Investigation Report
Research Misconduct Case # 2019-01
May ??, 2020

I. NAMES AND TITLES OF INVESTIGATION COMMITTEE MEMBERS

Michael Kahn, Professor, Institute of Biological Chemistry, College of Agricultural, Human, and Natural Resource Sciences.

Joanna Kelley, Associate Professor, School of Biological Science, College of Arts and Sciences

James Pru, Professor, Department of Animal Sciences, College of Agricultural, Human, and Natural Resource Sciences.

II. SUMMARY

Based on an Inquiry Report (**Exhibit 72**), Dr. Keane assembled an Investigation Committee (Committee) to evaluate possible evidence of misconduct by Mr. Ryan Evanoff (Mr. Evanoff or Respondent), Scientific Assistant in the Department of Veterinary Microbiology and Pathology at Washington State University (WSU, **Exhibit 57**). The Committee finds, based on a preponderance of evidence, that the Respondent did commit research misconduct with respect to the allegations that the Respondent committed plagiarism, falsification, and/or fabrication as defined by Executive Policy #33 (**Exhibit 3**). Regarding the allegation of falsifying data, records show the falsification of plasmid sequences (**Exhibits 1, 6, 70-72, 83-89, 92**).

Research misconduct was also committed in the fabrication of data where Mr. Evanoff was tasked with designing and ordering peptide sequences and delivering these to 45 for use in her studies [described in **Exhibits 48-52**, and summarized in **Section VIII** below (also see **Exhibits 59, 61, 62, 93**)]. 45 spent a great deal of time and effort using materials provided by Mr. Evanoff that turned out not be peptide sequences at all (**Exhibits 9, 10, 46, 48-52, 90, 91**). Peptides were completely fabricated based on protein sequence analyses conducted by the University of Idaho (**Exhibits 9, 10, 46, 48-52, 90, 91**), as well as an absence of any record at WSU showing that the peptides were present or purchased (**Exhibits 17-19**). Contact with JPT Peptide Technologies, the company that purportedly generated the peptides, also has no record that the peptides were ever ordered by Mr. Evanoff (**Exhibit 20**).

Aside from these examples of falsification and fabrication, addition examples of data falsification and fabrication are evident in several other projects discussed during the testimonies of 45, 45 and 45 (**Exhibits 48-52**). While these projects were funded by private or institutional mechanisms and not through federal sources, we refer the reader to 45 45 accounting of events (**Exhibit 10)** and summary of his testimony **(Exhibit 59)** as evidence that Mr. Evanoff's deception ran deep and over several years while working in the 45 and 45 labs. These projects include: 1) Hepacivirus A quasispecies; 2) T-cell responses during resolving hepaivirus A infection, a surrogate animal model for human hepatitis C; 3) investigating metabolic pathways as potential causes for maladaptation to training syndrome in Thoroughbred horses; and 4) the prevalence of evaluate gama-butamyltransferase and sorbitol dehydrogenase activity in racing Thoroughbreds and their associations with viral

infections. Please see **Exhibits 12-42** for information related to these non-federally funded projects.

Beyond the falsification and fabrication of data, there is clear evidence that Mr. Evanoff failed to adequately perform duties and responsibilities as required. Based on witness testimonies and Mr. Evanoff's procured lab notebooks (**Exhibits 73-82**), the clearest example of this is in his failure to keep quality records of his research efforts, either in electronic or written notebook form (**Exhibits 9, 10, 48-52, 55, 56, 59, 73-82**). He also failed to complete simple, but essential lab tasks such as ensuring that liquid nitrogen tanks (**Exhibit 11**) remain full for the long-term preservation of vital cell lines and research samples housed in the 45 and 45 labs (**Exhibits 9-11, 48-53, 55, 56, 59, 61, 62**). Finally, Mr. Evanoff's efforts to assist the Committee during the investigation have not been particularly helpful based on his refusal to provide oral testimony for the Committee (**Exhibits 60, 65**) and less than adequate responses (**Exhibit 64**) to written questions (**Exhibit 58**) submitted to Mr. Evanoff by the Committee. After evaluating testimonies from 45, 45 and 45 the Committee finds that annual evaluations provided by 45 and 45 (**Exhibits 66-68**) are inconsistent with the actual job performance by Mr. Evanoff indicating some degree of a lack of quality oversight in Mr. Evanoff's daily research efforts. 45 acknowledged this in his testimony and took full responsibility (**Exhibits 48** and **55**). However, the evidence makes clear that research falsification and fabrication were committed through the individual actions of Mr. Evanoff. Mr. Evanoff's proclaimed one-time incident where plasmid sequences were falsified (**Exhibits 6** and **72**) is inconsistent with the findings of the Committee. Rather, the Committee finds a repeated and measurable pattern of research material manipulation, changing of data, omission of critical research procedures and findings in lab notebooks, and making up data and results (*i.e.*, fabrication) by Mr. Evanoff throughout his tenure in the 45 and 45 labs.

III. BACKGROUND AND STATEMENT OF ISSUE/ALLEGATIONS

A. At the request of Dr. Christopher J. Keane (Dr. Keane), Vice President for Research at WSU, this Committee was formed to review the research misconduct allegation of data falsification and fabrication by Mr. Ryan Evanoff. Based on testimony from Mr. Evanoff (**Exhibit 6**) and witness testimonies (**Exhibits 48-52, 55, 56)** as well as document files [**Exhibits 1-8 (**45 **10-47, 48-62, 70-72**], there is a preponderance of evidence showing that the Respondent committed data falsification and fabrication as defined by Executive Policy #33 (**Exhibit 3**). Mr. Evanoff's actions constitute a significant departure from accepted practices of the relevant research community. The preponderance of evidence proves the data falsification and fabrication were committed intentionally and knowingly over a period of time and was not confined to the one incident that the Respondent has admitted. Other components of this misconduct are evident from an examination of testimony and laboratory records. Based on the evidence, it is clear that a pattern of falsification and fabrication, as well as delinquencies in job responsibilities, existed from at least 2015 through 2019 as the Respondent was 45 in 45 45 and then 45 labs. The data falsification and fabrication had a significant negative impact on the research record of the laboratories of 45 and 45, including the work carried out under on federally funded grant and several private and internal university grants. They affected two published manuscripts and, a manuscript submitted but not accepted for publication, as well as one manuscript in preparation but not submitted for peer-review. Falsification and fabrication of data and materials especially negatively impacted the

career of [redacted], who relied on the Respondent's data and materials as inputs for her work related to hepacivirus. [redacted] will leave the [redacted] lab after four years of research effort without a single publication in this area as a postdoctoral fellow. As part of the bigger research picture, the misconduct has also negatively impacted prospects for developing a novel animal model system for human hepatitis C.

Despite the Respondent's response that he did "not recall any information on any instances of data falsification other than what has been previously discussed or know of grants or publications that would be impacted" (**Exhibit 64**), the Committee concludes that there are many instances of laboratory behavior that are difficult, if not impossible, to explain in any other way than misconduct. Because the Respondent received training in the Responsible Conduct of Research at WSU as is required by all research personnel, and because the several instances of misconduct are significant departures from normal protocols, we conclude that the Respondent knowingly and deliberately acted improperly.

IV. FEDERAL RESEARCH SPONSOR SUPPORT

Proposal: ORSO #127249 (**Exhibits 2, 2.1, 2.2, 2.3**)
Agency: U.S. Department of Health and Human Services
NIH Award: R21AI126304

V. APPLICABLE POLICIES AND PROCEDURES

This investigation was conducted pursuant to the WSU Executive Manual Policy #33, *Responding to Allegations of Research Misconduct* (**Exhibit 3)**. The policy defines research misconduct as follows:

> *Research misconduct* means misconduct in research and scholarship fabrication or falsification of data, plagiarism, or other serious deviations from accepted practice in proposing, implementing, or reporting on research. Research misconduct does not include honest error or honest differences in interpretations or judgments of data.

The policy defines falsification as follows:

> *Falsification* is manipulating research materials, equipment, or processes, or changing or omitting data or results such that the research is not accurately represented in the research record.

This policy defines fabrication as follows:

Fabrication is making up data or results and recording or reporting them. We include as fabrication the construction of research materials for use by collaborators that were not as described and providing these materials to these collaborators so that they will carry out experiments that are invalid.

VI. SUMMARY OF INVESTIGATION PROCESS

On April 24, 2019, Dr. Keane, WSU Vice President for Research and Research Integrity Office (RIO), notified the Respondent of the research misconduct investigation. **Exhibit 5.** On November 7, 2019, Dr. Keane delivered a charge to this Committee, composed of professors Kahn, Kelley, and Pru, to investigate potential research misconduct associated with the Respondent. All Committee members attended the charging meeting. Also present were Senior Counsel Sherry Gordon, who provided legal advice to the Committee, and Lisa Brown-Haas, the WSU Research Misconduct Coordinator. The Committee met to conduct the investigation, write the report, and discuss their impressions on the following dates: December 9, 2019; December 16, 2019; February 17, 2020; May 3. The Committee interviewed and recorded five witnesses regarding the misconduct allegations as follows:

1. 45 (Complainant)-December 9, 2019 and March 19, 2020 (**Exhibits 48 and 55**);
2. 45 -December 16, 2019 and March 19, 2020 (**Exhibits 49 and 56**);
3. 45 -December 16, 2019 (**Exhibits 50-52**);
4. 45 - February 17, 2020 (**Exhibit 53**); and
5. 45 -March 3, 2020 (**Exhibit 54**)

The Respondent was invited and reminded several times to answer questions and submitted a written response **(Exhibit 64)** but did not agreed to be interviewed.

VII. RECORDS REVIEWED

The records determined to be relevant to this report are marked as exhibits to this report. See the Exhibit Table at the end of this report.

VIII. SUMMARIES OF INTERVIEWS

A. 45, Complainant, December 9, 2019 and March 19, 2020 (**Exhibits 48 and 55**)

45 described the various events that led him to conclude that research performed and published by his laboratory was not correct and that it was generated in a way that involved data falsification and fabrication. The initial issue was a problem with sequences that his technician, Ryan Evanoff, had presented to support his claim that he had cloned a viral gene and used this to express the corresponding protein. Mr. Evanoff claimed the DNA sequence of the expression plasmid was verified commercially by Eurofins, a company often used for this purpose, but the actual sequence obtained from Eurofins was of poor quality and did not support this claim. Instead, Mr. Evanoff substituted a known sequence of the gene in information he gave to 45, a postdoctoral colleague in the laboratory. When confronted with this discrepancy, Mr. Evanoff acknowledged that he had misrepresented the DNA sequence. He subsequently assured 45 that this was a one-time issue. However, 45 and 45 45 subsequently investigated other work that had been done by Mr. Evanoff and found serious problems with considerable additional work, extending over several years. Mr. Evanoff went on medical leave in the spring, 2019 and resigned in July, 2019. He is no longer a WSU employee.

The flawed work is potentially related to several papers that Mr. Evanoff co-authored:

1) Ramsay JD, Evanoff R, Mealey RH, Simpson EL. The prevalence of elevated gamma-glutamyltransferase and sorbitol dehydrogenase activity in racing thoroughbreds and their associations with viral infection. Equine Vet J. 2019 Nov;51(6):738-742. doi: 10.1111/evj.13092. Epub 2019 Apr 10. PubMed PMID: 30849186.
2) Ramsay JD, Evanoff R, Mealey RH. Hepacivirus A infection in horses defines distinct envelope hypervariable regions and elucidates potential roles of viral strain and adaptive immune status in determining envelope diversity and infection outcome. J Virol. 2018 Aug 29;92(18). pii: e00314-18. doi: 10.1128/JVI.00314-18. Print 2018 Sep 15. PubMed PMID: 29976666; PubMed Central PMCID: PMC6146699.
3) Gimenez F, Hines SA, Evanoff R, Ojo KK, Van Voorhis WC, Maly DJ, Vidadala RSR, Mealey RH. In vitro growth inhibition of Theileria equi by bumped kinase inhibitors. Vet Parasitol. 2018 Feb 15;251:90-94. doi: 10.1016/j.vetpar.2017.12.024. Epub 2
4) Ramsay JD, Evanoff R, Wilkinson TE Jr, Divers TJ, Knowles DP, Mealey RH. Experimental transmission of equine hepacivirus in horses as a model for hepatitis C virus. Hepatology. 2015 May;61(5):1533-46. doi: 10.1002/hep.27689. Epub 2015 Feb 24. PubMed PMID: 25580897.
It is also relevant to ongoing unpublished work in the laboratory. Information from these papers and unpublished research was used to support of grant proposal applications to the USDA and NIH that were subsequently funded.

The primary concern is with papers 1, 2 and 4, which deal with viral infection and especially with paper 2. The papers evaluate equine viruses similar to Human Hepatitis C virus and the NIH R21 grant the laboratory obtained proposes that these equine hepaciviruses to be studied could be a model for the human infection. It also argued that WSU research might be especially valuable because WSU maintains a herd of horses with Severe Combined ImmunoDeficiency in Pullman and investigating viral pathogenesis in these could help define which components of the immune system are involved in developing immune resistance to the viruses. Data obtained in (4) showed that the virus infection can be controlled by the immune system and suggested several potential targets for vaccine intervention. It now appears that the data in (2) is highly flawed and that the entire story line describing specific EHV proteins that are recognized by the immune system of infected horses and that these proteins can be used to generate a protective response is not supported by the data nor, in some cases, were the reported experiments carried out. *At this point, we conclude that the mechanism of resistance can only be considered to be untested, rather than whether it is correct or incorrect.*

45 described an experiment on equine hepacivirus done in 2018? (*last summer is how it is described and since Ryan was not working by then, MK concluded 2018?*) in which as a control he wanted to evaluate the horses for the presence of Equine Herpes Virus, a distinct virus. “I asked him (Ryan) to submit those to WADDL (*Washington Animal Disease Diagnostic Laboratory*) so we could get some initial viral titers and he said he did that. … This is easy stuff to check…. So he reported data summarized and in an Excel sheet that showed their herpes virus titers.” But in going back and looking at the information, “WADDL does not have evidence of that…. I called WADDL we went online we went in the WADDL database we look for sessions for these numbers. Ten horses. No record that anything was ever submitted; call them, talk to the technician. ….So we checked all of this stuff and can find no evidence that any of these had ever been submitted. And so we try to go back to the archive samples from these horses and couldn't find them. Couldn't find any serum. Couldn't find any blood, couldn't find anything.” The upshot

of this discussion was that, while some serum samples were found, they did not seem to correspond to those reported on by Ryan. And there was no WADDL data to be found. The data that Ryan had "generated" was used in the USDA grant application and 45 describes interactions with the USDA Program Officer in which he described his reluctance to report these results as part of his final report due in 2019.

Specifically, a protein identified using immunoblots that was said to have been isolated and sequenced by proteomics techniques was not actually confirmed as indicated by Mr. Evanoff's data. Moreover, follow-up experiments carried out by 45 in which peptides derived from this protein were being tested for their ability to interact with immunoreactivity were completely bogus—the peptides that Mr. Evanoff said he was supplying to 45 for these experiments had never been ordered!! ("Overlapping peptides that 45 had designed several years ago and Ryan was supposed to, supposedly ordered from a company. And made dilutions of those and plated them all out so we had individual peptide pools, overlapping peptides, and those had been used to screen T cell responses and horses, prospectively, and we weren't getting very good results. But at the time we—none of us—had any suspicions at the time that these weren't what was ordered, but we weren't getting good results and/but we got everything written up for a paper. And that was going to be submitted this year. But 45 just said, well, I'm going to check just to make sure that we actually had these peptides and so he checked. You know our financial records. He checked emails. He checked our business office and we could find no record that these peptides had ever been ordered.")

Experiments were done to test the reaction of horses, including SCID horses, against candidate proteins. "Antibodies against an envelope protein and you know, he was showing results in the antibody preparation. We did these infusion studies in these foals. We inoculated them with the virus and followed them along with real-time PCR to see if there was protective effects, and we were going to correlate that with antibody levels and so we had all that data from the last two to three years and had that meeting we written it up and actually had that submitted to the Journal of Virology. It was not accepted because there was some question about the recombinant protein that was used. Again Ryan did this work but was expressed in bacteria, and these are envelope glycoproteins. (*MK Note: Bacterially produced proteins do not contain the sugar modifications that are added by eukaryotic cells. These sugar modifications are often important in immunoreactivity.*) And so, you know, it was a stupid move but the paper was not accepted for publication and we went back to (*Ryan and*) asked him to express these proteins into 293 cells (*Human Embryonic Kidney 293 cells*) and kind of pretty soon after we asked him to do that he was starting to show us data and we didn't…. and this is all when this is starting to break loose now." (*MK Note: Converting a bacterially expressed gene into a context where it can be expressed in eukaryotes can take significant time and is generally not easy.*)

"So bottom line is we became very concerned about that stuff. We actually sequenced the recombinant protein again. This was the one that we found the original sequences that he falsified last spring. You know, he had supposedly made some recombinant proteins and we submitted those to Mass Spec and didn't get any protein in there."

The Respondent started to work with the [redacted] lab in 2012. His initial work was in collaboration with a long-time technician, Steve Leib, who was heading for retirement. This all appeared to go well.

However, Mr. Evanoff did not keep good records ("we have looked at his lab notebooks and you know, again, it's just he kept horrible records and the lab notebooks kind of petered out in 2015.", **Exhibits 73-82**). Although [redacted] stated that (apparently with regard to the 2015 paper (4) that "Everything we reported has been independently confirmed by other groups." Many of the materials collected cannot be found. [redacted] was not sure that they did not exist but he and others were unable to find them. The Respondent has not been helpful. With regard to this it may be relevant that a collection of equine kidney cell cultures that were in several liquid nitrogen storage tanks had been allowed to thaw and records indicated that Mr. Evanoff had not ordered the liquid nitrogen needed to fill those Dewars in years. While probably grounds for dismissal in its own right, this neglect does not meet the FFP standard of a misconduct investigation.

Misgivings about Ryan's work were first reported by [redacted], but it took some time, including her withdrawing from authorship, for this to be really acted upon. [redacted] answered with "Absolutely correct" when asked to comment on a summary by MK, "So it is coming across very strongly that you were basically blindsided by the initial exposure of something wrong, and then the fact that this clearly was not a one-time thing, but it looks like something fairly systematic going back a fair distance. I take from what you've said also that you feel that other people in your laboratory, [redacted] and [redacted] in particular, were also blindsided by this in the sense that whereas [redacted] may have had some misgivings a year ago, clearly the extent of the problem was not obvious to her and or to [redacted]

In describing his interaction with Ryan when he first took the issue seriously, [redacted] states, "When I really faced him that first day with those falsified sequences, and I looked at him. I mean I was shocked and I just assumed this was a one-off deal. Not that I was. I guess that's what I wanted to believe. Not that I didn't believe all the concerns that [redacted] was having. She was right, but I just wanted at that time to say okay." "So I was shocked, [redacted] was shocked. I don't think [redacted] was surprised. But then as we started to go back and back a bit further and further and found things I think yeah [redacted] ended up being shocked as well. Especially I mean just to find out that we've been work trying to do these T cell assays with water. I mean who does that?"

With regard to the current state of confidence about the questions, [redacted] stated, "So the Journal of Virology paper (2) we decided that we have enough evidence to retract" and there was discussion of this committee concluding where responsibility for the problems might be assigned in the retraction. "You know if I could be a little bit more specific in the retraction statement that would be better. But we could we have enough evidence right now that if we could just write a generic retraction statement. But I have concerns about doing and Sherry told me [redacted]."

Commented [MK1]: Somewhere we should make a statement about the retraction of the paper

"The Hepatology paper (4) that was published five years ago was primary data for the grant. You know, that's something I need to address that we haven't really done in detail yet. And again,

that's another one that if we either confirm or that the sequences were submitted or not and we confirm that the sequences were correct then the only other thing he did was these antibody assays. If I can't find the data, the raw data, then he either did it and was correct, but just didn't save it. But if I'm called to the carpet on it and I can't produce the printouts from the original printouts then what do you conclude from that?"

The committee concludes that this is not normal proper laboratory behavior and that what 45 45 was describing was a serious and extended pattern of scientific misconduct, including both data fabrication and falsification. While 45 does indicate that he should have been more vigilant in overseeing the work and data that was offered to him, the experiments were carried out over several years and he trusted Mr. Evanoff. Even valid experiments of this type are difficult. For Mr. Evanoff to have involved others in a charade with the protocols knowing that the starting materials were imaginary is startling since it not only indicates both data falsification and fabrication but it also involves others in time-consuming work that is certain to fail. 45 stated '45 was concerned … about safety because if this person was you know had mental health problems or whatever. What is he capable of doing? Because this is kind of pathologic."

Commented [MK2]: Delete or move elsewhere

B. 45, December 16, 2019 (**Exhibits 50-52**)

45 is a Postdoctoral Researcher in the Department of 45 45 who is 45 by 45, 45 45 and 45 She has a DVM, two PhD degrees, and four years of postdoctoral experience. She joined the laboratory in Sept 2015. Later in the interview, 45 noted that she did her PhD in a very productive laboratory where all members of the laboratory were generating data and then putting it all together. There was a lot of collaboration and everyone contributed to publications.

During her time at WSU, she worked on both Theileria equi and Hepacivirus C. While the Respondent participated in both projects, his involvement with the Theileria project was not central to the project, while he was very involved in several key components of the hepacivirus project.

Mr. Evanoff was working under the 45 of 45 and 45 but not under the 45 of 45. 45 stated that she always got along well with Mr. Evanoff and had a cordial work relationship. Mr. Evanoff assisted with lab work in support of 45 45 research. Mr. Evanoff assisted 45 in experiments and provided her samples on material generated before she joined the laboratory. The samples are materials provided by Mr. Evanoff where some generated by him and some bought and prepared by Mr. Evanoff.

There are three manuscripts in question that have 45 and Mr. Evanoff as 45 Mr. Evanoff had no significant contribution to the. 45 et al. paper on Theileria [#3 above]. He was included as a co-author because he was part of the laboratory team, but he did not do any experiments. His specific contributions were to change or prepare culture media using a recipe.

For the two additional manuscripts in question, one manuscript was rejected and the other manuscript was in the process of being submitted. Neither manuscript has been resubmitted for publication. The experiments in question in the rejected manuscript could not be repeated because samples disappeared from the laboratory.

45 stated that one of the first things that caught her attention in the laboratory was that Mr. Evanoff was generating a significant amount of research data that was not consistent with the hours of laboratory work he was putting in. 45 and Mr. Evanoff were the ones working in the laboratory. It always caught her attention that the amount of work did not align with the amount of information produced. Mr. Evanoff always presented positive data. 45 45 was always generating negative results and Mr. Evanoff was generating beautiful results. She stated that Mr. Evanoff was the star in the laboratory.

The second point that caught her attention was that all of the experiments she did with materials provided by Mr. Evanoff resulted in alarming inconsistent results without a clear explanation.

Based on those inconsistencies she suspected that something was not working well. In January or February of 2019, she first raised her concerns with 45. Mr. Evanoff was asked to detail what he had done, and the data did not coincide with data generated by 45.

The second time she spoke with 45 she was also ignored. 45 stated that 45 45 indicated that her message raising concerns was not clear enough. She believes she was clear enough and that she was extremely careful because it was a severe situation. However, she felt that if there was a small doubt about what she was reporting, the data generated and presented by Mr. Evanoff during lab meetings were more than suggestive of an issue.

The second time 45 approached 45 it was to tel 45 that Mr. Evanoff was not honest with her. The data shows that she was working with different samples. She had saved previous samples provided by Mr. Evanoff as control samples and ran them with new samples provided that should have been the same material. The two sets of samples that were supposed to coincide had proteins with different molecular weights. When asked to discuss, Mr. Evanoff never called 45 back. 45 stated that her and Mr. Evanoff's results never coincided. For example, the Coomassie stains of proteins showed different molecular weights. Mr. Evanoff always put in doubt her laboratory skills and suggested that she was confusing the samples or putting samples in an incorrect position.

In approximately March, because there had been no action taken based on her reports, 45 45 approached 45. 45 was receptive to the claims and asked for proof. Of note, in November, Mr. Evanoff unexpectedly 14. It was an event that shocked the entire lab. 45 told 45 to be careful with Mr. Evanoff because Mr. Evanoff never took a break after the loss and he could be confusing the samples and he could be doing things that were not proper because he was not well.

To generate proof, 45 asked 45 and Mr. Evanoff to submit a sample to the University of Idaho for mass spectrometry. There are emails proving the samples were sent

(**Exhibit 90, 91**). The protein was supposed to be a recombinant envelope protein of a virus that Mr. Evanoff had generated. Mr. Evanoff had the cloning skills to generate the protein.

Reviews of a submitted manuscript had come back stating that the protein in question should not have been generated in an *E. coli* system because it needs to be glycosylated and this does not happen in *E. coli*.

To produce a glycosylated protein it is necessary to use a eukaryotic system, such as embryonic kidney cells. 45 was interested in learning the process but she stated that Mr. Evanoff came to the lab at 7am and was done with everything by the time that she arrived at the laboratory around 8:30 or 9am. He had claimed to have completed the cloning in a eukaryotic system in two weeks, including verifying protein production using a functional ELISA, while he was only working from 7:00 to 3:00. It is implausible to have done all of that in that amount of time. Even if you're starting with a purified DNA sample, it takes that longer than that to transfer to appropriate expression vehicles, express it and get the ELISA working. It takes two weeks just to move the plasmid from a prokaryotic vector to a eukaryotic vector much less getting it into the eukaryotic cell system, which presumably he wasn't using until he needed it in this case and then purifying the protein. This is at least a month-long project.

45 wanted to confirm the presence of a protein of interest for their experiments. The samples were selected and submitted by Mr. Evanoff on March 26, 2019. On April 3, 2019, the results came back showing that the material generated by Mr. Evanoff did not contain the components it was supposed to have. This was a confirmation to her that Mr. Evanoff was fabricating material. There was no evidence by mass spectrometry that the target protein was present in the samples provided [Exhibit 8, email from Lee Deobald]. April 4, 2019, 45 45 sent an email to 45 and 45 sending the results of the mass spectrometry [Exhibit 5]. She was not kept in the loop of the emails and she had to email University of Idaho personally to be kept in the loop.

The results from the University of Idaho indicated that the sample had horse serum proteins and chicken egg albumin (most abundant peptide) instead of viral envelope proteins. None of the systems involved should have had chicken proteins and the purified proteins should not have contained serum proteins.

Purified proteins from the 293 samples were submitted for mass spectrometry. Proteins from horse serum was the most abundant in the eukaryotic system; in the *E. coli* sample, chicken egg albumin was the most abundant protein. The presence of abundant proteins such as serum proteins and egg albumin may obscure the acquisition of mass spectra from relatively less abundant E2 peptides if they are present in the samples. 45 speculated that Mr. Evanoff may have sent plasma from an infected horse, which may explain the horse serum protein result.

The results of the mass spectrometry from University of Idaho was received by Mr. Evanoff, 45 45 45 and 45 (**Exhibits 90, 91**). The results were ignored until 45 45 brought it to 45 attention—he recognized that the results were unexplainable. Based on the mass spectrometry evidence, 45 requested 45

and Mr. Evanoff to resequence other proteins that are used in the laboratory because the paper was already presented and rejected. 45 emailed Mr. Evanoff a clear plan to avoid any confusion [Exhibit 6, email April 12, 2019 1:01pm]. And yet, the plasmid sequence was never provided to 45 . 45 also requested the raw data. Based on this, 45 claims that Mr. Evanoff provided 15 files with fabricated data [Exhibit 1, emails from Mr. Evanoff on April 17th, 2019 at 7:26 Has 15 attachments to it.]. Of note, the plasmids were never sent for sequencing.

The 15 files were the DNA sequence for the recombinant proteins. The recombinant proteins were sent for sequencing. The nucleotide sequences directly from Eurofins (example [Exhibit 2]) do not match the nucleotide sequences provided by Mr. Evanoff in the email attachments [Exhibit 1]. Nucleotide sequences from Eurofins do not contain clear sequence and certainly do not match the envelope proteins, or any other protein [Exhibit 2].

Mr. Evanoff sent 45 a sequence that would have produced a perfect envelope protein. 45 asked Mr. Evanoff to login to Eurofins and download the files directly to her computer. Mr. Evanoff downloaded the files from Eurofins onto her computer. When she compares the files sent by Mr. Evanoff and the files from Eurofins, they do not match [Exhibit 4, chromatograms from Eurofins].

Based on the Eurofins data, 45 contacted 45 immediately and 45 took immediate action by reviewing the data and interviewing Mr. Evanoff the following day. This was the second physical clear evidence of misconduct but the first one that action was taken on.

After the discovery

The laboratory books of Mr. Evanoff for 9 years were not available. The samples that 45 45 collected during three summers that could have revealed additional fabrication of data disappeared. She did not the opportunity to re-test her samples.

For one experiment, blood was drawn every 15 days from infected horses and was then stimulated with 73 individual peptides. The results were negative. Nothing was stimulated. The results were not clear regarding the peptides. 45 finished writing the paper, at which point 45 said they were going to see if Mr. Evanoff had ordered the peptides. They could never find an order for the peptides, which would have been quite expensive. 45 was working with unknown samples.

It was confirmed that samples expected to have 73 peptides provided by Mr. Evanoff were not present in samples provided. Later it was confirmed that the proteins and reagents provided by Mr. Evanoff were never ordered. The Respondent was providing 45 with fabricated research material.

45 was provided with antibodies said to have been generated against the target protein by a person that was on the same floor as the laboratory on the third floor of the veterinary school. 45 asked the person in December 2019 (Sally Matson, last name unknown)

whether she had ever generated the antibodies and the person had never generated those antibodies. Those "antibodies" lead to additional experiments that were unsuccessful. Mr. Evanoff was going to provide the person with proteins to generate the antibodies in mice. The proteins had never been provided.
***
45 career as a scientist has been compromised as a result of working with fabricated material provided by Mr. Evanoff. 45 worked hard to reveal this problem. 45 45 was never able to learn from Mr. Evanoff. She tried to learn several techniques from him, including cloning, but he never wanted to teach her.

Other examples of issues in the laboratory were that sequences were never sent to LBB1 for sequencing and the nitrogen tanks had not been filled since 2016 or 2015.

***

When asked whether the Respondent's "actions caused you to do something which was nonsense because there was no experiment that corresponded with what you wrote in your laboratory notebook you were trying to do?", 45 responded that she "Probably can match with a reality, but I have to redo all the experiments again. Infect the horses, draw blood every 15 days, that experiment takes two full days every 15 days. Each time that we did that experiment it cost $500, approximately, and that's just the reagents we were using, that's not the horses, that was just the plate with the reagents and everything." Then you have to count the horses, the technicians that work drawing blood over there, your salary, his salary. At the end of this 45 45 stated "and then the time because I lost it. I lost my time. I'm no baby. I'm 45 years old. So I lost my time. My dad asked me when are you going to have a real work, a real job. That this is a real job and your salary has to increase someday."

When asked about what Mr. Evanoff was doing in the laboratory, 45 stated that he was often doing computational things. At three P.M. he was gone, regardless if an experiment was going on or not. However, they were not co-located in the same laboratory space. She also stated that Mr. Evanoff always tried to get everyone out of the laboratory. He was not interested in teaching her the techniques that he supposedly knew.

C. 45, December 16, 2019 (**Exhibit 49**) and March 19, 2020 (**Exhibits 56**)

As outlined below, 45 began by summarizing his initial interactions with Ryan Evanoff after Ryan had admitted to fabricating data. During this meeting, 45 was told by Ryan that the only fabricated data was that related to some recent sequencing data of viral DNA in plasmids (**Exhibits 1, 70** and **71**). The material to be sequenced was submitted to Eurofins. Ryan admitted that the submitted samples yielded poor quality sequencing information. Ryan admitted to replacing the poor quality sequencing data with sequences that were evidently obtained from the GeneBank database and providing these to a postdoctoral fellow in the 45 lab, 45 45.

45 **paraphrased testimony:** *So when this started to unfold in the spring of this year [2019] and Ryan had admitted to fabricating some sequencing data, I met with him at that time shortly thereafter and asked him about the two papers that we had published relatively recently and whether the data in those papers was sound. He swore that it was and I told him you know, that's great, but just to let him know that I'd be going through all those projects and also potentially repeating experiments to determine if that was indeed the case. Shortly thereafter he went on family medical leave and then subsequently resigned. I had no technical support at that time. My approach was to hire back our former lab tech who had worked in the lab for 30 plus years to come back as a time slip to help with sorting through everything. His name is Steve Leib, and I wanted to start with the projects that have first been published to try to get a handle on those so that we knew if those need to be retracted or not. And so we started with the Journal of Virology paper.*

45 made quality efforts to repeat some of Ryan Evanoff's research with assistance from former Lab Technician Steve Leib. 45 describes the events that unfolded. Ryan had told 45 that several rounds of sequencing attempts through LBB1 (WSU campus sequencing facility) were made to sequence and resequence viral DNA samples. 45 explained that he discovered that only one set of samples was actually submitted to LBB1 and that he and his departmental accounting office had no record of additional billing or payments for sequencing through LBB1. When contacted, LBB1 confirmed that they had record of only the initial submission, but not of other sequencing from Ryan Evanoff. 45 explained that many of the sequences that Ryan had provided him were obtained from GeneBank and that some of the sequences were not even of the region of the virus that was under investigation. Simply put, Ryan had falsified original sequencing data by replacing it with DNA sequencing information that he procured from the GenBank database. 45 has submitted email correspondence with LBB1 (**Exhibit 13**) and data from Ryan's lab notebook have been submitted as evidence (**Exhibit 73-82**). 45 also noted several times that Ryan's notebooks were almost useless in that records were so poorly kept that it is likely impossible that anyone could follow his progression and understand the content of what was presented in the notebooks (**Exhibits 73-82**).

45 **paraphrased testimony:** *In which I did quasi species analysis on a relatively novel equine hepacivirus, which is going to be a little inconsistent in the notes because the name has changed several times. But we did that just on archival samples that I had from my PhD work and for that project we generated amplicons for the E1 and E2 envelope genes and then we were taking those and sending them to the Sequencing Center which officially is called the Laboratory for Biotechnology and Bioanalysis here on campus. And that was the first set of samples that we had submitted for that was actually done before— it's either before Steve Leib's retirement or when he came back for a short stint as a time slip. And so Steve had actually helped put those first set of samples together and those went up. And we got the data back and I'd seen the raw sequence of the time but it was a really large data set and one of the things that Ryan, at least we thought, brought to the lab when he was hired was his bioinformatics ability and ability to analyze that data. And so we started he did some alignments to figure out the number of variants that were there and I started to work on the analyzing and how would that fit together with a story? The next part of that project was to generate another set of samples to up for PacBio sequencing and that was just going to add to the number of horses we evaluated as well. So Ryan supplied me with data associated with that and we had been going back and forth for months*

about how to analyze the data with different methods: mean Hamming distance scores, something called Shannon entropy scores and looking at those different modalities to see if there would be anything that would be statistically significant or interesting consistent with the work that's been done in hepatitis C, which is the closest relative of the virus we were working on and so we did that. We weren't able to identify hypervariable regions based on the data that we had, which is something they had shown in hepatitis C in those genes. And so at that point I had asked Ryan to pull all the sequences for this virus published by other groups and by our group and to see if from looking at a more diverse data set if we could identify hypervariable regions within those envelope genes. He didn't do statistical analysis, but he had put it in the Los Alamos database and we did the Shannon entropy scores determined by per amino acid throughout the genes that we were interested in and from that I did the statistical analysis and determine that there were three hypervariable regions in close proximity to what had been identified for Hepatitis C.

The point of when the paper was under review the last bit of sequencing that they had asked for us to do is some validation data to determine the depth of the sequencing that we were doing and also number of potential sequencing errors of contributing to what we were seeing and said before that I had asked Ryan because we had or supposed to have had different variants of these genes in plasmids. And so I had instructed him to take those and mix them in different quantities and concentrations and to then send them up for sequencing so we would have a known so because we use bar-coded primers we can mix them in different quantities and so by doing that we could compare back to what our known was and ***within a month Ryan provided that data and I use that in my review and in hindsight, you know, there's many, many problems. When Steve came back, the first thing we did was to look into the most recent sequencing set which was the validation and when he found out through talking to the LBB1 group as well as talking to our administrative finance office that that had never been submitted, and so we were kind of floored by that and so the thought at that time was well, maybe you know, he had based it on like as time has progressed, I'd become more and more convinced that he's done many, many things which we'll talk about but at the time I was still holding out hope that maybe this was the one thing that was wrong****. It was a validation run and could we repeat that validation and provide a correction to the paper as far as you know, the types of errors and things we expected.*

It was accepted and then you know while we were doing that work we figured out found out from again for they're talking them that they have done no other PacBio sequencing for us. So the second run which he provided data for on additional horses that is in the paper, and as soon as I saw that I knew we were cooked and the paper needs to be retracted because it just never happened and he completely fabricated all the data that he sent me. The other thing I had Steve do was look at this, you know, the GenBank accession numbers that he included in the paper that he analyzed and determined that some of the GenBank accession numbers that he provided didn't even apply to our genes of interest, but rather belonged to envelope genes. He had included a gene segments that had accession numbers to the non-structural protein 3, again one more thing that just had been completely fabricated. *So that was basically that project and that took us quite a while to sort of mentally sort through as well as get to the point of figuring out.*

45 provided an explanation of how more recent data generated by Ryan was used. He indicated that after reevaluating data from the Journal of Virology manuscript, he decided to

eliminate the NIH grant proposal that he was currently working on, which included preliminary data generated by Ryan. 45 has not used any of the more recent data generated by Ryan for subsequent grant proposal submissions. 45 indicated that Ryan's falsified data has not been used in any other grant proposals and the data has not been referenced in any other manuscripts.

