

Joshua W. Modell

jmodell1@jhmi.edu • (617) 571-6459 • 725 N. Wolfe Street, 615A PCTB; Baltimore, MD 21205

EDUCATION & RESEARCH

Johns Hopkins University School of Medicine , Baltimore, MD Assistant Professor Focus: Molecular mechanisms of CRISPR-Cas immunity	2018-present
Rockefeller University , New York, NY Jane Coffin Childs Postdoctoral Fellow Project: Self vs. non-self discrimination during CRISPR-Cas adaptive immunity Adviser: Luciano A. Marraffini	2013-2018
Massachusetts Institute of Technology , Cambridge, MA Ph.D. in Biology Dissertation: <i>DNA damage checkpoints in <i>Caulobacter crescentus</i></i> Adviser: Michael T. Laub	2007-2013
Broad Institute , Cambridge, MA Project: The Connectivity Map – an open-access resource linking gene expression signatures of disease with those of drugs and small molecules Adviser: Todd R. Golub, Cancer Genomics group	2005-2007
Duke University , Durham, NC B.S. in Biology with distinction, minor in Computer Science, <i>summa cum laude</i> Thesis: <i>The mitochondrial role in oral/aboral specification of sea urchin embryos</i> Adviser: David R. McClay	2001-2005

PUBLICATIONS

- Goldberg GW, McMillan EA, Varble A, **Modell JW**, et al. (2018) Incomplete prophage tolerance by type III-A CRISPR-Cas systems reduces the fitness of lysogenic hosts. *Nat Commun.* 9(1):61.
- Modell JW**, Jiang W, Marraffini LA. (2017) CRISPR-Cas systems exploit viral DNA injection to establish and maintain adaptive immunity. *Nature.* 544(7648):101-104.
- Heler R*, Samai P*, **Modell JW**, Weiner C, Goldberg GW, Bikard D, Marraffini LA. (2015) Cas9 specifies functional viral targets during CRISPR-Cas adaptation. *Nature.* 519(7542):199-202.
- Modell JW**, Kambara TK, Laub MT. (2014) A DNA damage-induced, SOS-independent checkpoint prevents cell division in *Caulobacter crescentus*. *PLoS Biology.* 12(10):e1001977.
- Modell JW**, Hopkins AC, Laub MT. (2011) A DNA damage checkpoint in *Caulobacter crescentus* inhibits cell division through a direct interaction with FtsW. *Genes and Development.* 25(12):1328-43.
- Modell JW**, Bradham CA. (2011) Mitochondrial gradients and p38 activity in early sea urchin embryos. *Molecular Reproduction and Development.* 78(4):225.
- Bradham CA, Oikonomou C, Kühn A, Core AB, **Modell JW**, McClay DR, Poustka AJ. (2009) Chordin is required for neural but not axial development in sea urchin embryos. *Developmental Biology.* 328(2):221-33.
- Lamb J, Crawford ED, Peck D, **Modell JW**, et al. (2006) The Connectivity Map: using gene-expression signatures to connect small molecules, genes and disease. *Science.* 313(5795):1929-35.

HONORS & FELLOWSHIPS

Jane Coffin Childs / Simons Foundation Postdoctoral Fellow (2014-2017)
National Science Foundation Graduate Research Fellow (2009-2013)
DuPont Presidential Fellow (2007)
Phi Beta Kappa (2005)
Howard Hughes Summer Scholars Program (2004)

POSTERS AND PRESENTATIONS

Re-writing Genomes, QB3, Berkeley, CA **2017**
Speaker. *CRISPR systems exploit viral DNA injection to establish and maintain adaptive immunity*

CRISPR 2017 Conference, Bozeman, MT **2017**
Speaker. *CRISPR systems exploit viral DNA injection to establish and maintain adaptive immunity*

Symposium of The Jane Coffin Childs Memorial Fund, New Haven, CT **2017**
Speaker. *CRISPR systems exploit viral DNA injection to establish and maintain adaptive immunity*

Symposium of The Jane Coffin Childs Memorial Fund, Lakeville, CT **2016**
Poster. *Self vs. non-self discrimination during CRISPR-Cas adaptive immunity*

Gordon Research Conference: Microbial Stress Response, South Hadley, MA **2012**
Speaker. *Regulatory pathways controlling cell division after DNA damage in *Caulobacter crescentus*.*

HHMI Scientific Meeting, Janelia Farm, Ashburn, VA **2011**
Poster. *A DNA damage checkpoint inhibits cell division through a direct interaction with FtsW.*

Molecular Genetics of Bacteria and Phages Meeting, Cold Spring Harbor, NY **2010**
Speaker. *Identification of a novel DNA damage checkpoint in *Caulobacter crescentus*.*

TEACHING AND MENTORING

Judge, New York State Science & Engineering Fair Judge **2016, 2017**

Organizer/lecturer, The CRISPR Revolution, Elmont Memorial High School **2016**

Organizer/lecturer, PhD for a day program, Tech International Charter School, Harlem Children's Zone PA2 Middle School **2014-2016**

Mentored students: MIT – Alex Hopkins, Tracy Kambara; Rockefeller – Amer Hossain, Phil Nussenzweig

TA, Molecular Basis of Infectious Disease (7.26), MIT **2010**

HHMI Summer Pal Mentorship Program, MIT **2010**

TA, Experimental Microbial Genetics (7.13), MIT **2008**

REFERENCES

Luciano Marraffini (Postdoctoral adviser)
Rockefeller University, Dept. of Bacteriology
1230 York Ave., TSH 141
New York, NY 10065
marraffini@rockefeller.edu

Michael T. Laub (Thesis adviser)
MIT/HHMI, Dept. of Biology
31 Ames St., 68-580A
Cambridge, MA 02139
laub@mit.edu

Alan Grossman (Thesis committee chair)
MIT, Dept. of Biology
31 Ames St., 68-530
Cambridge, MA 02139
adg@mit.edu