

UNIVERSITY of CHICAGO

CHICAGO, ILLINOIS 60637

L. Ridgway Scott
Professor Emeritus

E-mail: ridg@uchicago.edu
Website: <http://people.cs.uchicago.edu/~ridg>

30 April 2023

I, L. Ridgway Scott, Ph.D., declare as follows:

I. MY BACKGROUND, QUALIFICATIONS, STATEMENTS AND BASES FOR OPINION

Background: I am professor emeritus at the University of Chicago. I was Professor of Computer Science and of Mathematics at the University of Chicago from 1998 to 2017, and the Louis Block Professor since 2001. I obtained the B. S. degree (Magna Cum Laude) from Tulane University in 1969 and the Ph. D. degree in Mathematics from the Massachusetts Institute of Technology in 1973. I have been active in research in many areas, including approximation methods for models in physics and engineering, especially the finite element method. I have also worked on parallel computation (and published a book on this) and molecular biophysics (also publishing a book on the subject).

Qualifications: I am the Louis Block Emeritus Professor of Mathematics and Computer Science at the University of Chicago and specialize in applied and computational mathematics with particular expertise in molecular biophysics. I am familiar with kinetic experiments and other assays involving biomolecular systems, as illustrated by our landmark publication:

Ariel Fernandez and Ridgway Scott: Adherence of packing defects in soluble proteins, *Physical Review Letters* 91, 018102, 4 pages (2003),

and confirmed by our book

L. Ridgway Scott and Ariel Fernandez, *A Mathematical Approach to Protein Biophysics*, Springer, 2017.

I have also performed extensive research involving algorithms for high throughput screening of data.

Dr. Ariel Fernandez has asked me to examine certain kinetic assays and other experimental images on novel compounds that he has designed, known as wrapping compounds and opine on the validity of the data. Given my background, I am well qualified to make such assessment.

I hereby state the following:

- I have not received any compensation for this expert testimony.
- I have never served before as an expert witness in any legal cases.
- I have examined the figures reporting experimental data indicated below in Fernandez's publications MP08 (R. Ex. 14), CR07 (R. Ex. 23), Struct05 (R. Ex. 15), BioE06 (C.L. Ex. 10), JMC06 (R. Ex. 17), NANO08 (R. Ex. 28), JMC08 (R. Ex. 18) and JPCB07 (R. Ex. 27).

II. EXPERT STATEMENT OF OPINIONS

In the following, I give first the ORI finding (by number, *in italics*) followed by my assessment.

1) *Spectrophotometric experiments involving the compound Entropy Jolt contain signs of fabrication*

This claims that Figure 8 of MP08 and Figure 3A of CR07 have an "identical" element. This is presumably the top curve in each figure (the others are the basis of comparison, which is the same for both figures). What is different is that the error bars are significantly different. The mean values are similar because WBZ_7 is a similar compound to Entropy Jolt, both being small perturbations of Imatinib. A better representation of the data would be a probability distribution, and if this were done, anyone could see the differences. This observation applies to all subsequent discussion regarding error bars.

2) *Spectrophotometric Kinetic Assays in Struct05 and BioE06 contain signs of fabrication (identical Lck curves). Specifically, Struct05 contained spectrophotometric kinetic assay results (Figures 4D) that demon-*

Docket No. C-23-88

R. Ex. 34

Page 1 of 9

strated Wrapper 1's enhanced selectivity and effectiveness (red squares in Fig. 4D in Struct05). The figure included curves analyzing the effect of various compounds on the kinase Lck. ORI determined that these curves were implausibly identical to the Lck curves in a different paper that involved a different treatment compound, namely WBZ_7 (green squares in Fig. 5c in BioE06).

The gist of the ORI comment is that the top green curve in Fig. 5c in BioE06 is similar to the top red curve in Fig. 4D in Struct05. This says that two inhibitors, which are small modifications of Gleevec, behave (on average) similarly with regard to Lck, but again ORI has ignored the difference in error bars. In terms of drug design, the spread in the distribution is significant.

3) Figure 6 of JMC06 reports the results of a spectrophotometric kinetic assay involving compound 9. ORI confirmed identical figures were reported in other papers and grant applications and yet they report differing numbers of replicate runs suggesting they represent different experiments, which is implausible.

This finding is way too vague to be allowed in a serious discussion. Not a single figure is mentioned "in other papers and grant applications". Nevertheless, I will do my best to respond. Supposing there are similar issues addressed "in other papers and grant applications" somewhere, what ORI is concerned about is that a different number of runs is reported. This could be for a variety of reasons, but even if there are, for whatever reason, as in finding 1), the error bars are likely different. So this finding is embarrassing in a serious scientific discussion.

