

Melanie A. Stegman, Ph.D.

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Education

- 2004 Ph.D., Department of Molecular Genetics, Biochemistry and Microbiology,
University of Cincinnati College of Medicine, Cincinnati, OH.
- 1992 A.B., Political Science. The College, University of Chicago, Chicago, IL.

Experience

- 1/2010-Current Director, Learning Technologies Program, Federation of American Scientists.
Refocusing the Program on new goals of practical assessment of learning game effectiveness, and classroom integration. Pushing forward the use of games to introduce complex abstract concepts such as molecular biology to students and adults who do not yet have an explicit understanding.
- 8/2008-12/2009 Project Manager, Federation of American Scientists, Learning Technologies Program.
Manager of the Immune Attack project, sought out and won new funding, created new evaluation methods and collaborations, and began development of Immune Attack 2.0.
- 8/2005-7/2008 Postdoctoral Research, Department of Microbiology and Immunology,
Cornell Weill Medical College, New York, NY.
Mentor: Carl Nathan, M.D.
Research subject: High through put screen for novel inhibitors of *Mycobacterium tuberculosis* pathogenic mechanisms.
- 2003-2005 Dissertation Research, Department of Pharmacology and Toxicology,
Dartmouth Medical School, Hanover, NH.
Mentor: David J. Robbins, Ph.D.
Research subject: Mechanism of Hedgehog signal regulation by the Kinesin related protein Costal2.
- 1998-2003 Dissertation Research, Department of Molecular Genetics, Biochemistry and
Microbiology, University of Cincinnati, OH.
Mentor: David J. Robbins, Ph.D.
- 1993-1995 Editorial Assistant, *J. Eukaryotic Microbiology*, Department of Biology,
University of Cincinnati, Cincinnati, OH.
- 1991-1992 Student Assistant, Department of Psychiatry, University of Chicago, Chicago, IL.
Mentor: Bruce Perry, M.D., Ph.D.
Research subject: Optimization of the binding affinities of novel compounds for neurotransmitter receptors.

Teaching experience

- 9/2006-6/2008 Teacher at The American Museum of Natural History, New York, NY. Teach high school level after-school classes in genetics and biochemistry. Present and discuss genetic concepts with museum patrons in the Hall of Human Origins Education Lab.
- 9/2007-7/2008 Volunteer mentor at Hour Children, Long Island City, NY. Serve as companion to kids and adults on field trips, and serve as mentor to one child.
- 9/2006-11/2006 Volunteer with Cornell Science Challenge. Attended the East Side Middle School once a week for 6 weeks to help my group of 5 students design, execute, evaluate and present their science fair project. Judged presentations at the science fair.
- 9/2000-6/2001 Volunteer instructor with Yeast as an Educational Tool, Cincinnati, OH. Co-taught public middle school and high school science classes, once a week for 6 weeks at each school. Prepared lab materials and lectures to let the students repair the DNA of yeast and assay for its new phenotype. Assisted with the end of the year science fair.
- 9/1995-6/1996 Tutor of English as a Second Language, Norwood High School, Norwood, OH. Tutored three Vietnamese students two times a week, covering all classes.
- 9/1994-2/1995 Teacher of English as a Second language, Traveler's Aid, Cincinnati, OH. Taught the beginner's class of 15 adults from 10 different countries.

Awards

- 2007 Travel Award to attend and present at the 2007 Gordon Research Conference on Oxidation and Disease, Ventura Beach, CA.
- 2005 Best Paper of 2004, Cancer Mechanisms Program, Dartmouth College of Medicine.
- 2001 University Summer Research Fellowship. University of Cincinnati, College of Medicine, Cincinnati, OH.
- 1989 The Goethe Prize, for Excellence in Germanic Languages and Literature, University of Chicago, Chicago, IL.

Presentations

Immune Attack and Science Video Games: Present the Unimaginable, Teach the Inexplicable, and Assess the Immeasurable, M. A. Stegman. Invited Speaker, Games in Science Education, Rice University, Center for Technology in Teaching and Learning, 2010.

<http://www.gise.rice.edu/index.html>

Immune Attack: Presenting Molecular Science Intuitively, M. A. Stegman. Games, Learning and Society, 2010. Madison, WI.

Immune Attack Introduces the World of Molecular Biology, M. A. Stegman. Microcomputers in Education conference, Arizona State University, Phoenix, AZ, 2010.
<http://mec.asu.edu/announcement/featured-speakers-at-mec-2010/>

Immune Attack: Teaching Kids About Science and Researchers About Designing Learning, M. A. Stegman. American Association for the Advancement of Science (AAAS), Annual Meeting, San Diego, 2010.

