

## Aaron S. Meyer

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### Education

*Ph.D.*, Biological Engineering April 2014  
Massachusetts Institute of Technology, Cambridge, MA  
Thesis: Quantitative approaches to understanding signaling regulation of 3D cell migration

*B.S.*, Bioengineering, magna cum laude June 2009  
University of California, Los Angeles, CA

### Research Experience

*Assistant Professor* 2017 – Present  
Bioengineering Department, University of California, Los Angeles

- Assembling mechanistic model of FcγR engagement and activation sufficient to accurately predict *in vivo* IgG-driven effector function
- Further refining our understanding of TAM receptor activation response and role in targeted therapy and chemotherapy resistance

*Principal Investigator & Research Fellow* 2014 – 2017  
Koch Cancer Institute, MIT, Cambridge, MA

- Developed systems cancer cell resistance model allowing predictive precision therapy selection
- Refined models of TAM receptor activation for optimal immunotherapeutic targeting

*Graduate Researcher in the labs of Douglas Lauffenburger & Frank Gertler* 2009 – 2014  
Department of Biological Engineering & Koch Cancer Institute, MIT, Cambridge, MA

- Identified similarities in migration response between dimensionalities, suggesting relevant migration assays for invasive disease
- Studied transactivation of TAM receptors and its role in promoting motility response
- Developed systems models of TAM signaling, unifying conflicting observations regarding the receptors in normal biology and suggesting new methods of intervention to modulate activity

*Undergraduate Researcher in the lab of Daniel Kamei* 2006 – 2009  
Department of Bioengineering, University of California, Los Angeles, CA

- Investigated biomarker purification using novel aqueous micellar systems
- Extended a previous statistical mechanics model to nucleic acid partitioning
- Designed and executed experiments to analyze the partitioning of surfactant systems
- Developed assays for quantifying the concentration of charged and uncharged surfactants

*Summer Intern, Bioprocess Development Division* 2008  
Schering-Plough Corporation, Watchung, NJ

- Developed a novel method for high-throughput batch culture within deep-welled microtiter plates
- Investigated the social behavior of nonproducing impurities within monoclonal cultures
- Provided statistical basis for process-based confidence in monoclonality