45 **paraphrased testimony:** ***Nothing from this paper has been used to this point to for another grant [proposal]****. It was when this all started to happen that I was actively working on an NIH Grant thinking that he was doing the work. I thought he was doing and once we realized what was going on, I just trashed the whole idea.*

45 goes on to describe preliminary data that was included in a published 2019 Equine Veterinary Journal manuscript, which outlines a collaborative project in race horses between his lab and a veterinarian in California. He describes that race horses can have elevated levels of two different liver enzymes. These enzymes were evaluated by the California collaborator and 45 45 lab was to complete PCR analysis for three different viruses in the samples that he received from the California group. Ryan completed all of the initial PCR work and the paper was submitted in fall of 2018 and accepted in early 2019. Preliminary data that was generated was used in a funded collaborative grant with the Grayson Jockey club. 45 explained that some of Ryan's original data still exists, but that the gels are so poorly labelled that it is impossible to make any sense of the data after the fact. This preliminary data was included in the 2019 Equine Veterinary Journal manuscript and was used for a second funded grant through the Southern California Equine Foundation. The original samples still exist and 45 is working now to repeat some of Ryan's initial PCR analysis. No update was available at the time of his testimony.

45 **paraphrased testimony:** *The only other paper that I have had published in association with Ryan was a paper that got published in the Equine Veterinary Journal. Investigators think that poor performance horses have elevated gamma glutamyl transferase or elevated liver enzymes, and so a veterinarian from California had sent some samples to do a pre-screen on it and we looked for the three viruses we were aware of at the time which were equine pegivirus, equine hepacivirus, and another virus, and we found and we have the gel showing that most if not all were positive for this pegivirus. A PCR analysis was completed for this. So then I wrote a grant proposal that was funded. Part of it went to* ***Boehringer Ingelheim****. It was for an equine advancement toward research award. Then the other one was actually submitted to the* ***Southern California Equine Foundation*** *and so they funded the other portion of the award. In that grant proposal we were we looked at 800 racehorse race day samples from individual horses down at the racetrack in California. They did the biochemical work looking at liver enzyme activity. The samples were subsequently frozen and sent up to us and we did the PCR work to determine if they were infected with any of the viruses we were looking at. We still have these samples.*

The paper was submitted in the fall of 2018 I recall and it was accepted in early 2019. The data that had been generated at that point, which was still preliminary, was used as preliminary data for a collaborative grant where I was just a co-investigator with Grayson Jockey Club, and that grant was funded.

45 **was asked if the data still existed and he replied** ***"no, they're so poorly labelled that can't you can't make heads or tails of it."*** *So what I had Steve Leib do initially*

because it was such a large number of samples was too we had picked a subset those that have been indicated by Ryan to be positive for one virus or another and some that had been recorded as being negative. Then I think we started with approximately 50 and what we found is a large number of inconsistencies with horses that were negative being positive and to this point we've done about a hundred and fifty samples. I didn't bring that information today because I've done it, but the one glimmer of hope that I still have on that project is that it looks like there's the conclusions from that paper was there is no association with viral infection and these elevated liver enzymes. It still appears that that is indeed the case based on the repeated samples that we've done, which is over a hundred and fifty but there are enough inconsistencies there that I'm going to have to repeat all of them, and so that's currently that's my plan…

45 laid out several examples showing a deeper pattern of incompetence and failure to perform standard procedures in the lab. He also provided additional testimony highlighting data fabrication/falsification and explained how this has hamstrung ongoing collaboration. By example, 45 has a relatively large collaboration with Cornell to sequence/PCR samples as is routinely done in his lab. 45 has put a hold on that project and had to explain to his colleagues at Cornell the ongoing issues in 45 lab with 45 research technician (*i.e.*, Ryan Evanoff).

45 **paraphrased testimony:** *So there's not very many things that have been published and so in hindsight, I mean there's a reason I think why but* ***nevertheless some other things that just speak to the depth of what he was capable of during the process. I wondered about the liquid nitrogen tanks and where they were at, so we checked on them. We have six liquid nitrogen tanks with samples going back to the 80s and all of them were bone dry and checked with our we were worried at first that maybe we just neglected, you know with everything going on, but we checked with our business office and our lab hadn't purchased any liquid nitrogen since 2016. And so I have some emails to that effect, I have images of us throwing away everything and the one thing that relates to that is during the 2018 intramural grant through the CVM, which would have required Ryan to be transfecting cells and using cells that we would have had in the liquid nitrogen tank that he told me he was working on as part of generating preliminary data towards the NIH proposal that I was going to put together. I had asked him to start trying to develop pseudotyped viral particles and he said he was doing that as well and to do that he would have had to be using cells which didn't exist.***

Summary of the impact of Ryan Evanoff's falsification/fabrication of data on publications and funded grants in the 45 **and** 45 **labs:** In his summary, 45 identified two, and possibly three, manuscripts, an NIH R21 grant, and potentially a USDA grant that are likely compromised by Mr. Evanoff's data fabrication and falsification. One manuscript that is certainly compromised (Journal of Virology, 2019) is in the process of retraction and the second (Equine Veterinary Journal, 2019) is in a holding pattern, as 45 is working to validate some of the viral DNA sequences in this second published manuscript. A third manuscript (Hepatology, 2015) is also being evaluated for inclusion of fabricated data by Ryan Evanoff. 45 45 is primary authors on both manuscripts. To this list, 45 described preliminary data that was generated through a collaborative effort between his lab and a veterinarian in California that was published in a 2019 Equine Veterinary Journal manuscript. This information was subsequently used to generate funds from three different sources in which 45 was

either a [45] or [45]. The first funded grant is from the Southern California Equine Foundation, and a second is from Boehring Ingelheim. These two projects seem to be related and partial funding was provided by each funding source. A third grant was funded using the initial PCR data generated by Ryan Evanoff was from the Grayson Jockey Club. [45] served as a [45] on this funded project. Importantly, in terms of the sequence of events, the description of falsified and fabricated data, the depth of deception by Ryan Evanoff, and the description of additional incompetency and failure to perform expected lab responsibilities by Ryan Evanoff, [45] testimony is consistent with that of [45] [45] and [45] who testified before and after [45], respectively. [45] and [45] indicated that they take responsibility for what has happened given that their status as [45], but they both appear to have been blindsided by Ryan Evanoff's calculated and deliberate efforts to undermine research efforts in each of their labs.

[45] described the importance and potential societal impact of the research in his lab and how Ryan Evanoff's data falsification/fabrication has jeopardized his and [45] research programs. He also described the negative impact that Ryan's data falsification/fabrication has had on the career of [45] as she seeks to move a postdoctoral position into a tenure-track faculty position. She has no manuscripts to support her application to faculty positions after working for several years in the labs of [45] and [45] [45] As described by [45], the viral sequencing data and immunizations in SCID horses against proteins encoded by the viral proteins has potential significant medical and economic value in that the viral DNA sequences are similar to DNA sequences contained within virus that causes hepatitis C in humans. Hepatitis C is difficult to study in humans and there is no quality immunization against the virus that causes this disease in humans. As such, the [45] and [45] labs were working with the SCID horse model system to develop proof of principle data to move toward development of a hepatitis C viral immunization for use in humans. Since his testimony, [45] has put together a timeline (**Exhibit 9**) and very good summary that outlines the projects that were compromised by Mr. Evanoff's deception (**Exhibit 10**).

D. [45], February 17, 2020 (**Exhibit 53)**

[45] began by explaining that [45] ran his lab during Ryan Evanoff's tenure in the [45] lab while [45] partitioned his time between administrative and research responsibilities. [45] was surprised to hear of the possible data falsification by Ryan Evanoff and indicated that he had no reason to question Ryan's efforts in his lab. [45] went on to say that he "was sorry to see Ryan leave as he was quite productive." Ryan left the [45] lab in good standing for a higher salary in the [45] lab. [45] explained that Ryan had no purchasing responsibility, his turn around time on experiments was reasonable and could not remember a time when data was generated faster than expected. Ryan co-authored 13 manuscript during his time in the [45] lab, mostly in the capacity of standard molecular biology techniques and generating recombinant proteins for antibody production. [45] explained that all final data were reviewed by [45] and/or him prior to manuscript preparation and submission for peer-review.

E. [45], March 3, 2020 (**Exhibit 54**)

The discussion began with an explanation of [redacted] overlap with Ryan Evanoff in the [redacted] lab. She explained that Ryan was already working in the [redacted] lab when she began her employment at WSU in 2007. They were collectively in the [redacted] lab through 2012 and [redacted] on four manuscripts. [redacted] explained that Ryan's primary role on these manuscripts centered on the development of the STRA8 antibody. Ryan worked to clone the *Stra8* gene, sequence the gene, and then use the sequence to generate recombinant protein using an *E. coli* bacterial system. He was successful in making an outstanding antibody against STRA8, one that has been and is used by numerous labs around the world to identify preleptotene spermatogonia housed within the testis. [redacted] explained that she and others in the [redacted] lab evaluated Ryan's efforts on a weekly basis and it was a complete surprise to her to hear about possible data falsification and fabrication by Ryan after leaving the [redacted] lab. She even went so far as to mention that Ryan, while independent, was very good in the lab from a technical perspective. She also said that "Ryan was very open when things were not working" and that he was very open in general about his efforts in the lab, particularly in group lab meetings. [redacted] thought Ryan to be excellent with no issues and she had a lot of confidence in Ryan's abilities. Ryan had no purchasing authority in the [redacted] lab. Ryan also worked toward generating a second recombinant protein called RDH10 using the same bacterial system. While successfully cloning and sequencing the *Rdh10* gene, he was unsuccessful at generating quality recombinant RDH10 protein in the bacterial system. [redacted] again described her confidence in Ryan's abilities and openness.

IX. ANALYSIS

Optional: In the interest of some clarity in this account, the Committee determined the report should include a timeline for reference.

Timeline:

X. FINDINGS OF FACT

There is sufficient evidence for the Committee to make the following Findings:

1. Mr. Ryan Evanoff was a Project Associate in the School of Molecular Biosciences from January 16, 2008 to February 15, 2011.

2. Mr. Ryan Evanoff was a Project Associate in the School of Molecular Biosciences from February 16, 2011 to May 31, 2012.

3. Mr. Ryan Evanoff was a Scientific Assistant in the Department of Veterinary Microbiology and Pathology from June 1, 2012, to July 8, 2019.

4. Mr. Evanoff falsified data on four projects outlined in the Section II.

5. Mr. Evanoff fabricated data in two projects as outlined in Section II.

XI. CONCLUSIONS OF LAW

Based on the Findings of Fact, we reach the following conclusions:

A. Jurisdiction. This Committee was properly charged and has authority to decide this case. Respondent was notified of the case and given the opportunity to respond to the allegations.

B. The committee concludes that Mr. Evanoff willfully and knowingly falsified and fabricated data in several unrelated projects that were funded by federal and non-federal funding bodies.

XII. RECOMMENDED ACTIONS

The Committee recommends that

Michael Kahn
Professor, Institute of Biological Chemistry

Date

Joanna Kelley
Associate Professor, School of Biological Sciences

Date

James Pru
Professor, Animal Sciences

Date

Exhibit List
Research Misconduct Case # 2019-01

EXHIBIT	INFORMATION
1	[redacted] initial email to the Dr. Keane highlighting the incident
2	eREX for [redacted] NIH R21 application 1R21AI126304-01
2.1	Grants.gov confirmation of receipt of [redacted] NIH R21 application
2.2	Notice of Award for 1R21AI126304-01
2.3	WSU Sponsored Project Award Notification (ORSO#127249)
3	WSU Executive Policy Manual (Responding to Allegations of Research Misconduct)
4	Memorandum to Inquiry Committee 4/19/19
5	Letter of notification of misconduct to Ryan Evanoff
6	Ryan Evanoff testimony from 5/6/19
1 ([redacted]	Ryan Evanoff email to [redacted] regarding downloaded sequencing information from Eurofins for three plasmids using two different primer sets (4/17/19)
2 ([redacted]	DNA sequence
3 ([redacted]	DNA sequence
4a-d ([redacted]	Raw sequencing data in chromatogram form
5 ([redacted]	[redacted] email from 4/4/19 with recommendation to re-sequence 293 cell peptides at another proteomics facility.
6 ([redacted]	Ryan Evanoff response to [redacted] email about the general plan to move forward with sequencing new Hepacivirus A E2 envelope proteins
7 ([redacted]	Outline of events discussed during [redacted] testimony (entry date 12/16/19)
8 ([redacted]	Lee Deobald (Univ of Idaho proteomics lab) email (4/3/19) indicating lack of any sequences for Hepacivirus A E2 envelope glycoprotein in samples submitted by Ryan Evanoff
9	[redacted] timeline outlining events associated with misconduct by Ryan Evanoff (2015-present)
10	[redacted] written comments on misconduct by Ryan Evanoff
11	[redacted] written description of delinquency by Ryan Evanoff in maintaining liquid nitrogen tanks
12	Excel spreadsheet with information on viral variants
13	Email from Mark Wildung (LBB1 sequencing core) indicating no record of Ryan Evanoff sample submission for PacBio sequencing
14	EHCV peptide information
15	Email from Ryan Evanoff to [redacted] (10/22/18) with EHCV liver tissue cytokine and real time data
16	Email (9/23/19) from Lee Deobald (Univ of Idaho proteomics lab) indicating the resequenced protein preparations lacked peptides that were supposed to be generated by Ryan Evanoff
17	Email (8/30/16) from Ryan Evanoff to [redacted] regarding a JPT order indicating that he (Evanoff) did not have the information in an email

18	Follow-up email from Ryan Evanoff to [redacted] indicating that he could not find the JPT order information
19	JPT Innovation Peptide Solutions quote for costs associated with peptide sequencing from 2/23/15
20	Email (9/30/19) from Vincent Kurnia (JPT Innovation Peptide Solutions) to [redacted] indicating that samples from Ryan Evanoff were never received at JPT in 2015.
21	Email (5/16/18) about liver biopsies from WSU sent for qPCR analysis at Gluck Equine Research Center in Kentucky
22	EHCV peptide pools
23	Information on the EHCV peptide pools
24	Endpoint PCR screen information
25	Cornell PCR data from [redacted] equine samples for various viruses
26	Email (9/27/18) from Ryan Evanoff to [redacted] providing Cornell PCR data
27	Gel images of PCR results
28-30	Sequencing information
31	TDAV racehorse screen
32	Email (10/15/18) from Ryan Evanoff to [redacted] with updated qPCR data from Cornell
33	Variance Table Report
34-39	Gel images showing PCR results
40	Gel images from EpGV endpoint PCR
41	Summary of horserace PCR results
42	Email (3/20/20) from [redacted] indicating that Eurofins was unable to find sequencing information on samples sent by Ryan Evanoff in 2012 and 2013
43	Clarification email (3/20/20) from [redacted] to the Office of Research about his testimony from the prior day (second testimony)
44	Email (4/17/19) from [redacted] to [redacted] indicating that [redacted] wanted to meet with them, presumably about Ryan Evanoff's data falsification/fabrication
45	Email (3/20/20) from [redacted] to the Office of Research highlighting a prior (3/11/17) email from [redacted] to [redacted], [redacted] and Ryan Evanoff about a poor T-cell response
46	Email (3/20/20) from [redacted] to the Office of Research again highlighting the lack of protein sequencing information obtained from Lee Deobald (Univ. of Idaho proteomics lab) – same as [redacted] Exhibit 8 and Exhibit 16
47	Email from [redacted] to the Office of Research related to a prior email (4/16/19) from [redacted] to [redacted] regarding ELISPOT data from chimpanzees.
48	Interview with [redacted] 12/9/19
49	Interview with [redacted] 12/16/19
50-52	Interview with [redacted] 12/16/19
53	Interview with [redacted] 2/17/20

54	Interview with [redacted] 3/3/20
55	Interview with [redacted] 3/19/20
56	Interview with [redacted] 3/19/20
57	Evanoff Appointment information
58	Investigation committee questions for Ryan Evanoff
59	Summary of [redacted] interview (Exhibit 49)
60	Letter of interview request to Ryan Evanoff dated 1/29/20
61	Summary of [redacted] interview (Exhibit 48)
62	Summary of [redacted] interview (Exhibits 50-52)
63	Summary of [redacted] interview (Exhibit 54)
64	Email (4/8/20) from Ryan Evanoff to the Office of Research addressing written questions from the Investigation Committee
65	Timeline of email and other correspondence between the Office of Research and Ryan Evanoff
66-68	Ryan Evanoff Annual Reviews for 2012, 2013, and 2018, respectively
69	Email (12/21/19) from [redacted] forwarding her CV to the Office of Research
70	Email (12/21/19) from [redacted] forwarding an email (4/17/19) to the Office of Research containing information about the three plasmid sequences containing E2 sequences submitted to Eurofins (no chromatograms)
71	Email (12/21/19) from [redacted] to the Office of Research containing Eurofins sequencing information downloaded by Ryan Evanoff onto [redacted] personal computer (with chromatograms)
72	Inquiry Report
73	Evanoff first notebook in [redacted] lab from2012
74	Evanoff notebook from 2013
75	Evanoff notebook from summer and fall of 2015
76	Evanoff notebook from early 2019
77	Evanoff notes
78	Evanoff notes
79	Evanoff notebook from June 2012 through early 2013
80	Evanoff notebook spring 2015
81	Evanoff notebook April 2019
82	Evanoff notebook 2014
83	Evanoff email to [redacted] about sequencing data
84	[redacted] sequence 1
85	[redacted] sequence 2
86	Chromatogram 1
87	Chromatogram 2
88	Chromatogram 3
89	Chromatogram 4
90	Lee Deabold email on sequencing data – A
91	Lee Deabold email on sequencing data – B
92	Sequencing plan between Evanoff and [redacted]
93	Outline of [redacted] testimony.

Investigation Report
Research Misconduct Case # 2019-01
May ??, 2020

I. NAMES AND TITLES OF INVESTIGATION COMMITTEE MEMBERS

Michael Kahn, Professor, Institute of Biological Chemistry, College of Agricultural, Human, and Natural Resource Sciences.

Joanna Kelley, Associate Professor, School of Biological Sciences, College of Arts and Sciences

James Pru, Professor, Department of Animal Sciences, College of Agricultural, Human, and Natural Resource Sciences.

II. SUMMARY

Based on an Inquiry Report (**Exhibit 72**), Dr. Keane assembled an Investigation Committee (Committee) to evaluate possible evidence of misconduct by Mr. Ryan Evanoff (Mr. Evanoff or Respondent), Scientific Assistant in the Department of Veterinary Microbiology and Pathology at Washington State University (WSU, **Exhibit 57**). The Committee finds, based on a preponderance of evidence, that the Respondent did commit research misconduct with respect to the allegations that the Respondent committed plagiarism, falsification, and/or fabrication as defined by Executive Policy #33 (**Exhibit 3**). Regarding the allegation of falsifying data, records show the falsification of plasmid sequences (**Exhibits 1, 6, 70-72, 83-89, 92**).

Commented [JK1]: Do we need to specify in this upper part that there was federal funding? Since the lack of federal funding is mentioned in the 3rd paragraph

Research misconduct was also committed in the fabrication of data where Mr. Evanoff was tasked with designing and ordering peptide sequences and delivering these to 45 for use in her studies [described in **Exhibits 48-52**, and summarized in **Section VIII** below (also see **Exhibits 59, 61, 62, 93**)]. 45 spent a great deal of time and effort working with materials provided by Mr. Evanoff that turned out not be peptide sequences at all (**Exhibits 9, 10, 46, 48-52, 90, 91**). We concluded that the peptides were completely fabricated, a judgement based on protein sequence analyses of putative peptides conducted by the University of Idaho (**Exhibits 9, 10, 46, 48-52, 90, 91**), as well the lack of any record at WSU showing that the peptides were present or had been purchased (**Exhibits 17-19**). ~~Contact with~~Moreover, JPT Peptide Technologies, the company that purportedly generated the peptides, also has no record that the peptides were ever ordered by Mr. Evanoff (**Exhibit 20**).

Aside from these examples of falsification and fabrication, addition examples of data falsification and fabrication are evident in several other projects discussed during the testimonies of 45, 45 and 45 (**Exhibits 48-52**). While these projects were funded by private or institutional mechanisms and not through federal sources, we refer the reader to 45 45 account of events (**Exhibit 10)** and summary of his testimony **(Exhibit 59)** as evidence that Mr. Evanoff's deception was systematic and over several years and several projects while he was working in the 45 and 45 labs. These projects included, but may not be limited to:

1) Sequence analysis of a potential Hepacivirus A quasispecies;

2) T-cell responses during the resolution and development of equine immunity to hepacivirus A infection, a surrogate animal model for human hepatitis C infection;

3) Investigation of metabolic pathways as potential causes for maladaptation to training syndrome in Thoroughbred horses; and

4) The prevalence of evaluate gamma-glutamyltransferase and sorbitol dehydrogenase activity in racing Thoroughbreds and their associations with viral infections.

Please see **Exhibits 10, and 12-42** for information related to these non-federally funded projects, as well as the most salient points that are presented at the end of [redacted] summarized testimony in Section VIII.C.

Beyond the falsification and fabrication of data, there is clear evidence that Mr. Evanoff failed to adequately perform duties and responsibilities as required. Based on witness testimonies and Mr. Evanoff's procured lab notebooks (**Exhibits 73-82**), the clearest example of this is in his failure to keep quality records of his research efforts, either in electronic or written notebook form (**Exhibits 9, 10, 48-52, 55, 56, 59, 73-82**). He also failed to complete simple, but essential lab tasks such as ensuring that liquid nitrogen tanks ~~(Exhibit 11)~~ used to store cells remained full (Exhibit 11) for the long-term preservation of vital cell lines and research samples housed in the [redacted] and [redacted] labs (**Exhibits 9-11, 48-53, 55, 56, 59, 61, 62**). Finally, Mr. Evanoff's efforts to assist the Committee during the investigation have not been helpful based on his refusal to provide oral testimony for the Committee (**Exhibits 60, 65**) and less than adequate response (**Exhibit 64**) to written questions (**Exhibit 58**) submitted to Mr. Evanoff by the Committee. After evaluating testimonies from [redacted], [redacted] and [redacted] the Committee finds that annual evaluations provided by [redacted] and [redacted] (**Exhibits 66-68**) were not consistent with the actual job performance by Mr. Evanoff and are evidence of a lack of quality oversight of Mr. Evanoff's daily research efforts. [redacted] acknowledged this in his testimony and took full responsibility (**Exhibits 48** and **55**). However, the evidence makes it clear that research falsification and fabrication were committed through the individual actions of Mr. Evanoff. Mr. Evanoff's proclaimed one-time incident where plasmid sequences were falsified (**Exhibits 6** and **72**) is inconsistent with the findings of the Committee. Rather, the Committee found a repeated and measurable pattern of research material manipulation, changing of data, omission of critical research procedures and findings in lab notebooks, and fabrication of data and results (*i.e.*, fabrication) by Mr. Evanoff throughout his tenure in the [redacted] and [redacted] labs.

III. BACKGROUND AND STATEMENT OF ISSUE/ALLEGATIONS

A. This Committee was formed to review the research misconduct allegation of data falsification and fabrication by Mr. ~~Ryan~~ Evanoff at the request of Dr. Christopher J. Keane (Dr. Keane), the Vice President for Research at WSU, Based on testimony from Mr. Evanoff (**Exhibit 6**) and witness testimonies (**Exhibits 48-52, 55, 56)** as well as document files [**Exhibits 1-8 (**[redacted] **10-47, 48-62, 70-72**], there is a preponderance of evidence showing that the Respondent committed data falsification and fabrication as defined by Executive Policy #33 (**Exhibit 3**). Mr. Evanoff's actions constitute a significant departure from accepted practices of the relevant research community. The preponderance of evidence proves the data falsification and fabrication were committed intentionally and knowingly over a period of time and misconduct was not limited to the one incident that the Respondent has admitted. Other components of this misconduct are evident from an examination of testimony and laboratory

records. Based on the evidence, it is clear that a pattern of falsification and fabrication, as well as delinquencies in job responsibilities, existed from at least 2015 through 2019 as the Respondent was [redacted] in [redacted] and then [redacted] labs. The data falsification and fabrication had a significant negative impact on the research record of the laboratories of [redacted] and [redacted], including the work carried out under on federally funded grant and several private and internal university grants. The data falsification and fabrication ~~y~~ significantly affected the direction of research in the laboratory and were important elements in two published manuscripts and, a manuscript submitted but not accepted for publication, as well as one manuscript in preparation that was prepared but not submitted for peer-review as the group discovered potential problems. Falsification and fabrication of data and materials especially negatively impacted the career of [redacted], who relied on the Respondent's data and materials as inputs for her work related to hepacivirus. [redacted] will leave the [redacted] lab after four years of postdoctoral research effort without a single publication in this area. As part of the bigger research picture, the misconduct has also negatively impacted prospects for developing a novel animal model system for human hepatitis C.

Despite the Respondent's response that he did "not recall any information on any instances of data falsification other than what has been previously discussed or know of grants or publications that would be impacted" (**Exhibit 64**), the Committee concludes that there are many instances of laboratory behavior that are difficult, if not impossible, to explain in any other way than misconduct. Because the Respondent received training in the Responsible Conduct of Research at WSU as is required by all research personnel, and because the several instances of misconduct are significant departures from normal protocols, we conclude that the Respondent knowingly, deliberately and repeatedly acted improperly.

IV. FEDERAL RESEARCH SPONSOR SUPPORT

Proposal: ORSO #127249 (**Exhibits 2, 2.1, 2.2, 2.3**)
Agency: U.S. Department of Health and Human Services
NIH Award: R21AI126304

Commented [JK2]: I thought there was also a UDSA grant

V. APPLICABLE POLICIES AND PROCEDURES

This investigation was conducted pursuant to the WSU Executive Manual Policy #33, *Responding to Allegations of Research Misconduct* (**Exhibit 3**). The policy defines research misconduct as follows:

> *Research misconduct* means misconduct in research and scholarship fabrication or falsification of data, plagiarism, or other serious deviations from accepted practice in proposing, implementing, or reporting on research. Research misconduct does not include honest error or honest differences in interpretations or judgments of data.

The policy defines falsification as follows:

Falsification is manipulating research materials, equipment, or processes, or changing or omitting data or results such that the research is not accurately represented in the research record.

This policy defines fabrication as follows:

Fabrication is making up data or results and recording or reporting them. We include as fabrication the construction of research materials for use by collaborators that were not as described and providing these materials to these collaborators, completely invalidating the subsequent experiments they carried out.

VI. SUMMARY OF INVESTIGATION PROCESS

On April 24, 2019, Dr. Keane, WSU Vice President for Research and Research Integrity Office (RIO), notified the Respondent of the research misconduct investigation. **Exhibit 5.** On November 7, 2019, Dr. Keane delivered a charge to this Committee, composed of professors Kahn, Kelley, and Pru, to investigate potential research misconduct associated with the Respondent. All Committee members attended the charging meeting. Also present were Senior Counsel Sherry Gordon, who provided legal advice to the Committee, and Lisa Brown-Haas, the WSU Research Misconduct Coordinator. The Committee met to conduct the investigation, write the report, and discuss their impressions on the following dates: December 9, 2019; December 16, 2019; February 17, 2020; May 3, 2020 (via Zoom). The Committee interviewed and recorded five witnesses regarding the misconduct allegations as follows:

1. 45 (Complainant)-December 9, 2019 and March 19, 2020 (**Exhibits 48 and 55**);
2. 45 -December 16, 2019 and March 19, 2020 (**Exhibits 49 and 56**);
3. 45 -December 16, 2019 (**Exhibits 50-52**);
4. 45 - February 17, 2020 (**Exhibit 53**); and
5. 45 -March 3, 2020 (**Exhibit 54**)

The Respondent was invited and reminded several times to answer questions and submitted a written response **(Exhibit 64),** but did not agree~~d~~ to be interviewed.

VII. RECORDS REVIEWED

The records determined to be relevant to this report are marked as exhibits to this report. See the Exhibit Table at the end of this report.

VIII. SUMMARIES OF INTERVIEWS

A. 45 , Complainant, December 9, 2019 and March 19, 2020 (**Exhibits 48 and 55**)

45 described the various events that led him to conclude that research performed and published by his laboratory was not correct and that it was generated in a way that involved data falsification and fabrication. The initial issue was a problem with sequences that his technician, Mr. Evanoff, had presented to support his claim that he had cloned a viral gene and used this to express the corresponding protein. Mr. Evanoff claimed he had verified the DNA sequence of

the expression plasmid commercially by Eurofins, a company often used for this purpose, but the actual sequence obtained from Eurofins was of poor quality and did not support this claim. Instead, Mr. Evanoff substituted a known sequence of the gene in information he gave to [redacted] a postdoctoral colleague in the laboratory. When confronted with this discrepancy, Mr. Evanoff acknowledged that he had misrepresented the DNA sequence. He subsequently assured [redacted] that this was a one-time issue. However, [redacted] and [redacted] subsequently investigated other work that had been done by Mr. Evanoff and found serious problems with considerable additional work, extending over several years. Mr. Evanoff went on medical leave in the spring, 2019 and resigned from WSU in July, 2019. He is no longer a WSU employee.

The flawed work is potentially related to several papers that Mr. Evanoff co-authored:
1) Ramsay JD, Evanoff R, Mealey RH, Simpson EL. The prevalence of elevated gamma-glutamyltransferase and sorbitol dehydrogenase activity in racing thoroughbreds and their associations with viral infection. Equine Vet J. 2019 Nov;51(6):738-742. doi: 10.1111/evj.13092. Epub 2019 Apr 10. PubMed PMID: 30849186.
2) Ramsay JD, Evanoff R, Mealey RH. Hepacivirus A infection in horses defines distinct envelope hypervariable regions and elucidates potential roles of viral strain and adaptive immune status in determining envelope diversity and infection outcome. J Virol. 2018 Aug 29;92(18). pii: e00314-18. doi: 10.1128/JVI.00314-18. Print 2018 Sep 15. PubMed PMID: 29976666; PubMed Central PMCID: PMC6146699.
3) Gimenez F, Hines SA, Evanoff R, Ojo KK, Van Voorhis WC, Maly DJ, Vidadala RSR, Mealey RH. In vitro growth inhibition of Theileria equi by bumped kinase inhibitors. Vet Parasitol. 2018 Feb 15;251:90-94. doi: 10.1016/j.vetpar.2017.12.024. Epub 2
4) Ramsay JD, Evanoff R, Wilkinson TE Jr, Divers TJ, Knowles DP, Mealey RH. Experimental transmission of equine hepacivirus in horses as a model for hepatitis C virus. Hepatology. 2015 May;61(5):1533-46. doi: 10.1002/hep.27689. Epub 2015 Feb 24. PubMed PMID: 25580897.
The flawed work is also relevant to ongoing unpublished work in the laboratory. Information from these papers and unpublished research was used to support of grant proposal applications to the USDA and NIH that were subsequently funded.

The primary concern is with papers 1, 2 and 4, which deal with viral infection and especially with paper 2. The papers evaluate equine viruses similar to Human Hepatitis C virus and the NIH R21 grant the laboratory obtained proposes that the equine hepaciviruses to be studied could be a model for the human infection. It also argued that WSU research might be especially valuable because WSU maintains a herd of horses in Pullman with Severe Combined ImmunoDeficiency and investigating viral pathogenesis in these could help define which components of the immune system are involved in developing immune resistance to the viruses. Data obtained in (4) showed that the virus infection can be controlled by the immune system and suggested several potential targets for vaccine intervention. It now appears that the DNA sequence data in (2) that was described as showing a pattern of virus sequence evolution was highly flawed and that the entire story line describing specific EHV proteins that are recognized by the immune system of infected horses and that these proteins can be used to generate a protective response is not supported by the data nor, in some cases, were the reported experiments even carried out. In particular, there is no evidence that the nucleic acid sequences were fabricated, including a lack of billing for determining these sequences. *At this point, we*

conclude that the mechanism of variation and resistance can only be considered to be untested, rather than whether it is correct or incorrect.

45 described an experiment on equine hepacivirus done in 2018? (*last summer is how it is described and since Ryan was not working by then, MK concluded 2018?*) in which as a control he wanted to evaluate the horses for the presence of Equine Herpes Virus, a distinct virus. "I asked him (Ryan) to submit those to WADDL (*Washington Animal Disease Diagnostic Laboratory*) so we could get some initial viral titers and he said he did that. … This is easy stuff to check…. So he reported data, summarized and in an Excel sheet that showed their herpes virus titers." But in going back and looking at the information, 45 found that "WADDL does not have evidence of that…. I called WADDL we went online we went in the WADDL database we look for sessions for these numbers. Ten horses. No record that anything was ever submitted; call them, talk to the technician. ….So we checked all of this stuff and can find no evidence that any of these had ever been submitted. And so we try to go back to the archive samples from these horses and couldn't find them. Couldn't find any serum. Couldn't find any blood, couldn't find anything." The upshot of this discussion was that, while some serum samples were found, they did not seem to correspond to those reported on by Ryan. And there was no WADDL data to be found, nor was there evidence that WADDL had produced the data. The data that Ryan had "generated" was used in the USDA grant application and 45 detailed interactions with the USDA Program Officer in which he described his reluctance to report these results as part of his final report due in 2019.

Specifically, a protein identified using immunoblots that was said to have been isolated and sequenced by proteomics techniques was not actually confirmed as indicated by Mr. Evanoff's data. Moreover, follow-up experiments carried out by 45 in which peptides derived from the amino acid sequence of this protein were being tested for their ability to interact with immunoreactivity tests of infected horses were completely bogus—the peptides that Mr. Evanoff said he was supplying to 45 for these experiments had never been ordered![1] ("Overlapping peptides that 45 had designed several years ago and Ryan was supposed to, supposedly ordered from a company. And made dilutions of those and plated them all out so we had individual peptide pools, overlapping peptides, and those had been used to screen T cell responses and horses, prospectively, and we weren't getting very good results. But at the time we—none of us—had any suspicions at the time that these weren't what was ordered, but we weren't getting good results and/but we got everything written up for a paper. And that was going to be submitted this year. But 45 just said, well, I'm going to check just to make sure that we actually had these peptides and so he checked. You know our financial records. He checked emails. He checked our business office and we could find no record that these peptides had ever been ordered.")

Experiments were done to test the reaction of horses, including SCID horses, against candidate proteins. "Antibodies against an envelope protein and you know, he was showing results in the antibody preparation. We did these infusion studies in these foals. We inoculated them with the virus and followed them along with real-time PCR to see if there was protective effects, and we were going to correlate that with antibody levels and so we had all that data from the last two to three years and had that meeting we had written it up and actually had that submitted to the Journal of Virology. It was not accepted because there was some question about the recombinant

protein that was used. Again Ryan did this work but (*the protein*) was expressed in bacteria, and these are envelope glycoproteins. (*MK Note: Bacterially produced proteins do not contain the sugar modifications that are added by eukaryotic cells. These sugar modifications are often important in immunoreactivity.*) And so, you know, it was a stupid move but the paper was not accepted for publication and we went back to (*Ryan and*) asked him to express these proteins in 293 cells (*Human Embryonic Kidney 293 cells*) and kind of pretty soon after we asked him to do that he was starting to show us data and we didn't…. and this is all when this is starting to break loose now." (*MK Note: Converting a bacterially expressed gene into a context where it can be expressed in eukaryotes can take significant time and is generally not easy.*)

"So bottom line is we became very concerned about that stuff. We actually sequenced the recombinant protein again. This was the one that we found the original sequences that he falsified last spring. You know, he had supposedly made some recombinant proteins and we submitted those to Mass Spec and didn't get any protein in there."

The Respondent started to work with the 45 lab in 2012. His initial work was in collaboration with a long-time technician, Steve Leib, who was heading for retirement at that time. This all appeared to go well.

Commented [JK3]: What does this mean? Do we mean the initial time in the lab / overlap with mr Leib?

However, Mr. Evanoff did not keep good records ("we have looked at his lab notebooks and you know, again, it's just he kept horrible records and the lab notebooks kind of petered out in 2015.", **Exhibits 73-82**). Although 45 stated that (apparently with regard to the 2015 paper (4) that "Everything we reported has been independently confirmed by other groups.", many of the materials collected cannot be found. 45 was not sure that they did not exist but he and others were unable to find them. The Respondent has not been helpful. With regard to this it may be relevant that a collection of equine kidney cell cultures that were in several liquid nitrogen storage tanks had been allowed to thaw and records indicated that Mr. Evanoff had not ordered the liquid nitrogen needed to fill those Dewars in years. While probably grounds for dismissal in its own right, this neglect does not meet the FFP standard of a misconduct investigation.