4) JPCB07 Figure 3 and NANO08 Figure 2b show adsorption/desorption assays measuring the activity of various peptides. But these figures implausibly report largely identical results for different peptides.

I am a coauthor of NANO08. I suppose that ORI means that the purple curve in NANO08 Figure 2b is similar to the red curve in JPCB07 Figure 3. The purple curve in NANO08 Figure 2b is for the sequence DRYyre, which is pronounced "dryer", and the red curve in JPCB07 Figure 3 is for DRDARDR. While the mean values are similar, the error bars are quite different in the two figures. The main point in NANO08 is in the title of the paper: the quadrupole switch. This was discussed extensively regarding DRYyre in NANO08.

This was not observed regarding DRDARDR in JPCB07, but it also forms a similar type of switch. In helical form, sidechains i and $i + 4$ are close, so that the pairings are strong salt bridges (see our book for definitions of these terms). Thus the first three DRD line up with the last three RDR (D is negatively charged and R is positively charged). The alanine A a type of spacer to make this work out.

But the key is that a switch can have a different pairing of the sidechains when the peptide unrolls from its helical conformation, which then has different salt bridges with nearest neighbor D's and R's.

Since DRDARDR and DRYyre have similar switch characteristics, it is not surprising that the curves are similar. To summarize, the understanding of DRDARDR and DRYyre requires physical chemistry, which can be thought of as applied mathematics from a layman's point of view. It is unfortunate that ORI missed this crucial point.

5) Western blots for the compound Entropy Jolt (EJ, Figure 10 of MP08) and WBZ_7 in Fig. 4B of CR07 contains signs of fabrication. Parts of the western blot for EJ (Figure 10 of MP08) were identical to Figure 4B of CR07 that deals with another compound, WBZ_7, but the matching bands involved different compounds and concentrations.

I have gone back and forth between these two figures and I do not see what they purport to see. The similarity description is very vague. I think this is bogus.

6) High-throughput Assays show signs of fabrication. Figures 4 and 7, and associated tables, in JMC08 purport to show the results of high-throughput kinase screens involving Compounds 9 and 10. Yet, ORI noted several anomalies with these figures. As was the case with the high-throughput screen reported in MP08

Figure 9, these figures deviated from the format provided by the company that created the screen and reported results in an arbitrary and obfuscating manner.

I have no idea what ORI means here by deviating “from the format provided by the company that created the screen” and why this is “obfuscating.” The figures are easy to read and understand. This comment by ORI is a stretch beyond even the low standard in the previous comments and should be viewed as a waste of everyone’s time.

7) a. *Synthetic pathway: The descriptions of the synthetic pathways for the Six Compounds in Respondents research (when included) contain similar errors, including identifying the wrong base compound and describing reactions between compounds that would not occur.*

b. *Characterization: The characterization data across Respondents research also present recurring issues, including: aspects, such as errant signals, that are not plausible for the compounds at issue, and inexplicable changes to data reported in different versions of supporting information submitted for the same manuscript.*

The compounds and their synthesis were adequately explained in affidavits from the University of Wisconsin-Madison Small Molecule Screening and Synthesis Facility and patent US8,466,154B2, in 2012 and 2013, all of which I have reviewed. ORI took no action at the time, and I presumed that they had agreed. Now they come back a decade later with statements that seem to indicate a lack of understanding of the processes and intricacies of structural biology, the bedrock of modern drug design. As I am not a synthetic chemist, I cannot add to what the experts have already testified, but it seems that ORI is beating a dead horse with a broken whip. They should be strongly criticized for raising these false issues.

III. SUMMARY OF OPINIONS

First a summary of what the ORI findings say in general. They say that different curves in different papers look similar. Such curves summarize many experiments, and the results get compressed into a representation of a mean value and error bars. While the mean values may be similar in different figures, the error bars are quite different in the compared figures. A better representation of the data would be a probability distribution, and if this were done, anyone could see the differences more clearly. On the other hand, a trained professional in the field should realize this, but ORI seems to be missing the point. This lack of rigor is not acceptable today.

It is personally disturbing to me to see such a poor quality of analysis emerging from ORI. ORI has access to everyone in the field to provide expert opinion. But they seem to have found a very weak group of scientists in this case. This reminds me of my teaching days. I saw behavior like this, but not from the good students. I cannot give ORI a passing grade in this case.

