Stacey D. Finley, Ph.D.

Department of Biomedical Engineering
University of Southern California
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Education

2004 – 2009	**Northwestern University, Evanston, IL**	
6/2009	Ph.D. in Chemical Engineering	

Thesis: Computational approaches to systems biology: Applications in xenobiotic metabolism and cellular signaling

2000 – 2004	**Florida Agricultural & Mechanical University, Tallahassee, FL**
5/2004	B.S. in Chemical Engineering, *Summa Cum Laude*

Professional Experience

Assistant Professor, University of Southern California

Gordon S. Marshall Early Career Chair	2017 – present
Department of Biomedical Engineering	2013 – present

Concurrent University Appointments

University Member, Lawrence J. Ellison Institute for Transformative Medicine	2018 – present
Department of Biological Sciences, Molecular and Computational Biology	2018 – present
Department of Chemical Engineering and Materials Science	2014 – present
Associate Member, Norris Comprehensive Cancer Center	2014 – present

Postdoctoral Research Fellow, Johns Hopkins University

Department of Biomedical Engineering, School of Medicine	2009 – 2013

Advisor: Aleksander S. Popel
Funding: NIH NRSA F32 Fellowship, UNCF/Merck Science Initiative Fellowship

Graduate Research Assistant, Northwestern University

Department of Chemical and Biological Engineering	2004 – 2009

Advisors: Linda J. Broadbelt, Vassily Hatzimanikatis
Funding: NSF Graduate Research Fellowship, NIH Biotechnology Training Grant

Honors and Awards

University of Southern California

American Association for Cancer Research NextGen Star	2018
Outstanding Young Engineer, Orange County Engineering Council	2018
Gordon S. Marshall Early Career Chair	2017
USC Viterbi Junior Research Award	2017
Hanna Reisler Mentorship Award, USC WiSE Program	2017
Undergraduate Research Associates Program Grant	2017
Leah Edelstein-Keshet Prize, Society for Mathematical Biology	2017
Frontiers in Engineering, National Academy of Engineering	2016
Young Innovator, *Cellular and Molecular Bioengineering* journal	2016
NSF CAREER Award	2016
Keystone Symposia Fellow	2016
Emerging Scholar Award, *Diverse: Issues in Higher Education* publication	2015
Undergraduate Research Associates Program Grant	2015
Frontiers in Engineering Education, National Academy of Engineering	2014
Undergraduate Research Associates Program Grant	2014
WiSE Gabilan Assistant Professorship	2013

Prior to joining USC

SIAM Conference on the Life Sciences Travel Grant	2012
Keystone Symposia Underrepresented Minority Scholarship	2011
Elmer Gaden Jr. Award, *Biotechnology and Bioengineering* journal	2011
NIH Ruth L. Kirschstein National Research Service Award (NRSA F32)	2010 − 2013
UNCF/Merck Postdoctoral Science Research Fellowship	2010 − 2012
Merck Poster Award, Metabolic Engineering VII Conference	2008
Alliances for Graduate Education and the Professoriate Scholar	2007 − 2009
NSF Graduate Research Fellowship	2006 − 2009
NIH Biotechnology Pre-doctoral Training Program	2006 – 2007

Research Grants

Ongoing research support

NIH NCI 1U01CA232137-01   9/13/18 – 8/31/23
"Multiscale systems biology modeling to exploit tumor-stromal metabolic crosstalk in colorectal cancer"
Role: Co-Principal Investigator, Contact PI (Co-PIs: S. Mumenthaler, P. Macklin)

USC Bridge Institute, Pancreatic Beta Cell Consortium   9/1/17 – 8/30/19
"Constructing a kinetic model of pancreatic beta cell metabolism"
Role: Principal Investigator

American Cancer Society Research Scholar Grant   7/1/17 – 6/30/21
"Predictive mechanistic model of angiogenic factors in breast cancer"
Role: Principal Investigator

NIH NIGMS 1R01GM140624-01A1   4/15/17 – 3/31/21
"Computational studies of virus-host interactions using metagenomics data and applications"
Role: Key Personnel (PIs: Fengzhu Sun, Nathan Ahlgren)

NSF Faculty Early Career Development Program   7/1/16 − 6/30/21
"CAREER: Mathematical modeling of angiogenesis signaling and crosstalk in tumor cells"
Role: Principal Investigator

Completed research support

USC Diabetes & Obesity Research Institute (DORI) Pilot Grant   4/1/17 – 3/31/18
"Building a computational model to stimulate beta cell regeneration *in vivo*"
Role: Co-Principal Investigator (Co-PI: Senta Georgia)

NCI Cancer Center Support Grant Developmental Fund   7/22/17 – 11/30/17
"Developing and testing 3-D in vitro organoid models to study the role of tumor cell-stromal cell
interaction on drug resistance in the tumor microenvironment (TME)"
Role: Co-Principal Investigator (PIs: S. Mumenthaler, Y. DeClerck, H.J. Lenz)

Rose Hills Foundation Research Fellowship   7/1/15 − 6/30/17
"Computational model to identify novel therapeutic targets that inhibit pancreatic cancer metabolism"
Role: Principal Investigator

Publications

*Research group members: * Postdoctoral scholar, † Ph.D. student, ‡ Undergraduate student*

Under review or in revision

28. **Finley, S.D.** (2018) "Metabolism in cancer progression". Under review at *Convergent Science Physical Oncology*, as part of the Roadmap on Mathematical Oncology.

27. Makaryan, S.Z.† and **Finley, S.D.** (2018) "Modeling of CD16, 2B4 and NKG2D stimulation in natural killer cell activation". *Under review*. *bioRxiv* pre-print: https://doi.org/10.1101/395756

26. Song, M.† and **Finley, S.D.** (2018) "Fibroblast growth factor is predicted to dominate MAPK activation by pro-angiogenic factors". *Under review*. *bioRxiv* pre-print: https://doi.org/10.1101/368415

Published or In press

25. Rohrs, J.A.†, Wang, P., and **Finley, S.D.** (2018) "Understanding the dynamics of T cell activation through the lens of computational modeling". *JCO Clinical Cancer Informatics*. In press.