Misgivings about Ryan's work were first reported by 45, but it took some time, including her withdrawing from authorship, for this to be really acted upon. 45 answered with "Absolutely correct" when asked to comment on a summary by MK, "So it is coming across very strongly that you were basically blindsided by the initial exposure of something wrong, and then the fact that this clearly was not a one-time thing, but it looks like something fairly systematic going back a fair distance. I take from what you've said also that you feel that other people in your laboratory, 45 and 45 in particular, were also blindsided by this in the sense that whereas 45 may have had some misgivings a year ago, clearly the extent of the problem was not obvious to her and or to 45

In describing his interaction with Ryan when he first took the issue seriously, 45 states, "When I really faced him that first day with those falsified sequences, and I looked at him. I mean I was shocked and I just assumed this was a one-off deal. Not that I was. I guess that's what I wanted to believe. Not that I didn't believe all the concerns that 45 was having. She was right, but I just wanted at that time to say okay." "So I was shocked, 45 was shocked. I

don't think [redacted] was surprised. But then as we started to go back and back a bit further and further and found things I think yeah [redacted] ended up being shocked as well. Especially I mean just to find out that we've been work trying to do these T cell assays with water. I mean who does that?"

With regard to the current state of confidence about the questions, [redacted] stated, "So the Journal of Virology paper (2) we decided that we have enough evidence to retract" and there was discussion of this committee concluding where responsibility for the problems might be assigned in the retraction. "You know if I could be a little bit more specific in the retraction statement that would be better. But we could we have enough evidence right now that if we could just write a generic retraction statement. But I have concerns about doing and Sherry told me [redacted]."

Commented [MK4]: Somewhere we should make a statement about the retraction of the paper

"The Hepatology paper (4) that was published five years ago was primary data for the grant. You know, that's something I need to address that we haven't really done in detail yet. And again, that's another one that if we either confirm or that the sequences were submitted or not and we confirm that the sequences were correct then the only other thing he did was these antibody assays. If I can't find the data, the raw data, then he either did it and was correct, but just didn't save it. But if I'm called to the carpet on it and I can't produce the printouts from the original printouts then what do you conclude from that?"

The committee concludes that this is not normal proper laboratory behavior and that what [redacted] was describing was a serious and extended pattern of scientific misconduct, including both data fabrication and falsification. While [redacted] does indicate that he should have been more vigilant in overseeing the work and data that was offered to him, the experiments were carried out over several years and he trusted Mr. Evanoff. Even valid experiments of this type are difficult. For Mr. Evanoff to have involved others in a charade with the protocols knowing that the starting materials were imaginary is startling since it not only indicates both data falsification and fabrication but it also involves others in time-consuming work that is certain to fail. [redacted] stated "[redacted] was concerned … about safety because if this person was you know had mental health problems or whatever. What is he capable of doing? Because this is kind of pathologic."

Commented [MK5]: Delete or move elsewhere

Commented [JK6R5]: I would delete this

B. [redacted], December 16, 2019 (**Exhibits 50-52**)

[redacted] is a Postdoctoral Researcher in the Department of [redacted] who is [redacted] by [redacted], [redacted] and [redacted] She has a DVM, two PhD degrees, and four years of postdoctoral experience. She joined the laboratory in Sept 2015. In the interview, [redacted] noted that she did her PhD in a very productive laboratory where all members of the laboratory were generating data and then putting it all together. There was a lot of collaboration and everyone contributed to publications.

Commented [JK7]: Should this be past tense?

During her time at WSU, she worked on both *Theileria equi,* a protozoan parasite, and Hepacivirus C. While the Respondent participated in both projects, his involvement with the

Theileria project was not central to the project, while he was very involved in several key components of the hepacivirus project.

Mr. Evanoff was working under the 45 of 45 and 45 but not under the 45 of 45 . 45 stated that she always got along well with Mr. Evanoff and had a cordial work relationship. Mr. Evanoff assisted 45 in experiments and provided her samples of material generated before she joined the laboratory. The samples were materials provided by Mr. Evanoff where some was generated by him and some bought and prepared by Mr. Evanoff.

There are three manuscripts in question that have 45 and Mr. Evanoff as 45 . Mr. Evanoff had no significant contribution to the Gimenez et al. paper on *Theileria* [#3 above]. He was included as a co-author because he was part of the laboratory team, but he did not do any experiments. His specific contributions were to change or prepare culture media using a recipe.

For the two additional manuscripts in question, one manuscript was rejected and the other manuscript was in the process of being submitted. Neither manuscript has been resubmitted for publication. The experiments in question in the rejected manuscript could not be repeated because samples disappeared from the laboratory.

45 stated that one of the first things that caught her attention in the laboratory was that Mr. Evanoff was generating a significant amount of research data that was not consistent with the hours of laboratory work he was putting in. 45 and Mr. Evanoff were the ones working in the laboratory. It always caught her attention that the amount of work did not align with the amount of information produced. Mr. Evanoff always presented positive data. 45 45 was always generating negative results and Mr. Evanoff was generating beautiful results. She stated that Mr. Evanoff was the star in the laboratory.

The second point that caught her attention was that all of the experiments she did with materials provided by Mr. Evanoff resulted in alarmingly inconsistent results without a clear explanation.

Based on those inconsistencies she suspected that something was not working well. In January or February of 2019, she first raised her concerns with 45 . Mr. Evanoff was asked to detail what he had done, and the data did not coincide with data generated by 45 .

The second time she spoke with 45 she was also ignored. 45 stated that 45 45 indicated that her message raising concerns was not clear enough. She believes she was clear enough and that she was extremely careful because it was a severe situation. However, she felt that if there was a small doubt about what she was reporting, the data generated and presented by Mr. Evanoff during lab meetings were more than suggestive of an issue.

The second time 45 approached 45 it was to tell 45 that Mr. Evanoff was not honest with her. The data shows that she was working with different samples. She had saved previous samples provided by Mr. Evanoff as control samples and analyzed them again with new samples he provided that should have been the same material. The two sets of samples that were supposed to coincide contained proteins with different molecular weights.

When asked to discuss, Mr. Evanoff never called [redacted] back. [redacted] stated that her and Mr. Evanoff's results never coincided. For example, the Coomassie stains of proteins showed different molecular weights. Mr. Evanoff always put in doubt her laboratory skills and suggested that she was confusing the samples or putting samples in an incorrect position.

In approximately March, because there had been no action taken based on her reports, [redacted] approached [redacted]. [redacted] was receptive to the claims and asked for proof. To generate proof, [redacted] asked [redacted] and Mr. Evanoff to submit a sample to the University of Idaho for mass spectrometry. There are emails proving the samples were sent (**Exhibit 90, 91**). The protein was supposed to be a recombinant envelope protein of a virus that Mr. Evanoff had generated. Mr. Evanoff had the cloning skills to generate the protein.

Of note, in November 2018, Mr. Evanoff unexpectedly [redacted]. It was an event that shocked the entire lab. [redacted] told [redacted] to be careful with Mr. Evanoff because Mr. Evanoff never took a break after the loss and he could be confusing the samples and he could be doing things that were not proper because he was not well.

Reviews of a submitted manuscript had come back stating that the protein in question should not have been generated in an *E. coli* system because it needs to be glycosylated and this does not happen in *E. coli*. To produce a glycosylated protein it is necessary to use a eukaryotic system, such as embryonic kidney cells. [redacted] was interested in learning the process but she stated that Mr. Evanoff came to the lab at 7am and was done with everything by the time that she arrived at the laboratory around 8:30 or 9am. He had claimed to have completed the cloning in a eukaryotic system in two weeks, including verifying protein production using a functional ELISA, while he was only working from 7:00 to 3:00. It is implausible to have done all of that in that amount of time. Even if you're starting with a purified DNA sample, it takes that longer than that to transfer to appropriate expression vehicles, express it and get the ELISA working. It can take two weeks just to move the plasmid from a prokaryotic vector to a eukaryotic vector much less getting it into the eukaryotic cell system, which presumably he wasn't using until he needed it in this case, and then purifying the protein. The Committee believes producing this protein is at least a month-long project and would likely take more time

[redacted] wanted to confirm the presence of a protein of interest for their experiments. The samples were selected and submitted by Mr. Evanoff on March 26, 2019. On April 3, 2019, the results came back showing that the material generated by Mr. Evanoff did not contain the components it was supposed to have. This was a confirmation to her that Mr. Evanoff was fabricating material. There was no evidence by mass spectrometry that the target protein was present in the samples provided [Exhibit 8, email from Lee Deobald]. April 4, 2019, [redacted] sent an email to [redacted] and [redacted] sending the results of the mass spectrometry [Exhibit 5]. She was not kept in the loop of the emails and she had to email University of Idaho personally to be kept in the loop.

The results from the University of Idaho indicated that the sample had horse serum proteins and chicken egg albumin (most abundant peptide) instead of viral envelope proteins. None of the systems involved should have had chicken proteins and the purified proteins should not have contained horse serum proteins.

Purified proteins said to be from the human embryonic kidney 293 cells were submitted for mass spectrometry. Proteins from horse serum was the most abundant in the eukaryotic system; in the *E. coli* sample, chicken egg albumin was the most abundant protein. The presence of abundant proteins such as serum proteins and egg albumin may obscure the acquisition of mass spectra from relatively less abundant E2 peptides if they are present in the samples. 45 speculated that Mr. Evanoff may have sent plasma from an infected horse, which may explain the horse serum protein result.

The results of the mass spectrometry from University of Idaho was received by Mr. Evanoff, 45 45 45 and 45 (**Exhibits 90, 91**). The results were ignored until 45 45 brought it to 45 attention—he recognized that the results were unexplainable. Based on the mass spectrometry evidence, 45 requested 45 and Mr. Evanoff to resequence other proteins that are used in the laboratory because the paper was already presented and rejected. 45 emailed Mr. Evanoff a clear plan to avoid any confusion [Exhibit 6, email April 12, 2019 1:01pm]. And yet, the plasmid sequence was never provided to 45 45 also requested the raw data. Based on this, 45 claims that Mr. Evanoff provided 15 files with fabricated data [Exhibit 1, emails from Mr. Evanoff on April 17th, 2019 at 7:26 Has 15 attachments to it.]. Of note, the plasmids were never sent for sequencing.

The 15 files were the DNA sequence for the recombinant proteins. The recombinant proteins were sent for sequencing. The nucleotide sequences directly from Eurofins (example [Exhibit 2]) do not match the nucleotide sequences provided by Mr. Evanoff in the email attachments [Exhibit 1]. Nucleotide sequences from Eurofins do not contain clear sequence and certainly do not match the envelope proteins, or any other protein [Exhibit 2].

Mr. Evanoff sent 45 a sequence that would have produced a perfect envelope protein. 45 asked Mr. Evanoff to login to Eurofins and download the files directly to her computer. Mr. Evanoff downloaded the files from Eurofins onto her computer. When she compares the files sent by Mr. Evanoff and the files from Eurofins, they do not match [Exhibit 4, chromatograms from Eurofins].

Based on the Eurofins data, 45 contacted 45 immediately and 45 took immediate action by reviewing the data and interviewing Mr. Evanoff the following day. This was the second physical clear evidence of misconduct but the first one that action was taken on.

After the discovery

The laboratory books of Mr. Evanoff for seven years were not available. The samples that 45 45 collected during three summers that could have revealed additional fabrication of data disappeared. She did not the opportunity to re-test her samples.

For one experiment, blood was drawn every 15 days from infected horses and was then stimulated with 73 individual peptides. The results were negative. Nothing was stimulated. The

results were not clear regarding the peptides. 45 finished writing the paper, at which point 45 said they were going to see if Mr. Evanoff had ordered the peptides. They could never find an order for the peptides, which would have been quite expensive and therefore prominent in the budgets. 45 was working with unknown samples.

It was confirmed that samples expected to have 73 peptides provided by Mr. Evanoff were not present in samples provided. Later it was confirmed that the proteins and reagents provided by Mr. Evanoff were never ordered. The Respondent was providing 45 with fabricated research material.

45 was provided with antibodies said to have been generated against the target protein by a person that was on the same floor as the laboratory on the third floor of the veterinary school. 45 asked the person in December 2019 (Sally A. Madsen-Bouterse) whether she had ever generated the antibodies and the person had never generated those antibodies. Those "antibodies" led to additional experiments that were unsuccessful. Mr. Evanoff was going to provide the person with proteins to generate the antibodies in mice. The proteins had never been provided.
***

45 career as a scientist has been compromised as a result of working with fabricated material provided by Mr. Evanoff. 45 worked hard to reveal this problem. 45 45 was never able to learn from Mr. Evanoff. She tried to learn several techniques from him, including cloning, but he never wanted to teach her.

Other examples of issues in the laboratory were that sequences were never sent to LBB1 for sequencing and the nitrogen tanks had not been filled since 2016 or 2015.
***

Commented [JK8]: I think this could be removed from here since they are detailed elsewhere

When asked whether the Respondent's "actions caused you to do something which was nonsense because there was no experiment that corresponded with what you wrote in your laboratory notebook you were trying to do?", 45 responded that she "Probably can match with a reality, but I have to redo all the experiments again. Infect the horses, draw blood every 15 days, that experiment takes two full days every 15 days. Each time that we did that experiment it cost $500, approximately, and that's just the reagents we were using, that's not the horses, that was just the plate with the reagents and everything." Then you have to count the horses, the technicians that work drawing blood over there, your salary, his salary. At the end of this 45 45 stated "and then the time because I lost it. I lost my time. I'm no baby. I'm 45 years old. So I lost my time. My dad asked me when are you going to have a real work, a real job. That this is a real job and your salary has to increase someday."

When asked about what Mr. Evanoff was doing in the laboratory, 45 stated that he was often doing computational things. At three P.M. he was gone, regardless if an experiment was going on or not. However, they were not co-located in the same laboratory space. She also stated that Mr. Evanoff always tried to get everyone out of the laboratory. He was not interested in teaching her the techniques that he supposedly knew.

C. [redacted], December 16, 2019 (**Exhibit 49**) and March 19, 2020 (**Exhibits 56**)

As outlined below, [redacted] began by summarizing his initial interactions with Ryan Evanoff after Ryan had admitted to fabricating data. During this meeting, [redacted] was told by Ryan that the only fabricated data was that related to some recent sequencing data of viral DNA in plasmids (**Exhibits 1, 70** and **71**). The material to be sequenced was submitted to Eurofins. Ryan admitted that the submitted samples yielded poor quality sequencing information. Ryan admitted to replacing the poor quality sequencing data with sequences that were evidently obtained from the GeneBank database and providing these to a postdoctoral fellow in the [redacted] lab, [redacted].

[redacted] **paraphrased testimony:** *So when this started to unfold in the spring of this year [2019] and Ryan had admitted to fabricating some sequencing data, I met with him at that time shortly thereafter and asked him about the two papers that we had published relatively recently and whether the data in those papers was sound. He swore that it was and I told him you know, that's great, but just to let him know that I'd be going through all those projects and also potentially repeating experiments to determine if that was indeed the case. Shortly thereafter he went on family medical leave and then subsequently resigned. I had no technical support at that time. My approach was to hire back Steve Leib, our former lab tech who had worked in the lab for 30 plus years, to come back as a time slip to help with sorting through everything. I wanted to start with the projects that have first been published to try to get a handle on those so that we knew if those need to be retracted or not. And so we started with the Journal of Virology paper.*

[redacted] made quality efforts to repeat some of Ryan Evanoff's research with assistance from former Lab Technician Steve Leib. [redacted] describes the events that unfolded. Ryan had told [redacted] that several rounds of sequencing attempts through LBB1 (WSU campus sequencing facility) were made to sequence and resequence viral DNA samples. [redacted] explained that he discovered that only one set of samples was actually submitted to LBB1 and that he and his departmental accounting office had no record of additional billing or payments for sequencing through LBB1. When contacted, LBB1 confirmed that they had record of only the initial submission, but not of other sequencing from Mr. Evanoff. [redacted] explained that many of the sequences that Ryan had provided him were obtained from GeneBank and that some of the sequences were not even of the region of the virus that was under investigation. Simply put, Ryan had falsified original sequencing data by replacing it with DNA sequencing information that he procured from the GenBank database. [redacted] has submitted email correspondence with LBB1 (**Exhibit 13**) and data from Ryan's lab notebook have been submitted as evidence (**Exhibit 73-82**). [redacted] also noted several times that Ryan's notebooks were almost useless in that records were so poorly kept that it is likely impossible that anyone could follow his progression and understand the content of what was presented in the notebooks (**Exhibits 73-82**).

[redacted] **paraphrased testimony:** *In which I did quasi species analysis on a relatively novel equine hepacivirus, which is going to be a little inconsistent in the notes because the name has changed several times. But we did that just on archival samples that I had from my PhD work and for that project we generated amplicons for the E1 and E2 envelope genes and then we were taking those and sending them to the Sequencing Center which officially is called the Laboratory for Biotechnology and Bioanalysis here on campus. And that was the first set of samples that we*

had submitted for that was actually done before— it's either before Steve Leib's retirement or when he came back for a short stint as a time slip. And so Steve had actually helped put the first set of samples together and those went up. And we got the data back and I'd seen the raw sequence of the time but it was a really large data set and one of the things that Ryan, at least we thought, brought to the lab when he was hired was his bioinformatics ability and ability to analyze that data. And so we started he did some alignments to figure out the number of variants that were there and I started to work on the analyzing and how would that fit together with a story? The next part of that project was to generate another set of samples up for PacBio sequencing and that was just going to add to the number of horses we evaluated as well. So Ryan supplied me with data associated with that and we had been going back and forth for months about how to analyze the data with different methods: mean Hamming distance scores, something called Shannon entropy scores and looking at those different modalities to see if there would be anything that would be statistically significant or interesting consistent with the work that's been done in hepatitis C, which is the closest relative of the virus we were working on and so we did that. We weren't able to identify hypervariable regions based on the data that we had, which is something they had shown in hepatitis C in those genes. And so at that point I had asked Ryan to pull all the sequences for this virus published by other groups and by our group and to see if from looking at a more diverse data set if we could identify hypervariable regions within those envelope genes. He didn't do statistical analysis, but he had put it in the Los Alamos database and we did the Shannon entropy scores determined by per amino acid throughout the genes that we were interested in and from that I did the statistical analysis and determine that there were three hypervariable regions in close proximity to what had been identified for Hepatitis C.

The point of when the paper was under review the last bit of sequencing that they had asked for us to do is some validation data to determine the depth of the sequencing that we were doing and also number of potential sequencing errors of contributing to what we were seeing and said before that I had asked Ryan because we had or supposed to have had different variants of these genes in plasmids. And so I had instructed him to take those and mix them in different quantities and concentrations and to then send them up for sequencing so we would have a known so because we use bar-coded primers we can mix them in different quantities and so by doing that we could compare back to what our known was and ***within a month Ryan provided that data and I use that in my review and in hindsight, you know, there's many, many problems. When Steve came back, the first thing we did was to look into the most recent sequencing set which was the validation and when he found out through talking to the LBB1 group as well as talking to our administrative finance office that that had never been submitted, and so we were kind of floored by that and so the thought at that time was well, maybe you know, he had based it on like as time has progressed, I'd become more and more convinced that he's done many, many things which we'll talk about but at the time I was still holding out hope that maybe this was the one thing that was wrong****. It was a validation run and could we repeat that validation and provide a correction to the paper as far as you know, the types of errors and things we expected.*

It was accepted and then you know while we were doing that work we figured out found out from again for they're talking them that they have done no other PacBio sequencing for us. So the second run which he provided data for on additional horses that is in the paper, and as soon as I saw that I knew we were cooked and the paper needs to be retracted because it just never happened and he completely fabricated all the data that he sent

me. The other thing I had Steve do was look at this, you know, the GenBank accession numbers that he included in the paper that he analyzed and determined that some of the GenBank accession numbers that he provided didn't even apply to our genes of interest, but rather belonged to envelope genes. He had included a gene segments that had accession numbers to the non-structural protein 3, again one more thing that just had been completely fabricated. *So that was basically that project and that took us quite a while to sort of mentally sort through as well as get to the point of figuring out.*

45 provided an explanation of how more recent data generated by Ryan was used. He indicated that after reevaluating data from the Journal of Virology manuscript, he decided to abandon the NIH grant proposal that he was currently working on, which included preliminary data generated by Ryan. 45 has not used any of the more recent data generated by Ryan for subsequent grant proposal submissions. 45 indicated that Ryan's falsified data has not been used in any other grant proposals and the data has not been referenced in any other manuscripts.

45 **paraphrased testimony:** ***Nothing from this paper has been used to this point to for another grant [proposal]****. It was when this all started to happen that I was actively working on an NIH Grant thinking that he was doing the work. I thought he was doing and once we realized what was going on, I just trashed the whole idea.*

45 goes on to describe preliminary data that was included in a published 2019 Equine Veterinary Journal manuscript, which outlines a collaborative project in race horses between his lab and a veterinarian in California. He described that race horses can have elevated levels of two different liver enzymes. These enzymes were evaluated by the California collaborator and 45 45 lab was to complete PCR analysis in order to detect three different viruses in the samples that he received from the California group. Ryan completed all of the initial PCR work and the paper was submitted in fall of 2018 and accepted in early 2019. Preliminary data that was generated was used in a funded collaborative grant with the Grayson Jockey club. 45 explained that some of Ryan's original data still exists, but that the gels are so poorly labeled that it is impossible to make any sense of the data after the fact. This preliminary data was included in the 2019 Equine Veterinary Journal manuscript and was used for a second funded grant through the Southern California Equine Foundation. The original samples still exist and 45 45 is working now to repeat some of Ryan's initial PCR analysis. No update was available at the time of his testimony.

45 **paraphrased testimony:** *The only other paper that I have had published in association with Ryan was a paper that got published in the Equine Veterinary Journal. Investigators think that poor performance horses have elevated gamma glutamyl transferase or elevated liver enzymes, and so a veterinarian from California had sent some samples to do a pre-screen on it and we looked for the three viruses we were aware of at the time which were equine pegivirus, equine hepacivirus, and another virus, and we found and we have the gel showing that most if not all were positive for this pegivirus. A PCR analysis was completed for this. So then I wrote a grant proposal that was funded. Part of it went to* ***Boehringer Ingelheim****. It was for an equine advancement toward research award. Then the other one was actually submitted to the* ***Southern California Equine Foundation*** *and so they funded the other portion of the award. In that grant*

proposal we were we looked at 800 racehorse race day samples from individual horses down at the racetrack in California. They did the biochemical work looking at liver enzyme activity. The samples were subsequently frozen and sent up to us and we did the PCR work to determine if they were infected with any of the viruses we were looking at. We still have these samples.

The paper was submitted in the fall of 2018 I recall and it was accepted in early 2019. The data that had been generated at that point, which was still preliminary, was used as preliminary data for a collaborative grant where I was just a co-investigator with Grayson Jockey Club, and that grant was funded.

45 **was asked if the data still existed and he replied *"no, they're so poorly labeled that can't you can't make heads or tails of it."*** *So what I had Steve Leib do initially because it was such a large number of samples was too we had picked a subset those that have been indicated by Ryan to be positive for one virus or another and some that had been recorded as being negative. Then I think we started with approximately 50 and what we found is a large number of inconsistencies with horses that were negative being positive and to this point we've done about a hundred and fifty samples. I didn't bring that information today because I've done it, but the one glimmer of hope that I still have on that project is that it looks like there's the conclusions from that paper was there is no association with viral infection and these elevated liver enzymes. It still appears that that is indeed the case based on the repeated samples that we've done, which is over a hundred and fifty but there are enough inconsistencies there that I'm going to have to repeat all of them, and so that's currently that's my plan…*

45 laid out several examples showing a deeper pattern of incompetence and failure to perform standard procedures in the lab. He also provided additional testimony highlighting data fabrication/falsification and explained how this has hamstrung ongoing collaboration. For example, 45 has a relatively large collaboration with Cornell to sequence/PCR samples as is routinely done in his lab. 45 has put a hold on that project and had to explain to his colleagues at Cornell the ongoing issues in 45 lab with 45 research technician (*i.e.*, Mr. Evanoff).

45 **paraphrased testimony:** *So there's not very many things that have been published and so in hindsight, I mean there's a reason I think why but* ***nevertheless some other things that just speak to the depth of what he was capable of during the process. I wondered about the liquid nitrogen tanks and where they were at, so we checked on them. We have six liquid nitrogen tanks with samples going back to the 80s and all of them were bone dry and we were worried at first that maybe we just neglected, you know with everything going on, but we checked with our business office and our lab hadn't purchased any liquid nitrogen since 2016. And so I have some emails to that effect, I have images of us throwing away everything and the one thing that relates to that is during the 2018 intramural grant through the CVM, which would have required Ryan to be transfecting cells and using cells that we would have had in the liquid nitrogen tank that he told me he was working on as part of generating preliminary data towards the NIH proposal that I was going to put together. I had asked him to start trying to develop pseudotyped viral particles and he said he was doing that as well and to do that he would have had to be using cells which didn't exist.***

Summary of the impact of Mr Evanoff's falsification/fabrication of data on publications and funded grants in the 45 **and** 45 **labs:** In his summary, 45 identified

two, and possibly three, manuscripts, an NIH R21 grant, and potentially a USDA grant that are likely compromised by Mr. Evanoff's data fabrication and falsification. One manuscript that is certainly compromised (Journal of Virology, 2019) is in the process of retraction and the second (Equine Veterinary Journal, 2019) is in a holding pattern, as 45 is working to validate some of the viral DNA sequences in this second published manuscript. A third manuscript (Hepatology, 2015) is also being evaluated for inclusion of fabricated data by Ryan Evanoff. 45 45 is primary author on both manuscripts. To this list, 45 described preliminary data that was generated through a collaborative effort between his lab and a veterinarian in California that was published in a 2019 Equine Veterinary Journal manuscript. This information was subsequently used to generate funds from three different sources in which 45 was either a 45 or 45. The first funded grant is from the Southern California Equine Foundation, and a second is from Boehring Ingelheim. These two projects seem to be related and partial funding was provided by each funding source. A third grant was funded using the initial PCR data generated by Ryan Evanoff was from the Grayson Jockey Club. 45 served as a 45 on this funded project. Importantly, in terms of the sequence of events, the description of falsified and fabricated data, the depth of deception by Mr. Evanoff, and the description of additional incompetency and failure to perform expected lab responsibilities by Mr. Evanoff, 45 testimony is consistent with that of 45 and 45 who testified before and after 45, respectively. 45 and 45 indicated that they take responsibility for what has happened given that their status as 45 45 but they both appear to have been blindsided by Mr. Evanoff's calculated and deliberate misconduct, which undermined research efforts in each of their labs.

45 described the importance and potential societal impact of the research in his lab and how Mr. Evanoff's data falsification/fabrication has jeopardized his and 45 research programs. He also described the negative impact that Mr. Evanoff's data falsification/fabrication has had on the career of 45 as she seeks to move a postdoctoral position into a tenure-track faculty position. She has no virology manuscripts to support her application to faculty positions after working for several years in the labs of 45 45 and 45. As described by 45, the viral sequencing data and immunizations in SCID horses against proteins encoded by the viral proteins has potential significant medical and economic value in that the viral DNA sequences are similar to DNA sequences contained within the human hepatitis C virus. Hepatitis C is difficult to study in humans and there is no quality immunization against the virus that causes this disease in humans. As such, the 45 and 45 labs were working with the SCID horse model system to develop proof of principle data to move toward development of a hepatitis C viral immunization for use in humans. Since his testimony, 45 has put together a timeline (**Exhibit 9**) and very good summary that outlines the projects that were compromised by Mr. Evanoff's deception (**Exhibit 10**), and additional supporting materials are provided (Exhibits 12-42.

D. 45, February 17, 2020 (**Exhibit 53)**

45 began by explaining that 45 ran his lab during Ryan Evanoff's tenure in the 45 lab while 45 partitioned his time between administrative and research responsibilities. 45 was surprised to hear of the possible data falsification by Ryan Evanoff and indicated that he had no reason to question Ryan's efforts in his lab. 45 went on to say that he "was sorry to see Ryan leave as he was quite

productive." Ryan left the [redacted] lab in good standing for a higher salary in the [redacted] lab. [redacted] explained that Ryan had no purchasing responsibility, his turn around time on experiments was reasonable and could not remember a time when data was generated faster than expected. Ryan co-authored 13 manuscripts during his time in the [redacted] lab, mostly in the capacity of standard molecular biology techniques and generating recombinant proteins for antibody production. [redacted] explained that all final data were reviewed by [redacted] and/or him prior to manuscript preparation and submission for peer-review.

E. [redacted], March 3, 2020 (**Exhibit 54**)

The discussion began with an explanation of [redacted] overlap with Mr. Evanoff in the [redacted] lab. She explained that Ryan was already working in the [redacted] lab when she began her employment at WSU in 2007. They were collectively in the [redacted] lab through 2012 and [redacted] on four manuscripts. [redacted] explained that Ryan's primary role on these manuscripts centered on the development of the STRA8 antibody. Ryan worked to clone the *Stra8* gene, sequence the gene, and then use the sequence to generate recombinant protein using an *E. coli* bacterial system. He was successful in making an outstanding antibody against STRA8, one that has been and is used by numerous labs around the world to identify preleptotene spermatogonia housed within the testis. [redacted] explained that she and others in the [redacted] lab evaluated Ryan's efforts on a weekly basis and it was a complete surprise to her to hear about possible data falsification and fabrication by Ryan after leaving the [redacted] lab. She even went so far as to mention that Ryan, while independent, was very good in the lab from a technical perspective. She also said that "Ryan was very open when things were not working" and that he was very open in general about his efforts in the lab, particularly in group lab meetings. [redacted] thought Ryan to be excellent with no issues and she had a lot of confidence in Ryan's abilities. Ryan had no purchasing authority in the [redacted] lab. Ryan also worked toward generating a second recombinant protein called RDH10 using the same bacterial system. While successfully cloning and sequencing the *Rdh10* gene, he was unsuccessful at generating quality recombinant RDH10 protein in the bacterial system. [redacted] again described her confidence in Ryan's abilities and openness.

IX. ANALYSIS

Optional: In the interest of some clarity in this account, the Committee determined the report should include a timeline for reference.

Timeline:

X. FINDINGS OF FACT

There is sufficient evidence for the Committee to make the following Findings:

1. Mr. Ryan Evanoff was a Project Associate in the School of Molecular Biosciences from January 16, 2008 to February 15, 2011.

2. Mr. Ryan Evanoff was a Project Associate in the School of Molecular Biosciences from February 16, 2011 to May 31, 2012.

3. Mr. Ryan Evanoff was a Scientific Assistant in the Department of Veterinary Microbiology and Pathology from June 1, 2012, to July 8, 2019.

4. Mr. Evanoff falsified data on four projects outlined in the Section II.

5. Mr. Evanoff fabricated data in two projects as outlined in Section II.

XI. CONCLUSIONS OF LAW

Based on the Findings of Fact, we reach the following conclusions:

A. Jurisdiction. This Committee was properly charged and has authority to decide this case. Respondent was notified of the case and given the opportunity to respond to the allegations.

B. The committee concludes that Mr. Evanoff willfully and knowingly falsified and fabricated data in several unrelated projects that were funded by federal and non-federal funding bodies.

XII. RECOMMENDED ACTIONS

The Committee recommends that

_____ _____

Michael Kahn Date
Professor, Institute of Biological Chemistry

_____ _____

Joanna Kelley Date
Associate Professor, School of Biological Sciences

James Pru
Professor, Animal Sciences

Date

Exhibit List
Research Misconduct Case # 2019-01

EXHIBIT	INFORMATION
1	[redacted] initial email to the Dr. Keane highlighting the incident
2	eREX for [redacted] NIH R21 application 1R21AI126304-01
2.1	Grants.gov confirmation of receipt of [redacted] NIH R21 application
2.2	Notice of Award for 1R21AI126304-01
2.3	WSU Sponsored Project Award Notification (ORSO#127249)
3	WSU Executive Policy Manual (Responding to Allegations of Research Misconduct)
4	Memorandum to Inquiry Committee 4/19/19
5	Letter of notification of misconduct to Ryan Evanoff
6	Ryan Evanoff testimony from 5/6/19
1 ([redacted]	Ryan Evanoff email to [redacted] regarding downloaded sequencing information from Eurofins for three plasmids using two different primer sets (4/17/19)
2 ([redacted]	DNA sequence
3 ([redacted]	DNA sequence
4a-d ([redacted]	Raw sequencing data in chromatogram form
5 ([redacted]	[redacted] email from 4/4/19 with recommendation to re-sequence 293 cell peptides at another proteomics facility.
6 ([redacted]	Ryan Evanoff response to [redacted] email about the general plan to move forward with sequencing new Hepacivirus A E2 envelope proteins
7 ([redacted]	Outline of events discussed during [redacted] testimony (entry date 12/16/19)
8 ([redacted]	Lee Deobald (Univ of Idaho proteomics lab) email (4/3/19) indicating lack of any sequences for Hepacivirus A E2 envelope glycoprotein in samples submitted by Ryan Evanoff
9	[redacted] timeline outlining events associated with misconduct by Ryan Evanoff (2015-present)
10	[redacted] written comments on misconduct by Ryan Evanoff
11	[redacted] written description of delinquency by Ryan Evanoff in maintaining liquid nitrogen tanks
12	Excel spreadsheet with information on viral variants
13	Email from Mark Wildung (LBB1 sequencing core) indicating no record of Ryan Evanoff sample submission for PacBio sequencing
14	EHCV peptide information
15	Email from Ryan Evanoff to [redacted] (10/22/18) with EHCV liver tissue cytokine and real time data
16	Email (9/23/19) from Lee Deobald (Univ of Idaho proteomics lab) indicating the resequenced protein preparations lacked peptides that were supposed to be generated by Ryan Evanoff
17	Email (8/30/16) from Ryan Evanoff to [redacted] regarding a JPT order indicating that he (Evanoff) did not have the information in an email

18	Follow-up email from Ryan Evanoff to [redacted] indicating that he could not find the JPT order information
19	JPT Innovation Peptide Solutions quote for costs associated with peptide sequencing from 2/23/15
20	Email (9/30/19) from Vincent Kurnia (JPT Innovation Peptide Solutions) to [redacted] indicating that samples from Ryan Evanoff were never received at JPT in 2015.
21	Email (5/16/18) about liver biopsies from WSU sent for qPCR analysis at Gluck Equine Research Center in Kentucky
22	EHCV peptide pools
23	Information on the EHCV peptide pools
24	Endpoint PCR screen information
25	Cornell PCR data from [redacted] equine samples for various viruses
26	Email (9/27/18) from Ryan Evanoff to [redacted] providing Cornell PCR data
27	Gel images of PCR results
28-30	Sequencing information
31	TDAV racehorse screen
32	Email (10/15/18) from Ryan Evanoff to [redacted] with updated qPCR data from Cornell
33	Variance Table Report
34-39	Gel images showing PCR results
40	Gel images from EpGV endpoint PCR
41	Summary of horserace PCR results
42	Email (3/20/20) from [redacted] indicating that Eurofins was unable to find sequencing information on samples sent by Ryan Evanoff in 2012 and 2013
43	Clarification email (3/20/20) from [redacted] to the Office of Research about his testimony from the prior day (second testimony)
44	Email (4/17/19) from [redacted] to [redacted] indicating that [redacted] wanted to meet with them, presumably about Ryan Evanoff's data falsification/fabrication
45	Email (3/20/20) from [redacted] to the Office of Research highlighting a prior (3/11/17) email from [redacted] to [redacted], [redacted] and Ryan Evanoff about a poor T-cell response
46	Email (3/20/20) from [redacted] to the Office of Research again highlighting the lack of protein sequencing information obtained from Lee Deobald (Univ. of Idaho proteomics lab) – same as [redacted] Exhibit 8 and Exhibit 16
47	Email from [redacted] to the Office of Research related to a prior email (4/16/19) from [redacted] to [redacted] regarding ELISPOT data from chimpanzees.
48	Interview with [redacted] 12/9/19
49	Interview with [redacted] 12/16/19
50-52	Interview with [redacted] 12/16/19
53	Interview with [redacted] 2/17/20

54	Interview with [redacted] 3/3/20
55	Interview with [redacted] 3/19/20
56	Interview with [redacted] 3/19/20
57	Evanoff Appointment information
58	Investigation committee questions for Ryan Evanoff
59	Summary of [redacted] interview (Exhibit 49)
60	Letter of interview request to Ryan Evanoff dated 1/29/20
61	Summary of [redacted] interview (Exhibit 48)
62	Summary of [redacted] interview (Exhibits 50-52)
63	Summary of [redacted] interview (Exhibit 54)
64	Email (4/8/20) from Ryan Evanoff to the Office of Research addressing written questions from the Investigation Committee
65	Timeline of email and other correspondence between the Office of Research and Ryan Evanoff
66-68	Ryan Evanoff Annual Reviews for 2012, 2013, and 2018, respectively
69	Email (12/21/19) from [redacted] forwarding her CV to the Office of Research
70	Email (12/21/19) from [redacted] forwarding an email (4/17/19) to the Office of Research containing information about the three plasmid sequences containing E2 sequences submitted to Eurofins (no chromatograms)
71	Email (12/21/19) from [redacted] to the Office of Research containing Eurofins sequencing information downloaded by Ryan Evanoff onto [redacted] personal computer (with chromatograms)
72	Inquiry Report
73	Evanoff first notebook in [redacted] lab from2012
74	Evanoff notebook from 2013
75	Evanoff notebook from summer and fall of 2015
76	Evanoff notebook from early 2019
77	Evanoff notes
78	Evanoff notes
79	Evanoff notebook from June 2012 through early 2013
80	Evanoff notebook spring 2015
81	Evanoff notebook April 2019
82	Evanoff notebook 2014
83	Evanoff email to [redacted] about sequencing data
84	[redacted] sequence 1
85	[redacted] sequence 2
86	Chromatogram 1
87	Chromatogram 2
88	Chromatogram 3
89	Chromatogram 4
90	Lee Deabold (University of Idaho) email on sequencing data – A
91	Lee Deabold (University of Idaho) email on sequencing data – B
92	Sequencing plan between Evanoff and [redacted]
93	Outline of [redacted] testimony.

