

# Sonya M. Hanson, Ph.D.

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## EDUCATION

**PH.D. Biochemistry, University of Oxford** 2009–14  
*Supervisors:* [Kenton J. Swartz](#) (NIH), [Simon Newstead](#) (Oxford), [Mark. S.P. Sansom](#) (Oxford)

**B.S. Biophysics, Minor: Screenwriting, University of Southern California, cum laude** 2005–09

## RESEARCH EXPERIENCE

**Postdoctoral Fellow, Computational Biology Program, Memorial Sloan Kettering Cancer Center** 2014–present  
PI: [John D. Chodera](#).  
Developing a combined pipeline of automated wetlab experiment and molecular simulation to dissect the contribution of conformational reorganization energies to inhibitor binding.

**PH.D. Biochemistry, University of Oxford** 2009–14  
Dissertation: *Structural, biochemical and computational studies of TRP channel transmembrane domain modularity*.  
Funded via the NIH-Oxford-Cambridge scholars program, specifically the National Institute of Neurological Disorders and Stroke (NINDS) of the National Institutes of Health.

**University of Southern California** 2007–09  
Undergraduate research with [Lin Chen](#) (*computational modeling and docking of antibody-ion channel interaction*).

**Indiana University** 2005–07  
Undergraduate research with [Santiago Schnell](#) (*mathematical models of enzyme kinetics*).

## ACADEMIC LEADERSHIP EXPERIENCE

Course Instructor 'Quantitative and computational biology' at Gerstner Sloan Kettering Graduate School 2016  
*Ad hoc* reviewer, *JoVE* 2016  
MSKCC Postdoctoral Association Board Member 2015–16  
Gordon Research Seminar 'Computer Aided Drug Design' - Discussion Leader 2015  
*Ad hoc* reviewer, *Biochemistry* 2015  
Biophysical Society 59th Annual Meeting Platform Co-Chair: 'Protein-Small Molecule Interactions' 2015

## AWARDS AND HONORS

Biophysical Society Committee for Professional Opportunities for Women (CPOW) Travel Award 2016  
Materials Computation Center (MCC) Travel Award to attend "Molecular and chemical kinetics" workshop 2015  
OXION: Ion Channels and Disease Initiative Day Poster Award 2013  
Bursary Award to Attend 2013 4th RSC/SCI symposium on Ion Channels as Therapeutic Targets 2013  
NIH-Oxford-Cambridge Biomedical Research Scholar 2009–14  
B.S. awarded *cum laude* and with 'Discovery honors' for original research from USC 2009  
Barry M. Goldwater Scholarship 2008  
Interdisciplinary Award at the USC Undergraduate Research Symposium 2008  
National Merit Finalist Presidential Scholarship from the University of Southern California 2005–09

## SCIENCE COMMUNICATION ACTIVITIES

Volunteer at Rockefeller University's 'Science Saturday' - *Protein biochemistry super station* 2016  
General Audience Lecture at [Genspace NYC](#) - *How computer programs can help us design better cancer drugs* 2016  
Biophysical Society Annual Meeting Guest Blogger 2015–16  
Alan Alda Science Communication Boot Camp 2015  
Founding Editor of the [Oxbridge Biotech Roundtable Review](#): Editor in Chief 2011–12, Oxford Editor 2011–13 2011–13

## PROFESSIONAL MEMBERSHIP

New York Academy of Sciences  
Biophysical Society  
Member of the organizing committee for Undergraduate Women in Physics Conf. at USC

2014-present  
2009-present  
2008

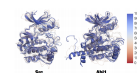
## TALKS

- Developing high-throughput fluorescence-based assays for measuring kinase inhibitor free energies of binding  
Biophysical Society 59th Annual Meeting - Baltimore, MD  
**Hanson SM**, Prinz JH, Behr JB, Grinaway PB, Rustenburg AS, Beauchamp KA, Parton DL, Chodera JD 2015
- Tackling complex problems in small molecule recognition using computation and automated biophysical experiment  
Telluride TSRC 'Molecular Recognition' Workshop - Telluride, CO  
**Hanson SM**, Prinz JH, Grinaway PB, Rustenburg AS, Beauchamp KA, Behr JB, Parton DL, Chodera JD 2014

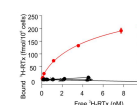
## PUBLICATIONS

\* asterisks denote that marked authors contributed equally

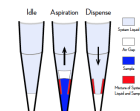
Parton DL, Grinaway PB, **Hanson SM**, Beauchamp KA, and Chodera JD. Ensembler: Enabling high-throughput molecular simulations at the superfamily scale. *PLoS Computational Biology* – accepted. · [bioRxiv](#)



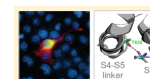
Zhang F\*, **Hanson SM**\*, Jara-Oseguera A, Krepiy D, Bae C, Pearce LV, Blumberg PM, Newstead S, and Swartz KJ. Engineering vanilloid-sensitivity into the rat TRPV2 channel. *eLife* 2016;10.7554/eLife.16409, 2016 · [DOI](#)



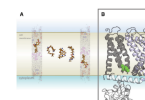
**Hanson SM**, Ekins S, and Chodera JD. Modeling error in experimental assays using the bootstrap principle: Understanding discrepancies between assays using different dispensing technologies. *Journal of Computer-Aided Molecular Design* 29(12):1073-86, 2015 · [DOI](#)



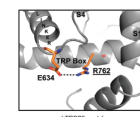
**Hanson SM**, Sansom MSP, and Becker EB. Modeling suggests TRPC3 hydrogen bonding and not phosphorylation contributes to the ataxia phenotype of the Moonwalker mouse. *Biochemistry* 54(26):4033-41, 2015 · [DOI](#)



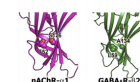
**Hanson SM**, Newstead S, Swartz KJ, and Sansom MSP. Capsaicin interaction with TRPV1 channels in a lipid bilayer: Molecular dynamics simulation. *Biophysical Journal*, 108(6):1425-34, 2015 · [DOI](#)  
Selected for 'Best of 2015' reprint collection as one of 12 most-accessed articles in the *Biophysical Journal* in 2015.



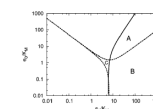
Fogel BF, **Hanson SM**, and Becker EB. Do mutations in the murine ataxia gene TRPC3 cause cerebellar ataxia in humans? *Movement Disorders*, 30(2):284–6, 2014 · [DOI](#)



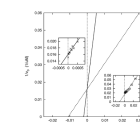
Dellisanti CM, **Hanson SM**, Chen L, and Czajkowski C. Packing of the extracellular domain hydrophobic core has evolved to facilitate pentameric ligand-gated ion channel function. *The Journal of Biological Chemistry*, 286(5):3658–70, 2011 · [DOI](#)



**Hanson SM** and Schnell S. The reactant stationary approximation in enzyme kinetics. *The Journal of Physical Chemistry A*, 112:8654–58, 2008 · [DOI](#)



Schnell S and **Hanson SM**. A test for measuring the effects of enzyme inactivation. *Biophysical Chemistry*, 125:269–74, 2007 · [DOI](#)



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