NEDA **BAGHERI**

University of Washington Seattle
nbagheri@uw.edu | BagheriLab.com

RESEARCH INTERESTS

Emergent dynamics within and among heterogeneous cell populations; multiscale, multiclass **computational models** of dynamic life systems; network inference of **cellular decision & regulation**; (machine) **learning** from biological data; **entrainment & control** of cell populations and disease states.

EDUCATION

Massachusetts Institute of Technology | Postdoctoral Researcher 2008-2011

- Biological Engineering
- Advisor: Douglas A Lauffenburger

University of California Santa Barbara | Doctoral Student 2002-2007

- Electrical & Computer Engineering with an emphasis in Control Theory
- Advisor: Francis J Doyle III (now Provost at Brown University)

University of California Santa Barbara | Undergraduate Student 1998-2002

- Electrical & Computer Engineering with Honors

EMPLOYMENT

University of Washington | 50% FTE

- Tenured Full Professor of Biology and Chemical Engineering 2025-***present***
- Tenured Associate Professor of Biology and Chemical Engineering 2020-2025
- Assistant Professor of Biology and Chemical Engineering 2019-2020

Allen Institute for Cell Science | 50% FTE

- Senior Advisor of Modeling, Dissemination, & Alliances 2019-2024

Northwestern University

- Tenured Associate Professor of Chemical & Biological Engineering 2019
- Assistant Professor of Chemical & Biological Engineering 2012-2018

ADVISORY BOARDS & PROGRAM REVIEW COMMITTEES

- NSF Science and Technology Center for Cellular Construction, Advisor 2017-***present***
  Partnership among UCSF, UC Berkeley, SF State, Stanford, and IBM
- UIUC Scott H. Fisher Multicellular Engineered Living Systems, Reviewer 2026
- Allen Institute for Cell Science, Advisor 2018-2019
- Immuneering Corporation, Advisor 2012-2018

ACADEMIC AFFILIATIONS

University of Washington

- Center for Synthetic Biology 2022-***present***
- Computational Molecular Biology Program 2019-***present***

Northwestern University

- Chemical & Biological Engineering Adjunct Professor 2019-***present***
- Center for Synthetic Biology, **founding member** 2017-***present***

- Institute of Complex Systems, **core member until 2019** 2012-***present***
- NSF-Simons Center for Quantitative Biology, **founding member** 2018-2019
- Feinberg School of Medicine, Pulmonary and Critical Care 2014-2019
- Chemistry of Life Processes Institute 2012-2019
- Interdisciplinary Biological Sciences Program 2012-2019
- Biotechnology Training Program 2012-2019

HONORS & AWARDS

- **Senior Moulton Medal**, Institution of Chemical Engineers best paper award 2020
- **Distinguished Investigator**, Washington Research Foundation 2019
- **NSF CAREER Award**, National Science Foundation Directorate for Engineering 2017
- **Cornew Innovation Award**, Northwestern University Chemistry of Life Processes 2014
- **Searle Fellow**, Northwestern University Searle Scholars Teaching Program 2013

INVITED PUBLIC LECTURES & CONFERENCE SEMINARS

35. Finding Your Inner Modeler, The Future of Mechanistic Modeling in the Age of AI (Irvine, CA) 2025
34. Winter qBIO Annual Meeting, **Keynote Speaker** (Oahu, HI) 2025
33. Biomedical Engineering Society (BMES) Annual Meeting (Seattle, WA) 2023
32. Cell Symposia on The Conceptual Power of Single Cell Biology (San Diego, CA) 2023
31. American Physical Society (APS) 2023
    Annual March Meeting, Division of Biological Physics (Las Vegas, NV)
30. Allen Institute for Immunology (Seattle, WA) 2023
29. International Federation of Automatic Control (IFAC), **Plenary Speaker** 2022
    Symposium on Dynamics & Control of Process Systems (DYCOPS) (Busan, Korea)
28. Cell and Experimental Biology Conference (Boston, MA) 2022
27. Biomedical Engineering Society (BMES) 2022
    Conference on Cellular & Molecular Engineering (Indian Wells, CA)
26. American Institute of Chemical Engineering (AIChE) 2021
    Annual Meeting (Boston, MA)
25. American Society of Cell Biology (ASCB) | Annual Meeting (Washington, DC) 2019
24. Foundations of Systems Biology in Engineering (FOSBE) 2019
    Trienniel International Conference, **Keynote Speaker** (Valencia, Spain)
23. Calico Labs Seminar (San Francisco, CA) 2019
22. Paul G. Allen Frontiers Symposium on Predicting Biology (Seattle, WA) 2019
21. University of Washington Mindlin Foundation Public Lecture (Seattle, WA) 2019
20. American Institute of Chemical Engineering (AIChE) *Declined 2019*
    International Conference on Biomolecular Engineering, **Keynote Speaker** (Newport, CA)
19. Institute for Systems Biology (Seattle, WA) 2018
18. Biomedical Engineering Society (BMES) 2018
    Conference on Systems Thinking in Education (Atlanta, GA)
17. Accelerated Discovery Forum, **Distinguished Speaker** 2018
    IBM Research-Almaden (San Jose, CA)
16. Mathematical Biosciences Institute (MBI) 2018
    Workshop on Multiscale Dynamics of Infections (Columbus, OH)
15. Mathematical Biosciences Institute (MBI) 2017
    Workshop on Control of Disease (Columbus, OH)
14. American Institute of Chemical Engineers (AIChE) 2017
    Annual Meeting (Minneapolis, MN)
13. Shirley Welsh Ryan Learning for Life Public Lecture Series (Chicago, IL) 2017