Investigation Report
Research Misconduct Case # 2019-01
May ??, 2020

I. NAMES AND TITLES OF INVESTIGATION COMMITTEE MEMBERS

Michael Kahn, Professor, Institute of Biological Chemistry, College of Agricultural, Human, and Natural Resource Sciences.

Joanna Kelley, Associate Professor, School of Biological Sciences, College of Arts and Sciences

James Pru, Professor, Department of Animal Sciences, College of Agricultural, Human, and Natural Resource Sciences.

II. SUMMARY

Based on an Inquiry Report (**Exhibit 72**), Dr. Keane assembled an Investigation Committee (Committee) to evaluate possible evidence of misconduct by Mr. Ryan Evanoff (Mr. Evanoff or Respondent), Scientific Assistant in the Department of Veterinary Microbiology and Pathology at Washington State University (WSU, **Exhibit 57**). The Committee finds, based on a preponderance of evidence, that the Respondent did commit research misconduct with respect to the allegations that the Respondent committed plagiarism, falsification, and/or fabrication as defined by Executive Policy #33 (**Exhibit 3**). Regarding the allegation of falsifying data, records show the falsification of plasmid sequences (**Exhibits 1, 6, 70-72, 83-89, 92**).

Research misconduct was also committed in the fabrication of data where Mr. Evanoff was tasked with designing and ordering peptide sequences and delivering these to 45 for use in her studies [described in **Exhibits 48-52**, and summarized in **Section VIII** below (also see **Exhibits 59, 61, 62, 93**)]. 45 spent a great deal of time and effort working with materials provided by Mr. Evanoff that turned out not be peptide sequences at all (**Exhibits 9, 10, 46, 48-52, 90, 91**). We concluded that the peptides were completely fabricated, a judgement based on protein sequence analyses of putative peptides conducted by the University of Idaho (**Exhibits 9, 10, 46, 48-52, 90, 91**), as well the lack of any record at WSU showing that the peptides were present or had been purchased (**Exhibits 17-19**). Contact with JPT Peptide Technologies, the company that purportedly generated the peptides, also has no record that the peptides were ever ordered by Mr. Evanoff (**Exhibit 20**).

Aside from these examples of falsification and fabrication, addition examples of data falsification and fabrication are evident in several other projects discussed during the testimonies of 45, 45 and 45 (**Exhibits 48-52**). While these projects were funded by private or institutional mechanisms and not through federal sources, we refer the reader to 45 45 account of events (**Exhibit 10)** and summary of his testimony **(Exhibit 59)** as evidence that Mr. Evanoff's deception was systematic and over several years and several projects while he was working in the 45 and 45 labs. These projects included, but may not be limited to:

1) Sequence analysis of a potential Hepacivirus A quasispecies;

2) T-cell responses during the resolution and development of equine immunity to hepacivirus A infection, a surrogate animal model for human hepatitis C infection;

3) Investigation of metabolic pathways as potential causes for maladaptation to training syndrome in Thoroughbred horses; and

4) The prevalence of evaluate gamma-glutamyltransferase and sorbitol dehydrogenase activity in racing Thoroughbreds and their associations with viral infections. Please see **Exhibits 10, and 12-42** for information related to these non-federally funded projects, as well as the most salient points that are presented at the end of 45 summarized testimony in Section VIII.C.

Beyond the falsification and fabrication of data, there is clear evidence that Mr. Evanoff failed to adequately perform duties and responsibilities as required. Based on witness testimonies and Mr. Evanoff's procured lab notebooks (**Exhibits 73-82**), the clearest example of this is in his failure to keep quality records of his research efforts, either in electronic or written notebook form (**Exhibits 9, 10, 48-52, 55, 56, 59, 73-82**). He also failed to complete simple, but essential lab tasks such as ensuring that liquid nitrogen tanks (**Exhibit 11**) used to store cells remained full for the long-term preservation of vital cell lines and research samples housed in the 45 and 45 labs (**Exhibits 9-11, 48-53, 55, 56, 59, 61, 62**). Finally, Mr. Evanoff's efforts to assist the Committee during the investigation have not been helpful based on his refusal to provide oral testimony for the Committee (**Exhibits 60, 65**) and less than adequate response (**Exhibit 64**) to written questions (**Exhibit 58**) submitted to Mr. Evanoff by the Committee. After evaluating testimonies from 45, 45 and 45 the Committee finds that annual evaluations provided by 45 and 45 (**Exhibits 66-68**) were not consistent with the actual job performance by Mr. Evanoff and are evidence of a lack of quality oversight of Mr. Evanoff's daily research efforts. 45 acknowledged this in his testimony and took full responsibility (**Exhibits 48** and **55**). However, the evidence makes it clear that research falsification and fabrication were committed through the individual actions of Mr. Evanoff. Mr. Evanoff's proclaimed one-time incident where plasmid sequences were falsified (**Exhibits 6** and **72**) is inconsistent with the findings of the Committee. Rather, the Committee found a repeated and measurable pattern of research material manipulation, changing of data, omission of critical research procedures and findings in lab notebooks, and fabrication of data and results (*i.e.*, fabrication) by Mr. Evanoff throughout his tenure in the 45 and 45 labs.

III. BACKGROUND AND STATEMENT OF ISSUE/ALLEGATIONS

A. This Committee was formed to review the research misconduct allegation of data falsification and fabrication by Mr. ~~Ryan~~ Evanoff at the request of Dr. Christopher J. Keane (Dr. Keane), the Vice President for Research at WSU, Based on testimony from Mr. Evanoff (**Exhibit 6**) and witness testimonies (**Exhibits 48-52, 55, 56)** as well as document files [**Exhibits 1-8 (**45 **10-47, 48-62, 70-72**], there is a preponderance of evidence showing that the Respondent committed data falsification and fabrication as defined by Executive Policy #33 (**Exhibit 3**). Mr. Evanoff's actions constitute a significant departure from accepted practices of the relevant research community. The preponderance of evidence proves the data falsification and fabrication were committed intentionally and knowingly over a period of time and misconduct was not limited to the one incident that the Respondent has admitted. Other components of this misconduct are evident from an examination of testimony and laboratory records. Based on the evidence, it is clear that a pattern of falsification and fabrication, as well as

delinquencies in job responsibilities, existed from at least 2015 through 2019 as the Respondent was 45 in 45 and then 45 labs. The data falsification and fabrication had a significant negative impact on the research record of the laboratories of 45 and 45, including the work carried out under on federally funded grant and several private and internal university grants. They significantly affected the direction of research in the laboratory and were important elements in two published manuscripts and, a manuscript submitted but not accepted for publication, as well as one manuscript in preparation that was prepared but not submitted for peer-review as the group discovered potential problems. Falsification and fabrication of data and materials especially negatively impacted the career of 45, who relied on the Respondent's data and materials as inputs for her work related to hepacivirus. 45 will leave the 45 lab after four years of postdoctoral research effort without a single publication in this area. As part of the bigger research picture, the misconduct has also negatively impacted prospects for developing a novel animal model system for human hepatitis C.

Despite the Respondent's response that he did "not recall any information on any instances of data falsification other than what has been previously discussed or know of grants or publications that would be impacted" (**Exhibit 64**), the Committee concludes that there are many instances of laboratory behavior that are difficult, if not impossible, to explain in any other way than misconduct. Because the Respondent received training in the Responsible Conduct of Research at WSU as is required by all research personnel, and because the several instances of misconduct are significant departures from normal protocols, we conclude that the Respondent knowingly, deliberately and repeatedly acted improperly.

IV. FEDERAL RESEARCH SPONSOR SUPPORT

Proposal: ORSO #127249 (**Exhibits 2, 2.1, 2.2, 2.3**)
Agency: U.S. Department of Health and Human Services
NIH Award: R21AI126304

V. APPLICABLE POLICIES AND PROCEDURES

This investigation was conducted pursuant to the WSU Executive Manual Policy #33, *Responding to Allegations of Research Misconduct* (**Exhibit 3)**. The policy defines research misconduct as follows:

> *Research misconduct* means misconduct in research and scholarship fabrication or falsification of data, plagiarism, or other serious deviations from accepted practice in proposing, implementing, or reporting on research. Research misconduct does not include honest error or honest differences in interpretations or judgments of data.

The policy defines falsification as follows:

> *Falsification* is manipulating research materials, equipment, or processes, or changing or omitting data or results such that the research is not accurately represented in the research record.

This policy defines fabrication as follows:

Fabrication is making up data or results and recording or reporting them. We include as fabrication the construction of research materials for use by collaborators that were not as described and providing these materials to these collaborators, completely invalidating the subsequent experiments they carried out.

VI. SUMMARY OF INVESTIGATION PROCESS

On April 24, 2019, Dr. Keane, WSU Vice President for Research and Research Integrity Office (RIO), notified the Respondent of the research misconduct investigation. **Exhibit 5.** On November 7, 2019, Dr. Keane delivered a charge to this Committee, composed of professors Kahn, Kelley, and Pru, to investigate potential research misconduct associated with the Respondent. All Committee members attended the charging meeting. Also present were Senior Counsel Sherry Gordon, who provided legal advice to the Committee, and Lisa Brown-Haas, the WSU Research Misconduct Coordinator. The Committee met to conduct the investigation, write the report, and discuss their impressions on the following dates: December 9, 2019; December 16, 2019; February 17, 2020; May 3, 2020 (via Zoom). The Committee interviewed and recorded five witnesses regarding the misconduct allegations as follows:

1. 45 (Complainant)-December 9, 2019 and March 19, 2020 (**Exhibits 48 and 55**);
2. 45 -December 16, 2019 and March 19, 2020 (**Exhibits 49 and 56**);
3. 45 -December 16, 2019 (**Exhibits 50-52**);
4. 45 - February 17, 2020 (**Exhibit 53**); and
5. 45 -March 3, 2020 (**Exhibit 54**)

The Respondent was invited and reminded several times to answer questions and submitted a written response **(Exhibit 64),** but did not agreed to be interviewed.

VII. RECORDS REVIEWED

The records determined to be relevant to this report are marked as exhibits to this report. See the Exhibit Table at the end of this report.

VIII. SUMMARIES OF INTERVIEWS

A. 45, Complainant, December 9, 2019 and March 19, 2020 (**Exhibits 48 and 55**)

45 described the various events that led him to conclude that research performed and published by his laboratory was not correct and that it was generated in a way that involved data falsification and fabrication. The initial issue was a problem with sequences that his technician, Mr. Evanoff, had presented to support his claim that he had cloned a viral gene and used this to express the corresponding protein. Mr. Evanoff claimed he had verified the DNA sequence of the expression plasmid commercially by Eurofins, a company often used for this purpose, but the actual sequence obtained from Eurofins was of poor quality and did not support this claim. Instead, Mr. Evanoff substituted a known sequence of the gene in information he gave to

[redacted], a postdoctoral colleague in the laboratory. When confronted with this discrepancy, Mr. Evanoff acknowledged that he had misrepresented the DNA sequence. He subsequently assured [redacted] that this was a one-time issue. However, [redacted] and [redacted] subsequently investigated other work that had been done by Mr. Evanoff and found serious problems with considerable additional work, extending over several years. Mr. Evanoff went on medical leave in the spring, 2019 and resigned from WSU in July, 2019. He is no longer a WSU employee.

The flawed work is potentially related to several papers that Mr. Evanoff co-authored:
1) Ramsay JD, Evanoff R, Mealey RH, Simpson EL. The prevalence of elevated gamma-glutamyltransferase and sorbitol dehydrogenase activity in racing thoroughbreds and their associations with viral infection. Equine Vet J. 2019 Nov;51(6):738-742. doi: 10.1111/evj.13092. Epub 2019 Apr 10. PubMed PMID: 30849186.
2) Ramsay JD, Evanoff R, Mealey RH. Hepacivirus A infection in horses defines distinct envelope hypervariable regions and elucidates potential roles of viral strain and adaptive immune status in determining envelope diversity and infection outcome. J Virol. 2018 Aug 29;92(18). pii: e00314-18. doi: 10.1128/JVI.00314-18. Print 2018 Sep 15. PubMed PMID: 29976666; PubMed Central PMCID: PMC6146699.
3) Gimenez F, Hines SA, Evanoff R, Ojo KK, Van Voorhis WC, Maly DJ, Vidadala RSR, Mealey RH. In vitro growth inhibition of Theileria equi by bumped kinase inhibitors. Vet Parasitol. 2018 Feb 15;251:90-94. doi: 10.1016/j.vetpar.2017.12.024. Epub 2
4) Ramsay JD, Evanoff R, Wilkinson TE Jr, Divers TJ, Knowles DP, Mealey RH. Experimental transmission of equine hepacivirus in horses as a model for hepatitis C virus. Hepatology. 2015 May;61(5):1533-46. doi: 10.1002/hep.27689. Epub 2015 Feb 24. PubMed PMID: 25580897.
The flawed work is also relevant to ongoing unpublished work in the laboratory. Information from these papers and unpublished research was used to support of grant proposal applications to the USDA and NIH that were subsequently funded.

The primary concern is with papers 1, 2 and 4, which deal with viral infection and especially with paper 2. The papers evaluate equine viruses similar to Human Hepatitis C virus and the NIH R21 grant the laboratory obtained proposes that the equine hepaciviruses to be studied could be a model for the human infection. It also argued that WSU research might be especially valuable because WSU maintains a herd of horses in Pullman with Severe Combined ImmunoDeficiency and investigating viral pathogenesis in these could help define which components of the immune system are involved in developing immune resistance to the viruses. Data obtained in (4) showed that the virus infection can be controlled by the immune system and suggested several potential targets for vaccine intervention. It now appears that the DNA sequence data in (2) that was described as showing a pattern of virus sequence evolution was highly flawed and that the entire story line describing specific EHV proteins that are recognized by the immune system of infected horses and that these proteins can be used to generate a protective response is not supported by the data nor, in some cases, were the reported experiments even carried out. In particular, there is no evidence that the nucleic acid sequences were fabricated, including a lack of billing for determining these sequences. *At this point, we conclude that the mechanism of variation and resistance can only be considered to be untested, rather than whether it is correct or incorrect.*

45 described an experiment on equine hepacivirus done in 2018? (*last summer is how it is described and since Ryan was not working by then, MK concluded 2018?*) in which as a control he wanted to evaluate the horses for the presence of Equine Herpes Virus, a distinct virus. "I asked him (Ryan) to submit those to WADDL (*Washington Animal Disease Diagnostic Laboratory*) so we could get some initial viral titers and he said he did that. … This is easy stuff to check…. So he reported data, summarized and in an Excel sheet that showed their herpes virus titers." But in going back and looking at the information, 45 found that "WADDL does not have evidence of that…. I called WADDL we went online we went in the WADDL database we look for sessions for these numbers. Ten horses. No record that anything was ever submitted; call them, talk to the technician. ….So we checked all of this stuff and can find no evidence that any of these had ever been submitted. And so we try to go back to the archive samples from these horses and couldn't find them. Couldn't find any serum. Couldn't find any blood, couldn't find anything." The upshot of this discussion was that, while some serum samples were found, they did not seem to correspond to those reported on by Ryan. And there was no WADDL data to be found, nor was there evidence that WADDL had produced the data. The data that Ryan had "generated" was used in the USDA grant application and 45 detailed interactions with the USDA Program Officer in which he described his reluctance to report these results as part of his final report due in 2019.

Specifically, a protein identified using immunoblots that was said to have been isolated and sequenced by proteomics techniques was not actually confirmed as indicated by Mr. Evanoff's data. Moreover, follow-up experiments carried out by 45 in which peptides derived from the amino acid sequence of this protein were being tested for their ability to interact with immunoreactivity tests of infected horses were completely bogus—the peptides that Mr. Evanoff said he was supplying to 45 for these experiments had never been ordered!! ("Overlapping peptides that 45 had designed several years ago and Ryan was supposed to, supposedly ordered from a company. And made dilutions of those and plated them all out so we had individual peptide pools, overlapping peptides, and those had been used to screen T cell responses and horses, prospectively, and we weren't getting very good results. But at the time we—none of us—had any suspicions at the time that these weren't what was ordered, but we weren't getting good results and/but we got everything written up for a paper. And that was going to be submitted this year. But 45 just said, well, I'm going to check just to make sure that we actually had these peptides and so he checked. You know our financial records. He checked emails. He checked our business office and we could find no record that these peptides had ever been ordered.")

Experiments were done to test the reaction of horses, including SCID horses, against candidate proteins. "Antibodies against an envelope protein and you know, he was showing results in the antibody preparation. We did these infusion studies in these foals. We inoculated them with the virus and followed them along with real-time PCR to see if there was protective effects, and we were going to correlate that with antibody levels and so we had all that data from the last two to three years and had that meeting we had written it up and actually had that submitted to the Journal of Virology. It was not accepted because there was some question about the recombinant protein that was used. Again Ryan did this work but (*the protein*) was expressed in bacteria, and these are envelope glycoproteins. (*MK Note: Bacterially produced proteins do not contain the sugar modifications that are added by eukaryotic cells. These sugar modifications are often*

important in immunoreactivity.) And so, you know, it was a stupid move but the paper was not accepted for publication and we went back to (*Ryan and*) asked him to express these proteins in 293 cells (*Human Embryonic Kidney 293 cells*) and kind of pretty soon after we asked him to do that he was starting to show us data and we didn't…. and this is all when this is starting to break loose now." (*MK Note: Converting a bacterially expressed gene into a context where it can be expressed in eukaryotes can take significant time and is generally not easy.*)

"So bottom line is we became very concerned about that stuff. We actually sequenced the recombinant protein again. This was the one that we found the original sequences that he falsified last spring. You know, he had supposedly made some recombinant proteins and we submitted those to Mass Spec and didn't get any protein in there."

The Respondent started to work with the 45 lab in 2012. His initial work was in collaboration with a long-time technician, Steve Leib, who was heading for retirement. This all appeared to go well.

However, Mr. Evanoff did not keep good records ("we have looked at his lab notebooks and you know, again, it's just he kept horrible records and the lab notebooks kind of petered out in 2015.", **Exhibits 73-82**). Although 45 stated that (apparently with regard to the 2015 paper (4) that "Everything we reported has been independently confirmed by other groups.", many of the materials collected cannot be found. 45 was not sure that they did not exist but he and others were unable to find them. The Respondent has not been helpful. With regard to this it may be relevant that a collection of equine kidney cell cultures that were in several liquid nitrogen storage tanks had been allowed to thaw and records indicated that Mr. Evanoff had not ordered the liquid nitrogen needed to fill those Dewars in years. While probably grounds for dismissal in its own right, this neglect does not meet the FFP standard of a misconduct investigation.

Misgivings about Ryan's work were first reported by 45, but it took some time, including her withdrawing from authorship, for this to be really acted upon. 45 answered with "Absolutely correct" when asked to comment on a summary by MK, "So it is coming across very strongly that you were basically blindsided by the initial exposure of something wrong, and then the fact that this clearly was not a one-time thing, but it looks like something fairly systematic going back a fair distance. I take from what you've said also that you feel that other people in your laboratory, 45 and 45 in particular, were also blindsided by this in the sense that whereas 45 may have had some misgivings a year ago, clearly the extent of the problem was not obvious to her and or to 45

In describing his interaction with Ryan when he first took the issue seriously, 45 states, "When I really faced him that first day with those falsified sequences, and I looked at him. I mean I was shocked and I just assumed this was a one-off deal. Not that I was. I guess that's what I wanted to believe. Not that I didn't believe all the concerns that 45 was having. She was right, but I just wanted at that time to say okay." "So I was shocked, 45 was shocked. I don't think 45 was surprised. But then as we started to go back and back a bit further and further and found things I think yeah 45 ended up being shocked as well. Especially I

mean just to find out that we've been work trying to do these T cell assays with water. I mean who does that?"

With regard to the current state of confidence about the questions, 45 stated, "So the Journal of Virology paper (2) we decided that we have enough evidence to retract" and there was discussion of this committee concluding where responsibility for the problems might be assigned in the retraction. "You know if I could be a little bit more specific in the retraction statement that would be better. But we could we have enough evidence right now that if we could just write a generic retraction statement. But I have concerns about doing and Sherry told me 04 04

Commented [MK1]: Somewhere we should make a statement about the retraction of the paper

"The Hepatology paper (4) that was published five years ago was primary data for the grant. You know, that's something I need to address that we haven't really done in detail yet. And again, that's another one that if we either confirm or that the sequences were submitted or not and we confirm that the sequences were correct then the only other thing he did was these antibody assays. If I can't find the data, the raw data, then he either did it and was correct, but just didn't save it. But if I'm called to the carpet on it and I can't produce the printouts from the original printouts then what do you conclude from that?"

The committee concludes that this is not normal proper laboratory behavior and that what 45 45 was describing was a serious and extended pattern of scientific misconduct, including both data fabrication and falsification. While 45 does indicate that he should have been more vigilant in overseeing the work and data that was offered to him, the experiments were carried out over several years and he trusted Mr. Evanoff. Even valid experiments of this type are difficult. For Mr. Evanoff to have involved others in a charade with the protocols knowing that the starting materials were imaginary is startling since it not only indicates both data falsification and fabrication but it also involves others in time-consuming work that is certain to fail. 45 stated " 45 was concerned … about safety because if this person was you know had mental health problems or whatever. What is he capable of doing? Because this is kind of pathologic."

Commented [MK2]: Delete or move elsewhere

B. 45, December 16, 2019 (**Exhibits 50-52**)

45 is a Postdoctoral Researcher in the Department of 45 45 who is 45 by 45, 45 45 and 45 She has a DVM, two PhD degrees, and four years of postdoctoral experience. She joined the laboratory in Sept 2015. In the interview, 45 noted that she did her PhD in a very productive laboratory where all members of the laboratory were generating data and then putting it all together. There was a lot of collaboration and everyone contributed to publications.

During her time at WSU, she worked on both *Theileria equi,* a protozoan parasite, and Hepacivirus C. While the Respondent participated in both projects, his involvement with the Theileria project was not central to the project, while he was very involved in several key components of the hepacivirus project.

Mr. Evanoff was working under the [redacted] of [redacted] and [redacted] but not under the [redacted] of [redacted]. [redacted] stated that she always got along well with Mr. Evanoff and had a cordial work relationship. Mr. Evanoff assisted [redacted] in experiments and provided her samples of material generated before she joined the laboratory. The samples were materials provided by Mr. Evanoff where some was generated by him and some bought and prepared by Mr. Evanoff.

There are three manuscripts in question that have [redacted] and Mr. Evanoff as [redacted] Mr. Evanoff had no significant contribution to the [redacted] et al. paper on *Theileria* [#3 above]. He was included as a co-author because he was part of the laboratory team, but he did not do any experiments. His specific contributions were to change or prepare culture media using a recipe.

For the two additional manuscripts in question, one manuscript was rejected and the other manuscript was in the process of being submitted. Neither manuscript has been resubmitted for publication. The experiments in question in the rejected manuscript could not be repeated because samples disappeared from the laboratory.

[redacted] stated that one of the first things that caught her attention in the laboratory was that Mr. Evanoff was generating a significant amount of research data that was not consistent with the hours of laboratory work he was putting in. [redacted] and Mr. Evanoff were the ones working in the laboratory. It always caught her attention that the amount of work did not align with the amount of information produced. Mr. Evanoff always presented positive data. [redacted] was always generating negative results and Mr. Evanoff was generating beautiful results. She stated that Mr. Evanoff was the star in the laboratory.

The second point that caught her attention was that all of the experiments she did with materials provided by Mr. Evanoff resulted in alarmingly inconsistent results without a clear explanation.

Based on those inconsistencies she suspected that something was not working well. In January or February of 2019, she first raised her concerns with [redacted]. Mr. Evanoff was asked to detail what he had done, and the data did not coincide with data generated by [redacted].

The second time she spoke with [redacted] she was also ignored. [redacted] stated that [redacted] indicated that her message raising concerns was not clear enough. She believes she was clear enough and that she was extremely careful because it was a severe situation. However, she felt that if there was a small doubt about what she was reporting, the data generated and presented by Mr. Evanoff during lab meetings were more than suggestive of an issue.

The second time [redacted] approached [redacted] it was to tell [redacted] that Mr. Evanoff was not honest with her. The data shows that she was working with different samples. She had saved previous samples provided by Mr. Evanoff as control samples and analyzed them again with new samples he provided that should have been the same material. The two sets of samples that were supposed to coincide contained proteins with different molecular weights. When asked to discuss, Mr. Evanoff never called [redacted] back. [redacted] stated that her and Mr. Evanoff's results never coincided. For example, the Coomassie stains of proteins

showed different molecular weights. Mr. Evanoff always put in doubt her laboratory skills and suggested that she was confusing the samples or putting samples in an incorrect position.

In approximately March, because there had been no action taken based on her reports, 45 45 approached 45 . 45 was receptive to the claims and asked for proof. To generate proof, 45 asked 45 and Mr. Evanoff to submit a sample to the University of Idaho for mass spectrometry. There are emails proving the samples were sent (**Exhibit 90, 91**). The protein was supposed to be a recombinant envelope protein of a virus that Mr. Evanoff had generated. Mr. Evanoff had the cloning skills to generate the protein.

Of note, in November 2018, Mr. Evanoff unexpectedly 14 . It was an event that shocked the entire lab. 45 told 45 to be careful with Mr. Evanoff because Mr. Evanoff never took a break after the loss and he could be confusing the samples and he could be doing things that were not proper because he was not well.

Reviews of a submitted manuscript had come back stating that the protein in question should not have been generated in an *E. coli* system because it needs to be glycosylated and this does not happen in *E. coli*. To produce a glycosylated protein it is necessary to use a eukaryotic system, such as embryonic kidney cells. 45 was interested in learning the process but she stated that Mr. Evanoff came to the lab at 7am and was done with everything by the time that she arrived at the laboratory around 8:30 or 9am. He had claimed to have completed the cloning in a eukaryotic system in two weeks, including verifying protein production using a functional ELISA, while he was only working from 7:00 to 3:00. It is implausible to have done all of that in that amount of time. Even if you're starting with a purified DNA sample, it takes that longer than that to transfer to appropriate expression vehicles, express it and get the ELISA working. It can take two weeks just to move the plasmid from a prokaryotic vector to a eukaryotic vector much less getting it into the eukaryotic cell system, which presumably he wasn't using until he needed it in this case, and then purifying the protein. The Committee believes producing this protein is at least a month-long project and would likely take more time

45 wanted to confirm the presence of a protein of interest for their experiments. The samples were selected and submitted by Mr. Evanoff on March 26, 2019. On April 3, 2019, the results came back showing that the material generated by Mr. Evanoff did not contain the components it was supposed to have. This was a confirmation to her that Mr. Evanoff was fabricating material. There was no evidence by mass spectrometry that the target protein was present in the samples provided [Exhibit 8, email from Lee Deobald]. April 4, 2019, 45 45 sent an email to 45 and 45 sending the results of the mass spectrometry [Exhibit 5]. She was not kept in the loop of the emails and she had to email University of Idaho personally to be kept in the loop.

The results from the University of Idaho indicated that the sample had horse serum proteins and chicken egg albumin (most abundant peptide) instead of viral envelope proteins. None of the systems involved should have had chicken proteins and the purified proteins should not have contained horse serum proteins.

Purified proteins said to be from the human embryonic kidney 293 cells were submitted for mass spectrometry. Proteins from horse serum was the most abundant in the eukaryotic system; in the *E. coli* sample, chicken egg albumin was the most abundant protein. The presence of abundant proteins such as serum proteins and egg albumin may obscure the acquisition of mass spectra from relatively less abundant E2 peptides if they are present in the samples. 45 speculated that Mr. Evanoff may have sent plasma from an infected horse, which may explain the horse serum protein result.

The results of the mass spectrometry from University of Idaho was received by Mr. Evanoff, 45 45 45 and 45 (**Exhibits 90, 91**). The results were ignored until 45 45 brought it to 45 attention—he recognized that the results were unexplainable. Based on the mass spectrometry evidence, 45 requested 45 and Mr. Evanoff to resequence other proteins that are used in the laboratory because the paper was already presented and rejected. 45 emailed Mr. Evanoff a clear plan to avoid any confusion [Exhibit 6, email April 12, 2019 1:01pm]. And yet, the plasmid sequence was never provided to 45 . 45 also requested the raw data. Based on this, 45 claims that Mr. Evanoff provided 15 files with fabricated data [Exhibit 1, emails from Mr. Evanoff on April 17th, 2019 at 7:26 Has 15 attachments to it.]. Of note, the plasmids were never sent for sequencing.

The 15 files were the DNA sequence for the recombinant proteins. The recombinant proteins were sent for sequencing. The nucleotide sequences directly from Eurofins (example [Exhibit 2]) do not match the nucleotide sequences provided by Mr. Evanoff in the email attachments [Exhibit 1]. Nucleotide sequences from Eurofins do not contain clear sequence and certainly do not match the envelope proteins, or any other protein [Exhibit 2].

Mr. Evanoff sent 45 a sequence that would have produced a perfect envelope protein. 45 asked Mr. Evanoff to login to Eurofins and download the files directly to her computer. Mr. Evanoff downloaded the files from Eurofins onto her computer. When she compares the files sent by Mr. Evanoff and the files from Eurofins, they do not match [Exhibit 4, chromatograms from Eurofins].

Based on the Eurofins data, 45 contacted 45 immediately and 45 took immediate action by reviewing the data and interviewing Mr. Evanoff the following day. This was the second physical clear evidence of misconduct but the first one that action was taken on.

After the discovery

The laboratory books of Mr. Evanoff for seven years were not available. The samples that 45 45 collected during three summers that could have revealed additional fabrication of data disappeared. She did not the opportunity to re-test her samples.

For one experiment, blood was drawn every 15 days from infected horses and was then stimulated with 73 individual peptides. The results were negative. Nothing was stimulated. The results were not clear regarding the peptides. 45 finished writing the paper, at which

point [redacted] said they were going to see if Mr. Evanoff had ordered the peptides. They could never find an order for the peptides, which would have been quite expensive and therefore prominent in the budgets. [redacted] was working with unknown samples.

It was confirmed that samples expected to have 73 peptides provided by Mr. Evanoff were not present in samples provided. Later it was confirmed that the proteins and reagents provided by Mr. Evanoff were never ordered. The Respondent was providing [redacted] with fabricated research material.

[redacted] was provided with antibodies said to have been generated against the target protein by a person that was on the same floor as the laboratory on the third floor of the veterinary school. [redacted] asked the person in December 2019 (Sally A. Madsen-Bouterse) whether she had ever generated the antibodies and the person had never generated those antibodies. Those "antibodies" led to additional experiments that were unsuccessful. Mr. Evanoff was going to provide the person with proteins to generate the antibodies in mice. The proteins had never been provided.
***
[redacted] career as a scientist has been compromised as a result of working with fabricated material provided by Mr. Evanoff. [redacted] worked hard to reveal this problem. [redacted] was never able to learn from Mr. Evanoff. She tried to learn several techniques from him, including cloning, but he never wanted to teach her.

Other examples of issues in the laboratory were that sequences were never sent to LBB1 for sequencing and the nitrogen tanks had not been filled since 2016 or 2015.
***

When asked whether the Respondent's "actions caused you to do something which was nonsense because there was no experiment that corresponded with what you wrote in your laboratory notebook you were trying to do?", [redacted] responded that she "Probably can match with a reality, but I have to redo all the experiments again. Infect the horses, draw blood every 15 days, that experiment takes two full days every 15 days. Each time that we did that experiment it cost $500, approximately, and that's just the reagents we were using, that's not the horses, that was just the plate with the reagents and everything." Then you have to count the horses, the technicians that work drawing blood over there, your salary, his salary. At the end of this [redacted] stated "and then the time because I lost it. I lost my time. I'm no baby. I'm [redacted] years old. So I lost my time. My dad asked me when are you going to have a real work, a real job. That this is a real job and your salary has to increase someday."

When asked about what Mr. Evanoff was doing in the laboratory, [redacted] stated that he was often doing computational things. At three P.M. he was gone, regardless if an experiment was going on or not. However, they were not co-located in the same laboratory space. She also stated that Mr. Evanoff always tried to get everyone out of the laboratory. He was not interested in teaching her the techniques that he supposedly knew.

C. [redacted], December 16, 2019 (**Exhibit 49**) and March 19, 2020 (**Exhibits 56**)

As outlined below, 45 began by summarizing his initial interactions with Ryan Evanoff after Ryan had admitted to fabricating data. During this meeting, 45 was told by Ryan that the only fabricated data was that related to some recent sequencing data of viral DNA in plasmids (**Exhibits 1, 70** and **71**). The material to be sequenced was submitted to Eurofins. Ryan admitted that the submitted samples yielded poor quality sequencing information. Ryan admitted to replacing the poor quality sequencing data with sequences that were evidently obtained from the GeneBank database and providing these to a postdoctoral fellow in the 45 lab, 45 45.

45 **paraphrased testimony:** *So when this started to unfold in the spring of this year [2019] and Ryan had admitted to fabricating some sequencing data, I met with him at that time shortly thereafter and asked him about the two papers that we had published relatively recently and whether the data in those papers was sound. He swore that it was and I told him you know, that's great, but just to let him know that I'd be going through all those projects and also potentially repeating experiments to determine if that was indeed the case. Shortly thereafter he went on family medical leave and then subsequently resigned. I had no technical support at that time. My approach was to hire back Steve Leib, our former lab tech who had worked in the lab for 30 plus years, to come back as a time slip to help with sorting through everything. I wanted to start with the projects that have first been published to try to get a handle on those so that we knew if those need to be retracted or not. And so we started with the Journal of Virology paper.*

45 made quality efforts to repeat some of Ryan Evanoff's research with assistance from former Lab Technician Steve Leib. 45 describes the events that unfolded. Ryan had told 45 that several rounds of sequencing attempts through LBB1 (WSU campus sequencing facility) were made to sequence and resequence viral DNA samples. 45 explained that he discovered that only one set of samples was actually submitted to LBB1 and that he and his departmental accounting office had no record of additional billing or payments for sequencing through LBB1. When contacted, LBB1 confirmed that they had record of only the initial submission, but not of other sequencing from Mr. Evanoff. 45 explained that many of the sequences that Ryan had provided him were obtained from GeneBank and that some of the sequences were not even of the region of the virus that was under investigation. Simply put, Ryan had falsified original sequencing data by replacing it with DNA sequencing information that he procured from the GenBank database. 45 has submitted email correspondence with LBB1 (**Exhibit 13**) and data from Ryan's lab notebook have been submitted as evidence (**Exhibit 73-82**). 45 also noted several times that Ryan's notebooks were almost useless in that records were so poorly kept that it is likely impossible that anyone could follow his progression and understand the content of what was presented in the notebooks (**Exhibits 73-82**).

45 **paraphrased testimony:** *In which I did quasi species analysis on a relatively novel equine hepacivirus, which is going to be a little inconsistent in the notes because the name has changed several times. But we did that just on archival samples that I had from my PhD work and for that project we generated amplicons for the E1 and E2 envelope genes and then we were taking those and sending them to the Sequencing Center which officially is called the Laboratory for Biotechnology and Bioanalysis here on campus. And that was the first set of samples that we had submitted for that was actually done before— it's either before Steve Leib's retirement or when he came back for a short stint as a time slip. And so Steve had actually helped put the first*

set of samples together and those went up. And we got the data back and I'd seen the raw sequence of the time but it was a really large data set and one of the things that Ryan, at least we thought, brought to the lab when he was hired was his bioinformatics ability and ability to analyze that data. And so we started he did some alignments to figure out the number of variants that were there and I started to work on the analyzing and how would that fit together with a story? The next part of that project was to generate another set of samples up for PacBio sequencing and that was just going to add to the number of horses we evaluated as well. So Ryan supplied me with data associated with that and we had been going back and forth for months about how to analyze the data with different methods: mean Hamming distance scores, something called Shannon entropy scores and looking at those different modalities to see if there would be anything that would be statistically significant or interesting consistent with the work that's been done in hepatitis C, which is the closest relative of the virus we were working on and so we did that. We weren't able to identify hypervariable regions based on the data that we had, which is something they had shown in hepatitis C in those genes. And so at that point I had asked Ryan to pull all the sequences for this virus published by other groups and by our group and to see if from looking at a more diverse data set if we could identify hypervariable regions within those envelope genes. He didn't do statistical analysis, but he had put it in the Los Alamos database and we did the Shannon entropy scores determined by per amino acid throughout the genes that we were interested in and from that I did the statistical analysis and determine that there were three hypervariable regions in close proximity to what had been identified for Hepatitis C.

