Joanna S.G. Slusky

Assistant professor, Center for Computational Biology
Assistant professor, Department of Molecular Biosciences

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Academic training

Postdoctoral Fellow
Fox Chase Cancer Center: Institute for Cancer Research 2012-2014
NIH postdoctoral research training grant Advisor: Roland L. Dunbrack Jr.
Bioinformatic insights into outer membrane β proteins with an eye towards cancer therapeutics.

Postdoctoral Fellow
Stockholm University: Biochemistry and Biophysics 2008-2012
Human Frontier Science Program postdoctoral fellow Advisor: Gunnar von Heijne
Developing novel methods for exploring protein insertion and orientation in the transmembrane.

Ph.D. in Biochemistry and Molecular Biophysics, University of Pennsylvania Dec. 2007
NSF Graduate Research Fellow
Thesis: *Sketching Nature's Energy Function: Designing Helices that Target Transmembrane Proteins and Creating Software for Further Design*. Advisor: William F. DeGrado

A.B. in Chemistry, *Magna Cum Laude*. Princeton University May 2001
Minor in Material Science and Engineering. Undergraduate thesis: *Solid State Substitution Chemistry: Altering Magnetic Properties of Boride Superconductors and Frustrated Magnet*s. Advisor: Robert J. Cava

Publications

1. **Slusky, J.S.G.** "Outer membrane protein design." *Current Opinion in Structural Biology* (2017). [CurrOpStructBio]
2. Kim, S., Patel, D. S., Park, S., **Slusky, J**., Klauda, J. B., Widmalm, G., & Im, W.. Bilayer Properties of Lipid A from Various Gram-Negative Bacteria. *Biophysical Journal* (2016). [BJ]
3. P. Lloris-Garcerá, S. Seppälä, **J.S.G. Slusky**, M. Rapp, G. von Heijne. "Why Have Small Multidrug Resistance Proteins Not Evolved into Fused, Internally Duplicated Structures?" *Journal of Molecular Biology* (2014). [JMB]
4. **J.S.G. Slusky*** and R.L. Dunbrack. "Charge asymmetry in proteins of the outer membrane." *Bioinformatics* 29 (2013). ***corresponding author** [Bioinformatics]
5. P. Lloris-Garcerá, **J.S.G. Slusky**, S. Seppälä, M. Prieß, L. V. Schäfer, G.von Heijne. "In vivo Trp-scanning of the Small Multidrug Resistance protein EmrE confirms anti-parallel 3D structure models." *Journal of Molecular Biology* (2013). [JMB]
6. P. Lloris-Garcerá, F. Bianchi, **J.S.G. Slusky**, S. Seppälä, D.O. Daley, G.von Heijne. "Antiparallel dimers of the small multidrug-resistance protein EmrE are more stable than parallel dimers." *Journal of Biological Chemistry* 287, (2012). [JBC]