## Refereed Publications

- Situ, K., B.A. Chua, S.Y. Bae, **A.S. Meyer**, K. Morizono. "Versatile targeting system for lentiviral vectors involving biotinylated targeting molecules." *Virology*. 2018 Oct 2; 525: 170–181.
- Robinett, R.A., N. Guan, A. Lux, M. Biburger, F. Nimmerjahn, **A.S. Meyer**. "Dissecting FcγR Regulation Through a Multivalent Binding Model." *Cell Systems*. 2018 Jul 25; 6(7): 1–8.
- Claas, A.M., L. Atta, S. Gordonov, **A.S. Meyer**, D.A. Lauffenburger. "Systems Modeling Identifies Divergent Receptor Tyrosine Kinase Reprogramming to MAPK Pathway Inhibition." *Cellular and Molecular Bioengineering* 2018 Jul 26; 1–19.
- Muffat, J., Y. Li, A. Omer, A. Durbin, I. Bosch, G. Bakiasi, E. Richards, **A.S. Meyer**, L. Gehrke, R. Jaenisch. "Human iPSC-derived Glial Cells and Neural Progenitors Display Divergent Responses to Zika and Dengue Infections." *Proc. Natl. Acad. Sci. U.S.A.* 2018 Jun 18; 201719266.
- Schwartz, A.D., L.E. Barney, L.E. Jansen, T.V. Nguyen, C.L. Hall, **A.S. Meyer**, S.R. Peyton. "A Biomaterial Screening Approach to Reveal Microenvironmental Mechanisms of Drug Resistance." *Integrative Biology*. 2017 Nov 14; 9: 912–924.
- Zweemer, A.J.M., C.B. French, J. Mesfin, S. Gordonov, **A.S. Meyer**, D.A. Lauffenburger. "Apoptotic Cell Bodies Elicit Gas6-Mediated Migration Of AXL-Expressing Tumor Cells." *Molecular Cancer Research*. 2017 Sept 18.
- Archer, T.C., E.J. Fertig, S.J.C. Gosline, M. Hafner, S.K. Hughes, B.A. Joughin, **A.S. Meyer**<sup>1</sup>, S.P. Piccolo, A. Shajahan-Haq. "Systems Approaches to Cancer Biology." *Cancer Research*. 2016 Nov 18; 76 (23); 1–4.
- Manole, S., E.J. Richards, **A.S. Meyer**. "JNK pathway activation modulates acquired resistance to EGFR/HER2 targeted therapies." *Cancer Research*. 2016 Sept 15; 76 (18): 5219–5228.
- McConnell, R.E., J.E. Van Veen, M. Vidaki, A.V. Kwiatkowski, **A.S. Meyer**, D.A. Lauffenburger, F.B. Gertler. "A Requirement for Filopodia Extension Towards Slit During Robo-Mediated Axon Repulsion." *Journal of Cell Biology*. 2016 Apr 18; 213 (2): 261.
- Miller, M.A., M.J. Oudin, R.J. Sullivan, D.T. Frederick, **A.S. Meyer**, S. Wang, H. Im, J. Tadros, L.G. Griffith, H. Lee, R. Weissleder, K.T. Flaherty, F.B. Gertler, D.A. Lauffenburger. "Reduced proteolytic shedding of receptor tyrosine kinases is a post-translational mechanism of kinase inhibitor resistance." *Cancer Discovery*. 2016 Apr; 6:331-333.
- Miller, M.A., M. Moss, G. Powell, R. Petrovich, L. Edwards, **A.S. Meyer**, L.G. Griffith, D.A. Lauffenburger. "Targeting autocrine HB-EGF signaling with specific ADAM12 inhibition using recombinant ADAM12 prodomain." *Scientific Reports*. 2015 Oct 19; 5:15150.
- Meyer**<sup>2</sup>, **A.S.**, A.J.M. Zweemer, D.A. Lauffenburger<sup>2</sup>. "The AXL receptor is a sensor of ligand spatial heterogeneity." *Cell Systems*. 2015 Nov 29; 1(1):25-36.
- Riquelme, D.N., **A.S. Meyer**, M. Barzik, A. Keating, F.B. Gertler. "Selectivity in subunit composition of Ena/VASP tetramers." *Biosci. Rep.* 2015 Jul 28;35(5). pii: e00246.
- Meyer, A.S.**, M.A. Miller, F.B. Gertler, D.A. Lauffenburger. "The receptor AXL diversifies EGFR signaling and limits the response to EGFR-targeted inhibitors in triple-negative breast cancer cells." *Science Signaling*. 2013 Aug 6; 6(287):ra66.
- Miller<sup>3</sup>, M.A., **A.S. Meyer**<sup>3</sup>, M. Beste, Z. Lasisi, S. Reddy, K. Jeng, C.-H. Chen, J. Han, K. Isaacson, L.G. Griffith, D.A. Lauffenburger. "ADAM-10 and -17 regulate endometriotic cell migration via concerted ligand and receptor

<sup>1</sup>Corresponding author.

<sup>2</sup>Co-corresponding authors.

<sup>3</sup>Equally contributing authors.

shedding feedback on kinase signaling." *Proc. Natl. Acad. Sci. U.S.A.* 2013 May 28; 110(22):E2074-83.

**Meyer, A.S.**, S.K. Hughes-Alford, J.E. Kay, A. Castillo, A. Wells, F.B. Gertler, D.A. Lauffenburger. "2D protrusion but not motility predicts growth factor-induced cancer cell migration in 3D collagen." *Journal of Cell Biology.* 2012 Jun 11; 197(6):721-9.

Kim, H.D., **A.S. Meyer**, J.P. Wagner, S.K. Alford, A. Wells, F.B. Gertler, D.A. Lauffenburger. "Signaling network state predicts Twist-mediated effects on breast cell migration across diverse growth factor contexts." *Mol. Cell. Proteomics.* 2011 Nov;10(11):M111.008433.

**Meyer, A.S.**, R.G. Condon, G. Keil, N. Jhaveri, Z. Liu, Y.-S. Tsao. "Fluorinert, an oxygen carrier, improves cell culture performance in deep square 96-well plates by facilitating oxygen transfer." *Biotechnol. Prog.* 2012 Jan; 28(1):171-8.

Mashayekhi, F., **A.S. Meyer**, S.A. Shiigi, V. Nguyen, D.T. Kamei. "Concentration of mammalian genomic DNA using two-phase aqueous micellar systems." *Biotechnol. Bioeng.* 2009 Apr 15; 102(6):1613-23.