The point of when the paper was under review the last bit of sequencing that they had asked for us to do is some validation data to determine the depth of the sequencing that we were doing and also number of potential sequencing errors of contributing to what we were seeing and said before that I had asked Ryan because we had or supposed to have had different variants of these genes in plasmids. And so I had instructed him to take those and mix them in different quantities and concentrations and to then send them up for sequencing so we would have a known so because we use bar-coded primers we can mix them in different quantities and so by doing that we could compare back to what our known was and ***within a month Ryan provided that data and I use that in my review and in hindsight, you know, there's many, many problems. When Steve came back, the first thing we did was to look into the most recent sequencing set which was the validation and when he found out through talking to the LBB1 group as well as talking to our administrative finance office that that had never been submitted, and so we were kind of floored by that and so the thought at that time was well, maybe you know, he had based it on like as time has progressed, I'd become more and more convinced that he's done many, many things which we'll talk about but at the time I was still holding out hope that maybe this was the one thing that was wrong****. It was a validation run and could we repeat that validation and provide a correction to the paper as far as you know, the types of errors and things we expected.*

It was accepted and then you know while we were doing that work we figured out found out from again for they're talking them that they have done no other PacBio sequencing for us. So the second run which he provided data for on additional horses that is in the paper, and as soon as I saw that I knew we were cooked and the paper needs to be retracted because it just never happened and he completely fabricated all the data that he sent me. The other thing I had Steve do was look at this, you know, the GenBank accession numbers that he included in the paper that he analyzed and determined that some of the

GenBank accession numbers that he provided didn't even apply to our genes of interest, but rather belonged to envelope genes. He had included a gene segments that had accession numbers to the non-structural protein 3, again one more thing that just had been completely fabricated. *So that was basically that project and that took us quite a while to sort of mentally sort through as well as get to the point of figuring out.*

45 provided an explanation of how more recent data generated by Ryan was used. He indicated that after reevaluating data from the Journal of Virology manuscript, he decided to abandon the NIH grant proposal that he was currently working on, which included preliminary data generated by Ryan. 45 has not used any of the more recent data generated by Ryan for subsequent grant proposal submissions. 45 indicated that Ryan's falsified data has not been used in any other grant proposals and the data has not been referenced in any other manuscripts.

45 **paraphrased testimony:** ***Nothing from this paper has been used to this point to for another grant [proposal]****. It was when this all started to happen that I was actively working on an NIH Grant thinking that he was doing the work. I thought he was doing and once we realized what was going on, I just trashed the whole idea.*

45 goes on to describe preliminary data that was included in a published 2019 Equine Veterinary Journal manuscript, which outlines a collaborative project in race horses between his lab and a veterinarian in California. He described that race horses can have elevated levels of two different liver enzymes. These enzymes were evaluated by the California collaborator and 45 45 lab was to complete PCR analysis in order to detect three different viruses in the samples that he received from the California group. Ryan completed all of the initial PCR work and the paper was submitted in fall of 2018 and accepted in early 2019. Preliminary data that was generated was used in a funded collaborative grant with the Grayson Jockey club. 45 explained that some of Ryan's original data still exists, but that the gels are so poorly labeled that it is impossible to make any sense of the data after the fact. This preliminary data was included in the 2019 Equine Veterinary Journal manuscript and was used for a second funded grant through the Southern California Equine Foundation. The original samples still exist and 45 45 is working now to repeat some of Ryan's initial PCR analysis. No update was available at the time of his testimony.

45 **paraphrased testimony:** *The only other paper that I have had published in association with Ryan was a paper that got published in the Equine Veterinary Journal. Investigators think that poor performance horses have elevated gamma glutamyl transferase or elevated liver enzymes, and so a veterinarian from California had sent some samples to do a pre-screen on it and we looked for the three viruses we were aware of at the time which were equine pegivirus, equine hepacivirus, and another virus, and we found and we have the gel showing that most if not all were positive for this pegivirus. A PCR analysis was completed for this. So then I wrote a grant proposal that was funded. Part of it went to* ***Boehringer Ingelheim****. It was for an equine advancement toward research award. Then the other one was actually submitted to the* ***Southern California Equine Foundation*** *and so they funded the other portion of the award. In that grant proposal we were we looked at 800 racehorse race day samples from individual horses down at the racetrack in California. They did the biochemical work looking at liver enzyme activity. The*

samples were subsequently frozen and sent up to us and we did the PCR work to determine if they were infected with any of the viruses we were looking at. We still have these samples.

The paper was submitted in the fall of 2018 I recall and it was accepted in early 2019. The data that had been generated at that point, which was still preliminary, was used as preliminary data for a collaborative grant where I was just a co-investigator with Grayson Jockey Club, and that grant was funded.

45 **was asked if the data still existed and he replied *"no, they're so poorly labeled that can't you can't make heads or tails of it."*** *So what I had Steve Leib do initially because it was such a large number of samples was too we had picked a subset those that have been indicated by Ryan to be positive for one virus or another and some that had been recorded as being negative. Then I think we started with approximately 50 and what we found is a large number of inconsistencies with horses that were negative being positive and to this point we've done about a hundred and fifty samples. I didn't bring that information today because I've done it, but the one glimmer of hope that I still have on that project is that it looks like there's the conclusions from that paper was there is no association with viral infection and these elevated liver enzymes. It still appears that that is indeed the case based on the repeated samples that we've done, which is over a hundred and fifty but there are enough inconsistencies there that I'm going to have to repeat all of them, and so that's currently that's my plan…*

45 laid out several examples showing a deeper pattern of incompetence and failure to perform standard procedures in the lab. He also provided additional testimony highlighting data fabrication/falsification and explained how this has hamstrung ongoing collaboration. For example, 45 has a relatively large collaboration with Cornell to sequence/PCR samples as is routinely done in his lab. 45 has put a hold on that project and had to explain to his colleagues at Cornell the ongoing issues in 45 lab with 45 research technician (*i.e.*, Mr. Evanoff).

45 **paraphrased testimony:** *So there's not very many things that have been published and so in hindsight, I mean there's a reason I think why but* ***nevertheless some other things that just speak to the depth of what he was capable of during the process. I wondered about the liquid nitrogen tanks and where they were at, so we checked on them. We have six liquid nitrogen tanks with samples going back to the 80s and all of them were bone dry and we were worried at first that maybe we just neglected, you know with everything going on, but we checked with our business office and our lab hadn't purchased any liquid nitrogen since 2016. And so I have some emails to that effect, I have images of us throwing away everything and the one thing that relates to that is during the 2018 intramural grant through the CVM, which would have required Ryan to be transfecting cells and using cells that we would have had in the liquid nitrogen tank that he told me he was working on as part of generating preliminary data towards the NIH proposal that I was going to put together. I had asked him to start trying to develop pseudotyped viral particles and he said he was doing that as well and to do that he would have had to be using cells which didn't exist.***

Summary of the impact of Mr Evanoff's falsification/fabrication of data on publications and funded grants in the 45 **and** 45 **labs:** In his summary, 45 identified two, and possibly three, manuscripts, an NIH R21 grant, and potentially a USDA grant that are likely compromised by Mr. Evanoff's data fabrication and falsification. One manuscript that is

certainly compromised (Journal of Virology, 2019) is in the process of retraction and the second (Equine Veterinary Journal, 2019) is in a holding pattern, as 45 is working to validate some of the viral DNA sequences in this second published manuscript. A third manuscript (Hepatology, 2015) is also being evaluated for inclusion of fabricated data by Ryan Evanoff. 45 45 is primary author on both manuscripts. To this list, 45 described preliminary data that was generated through a collaborative effort between his lab and a veterinarian in California that was published in a 2019 Equine Veterinary Journal manuscript. This information was subsequently used to generate funds from three different sources in which 45 was either a 45 or 45. The first funded grant is from the Southern California Equine Foundation, and a second is from Boehring Ingelheim. These two projects seem to be related and partial funding was provided by each funding source. A third grant was funded using the initial PCR data generated by Ryan Evanoff was from the Grayson Jockey Club. 45 served as a 45 on this funded project. Importantly, in terms of the sequence of events, the description of falsified and fabricated data, the depth of deception by Mr. Evanoff, and the description of additional incompetency and failure to perform expected lab responsibilities by Mr. Evanoff, 45 testimony is consistent with that of 45 and 45 who testified before and after 45, respectively. 45 and 45 indicated that they take responsibility for what has happened given that their status as 45 45 but they both appear to have been blindsided by Mr. Evanoff's calculated and deliberate misconduct, which undermined research efforts in each of their labs.

45 described the importance and potential societal impact of the research in his lab and how Mr. Evanoff's data falsification/fabrication has jeopardized his and 45 research programs. He also described the negative impact that Mr. Evanoff's data falsification/fabrication has had on the career of 45 as she seeks to move a postdoctoral position into a tenure-track faculty position. She has no virology manuscripts to support her application to faculty positions after working for several years in the labs of 45 45 and 45. As described by 45, the viral sequencing data and immunizations in SCID horses against proteins encoded by the viral proteins has potential significant medical and economic value in that the viral DNA sequences are similar to DNA sequences contained within the human hepatitis C virus. Hepatitis C is difficult to study in humans and there is no quality immunization against the virus that causes this disease in humans. As such, the 45 and 45 labs were working with the SCID horse model system to develop proof of principle data to move toward development of a hepatitis C viral immunization for use in humans. Since his testimony, 45 has put together a timeline (**Exhibit 9**) and very good summary that outlines the projects that were compromised by Mr. Evanoff's deception (**Exhibit 10**), and additional supporting materials are provided (Exhibits 12-42.

D. 45, February 17, 2020 (**Exhibit 53)**

45 began by explaining that 45 ran his lab during Ryan Evanoff's tenure in the 45 lab while 45 partitioned his time between administrative and research responsibilities. 45 was surprised to hear of the possible data falsification by Ryan Evanoff and indicated that he had no reason to question Ryan's efforts in his lab. 45 went on to say that he "was sorry to see Ryan leave as he was quite productive." Ryan left the 45 lab in good standing for a higher salary in the 45 lab. 45 explained that Ryan had no purchasing responsibility, his turn around time on

experiments was reasonable and could not remember a time when data was generated faster than expected. Ryan co-authored 13 manuscripts during his time in the 45 lab, mostly in the capacity of standard molecular biology techniques and generating recombinant proteins for antibody production. 45 explained that all final data were reviewed by 45 and/or him prior to manuscript preparation and submission for peer-review.

E. 45, March 3, 2020 (**Exhibit 54**)

The discussion began with an explanation of 45 overlap with Mr. Evanoff in the 45 lab. She explained that Ryan was already working in the 45 lab when she began her employment at WSU in 2007. They were collectively in the 45 lab through 2012 and 45 on four manuscripts. 45 explained that Ryan's primary role on these manuscripts centered on the development of the STRA8 antibody. Ryan worked to clone the *Stra8* gene, sequence the gene, and then use the sequence to generate recombinant protein using an *E. coli* bacterial system. He was successful in making an outstanding antibody against STRA8, one that has been and is used by numerous labs around the world to identify preleptotene spermatogonia housed within the testis. 45 explained that she and others in the 45 lab evaluated Ryan's efforts on a weekly basis and it was a complete surprise to her to hear about possible data falsification and fabrication by Ryan after leaving the 45 lab. She even went so far as to mention that Ryan, while independent, was very good in the lab from a technical perspective. She also said that "Ryan was very open when things were not working" and that he was very open in general about his efforts in the lab, particularly in group lab meetings. 45 thought Ryan to be excellent with no issues and she had a lot of confidence in Ryan's abilities. Ryan had no purchasing authority in the 45 lab. Ryan also worked toward generating a second recombinant protein called RDH10 using the same bacterial system. While successfully cloning and sequencing the *Rdh10* gene, he was unsuccessful at generating quality recombinant RDH10 protein in the bacterial system. 45 again described her confidence in Ryan's abilities and openness.

IX. ANALYSIS

Optional: In the interest of some clarity in this account, the Committee determined the report should include a timeline for reference.

Timeline:

X. FINDINGS OF FACT

There is sufficient evidence for the Committee to make the following Findings:

1. Mr. Ryan Evanoff was a Project Associate in the School of Molecular Biosciences from January 16, 2008 to February 15, 2011.

2. Mr. Ryan Evanoff was a Project Associate in the School of Molecular Biosciences from

February 16, 2011 to May 31, 2012.

3. Mr. Ryan Evanoff was a Scientific Assistant in the Department of Veterinary Microbiology and Pathology from June 1, 2012, to July 8, 2019.

4. Mr. Evanoff falsified data on four projects outlined in the Section II.

5. Mr. Evanoff fabricated data in two projects as outlined in Section II.

XI. CONCLUSIONS OF LAW

Based on the Findings of Fact, we reach the following conclusions:

A. Jurisdiction. This Committee was properly charged and has authority to decide this case. Respondent was notified of the case and given the opportunity to respond to the allegations.

B. The committee concludes that Mr. Evanoff willfully and knowingly falsified and fabricated data in several unrelated projects that were funded by federal and non-federal funding bodies.

XII. RECOMMENDED ACTIONS

The Committee recommends that

Michael Kahn
Professor, Institute of Biological Chemistry

Date

Joanna Kelley
Associate Professor, School of Biological Sciences

Date

James Pru

Date

Professor, Animal Sciences

Exhibit List
Research Misconduct Case # 2019-01

EXHIBIT	INFORMATION
1	[redacted] initial email to the Dr. Keane highlighting the incident
2	eREX for [redacted] NIH R21 application 1R21AI126304-01
2.1	Grants.gov confirmation of receipt of [redacted] NIH R21 application
2.2	Notice of Award for 1R21AI126304-01
2.3	WSU Sponsored Project Award Notification (ORSO#127249)
3	WSU Executive Policy Manual (Responding to Allegations of Research Misconduct)
4	Memorandum to Inquiry Committee 4/19/19
5	Letter of notification of misconduct to Ryan Evanoff
6	Ryan Evanoff testimony from 5/6/19
1 ([redacted]	Ryan Evanoff email to [redacted] regarding downloaded sequencing information from Eurofins for three plasmids using two different primer sets (4/17/19)
2 ([redacted]	DNA sequence
3 ([redacted]	DNA sequence
4a-d ([redacted]	Raw sequencing data in chromatogram form
5 ([redacted]	[redacted] email from 4/4/19 with recommendation to re-sequence 293 cell peptides at another proteomics facility.
6 ([redacted]	Ryan Evanoff response to [redacted] email about the general plan to move forward with sequencing new Hepacivirus A E2 envelope proteins
7 ([redacted]	Outline of events discussed during [redacted] testimony (entry date 12/16/19)
8 ([redacted]	Lee Deobald (Univ of Idaho proteomics lab) email (4/3/19) indicating lack of any sequences for Hepacivirus A E2 envelope glycoprotein in samples submitted by Ryan Evanoff
9	[redacted] timeline outlining events associated with misconduct by Ryan Evanoff (2015-present)
10	[redacted] written comments on misconduct by Ryan Evanoff
11	[redacted] written description of delinquency by Ryan Evanoff in maintaining liquid nitrogen tanks
12	Excel spreadsheet with information on viral variants
13	Email from Mark Wildung (LBB1 sequencing core) indicating no record of Ryan Evanoff sample submission for PacBio sequencing
14	EHCV peptide information
15	Email from Ryan Evanoff to [redacted] (10/22/18) with EHCV liver tissue cytokine and real time data
16	Email (9/23/19) from Lee Deobald (Univ of Idaho proteomics lab) indicating the resequenced protein preparations lacked peptides that were supposed to be generated by Ryan Evanoff
17	Email (8/30/16) from Ryan Evanoff to [redacted] regarding a JPT order indicating that he (Evanoff) did not have the information in an email

18	Follow-up email from Ryan Evanoff to [redacted] indicating that he could not find the JPT order information
19	JPT Innovation Peptide Solutions quote for costs associated with peptide sequencing from 2/23/15
20	Email (9/30/19) from Vincent Kurnia (JPT Innovation Peptide Solutions) to [redacted] indicating that samples from Ryan Evanoff were never received at JPT in 2015.
21	Email (5/16/18) about liver biopsies from WSU sent for qPCR analysis at Gluck Equine Research Center in Kentucky
22	EHCV peptide pools
23	Information on the EHCV peptide pools
24	Endpoint PCR screen information
25	Cornell PCR data from [redacted] equine samples for various viruses
26	Email (9/27/18) from Ryan Evanoff to [redacted] providing Cornell PCR data
27	Gel images of PCR results
28-30	Sequencing information
31	TDAV racehorse screen
32	Email (10/15/18) from Ryan Evanoff to [redacted] with updated qPCR data from Cornell
33	Variance Table Report
34-39	Gel images showing PCR results
40	Gel images from EpGV endpoint PCR
41	Summary of horserace PCR results
42	Email (3/20/20) from [redacted] indicating that Eurofins was unable to find sequencing information on samples sent by Ryan Evanoff in 2012 and 2013
43	Clarification email (3/20/20) from [redacted] to the Office of Research about his testimony from the prior day (second testimony)
44	Email (4/17/19) from [redacted] to [redacted] indicating that [redacted] wanted to meet with them, presumably about Ryan Evanoff's data falsification/fabrication
45	Email (3/20/20) from [redacted] to the Office of Research highlighting a prior (3/11/17) email from [redacted] to [redacted], [redacted] and Ryan Evanoff about a poor T-cell response
46	Email (3/20/20) from [redacted] to the Office of Research again highlighting the lack of protein sequencing information obtained from Lee Deobald (Univ. of Idaho proteomics lab) – same as [redacted] Exhibit 8 and Exhibit 16
47	Email from [redacted] to the Office of Research related to a prior email (4/16/19) from [redacted] to [redacted] regarding ELISPOT data from chimpanzees.
48	Interview with [redacted] 12/9/19
49	Interview with [redacted] 12/16/19
50-52	Interview with [redacted] 12/16/19
53	Interview with [redacted] 2/17/20

54	Interview with [redacted] 3/3/20
55	Interview with [redacted] 3/19/20
56	Interview with [redacted] 3/19/20
57	Evanoff Appointment information
58	Investigation committee questions for Ryan Evanoff
59	Summary of [redacted] interview (Exhibit 49)
60	Letter of interview request to Ryan Evanoff dated 1/29/20
61	Summary of [redacted] interview (Exhibit 48)
62	Summary of [redacted] interview (Exhibits 50-52)
63	Summary of [redacted] interview (Exhibit 54)
64	Email (4/8/20) from Ryan Evanoff to the Office of Research addressing written questions from the Investigation Committee
65	Timeline of email and other correspondence between the Office of Research and Ryan Evanoff
66-68	Ryan Evanoff Annual Reviews for 2012, 2013, and 2018, respectively
69	Email (12/21/19) from [redacted] forwarding her CV to the Office of Research
70	Email (12/21/19) from [redacted] forwarding an email (4/17/19) to the Office of Research containing information about the three plasmid sequences containing E2 sequences submitted to Eurofins (no chromatograms)
71	Email (12/21/19) from [redacted] to the Office of Research containing Eurofins sequencing information downloaded by Ryan Evanoff onto [redacted] personal computer (with chromatograms)
72	Inquiry Report
73	Evanoff first notebook in [redacted] lab from2012
74	Evanoff notebook from 2013
75	Evanoff notebook from summer and fall of 2015
76	Evanoff notebook from early 2019
77	Evanoff notes
78	Evanoff notes
79	Evanoff notebook from June 2012 through early 2013
80	Evanoff notebook spring 2015
81	Evanoff notebook April 2019
82	Evanoff notebook 2014
83	Evanoff email to [redacted] about sequencing data
84	[redacted] sequence 1
85	[redacted] sequence 2
86	Chromatogram 1
87	Chromatogram 2
88	Chromatogram 3
89	Chromatogram 4
90	Lee Deabold (University of Idaho) email on sequencing data – A
91	Lee Deabold (University of Idaho) email on sequencing data – B
92	Sequencing plan between Evanoff and [redacted]
93	Outline of [redacted] testimony.

Investigation Report
Research Misconduct Case # 2019-01
May 5, 2020

I. NAMES AND TITLES OF INVESTIGATION COMMITTEE MEMBERS

Michael Kahn, Professor, Institute of Biological Chemistry, College of Agricultural, Human, and Natural Resource Sciences.

Joanna Kelley, Associate Professor, School of Biological Sciences, College of Arts and Sciences

James Pru, Professor, Department of Animal Sciences, College of Agricultural, Human, and Natural Resource Sciences.

II. SUMMARY

Based on an Inquiry Report (**Exhibit 72**), Dr. Keane assembled an Investigation Committee (Committee) to evaluate possible evidence of misconduct by Mr. Ryan Evanoff (Mr. Evanoff or Respondent), Scientific Assistant in the Department of Veterinary Microbiology and Pathology at Washington State University (WSU, **Exhibit 57**). The Committee finds, based on a preponderance of evidence, that the Respondent did commit research misconduct with respect to the allegations that the Respondent committed plagiarism, falsification, and/or fabrication as defined by Executive Policy #33 (**Exhibit 3**). Regarding the allegation of falsifying data, records show the falsification of plasmid sequences (**Exhibits 1, 6, 70-72, 83-89, 92**).

Research misconduct was also committed in the fabrication of data where Mr. Evanoff was tasked with designing and ordering peptide sequences and delivering these to 45 for use in her studies [described in **Exhibits 48-52**, and summarized in **Section VIII** below (also see **Exhibits 59, 61, 62, 93**)]. 45 spent a great deal of time and effort working with materials provided by Mr. Evanoff that turned out not be peptide sequences at all (**Exhibits 9, 10, 46, 48-52, 90, 91**). We concluded that the peptides were completely fabricated, a judgement based on protein sequence analyses of putative peptides conducted by the University of Idaho (**Exhibits 9, 10, 46, 48-52, 90, 91**), as well the lack of any record at WSU showing that the peptides were present or had been purchased (**Exhibits 17-19**). Moreover, JPT Peptide Technologies, the company that purportedly generated the peptides, also has no record that the peptides were ever ordered by Mr. Evanoff (**Exhibit 20**).

Aside from these examples of falsification and fabrication, addition examples of data falsification and fabrication are evident in several other projects discussed during the testimonies of 45, 45 and 45 (**Exhibits 48-52**). While these projects were funded by private or institutional mechanisms and not through federal sources, we refer the reader to 45 45 account of events (**Exhibit 10)** and summary of his testimony **(Exhibit 59)** as evidence that Mr. Evanoff's deception was systematic and over several years and several projects while he was working in the 45 and 45 labs. These projects included, but may not be limited to:

1) Sequence analysis of a potential Hepacivirus A quasispecies;

2) T-cell responses during the resolution and development of equine immunity to hepacivirus A infection, a surrogate animal model for human hepatitis C infection;

3) Investigation of metabolic pathways as potential causes for maladaptation to training syndrome in Thoroughbred horses; and

4) The prevalence of evaluate gamma-glutamyltransferase and sorbitol dehydrogenase activity in racing Thoroughbreds and their associations with viral infections.

Please see **Exhibits 10, 12-42** for information related to these non-federally funded projects, as well as the most salient points that are presented at the end of 45 summarized testimony in Section VIII.C.

Beyond the falsification and fabrication of data, there is clear evidence that Mr. Evanoff failed to adequately perform duties and responsibilities as required. Based on witness testimonies and Mr. Evanoff's procured lab notebooks (**Exhibits 73-82**), the clearest example of this is in his failure to keep quality records of his research efforts, either in electronic or written notebook form (**Exhibits 9, 10, 48-52, 55, 56, 59, 73-82**). He also failed to complete simple, but essential lab tasks such as ensuring that liquid nitrogen tanks used to store cells remained full (**Exhibit 11**) for the long-term preservation of vital cell lines and research samples housed in the 45 and 45 labs (**Exhibits 9-11, 48-53, 55, 56, 59, 61, 62**). Finally, Mr. Evanoff's efforts to assist the Committee during the investigation have not been helpful based on his refusal to provide oral testimony for the Committee (**Exhibits 60, 65**) and his less than adequate response (**Exhibit 64**) to written questions (**Exhibit 58**) submitted to Mr. Evanoff by the Committee. After evaluating testimonies from 45, 45 and 45 the Committee finds that annual evaluations provided by 45 and 45 (**Exhibits 66-68**) were not consistent with the actual job performance by Mr. Evanoff and are evidence of a lack of quality oversight of Mr. Evanoff's daily research efforts. 45 acknowledged this in his testimony and took full responsibility (**Exhibits 48** and **55**). However, the evidence makes it clear that research falsification and fabrication were committed through the individual actions of Mr. Evanoff. Mr. Evanoff's proclaimed one-time incident where plasmid sequences were falsified (**Exhibits 6** and **72**) is inconsistent with the findings of the Committee. Rather, the Committee found a repeated and measurable pattern of research material manipulation, changing of data, omission of critical research procedures and findings in lab notebooks, and fabrication of data and results (*i.e.*, fabrication) by Mr. Evanoff throughout his tenure in the 45 and 45 labs.

Impact of misconduct: The misconduct of data falsification and fabrication by Mr. Evanoff negatively impacted several peer-reviewed publications and two federally funded grant applications awarded to 45, as well as at least one prospective manuscript that could not be submitted for peer-review, one prospective NIH grant that could not be submitted for scientific merit review, and two non-federally funded grants awarded to 45. Importantly, because much of Mr. Evanoff's data were used extensively by others in the labs of 45 and 45, their research efforts, and, as such, their careers, are likely compromised by Mr. Evanoff's research misconduct. The clearest example of this is the postdoctoral fellowship completed by 45, after which she recently left 45 lab after four years of intense training with a single publication. 45 went so far as to decline co-authorship on at least one manuscript because of her concerns ~~for~~ of data falsification by Mr. Evanoff.

Commented [JK1]: Do we also want to include institutional funds here?

III. BACKGROUND AND STATEMENT OF ISSUE/ALLEGATIONS

A. This Committee was formed to review the research misconduct allegation of data falsification and fabrication by Mr. Evanoff at the request of Dr. Christopher J. Keane (Dr. Keane), the Vice President for Research at WSU, Based on testimony from Mr. Evanoff (**Exhibit 6**) and witness testimonies (**Exhibits 48-52, 55, 56)** as well as document files [**Exhibits 1-8 (** 45 **10-47, 48-62, 70-72**], there is a preponderance of evidence showing that the Respondent committed data falsification and fabrication as defined by Executive Policy #33 (**Exhibit 3**). Mr. Evanoff's actions constitute a significant departure from accepted practices of the relevant research community. The preponderance of evidence proves the data falsification and fabrication were committed intentionally and knowingly over a period of time and misconduct was not limited to the one incident that the Respondent has admitted. Other components of this misconduct are evident from an examination of testimony and laboratory records. Based on the evidence, it is clear that a pattern of falsification and fabrication, as well as delinquencies in job responsibilities, existed from at least 2015 through 2019 as the Respondent was 45 in 45 and then 45 labs. The data falsification and fabrication had a significant negative impact on the research record of the laboratories of 45 and 45, including the work carried out under on federally funded grant and several private and internal university grants. The data falsification and fabrication significantly affected the direction of research in the laboratory and were important elements in two published manuscripts and, a manuscript submitted but not accepted for publication, as well as one manuscript in preparation that was prepared but not submitted for peer-review as the group discovered potential problems. Falsification and fabrication of data and materials especially negatively impacted the career of 45, who relied on the Respondent's data and materials as inputs for her work related to hepacivirus. 45 will leave the 45 lab after four years of postdoctoral research effort without a single publication in this area. As part of the bigger research picture, the misconduct has also negatively impacted prospects for developing a novel animal model system for human hepatitis C.

Despite the Respondent's response that he did "not recall any information on any instances of data falsification other than what has been previously discussed or know of grants or publications that would be impacted" (**Exhibit 64**), the Committee concludes that there are many instances of laboratory behavior that are very difficult, if not impossible, to explain in any other way than misconduct. Because the Respondent received training in the Responsible Conduct of Research at WSU as is required by all research personnel, and because the several instances of misconduct are significant departures from normal protocols, we conclude that the Respondent knowingly, deliberately and repeatedly acted improperly.

IV. FEDERAL RESEARCH SPONSOR SUPPORT

Proposal: ORSO #127249 (**Exhibits 2, 2.1, 2.2, 2.3**)
Agency: U.S. Department of Health and Human Services
NIH Award: R21AI126304

Proposal: ???? (**Exhibits, ?, ?, ?**)
Agency: USDA
USDA Award:

V. APPLICABLE POLICIES AND PROCEDURES

This investigation was conducted pursuant to the WSU Executive Manual Policy #33, *Responding to Allegations of Research Misconduct* (**Exhibit 3)**. The policy defines research misconduct as follows:

> *Research misconduct* means misconduct in research and scholarship fabrication or falsification of data, plagiarism, or other serious deviations from accepted practice in proposing, implementing, or reporting on research. Research misconduct does not include honest error or honest differences in interpretations or judgments of data.

The policy defines falsification as follows:

> *Falsification* is manipulating research materials, equipment, or processes, or changing or omitting data or results such that the research is not accurately represented in the research record.

This policy defines fabrication as follows:

> *Fabrication* is making up data or results and recording or reporting them. We include as fabrication the construction of research materials for use by collaborators that were not as described and providing these materials to these collaborators, completely invalidating the subsequent experiments they carried out.

VI. SUMMARY OF INVESTIGATION PROCESS

On April 24, 2019, Dr. Keane, WSU Vice President for Research and Research Integrity Office (RIO), notified the Respondent of the research misconduct investigation. **Exhibit 5.** On November 7, 2019, Dr. Keane delivered a charge to this Committee, composed of professors Kahn, Kelley, and Pru, to investigate potential research misconduct associated with the Respondent. All Committee members attended the charging meeting. Also present were Senior Counsel Sherry Gordon, who provided legal advice to the Committee, and Lisa Brown-Haas, the WSU Research Misconduct Coordinator. The Committee met to conduct the investigation, write the report, and discuss their impressions on the following dates: December 9, 2019; December 16, 2019; February 17, 2020; May 3, 2020 (via Zoom). The Committee interviewed and recorded five witnesses regarding the misconduct allegations as follows:

1. [redacted] (Complainant)-December 9, 2019 and March 19, 2020 (**Exhibits 48 and 55**);
2. [redacted]-December 16, 2019 and March 19, 2020 (**Exhibits 49 and 56**);
3. [redacted]-December 16, 2019 (**Exhibits 50-52**);
4. [redacted]- February 17, 2020 (**Exhibit 53**); and
5. [redacted]-March 3, 2020 (**Exhibit 54**)

The Respondent was invited and reminded several times to answer questions and submitted a written response **(Exhibit 64),** but did not agree to be interviewed.

VII. RECORDS REVIEWED

The records determined to be relevant to this report are marked as exhibits to this report. See the Exhibit Table at the end of this report for a list of these materials.

VIII. SUMMARIES OF INTERVIEWS

A. [redacted], Complainant, December 9, 2019 and March 19, 2020 (**Exhibits 48 and 55**)

[redacted] described the various events that led him to conclude that research performed and published by his laboratory was not correct and that it was generated in a way that involved data falsification and fabrication. The initial issue was a problem with sequences that his technician, Mr. Evanoff, had presented to support his claim that he had cloned a viral gene and used this to express the corresponding protein. Mr. Evanoff claimed he had verified the DNA sequence of the expression plasmid commercially by sending the plasmid to Eurofins, a company often used for this purpose, but the actual sequence obtained from Eurofins was of poor quality and did not support this claim. Instead, Mr. Evanoff substituted a known sequence of the gene in information he gave to [redacted], a postdoctoral colleague in the laboratory. When confronted with this discrepancy, Mr. Evanoff acknowledged that he had misrepresented the DNA sequence. He assured [redacted] and [redacted] that this was a one-time issue. However, [redacted] and [redacted] subsequently investigated other work that had been done by Mr. Evanoff and found serious problems with considerable additional work, extending over several years. Mr. Evanoff went on medical leave in the spring, 2019 and resigned from WSU in July, 2019. He is no longer a WSU employee.

The flawed work is potentially related to several papers that Mr. Evanoff co-authored:
1) Ramsay JD, Evanoff R, Mealey RH, Simpson EL. The prevalence of elevated gamma-glutamyltransferase and sorbitol dehydrogenase activity in racing thoroughbreds and their associations with viral infection. Equine Vet J. 2019 Nov;51(6):738-742. doi: 10.1111/evj.13092. Epub 2019 Apr 10. PubMed PMID: 30849186.
2) Ramsay JD, Evanoff R, Mealey RH. Hepacivirus A infection in horses defines distinct envelope hypervariable regions and elucidates potential roles of viral strain and adaptive immune status in determining envelope diversity and infection outcome. J Virol. 2018 Aug 29;92(18). pii: e00314-18. doi: 10.1128/JVI.00314-18. Print 2018 Sep 15. PubMed PMID: 29976666; PubMed Central PMCID: PMC6146699.
3) Gimenez F, Hines SA, Evanoff R, Ojo KK, Van Voorhis WC, Maly DJ, Vidadala RSR, Mealey RH. In vitro growth inhibition of Theileria equi by bumped kinase inhibitors. Vet Parasitol. 2018 Feb 15;251:90-94. doi: 10.1016/j.vetpar.2017.12.024. Epub 2
4) Ramsay JD, Evanoff R, Wilkinson TE Jr, Divers TJ, Knowles DP, Mealey RH. Experimental transmission of equine hepacivirus in horses as a model for hepatitis C virus. Hepatology. 2015 May;61(5):1533-46. doi: 10.1002/hep.27689. Epub 2015 Feb 24. PubMed PMID: 25580897.
The flawed work is also relevant to ongoing unpublished work in the laboratory. Information from these papers and unpublished research was used to support of grant proposal applications to the USDA and NIH that were subsequently funded.

The primary concern is with papers 1, 2 and 4, which deal with viral infection and especially with paper 2. The papers evaluate equine viruses similar to Human Hepatitis C virus. The NIH R21 grant the laboratory obtained proposes that the equine hepaciviruses to be studied could be a model for the human infection. It also proposed that WSU research might be especially valuable

because WSU maintains a herd of horses in Pullman with Severe Combined ImmunoDeficiency and investigating viral pathogenesis in these could help define which components of the immune system are involved in developing immune resistance to the viruses. Data obtained in (4) showed that the virus infection can be controlled by the immune system and suggested several potential targets for vaccine intervention. It now appears that the DNA sequence data in (2) that was described as showing a pattern of virus sequence evolution was highly flawed and that the entire story line describing specific EHV proteins that are recognized by the immune system of infected horses and that these proteins can be used to generate a protective response is not supported by the data nor, in some cases, were the reported experiments even carried out. In particular, there is no evidence that the nucleic acid sequences were fabricated, including a lack of billing for determining these sequences. *At this point, we conclude that the mechanism of variation and resistance can only be considered to be untested, rather than whether it is correct or incorrect.*

45 described an experiment on equine hepacivirus done in which as a control he wanted to evaluate the horses for the presence of Equine Herpes Virus, a distinct virus. "I asked him (Ryan) to submit those to WADDL (*Washington Animal Disease Diagnostic Laboratory*) so we could get some initial viral titers and he said he did that. … This is easy stuff to check…. So he reported data, summarized and in an Excel sheet that showed their herpes virus titers." But in going back and looking at the information, 45 found that "WADDL does not have evidence of that…. I called WADDL we went online we went in the WADDL database we look for sessions for these numbers. Ten horses. No record that anything was ever submitted; call them, talk to the technician. ….So we checked all of this stuff and can find no evidence that any of these had ever been submitted. And so we try to go back to the archive samples from these horses and couldn't find them. Couldn't find any serum. Couldn't find any blood, couldn't find anything." The upshot of this discussion was that, while some serum samples were found, they did not seem to correspond to those reported on by Ryan. And there was no WADDL data to be found, nor was there evidence that WADDL had produced the data. The data that Ryan had "generated" was used in the USDA grant application and 45 detailed interactions with the USDA Program Officer in which he described his reluctance to report these results as part of his final report due in 2019.

Specifically, a protein identified using immunoblots that was said to have been isolated and sequenced by proteomics techniques was not actually confirmed as indicated by Mr. Evanoff's data. Moreover, follow-up experiments carried out by 45 in which peptides derived from the amino acid sequence of this protein were being tested for their ability to stimulate immune reactions of cells from infected horses were completely bogus—the peptides that Mr. Evanoff said he was supplying to 45 for these experiments had never been ordered! ("Overlapping peptides that 45 had designed several years ago and Ryan was supposed to, supposedly ordered from a company. And made dilutions of those and plated them all out so we had individual peptide pools, overlapping peptides, and those had been used to screen T cell responses and horses, prospectively, and we weren't getting very good results. But at the time we—none of us—had any suspicions at the time that these weren't what was ordered, but we weren't getting good results and/but we got everything written up for a paper. And that was going to be submitted this year. But 45 just said, well, I'm going to check just to make sure that we actually had these peptides and so he checked. You know our financial records. He checked

emails. He checked our business office and we could find no record that these peptides had ever been ordered.")

Experiments were done to test the reaction of horses, including SCID horses, against candidate proteins. "Antibodies against an envelope protein and you know, he was showing results in the antibody preparation. We did these infusion studies in these foals. We inoculated them with the virus and followed them along with real-time PCR to see if there was protective effects, and we were going to correlate that with antibody levels and so we had all that data from the last two to three years and had that meeting we had written it up and actually had that submitted to the Journal of Virology. It was not accepted because there was some question about the recombinant protein that was used. Again Ryan did this work but (*the protein*) was expressed in bacteria, and these are envelope glycoproteins. (*MK Note: Bacterially produced proteins do not contain the sugar modifications that are added by eukaryotic cells. These sugar modifications are often important in immunoreactivity.*) And so, you know, it was a stupid move but the paper was not accepted for publication and we went back to (*Ryan and*) asked him to express these proteins in 293 cells (*Human Embryonic Kidney 293 cells*) and kind of pretty soon after we asked him to do that he was starting to show us data and we didn't…. and this is all when this is starting to break loose now." (*MK Note: Converting a bacterially expressed gene into a context where it can be expressed in eukaryotes can take significant time and is generally not easy.*)

"So bottom line is we became very concerned about that stuff. We actually sequenced the recombinant protein again. This was the one that we found the original sequences that he falsified last spring. You know, he had supposedly made some recombinant proteins and we submitted those to Mass Spec and didn't get any protein in there."