Pursuant to 28 U. S. C. 1746, I declare under penalty of perjury that the foregoing statements are true and correct.

Sincerely,



L. Ridgway Scott

30 April 2023

4530 Ferncroft Road, Mercer Island, WA

206-240-5461

ridg@uchicago.edu

Docket No. C-23-88

R. Ex. 34

Page 3 of 9

APPENDIX 1 CV for L. Ridgway Scott

Born 27 March 1948

Marital status married (three children)

Degrees

B. S., Tulane University, 1969

Ph. D., Massachusetts Institute of Technology, 1973.

Current Positions

Professor Emeritus, University of Chicago, since 2018.

CEO, Computational Modeling Initiative LLC, since 2015.

Previous Employment

University of Chicago: Instructor, 1973–1975

Brookhaven National Laboratory: Associate Mathematician, 1975–1977, Mathematician, 1977–1978

University of Michigan: Assistant Professor of Mathematics, 1978–1980, Associate Professor of Mathematics, 1980–1984, Professor of Mathematics, 1984–1986

Pennsylvania State University: Professor of Computer Science and of Mathematics, 1986–1989

University of Houston: Professor of Computer Science and of Mathematics, 1989–1998. M. D. Anderson Professor 1995–1998

University of Chicago: Department of Computer Science and Department of Mathematics, and the College, 1998–2017. Louis Block Professor, 2001–2017. Member, Institute for Biophysical Dynamics, 1998–2017. Senior Fellow, Computation Institute, 1999–2017. (Founding co-director, 1999–2002.)

Rice University: Visiting Professor, Department of Computational and Applied Mathematics, spring semester 2018.

Member editorial board of

SIAM Journal for Numerical Analysis, 1979–1997

R. A. I. R. O. Numerical Analysis (new name: M^2AN), 1981–2005

Mathematics of Computation, 1984–1999

Houston Journal of Mathematics, 1990–1999

Notices of the AMS, 1991–1994

SIAM Review, 1995–1999, 2010–2012

Asymptotic Analysis, 2012–2017.

Honors and Awards

B. S. *Magna Cum Laude*, Tulane University, 1969

Phi Beta Kappa

Woodrow Wilson Fellowship Designate, 1969

Sloan Graduate Fellowship, MIT, 1969–1973

Invited Hour Speaker, American Mathematical Society Regional Meeting, 1987

Ordway Visiting Distinguished Professorship, University of Minnesota, March, 1997

Distinguished Lecture for the Molecular Basis of Disease program at Georgia State University, December, 2008

Magnus Lecturer, Colorado State University, April, 2011

UIUC CSE Annual Research Symposium keynote speaker, April, 2012

Fellow of the American Mathematical Society (Inaugural Class)

Fellow of the Society for Industrial and Applied Mathematics (Class of 2014)

2021 Marden Lecturer, University of Wisconsin-Milwaukee.

Visiting Fellowships

University of Bonn, West Germany, 1976, 1978, 1979 (one month each time)

I C A S E, NASA Langley Research Center, 1979 (three months)
Mathematics Research Center, University of Wisconsin, 1980–1981 (9 months), 1985 (3 months)
Centre de Mathématiques Appliquées, Ecole Polytechnique, Paris, 1981–1982 (nine months)
Center for Nonlinear Studies, Los Alamos National Laboratory, 1985 (three months)
Institute for Mathematics and Its Applications, University of Minnesota, 1986 (four months), 1997 (one month), 2008-9 (ten months)
Mittag-Leffler Institute, 1998 (one month)
Mathematical Biosciences Institute, Ohio State University, fall 2015
Division of Applied Mathematics, Brown University, winter 2017 (two months)
Basque Center for Applied Mathematics, Bilbao, spring 2019 (one month).

Consultant to

Los Alamos National Laboratory, 1985–1986
KMS Fusion (Ann Arbor, Michigan), 1985–1989
US Army White Sands Missile Range, 1990–1996
Open Channel Software, 1999–2002
Toyota Technological Institute at Chicago, 2000–2008
Blue Operations, 2001–2003.

