**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**

2014 – **Owner**, Molecular Jig Games, LLC. Educating the average person about proteins and cells using exciting video games. Our first game is a real time strategy game called *Immune Defense*. Play test with Boys and Girls Club and other groups, analyze in game analytics, iterate on game design to maximize engagement and learning. Manage team of four. www.MolecularJig.com.

2009-2014 **Director**, Learning Technologies Program, Federation of American Scientists, Washington, DC. Refocused the Program on practical assessment of learning game effectiveness, classroom integration, and teacher professional development. Won new competitive funding from the National Institutes of Health and private sources. Managed team of six.

2008-2009 **Project Manager**, Federation of American Scientists, Learning Technologies Program. Manager of the Immune Attack project. Led development and evaluation of game to teach molecular and cellular biology to students 7th – 12th grades. Developed new learning and confidence evaluation methods.

2005-2009 **Postdoctoral Scientist**, Department of Microbiology and Immunology, Cornell Weill Medical College, New York, NY. Screened 40,000 chemical compounds for novel inhibitors of the M*ycobacterium tuberculosis* DNA repair pathway. Developed methods for assessing growth rate of mycobacteria, applying consistent DNA damage and determining the statistical significance of differences in recovery rates caused by compounds.

2003-2005 **Dissertation Research**, Department of Pharmacology and Toxicology, Dartmouth Medical School, Hanover, NH.

1997-2003 **Dissertation Research**, Department of Molecular Genetics, Biochemistry and Microbiology, University of Cincinnati, OH.

Blended biochemical and cell biology methods with genetic data to determine the role of a signaling protein (Hedgehog) in fetal development and cancers.

1995 – 1997 **Academic Advisor**, University of Cincinnati, College of Arts and Sciences. Served as freshman and transfer student advisor, helped students with diverse educational histories prepare for a four year degree.

**Teaching experience**

9/2011 – 6/2013 Teacher Professional Development presenter. Recruited by Washington, DC public schools to teach several seminars during teacher training days on integrating video games into science curriculum.

9/2006 – 8/2008 Teacher at The American Museum of Natural History, New York, NY. Taught high school level after-school classes in genetics and biochemistry. Additionally, presented and discussed genetic concepts with museum patrons in the Hall of Human Origins Education Lab.

9/2007 – 8/2008 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.

9/2000 – 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.

**Publications (Selected)**

Stegman, M. Immune Attack players perform better on a test of cellular immunology and self confidence than their classmates who play a control video game. 2014. *Faraday Discuss*., **169:**403-423

Khalili N, Sheridan K, Williams A, Clark K & Stegman M.  2011. Students Designing Video Games about Immunology: Insights for Science Learning. *Computers in the Schools.* 2011.  **28:**228-240.

Mazloum, N., Stegman, M.A., Croteau, D.L., Van Houten, B., Kwon, N.S., Ling Y., Dickinson C., Venugopal, A., Towheed, M.A., Nathan, C.  2011. Identification of a chemical that inhibits the mycobacterial UvrABC complex in nucleotide excision repair. *Biochemistry.*2011. **50:**1329-35.

Mazloum, N., 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. 88 Suppl **1:**S25-33.

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.

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.

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.

**Awards**

2014 – 2015

*Immune Defense* won places in competitive video game expos:

Seattle: Power of Play, iFest, and the Seattle Indies Expo at PAX

Baltimore, MD: Gamescape at Artscape

Washington, DC: MAGFest Indie Games Showcase.

2010

National Science Teacher Association ***Rock Star of Science***.

2009

Abstract chosen for inclusion in the Press Book for the Society for Cell Biology Annual Meeting. First education abstract ever chosen for press book.

**Invited Presentations (Selected)**

2015

Koshland Museum of Science, STEM/STEAM Game Community Event. Washington, DC.

National Academies of Science. [Envisioning the Future of Health Professional Education:](http://www.nap.edu/read/21796)Washington, DC.

2014

International Game Developer Association (IGDA) Seattle meeting. “How to evaluate intuitive learning that occurs in a video game.”

Molecular Simulations and Visualizations, Faraday Discussion 169, Royal Society of Chemistry, Nottingham, England.

2013

Center for Research and Interdisciplinarity, Paris France. Mentored young science faculty in the Leadership Program. Discussed how games can teach concepts that are complex and require an intuitive understanding, as well as how to evaluate their effect.

National Institutes of Health, Got Game? Conference on games in biomedical science research and education. Washington, DC.

Serious Play, Seattle, WA. *Immune Defense*, a research based design for a strategy game.

2012

Association of Medical Illustrators annual meeting. “Using games to introduce a wider audience to the wealth of detail available about molecular biology.”

eTech Ohio, annual conference. Presented a data talk and workshop on game development.

Society for Scholarly Publishing, annual conference. “Games as novel methods to present data and engage an audience.”