The Respondent started to work with the 45 lab in 2012. His initial work was in collaboration with a long-time technician, Steve Leib, who was heading for retirement at that time.

However, Mr. Evanoff did not keep good records ("we have looked at his lab notebooks and you know, again, it's just he kept horrible records and the lab notebooks kind of petered out in 2015.", **Exhibits 73-82**). Although 45 stated that (apparently with regard to the 2015 paper (4) that "Everything we reported has been independently confirmed by other groups.", many of the materials collected cannot be found. 45 was not sure that they did not exist but he and others were unable to find them. The Respondent has not been helpful. With regard to this it may be relevant that a collection of equine kidney cell cultures that were in several liquid nitrogen storage tanks had been allowed to thaw and records indicated that Mr. Evanoff had not ordered the liquid nitrogen needed to fill those Dewars in years. While probably grounds for dismissal in its own right, this neglect does not meet the FFP standard of a misconduct investigation.

Misgivings about Ryan's work were first reported by 45, but it took some time, including her withdrawing from authorship, for this to be really acted upon. 45 answered with "Absolutely correct" when asked to comment on a summary by MK, "So it is coming across very strongly that you were basically blindsided by the initial exposure of something wrong, and then the fact that this clearly was not a one-time thing, but it looks like

something fairly systematic going back a fair distance. I take from what you've said also that you feel that other people in your laboratory, 45 and 45 in particular, were also blindsided by this in the sense that whereas 45 may have had some misgivings a year ago, clearly the extent of the problem was not obvious to her and or to 45

In describing his interaction with Ryan when he first took the issue seriously, 45 states, "When I really faced him that first day with those falsified sequences, and I looked at him. I mean I was shocked and I just assumed this was a one-off deal. Not that I was. I guess that's what I wanted to believe. Not that I didn't believe all the concerns that 45 was having. She was right, but I just wanted at that time to say okay." "So I was shocked, 45 was shocked. I don't think 45 was surprised. But then as we started to go back and back a bit further and further and found things I think yeah 45 ended up being shocked as well. Especially I mean just to find out that we've been work trying to do these T cell assays with water. I mean who does that?"

With regard to the current state of confidence about the questions, 45 stated, "So the Journal of Virology paper (2) we decided that we have enough evidence to retract" and there was discussion of this committee concluding where responsibility for the problems might be assigned in the retraction. "You know if I could be a little bit more specific in the retraction statement that would be better. But we could we have enough evidence right now that if we could just write a generic retraction statement. But I have concerns about doing and Sherry told me 04 04 ."

"The Hepatology paper (4) that was published five years ago was primary data for the grant. You know, that's something I need to address that we haven't really done in detail yet. And again, that's another one that if we either confirm or that the sequences were submitted or not and we confirm that the sequences were correct then the only other thing he did was these antibody assays. If I can't find the data, the raw data, then he either did it and was correct, but just didn't save it. But if I'm called to the carpet on it and I can't produce the printouts from the original printouts then what do you conclude from that?"

The committee concludes that this is not normal proper laboratory behavior and that what 45 45 was describing was a serious and extended pattern of scientific misconduct, including both data fabrication and falsification. While 45 does indicate that he should have been more vigilant in overseeing the work and data that was offered to him, the experiments were carried out over several years and he trusted Mr. Evanoff. Even valid experiments of this type are difficult. For Mr. Evanoff to have involved others in a charade with the protocols knowing that the starting materials were imaginary is startling since it not only indicates both data falsification and fabrication but it also involves others in time-consuming work that is certain to fail.

B. 45 , December 16, 2019 (**Exhibits 50-52**)

45 is a former Postdoctoral Researcher in the Department of 45 45 who is 45 by 45 , 45

45 and 45 She has a DVM, two PhD degrees, and four years of postdoctoral experience. She joined the laboratory in Sept 2015. In the interview, 45 noted that she did her PhD in a very productive laboratory where all members of the laboratory were generating data and then putting it all together. There was a lot of collaboration and everyone contributed to publications.

During her time at WSU, she worked on both *Theileria equi,* a protozoan parasite, and Hepacivirus C. While the Respondent participated in both projects, his involvement with the Theileria project was not central to the project, while he was very involved in several key components of the hepacivirus project.

Mr. Evanoff was working under the 45 of 45 and 45 but not under the supervision of 45 . 45 stated that she always got along well with Mr. Evanoff and had a cordial work relationship. Mr. Evanoff assisted 45 in experiments and provided her samples of material generated before she joined the laboratory. The samples were materials provided by Mr. Evanoff where some was generated by him and some bought and prepared by Mr. Evanoff.

There are three manuscripts in question that have 45 and Mr. Evanoff as 45 Mr. Evanoff had no significant contribution to the 45 et al. paper on *Theileria* [#3 above]. He was included as a co-author because he was part of the laboratory team, but he did not do any experiments. His specific contributions were to change or prepare culture media using a recipe.

For the two additional manuscripts in question, one manuscript was rejected and the other manuscript was in the process of being submitted. Neither manuscript has been resubmitted for publication. The experiments in question in the rejected manuscript could not be repeated because samples disappeared from the laboratory.

45 stated that one of the first things that caught her attention in the laboratory was that Mr. Evanoff was generating a significant amount of research data that was not consistent with the hours of laboratory work he was putting in. 45 and Mr. Evanoff were the ones working in the laboratory. It always caught her attention that the amount of work did not align with the amount of information produced. Mr. Evanoff always presented positive data. 45 45 was always generating negative results and Mr. Evanoff was generating beautiful results. She stated that Mr. Evanoff was the star in the laboratory.

The second point that caught her attention was that all of the experiments she did with materials provided by Mr. Evanoff resulted in alarmingly inconsistent results without a clear explanation.

Based on those inconsistencies she suspected that something was not working well. In January or February of 2019, she first raised her concerns with 45 . Mr. Evanoff was asked to detail what he had done, and the data did not coincide with data generated by 45 .

The second time she spoke with 45 she was also ignored. 45 stated that 45 45 indicated that her message raising concerns was not clear enough. She believes she was clear enough and that she was extremely careful because it was a severe situation. However, she

felt that if there was a small doubt about what she was reporting, the data generated and presented by Mr. Evanoff during lab meetings were more than suggestive of an issue.

The second time 45 approached 45 it was to tell 45 that Mr. Evanoff was not honest with her. The data shows that she was working with different samples. She had saved previous samples provided by Mr. Evanoff as control samples and analyzed them again with new samples he provided that should have been the same material. The two sets of samples that were supposed to coincide contained proteins with different molecular weights. When asked to discuss, Mr. Evanoff never called 45 back. 45 stated that her and Mr. Evanoff's results never coincided. For example, the Coomassie stains of proteins showed different molecular weights. Mr. Evanoff always put in doubt her laboratory skills and suggested that she was confusing the samples or putting samples in an incorrect position.

In approximately March, because there had been no action taken based on her reports, 45 45 approached 45 . 45 was receptive to the claims and asked for proof. To generate proof, 45 asked 45 and Mr. Evanoff to submit a sample to the University of Idaho for mass spectrometry. There are emails proving the samples were sent (**Exhibit 90, 91**). The protein was supposed to be a recombinant envelope protein of a virus that Mr. Evanoff had generated. Mr. Evanoff had the cloning skills to generate the protein.

Of note, in November 2018, Mr. Evanoff unexpectedly 14 . It was an event that shocked the entire lab. 45 told 45 to be careful with Mr. Evanoff because Mr. Evanoff never took a break after the loss and he could be confusing the samples and he could be doing things that were not proper because he was not well.

Reviews of a submitted manuscript had come back stating that the protein in question should not have been generated in an *E. coli* system because it needs to be glycosylated and this does not happen in *E. coli*. To produce a glycosylated protein it is necessary to use a eukaryotic system, such as embryonic kidney cells. 45 was interested in learning the process but she stated that Mr. Evanoff came to the lab at 7am and was done with everything by the time that she arrived at the laboratory around 8:30 or 9am. He had claimed to have completed the cloning in a eukaryotic system in two weeks, including verifying protein production using a functional ELISA, while he was only working from 7:00 to 3:00. It is implausible to have done all of that in that amount of time. Even if you're starting with a purified DNA sample, it takes that longer than that to transfer to appropriate expression vehicles, express it and get the ELISA working. It can take two weeks just to move the plasmid from a prokaryotic vector to a eukaryotic vector much less getting it into the eukaryotic cell system, which presumably he wasn't using until he needed it in this case, and then purifying the protein. The Committee believes producing this protein is at least a month-long project and would likely take more time

45 wanted to confirm the presence of a protein of interest for their experiments. The samples were selected and submitted by Mr. Evanoff on March 26, 2019. On April 3, 2019, the results came back showing that the material generated by Mr. Evanoff did not contain the components it was supposed to have. This was a confirmation to her that Mr. Evanoff was fabricating material. There was no evidence by mass spectrometry that the target protein was present in the samples provided (**Exhibits 90, 91**). April 4, 2019, 45 sent an email to

45 and 45 sending the results of the mass spectrometry. She was not kept in the loop of the emails and she had to email University of Idaho personally to be kept in the loop.

The results from the University of Idaho indicated that the sample had horse serum proteins and chicken egg albumin (most abundant peptide) instead of viral envelope proteins. None of the systems involved should have had chicken proteins and the purified proteins should not have contained horse serum proteins.

Purified proteins said to be from the human embryonic kidney 293 cells were submitted for mass spectrometry. Proteins from horse serum was the most abundant in the eukaryotic system; in the *E. coli* sample, chicken egg albumin was the most abundant protein. The presence of abundant proteins such as serum proteins and egg albumin may obscure the acquisition of mass spectra from relatively less abundant E2 peptides if they are present in the samples. 45 speculated that Mr. Evanoff may have sent plasma from an infected horse, which may explain the horse serum protein result.

The results of the mass spectrometry from University of Idaho was received by Mr. Evanoff, 45 45 45 and 45 (**Exhibits 90, 91**). The results were ignored until 45 45 brought it to 45 attention—he recognized that the results were unexplainable. Based on the mass spectrometry evidence, 45 requested 45 and Mr. Evanoff to resequence other proteins that were used in the laboratory because the paper was already presented and rejected. 45 emailed Mr. Evanoff a clear plan to avoid any confusion (**Exhibit 92**). Yet the plasmid sequences were never provided to 45 .45 45 also requested the raw data. Based on this, 45 claims that Mr. Evanoff provided 15 files with fabricated data (**Exhibit 83**, email correspondence, -**Exhibits 84, 85** are two of those attachments~~has 15 attachments to it.~~). Of note, the plasmids were never sent for sequencing.

The 15 files provided by Mr. Evanoff were supposedly the DNA sequence for the recombinant proteins. The nucleotide sequences directly from Eurofins do not contain clear sequence and certainly do not match the envelope proteins, or any other nucleotide sequence (**Exhibits 86-89**).

~~(example **Exhibits 86-89**) do not match the nucleotide sequences provided by Mr. Evanoff in the email attachments (**Exhibit 83-85**). Nucleotide sequences from Eurofins do not contain clear sequence and certainly do not match the envelope proteins, or any other nucleotide sequence (**Exhibits 86-89**).~~

Mr. Evanoff sent 45 a sequence that would have produced a perfect envelope protein. 45 asked Mr. Evanoff to login to Eurofins and download the files directly to her computer. Mr. Evanoff downloaded the files from Eurofins onto her computer. When she compares the files sent by Mr. Evanoff and the files from Eurofins, they do not match (Exhibits 86-89).

Based on the Eurofins data, 45 contacted 45 immediately and 45 took immediate action by reviewing the data and interviewing Mr. Evanoff the following day.

Formatted: Font: Bold

Formatted: Font: Bold

Commented [JK2]: These are not showing up in the exhibits, maybe we just say that Exhibits 84 and 85 are two of those attachments? I have recommended text revision here

Commented [PJK3]: Joanna and Mike, please double check the text and corresponding exhibits to ensure that they match properly I think these are correct, but a double-check is needed

Jim, 83-85 do show ryan's communication and the sequences are virus envelope in a plasmid 86-89 show the garbage traces from Eurofins Not clear where the information is that links one to the other

The exhibit numbers are correct

Commented [PJK4]: Joanna and Mike, please double check the text and corresponding exhibits to ensure that they match properly I think these are correct, but a double-check is needed

Jim, 83-85 do show ryan's communication and the sequences are virus envelope in a plasmid 86-89 show the garbage traces from Eurofins Not clear where the information is that links one to the other

The exhibit numbers are correct I have revised the text here See what you think

This was the second physical clear evidence of misconduct but the first one where action was taken.

After the discovery

The laboratory books of Mr. Evanoff for seven years were not available. The samples that 45 45 collected during three summers that could have revealed additional fabrication of data disappeared. She did not the opportunity to re-test her samples.

For one experiment, blood was drawn every 15 days from infected horses and was then stimulated with 73 individual peptides. The results were negative. Nothing was stimulated. The results were not clear regarding the peptides. 45 finished writing the paper, at which point 45 said they were going to see if Mr. Evanoff had ordered the peptides. They could never find an order for the peptides, which would have been quite expensive and therefore prominent in the budgets. 45 was working with unknown samples.

It was confirmed that samples expected to have 73 peptides provided by Mr. Evanoff were not present in samples provided. Later it was confirmed that the proteins and reagents provided by Mr. Evanoff were never ordered. The Respondent was providing 45 with fabricated research material.

45 was provided with antibodies said to have been generated against the target protein by a person that was on the same floor as the laboratory on the third floor of the veterinary school. 45 asked the person in December 2019 (Sally A. Madsen-Bouterse) whether she had ever generated the antibodies and the person had never generated those antibodies. Those "antibodies" led to additional experiments that were unsuccessful. Mr. Evanoff was going to provide the person with proteins to generate the antibodies in mice. The proteins had never been provided.

45 career as a scientist has been compromised as a result of working with fabricated material provided by Mr. Evanoff. 45 worked hard to reveal this problem. 45 45 was never able to learn from Mr. Evanoff. She tried to learn several techniques from him, including cloning, but he never wanted to teach her.

When asked whether the Respondent's "actions caused you to do something which was nonsense because there was no experiment that corresponded with what you wrote in your laboratory notebook you were trying to do?", 45 responded that she "Probably can match with a reality, but I have to redo all the experiments again. Infect the horses, draw blood every 15 days, that experiment takes two full days every 15 days. Each time that we did that experiment it cost $500, approximately, and that's just the reagents we were using, that's not the horses, that was just the plate with the reagents and everything." Then you have to count the horses, the technicians that work drawing blood over there, your salary, his salary. At the end of this 45 45 stated "and then the time because I lost it. I lost my time. I'm no baby. I'm 45 years old. So I lost my time. My dad asked me when are you going to have a real work, a real job. That this is a real job and your salary has to increase someday."

When asked about what Mr. Evanoff was doing in the laboratory, 45 stated that he was often doing computational things. At three P.M. he was gone, regardless if an experiment was going on or not. However, they were not co-located in the same laboratory space. She also stated that Mr. Evanoff always tried to get everyone out of the laboratory. He was not interested in teaching her the techniques that he supposedly knew.

C. 45, December 16, 2019 (**Exhibit 49**) and March 19, 2020 (**Exhibits 56**)

As outlined below, 45 began by summarizing his initial interactions with Ryan Evanoff after Ryan had admitted to fabricating data. During this meeting, 45 was told by Ryan that the only fabricated data was that related to some recent sequencing data of viral DNA in plasmids (**Exhibits 1, 70** and **71**). The material to be sequenced was submitted to Eurofins. Ryan admitted that the submitted samples yielded poor quality sequencing information. Ryan admitted to replacing the poor quality sequencing data with sequences that were evidently obtained from the GeneBank database and providing these to a postdoctoral fellow in the 45 lab, 45 45.

45 **paraphrased testimony:** *So when this started to unfold in the spring of this year [2019] and Ryan had admitted to fabricating some sequencing data, I met with him at that time shortly thereafter and asked him about the two papers that we had published relatively recently and whether the data in those papers was sound. He swore that it was and I told him you know, that's great, but just to let him know that I'd be going through all those projects and also potentially repeating experiments to determine if that was indeed the case. Shortly thereafter he went on family medical leave and then subsequently resigned. I had no technical support at that time. My approach was to hire back Steve Leib, our former lab tech who had worked in the lab for 30 plus years, to come back as a time slip to help with sorting through everything. I wanted to start with the projects that have first been published to try to get a handle on those so that we knew if those need to be retracted or not. And so we started with the Journal of Virology paper.*

45 made quality efforts to repeat some of Ryan Evanoff's research with assistance from former Lab Technician Steve Leib. 45 describes the events that unfolded. Ryan had told 45 that several rounds of sequencing attempts through LBB1 (WSU campus sequencing facility) were made to sequence and resequence viral DNA samples. 45 explained that he discovered that only one set of samples was actually submitted to LBB1 and that he and his departmental accounting office had no record of additional billing or payments for sequencing through LBB1. When contacted, LBB1 confirmed that they had record of only the initial submission, but not of other sequencing from Mr. Evanoff. 45 explained that many of the sequences that Ryan had provided him were obtained from GeneBank and that some of the sequences were not even of the region of the virus that was under investigation. Simply put, Ryan had falsified original sequencing data by replacing it with DNA sequencing information that he procured from the GenBank database. 45 has submitted email correspondence with LBB1 (**Exhibit 13**) and data from Ryan's lab notebook have been submitted as evidence (**Exhibit 73-82**). 45 also noted several times that Ryan's notebooks were almost useless in that records were so poorly kept that it is likely impossible that anyone could follow his progression and understand the content of what was presented in the notebooks (**Exhibits 73-82**).

45 **paraphrased testimony:** *In which I did quasi species analysis on a relatively novel equine hepacivirus, which is going to be a little inconsistent in the notes because the name has changed several times. But we did that just on archival samples that I had from my PhD work and for that project we generated amplicons for the E1 and E2 envelope genes and then we were taking those and sending them to the Sequencing Center which officially is called the Laboratory for Biotechnology and Bioanalysis here on campus. And that was the first set of samples that we had submitted for that was actually done before— it's either before Steve Leib's retirement or when he came back for a short stint as a time slip. And so Steve had actually helped put the first set of samples together and those went up. And we got the data back and I'd seen the raw sequence of the time but it was a really large data set and one of the things that Ryan, at least we thought, brought to the lab when he was hired was his bioinformatics ability and ability to analyze that data. And so we started he did some alignments to figure out the number of variants that were there and I started to work on the analyzing and how would that fit together with a story? The next part of that project was to generate another set of samples up for PacBio sequencing and that was just going to add to the number of horses we evaluated as well. So Ryan supplied me with data associated with that and we had been going back and forth for months about how to analyze the data with different methods: mean Hamming distance scores, something called Shannon entropy scores and looking at those different modalities to see if there would be anything that would be statistically significant or interesting consistent with the work that's been done in hepatitis C, which is the closest relative of the virus we were working on and so we did that. We weren't able to identify hypervariable regions based on the data that we had, which is something they had shown in hepatitis C in those genes. And so at that point I had asked Ryan to pull all the sequences for this virus published by other groups and by our group and to see if from looking at a more diverse data set if we could identify hypervariable regions within those envelope genes. He didn't do statistical analysis, but he had put it in the Los Alamos database and we did the Shannon entropy scores determined by per amino acid throughout the genes that we were interested in and from that I did the statistical analysis and determine that there were three hypervariable regions in close proximity to what had been identified for Hepatitis C.*

The point of when the paper was under review the last bit of sequencing that they had asked for us to do is some validation data to determine the depth of the sequencing that we were doing and also number of potential sequencing errors of contributing to what we were seeing and said before that I had asked Ryan because we had or supposed to have had different variants of these genes in plasmids. And so I had instructed him to take those and mix them in different quantities and concentrations and to then send them up for sequencing so we would have a known so because we use bar-coded primers we can mix them in different quantities and so by doing that we could compare back to what our known was and ***within a month Ryan provided that data and I use that in my review and in hindsight, you know, there's many, many problems. When Steve came back, the first thing we did was to look into the most recent sequencing set which was the validation and when he found out through talking to the LBB1 group as well as talking to our administrative finance office that that had never been submitted, and so we were kind of floored by that and so the thought at that time was well, maybe you know, he had based it on like as time has progressed, I'd become more and more convinced that he's done many, many things which we'll talk about but at the time I was still holding out hope that maybe this was the one thing that was wrong****. It was a validation run and*

could we repeat that validation and provide a correction to the paper as far as you know, the types of errors and things we expected.

It was accepted and then you know while we were doing that work we figured out found out from again for they're talking them that they have done no other PacBio sequencing for us. So the second run which he provided data for on additional horses that is in the paper, and as soon as I saw that I knew we were cooked and the paper needs to be retracted because it just never happened and he completely fabricated all the data that he sent me. The other thing I had Steve do was look at this, you know, the GenBank accession numbers that he included in the paper that he analyzed and determined that some of the GenBank accession numbers that he provided didn't even apply to our genes of interest, but rather belonged to envelope genes. He had included a gene segments that had accession numbers to the non-structural protein 3, again one more thing that just had been completely fabricated. *So that was basically that project and that took us quite a while to sort of mentally sort through as well as get to the point of figuring out.*

45 provided an explanation of how more recent data generated by Ryan was used. He indicated that after reevaluating data from the Journal of Virology manuscript, he decided to abandon the NIH grant proposal that he was currently working on, which included preliminary data generated by Ryan. 45 has not used any of the more recent data generated by Ryan for subsequent grant proposal submissions. 45 indicated that Ryan's falsified data has not been used in any other grant proposals and the data has not been referenced in any other manuscripts.

45 **paraphrased testimony:** ***Nothing from this paper has been used to this point to for another grant [proposal]****. It was when this all started to happen that I was actively working on an NIH Grant thinking that he was doing the work. I thought he was doing and once we realized what was going on, I just trashed the whole idea.*

45 goes on to describe preliminary data that was included in a published 2019 Equine Veterinary Journal manuscript, which outlines a collaborative project in race horses between his lab and a veterinarian in California. He described that race horses can have elevated levels of two different liver enzymes. These enzymes were evaluated by the California collaborator and 45 45 lab was to complete PCR analysis in order to detect three different viruses in the samples that he received from the California group. Ryan completed all of the initial PCR work and the paper was submitted in fall of 2018 and accepted in early 2019. Preliminary data that was generated was used in a funded collaborative grant with the Grayson Jockey club. 45 explained that some of Ryan's original data still exists, but that the gels are so poorly labeled that it is impossible to make any sense of the data after the fact. This preliminary data was included in the 2019 Equine Veterinary Journal manuscript and was used for a second funded grant through the Southern California Equine Foundation. The original samples still exist and 45 45 is working now to repeat some of Ryan's initial PCR analysis. No update was available at the time of his testimony.

45 **paraphrased testimony:** *The only other paper that I have had published in association with Ryan was a paper that got published in the Equine Veterinary Journal. Investigators think that poor performance horses have elevated gamma glutamyl transferase or elevated liver*

enzymes, and so a veterinarian from California had sent some samples to do a pre-screen on it and we looked for the three viruses we were aware of at the time which were equine pegivirus, equine hepacivirus, and another virus, and we found and we have the gel showing that most if not all were positive for this pegivirus. A PCR analysis was completed for this. So then I wrote a grant proposal that was funded. Part of it went to ***Boehringer Ingelheim****. It was for an equine advancement toward research award. Then the other one was actually submitted to the* ***Southern California Equine Foundation*** *and so they funded the other portion of the award. In that grant proposal we were we looked at 800 racehorse race day samples from individual horses down at the racetrack in California. They did the biochemical work looking at liver enzyme activity. The samples were subsequently frozen and sent up to us and we did the PCR work to determine if they were infected with any of the viruses we were looking at. We still have these samples.*

The paper was submitted in the fall of 2018 I recall and it was accepted in early 2019. The data that had been generated at that point, which was still preliminary, was used as preliminary data for a collaborative grant where I was just a co-investigator with Grayson Jockey Club, and that grant was funded.

45 **was asked if the data still existed and he replied** ***"no, they're so poorly labeled that can't you can't make heads or tails of it."*** *So what I had Steve Leib do initially because it was such a large number of samples was too we had picked a subset those that have been indicated by Ryan to be positive for one virus or another and some that had been recorded as being negative. Then I think we started with approximately 50 and what we found is a large number of inconsistencies with horses that were negative being positive and to this point we've done about a hundred and fifty samples. I didn't bring that information today because I've done it, but the one glimmer of hope that I still have on that project is that it looks like there's the conclusions from that paper was there is no association with viral infection and these elevated liver enzymes. It still appears that that is indeed the case based on the repeated samples that we've done, which is over a hundred and fifty but there are enough inconsistencies there that I'm going to have to repeat all of them, and so that's currently that's my plan…*

45 laid out several examples showing a deeper pattern of incompetence and failure to perform standard procedures in the lab. He also provided additional testimony highlighting data fabrication/falsification and explained how this has hamstrung ongoing collaboration. For example, 45 has a relatively large collaboration with Cornell to sequence/PCR samples as is routinely done in his lab. 45 has put a hold on that project and had to explain to his colleagues at Cornell the ongoing issues in 45 lab with 45 research technician (*i.e.*, Mr. Evanoff).

45 **paraphrased testimony:** *So there's not very many things that have been published and so in hindsight, I mean there's a reason I think why but* ***nevertheless some other things that just speak to the depth of what he was capable of during the process. I wondered about the liquid nitrogen tanks and where they were at, so we checked on them. We have six liquid nitrogen tanks with samples going back to the 80s and all of them were bone dry and we were worried at first that maybe we just neglected, you know with everything going on, but we checked with our business office and our lab hadn't purchased any liquid nitrogen since 2016. And so I have some emails to that effect, I have images of us throwing away everything and the one thing that relates to that is during the 2018 intramural grant through the CVM, which would have required Ryan to be transfecting cells and using cells that we would have had in the***

liquid nitrogen tank that he told me he was working on as part of generating preliminary data towards the NIH proposal that I was going to put together. I had asked him to start trying to develop pseudotyped viral particles and he said he was doing that as well and to do that he would have had to be using cells which didn't exist.

Summary of the impact of Mr. Evanoff's falsification/fabrication of data on publications and funded grants in the 45 **and** 45 **labs:** In his summary, 45 identified two, and possibly three, manuscripts, an NIH R21 grant, and potentially a USDA grant that are likely compromised by Mr. Evanoff's data fabrication and falsification. One manuscript that is certainly compromised (Journal of Virology, 2019) is in the process of retraction and the second (Equine Veterinary Journal, 2019) is in a holding pattern, as 45 is working to validate some of the viral DNA sequences in this second published manuscript. A third manuscript (Hepatology, 2015) is also being evaluated for inclusion of fabricated data by Ryan Evanoff. 45 45 is primary author on both manuscripts. To this list, 45 described preliminary data that was generated through a collaborative effort between his lab and a veterinarian in California that was published in a 2019 Equine Veterinary Journal manuscript. This information was subsequently used to generate funds from three different sources in which 45 was either a 45 or 45. The first funded grant is from the Southern California Equine Foundation, and a second is from Boehring Ingelheim. These two projects seem to be related and partial funding was provided by each funding source. A third grant was funded using the initial PCR data generated by Ryan Evanoff was from the Grayson Jockey Club. 45 served as a 45 on this funded project. Importantly, in terms of the sequence of events, the description of falsified and fabricated data, the depth of deception by Mr. Evanoff, and the description of additional incompetency and failure to perform expected lab responsibilities by Mr. Evanoff, 45 testimony is consistent with that of 45 and 45 who testified before and after 45, respectively. 45 and 45 indicated that they take responsibility for what has happened given that their status as 45 45 but they both appear to have been blindsided by Mr. Evanoff's calculated and deliberate misconduct, which undermined research efforts in each of their labs.

45 described the importance and potential societal impact of the research in his lab and how Mr. Evanoff's data falsification/fabrication has jeopardized his and 45 research programs. He also described the negative impact that Mr. Evanoff's data falsification/fabrication has had on the career of 45 as she seeks to move a postdoctoral position into a tenure-track faculty position. She has no virology manuscripts to support her application to faculty positions after working for several years in the labs of 45 45 and 45. As described by 45, the viral sequencing data and immunizations in SCID horses against proteins encoded by the viral proteins has potential significant medical and economic value in that the viral DNA sequences are similar to DNA sequences contained within the human hepatitis C virus. Hepatitis C is difficult to study in humans and there is no quality immunization against the virus that causes this disease in humans. As such, the 45 and 45 labs were working with the SCID horse model system to develop proof of principle data to move toward development of a hepatitis C viral immunization for use in humans. Since his testimony, 45 has put together a timeline (**Exhibit 9**) and very good summary that outlines the projects that were compromised by Mr. Evanoff's deception (**Exhibit 10**), and additional supporting materials are provided (Exhibits 12-42.

D. [redacted], February 17, 2020 (**Exhibit 53)**

[redacted] began by explaining that [redacted] ran his lab during Ryan Evanoff's tenure in the [redacted] lab while [redacted] partitioned his time between administrative and research responsibilities. [redacted] was surprised to hear of the possible data falsification by Ryan Evanoff and indicated that he had no reason to question Ryan's efforts in his lab. [redacted] went on to say that he "was sorry to see Ryan leave as he was quite productive." Ryan left the [redacted] lab in good standing for a higher salary in the [redacted] lab. [redacted] explained that Ryan had no purchasing responsibility, his turn around time on experiments was reasonable and could not remember a time when data was generated faster than expected. Ryan co-authored 13 manuscripts during his time in the [redacted] lab, mostly in the capacity of standard molecular biology techniques and generating recombinant proteins for antibody production. [redacted] explained that all final data were reviewed by [redacted] and/or him prior to manuscript preparation and submission for peer-review.

E. [redacted], March 3, 2020 (**Exhibit 54**)

The discussion began with an explanation of [redacted] overlap with Mr. Evanoff in the [redacted] lab. She explained that Ryan was already working in the [redacted] lab when she began her employment at WSU in 2007. They were collectively in the [redacted] lab through 2012 and [redacted] on four manuscripts. [redacted] explained that Ryan's primary role on these manuscripts centered on the development of the STRA8 antibody. Ryan worked to clone the *Stra8* gene, sequence the gene, and then use the sequence to generate recombinant protein using an *E. coli* bacterial system. He was successful in making an outstanding antibody against STRA8, one that has been and is used by numerous labs around the world to identify preleptotene spermatogonia housed within the testis. [redacted] explained that she and others in the [redacted] lab evaluated Ryan's efforts on a weekly basis and it was a complete surprise to her to hear about possible data falsification and fabrication by Ryan after leaving the [redacted] lab. She even went so far as to mention that Ryan, while independent, was very good in the lab from a technical perspective. She also said that "Ryan was very open when things were not working" and that he was very open in general about his efforts in the lab, particularly in group lab meetings. [redacted] thought Ryan to be excellent with no issues and she had a lot of confidence in Ryan's abilities. Ryan had no purchasing authority in the [redacted] lab. Ryan also worked toward generating a second recombinant protein called RDH10 using the same bacterial system. While successfully cloning and sequencing the *Rdh10* gene, he was unsuccessful at generating quality recombinant RDH10 protein in the bacterial system. [redacted] again described her confidence in Ryan's abilities and openness.

IX. ANALYSIS

The Committee relied on recorded testimony from Mr. Evanoff (from the first inquiry) and [redacted] in establishing a consistent and long-term pattern of misconduct by Mr. Evanoff. The testimony was supported by documentation included in the Investigation Report as exhibits. Furthermore, the Committee's conclusions were supported by documentation provided by internal WSU sources and external sources to WSU

Commented [JK5]: Not sure how to say this but since he didn't come in to interview with us

and billing reports not directly connected with this investigation (*e.g.*, WSU Laboratory for Biotechnology and Bioanalysis 1 (LBB1), JPT Innovation Peptide Solutions, and the University of Idaho Proteomics Core). The Committee also invited Mr. Evanoff to provide additional testimony for his accounting of events on several occasions, but he declined to schedule an interview. However, Mr. Evanoff did respond to written questions five weeks after submission to him along with several intermittent email requests for updates on progress toward his response to the questions. The Committee viewed Mr. Evanoff's responses as limited. They contrast, for the most part, with the conclusions of this Report since he denies any culpability in misconduct aside from the plasmid sequencing data falsification despite testimonies from 45 , 45 and 45 and the unbiased documented evidence that were used to develop the conclusions of this Report.

X. FINDINGS OF FACT

There is sufficient evidence for the Committee to make the following Findings:

1. Mr. Evanoff was a Project Associate in the School of Molecular Biosciences from January 16, 2008 to February 15, 2011.

2. Mr. Evanoff was a Project Associate in the School of Molecular Biosciences from February 16, 2011 to May 31, 2012.

3. Mr. Evanoff was a Scientific Assistant in the Department of Veterinary Microbiology and Pathology from June 1, 2012, to July 8, 2019.

4. Mr. Evanoff falsified or fabricated data on at least the following projects:

   a) Falsification of plasmid sequencing data (**Exhibits 1, 6, 70-72, 83-89, 92**).

   b) Fabrication of data where Mr. Evanoff was tasked with designing and ordering peptide sequences and delivering these to 45 for use in her studies [described in **Exhibits 48-52**, and summarized in **Section VIII** below (also see **Exhibits 59, 61, 62, 93**)]. The peptides were completely fabricated, a judgement based on protein sequence analyses of putative peptides conducted by the University of Idaho (**Exhibits 9, 10, 46, 48-52, 90, 91**), as well the lack of any record at WSU showing that the peptides were present or had been purchased (**Exhibits 17-19**). Moreover, JPT Peptide Technologies, the company that purportedly generated the peptides, also has no record that the peptides were ever ordered by Mr. Evanoff (**Exhibit 20**).

   c) *Falsification/fabrication of sequence analysis of a potential Hepacivirus A quasispecies.

   d) *Falsification of T-cell response data during the resolution and development of equine immunity to hepacivirus A infection, a surrogate animal model for human hepatitis C infection.

   e) *Falsification of data related to metabolic pathways as potential causes for maladaptation to training syndrome in Thoroughbred horses.

Commented [JK6]: What are these * for?

f) *Falsification of data related to the prevalence of evaluate gamma-glutamyltransferase and sorbitol dehydrogenase activity in racing Thoroughbreds and their associations with viral infections.

5. Beyond these clear cases of misconduct, Mr. Evanoff falsified information by indicating that he was performing his required lab responsibilities when in reality he was not. His lack of stewardship in keeping useful and reliable lab notebooks and documenting his daily research efforts, as well as the proper documentation, storage, and long-term management of precious blood/cell/tissue samples, is a form of misconduct that lies outside of the realm of proper lab practices.

***Exhibits 10, 12-42**

XI. CONCLUSIONS OF LAW

Based on the Findings of Fact, the Committee reaches the following conclusions:

1. Jurisdiction. -This Committee was properly charged and has authority to decide this case. Respondent was notified of the case and given the opportunity to respond to the allegations.

2. There is a preponderance of evidence that Mr. Evanoff willfully and knowingly falsified and fabricated data in several unrelated projects over several years that were funded by both federal and non-federal funding entities.

3. While there is clear evidence that Mr. Evanoff falsified and fabricated data in the 45 and 45 labs, there is no testimonial evidence that Mr. Evanoff engaged in research misconduct while employed in the 45 lab at WSU.

XII. RECOMMENDED ACTIONS

The Committee makes the following recommendations:

1. The following peer-reviewed and published manuscript should be retracted. 45 has concerns about the manuscript based on inclusion of data generated by Mr. Evanoff. While Mr. Leib and 45 recently repeated some of the experiments included in the publication and believe that the conclusions of the manuscript are correct, they find that the data generated by Mr. Evanoff used to arrive at the conclusions were falsified.

   Ramsay JD, Evanoff R, Mealey RH, Simpson EL. The prevalence of elevated gamma-glutamyltransferase and sorbitol dehydrogenase activity in racing thoroughbreds and their associations with viral infection. Equine Vet J. 2019 Nov;51(6):738-742. doi: 10.1111/evj.13092. Epub 2019 Apr 10. PubMed PMID: 30849186.

   This work acknowledged support from the Southern California Equine Foundation and Boehringer Ingelheim's Advancement in Equine Research Award.

2. The following peer-reviewed and published manuscript should be retracted because it contains falsified data generated by Mr. Evanoff.

Ramsay JD, Evanoff R, Mealey RH. Hepacivirus A infection in horses defines distinct envelope hypervariable regions and elucidates potential roles of viral strain and adaptive immune status in determining envelope diversity and infection outcome. J Virol. 2018 Aug 29;92(18). pii: e00314-18. doi: 10.1128/JVI.00314-18. Print 2018 Sep 15. PubMed PMID: 29976666; PubMed Central PMCID: PMC6146699.

This work acknowledged support from Public Health Services grant AI126304 from the National Institute of Allergy and Infectious Diseases, the Washington State University College of Veterinary Medicine Equine Infectious Disease Research Program, and a Washington State University new faculty seed grant.