24. Rohrs, J.A.†, Zheng, D., Graham, N.A., Wang, P., and **Finley, S.D.** (2018) "Computational model of chimeric antigen receptors explains site-specific phosphorylation kinetics". *Biophysical Journal*. 115, 1-14.

23. Wu, Q.†, Arnheim, A.D.‡ and **Finley, S.D.** (2018) "*In silico* mouse study identifies tumor growth kinetics as biomarkers for the outcome of anti-angiogenic treatment". *Journal of the Royal Society Interface*. 15, 20180243.

22. Li, D.† and **Finley, S.D.** (2018) "The impact of tumor receptor heterogeneity on the response to anti-angiogenic cancer treatment". *Integrative Biology*. 10, 253 - 269 ****Selected as a HOT article based on editor's assessment and exceptionally strong reviews**

21. Wu, Q.† and **Finley, S.D.** (2017) "Predictive model identifies strategies to enhance TSP1-mediated apoptosis signaling". *Cell Communication and Signaling*. 15, 53.

20. Gaddy, T.D.‡, Wu, Q.†, Arnheim, A.D.‡ and **Finley, S.D.** (2017) "Mechanistic modeling quantifies the influence of tumor growth kinetics on the response to anti-angiogenic treatment". *PLoS Computational Biology.* 13(12): e1005874.

19. Roy, M.* and **Finley, S.D.** (2017) "Computational model predicts the effects of targeting cellular metabolism in pancreatic cancer". *Frontiers in Physiology*. 8, 217.

18. Typpo, K.V., Wong, H.R., **Finley, S.D.**, Daniels, R.C., Seely, J.E., and Lacroix, J. (2017) "Monitoring severity of multiple organ dysfunction syndrome: New technologies". *Pediatric Critical Care Medicine*. 18(3 Suppl 1): S24-S31.

17. Chu, L.H., Ganta, V.J., Choi, M., Chen, G., **Finley, S.D.**, Annex, B., and Popel, A.S. (2016) "A multiscale computational model predicts distribution of anti-angiogenic isoform VEGF165b in peripheral arterial disease in human and mouse". *Scientific Reports*. 6, 37030.

16. Rohrs, J.A.†, Sulistio, C.S.‡, and **Finley, S.D.** (2016) "Predictive model of thrombospondin-1 and vascular endothelial growth factor in breast tumor tissue". *npj Systems Biology and Applications* (Nature Partner Journal). 2, 16030.

15. Rohrs, J.A.†, Wang, P., **Finley, S.D.** (2016) "Predictive model of lymphocyte-specific protein tyrosine kinase (LCK) autoregulation". *Cellular and Molecular Bioengineering.* 9(3), 351-367. ****Selected for the 2016 Young Innovators issue of the journal**

14. Soto-Ortiz, L.*, and **Finley, S.D.** (2016) "A cancer treatment based on synergy between anti-angiogenic and immune cell therapies". *Journal of Theoretical Biology*. 394,197-211.

13. **Finley, S.D.**, Angelikopoulos, P., Koumoutsakos, P., and Popel, A.S. (2015) "Pharmacokinetics of anti-VEGF agent aflibercept in cancer predicted by data driven, molecular-detailed model". *CPT: Pharmacometrics & Systems Pharmacology*. 4(11), 641-649.

12. **Finley, S.D.**, Chu, L.H., Popel, A.S. (2015) "Computational systems biology approaches to anti-angiogenic cancer therapeutics". *Drug Discovery Today*. 20(2), 187-197.

11. Logsdon, E.A., **Finley, S.D.**, Popel, A.S., and Mac Gabhann, F. (2014) "A systems biology view of blood vessel growth and remodeling". *Journal of Cellular and Molecular Medicine*. 18(8), 1491-1508.

10. **Finley, S.D.**, Dhar, M. and Popel, A.S. (2013) "Compartment model predicts VEGF secretion and investigates the effects of VEGF Trap in tumor-bearing mice". *Frontiers in Oncology*. 3, 196.

9. **Finley, S.D.** and Popel, A.S. (2013) "Effect of tumor microenvironment on tumor VEGF during anti- VEGF treatment: systems biology predictions". *Journal of the National Cancer Institute*. 105(11), 802-11.

8. **Finley, S.D.** and Popel, A.S. (2012) "Predicting the effects of anti-angiogenic agents targeting specific VEGF isoforms". *The AAPS Journal*. 14(3), 500-509.

7. Klinke, D.J. and **Finley, S.D.** (2012) "Timescale analysis of rule-based biochemical reaction networks". *Biotechnology Progress*. 28(1), 33-44.

6. **Finley, S.D.**, Engel-Stefanini, M.O., Imoukhuede, P.I., and Popel, A.S. (2011) "Pharmacokinetics and pharmacodynamics of VEGF-neutralizing agents". *BMC Systems Biology*. 5:193.

5. Yen, P.**, **Finley, S.D.**,** Stefanini, M.O., and Popel, A.S. (2011) "A two-compartment model of VEGF distribution in the mouse". *PLoS ONE*. 6:e27514. **Contributed equally.

4. **Finley, S.D.**, Gupta, D., Cheng, N., and Klinke, D.J. (2011) "Inferring relevant control mechanisms for Interleukin-12 signaling in naive CD4+ T cells". *Immunology and Cell Biology*. 89(1), 100-110.

3. **Finley, S.D.**, Broadbelt, L.J., and Hatzimanikatis, V. (2010) "In silico feasibility of novel biodegradation pathways for 1,2,4-trichlorobenzene". *BMC Systems Biology*. 4:7.

2. **Finley, S.D.**, Broadbelt, L.J., and Hatzimanikatis, V. (2009) "Computational framework for predictive biodegradation". *Biotechnology and Bioengineering*. 104(6), 1086-1097. **Awarded Elmer Gaden Jr. Award**; **Selected as Spotlight Article**

1. **Finley, S.D.**, Broadbelt, L.J., and Hatzimanikatis, V. (2009) "Thermodynamic analysis of biodegradation pathways". *Biotechnology and Bioengineering*. 103(3), 532-541. **Selected as Spotlight Article**

Non-peer reviewed manuscripts

1. Rohrs, J.A.†, Makaryan, S.Z.†, and **Finley, S.D.** (2018) "Constructing predictive cancer systems biology models". Mathematical Oncology Channel. *bioRxiv*. https://doi.org/10.1101/360800

Invited Research Presentations

Outside of USC

31. "Systems biology modeling to predict the dynamics of reaction networks in cancer", 2018 UConn Health-JAX for Genomic Medicine Postdoc Association Research Day, University of Connecticut, Farmington, CT, September 2018. **Invited Keynote Speaker**

30. "Mathematical modeling to predict the dynamics of biochemical reaction networks in cancer", Bioengineering Engineering Department Seminar, University of California, Los Angeles, Los Angeles, CA, May 2018.