### Research Support & Awards

<i>Administrative Supplement to U01-CA215709</i>	2018 – 2019
"Cell lineage analysis to quantify heterogeneous cell cycle responses of cancer cells"	
<i>NCI Cancer Systems Biology Consortium U01</i>	2017 – 2022
U01-CA215709 – "Precision Lung Cancer Therapy Design through Multiplexed Adapter Measurement"	
<i>Fellowship Grant</i>	2017 – 2019
Terri Brodeur Breast Cancer Foundation	
"Decoding the Role of TAM Receptors <i>In Vivo</i> Using More Specific and Potent Inhibitors"	
<i>Ten to Watch, Amgen Scholars Foundation</i>	2016
<i>AMIGOS Program Award</i>	2016 – 2020
Jayne Koskinas Ted Giovanis Foundation and Breast Cancer Research Foundation	
"Understanding the Role of Cell Plasticity in Mediating Drug Resistance"	
<i>Frontier Research Program Initiator Award</i>	2015
Koch Institute for Integrative Cancer Research	
"Multiplexed Tools for Probing Chemokine Receptor Activation State in Breast Cancer"	
<i>NIH Director's Early Independence Award</i>	2014 – 2019
DP5-OD019815 – "Adapter-Layer RTK Signaling: Basic Understanding & Targeted Drug Resistance"	
<b>Highlighted by the NIH director's office.</b>	
<i>Siebel Scholar, Class of 2014</i>	2013
<i>Whitaker Fellowship</i>	2013
Massachusetts Institute of Technology	
<i>Repligen Fellowship in Cancer Research</i>	2012
Koch Institute for Integrative Cancer Research	
<i>Frontier Research Program Initiator Award</i>	2011
Koch Institute for Integrative Cancer Research	
"Global Growth Factor Reprogramming and Invasion By AXL Expression And Shedding In Breast Carcinoma"	
<i>Breast Cancer Research Predoctoral Fellowship</i>	2010 – 2014
Department of Defense	

W81XWH-11-1-0088 – “Molecular Regulatory Network Dysregulation in Breast Cancer Cell Migration & Invasion”

*Graduate Research Fellowship* 2009 – 2014  
National Science Foundation

*Momenta Presidential Fellowship* 2009  
Massachusetts Institute of Technology

## Teaching Experience

*Instructor*, Bioengineering Laboratory 2018 – Present  
UCLA, Department of Bioengineering

- Lead lab-based course introduction to laboratory work in bioengineering and basics of experimental design and analysis

*Instructor*, Machine Learning & Data-Driven Modeling in Bioengineering 2018 – Present  
UCLA, Department of Bioengineering

- Designed and lead project-based course tailored to the background of students in the program

*Guest Speaker*, Introduction to Bioengineering 2017 – Present  
UCLA, Department of Bioengineering

- Guest speaker to discuss research program and opportunities in bioengineering

*Faculty of the Citizen Science Program* July 2015 – January 2016  
Bard College, Citizen Science Program, Annandale-on-Hudson, NY

- Led a short course introducing students to the natural sciences and scientific method

*Teaching Assistant*, Thermodynamics of Biomolecular Systems 2010  
MIT, Department of Biological Engineering, Cambridge, MA

- Taught at weekly discussion sections, office hours, and individual appointments
- Helped write and graded problem sets and exam questions

## Conference & Invited Presentations

*Univ. of Illinois at Urbana-Champaign*, Invited Departmental Seminar September 2018  
**Meyer, A.S.** “High-dimensional analysis to map and manipulate immune receptor-ligand families.”

*Systems Biology of Human Disease*, Selected Oral Presentation June 2018  
**Meyer, A.S.** “Dissecting FcγR Regulation Through a Multivalent Binding Model.”

*Univ. of Calif., Riverside, Department of Bioengineering*, Invited Departmental Seminar April 2018  
**Meyer, A.S.** “Dissecting FcγR Regulation Through a Multivalent Binding Model.”

*Univ. of Bergen, Centre for Cancer Biomarkers*, Invited Speaker March 2018  
**Meyer, A.S.** “Engineering more precise and potent TAM-targeted therapies.”

*Univ. of Calif., Los Angeles, Department of Bioengineering*, Invited Departmental Seminar October 2017  
**Meyer, A.S.** “Dissecting FcγR Regulation Through a Multivalent Binding Model.”