3. 45 and 45 should reevaluate the following peer-reviewed and published manuscript to ensure that the findings are accurate. While Mr. Evanoff contributed only a small amount of data to this manuscript, the archival samples that were supposed to be managed by Mr. Evanoff no longer exist and there is no record of their whereabouts. 45 45 indicated in his testimony that at least some of the data in the manuscript have been reported by other groups. In fact, a published manuscript (Gather T, Walter S, Pfaender S, Todt D, Feige K, Steinman E, Cavalleri JMV. Acute and chronic infections with nonprimate hepacivirus in young horses. Vet Res 2016;47:97) confirms and expands a good portions of the 45 publication.

Ramsay JD, Evanoff R, Wilkinson TE Jr, Divers TJ, Knowles DP, Mealey RH. Experimental transmission of equine hepacivirus in horses as a model for hepatitis C virus. Hepatology. 2015 May;61(5):1533-46. doi: 10.1002/hep.27689. Epub 2015 Feb 24. PubMed PMID: 25580897.

This work acknowledged support from the Washington State University College of Veterinary Medicine Equine Infectious Diseases Research Program.

4. All external entities that funded the affected research, including the National Institutes of Health, the United States Department of Agriculture, the Southern California Equine Foundation, the Boehringer Ingelheim Advancement in Equine Research Fund, and the Grayson Jockey Club should be informed of the problems described above. -All collaborators should be similarly notified.

Ramsay JD, Evanoff R, Wilkinson TE Jr, Divers TJ, Knowles DP, Mealey RH. Experimental transmission of equine hepacivirus in horses as a model for hepatitis C virus. Hepatology. 2015 May;61(5):1533-46. doi: 10.1002/hep.27689. Epub 2015 Feb 24. PubMed PMID: 25580897.

This work acknowledged support from the Washington State University College of Veterinary Medicine Equine Infectious Diseases Research Program.

5. Mr. Evanoff's WSU personnel file should be flagged to ensure that he never be hired by WSU under any circumstances.

6. Insufficient oversight of Mr. Evanoff by 45 and 45 was a major deficiency that allowed his fabrication and falsification to continue for many years. It is essential that members of a research team be trustworthy and trusted, but it is also important that critical experiments be monitored to verify that experimental procedures and the resulting data accurately describe what was done. Both 45 and 45 were very helpful in trying to determine the extent of the misconduct we describe above but, as became clear in our investigation, they had assigned many responsibilities to the Respondent and did not adequately monitor the Respondent's performance. Insufficient oversight is a recurring theme in misconduct cases and we make two recommendations that might help make WSU researchers more aware that the problem exists here.
    a. While it is important to separate behavior from personalities, WSU needs to improve awareness of WSU Principal Investigators that misconduct does occur at WSU and that they are responsible for the conduct of research they are supervising. The Vice President for Research should publicize these facts, even at the potential cost of damaging WSU's reputation.
    b. WSU should support research use of robust, computerized systems for keeping research records. This would help with organizing the variety of information that is being generated as research is carried out and help with oversight of ongoing research. Much of WSU's research is carried out in association with instruction and it is important that students be aware of their responsibility to keep accurate and accessible records.

7. It is in the interest of WSU to take actions to ensure that those impacted negatively be the fallout of Mr. Evanoff's misconduct, especially 45 (former Postdoctoral Fellow) and 45 (Assistant Professor), are able to move successfully forward on their career trajectory despite setbacks caused by the Respondent's research misconduct.

_____ _____
Michael Kahn Date
Professor, Institute of Biological Chemistry

_____ _____
Joanna Kelley Date
Associate Professor, School of Biological Sciences

_____ _____
James Pru Date
Professor, Animal Sciences

Exhibit List
Research Misconduct Case # 2019-01

EXHIBIT	INFORMATION
1	45 initial email to the Dr. Keane highlighting the incident
2	eREX for Dr. Mealey NIH R21 application 1R21AI126304-01
2.1	Grants.gov confirmation of receipt of 45 NIH R21 application
2.2	Notice of Award for 1R21AI126304-01
2.3	WSU Sponsored Project Award Notification (ORSO#127249)
3	WSU Executive Policy Manual (Responding to Allegations of Research Misconduct)
4	Memorandum to Inquiry Committee 4/19/19
5	Letter of notification of misconduct to Ryan Evanoff
6	Ryan Evanoff testimony from 5/6/19
1 (45	Ryan Evanoff email to 45 regarding downloaded sequencing information from Eurofins for three plasmids using two different primer sets (4/17/19)
2 (45	DNA sequence
3 (45	DNA sequence
4a-d (45	Raw sequencing data in chromatogram form
5 (45	45 email from 4/4/19 with recommendation to re-sequence 293 cell peptides at another proteomics facility.
6 (45	Ryan Evanoff response to 45 email about the general plan to move forward with sequencing new Hepacivirus A E2 envelope proteins
7 (45	Outline of events discussed during 45 testimony (entry date 12/16/19)
8 (45	Lee Deobald (Univ of Idaho proteomics lab) email (4/3/19) indicating lack of any sequences for Hepacivirus A E2 envelope glycoprotein in samples submitted by Ryan Evanoff
9	45 timeline outlining events associated with misconduct by Ryan Evanoff (2015-present)
10	45 written comments on misconduct by Ryan Evanoff
11	45 written description of delinquency by Ryan Evanoff in maintaining liquid nitrogen tanks
12	Excel spreadsheet with information on viral variants
13	Email from Mark Wildung (LBB1 sequencing core) indicating no record of Ryan Evanoff sample submission for PacBio sequencing
14	EHCV peptide information
15	Email from Ryan Evanoff to 45 (10/22/18) with EHCV liver tissue cytokine and real time data
16	Email (9/23/19) from Lee Deobald (Univ of Idaho proteomics lab) indicating the resequenced protein preparations lacked peptides that were supposed to be generated by Ryan Evanoff
17	Email (8/30/16) from Ryan Evanoff to 45 regarding a JPT order indicating that he (Evanoff) did not have the information in an email

18	Follow-up email from Ryan Evanoff to [redacted] indicating that he could not find the JPT order information
19	JPT Innovation Peptide Solutions quote for costs associated with peptide sequencing from 2/23/15
20	Email (9/30/19) from Vincent Kurnia (JPT Innovation Peptide Solutions) to [redacted] indicating that samples from Ryan Evanoff were never received at JPT in 2015.
21	Email (5/16/18) about liver biopsies from WSU sent for qPCR analysis at Gluck Equine Research Center in Kentucky
22	EHCV peptide pools
23	Information on the EHCV peptide pools
24	Endpoint PCR screen information
25	Cornell PCR data from [redacted] equine samples for various viruses
26	Email (9/27/18) from Ryan Evanoff to [redacted] providing Cornell PCR data
27	Gel images of PCR results
28-30	Sequencing information
31	TDAV racehorse screen
32	Email (10/15/18) from Ryan Evanoff to [redacted] with updated qPCR data from Cornell
33	Variance Table Report
34-39	Gel images showing PCR results
40	Gel images from EpGV endpoint PCR
41	Summary of horserace PCR results
42	Email (3/20/20) from [redacted] indicating that Eurofins was unable to find sequencing information on samples sent by Ryan Evanoff in 2012 and 2013
43	Clarification email (3/20/20) from [redacted] to the Office of Research about his testimony from the prior day (second testimony)
44	Email (4/17/19) from [redacted] to [redacted] indicating that [redacted] wanted to meet with them, presumably about Ryan Evanoff's data falsification/fabrication
45	Email (3/20/20) from [redacted] to the Office of Research highlighting a prior (3/11/17) email from [redacted] to [redacted], [redacted] and Ryan Evanoff about a poor T-cell response
46	Email (3/20/20) from [redacted] to the Office of Research again highlighting the lack of protein sequencing information obtained from Lee Deobald (Univ. of Idaho proteomics lab) – same as [redacted] Exhibit 8 and Exhibit 16
47	Email from [redacted] to the Office of Research related to a prior email (4/16/19) from [redacted] to [redacted] regarding ELISPOT data from chimpanzees.
48	Interview with [redacted] 12/9/19
49	Interview with [redacted] 12/16/19
50-52	Interview with [redacted] 12/16/19
53	Interview with [redacted] 2/17/20

54	Interview with [redacted] 3/3/20
55	Interview with [redacted] 3/19/20
56	Interview with [redacted] 3/19/20
57	Evanoff Appointment information
58	Investigation committee questions for Ryan Evanoff
59	Summary of [redacted] interview (Exhibit 49)
60	Letter of interview request to Ryan Evanoff dated 1/29/20
61	Summary of [redacted] interview (Exhibit 48)
62	Summary of [redacted] interview (Exhibits 50-52)
63	Summary of [redacted] interview (Exhibit 54)
64	Email (4/8/20) from Ryan Evanoff to the Office of Research addressing written questions from the Investigation Committee
65	Timeline of email and other correspondence between the Office of Research and Ryan Evanoff
66-68	Ryan Evanoff Annual Reviews for 2012, 2013, and 2018, respectively
69	Email (12/21/19) from [redacted] forwarding her CV to the Office of Research
70	Email (12/21/19) from [redacted] forwarding an email (4/17/19) to the Office of Research containing information about the three plasmid sequences containing E2 sequences submitted to Eurofins (no chromatograms)
71	Email (12/21/19) from [redacted] to the Office of Research containing Eurofins sequencing information downloaded by Ryan Evanoff onto [redacted] personal computer (with chromatograms)
72	Inquiry Report
73	Evanoff first notebook in [redacted] lab from2012
74	Evanoff notebook from 2013
75	Evanoff notebook from summer and fall of 2015
76	Evanoff notebook from early 2019
77	Evanoff notes
78	Evanoff notes
79	Evanoff notebook from June 2012 through early 2013
80	Evanoff notebook spring 2015
81	Evanoff notebook April 2019
82	Evanoff notebook 2014
83	Evanoff email to [redacted] about sequencing data
84	[redacted] sequence 1
85	[redacted] sequence 2
86	Chromatogram 1
87	Chromatogram 2
88	Chromatogram 3
89	Chromatogram 4
90	Lee Deabold (University of Idaho) email on sequencing data – A
91	Lee Deabold (University of Idaho) email on sequencing data – B
92	Sequencing plan between Evanoff and [redacted]
93	Outline of [redacted] testimony.

Investigation Report
Research Misconduct Case # 2019-01
May 5, 2020

I. NAMES AND TITLES OF INVESTIGATION COMMITTEE MEMBERS

Michael Kahn, Professor, Institute of Biological Chemistry, College of Agricultural, Human, and Natural Resource Sciences.

Joanna Kelley, Associate Professor, School of Biological Sciences, College of Arts and Sciences

James Pru, Professor, Department of Animal Sciences, College of Agricultural, Human, and Natural Resource Sciences.

II. SUMMARY

Based on an Inquiry Report (**Exhibit 72**), Dr. Keane assembled an Investigation Committee (Committee) to evaluate possible evidence of misconduct by Mr. Ryan Evanoff (Mr. Evanoff or Respondent), Scientific Assistant in the Department of Veterinary Microbiology and Pathology at Washington State University (WSU, **Exhibit 57**). The Committee finds, based on a preponderance of evidence, that the Respondent did commit research misconduct with respect to the allegations that the Respondent committed plagiarism, falsification, and/or fabrication as defined by Executive Policy #33 (**Exhibit 3**). Regarding the allegation of falsifying data, records show the falsification of plasmid sequences (**Exhibits 1, 6, 70-72, 83-89, 92**).

Research misconduct was also committed in the fabrication of data where Mr. Evanoff was tasked with designing and ordering peptide sequences and delivering these to 45 for use in her studies [described in **Exhibits 48-52**, and summarized in **Section VIII** below (also see **Exhibits 59, 61, 62, 93**)]. 45 spent a great deal of time and effort working with materials provided by Mr. Evanoff that turned out not be peptide sequences at all (**Exhibits 9, 10, 46, 48-52, 90, 91**). We concluded that the peptides were completely fabricated, a judgement based on protein sequence analyses of putative peptides conducted by the University of Idaho (**Exhibits 9, 10, 46, 48-52, 90, 91**), as well the lack of any record at WSU showing that the peptides were present or had been purchased (**Exhibits 17-19**). Moreover, JPT Peptide Technologies, the company that purportedly generated the peptides, also has no record that the peptides were ever ordered by Mr. Evanoff (**Exhibit 20**).

Aside from these examples of falsification and fabrication, addition examples of data falsification and fabrication are evident in several other projects discussed during the testimonies of 45, 45 and 45 (**Exhibits 48-52**). While these projects were funded by private or institutional mechanisms and not through federal sources, we refer the reader to 45 45 account of events (**Exhibit 10)** and summary of his testimony **(Exhibit 59)** as evidence that Mr. Evanoff's deception was systematic and over several years and several projects while he was working in the 45 and 45 labs. These projects included, but may not be limited to:

1) Sequence analysis of a potential Hepacivirus A quasispecies;

2) T-cell responses during the resolution and development of equine immunity to hepacivirus A infection, a surrogate animal model for human hepatitis C infection;

3) Investigation of metabolic pathways as potential causes for maladaptation to training syndrome in Thoroughbred horses; and

4) The prevalence of evaluate gamma-glutamyltransferase and sorbitol dehydrogenase activity in racing Thoroughbreds and their associations with viral infections.

Please see **Exhibits 10, 12-42** for information related to these non-federally funded projects, as well as the most salient points that are presented at the end of 45 summarized testimony in Section VIII.C.

Beyond the falsification and fabrication of data, there is clear evidence that Mr. Evanoff failed to adequately perform duties and responsibilities as required. Based on witness testimonies and Mr. Evanoff's procured lab notebooks (**Exhibits 73-82**), the clearest example of this is in his failure to keep quality records of his research efforts, either in electronic or written notebook form (**Exhibits 9, 10, 48-52, 55, 56, 59, 73-82**). He also failed to complete simple, but essential lab tasks such as ensuring that liquid nitrogen tanks used to store cells remained full (**Exhibit 11**) for the long-term preservation of vital cell lines and research samples housed in the 45 and 45 labs (**Exhibits 9-11, 48-53, 55, 56, 59, 61, 62**). Finally, Mr. Evanoff's efforts to assist the Committee during the investigation have not been helpful based on his refusal to provide oral testimony for the Committee (**Exhibits 60, 65**) and his less than adequate response (**Exhibit 64**) to written questions (**Exhibit 58**) submitted to Mr. Evanoff by the Committee. After evaluating testimonies from 45, 45 and 45 the Committee finds that annual evaluations provided by 45 and 45 (**Exhibits 66-68**) were not consistent with the actual job performance by Mr. Evanoff and are evidence of a lack of quality oversight of Mr. Evanoff's daily research efforts. 45 acknowledged this in his testimony and took full responsibility (**Exhibits 48** and **55**). However, the evidence makes it clear that research falsification and fabrication were committed through the individual actions of Mr. Evanoff. Mr. Evanoff's proclaimed one-time incident where plasmid sequences were falsified (**Exhibits 6** and **72**) is inconsistent with the findings of the Committee. Rather, the Committee found a repeated and measurable pattern of research material manipulation, changing of data, omission of critical research procedures and findings in lab notebooks, and fabrication of data and results (*i.e.*, fabrication) by Mr. Evanoff throughout his tenure in the 45 and 45 labs.

Impact of misconduct: The misconduct of data falsification and fabrication by Mr. Evanoff negatively impacted several peer-reviewed publications and two federally funded grant applications awarded to 45, as well as at least one prospective manuscript that could not be submitted for peer-review, one prospective NIH grant that could not be submitted for scientific merit review, and two non-federally funded grants awarded to 45. Importantly, because much of Mr. Evanoff's data were used extensively by others in the labs of 45 and 45, their research efforts, and, as such, their careers, are likely compromised by Mr. Evanoff's research misconduct. The clearest example of this is the postdoctoral fellowship completed by 45, after which she recently left 45 lab after four years of intense training with a single publication. 45 went so far as to decline co-authorship on at least one manuscript because of her concerns for data falsification by Mr. Evanoff.

III. BACKGROUND AND STATEMENT OF ISSUE/ALLEGATIONS

A. This Committee was formed to review the research misconduct allegation of data falsification and fabrication by Mr. Evanoff at the request of Dr. Christopher J. Keane (Dr. Keane), the Vice President for Research at WSU, Based on testimony from Mr. Evanoff (**Exhibit 6**) and witness testimonies (**Exhibits 48-52, 55, 56)** as well as document files [**Exhibits 1-8 (** 45 **10-47, 48-62, 70-72**], there is a preponderance of evidence showing that the Respondent committed data falsification and fabrication as defined by Executive Policy #33 (**Exhibit 3**). Mr. Evanoff's actions constitute a significant departure from accepted practices of the relevant research community. The preponderance of evidence proves the data falsification and fabrication were committed intentionally and knowingly over a period of time and misconduct was not limited to the one incident that the Respondent has admitted. Other components of this misconduct are evident from an examination of testimony and laboratory records. Based on the evidence, it is clear that a pattern of falsification and fabrication, as well as delinquencies in job responsibilities, existed from at least 2015 through 2019 as the Respondent was 45 in 45 and then 45 labs. The data falsification and fabrication had a significant negative impact on the research record of the laboratories of 45 and 45, including the work carried out under on federally funded grant and several private and internal university grants. The data falsification and fabrication significantly affected the direction of research in the laboratory and were important elements in two published manuscripts and, a manuscript submitted but not accepted for publication, as well as one manuscript in preparation that was prepared but not submitted for peer-review as the group discovered potential problems. Falsification and fabrication of data and materials especially negatively impacted the career of 45, who relied on the Respondent's data and materials as inputs for her work related to hepacivirus. 45 will leave the 45 lab after four years of postdoctoral research effort without a single publication in this area. As part of the bigger research picture, the misconduct has also negatively impacted prospects for developing a novel animal model system for human hepatitis C.

Despite the Respondent's response that he did "not recall any information on any instances of data falsification other than what has been previously discussed or know of grants or publications that would be impacted" (**Exhibit 64**), the Committee concludes that there are many instances of laboratory behavior that are very difficult, if not impossible, to explain in any other way than misconduct. Because the Respondent received training in the Responsible Conduct of Research at WSU as is required by all research personnel, and because the several instances of misconduct are significant departures from normal protocols, we conclude that the Respondent knowingly, deliberately and repeatedly acted improperly.

IV. FEDERAL RESEARCH SPONSOR SUPPORT

Proposal: ORSO #127249 (**Exhibits 2, 2.1, 2.2, 2.3**)
Agency: U.S. Department of Health and Human Services
NIH Award: R21AI126304

Proposal: ???? (**Exhibits, ?, ?, ?**)
Agency: USDA
USDA Award:

V. APPLICABLE POLICIES AND PROCEDURES

This investigation was conducted pursuant to the WSU Executive Manual Policy #33, *Responding to Allegations of Research Misconduct* (**Exhibit 3)**. The policy defines research misconduct as follows:

> *Research misconduct* means misconduct in research and scholarship fabrication or falsification of data, plagiarism, or other serious deviations from accepted practice in proposing, implementing, or reporting on research. Research misconduct does not include honest error or honest differences in interpretations or judgments of data.

The policy defines falsification as follows:

> *Falsification* is manipulating research materials, equipment, or processes, or changing or omitting data or results such that the research is not accurately represented in the research record.

This policy defines fabrication as follows:

> *Fabrication* is making up data or results and recording or reporting them. We include as fabrication the construction of research materials for use by collaborators that were not as described and providing these materials to these collaborators, completely invalidating the subsequent experiments they carried out.

VI. SUMMARY OF INVESTIGATION PROCESS

On April 24, 2019, Dr. Keane, WSU Vice President for Research and Research Integrity Office (RIO), notified the Respondent of the research misconduct investigation. **Exhibit 5.** On November 7, 2019, Dr. Keane delivered a charge to this Committee, composed of professors Kahn, Kelley, and Pru, to investigate potential research misconduct associated with the Respondent. All Committee members attended the charging meeting. Also present were Senior Counsel Sherry Gordon, who provided legal advice to the Committee, and Lisa Brown-Haas, the WSU Research Misconduct Coordinator. The Committee met to conduct the investigation, write the report, and discuss their impressions on the following dates: December 9, 2019; December 16, 2019; February 17, 2020; May 3, 2020 (via Zoom). The Committee interviewed and recorded five witnesses regarding the misconduct allegations as follows:

1. [redacted] (Complainant)-December 9, 2019 and March 19, 2020 (**Exhibits 48 and 55**);
2. [redacted]-December 16, 2019 and March 19, 2020 (**Exhibits 49 and 56**);
3. [redacted]-December 16, 2019 (**Exhibits 50-52**);
4. [redacted]- February 17, 2020 (**Exhibit 53**); and
5. [redacted]-March 3, 2020 (**Exhibit 54**)

The Respondent was invited and reminded several times to answer questions and submitted a written response **(Exhibit 64),** but did not agree to be interviewed.

VII. RECORDS REVIEWED

The records determined to be relevant to this report are marked as exhibits to this report. See the Exhibit Table at the end of this report for a list of these materials.

VIII. SUMMARIES OF INTERVIEWS

A. [redacted], Complainant, December 9, 2019 and March 19, 2020 (**Exhibits 48 and 55**)

[redacted] described the various events that led him to conclude that research performed and published by his laboratory was not correct and that it was generated in a way that involved data falsification and fabrication. The initial issue was a problem with sequences that his technician, Mr. Evanoff, had presented to support his claim that he had cloned a viral gene and used this to express the corresponding protein. Mr. Evanoff claimed he had verified the DNA sequence of the expression plasmid commercially by sending the plasmid to Eurofins, a company often used for this purpose, but the actual sequence obtained from Eurofins was of poor quality and did not support this claim. Instead, Mr. Evanoff substituted a known sequence of the gene in information he gave to [redacted] a postdoctoral colleague in the laboratory. When confronted with this discrepancy, Mr. Evanoff acknowledged that he had misrepresented the DNA sequence. He assured [redacted] and [redacted] that this was a one-time issue. However, [redacted] and [redacted] subsequently investigated other work that had been done by Mr. Evanoff and found serious problems with considerable additional work, extending over several years. Mr. Evanoff went on medical leave in the spring, 2019 and resigned from WSU in July, 2019. He is no longer a WSU employee.

The flawed work is potentially related to several papers that Mr. Evanoff co-authored:
1) Ramsay JD, Evanoff R, Mealey RH, Simpson EL. The prevalence of elevated gamma-glutamyltransferase and sorbitol dehydrogenase activity in racing thoroughbreds and their associations with viral infection. Equine Vet J. 2019 Nov;51(6):738-742. doi: 10.1111/evj.13092. Epub 2019 Apr 10. PubMed PMID: 30849186.
2) Ramsay JD, Evanoff R, Mealey RH. Hepacivirus A infection in horses defines distinct envelope hypervariable regions and elucidates potential roles of viral strain and adaptive immune status in determining envelope diversity and infection outcome. J Virol. 2018 Aug 29;92(18). pii: e00314-18. doi: 10.1128/JVI.00314-18. Print 2018 Sep 15. PubMed PMID: 29976666; PubMed Central PMCID: PMC6146699.
3) Gimenez F, Hines SA, Evanoff R, Ojo KK, Van Voorhis WC, Maly DJ, Vidadala RSR, Mealey RH. In vitro growth inhibition of Theileria equi by bumped kinase inhibitors. Vet Parasitol. 2018 Feb 15;251:90-94. doi: 10.1016/j.vetpar.2017.12.024. Epub 2
4) Ramsay JD, Evanoff R, Wilkinson TE Jr, Divers TJ, Knowles DP, Mealey RH. Experimental transmission of equine hepacivirus in horses as a model for hepatitis C virus. Hepatology. 2015 May;61(5):1533-46. doi: 10.1002/hep.27689. Epub 2015 Feb 24. PubMed PMID: 25580897.
The flawed work is also relevant to ongoing unpublished work in the laboratory. Information from these papers and unpublished research was used to support of grant proposal applications to the USDA and NIH that were subsequently funded.

The primary concern is with papers 1, 2 and 4, which deal with viral infection and especially with paper 2. The papers evaluate equine viruses similar to Human Hepatitis C virus. The NIH R21 grant the laboratory obtained proposes that the equine hepaciviruses to be studied could be a model for the human infection. It also proposed that WSU research might be especially valuable

because WSU maintains a herd of horses in Pullman with Severe Combined ImmunoDeficiency and investigating viral pathogenesis in these could help define which components of the immune system are involved in developing immune resistance to the viruses. Data obtained in (4) showed that the virus infection can be controlled by the immune system and suggested several potential targets for vaccine intervention. It now appears that the DNA sequence data in (2) that was described as showing a pattern of virus sequence evolution was highly flawed and that the entire story line describing specific EHV proteins that are recognized by the immune system of infected horses and that these proteins can be used to generate a protective response is not supported by the data nor, in some cases, were the reported experiments even carried out. In particular, there is no evidence that the nucleic acid sequences were fabricated, including a lack of billing for determining these sequences. *At this point, we conclude that the mechanism of variation and resistance can only be considered to be untested, rather than whether it is correct or incorrect.*

45 described an experiment on equine hepacivirus done in which as a control he wanted to evaluate the horses for the presence of Equine Herpes Virus, a distinct virus. "I asked him (Ryan) to submit those to WADDL (*Washington Animal Disease Diagnostic Laboratory*) so we could get some initial viral titers and he said he did that. … This is easy stuff to check…. So he reported data, summarized and in an Excel sheet that showed their herpes virus titers." But in going back and looking at the information, 45 found that "WADDL does not have evidence of that…. I called WADDL we went online we went in the WADDL database we look for sessions for these numbers. Ten horses. No record that anything was ever submitted; call them, talk to the technician. ….So we checked all of this stuff and can find no evidence that any of these had ever been submitted. And so we try to go back to the archive samples from these horses and couldn't find them. Couldn't find any serum. Couldn't find any blood, couldn't find anything." The upshot of this discussion was that, while some serum samples were found, they did not seem to correspond to those reported on by Ryan. And there was no WADDL data to be found, nor was there evidence that WADDL had produced the data. The data that Ryan had "generated" was used in the USDA grant application and 45 detailed interactions with the USDA Program Officer in which he described his reluctance to report these results as part of his final report due in 2019.

Specifically, a protein identified using immunoblots that was said to have been isolated and sequenced by proteomics techniques was not actually confirmed as indicated by Mr. Evanoff's data. Moreover, follow-up experiments carried out by 45 in which peptides derived from the amino acid sequence of this protein were being tested for their ability to stimulate immune reactions of cells from infected horses were completely bogus—the peptides that Mr. Evanoff said he was supplying to 45 for these experiments had never been ordered! ("Overlapping peptides that 45 had designed several years ago and Ryan was supposed to, supposedly ordered from a company. And made dilutions of those and plated them all out so we had individual peptide pools, overlapping peptides, and those had been used to screen T cell responses and horses, prospectively, and we weren't getting very good results. But at the time we—none of us—had any suspicions at the time that these weren't what was ordered, but we weren't getting good results and/but we got everything written up for a paper. And that was going to be submitted this year. But 45 just said, well, I'm going to check just to make sure that we actually had these peptides and so he checked. You know our financial records. He checked

emails. He checked our business office and we could find no record that these peptides had ever been ordered.")

Experiments were done to test the reaction of horses, including SCID horses, against candidate proteins. "Antibodies against an envelope protein and you know, he was showing results in the antibody preparation. We did these infusion studies in these foals. We inoculated them with the virus and followed them along with real-time PCR to see if there was protective effects, and we were going to correlate that with antibody levels and so we had all that data from the last two to three years and had that meeting we had written it up and actually had that submitted to the Journal of Virology. It was not accepted because there was some question about the recombinant protein that was used. Again Ryan did this work but (*the protein*) was expressed in bacteria, and these are envelope glycoproteins. (*MK Note: Bacterially produced proteins do not contain the sugar modifications that are added by eukaryotic cells. These sugar modifications are often important in immunoreactivity.*) And so, you know, it was a stupid move but the paper was not accepted for publication and we went back to (*Ryan and*) asked him to express these proteins in 293 cells (*Human Embryonic Kidney 293 cells*) and kind of pretty soon after we asked him to do that he was starting to show us data and we didn't…. and this is all when this is starting to break loose now." (*MK Note: Converting a bacterially expressed gene into a context where it can be expressed in eukaryotes can take significant time and is generally not easy.*)

"So bottom line is we became very concerned about that stuff. We actually sequenced the recombinant protein again. This was the one that we found the original sequences that he falsified last spring. You know, he had supposedly made some recombinant proteins and we submitted those to Mass Spec and didn't get any protein in there."

The Respondent started to work with the 45 lab in 2012. His initial work was in collaboration with a long-time technician, Steve Leib, who was heading for retirement at that time.

However, Mr. Evanoff did not keep good records ("we have looked at his lab notebooks and you know, again, it's just he kept horrible records and the lab notebooks kind of petered out in 2015.", **Exhibits 73-82**). Although 45 stated that (apparently with regard to the 2015 paper (4) that "Everything we reported has been independently confirmed by other groups.", many of the materials collected cannot be found. 45 was not sure that they did not exist but he and others were unable to find them. The Respondent has not been helpful. With regard to this it may be relevant that a collection of equine kidney cell cultures that were in several liquid nitrogen storage tanks had been allowed to thaw and records indicated that Mr. Evanoff had not ordered the liquid nitrogen needed to fill those Dewars in years. While probably grounds for dismissal in its own right, this neglect does not meet the FFP standard of a misconduct investigation.

Misgivings about Ryan's work were first reported by 45, but it took some time, including her withdrawing from authorship, for this to be really acted upon. 45 answered with "Absolutely correct" when asked to comment on a summary by MK, "So it is coming across very strongly that you were basically blindsided by the initial exposure of something wrong, and then the fact that this clearly was not a one-time thing, but it looks like

something fairly systematic going back a fair distance. I take from what you've said also that you feel that other people in your laboratory, 45 and 45 in particular, were also blindsided by this in the sense that whereas 45 may have had some misgivings a year ago, clearly the extent of the problem was not obvious to her and or to 45

In describing his interaction with Ryan when he first took the issue seriously, 45 states, "When I really faced him that first day with those falsified sequences, and I looked at him. I mean I was shocked and I just assumed this was a one-off deal. Not that I was. I guess that's what I wanted to believe. Not that I didn't believe all the concerns that 45 was having. She was right, but I just wanted at that time to say okay." "So I was shocked, 45 was shocked. I don't think 45 was surprised. But then as we started to go back and back a bit further and further and found things I think yeah 45 ended up being shocked as well. Especially I mean just to find out that we've been work trying to do these T cell assays with water. I mean who does that?"

With regard to the current state of confidence about the questions, 45 stated, "So the Journal of Virology paper (2) we decided that we have enough evidence to retract" and there was discussion of this committee concluding where responsibility for the problems might be assigned in the retraction. "You know if I could be a little bit more specific in the retraction statement that would be better. But we could we have enough evidence right now that if we could just write a generic retraction statement. But I have concerns about doing and Sherry told me 04 04

"The Hepatology paper (4) that was published five years ago was primary data for the grant. You know, that's something I need to address that we haven't really done in detail yet. And again, that's another one that if we either confirm or that the sequences were submitted or not and we confirm that the sequences were correct then the only other thing he did was these antibody assays. If I can't find the data, the raw data, then he either did it and was correct, but just didn't save it. But if I'm called to the carpet on it and I can't produce the printouts from the original printouts then what do you conclude from that?"

The committee concludes that this is not normal proper laboratory behavior and that what 45 45 was describing was a serious and extended pattern of scientific misconduct, including both data fabrication and falsification. While 45 does indicate that he should have been more vigilant in overseeing the work and data that was offered to him, the experiments were carried out over several years and he trusted Mr. Evanoff. Even valid experiments of this type are difficult. For Mr. Evanoff to have involved others in a charade with the protocols knowing that the starting materials were imaginary is startling since it not only indicates both data falsification and fabrication but it also involves others in time-consuming work that is certain to fail.

B. 45, December 16, 2019 (**Exhibits 50-52**)

45 is a former Postdoctoral Researcher in the Department of 45 45 who is 45 by 45, 45

45 and 45 She has a DVM, two PhD degrees, and four years of postdoctoral experience. She joined the laboratory in Sept 2015. In the interview, 45 noted that she did her PhD in a very productive laboratory where all members of the laboratory were generating data and then putting it all together. There was a lot of collaboration and everyone contributed to publications.

During her time at WSU, she worked on both *Theileria equi,* a protozoan parasite, and Hepacivirus C. While the Respondent participated in both projects, his involvement with the Theileria project was not central to the project, while he was very involved in several key components of the hepacivirus project.

Mr. Evanoff was working under the 45 of 45 and 45 but not under the supervision of 45 . 45 stated that she always got along well with Mr. Evanoff and had a cordial work relationship. Mr. Evanoff assisted 45 in experiments and provided her samples of material generated before she joined the laboratory. The samples were materials provided by Mr. Evanoff where some was generated by him and some bought and prepared by Mr. Evanoff.

There are three manuscripts in question that have 45 and Mr. Evanoff as 45 Mr. Evanoff had no significant contribution to the 45 et al. paper on *Theileria* [#3 above]. He was included as a co-author because he was part of the laboratory team, but he did not do any experiments. His specific contributions were to change or prepare culture media using a recipe.

For the two additional manuscripts in question, one manuscript was rejected and the other manuscript was in the process of being submitted. Neither manuscript has been resubmitted for publication. The experiments in question in the rejected manuscript could not be repeated because samples disappeared from the laboratory.

45 stated that one of the first things that caught her attention in the laboratory was that Mr. Evanoff was generating a significant amount of research data that was not consistent with the hours of laboratory work he was putting in. 45 and Mr. Evanoff were the ones working in the laboratory. It always caught her attention that the amount of work did not align with the amount of information produced. Mr. Evanoff always presented positive data. 45 45 was always generating negative results and Mr. Evanoff was generating beautiful results. She stated that Mr. Evanoff was the star in the laboratory.

The second point that caught her attention was that all of the experiments she did with materials provided by Mr. Evanoff resulted in alarmingly inconsistent results without a clear explanation.

Based on those inconsistencies she suspected that something was not working well. In January or February of 2019, she first raised her concerns with 45 . Mr. Evanoff was asked to detail what he had done, and the data did not coincide with data generated by 45 .

The second time she spoke with 45 she was also ignored. 45 stated that 45 45 indicated that her message raising concerns was not clear enough. She believes she was clear enough and that she was extremely careful because it was a severe situation. However, she

felt that if there was a small doubt about what she was reporting, the data generated and presented by Mr. Evanoff during lab meetings were more than suggestive of an issue.

The second time 45 approached 45 it was to tell 45 that Mr. Evanoff was not honest with her. The data shows that she was working with different samples. She had saved previous samples provided by Mr. Evanoff as control samples and analyzed them again with new samples he provided that should have been the same material. The two sets of samples that were supposed to coincide contained proteins with different molecular weights. When asked to discuss, Mr. Evanoff never called 45 back. 45 stated that her and Mr. Evanoff's results never coincided. For example, the Coomassie stains of proteins showed different molecular weights. Mr. Evanoff always put in doubt her laboratory skills and suggested that she was confusing the samples or putting samples in an incorrect position.

In approximately March, because there had been no action taken based on her reports, 45 45 approached 45 . 45 was receptive to the claims and asked for proof. To generate proof, 45 asked 45 and Mr. Evanoff to submit a sample to the University of Idaho for mass spectrometry. There are emails proving the samples were sent (**Exhibit 90, 91**). The protein was supposed to be a recombinant envelope protein of a virus that Mr. Evanoff had generated. Mr. Evanoff had the cloning skills to generate the protein.

Of note, in November 2018, Mr. Evanoff unexpectedly 14 . It was an event that shocked the entire lab. 45 told 45 to be careful with Mr. Evanoff because Mr. Evanoff never took a break after the loss and he could be confusing the samples and he could be doing things that were not proper because he was not well.

Reviews of a submitted manuscript had come back stating that the protein in question should not have been generated in an *E. coli* system because it needs to be glycosylated and this does not happen in *E. coli*. To produce a glycosylated protein it is necessary to use a eukaryotic system, such as embryonic kidney cells. 45 was interested in learning the process but she stated that Mr. Evanoff came to the lab at 7am and was done with everything by the time that she arrived at the laboratory around 8:30 or 9am. He had claimed to have completed the cloning in a eukaryotic system in two weeks, including verifying protein production using a functional ELISA, while he was only working from 7:00 to 3:00. It is implausible to have done all of that in that amount of time. Even if you're starting with a purified DNA sample, it takes that longer than that to transfer to appropriate expression vehicles, express it and get the ELISA working. It can take two weeks just to move the plasmid from a prokaryotic vector to a eukaryotic vector much less getting it into the eukaryotic cell system, which presumably he wasn't using until he needed it in this case, and then purifying the protein. The Committee believes producing this protein is at least a month-long project and would likely take more time

45 wanted to confirm the presence of a protein of interest for their experiments. The samples were selected and submitted by Mr. Evanoff on March 26, 2019. On April 3, 2019, the results came back showing that the material generated by Mr. Evanoff did not contain the components it was supposed to have. This was a confirmation to her that Mr. Evanoff was fabricating material. There was no evidence by mass spectrometry that the target protein was present in the samples provided (**Exhibits 90, 91**). April 4, 2019, 45 sent an email to

45 and 45 sending the results of the mass spectrometry. She was not kept in the loop of the emails and she had to email University of Idaho personally to be kept in the loop.