29. "Mathematical modeling to predict the dynamics of biochemical reaction networks in cancer", Chemical Engineering Seminar, École Polytechnique Fédérale de Lausanne, Lausanne, Switzerland, May 2018.

28. "Effects of altering receptor structure in CAR T cells: Predictions from an experimentally-validated systems biology model", American Association for Cancer Research Annual Meeting, Chicago, IL, April 2018. **Invited Talk for AACR NextGen Star Award**

27. "Kinetic analysis of phosphorylation of chimeric antigen receptors: Insight for T cell immunotherapy", American Chemical Society Annual Meeting, New Orleans, LA, March 2018.

26. "Applying mechanistic models to predict the dynamics of cancer signaling pathways", Department of Biomedical Engineering, University of California San Diego, San Diego, CA, March 2018.

25. "Systems biology modeling to predict the dynamics of biochemical reaction networks in cancer", Department of Biomedical Engineering, University of Texas at Austin, Austin, TX, February 2018.

24. "Chemical kinetic modeling of biological networks in cancer", Department of Chemical Engineering, University of Washington, Seattle, WA, February 2018.

23. "Mathematical modeling to predict the dynamics of biochemical reaction networks in cancer", Department of Biomedical Engineering Young Faculty Seminar Speaker Series, University of California Davis, Davis, CA, December 2017.

22. "Mechanistic modeling to predict the dynamics of cancer signaling pathways", Department of Biomedical Engineering, Johns Hopkins University, Baltimore, MD, September 2017.

21. "Systems biology modeling to predict the dynamics of reaction networks in cancer", Department of Biomedical Engineering, University of Virginia, Charlottesville, VA, September 2017.

20. "The angiogenic balance in breast tumor tissue: Insight from systems biology models", Society of Mathematical Biology Annual Meeting, Salt Lake City, UT, July 2017. ****Invited Plenary Talk for Leah Edelstein-Keshet Prize**

19. "Effects of targeting metabolic pathways in pancreatic cancer: Systems biology predictions", 12th International Conference on Pathways, Networks and Systems Medicine, Heraklion, Crete, Greece, July 2017.

18. "Mechanistic modeling to predict the dynamics of cancer signaling pathways", Department of Chemical and Biological Engineering, Northwestern University, Evanston, IL, June 2017.

17. "Systems biology approach to developing molecular-detailed computational models of biological processes related to human disease", Biotechnology Training Program, Advances in Biotechnology Course, Northwestern University, Evanston, IL, May 2017.

16. "Multi-scale model of breast cancer predicts response to anti-angiogenic therapies", Society of Industrial and Applied Mathematics Conference on Mathematical Physiology and Medicine, Snowbird, UT, May 2017.

15. "Developing systems biology models to predict signaling pathways in cancer", Center for Infectious Disease Research, Seattle, WA, April 2017.

14. "Systems biology modeling to predict the dynamics of signaling pathways in cancer", Engineering Department, Harvey Mudd College, Claremont, CA, March 2017.

13. "Kinetic analysis of chimeric antigen receptor (CAR) signaling domains", NIH Mathematical Oncology Meeting, Phoenix, AZ, February 2017.

12. "Systems biology modeling to investigate signaling pathways in cancer", New Mexico Center for the Spatiotemporal Modeling of Cell Signaling, Albuquerque, NM, February 2017.

11. "Applying systems biology to predict CAR-mediated T cell activation", Southern California Systems Biology Conference, Irvine, CA, January 2017.

10. "Applying computational systems biology to predict signaling pathways in cancer", Department of Computational and Systems Biology, University of Pittsburgh, Pittsburgh, PA, November 2016.

9. "Predictive model of lymphocyte-specific protein tyrosine kinase (LCK) autoregulation". Biomedical Engineering Society (BMES) Annual Meeting, Minneapolis, MN, October 2016. ****Invited Talk for Young Innovators Session**

8. "Applying computational systems biology to predict signaling pathways in cancer", Department of Mathematical Oncology, City of Hope Hospital, Duarte, CA, September 2016.

7. "Predicting cancer signaling dynamics using computational systems biology", Keystone Symposia Scientific Advisory Board Meeting, Keystone, CO, June 2016.

6. "Predicting cancer signaling dynamics using systems biology: chimeric antigen receptor (CAR) T cell activation", SoCalFlow Meeting, Irvine, CA, April 2016.

5. "Systems biology approach to understand chimeric antigen receptor (CAR) T cell activation", Novartis Institutes for Biomedical Research, Inc., Cambridge, MA, September 2015.

4. "Applying mechanistic mathematical modeling to investigate the severity of MODS: Lessons from cancer", Pediatric Multiple Organ Dysfunction Syndrome Workshop, National Institutes of Health, March 2015.

3. "Predictive mechanistic model to study anti-angiogenic cancer therapies", Department of Aerospace and Mechanical Engineering, University of California, San Diego, January 2015.

2. "Predictive mechanistic model to study anti-angiogenic cancer therapies", Department of Bioengineering, University of California, Riverside, November 2014.

1. "Anti-angiogenic cancer therapies targeting the VEGF pathway", Multiscale Modeling Consortium Meeting, National Institutes of Health, September 2014.

11. "Predicting the Dynamics of Angiogenesis Signaling Networks in Breast Tumor Tissue", WiSE on Complex Systems, Models and Materials, Research Horizons Symposium, University of Southern California, Los Angeles, CA, March 2017.

10. "Predicting cancer cell signaling dynamics using systems biology", Bridge@USC Science Faculty Luncheon Seminar Series, University of Southern California, Los Angeles, CA, October 2016.