Member, Review Panels

External Review Committee, Mathematics and Computer Sciences Division,
Argonne National Laboratory, 1986 and 1988
Application Review Committee, 1992 National Defense Science and
Engineering Fellowship Program
Committee on Mathematical Challenges from Computational Chemistry,
National Research Council, 1993-1994
Board of Governors, Institute for Mathematics and Its Applications,
University of Minnesota, 1997–1999
Advisory Board, NIH Reasearch Resource on Multiscale Modeling Tools
for Structural Biology, The Scripps Research Institute, 1997–2005
Advisory Board, National Center for Molecular Imaging, Baylor College of
Medicine, 2000–2004
Community Relations Committee, Institute for Mathematics and Its Applications,
University of Minnesota, 2009–2014
External Review Committee, Department of Mathematics and Computer Science,
Emory University, 2010
On-site reviewer for Austrian Science Fund (FWF), Vienna, September, 2015
Review Committee for the Computational Science, Mathematics and Engineering
(CSME) Graduate Program at UCSD, May 2018.

References

- [1] Scott LR. 2013 Tsunami simulation. Research Report UC/CS TR-2013-1, Dept. Comp. Sci., Univ. Chicago.
- [2] Dupont TF, Scott LR. 2013 The power method for tensor eigenproblems and limiting directions of newton iterates. *Numerical Linear Algebra and Applications* **20**, 6, 956–971.
- [3] Brune PR, Knepley MG, Scott LR. 2013 Unstructured geometric multigrid in two and three dimensions on complex and graded meshes. *SIAM J. Sci. Computing* **35**, 1, A173–A191.
- [4] Scott LR, Stigliano AF. 2013 A disruptive dipole-dipole alignment promotes a stable molecular association. Research Report UC/CS TR-2013-10, Dept. Comp. Sci., Univ. Chicago.
- [5] Dexuan X, Jiang Y, Scott LR. 2013 Efficient algorithms for solving a nonlocal dielectric model for protein in ionic solvent. *SIAM Journal on Scientific Computing* **35**, 6, B1267–B1284.
- [6] Scott LR, Jiang Y, Dexuan X. 2015 Comparison of a nonlocal dielectric model with a discontinuous model. Research Report UC/CS TR-2015-06, Dept. Comp. Sci., Univ. Chicago.
- [7] Fernández A, Scott LR. 2016 Drug leads for interactive protein targets with unknown structure. *Drug Discovery Today* **21**, 531–535.
- [8] Scott LR, Stigliano AF. 2015 Mismatched ions indicate quantum effects in proteins. Research Report UC/CS TR-2015-10, Dept. Comp. Sci., Univ. Chicago.
- [9] Girault V, Nochetto R, Scott LR. 2015 Max-norm estimates for Stokes and Navier–Stokes approximations in convex polyhedra. *Numerische Mathematik* **131**, 4, 771–822.
- [10] Fraser CM, Scott LR. 2015 Candidate dehydron identification in high resolution myoglobin structures. Research Report UC/CS TR-2015-12, Dept. Comp. Sci., Univ. Chicago.
- [11] Scott LR, Xie D. 2016 Analysis of a nonlocal Poisson–Boltzmann equation. Research Report UC/CS TR-2016-1, Dept. Comp. Sci., Univ. Chicago.
- [12] Xie D, Liu JL, Eisenberg B, Scott LR. 2016 A nonlocal Poisson–Fermi model for ionic solvent. *arXiv preprint arXiv:1603.05597 [physics.chem-ph]* .
- [13] Morgan H, Knepley MG, Sanan P, Scott LR. 2016 A stochastic performance model for pipelined krylov methods. *Concurrency and Computation: Practice and Experience* **28**, 18, 4532–4542.
- [14] Fernández A, Scott LR. 2017 Advanced modeling reconciles counterintuitive decisions in lead optimization. *Trends in Biotechnology* **35**, 490–497.
- [15] Scott LR. 2017 The impact of wrapping on sidechain-mainchain hydrogen bonds. Research Report UC/CS TR-2017-03, Dept. Comp. Sci., Univ. Chicago.
- [16] Girault V, Scott LR. 2017 Wellposedness of some Oldroyd models that lack explicit dissipation. Research Report UC/CS TR-2017-04, Dept. Comp. Sci., Univ. Chicago.
- [17] Girault V, Scott LR. 2017 Circumventing the lack of dissipation in certain Oldroyd models. *Comptes Rendus Mathématiques* **335**, 7, 753–759.
- [18] Scott LR, Fernández A. 2017 *A Mathematical Approach to Protein Biophysics*. Springer-Verlag.