The results from the University of Idaho indicated that the sample had horse serum proteins and chicken egg albumin (most abundant peptide) instead of viral envelope proteins. None of the systems involved should have had chicken proteins and the purified proteins should not have contained horse serum proteins.

Purified proteins said to be from the human embryonic kidney 293 cells were submitted for mass spectrometry. Proteins from horse serum was the most abundant in the eukaryotic system; in the *E. coli* sample, chicken egg albumin was the most abundant protein. The presence of abundant proteins such as serum proteins and egg albumin may obscure the acquisition of mass spectra from relatively less abundant E2 peptides if they are present in the samples. 45 speculated that Mr. Evanoff may have sent plasma from an infected horse, which may explain the horse serum protein result.

The results of the mass spectrometry from University of Idaho was received by Mr. Evanoff, 45 45 45 and 45 (**Exhibits 90, 91**). The results were ignored until 45 45 brought it to 45 attention—he recognized that the results were unexplainable. Based on the mass spectrometry evidence, 45 requested 45 and Mr. Evanoff to resequence other proteins that were used in the laboratory because the paper was already presented and rejected. 45 emailed Mr. Evanoff a clear plan to avoid any confusion (**Exhibit 92**). Yet the plasmid sequences were never provided to 45 .45 45 also requested the raw data. Based on this, 45 claims that Mr. Evanoff provided 15 files with fabricated data (**Exhibit 83**, has 15 attachments to it.). Of note, the plasmids were never sent for sequencing.

The 15 files were the DNA sequence for the recombinant proteins. The nucleotide sequences directly from Eurofins (example **Exhibits 86-89**) do not match the nucleotide sequences provided by Mr. Evanoff in the email attachments (**Exhibit 83-85**). Nucleotide sequences from Eurofins do not contain clear sequence and certainly do not match the envelope proteins, or any other nucleotide sequence (**Exhibits 86-89**).

Commented [PJK1]: Joanna and Mike, please double check the text and corresponding exhibits to ensure that they match properly I think these are correct, but a double-check is needed

Jim, 83-85 do show ryan's communication and the sequences are virus envelope in a plasmid 86-89 show the garbage traces from Eurofins Not clear where the information is that links one to the other

Mr. Evanoff sent 45 a sequence that would have produced a perfect envelope protein. 45 asked Mr. Evanoff to login to Eurofins and download the files directly to her computer. Mr. Evanoff downloaded the files from Eurofins onto her computer. When she compares the files sent by Mr. Evanoff and the files from Eurofins, they do not match (Exhibits 86-89).

Based on the Eurofins data, 45 contacted 45 immediately and 45 took immediate action by reviewing the data and interviewing Mr. Evanoff the following day. This was the second physical clear evidence of misconduct but the first one where action was taken.

After the discovery

The laboratory books of Mr. Evanoff for seven years were not available. The samples that 45 45 collected during three summers that could have revealed additional fabrication of data disappeared. She did not the opportunity to re-test her samples.

For one experiment, blood was drawn every 15 days from infected horses and was then stimulated with 73 individual peptides. The results were negative. Nothing was stimulated. The results were not clear regarding the peptides. 45 finished writing the paper, at which point 45 said they were going to see if Mr. Evanoff had ordered the peptides. They could never find an order for the peptides, which would have been quite expensive and therefore prominent in the budgets. 45 was working with unknown samples.

It was confirmed that samples expected to have 73 peptides provided by Mr. Evanoff were not present in samples provided. Later it was confirmed that the proteins and reagents provided by Mr. Evanoff were never ordered. The Respondent was providing 45 with fabricated research material.

45 was provided with antibodies said to have been generated against the target protein by a person that was on the same floor as the laboratory on the third floor of the veterinary school. 45 asked the person in December 2019 (Sally A. Madsen-Bouterse) whether she had ever generated the antibodies and the person had never generated those antibodies. Those "antibodies" led to additional experiments that were unsuccessful. Mr. Evanoff was going to provide the person with proteins to generate the antibodies in mice. The proteins had never been provided.

45 career as a scientist has been compromised as a result of working with fabricated material provided by Mr. Evanoff. 45 worked hard to reveal this problem. 45 45 was never able to learn from Mr. Evanoff. She tried to learn several techniques from him, including cloning, but he never wanted to teach her.

When asked whether the Respondent's "actions caused you to do something which was nonsense because there was no experiment that corresponded with what you wrote in your laboratory notebook you were trying to do?", 45 responded that she "Probably can match with a reality, but I have to redo all the experiments again. Infect the horses, draw blood every 15 days, that experiment takes two full days every 15 days. Each time that we did that experiment it cost $500, approximately, and that's just the reagents we were using, that's not the horses, that was just the plate with the reagents and everything." Then you have to count the horses, the technicians that work drawing blood over there, your salary, his salary. At the end of this 45 45 stated "and then the time because I lost it. I lost my time. I'm no baby. I'm 45 years old. So I lost my time. My dad asked me when are you going to have a real work, a real job. That this is a real job and your salary has to increase someday."

When asked about what Mr. Evanoff was doing in the laboratory, 45 stated that he was often doing computational things. At three P.M. he was gone, regardless if an experiment was going on or not. However, they were not co-located in the same laboratory space. She also stated that Mr. Evanoff always tried to get everyone out of the laboratory. He was not interested in teaching her the techniques that he supposedly knew.

C. [redacted], December 16, 2019 (**Exhibit 49**) and March 19, 2020 (**Exhibits 56**)

As outlined below, [redacted] began by summarizing his initial interactions with Ryan Evanoff after Ryan had admitted to fabricating data. During this meeting, [redacted] was told by Ryan that the only fabricated data was that related to some recent sequencing data of viral DNA in plasmids (**Exhibits 1, 70** and **71**). The material to be sequenced was submitted to Eurofins. Ryan admitted that the submitted samples yielded poor quality sequencing information. Ryan admitted to replacing the poor quality sequencing data with sequences that were evidently obtained from the GeneBank database and providing these to a postdoctoral fellow in the [redacted] lab, [redacted].

[redacted] **paraphrased testimony:** *So when this started to unfold in the spring of this year [2019] and Ryan had admitted to fabricating some sequencing data, I met with him at that time shortly thereafter and asked him about the two papers that we had published relatively recently and whether the data in those papers was sound. He swore that it was and I told him you know, that's great, but just to let him know that I'd be going through all those projects and also potentially repeating experiments to determine if that was indeed the case. Shortly thereafter he went on family medical leave and then subsequently resigned. I had no technical support at that time. My approach was to hire back Steve Leib, our former lab tech who had worked in the lab for 30 plus years, to come back as a time slip to help with sorting through everything. I wanted to start with the projects that have first been published to try to get a handle on those so that we knew if those need to be retracted or not. And so we started with the Journal of Virology paper.*

[redacted] made quality efforts to repeat some of Ryan Evanoff's research with assistance from former Lab Technician Steve Leib. [redacted] describes the events that unfolded. Ryan had told [redacted] that several rounds of sequencing attempts through LBB1 (WSU campus sequencing facility) were made to sequence and resequence viral DNA samples. [redacted] explained that he discovered that only one set of samples was actually submitted to LBB1 and that he and his departmental accounting office had no record of additional billing or payments for sequencing through LBB1. When contacted, LBB1 confirmed that they had record of only the initial submission, but not of other sequencing from Mr. Evanoff. [redacted] explained that many of the sequences that Ryan had provided him were obtained from GeneBank and that some of the sequences were not even of the region of the virus that was under investigation. Simply put, Ryan had falsified original sequencing data by replacing it with DNA sequencing information that he procured from the GenBank database. [redacted] has submitted email correspondence with LBB1 (**Exhibit 13**) and data from Ryan's lab notebook have been submitted as evidence (**Exhibit 73-82**). [redacted] also noted several times that Ryan's notebooks were almost useless in that records were so poorly kept that it is likely impossible that anyone could follow his progression and understand the content of what was presented in the notebooks (**Exhibits 73-82**).

[redacted] **paraphrased testimony:** *In which I did quasi species analysis on a relatively novel equine hepacivirus, which is going to be a little inconsistent in the notes because the name has changed several times. But we did that just on archival samples that I had from my PhD work and for that project we generated amplicons for the E1 and E2 envelope genes and then we were taking those and sending them to the Sequencing Center which officially is called the Laboratory*

for Biotechnology and Bioanalysis here on campus. And that was the first set of samples that we had submitted for that was actually done before— it's either before Steve Leib's retirement or when he came back for a short stint as a time slip. And so Steve had actually helped put the first set of samples together and those went up. And we got the data back and I'd seen the raw sequence of the time but it was a really large data set and one of the things that Ryan, at least we thought, brought to the lab when he was hired was his bioinformatics ability and ability to analyze that data. And so we started he did some alignments to figure out the number of variants that were there and I started to work on the analyzing and how would that fit together with a story? The next part of that project was to generate another set of samples up for PacBio sequencing and that was just going to add to the number of horses we evaluated as well. So Ryan supplied me with data associated with that and we had been going back and forth for months about how to analyze the data with different methods: mean Hamming distance scores, something called Shannon entropy scores and looking at those different modalities to see if there would be anything that would be statistically significant or interesting consistent with the work that's been done in hepatitis C, which is the closest relative of the virus we were working on and so we did that. We weren't able to identify hypervariable regions based on the data that we had, which is something they had shown in hepatitis C in those genes. And so at that point I had asked Ryan to pull all the sequences for this virus published by other groups and by our group and to see if from looking at a more diverse data set if we could identify hypervariable regions within those envelope genes. He didn't do statistical analysis, but he had put it in the Los Alamos database and we did the Shannon entropy scores determined by per amino acid throughout the genes that we were interested in and from that I did the statistical analysis and determine that there were three hypervariable regions in close proximity to what had been identified for Hepatitis C.

The point of when the paper was under review the last bit of sequencing that they had asked for us to do is some validation data to determine the depth of the sequencing that we were doing and also number of potential sequencing errors of contributing to what we were seeing and said before that I had asked Ryan because we had or supposed to have had different variants of these genes in plasmids. And so I had instructed him to take those and mix them in different quantities and concentrations and to then send them up for sequencing so we would have a known so because we use bar-coded primers we can mix them in different quantities and so by doing that we could compare back to what our known was and ***within a month Ryan provided that data and I use that in my review and in hindsight, you know, there's many, many problems. When Steve came back, the first thing we did was to look into the most recent sequencing set which was the validation and when he found out through talking to the LBB1 group as well as talking to our administrative finance office that that had never been submitted, and so we were kind of floored by that and so the thought at that time was well, maybe you know, he had based it on like as time has progressed, I'd become more and more convinced that he's done many, many things which we'll talk about but at the time I was still holding out hope that maybe this was the one thing that was wrong****. It was a validation run and could we repeat that validation and provide a correction to the paper as far as you know, the types of errors and things we expected.*

It was accepted and then you know while we were doing that work we figured out found out from again for they're talking them that they have done no other PacBio sequencing for us. So the second run which he provided data for on additional horses that is in the paper, and as soon as I saw that I knew we were cooked and the paper needs to be

retracted because it just never happened and he completely fabricated all the data that he sent me. The other thing I had Steve do was look at this, you know, the GenBank accession numbers that he included in the paper that he analyzed and determined that some of the GenBank accession numbers that he provided didn't even apply to our genes of interest, but rather belonged to envelope genes. He had included a gene segments that had accession numbers to the non-structural protein 3, again one more thing that just had been completely fabricated. *So that was basically that project and that took us quite a while to sort of mentally sort through as well as get to the point of figuring out.*

45 provided an explanation of how more recent data generated by Ryan was used. He indicated that after reevaluating data from the Journal of Virology manuscript, he decided to abandon the NIH grant proposal that he was currently working on, which included preliminary data generated by Ryan. 45 has not used any of the more recent data generated by Ryan for subsequent grant proposal submissions. 45 indicated that Ryan's falsified data has not been used in any other grant proposals and the data has not been referenced in any other manuscripts.

45 **paraphrased testimony:** ***Nothing from this paper has been used to this point to for another grant [proposal]****. It was when this all started to happen that I was actively working on an NIH Grant thinking that he was doing the work. I thought he was doing and once we realized what was going on, I just trashed the whole idea.*

45 goes on to describe preliminary data that was included in a published 2019 Equine Veterinary Journal manuscript, which outlines a collaborative project in race horses between his lab and a veterinarian in California. He described that race horses can have elevated levels of two different liver enzymes. These enzymes were evaluated by the California collaborator and 45 45 lab was to complete PCR analysis in order to detect three different viruses in the samples that he received from the California group. Ryan completed all of the initial PCR work and the paper was submitted in fall of 2018 and accepted in early 2019. Preliminary data that was generated was used in a funded collaborative grant with the Grayson Jockey club. 45 explained that some of Ryan's original data still exists, but that the gels are so poorly labeled that it is impossible to make any sense of the data after the fact. This preliminary data was included in the 2019 Equine Veterinary Journal manuscript and was used for a second funded grant through the Southern California Equine Foundation. The original samples still exist and 45 45 is working now to repeat some of Ryan's initial PCR analysis. No update was available at the time of his testimony.

45 **paraphrased testimony:** *The only other paper that I have had published in association with Ryan was a paper that got published in the Equine Veterinary Journal. Investigators think that poor performance horses have elevated gamma glutamyl transferase or elevated liver enzymes, and so a veterinarian from California had sent some samples to do a pre-screen on it and we looked for the three viruses we were aware of at the time which were equine pegivirus, equine hepacivirus, and another virus, and we found and we have the gel showing that most if not all were positive for this pegivirus. A PCR analysis was completed for this. So then I wrote a grant proposal that was funded. Part of it went to* ***Boehringer Ingelheim****. It was for an equine advancement toward research award. Then the other one was actually submitted to the* ***Southern***

California Equine Foundation *and so they funded the other portion of the award. In that grant proposal we were we looked at 800 racehorse race day samples from individual horses down at the racetrack in California. They did the biochemical work looking at liver enzyme activity. The samples were subsequently frozen and sent up to us and we did the PCR work to determine if they were infected with any of the viruses we were looking at. We still have these samples.*

The paper was submitted in the fall of 2018 I recall and it was accepted in early 2019. The data that had been generated at that point, which was still preliminary, was used as preliminary data for a collaborative grant where I was just a co-investigator with Grayson Jockey Club, and that grant was funded.

45 **was asked if the data still existed and he replied** ***"no, they're so poorly labeled that can't you can't make heads or tails of it."*** *So what I had Steve Leib do initially because it was such a large number of samples was too we had picked a subset those that have been indicated by Ryan to be positive for one virus or another and some that had been recorded as being negative. Then I think we started with approximately 50 and what we found is a large number of inconsistencies with horses that were negative being positive and to this point we've done about a hundred and fifty samples. I didn't bring that information today because I've done it, but the one glimmer of hope that I still have on that project is that it looks like there's the conclusions from that paper was there is no association with viral infection and these elevated liver enzymes. It still appears that that is indeed the case based on the repeated samples that we've done, which is over a hundred and fifty but there are enough inconsistencies there that I'm going to have to repeat all of them, and so that's currently that's my plan…*

45 laid out several examples showing a deeper pattern of incompetence and failure to perform standard procedures in the lab. He also provided additional testimony highlighting data fabrication/falsification and explained how this has hamstrung ongoing collaboration. For example, 45 has a relatively large collaboration with Cornell to sequence/PCR samples as is routinely done in his lab. 45 has put a hold on that project and had to explain to his colleagues at Cornell the ongoing issues in 45 lab with 45 research technician (*i.e.*, Mr. Evanoff).

45 **paraphrased testimony:** *So there's not very many things that have been published and so in hindsight, I mean there's a reason I think why but* ***nevertheless some other things that just speak to the depth of what he was capable of during the process. I wondered about the liquid nitrogen tanks and where they were at, so we checked on them. We have six liquid nitrogen tanks with samples going back to the 80s and all of them were bone dry and we were worried at first that maybe we just neglected, you know with everything going on, but we checked with our business office and our lab hadn't purchased any liquid nitrogen since 2016. And so I have some emails to that effect, I have images of us throwing away everything and the one thing that relates to that is during the 2018 intramural grant through the CVM, which would have required Ryan to be transfecting cells and using cells that we would have had in the liquid nitrogen tank that he told me he was working on as part of generating preliminary data towards the NIH proposal that I was going to put together. I had asked him to start trying to develop pseudotyped viral particles and he said he was doing that as well and to do that he would have had to be using cells which didn't exist.***

Summary of the impact of Mr_Evanoff's falsification/fabrication of data on publications and funded grants in the 45 **and** 45 **labs:** In his summary, 45 identified two, and possibly three, manuscripts, an NIH R21 grant, and potentially a USDA grant that are likely compromised by Mr. Evanoff's data fabrication and falsification. One manuscript that is certainly compromised (Journal of Virology, 2019) is in the process of retraction and the second (Equine Veterinary Journal, 2019) is in a holding pattern, as 45 is working to validate some of the viral DNA sequences in this second published manuscript. A third manuscript (Hepatology, 2015) is also being evaluated for inclusion of fabricated data by Ryan Evanoff. 45 45 is primary author on both manuscripts. To this list, 45 described preliminary data that was generated through a collaborative effort between his lab and a veterinarian in California that was published in a 2019 Equine Veterinary Journal manuscript. This information was subsequently used to generate funds from three different sources in which 45 was either a 45 or 45. The first funded grant is from the Southern California Equine Foundation, and a second is from Boehring Ingelheim. These two projects seem to be related and partial funding was provided by each funding source. A third grant was funded using the initial PCR data generated by Ryan Evanoff was from the Grayson Jockey Club. 45 served as a 45 on this funded project. Importantly, in terms of the sequence of events, the description of falsified and fabricated data, the depth of deception by Mr. Evanoff, and the description of additional incompetency and failure to perform expected lab responsibilities by Mr. Evanoff, 45 testimony is consistent with that of 45 and 45 who testified before and after 45, respectively. 45 and 45 indicated that they take responsibility for what has happened given that their status as 45 45 but they both appear to have been blindsided by Mr. Evanoff's calculated and deliberate misconduct, which undermined research efforts in each of their labs.

45 described the importance and potential societal impact of the research in his lab and how Mr. Evanoff's data falsification/fabrication has jeopardized his and 45 research programs. He also described the negative impact that Mr. Evanoff's data falsification/fabrication has had on the career of 45 as she seeks to move a postdoctoral position into a tenure-track faculty position. She has no virology manuscripts to support her application to faculty positions after working for several years in the labs of 45 45 and 45. As described by 45, the viral sequencing data and immunizations in SCID horses against proteins encoded by the viral proteins has potential significant medical and economic value in that the viral DNA sequences are similar to DNA sequences contained within the human hepatitis C virus. Hepatitis C is difficult to study in humans and there is no quality immunization against the virus that causes this disease in humans. As such, the 45 and 45 labs were working with the SCID horse model system to develop proof of principle data to move toward development of a hepatitis C viral immunization for use in humans. Since his testimony, 45 has put together a timeline (**Exhibit 9**) and very good summary that outlines the projects that were compromised by Mr. Evanoff's deception (**Exhibit 10**), and additional supporting materials are provided (Exhibits 12-42.

D. 45, February 17, 2020 (**Exhibit 53)**

45 began by explaining that 45 ran his lab during Ryan Evanoff's tenure in the 45 lab while 45 partitioned his time between administrative and research responsibilities. 45 was surprised to hear of the possible

data falsification by Ryan Evanoff and indicated that he had no reason to question Ryan's efforts in his lab. 45 went on to say that he "was sorry to see Ryan leave as he was quite productive." Ryan left the 45 lab in good standing for a higher salary in the 45 lab. 45 explained that Ryan had no purchasing responsibility, his turn around time on experiments was reasonable and could not remember a time when data was generated faster than expected. Ryan co-authored 13 manuscripts during his time in the 45 lab, mostly in the capacity of standard molecular biology techniques and generating recombinant proteins for antibody production. 45 explained that all final data were reviewed by 45 and/or him prior to manuscript preparation and submission for peer-review.

E. 45, March 3, 2020 (**Exhibit 54**)

The discussion began with an explanation of 45 overlap with Mr. Evanoff in the 45 lab. She explained that Ryan was already working in the 45 lab when she began her employment at WSU in 2007. They were collectively in the 45 lab through 2012 and 45 on four manuscripts. 45 explained that Ryan's primary role on these manuscripts centered on the development of the STRA8 antibody. Ryan worked to clone the *Stra8* gene, sequence the gene, and then use the sequence to generate recombinant protein using an *E. coli* bacterial system. He was successful in making an outstanding antibody against STRA8, one that has been and is used by numerous labs around the world to identify preleptotene spermatogonia housed within the testis. 45 explained that she and others in the 45 lab evaluated Ryan's efforts on a weekly basis and it was a complete surprise to her to hear about possible data falsification and fabrication by Ryan after leaving the 45 lab. She even went so far as to mention that Ryan, while independent, was very good in the lab from a technical perspective. She also said that "Ryan was very open when things were not working" and that he was very open in general about his efforts in the lab, particularly in group lab meetings. 45 thought Ryan to be excellent with no issues and she had a lot of confidence in Ryan's abilities. Ryan had no purchasing authority in the 45 lab. Ryan also worked toward generating a second recombinant protein called RDH10 using the same bacterial system. While successfully cloning and sequencing the *Rdh10* gene, he was unsuccessful at generating quality recombinant RDH10 protein in the bacterial system. 45 again described her confidence in Ryan's abilities and openness.

IX. ANALYSIS

The Committee relied on recorded testimony from Mr. Evanoff and 45, 45 45 and 45 in establishing a consistent and long-term pattern of misconduct by Mr. Evanoff. The testimony was supported by documentation included in the Investigation Report as exhibits. Furthermore, the Committee's conclusions were supported by documentation provided by internal WSU sources and external sources to WSU and billing reports not directly connected with this investigation (*e.g.*, WSU Laboratory for Biotechnology and Bioanalysis 1 (LBB1), JPT Innovation Peptide Solutions, and the University of Idaho Proteomics Core). The Committee also invited Mr. Evanoff to provide additional testimony for his accounting of events on several occasions, but he declined to schedule an interview. However, Mr. Evanoff did respond to written questions five weeks after submission to him along with several intermittent email

requests for updates on progress toward his response to the questions. The Committee viewed Mr. Evanoff's responses as limited. They contrast for the most part with the conclusions of this Report since he denies any culpability in misconduct aside from the plasmid sequencing data falsification despite testimonies from 45, 45 and 45 and the unbiased documented evidence that were used to develop the conclusions of this Report.

X. FINDINGS OF FACT

There is sufficient evidence for the Committee to make the following Findings:

1. Mr. Evanoff was a Project Associate in the School of Molecular Biosciences from January 16, 2008 to February 15, 2011.

2. Mr. Evanoff was a Project Associate in the School of Molecular Biosciences from February 16, 2011 to May 31, 2012.

3. Mr. Evanoff was a Scientific Assistant in the Department of Veterinary Microbiology and Pathology from June 1, 2012, to July 8, 2019.

4. Mr. Evanoff falsified or fabricated data on at least the following projects:

   a) Falsification of plasmid sequencing data (**Exhibits 1, 6, 70-72, 83-89, 92**).

   b) Fabrication of data where Mr. Evanoff was tasked with designing and ordering peptide sequences and delivering these to 45 for use in her studies [described in **Exhibits 48-52**, and summarized in **Section VIII** below (also see **Exhibits 59, 61, 62, 93**)]. The peptides were completely fabricated, a judgement based on protein sequence analyses of putative peptides conducted by the University of Idaho (**Exhibits 9, 10, 46, 48-52, 90, 91**), as well the lack of any record at WSU showing that the peptides were present or had been purchased (**Exhibits 17-19**). Moreover, JPT Peptide Technologies, the company that purportedly generated the peptides, also has no record that the peptides were ever ordered by Mr. Evanoff (**Exhibit 20**).

   c) *Falsification/fabrication of sequence analysis of a potential Hepacivirus A quasispecies.

   d) *Falsification of T-cell response data during the resolution and development of equine immunity to hepacivirus A infection, a surrogate animal model for human hepatitis C infection.

   e) *Falsification of data related to metabolic pathways as potential causes for maladaptation to training syndrome in Thoroughbred horses.

   f) *Falsification of data related to the prevalence of evaluate gamma-glutamyltransferase and sorbitol dehydrogenase activity in racing Thoroughbreds and their associations with viral infections.

5. Beyond these clear cases of misconduct, Mr. Evanoff falsified information by indicating that he was performing his required lab responsibilities when in reality he was not. His

lack of stewardship in keeping useful and reliable lab notebooks and documenting his daily research efforts, as well as the proper documentation, storage, and long-term management of precious blood/cell/tissue samples, is a form of misconduct that lies outside of the realm of proper lab practices.

***Exhibits 10, 12-42**

XI. CONCLUSIONS OF LAW

Based on the Findings of Fact, the Committee reaches the following conclusions:

1. Jurisdiction. This Committee was properly charged and has authority to decide this case. Respondent was notified of the case and given the opportunity to respond to the allegations.

2. There is a preponderance of evidence that Mr. Evanoff willfully and knowingly falsified and fabricated data in several unrelated projects over several years that were funded by both federal and non-federal funding entities.

3. While there is clear evidence that Mr. Evanoff falsified and fabricated data in the 45 and 45 labs, there is no testimonial evidence that Mr. Evanoff engaged in research misconduct while employed in the 45 lab at WSU.

XII. RECOMMENDED ACTIONS

The Committee makes the following recommendations:

1. The following peer-reviewed and published manuscript should be retracted. 45 has concerns about the manuscript based on inclusion of data generated by Mr. Evanoff. While Mr. Leib and 45 recently repeated some of the experiments included in the publication and believe that the conclusions of the manuscript are correct, they find that the data generated by Mr. Evanoff used to arrive at the conclusions were falsified.

   Ramsay JD, Evanoff R, Mealey RH, Simpson EL. The prevalence of elevated gamma-glutamyltransferase and sorbitol dehydrogenase activity in racing thoroughbreds and their associations with viral infection. Equine Vet J. 2019 Nov;51(6):738-742. doi: 10.1111/evj.13092. Epub 2019 Apr 10. PubMed PMID: 30849186.

   This work acknowledged support from the Southern California Equine Foundation and Boehringer Ingelheim's Advancement in Equine Research Award.

2. The following peer-reviewed and published manuscript should be retracted because it contains falsified data generated by Mr. Evanoff.

   Ramsay JD, Evanoff R, Mealey RH. Hepacivirus A infection in horses defines distinct envelope hypervariable regions and elucidates potential roles of viral strain and adaptive immune status in determining envelope diversity and infection outcome. J Virol. 2018 Aug 29;92(18). pii: e00314-18. doi: 10.1128/JVI.00314-18. Print 2018 Sep 15. PubMed PMID: 29976666; PubMed Central PMCID: PMC6146699.

This work acknowledged support from Public Health Services grant AI126304 from the National Institute of Allergy and Infectious Diseases, the Washington State University College of Veterinary Medicine Equine Infectious Disease Research Program, and a Washington State University new faculty seed grant.

3. 45 and 45 should reevaluate the following peer-reviewed and published manuscript to ensure that the findings are accurate. While Mr. Evanoff contributed only a small amount of data to this manuscript, the archival samples that were supposed to be managed by Mr. Evanoff no longer exist and there is no record of their whereabouts. Dr. 45 indicated in his testimony that at least some of the data in the manuscript have been reported by other groups. In fact, a published manuscript (Gather T, Walter S, Pfaender S, Todt D, Feige K, Steinman E, Cavalleri JMV. Acute and chronic infections with nonprimate hepacivirus in young horses. Vet Res 2016;47:97) confirms and expands a good portions of the 45 publication.

   Ramsay JD, Evanoff R, Wilkinson TE Jr, Divers TJ, Knowles DP, Mealey RH. Experimental transmission of equine hepacivirus in horses as a model for hepatitis C virus. Hepatology. 2015 May;61(5):1533-46. doi: 10.1002/hep.27689. Epub 2015 Feb 24. PubMed PMID: 25580897.

   This work acknowledged support from the Washington State University College of Veterinary Medicine Equine Infectious Diseases Research Program.

4. All external entities that funded the affected research, including the National Institutes of Health, the United States Department of Agriculture, the Southern California Equine Foundation, the Boehringer Ingelheim Advancement in Equine Research Fund, and the Grayson Jockey Club should be informed of the problems described above. All collaborators should be similarly notified.

   Ramsay JD, Evanoff R, Wilkinson TE Jr, Divers TJ, Knowles DP, Mealey RH. Experimental transmission of equine hepacivirus in horses as a model for hepatitis C virus. Hepatology. 2015 May;61(5):1533-46. doi: 10.1002/hep.27689. Epub 2015 Feb 24. PubMed PMID: 25580897.

   This work acknowledged support from the Washington State University College of Veterinary Medicine Equine Infectious Diseases Research Program.

5. Mr. Evanoff's WSU personnel file should be flagged to ensure that he never be hired by WSU under any circumstances.

6. Insufficient oversight of Mr. Evanoff by 45 and 45 was a major deficiency that allowed his fabrication and falsification to continue for many years. It is essential that members of a research team be trustworthy and trusted, but it is also important that critical experiments be monitored to verify that experimental procedures and the resulting data accurately describe what was done. Both 45 and 45 were very helpful in trying to determine the extent of the misconduct we describe above but, as became clear in

our investigation, they had assigned many responsibilities to the Respondent and did not adequately monitor the Respondent's performance. Insufficient oversight is a recurring theme in misconduct cases and we make two recommendations that might help make WSU researchers more aware that the problem exists here.

a. While it is important to separate behavior from personalities, WSU needs to improve awareness of WSU Principal Investigators that misconduct does occur at WSU and that they are responsible for the conduct of research they are supervising. The Vice President for Research should publicize these facts, even at the potential cost of damaging WSU's reputation.
b. WSU should support research use of robust, computerized systems for keeping research records. This would help with organizing the variety of information that is being generated as research is carried out and help with oversight of ongoing research. Much of WSU's research is carried out in association with instruction and it is important that students be aware of their responsibility to keep accurate and accessible records.

7. It is in the interest of WSU to take actions to ensure that those impacted negatively be the fallout of Mr. Evanoff's misconduct, especially 45 (former Postdoctoral Fellow) and 45 (Assistant Professor), are able to move successfully forward on their career trajectory despite setbacks caused by the Respondent's research misconduct.

_____ _____
Michael Kahn Date
Professor, Institute of Biological Chemistry

_____ _____
Joanna Kelley Date
Associate Professor, School of Biological Sciences

_____ _____
James Pru Date
Professor, Animal Sciences

Exhibit List
Research Misconduct Case # 2019-01

EXHIBIT	INFORMATION
1	[redacted] initial email to the Dr. Keane highlighting the incident
2	eREX for [redacted] NIH R21 application 1R21AI126304-01
2.1	Grants.gov confirmation of receipt of Dr. Mealy's NIH R21 application
2.2	Notice of Award for 1R21AI126304-01
2.3	WSU Sponsored Project Award Notification (ORSO#127249)
3	WSU Executive Policy Manual (Responding to Allegations of Research Misconduct)
4	Memorandum to Inquiry Committee 4/19/19
5	Letter of notification of misconduct to Ryan Evanoff
6	Ryan Evanoff testimony from 5/6/19
1 ([redacted]	Ryan Evanoff email to [redacted] regarding downloaded sequencing information from Eurofins for three plasmids using two different primer sets (4/17/19)
2 ([redacted]	DNA sequence
3 ([redacted]	DNA sequence
4a-d ([redacted]	Raw sequencing data in chromatogram form
5 ([redacted]	[redacted] email from 4/4/19 with recommendation to re-sequence 293 cell peptides at another proteomics facility.
6 ([redacted]	Ryan Evanoff response to [redacted] email about the general plan to move forward with sequencing new Hepacivirus A E2 envelope proteins
7 ([redacted]	Outline of events discussed during [redacted] testimony (entry date 12/16/19)
8 ([redacted]	Lee Deobald (Univ of Idaho proteomics lab) email (4/3/19) indicating lack of any sequences for Hepacivirus A E2 envelope glycoprotein in samples submitted by Ryan Evanoff
9	[redacted] timeline outlining events associated with misconduct by Ryan Evanoff (2015-present)
10	[redacted] written comments on misconduct by Ryan Evanoff
11	[redacted] written description of delinquency by Ryan Evanoff in maintaining liquid nitrogen tanks
12	Excel spreadsheet with information on viral variants
13	Email from Mark Wildung (LBB1 sequencing core) indicating no record of Ryan Evanoff sample submission for PacBio sequencing
14	EHCV peptide information
15	Email from Ryan Evanoff to [redacted] (10/22/18) with EHCV liver tissue cytokine and real time data
16	Email (9/23/19) from Lee Deobald (Univ of Idaho proteomics lab) indicating the resequenced protein preparations lacked peptides that were supposed to be generated by Ryan Evanoff
17	Email (8/30/16) from Ryan Evanoff to [redacted] regarding a JPT order indicating that he (Evanoff) did not have the information in an email

18	Follow-up email from Ryan Evanoff to [redacted] indicating that he could not find the JPT order information
19	JPT Innovation Peptide Solutions quote for costs associated with peptide sequencing from 2/23/15
20	Email (9/30/19) from Vincent Kurnia (JPT Innovation Peptide Solutions) to [redacted] indicating that samples from Ryan Evanoff were never received at JPT in 2015.
21	Email (5/16/18) about liver biopsies from WSU sent for qPCR analysis at Gluck Equine Research Center in Kentucky
22	EHCV peptide pools
23	Information on the EHCV peptide pools
24	Endpoint PCR screen information
25	Cornell PCR data from [redacted] equine samples for various viruses
26	Email (9/27/18) from Ryan Evanoff to [redacted] providing Cornell PCR data
27	Gel images of PCR results
28-30	Sequencing information
31	TDAV racehorse screen
32	Email (10/15/18) from Ryan Evanoff to [redacted] with updated qPCR data from Cornell
33	Variance Table Report
34-39	Gel images showing PCR results
40	Gel images from EpGV endpoint PCR
41	Summary of horserace PCR results
42	Email (3/20/20) from [redacted] indicating that Eurofins was unable to find sequencing information on samples sent by Ryan Evanoff in 2012 and 2013
43	Clarification email (3/20/20) from [redacted] to the Office of Research about his testimony from the prior day (second testimony)
44	Email (4/17/19) from [redacted] to [redacted] indicating that [redacted] wanted to meet with them, presumably about Ryan Evanoff's data falsification/fabrication
45	Email (3/20/20) from [redacted] to the Office of Research highlighting a prior (3/11/17) email from [redacted] to [redacted], [redacted] and Ryan Evanoff about a poor T-cell response
46	Email (3/20/20) from [redacted] to the Office of Research again highlighting the lack of protein sequencing information obtained from Lee Deobald (Univ. of Idaho proteomics lab) – same as [redacted] Exhibit 8 and Exhibit 16
47	Email from [redacted] to the Office of Research related to a prior email (4/16/19) from [redacted] to [redacted] regarding ELISPOT data from chimpanzees.
48	Interview with [redacted] 12/9/19
49	Interview with [redacted] 12/16/19
50-52	Interview with [redacted] 12/16/19
53	Interview with [redacted] 2/17/20

54	Interview with [redacted] 3/3/20
55	Interview with [redacted] 3/19/20
56	Interview with [redacted] 3/19/20
57	Evanoff Appointment information
58	Investigation committee questions for Ryan Evanoff
59	Summary of [redacted] interview (Exhibit 49)
60	Letter of interview request to Ryan Evanoff dated 1/29/20
61	Summary of [redacted] interview (Exhibit 48)
62	Summary of [redacted] interview (Exhibits 50-52)
63	Summary of [redacted] interview (Exhibit 54)
64	Email (4/8/20) from Ryan Evanoff to the Office of Research addressing written questions from the Investigation Committee
65	Timeline of email and other correspondence between the Office of Research and Ryan Evanoff
66-68	Ryan Evanoff Annual Reviews for 2012, 2013, and 2018, respectively
69	Email (12/21/19) from [redacted] forwarding her CV to the Office of Research
70	Email (12/21/19) from [redacted] forwarding an email (4/17/19) to the Office of Research containing information about the three plasmid sequences containing E2 sequences submitted to Eurofins (no chromatograms)
71	Email (12/21/19) from [redacted] to the Office of Research containing Eurofins sequencing information downloaded by Ryan Evanoff onto [redacted] personal computer (with chromatograms)
72	Inquiry Report
73	Evanoff first notebook in [redacted] lab from2012
74	Evanoff notebook from 2013
75	Evanoff notebook from summer and fall of 2015
76	Evanoff notebook from early 2019
77	Evanoff notes
78	Evanoff notes
79	Evanoff notebook from June 2012 through early 2013
80	Evanoff notebook spring 2015
81	Evanoff notebook April 2019
82	Evanoff notebook 2014
83	Evanoff email to [redacted] about sequencing data
84	[redacted] sequence 1
85	[redacted] sequence 2
86	Chromatogram 1
87	Chromatogram 2
88	Chromatogram 3
89	Chromatogram 4
90	Lee Deabold (University of Idaho) email on sequencing data – A
91	Lee Deabold (University of Idaho) email on sequencing data – B
92	Sequencing plan between Evanoff and [redacted]
93	Outline of [redacted] testimony.