9. "Applying computational systems biology to predict tumor angiogenesis signaling", Stem Cell Distinguished Speakers Series, University of Southern California, Los Angeles, CA, May 2016.

8. "Predictive model of the angiogenic balance in tumor tissue", University of Southern California Norris Comprehensive Cancer Center Tumor Microenvironment Program Retreat, La Cañada, CA, April 2016.

7. "Computational systems biology: Predicting cancer signaling dynamics", Associated Students of Biomedical Engineering BIOMED Research Symposium, University of Southern California, September 2015.

6. "Computational modeling of anti-angiogenic cancer therapeutics", Center for Applied Molecular Medicine, Physical Sciences in Oncology Center, University of Southern California, May 2015.

5. "Predicting the effects of anti-angiogenic cancer therapeutics: Insights from computational modeling", Translational and Clinical Sciences Research Seminar, University of Southern California, April 2015.

4. "Mathematical modeling of signaling pathways in cancer", Viterbi School of Engineering, Corporate Advisory Board Meeting, University of Southern California, April 2015.

3. "Predicting the effects of therapies to inhibit tumor angiogenesis", Research Seminar Series, The Saban Research Institute, Children's Hospital of Los Angeles, December 2014.

2. "Computational model to predict the effects of anti-angiogenic cancer therapies", Computational Biology Seminar Series, University of Southern California, November 2014.

1. "Predicting the effects of cancer therapies targeting angiogenesis signaling pathways ", ENH Seminar Series, University of Southern California, October 2013.

Contributed Meeting Presentations

*Research group members: * Postdoctoral scholar; † Ph.D. student, ‡ undergraduate student*

Bold denotes presenter

Oral Presentations

25. Rohrs, J.A.†, Wang, P., and **Finley, S.D.** "Kinetic modeling of CD28 co-stimulation in CAR-engineered T cells", 11th Annual International Conference on Systems Biology of Human Disease, Los Angeles, CA, June 2018.

24. **Rohrs, J.A.**†, Wang, P., and Finley, S.D., "Mechanistic model of Chimeric Antigen Receptor T cell activation", 22nd Annual Grodins Symposium, Los Angeles, CA, April 2018. ****J.A.R. selected to win the Outstanding Student Award**

23. **Rohrs, J.A.**†, Zheng, D., Wang, P., Graham, N.A., and Finley, S.D., "Kinetic Analysis of CD3ζ and CD28 Chimeric Antigen Receptor T cell Activation", American Institute of Chemical Engineers (AIChE) Annual Meeting, Minneapolis, MN, November 2017.

22. Roy, M.*,and **Finley, S.D.**, "Dynamic modeling of pancreatic cancer metabolism to investigate optimal therapeutic strategies", AIChE Annual Meeting, Minneapolis, MN, October 2017.

21. **Wu, Q.**†, Rohrs, J.A.†, Wang, P. and Finley, S.D., "Computational model predicts the dynamics of thrombospondin-1 mediated apoptosis", BMES Annual Meeting, Phoenix, AZ, October 2017.

20. **Rohrs, J.A.**†, Wang, P., Graham, N.A., and Finley, S.D., "Computational Model Predicts the Optimal Chimeric Antigen Receptor (CAR) Signaling Domain Structure for Dual Antigen Targeting", BMES Annual Meeting, Phoenix, AZ, October 2017.

19. **Li, D.**† and <u>Finley, S.D.</u>, "Systems biology model predicts the impact of heterogeneity on the response to combination anti-angiogenesis therapy", BMES Annual Meeting, Phoenix, AZ, October 2017.

18. **Rohrs, J.A.**†, Wang, P., Graham, N.A., and <u>Finley, S.D.</u>, "Kinetic analysis of chimeric antigen receptor T cell activation", ImmunologyLA Research Symposium, Los Angeles, CA, June 2017. ****Awarded Best Graduate Student Talk**

17. **Roy, M.***, and <u>Finley, S.D.</u>, "Dynamic modeling of pancreatic cancer metabolism to investigate optimal therapeutic strategies", 2nd Annual USC Postdoctoral Research Symposium, Los Angeles, CA, May 2017.

16. **Roy, M.***, and <u>Finley, S.D.</u>, "Computational model predicts the effects of targeting cellular metabolism in pancreatic cancer", da Vinci Convergence Symposium, Santa Monica, CA, March 2017.

15. **Rohrs, J.A.**†, Wang, P., Graham, N.A., and <u>Finley, S.D.</u>, "Mechanistic model of chimeric antigen receptor (CAR) phosphorylation sequence", AIChE Annual Meeting, San Francisco, CA, November 2016.

14. Sulistio, C.D.‡, Rohrs, J.A.†, and **Finley, S.D.**, "Predictive model of angiogenic factors in breast tumor tissue", Systems Approaches to Cancer Biology Conference, Woods Hole, MA, April 2016.

13. Sulistio, C.D.‡, Rohrs, J.A.† and **Finley, S.D.**, "Mechanistic model of angiogenesis inhibitor thrombospondin-1 in cancer", BMES Annual Meeting, Tampa, FL, October 2015.

12. Sulistio, C.D.‡ and **Finley, S.D.**, "Mathematical modeling of the role of thrombospondin-1 in tumor angiogenesis", Society of Mathematical Biology, Atlanta, GA, June 2015.

11. **Rohrs, J.A.**†, Wang, P. and <u>Finley, S.D.</u>, "Mechanistic model of chimeric antigen receptor (CAR) signaling predicts T cell response time", AIChE Annual Meeting, Atlanta, GA, November 2014.

10. **Finley, S.D.** and Popel, A.S., "Pharmacokinetic/pharmacodynamic model predicts the response to cancer therapeutics targeting VEGF", AIChE Annual Meeting, Pittsburgh, PA, October 2012.

9. **Finley, S.D.** and Popel, A.S., "Predicting the effect of anti-angiogenic therapies targeting the VEGF pathway", BMES Annual Meeting, Atlanta, GA, October 2012.

8. **Finley, S.D.** and Popel, A.S., "Whole-body compartment model predicts response to cancer therapies targeting vascular endothelial growth factor", Merck Research Laboratories, Boston, MA, August 2012.