*Univ. of Calif., Los Angeles, Broad Stem Cell Research Center*, Invited Speaker October 2017  
**Meyer, A.S.** “Engineering more precise and potent TAM-targeted therapies.”

*Momenta Pharmaceuticals*, Invited Oral Presentation April 2017

- Robinett, R.A., N. Guan, **A.S. Meyer**. "Dissecting FcyR Regulation Through a Multivalent Binding Model." *Univ. of Pennsylvania, Department of Bioengineering*, Invited Departmental Speaker March 2017  
**Meyer, A.S.**. "Engineering more precise and potent TAM-targeted therapies."
- Univ. of Calif., Los Angeles, Department of Bioengineering*, Invited Departmental Speaker March 2017  
**Meyer, A.S.**. "Engineering more precise and potent TAM-targeted therapies."
- Moffitt Cancer Center*, Invited Speaker January 2017  
**Meyer, A.S.**. "Engineering more precise and potent TAM-targeted therapies."
- Biomedical Engineering Society Annual Meeting*, Selected Oral Presentation October 2016  
Manole, S., E.J. Richards, **A.S. Meyer**. "JNK pathway activation modulates acquired resistance to EGFR/HER2 targeted therapies."
- MD Anderson Cancer Center, Dept. of Systems Biology*, Invited Departmental Speaker September 2016  
Richards, E.J., A. Zweemer, **A.S. Meyer**. "Engineering more precise and potent TAM-targeted therapies."
- MD Anderson Cancer Center, Future of Science Symposium*, Invited Oral Presentation September 2016  
Manole, S., **A.S. Meyer**. "Toward precision therapy: Identifying molecular commonalities among RTK bypass resistance mechanisms."
- FASEB Protein Kinase Signaling Network Regulation*, Invited Oral Presentation July 2016  
Richards, E.J., A. Zweemer, **A.S. Meyer**. "Engineering more precise and potent TAM-targeted therapies."
- Univ. of Calif., Irvine, Center for Complex Biological Systems*, Invited Departmental Speaker May 2016  
Manole, S., E.J. Richards, **A.S. Meyer**. "Data-driven design of targeted therapies and immunotherapies for cancer."
- Systems Approaches to Cancer Biology*, NCI Invited Oral Presentation April 2016  
Manole, S., E.J. Richards, **A.S. Meyer**. "Looking across resistance mechanisms to identify molecular commonalities and precision therapy approaches."
- Applied Mathematics in Germinating Oncology Solutions Workshop*, NCI Invited Participant March 2016
- NIH Common Fund High-Risk High-Reward Symposium* December 2015  
Manole, S., E.J. Richards, **A.S. Meyer**. "Conserved RTK-intrinsic signaling consequences result in distinct bypass resistance capacity dependent upon pathway dependencies."
- Harvard Medical School, Brugge lab*, Invited Oral Presentation November 2015  
Manole, S., E.J. Richards, **A.S. Meyer**. "Conserved RTK-intrinsic signaling consequences result in distinct bypass resistance capacity dependent upon pathway dependencies."
- Biomedical Engineering Society Annual Meeting* October 2015  
Manole, S., **A.S. Meyer**. "Conserved RTK-intrinsic signaling consequences result in distinct bypass resistance capacity dependent upon pathway dependencies."
- ICBP Principal Investigators Meeting* May 2015  
Manole, S., **A.S. Meyer**. "Conserved RTK-intrinsic signaling consequences result in distinct bypass resistance capacity dependent upon pathway dependencies."
- NIH Common Fund High-Risk High-Reward Symposium* December 2014  
**Meyer, A.S.**. "Adapter-Layer Integration of RTK Signaling: Basic Understanding and Application to Prediction of Targeted Drug Resistance."
- Biomedical Engineering Society Annual Meeting*, Selected Oral Presentation October 2014  
**Meyer, A.S.**, C.A. Riley, D.A. Lauffenburger. "AXL Is a Spatial Ligand Differentiation Sensor."