7. S.E. Dutton, E.D. Hanson, C.L. Broholm, **J.S. Slusky**, R.J Cava. "Magnetic properties of hole-doped SCGO, SrCr(8)Ga(4-x)M(x)O(19) (M=Zn, Mg, Cu)." *Journal of physics--Condensed matter,* 23, (2011). [JoP:CM]
8. S. Seppälä, **J.S. Slusky**, P. Lloris-Garcerá, M. Rapp, G.von Heijne. "Control of membrane protein topology by a single C-terminal residue." *Science* 328, (2010). [Science]
9. **J.S. Slusky**, H. Yin, W.F. DeGrado "Understanding membrane proteins: How to design inhibitors of transmembrane protein-protein interactions." *Protein Engineering* (C. Köehrer, U.L. RajBhandary; Ed.), Springer Verlag, 22, 315-338 (2009). [Springer]
10. H. Yin*, **J.S. Slusky***, B.W. Berger, R.S. Walters, G. Vilaire, R.I. Litvinov, J. D. Lear, G.A. Caputo, J.S. Bennett, W.F. DeGrado**.** "Computational Design of Peptides that Target Transmembrane Helices" *Science* 315**,** (2007).***co-first authors** [Science]
11. J. Snyder, B.G Ueland, **J.S**. **Slusky**, H. Karunadasa, R.J.Cava, P. Schiffer. "Low-temperature spin freezing in the $Dy_2Ti_2O_7$ spin ice." *Physical Review B: Condensed Matter and Materials Physics* 69, (2004). [PRB]
12. J. Snyder, B.G. Ueland, A. Mizel, **J.S. Slusky**, H. Karunadasa, R.J. Cava, P. Schiffer. "Quantum and thermal spin relaxation in the diluted spin ice $Dy_{2-x}M_xTi_2O_7$ (M=Lu,Y)." *Physical Review B: Condensed Matter and Materials Physics* 70**,** (2004). [PRB]
13. T.W. Heitmann, S.D. Bu, D.H. Kim., J.H. Choi, J. Giencke, C.B. Eom, K.A. Regan, N. Rogado, M.A. Hayward, T. He, **J.S. Slusky**, P. Khalifah, M. Haas, R.J. Cava, D.C. Larbalestier, M.S. Rzchowski. "MgB2 energy gap determination by scanning tunnelling spectroscopy." *Superconductor Science & Technology: Suppl S*. 17, (2004). [SS&T]
14. J. Snyder, B.G. Ueland, **J.S. Slusky,** H. Karunadasa, R.J.Cava, A. Mizel, P. Schiffer, "Quantum-classical reentrant relaxation crossover in $Dy_2Ti_2O_7$ spin ice." *Physical Review Letters* 91, (2003). [PRL]
15. J. Snyder, **J.S. Slusky,** R.J. Cava, P.Schiffer, "Dirty spin ice: The effect of dilution on spin freezing in $Dy_2Ti_2O_7$." Physical *Review B: Condensed Matter and Materials Physics* 66, (2002). [PRB]
16. **J. S. Slusky**, N. Rogado, K. A. Regan, M. A. Hayward, P. Khalifah, T. He, Inumaru, S. M. Loureiro, M. K. Haas, H. W. Zandbergen, R. J. Cava. "Loss of superconductivity with the addition of Al to MgB2 and a structural transition in Mg1-xAlxB2." *Nature* 410, (2001). [Nature]
17. J. Snyder**, J.S. Slusky**, R.J. Cava, P. Schiffer. "How 'spin ice' freezes." *Nature* 413, (2001). [Nature]
18. D.C. Larbalestier, L.D. Coolye, M.O. Rikel, A.A. Polyanskii, J. Jiang, S. Patnaik, X.Y. Cai, D.M. Feldmann, A Gurevich, AA Squirieri, M.T. Naus, C. B. Eom, E.E. Hellstrom, R. J. Cava, K. A. Regan, N. Rogado, M.A. Hayward, T. He, **J.S. Slusky**, P. Khalifah, K. Inumaru, M. Haas. "Strongly linked current flow in polycrystalline forms of the superconductor MgB_2." *Nature* 410, (2001). [Nature]
19. C.B. Eom, M.K. Lee, J.H. Choi, L. Belenky, X. Song, L.D. Cooley, M.T. Naus, S. Patnaik, J. Jiang, M. Rikel, A. Polyanskii, A. Gurevich, X.Y. Cai, S.D. Bu, S.E. Babcock, E.E. Hellstrom, D.C. Larbalestier, N. Rogado, K.A. Regan, M.A. Hayward, T. He**, J.S. Slusky**, K. Inumaru, M.K. Haas, R.J. Cava. "High critical current density and enhanced irreversibility field in superconducting MgB2 thin films." *Nature* 411, (2001). [Nature]
20. T. He, Q. Huang, A.P. Ramirez, Y. Wang, K.A. Regan, N. Rogado, M.A. Hayward, M.K. Haas, **J.S. Slusky**, K. Inumara, H.W. Zandbergen, N.P. Ong, and R.J. Cava. "Superconductivity in the non-oxide perovskite MgCNi3." *Nature* 411 (2001). [Nature]
21. T. Yildirium, O. Gulseren, J.W. Lynn, C.M. Brown, T.J. Udovic, Q. Huang, N. Rogado, K.A. Regan, M.A. Hayward, **J.S. Slusky**, T.He, M.K. Haas, P. Kalifah, K. Inumaru, and R.J. Cava. "Giant anharmonicity and nonlinear electron-phonon coupling in MgB2: a combined first-principles calculation and neutron scattering study." *Physical Review Letters* 87, (2001). [PRL]

Patents

J.S. Slusky, H. Yin, W.F. DeGrado. "Polypeptides That Bind Membrane Proteins." United States Patent. US 2010-0120695-A1 (2010). [GooglePatents]

Fellowships and Grants

- Moore Inventor Fellowship (2016)
- NIH Chemical Biology of Infectious Disease Junior Investigator (2016)
- NIH K-INBRE Developmental Research Project Grant (2016)
- NIH postdoctoral research training grant (2012-2014)
- HFSP (Human Frontier Science Program) Long Term Research Fellow (2008-2011)
- NIH Structural Biology Training Grant (2005-2007)
- NSF Graduate Research Fellowship (2002-2005)
- New Jersey Commission on Cancer Research, Summer Fellow (1997)

Honors

- Finalist for 2017 NIH New Innovator Director's Award—DP2 (winners will be announced Sept 2017)
- Moore Inventor Fellowship: Among the five inaugural recipients of this award (2016)
- University of Pennsylvania: Biomedical Graduate Studies Director's Award (2002)
- Princeton University: Malcolm H. Chisholm prize for student who displayed the most excellence in inorganic chemistry in class of 2001
- Semifinalist Westinghouse Science Talent Search (1997)

Selected Oral Presentations and Invited Lectures

- Invited Speaker: Workshop: Structural biology towards a systems level understanding at atomistic resolution, Stockholm, Sweden (January 2017)
- Invited Speaker: Modeling of Protein Interactions (international meeting), Lawrence, KS (October 2016)
- Selected Speaker: FASEB: Molecular Biophysics of Membranes, Snowmass, CO (July 2016)
- Invited Seminar: Rutgers University, Piscataway, NJ (June 2016)
- Invited Seminar: University of Missouri, Kansas City, Kansas City, KS (November 2015)
- Invited Speaker: GRC Membrane Protein Folding, Waltham, MA (June 2015)
- Invited Seminar: Stockholm University, Stockholm, Sweden (June 2015)
- Invited Seminar: University of Kansas Medical Center, Kansas City, KS (December 2014)
- Invited Seminar: Kansas State, Manhattan, Kansas (November 2014)
- Invited Seminar: Hebrew University, Jerusalem, Israel (May 2014)
- Invited Seminar: Weizmann Institute, Rehovot, Israel (May 2014)
- Invited Seminar: Tel Aviv University, Tel Aviv, Israel (May 2014)

Referee

Biochemie, Biochemistry, Biophysical Journal, BMC Structural Biology, Journal of Computational Chemistry, Molecular BioSystems, Oncotarget, PLoS Computational Biology, Proteins, Scientific Reports, Trends in Biotechnology