7. **Finley, S.D.** and Popel, A.S., "Multiscale modeling of breast cancer angiogenesis with therapeutic applications", Society of Industrial and Applied Mathematics Conference on the Life Sciences, San Diego, CA, August 2012.

6. **Klinke, D.J.**, <u>Finley, S.D.</u>, and Gupta, D. "Inferring relevant control mechanisms for Interleukin-12 signaling in naive CD4+ T cells", AIChE Annual Meeting, Nashville, TN, November 2009.

5. **Cheng, N.**, <u>Finley, S.D.</u>, and Klinke, D.J. "Inferring relevant control mechanisms for Interleukin-12 signaling in naive CD4+ T cells", BMES Annual Meeting, Pittsburgh, PA, October 2009.

4. **Finley, S.D.**, Gupta, D., Broadbelt, L.J., Brundage, K.M., and Klinke, D.J. "Dynamics and regulation of IL-12 receptor signaling", AIChE Annual Meeting, Philadelphia, PA, November 2008.

3. **Finley, S.D.**, Broadbelt, L.J., and Hatzimanikatis, V. "Generation and characterization of novel reactions to degrade xenobiotics: Insight from thermodynamics and metabolic flux analysis", AIChE Annual Meeting, Philadelphia, PA, November 2008.

2. **Finley, S.D.**, Broadbelt, L.J., and Hatzimanikatis, V. "Energetic and cellular feasibility of novel reactions to degrade trichlorobenzene", Metabolic Engineering Conference VII, Puerto Vallarta, Mexico, September 2008. ****Awarded the Merck Poster Award and selected to deliver an oral presentation in the special student session**

1. **Finley, S.D.**, Broadbelt, L.J., and Hatzimanikatis, V. "Novel reactions to degrade xenobiotics", AIChE Annual Meeting, Salt Lake City, UT, November 2007.

Poster Presentations

41. **Li, D.**† and <u>Finley, S.D.</u>, "The impact of tumor receptor heterogeneity on the response to combination anti-angiogenic cancer therapy", PMED Workshop, North Carolina State University, Raleigh, NC August 2018.

40. **Makaryan, S.Z.**† and <u>Finley, S.D.</u>, "Combinatorial analysis of CD16, 2B4 and NKG2D stimulation in natural killer cell activation", FASEB Conference on Protein Phosphorylation Networks in Health and Disease Conference, Snowmass, CO, July 2018.

39. **Makaryan, S.Z.**† and <u>Finley, S.D.</u>, "Towards an understanding of natural killer cell cytotoxicity via kinetic modeling", ImmunologyLA Research Symposium, Los Angeles, CA, June 2018.

38. **Li, D.**† and <u>Finley, S.D.</u>, "The impact of tumor receptor heterogeneity on the response to combination anti-angiogenic cancer therapy", 22nd Annual Grodins Symposium, Los Angeles, CA, April 2018.

37. **Makaryan, S.Z.**† and <u>Finley, S.D.</u>, "Towards an understanding of natural killer cell cytotoxicity via kinetic modeling", 22nd Annual Grodins Symposium, Los Angeles, CA, April 2018.

36. **Song, M.**† and <u>Finley, S.D.</u>, "Computational model of FGF and VEGF signaling interactions in angiogenesis", 22nd Annual Grodins Symposium, Los Angeles, CA, April 2018.

35. **Wu, Q.**†, Arnheim, A.D.‡, and <u>Finley, S.D.</u>, "*In silico* randomized mouse study explains effect of anti-angiogenic therapy using tumor growth kinetics", 22nd Annual Grodins Symposium, Los Angeles, CA, April 2018.

34. **Roy, M.***, Machado, K., Brass, D., Christofk, H., and <u>Finley, S.D.</u>, "Mapping pancreatic cancer metabolism to investigate optimal therapeutic strategies: Insight from 13C labeling", Keystone Symposia on Tumor Metabolism, Snowbird, UT, January 2018.

33. **Arnheim, A.D.**‡ and <u>Finley, S.D.</u>, "Identifying Biomarkers to Determine Efficacy of Anti-angiogenic Treatment", BMES Annual Meeting, Phoenix, AZ, October 2017.

32. **Roy, M.***, Machado, K., Brass, D., Christofk, H., and <u>Finley, S.D.</u>, "Mapping pancreatic cancer metabolism to investigate optimal therapeutic strategies: Insight from 13C labeling", BMES Annual Meeting, Phoenix, AZ, October 2017.

31. **Li, D.**† and <u>Finley, S.D.</u>, "Systems biology model predicts the impact of heterogeneity on the response to combination anti-angiogenesis therapy", 21st Annual Grodins Symposium, Los Angeles, CA, April 2017. ****Winner of The Best First Year Poster Award**

30. **Makaryan, S.Z.**†, Wang, P. and <u>Finley, S.D.</u>, "Deciphering T Cell Activation via Quantitative Analysis of CD3ζ Phosphorylation", 21st Annual Grodins Symposium, Los Angeles, CA, April 2017.

29. **Song, M.**† and <u>Finley, S.D.</u>, "Constructing a computational model of VEGF signaling in endothelial cells", 21st Annual Grodins Symposium, Los Angeles, CA, April 2017.

28. **Rohrs, J.A.**†, Zheng, D., Graham, N.A., Wang, P. and <u>Finley, S.D.</u>, "Kinetic analysis of CD3ζ chimeric antigen receptor T cell activation", 21st Annual Grodins Symposium, Los Angeles, CA, April 2017.

27. **Wu, Q.**†, Rohrs, J.A.†, Wang, P. and <u>Finley, S.D.</u>, "Computational model predicts the dynamics of thrombospondin-1 mediated apoptosis", 21st Annual Grodins Symposium, Los Angeles, CA, April 2017. ****Poster award winner for Biosignals & Systems section**

26. **Rohrs, J.A.**†, Wang, P., Graham, N.A. and <u>Finley, S.D.</u>, "Kinetic analysis of CAR co-stimulatory domains", Cell Symposium on Technology, Biology, and Data Science, Berkeley, CA, October 2016.