- [19] Veit A, Scott LR. 2017 Using the tensor-train approach to solve the ground-state eigenproblem for hydrogen molecules. *SIAM Journal on Scientific Computing* **39**, 1, B190–B220.
- [20] Morgan H, Scott LR. 2018 Towards a unified finite element method for the Stokes equations. *SIAM Journal on Scientific Computing* **40**, 1, A130–A141.
- [21] Cancès E, Scott LR. 2018 van der Waals interactions between two hydrogen atoms: The Slater-Kirkwood method revisited. *SIAM Journal on Mathematical Analysis* **50**, 1, 381–410.
- [22] Scott LR. 2018 *Introduction to Automated Modeling with FEniCS*. Computational Modeling Initiative.
- [23] Fernández A, Scott LR. 2018 Inoperative checkpoint immunotherapies rescued via companion targeted therapies. Research Report UC/CS TR-2018-8, Dept. Comp. Sci., Univ. Chicago.
- [24] Fernández A, Scott LR. 2018 Re-engineering dasatinib into an immuno-synergic drug. Research Report UC/CS TR-2018-9, Dept. Comp. Sci., Univ. Chicago.
- [25] Girault V, Scott LR. 2018 Oldroyd models without explicit dissipation. *Rev. Roumaine Math. Pures Appl.* **63**, 4, 401–446.
- [26] Crooks JE, Boughter CT, Scott LR, Adams EJ. 2018 The hypervariable loops of free TCRs sample multiple distinct metastable conformations in solution. *Frontiers in Molecular Biosciences* **5**, 95.
- [27] Guzmán J, Scott LR. 2018 Cubic Lagrange elements satisfying exact incompressibility. *SMAI Journal of Computational Mathematics* **4**, 345–374.
- [28] Guzmán J, Scott LR. 2019 The Scott-Vogelius finite elements revisited. *Mathematics of Computation* **88**, 515–529.
- [29] Scott LR. 2019 Topological representation of metric data: the ABC theorem. Research Report UC/CS TR-2019-16, Dept. Comp. Sci., Univ. Chicago.
- [30] Scott LR. 2019 C^1 piecewise polynomials satisfying boundary conditions. Research Report UC/CS TR-2019-18, Dept. Comp. Sci., Univ. Chicago.
- [31] Collin T, Chiw C, Scott LR, Reppy J, Kindlmann G. 2019 Point movement in a DSL for higher-order FEM visualization. In: *2019 IEEE Visualization Conference (VIS)*. IEEE. (doi: 10.1109/visual.2019.8933623).
- [32] Scott LR. 2020 Kinetic energy flow instability with application to Couette flow. Research Report UC/CS TR-2020-07, Dept. Comp. Sci., Univ. Chicago.
- [33] Rauch J, Scott LR. 2020 Analysis of the experiment defining the dielectric constant. *Indiana University Mathematics Journal* **69**, 5, 1663–1683.
- [34] Farrell P, Mitchell L, Scott LR, Wechsung F. 2020 Robust multigrid methods for nearly incompressible elasticity using macro elements. *arxiv* **2002.02051**.
- [35] Farrell P, Mitchell L, Scott LR, Wechsung F. 2020 A Reynolds-robust preconditioner for the Reynolds-robust Scott-Vogelius discretization of the stationary incompressible navier-stokes equations. *arxiv* **2004.09398**.
- [36] Rauch JB, Scott LR. 2021 The electrostatic potentials of periodic crystals. *SIAM Journal on Mathematical Analysis* **53**, 2, 1474–1491.