Immune Attack, a Video Game in the Molecular World., M. A. Stegman. American Society for Cell Biology, (ASCB) Annual Meeting, San Diego, 2009. Abstract was first in Education category to be chosen for advance release press book.

UvrB is required for *Mycobacterium tuberculosis* recovery from NO• Stress; DNA Damage Repair as a Novel Target for Antibiotics. Stegman, M.A. and Nathan, C. F. Gordon Research Conference for Oxidation and Disease, 2007. Ventura, CA.

Posters

Immune Attack 2.0: Building an Adventure in the Molecular World, M. A. Stegman. Games, Learning and Society, 2010. Madison, WI.

The Kinesin Related Protein Costal2 Associates with Membranes in a Hedgehog-Sensitive, Smoothed-Independent Manner. Stegman, M.A., Goetz, J.A., Ascano Jr., M., Ogden, S.K., Nybakken, K., and Robbins, D.J. Genetics Society of America, Drosophila Research Conference, 2004. Washington, D.C.

Costal2 is a Kinesin Related Protein that Responds to Hedgehog Signaling. Stegman, M.A. and Robbins, D.J. The American Society for Cell Biology, San Francisco, CA. Annual Meeting, 2002.

Dissection of a Hedgehog Signaling Complex. Stegman, M.A., Vallance, J.E. and Robbins, D.J. Genetics Society of America, Drosophila Research Conference, 2001. Washington, D.C.

Dissection of a Hedgehog Signaling Complex. Stegman, M.A., Vallance, J.E. and Robbins, D.J. Graduate Student Research Forum, University of Cincinnati College of Medicine. Cincinnati, OH. 2000.

Dissection of a Hedgehog Signaling Complex. Stegman, M.A., Vallance, J.E. and Robbins, D.J. Midwest Drosophila Research Conference, Allerton Park, IL. 2000.

Dissection of a Hedgehog Signaling Complex. Stegman, M.A., Vallance, J.E. and Robbins, D.J. Genetics Society of America, Drosophila Research Conference, 2000. Pittsburgh, PA.

Publications

Nathan, C. Gold, B., Lin, G., Stegman, M., Sorio de Carvalho, L.P., Vandal, O., Venugopal, A., and Bryk, R. A Philosophy of Anti-Infectives as a Guide in the Search for New Drugs for Tuberculosis. 2008. *Tuberculosis*, Special publication by the Global Alliance for Tuberculosis Drug Development. *In press*.

Stegman, M.A. and Robbins, D. J. Biochemical Fractionation of Drosophila Cells, in *Hedgehog Signaling Protocols*. Edited by: Horabin, J. Humana Press Inc., Totowa, NJ. 2007.

Robbins, D.J., Goetz, J.A., Yuan, Z. and Stegman, M.A. Inhibitors of the Hedgehog pathway. 2005. *Curr. Cancer Therapy Reviews*. **1**:277-288.

Stegman, M.A., Goetz, J.A., Ascano Jr., M., Ogden, S.K., Nybakken, K., and Robbins, D.J. The Kinesin-related protein Costal2 associates with membranes in a Hedgehog-sensitive, Smoothened-independent manner. 2004. *J. Biol. Chem.* **279**:7064-71.

Ogden, S.K., Ascano Jr., M., Stegman, M.A., and Robbins, D.J. Regulation of Hedgehog signaling: a complex story. 2004. *Biochem. Pharmacol.* **67**:805-14.

Ogden, S.K., Ascano Jr., M., Stegman, M.A., Suber, L.M., Hooper, J.E. and Robbins, D.J. Identification of a functional interaction between the transmembrane protein Smoothened and the Kinesin-related protein Costal2. 2003. *Curr. Biol.* **13**:1998-2003.

Ascano Jr., M., Nybakken, K., Stegman, M.A., Sosinski, J. and Robbins, D.J. Disruption of a Hedgehog Signaling Complex. 2002. *Mol. Cell Biol.* **22**:1555-66.

Stegman, M.A., Vallance, J.E., Elangovan, G., Sosinski, J., Cheng, Y. and Robbins, D.J. Identification of a Tetrameric Hedgehog Signaling Complex. 2000. *J. Biol. Chem.* **275**:21809-12.

Funding

Entertainment Software Association Foundation (ESAF), 1/2009-1/2012.
To support the evaluation and distribution of Immune Attack, 1.0.

National Institutes of Health, National Institute of Allergy and Infectious Diseases, (NIAID), 8/2009-8/2014. To create the sequel to Immune Attack building on the evaluation of the original and to help teachers implement the game in their classrooms/refer to it in the curriculum, and to evaluate its effectiveness as a teaching tool.