25. **Roy, M.*** and <u>Finley, S.D.</u>, "Predicting the dynamics of metabolic pathways in pancreatic ductal adenocarcinoma", BMES Annual Meeting, Minneapolis, MN, October 2016.

24. **Wu, Q.**†, Rohrs, J.A.†, Wang, P., and <u>Finley, S.D.</u>, "A Computational model of thrombospondin-1 apoptotic mechanisms", BMES Annual Meeting, Minneapolis, MN, October 2016.

23. **Wu, Q.**†, Rohrs, J.A.†, Wang, P., and <u>Finley, S.D.</u>, "A Computational model of thrombospondin-1 apoptotic mechanisms", 20th Annual Grodins Symposium, Los Angeles, CA, April 2016. ****Poster award winner for Biosignals & Systems section**

22. **Rohrs, J.A.**†, Wang, P. and Finley, S.D., "Data-driven model of chimeric antigen receptor co-stimulatory signaling", Keystone Meeting on Systems Immunology, Big Sky, MT, January 2016.

21. **Ayiotis, A.I.**‡ and Finley, S.D., "Mechanistic model of thrombospondin-1 intracellular apoptosis signaling", BMES Annual Meeting, Tampa, FL, October 2015.

20. **Lai, S.**‡ and Finley, S.D., "Computational model of VEGF-stimulated MAPK signaling in cancer cells", BMES Annual Meeting, Tampa, FL, October 2015.

19. Sulistio, C.D.‡ and **Finley, S.D.**, "Anti-angiogenic mechanisms of thrombospondin-1: Computational systems biology predictions", Gordon Research Conference on Angiogenesis, Newport, RI, August 2015.

18. **Rohrs, J.A.**†, Wang, P. and Finley, S.D., "Data driven model of CD3ζ and CD28 containing chimeric antigen receptors (CARs)", American Association of Pharmaceutical Sciences-USC Student Chapter Moving Targets Symposium, Los Angeles, CA, August 2015.

17. **Rohrs, J.A.**†, Wang, P. and Finley, S.D., "Systems biology approach to understanding chimeric antigen receptor (CAR) T cell activation", 19th Annual Grodins Symposium, Los Angeles, CA, April 2015.

16. **Rohrs, J.A.**†, Wang, P. and Finley, S.D., "Systems biology approach to understanding chimeric antigen receptor (CAR) T cell activation", AACR Special Conference on Computational and Systems Biology of Cancer, San Francisco, CA, February 2015.

15. **Rohrs, J.A.**†, Wang, P. and Finley, S.D., "Model of chimeric antigen receptor (CAR) T cell activation", BMES Annual Meeting, San Antonio, TX, October 2014.

14. **Rohrs, J.A.**†, Wang, P. and Finley, S.D., "A mechanistic model of chimeric antigen receptor (CAR) T cell activation", 18th Annual Grodins Symposium, Los Angeles, CA, April 2014.

13. **Finley, S.D.** and Popel, A.S., "Application of systems biology tools to investigate anti-angiogenic cancer therapies", AIChE Annual Meeting, Pittsburgh, PA, October 2012.

12. **Finley, S.D.** and Popel, A.S., "Multiscale molecular-detailed pharmacokinetic and pharmacodynamic model predicts response to anti-VEGF therapies in cancer", Multiscale Modeling Consortium Meeting, Bethesda, MD, October 2012.

11. **Finley, S.D.** and Popel, A.S., "Tumor VEGF can increase or decrease with anti-VEGF treatment depending on tumor microenvironment: systems biology predictions", the Johns Hopkins Institute for NanoBioTechnology Symposium, Baltimore, MD, May 2012.

10. **Finley, S.D.**, Engel-Stefanini, M.O., Imoukhuede, P.I., and Popel, A.S. "Influence of tumor microenvironment on the response to anti-VEGF therapy is predicted by a pharmacokinetic model", Anti-angiogenic Therapy Symposium, San Diego, CA, February 2012.

9. **Finley, S.D.** and Popel, A.S. "Predicting the effects of anti-angiogenic agents targeting specific VEGF isoforms", Angiogenesis Keystone Meeting, Snowbird, UT, January 2012.

8. **Finley, S.D.**, Engel-Stefanini, M.O., Imoukhuede, P.I., and Popel, A.S. "Multiscale compartment model of VEGF distribution in the body: Applications to cancer therapy", Multiscale Modeling Consortium Meeting, Bethesda, MD, October 2011.

7. **Finley, S.D.**, Engel-Stefanini, M.O., Imoukhuede, P.I., and Popel, A.S. "Optimization of VEGF-neutralizing antibodies: Insight from a pharmacokinetic model", Angiogenesis Gordon Research Seminar, Newport, RI, August 2011.

6. **Finley, S.D.**, Stefanini, M.O., and Popel, A.S. "Pharmacokinetics and pharmacodynamics of VEGF-neutralizing agents: drug design optimization from a predictive computational model", Experimental Biology Meeting, Washington, D.C., April 2011.

5. **Finley, S.D.**, Broadbelt, L.J., and Hatzimanikatis, V. "*In silico* feasibility of novel biodegradation pathways", 10th International Conference on Systems Biology, Palo Alto, CA, September 2009.

4. **Finley, S.D.**, Broadbelt, L.J., and Hatzimanikatis, V. "Generation and characterization of novel reactions to degrade xenobiotics", NIH National Graduate Research Festival, Bethesda, MD, September 2008.

3. **Finley, S.D.**, Broadbelt, L.J., and Hatzimanikatis, V. "Understanding the chemistry of biodegradation", Biochemical Engineering Conference XV, Quebec City, Quebec, July 2007.

2. **Finley, S.D.**, Broadbelt, L.J., and Hatzimanikatis, V. "Prediction of xenobiotic biodegradation reactions", National Society of Black Engineers Annual Conference, Pittsburgh, PA, April 2007.

1. **Finley, S.D.**, Broadbelt, L.J., and Hatzimanikatis, V. "Prediction and thermodynamic analysis of xenobiotic biodegradation reactions", Metabolic Engineering Conference VI, Amsterdam, Netherlands, October 2006.