- [37] Scott LR. 2021 A primer on ice. Research Report UC/CS TR-2021-06, Dept. Comp. Sci., Univ. Chicago.
- [38] Rauch JB, Scott LR. 2021 The charge-group summation method for electrostatics of periodic crystals. *SIAM Journal on Applied Mathematics* **81**, 2, 694–717.
- [39] Scott LR. 2021 A local Fortin operator for low-order Taylor–Hood elements. Research Report UC/CS TR-2021-07, Dept. Comp. Sci., Univ. Chicago.
- [40] Girault V, Scott LR. 2021 An asymptotic duality between the Oldroyd–Maxwell and grade-two fluid models. Research Report UC/CS TR-2021-08, Dept. Comp. Sci., Univ. Chicago.
- [41] Farrell P, Mitchell L, Scott LR, Wechsung F. 2021 A Reynolds-robust preconditioner for the Scott–Vogelius discretization of the stationary incompressible Navier–Stokes equations. *SMAI Journal of Computational Mathematics* **7**, 75–96.
- [42] Gjerde I, Scott LR. 2021 Lower bounds for the error in Nitsche’s method for the Navier–Stokes equations with slip boundary conditions. Research Report UC/CS TR-2021-09, Dept. Comp. Sci., Univ. Chicago.
- [43] Pollock S, Scott LR. 2021 Using small eigenproblems to accelerate power method iterations. Research Report UC/CS TR-2021-10, Dept. Comp. Sci., Univ. Chicago.
- [44] Fernández A, Scott LR. 2021 Origins of the SARS Corona Virus 2. Research Report UC/CS TR-2021-11, Dept. Comp. Sci., Univ. Chicago.
- [45] Girault V, Scott LR. 2021 Tanner duality between the Oldroyd–Maxwell and grade-two fluid models. *Comptes Rendus — Mathématique* **359**, 9, 1207–1215.
- [46] Pollock S, Scott LR. 2021 Extrapolating the Arnoldi algorithm to improve eigenvector convergence. *International Journal of Numerical Analysis & Modeling* **18**, 5, 712–721.
- [47] Gjerde IG, Scott LR. 2022 Nitsche’s method for Navier–Stokes equations with slip boundary conditions. *Mathematics of Computation* **91**, 334, 597–622.
- [48] Scott LR, Fernández A. 2022 Critical mutations of the SARS-CoV-2 virus. *WSEAS Transactions on Biology and Biomedicine* **19**, 22–30. (doi:10.37394/23208.2022.19.4).
- [49] Farrell P, Mitchell L, Scott LR, Wechsung F. 2022 Robust multigrid methods for nearly incompressible elasticity using macro elements. *IMA Journal of Numerical Analysis* **January**. (doi:10.1093/imanum/drab083).
- [50] Pollock S, Scott LR. 2022 Transport equations with inflow boundary conditions. *Partial Differential Equations and Applications* **3**, 35.
- [51] Pollock S, Scott LR. 2022 An algorithm for the grade-two rheological model. *M2AN* **56**, 1007–1025.
- [52] Gjerde IG, Scott LR. 2022 Kinetic-energy instability of flows with slip boundary conditions. *Journal of Mathematical Fluid Dynamics* **24**, 4, 1–27. (doi:10.1007/s00021-022-00720-4).
- [53] Jansson J, Johnson C, Scott R. 2022 Predictive Euler CFD — Resolution of NASA Vision 2030. *AIAA AVIATION 2022 Forum* (doi:10.2514/6.2022-3589).
- [54] Scott LR. 2023 Rheology, rheometers, and matching models to experiments. *Fluid Dynamics Research* **55**, 015501, 1–22. (doi:10.1088/1873-7005/acafa1).
- [55] Cancès E, Coyaud R, Scott LR. 2023 van der Waals interactions between two hydrogen atoms: The next orders. *Communications in Mathematical Sciences* **21**, 4, 915–948.

APPENDIX 2 Materials reviewed

Struct05. Ariel Fernandez: Incomplete protein packing as a selectivity filter in drug design. *Structure* 13, 1829-1836 (2005).

JMC06. Ariel Fernandez and Sridhar Maddipati: The a-priori inference of cross reactivity for drug targeted kinases. *Journal of Medicinal Chemistry* 49, 3092-3100 (2006).

BioE06. Sridhar Maddipati and Ariel Fernandez: Feature-similarity kinase classifier as a ligand engineering tool. *Biomolecular Engineering* 23, 307-315 (2006).

JPCB07. Ariel Fernandez, Alejandro Crespo and Axel Blau: Passive Water-Lipid Peptide Translocators with Conformational Switches: From Single-Molecule Probe to Cellular Assay. *Journal of Physical Chemistry B* 111, 13987-13992 (2007).

NANO08. Ariel Fernandez, Alejandro Crespo, Sridhar Maddipati and Ridgway Scott: Bottom-up engineering of peptide cell translocators based on environmentally modulated quadrupole switches. *ACS Nano* 2, 61-68 (2008).

MP08. Alejandro Crespo and Ariel Fernandez: Induced disorder in protein-ligand complexes as a drug-design strategy. *Molecular Pharmaceutics (ACS)* 5, 430-437 (2008).

CR07. Ariel Fernandez et al.: Rational Drug Redesign to overcome drug resistance in cancer therapy: Imatinib moving target. *Cancer Research* 67, 4028-4033, Priority Report, Cover featured (2007).

JMC08. Alejandro Crespo, Xi Zhang and Ariel Fernandez: "Redesigning kinase inhibitors to enhance specificity". *Journal of Medicinal Chemistry* 51, 4890-4898 (2008).

Docket No. C-23-88
R. Ex. 34
Page 9 of 9