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<i>Interdisciplinary Signaling Workshop</i> , Selected Oral Presentation	July 2014
<b>Meyer, A.S.</b> , C.A. Riley, D.A. Lauffenburger. "AXL Is a Spatial Ligand Differentiation Sensor."	
<i>ICBP Principal Investigators Meeting</i>	May 2014
<b>Meyer, A.S.</b> , C.A. Riley, D.A. Lauffenburger. "AXL is a spatial ligand differentiation sensor."	
<i>AACR Molecular Targets and Cancer Therapeutics</i>	October 2013
<b>Meyer, A.S.</b> , F.B. Gertler, D.A. Lauffenburger. "AXL amplifies EGFR signaling and drives resistance in triple negative breast carcinoma cells."	
<i>Merrimack Pharmaceuticals</i> , Invited Oral Presentation	October 2013
<b>Meyer, A.S.</b> , C.A. Riley, D.A. Lauffenburger. "AXL is a spatial ligand differentiation sensor."	
<i>ICBP Principal Investigators Meeting</i>	May 2013
<b>Meyer, A.S.</b> , F.B. Gertler, D.A. Lauffenburger. "AXL amplifies EGFR signaling and drives resistance in triple negative breast carcinoma cells."	
<i>Merrimack Pharmaceuticals</i> , Invited Oral Presentation	January 2013
<b>Meyer, A.S.</b> , F.B. Gertler, D.A. Lauffenburger. "AXL amplifies EGFR signaling and drives resistance in triple negative breast carcinoma cells."	

## Research Supervision

### Postdoctoral Fellows

- Edward Richards, Ph.D. (American Cancer Society Postdoctoral Fellowship) 2015 – Present
- Song Yi Bae, Ph.D. 2016 – Present
- Catera Wilder, Ph.D. (Co-advised by Alexander Hoffman) 2018 – Present

### Ph.D. Students

- Farnaz Mohammadi 2018 – Present
- Marc Creixell 2018 – Present

### Undergraduate Students

- Adam Weiner (Internet Research Initiative Award) 2017 – Present
- Ali Farhat (Rose Hills Foundation Scholar) 2017 – Present
- Rui Yan (Cathy Bank Scholarship) 2017 – Present
- Willie Wu 2018 – Present
- Alison Tran 2018 – Present

## Professional Service

<i>Faculty Volunteer</i> , Amgen Scholars Symposium	2018
<i>Ad Hoc Reviewer</i> , PLOS Computational Biology	2018
<i>Interviewee</i> , Prescriber Magazine	2017
<i>Ad Hoc Reviewer</i> , WIREs Systems Biology and Medicine	2017
<i>Ad Hoc Remote Reviewer</i> , Irish Research Council	2017
<i>Co-Chair</i> , Association of Early Career Cancer Systems Biologists	2017 – Present
<i>Ad Hoc Reviewer</i> , Cell Reports	2017
<i>Graduate Research Fellowship Program Review Panelist</i> , National Science Foundation	2016 – 2017

<i>Meeting Organizer &amp; Member, Association of Early Career Cancer Systems Biologists</i>	2015 – 2016
<i>Ad Hoc Reviewer, Biomedical Engineering Society Annual Meeting</i>	2016
<i>Ad Hoc Reviewer, Drug Discovery Today</i>	2016
<i>Ad Hoc Reviewer, Molecular Cell</i>	2015
<i>Member, Biomedical Engineering Society</i>	2010 – Present
<i>Coordinator, MIT Biological Engineering Graduate Student Board</i>	2010 – 2013
<i>Ad Hoc Reviewer, Oncogene</i>	2013
<i>Ad Hoc Reviewer, Nature</i>	2013
<i>Member, MIT Biological Engineering Retreat Organizing Committee</i>	2010 – 2012
<i>Ad Hoc Reviewer, J. Cell Biol.</i>	2011 – 2012

### **Patents/Disclosures**

Bae, S.Y., **A.S. Meyer**. "Small Molecule Competitive Inhibitors Of Phosphatidylserine-TAMR Ligand Interaction." Disclosure filed, 2018.

Richards, E.J., S. Manole, **A.S. Meyer**. "Modulating JNK activation to impede lung & breast cancer RTK inhibitor bypass resistance." Disclosure filed, 2016.

Miller, M.A., M.J. Oudin, **A.S. Meyer**, L.G. Griffith, F.B. Gertler, D.A. Lauffenburger. "Methods of Reducing Kinase Inhibitor Resistance." US patent application 14/690,001, 2015.

### **Thesis Committee Membership**

Daniel Bradbury, Bioengineering  
Advisor: Daniel Kamei

Giovanni Valdez, Bioengineering  
Advisor: Grace Xiao