Teaching

** Indicates new course developed by Prof. Finley

USC courses taught

Biomedical Engineering 430 – Principles and Applications of Systems Biology: Fall 2018

Biomedical Engineering 530 – Introduction to Systems Biology: Spring 2018

Biomedical Engineering 430 – Principles and Applications of Systems Biology: Fall 2017

Biomedical Engineering 533 – Seminars in Bioengineering: Fall 2017

Biomedical Engineering 530 – Introduction to Systems Biology: Spring 2017

Engineering 102 – Engineering Freshman Academy: Fall 2016

Biomedical Engineering 599 – Introduction to Systems Biology: Spring 2016

Biomedical Engineering 499 – Principles and Applications of Systems Biology: Fall 2015

Biomedical Engineering 599 – Introduction to Systems Biology: Spring 2015

Biomedical Engineering 499 – Principles and Applications of Systems Biology: Fall 2014 **

Biomedical Engineering 599 – Introduction to Systems Biology: Spring 2014 **

Guest lectures

Quantitative Biology 105 – Introduction to Quantitative Biology Seminar: Spring 2018

Chemistry 499 – Convergent Biosciences: Spring 2018

Biological Sciences 499 – Modeling Biology across Scales: Spring 2017

Chemical Engineering 205 – Numerical Methods in Chemical Engineering: Spring 2017

Engineering 102 – Engineering Freshman Academy: Fall 2014

Biomedical Engineering 410 – Introduction to Biomaterials and Tissue Engineering: Fall 2013

Research Supervision

Current trainees

Postdoctoral Scholars

- Dr. Mahua Roy   2015 – present
  Ph.D. in Chemistry, University of California, Irvine
  Awards: Postdoctoral Scholar Training & Travel Award, December 2017;
  WiSE Merit Award for Excellence in Postdoctoral Research, April 2017

Ph.D. Students

- Qianhui Wu   2015 – present
  Passed screening May 2016
  Awards: USC BME Grodins Symposium Poster Award, April 2016 and 2017;
  USC Graduate Mentoring Award, April 2018

- Min Song   2016 – present
  Passed screening May 2017

- Ding Li   2016 – present
  Passed screening May 2017
  Awards: USC BME Grodins Symposium Poster Award, April 2017

- Sahak Makaryan   2017 – present
  Passed screening May 2017

- Patrick Gelbach   2018 – present

- Colin Cess   2018 – present

Undergraduate Students
- Ryland Mortlock   2017 – present
  Award: USC Undergraduate Research Symposium Poster Award in the Physical
  Sciences and Engineering Category, April 2018

Former trainees (First job indicated when known)
Postdoctoral Scholars
- Dr. Luis Soto-Ortiz, 9/2014 – 1/2015   Instructor, East LA Community College
  Ph.D. in BME, University of California, Irvine

Ph.D. Students
- Jennifer Rohrs, 1/2014 – 5/2018   Senior Scientist, Applied BioMath
  Defended dissertation April 2018
  Awards: NIH NRSA F31 Pre-doctoral Fellowship, July 2015;
  Best Graduate Student Talk at immunologyLA Conference, June 2017;
  USC BME Grodins Symposium Outstanding Student Award, April 2018

Undergraduate Students from USC
- Daniel Kwon, BME, 2017   B.S. program
- Thomas Gaddy, ChE, 2015 – 2017   KTH University (Sweden), M.S. program
  Awards: Provost's Research Fellowship
- Kylie Chinn, BME, 2016   B.S. program
- Christopher Sulistio, BME, 2014 – 2016   Radlink, Inc.
  Awards: Provost's Research Fellowship
- Angela Chen, BME, 2016   Expected graduation 2018
- Steven Lai, BME, 2015   Graduation 2017
  Awards: Provost's Research Fellowship
- Andrianna Ayiotis, BME, 2015   Johns Hopkins University, Ph.D. program
  Awards: Provost's Research Fellowship
- Libanos Redda, BME, 2014 – 2015   Amgen
  Awards: Provost's Research Fellowship
- Taylor Clarkin, BME, 2014 – 2015   Biotronik
- Merrick Bautista, CS, 2014   Graduation 2015

Undergraduate Students from SURE Program
- Alyssa Arnheim, Summer 2017   B.S. program
  Boston University, Biomedical Engineering
- Yongin Choi, Summer 2016   UC Davis, Ph.D. program
  Rice University, Chemical Engineering

Candidacy and Thesis Committees
Within the School of Engineering
- Elizabeth Siegler, Biomedical Engineering, advisor: Pin Wang   2017
- Natnaree Siriwon, Chemical Engineering, advisor: Pin Wang   2016 – 2018
- Xiaoyang Zhang, Chemical Engineering, advisor: Pin Wang   2016 – 2017
- Edwin Juárez, Electrical Engineering, advisor: Edmond Jonckheere 2015 – 2017
- Maria-Eleni Dimotsantou, Biomedical Engineering, advisor: Scott Fraser 2016
- Samantha McBirney, Biomedical Engineering, advisor: Andrea Armani   2016
- Zaki Hasnain, Aerospace and Mechanical Engineering, advisor: Paul Newton 2015

Within the School of Medicine
- Colleen Garvey, Cancer Biology and Genomics, advisor: Shannon Mumenthaler

Service and Leadership within the Profession

Grant Review Panels

- **Reviewer**, NIH Modeling and Analysis of Biological Systems (MABS) Study Section   2016 – 2018
- **Reviewer**, NSF CBET Cellular and Biochemical Engineering Program   2018
- **Reviewer**, NIH Physical Sciences in Oncology Center, U54   2016
- **Early Career Reviewer**, NIH MABS Study Section   2015

Professional Society

- **Vice Chair Elect,** Area 15 D/E, American Institute of Chemical Engineers   2017 – present
- **Co-Editor,** Society for Mathematical Biology Newsletter   2017 – present
- **Associate Editor,** Bulletin of Mathematical Biology   2017 – present
- **Organizing Committee,** 2nd Meeting on Systems Approaches to Cancer Biology   2017 – present
- **Reviewer,** BMES Annual Meeting abstract submissions   2014 – present
- **Reviewer,** AIChE Annual Meeting abstract submissions   2013 – present
- **Session Chair**, "Computational Methods in Biological and Biomedical Systems", "Quantitative Approaches to Disease Mechanisms and Therapies", AIChE Annual Meeting, Minneapolis, MN   2017
- **Track Chair**, Cellular and Molecular Bioengineering Track BMES Annual Meeting, Phoenix, AZ   2017
- **Invited Participant**, Mathematical Oncology Meeting, NIH National Cancer Institute, Scottsdale, AZ   2017
- **Session Chair**, "Applications in Immunology and Immunotherapy", "Computational Methods in Biological and Biomedical Systems", and "Quantitative Approaches to Disease Mechanisms and Therapies", AIChE Annual Meeting, San Francisco, CA   2016
- **Session Chair**, "Metabolic Models", BMES Annual Meeting, Minneapolis, MN   2016
- **Session Chair**, "Complex and Networked Chemical and Biochemical Systems" AIChE Annual Meeting, Salt Lake City, UT   2015
- **Session Chair**, "Angiogenesis II" and "Multiscale Approaches", BMES Annual Meeting, Tampa, FL   2015
- **Mini-symposium Co-organizer**, "Biomedical Applications of Mathematical Biology", Society for Mathematical Biology Annual Meeting, Atlanta, GA   2015
- **Session Chair**, "Quantitative Approaches to Disease Mechanisms and Therapy" AIChE Annual Meeting, Atlanta, GA   2014
- **Session Chair**, "Multiscale Modeling", BMES Annual Meeting, San Antonio, TX   2014
- **Poster Session Chair**, "Molecular Bioengineering, Systems and Synthetic Biology", BMES Annual Meeting, San Antonio, TX   2014
- **Session Chair**, "Modeling Approaches for Biological Phenomena II: Higher Organisms", AIChE Annual Meeting, San Francisco, CA   2013

Journal Referee

- **Cancer biology**: *British Journal of Cancer; Cancer Letters; Molecular Cancer Research; Future Oncology*
- **Drug development**: *Drug Design, Development and Therapy; Drug Discovery Today; Expert Opinion on Therapeutic Targets*
- **Interdisciplinary**: *Annals of Biomedical Engineering; Cellular and Molecular Bioengineering; Journal of the Royal Society Interface; Journal of Theoretical Biology; Nature Communications; Philosophical Transactions B; PLoS Biology; PLoS Computational Biology; PLoS ONE; Scientific Reports; Science Signaling*

- **Pharmacokinetics/Pharmacodynamics**: *AAPS Journal; CPT: Pharmacometrics & Systems Pharmacology*

Society Memberships
• Biophysical Society	2018 – present
• American Chemical Society	2018 – present
• American Physiological Society	2017 – present
• Society for Mathematical Biology	2015 – present
• American Association for Cancer Research	2012 – present
• Biomedical Engineering Society	2012 – present
• American Institute of Chemical Engineers	2003 – present

Service to USC

University
• **Lecturer**, USC Bovard Scholars Program, "Introduction to Systems Biology"	2018
• **Presenter**, USC Trustee Conference, "The Art of Convergence" Panel	2018
• **Reviewer**, USC WiSE Hanna Reisler Mentoring Award	2018
• **Member**, Faculty Search Committee, Molecular and Computational Biology	2017 – 2018
• **Co-organizer and Session chair**, Systems View: Modeling across time and spatial scales, 2nd Annual da Vinci Convergence Symposium	2017
• **Reviewer**, USC Mellon Mentoring Awards	2017
• **Reviewer**, Rose Hills Research Fellowship Proposals	2017

School of Engineering
• **Member,** Viterbi Research Committee,	2018 – present
• **Panel member**, Viterbi Summer Institute, Faculty Panel	2018
• **Keynote Speaker,** Society of Women Engineers Annual High School Conference	2018
• **Panel member**, REACH Program, "Why Graduate School and How to Prepare" Panel	2018
• **Faculty Participant**, Center for Engineering Diversity, Spring Faculty Breakfast	2018
• **Keynote Speaker,** Society of Women Engineers Annual High School Conference	2017
• **Panel member**, Beyond the PhD Conference, "Academic Careers" Panel	2018
• **Panel Chair**, Pursuing a Career in Academia Mentoring Series, "Academic and Industry Paths: How to be Ready and in Demand for Both"	2017
• **Panel member**, USC AIChE Chapter, Biotechnology Panel	2017
• **BME Faculty Participant**, Explore USC Breakout Session	2016 – 2018
• **Speaker**, SHPE and MEGA, "Engineering Graduate Diversity Symposium"	2015
• **Speaker**, WiSE STEM Bytes	2015
• **Speaker**, ASBME BIOMED Research Symposium	2015
• **BME Faculty Participant**, Explore USC Parent Dinner and Breakout Session	2015
• **Faculty Advisory Board Member**, Center for Engineering Diversity	2015
• **Panel member**, STEM Careers, "Bridging the STEM Divide Conference"	2014
• **Interview panel member**, Explore USC Scholarship Interviews	2014
• **Panel member**, Pursuing a Career in Academia Mentoring Series, "Applying and Interviewing for Positions in Academia"	2013

Department
• **Co-organizer**, Distinguished Lecture Seminar Series	2015 – present
• **Judge**, Annual Grodins Research Symposium	2014 – present
• **Graduate Admissions Committee**, Biomedical Engineering	2013 – present

- **Faculty Search Committee**, Biomedical Engineering .... 2017 – 2018
- **Chair**, Graduate Admissions Committee, Biomedical Engineering ...... 2016 – 2017
- **Faculty Search Committee**, Biomedical Engineering .... 2015 – 2016
- **Chair**, Faculty Search Committee, Biomedical Engineering ...... 2014 – 2015

External Outreach Activities

- **Speaker**, 32nd Street School, DrEAMM Outreach Program, Los Angeles, CA   2016 – present
- **Invited Panelist**, Women of Color STEM Panel, LA Chapter of Black Girls CODE   2017
University of Southern California, Los Angeles, CA
- **Invited Panelist**, African American Women in STEM Panel, Celebration of   2016
Women's History Month, California African American Museum, Los Angeles, CA
- **Invited Speaker**, Women in Science, Technology, Engineering, Arts, and   2015
Mathematics (STEAM) Conference, Mirman School, Los Angeles, CA