12. International Conference on Molecular Systems Biology, **Keynote Speaker** 2017
(Raitenhaslach, Germany)
11. Q-Bio Summer School & Conference (New Brunswick, NJ) 2017
10. Society for Industrial & Applied Math (SIAM) 2017
Conference on Applications of Dynamical Systems (Snowbird, UT)
9. Midwest Quantitative Biology Symposium (Notre Dame, IN) 2017
8. Foundations of Systems Biology in Engineering (FOSBE) 2015
Triennial Domestic Conference (Boston, MA)
7. Quantitative Cell Biology Network Workshop 2015
Modeling in Cell Biology (San Francisco, CA)
6. New York University Genomics & Systems Biology Symposium (Abu Dhabi, UAE) 2014
5. Society for Integrative and Comparative Biology (SICB) 2014
Annual Meeting (Austin, TX)
4. Symposium on the Systems Biology of Stem Cells (Irvine, CA) 2013
3. International Conference on Frontiers in Systems & Synthetic Biology (Atlanta, GA) 2013
2. Society for Industrial & Applied Math (SIAM) 2012
Conference on Life Sciences (San Diego, CA)
1. Mathematical Biosciences Institute (MBI) 2012
Workshop on Robustness in Biological Systems (Columbus, OH)

TRAINEES

Postdoctoral Researchers

3. **Jason Y. Cain** | PhD in Chemical Engineering, University of Washington 2023-2025
2. **Tyrone J. Yacoub** | PhD in Chemical & Biological Engineering, Northwestern University 2015-2017
1. **Mark F. Ciaccio** | PhD in Cellular & Molecular Physiology, University of Chicago 2012-2015

Doctoral Students

17. **Krista Phommatha** | Chemical Engineering, University of Washington 2024-***present***
B.S. in Chemical Engineering, University of Colorado Boulder
16. **Allison W. Li** | Biology, University of Washington 2023-***present***
B.S. in Biochemistry and Computer Science, University of Washington
15. **Madeline T. Scott** | Biology, University of Washington 2023-***present***
B.S. in Mathematics and Natural Science, Johns Hopkins University
Co-advised with Ben Kerr
14. **Po-Hao Chiu** | Chemical Engineering, University of Washington 2022-***present***
B.S. in Chemical Engineering, National Taiwan University
13. **Jacob I. Evarts** | Biology, University of Washington 2021-***present***
B.S. in Computer & Information Science, University of Oregon
NSF Graduate Research Fellow
12. **Sophia K. Jannetty** | Biology, University of Washington 2020-***present***
B.A. in Biology, Williams College
Post Baccalaureate in Computer Science, Tufts University
11. **Jason Y. Cain** | Chemical Engineering, University of Washington 2018–2023
Unpacking the role of complexity in multiclass models of the tumor microenvironment
NU Data Science Fellow (2017), NU Biotechnology Training Program Fellow (2018)
Transferred from Chemical & Biological Engineering at Northwestern University in 2020
Postdoctoral Researcher at the University of Washington
10. **Kate E. Dray** | Chemical & Biological Engineering, Northwestern University 2018–2022
A systematic workflow for model development enables rigorous exploration of synthetic biological sys-

tems
NSF Graduate Research Fellow, NU Biotechnology Training Program Cluster Awardee (2018)
Co-advised with Joshua N. Leonard
Computational Biologist at Asimov

9. **Alexis N. Prybutok** | Chemical & Biological Engineering, Northwestern University 2017–2022
Discovering effects of tunable CAR T-cell properties and inherent tumor features on treatment outcome using ABMs NSF Graduate Research Fellow
Co-advised with Joshua N. Leonard
Assistant Teaching Professor of Chemical Engineering at the University of Washington
8. **Narasimhan Balakrishnan** | Chemical & Biological Engineering, Northwestern University 2016–2022
Modelling, analysis, and control of heterogeneous multicellular systems
NU Biotechnology Program Trainee (2017)
Senior Consultant at Guidehouse
7. **Joshua I. Levy** | Engineering Science & Applied Math, Northwestern University 2017–2021
Temperature processing and sensory navigation in Drosophila
Cabell Fellow (2016), NU Biophysics Training Program Fellow (2017–2018)
Co-advised with Bill Kath
Postdoctoral Fellow at Scripps Research
6. **Jessica S. Yu** | Chemical & Biological Engineering, Northwestern University 2016–2020
Multi-scale, multi-class agent-based models explore complexity and emergence in biological systems
NSF Graduate Research Fellow
Senior Scientist at the Allen Institute for Cell Science
5. **Joseph J. Muldoon** | Molecular Biosciences, Northwestern University 2014–2020
Heterogeneity and robustness in synthetic signaling and immune regulatory networks
NU Biotechnology Training Program Cluster Awardee (2015), NSF GRFP Honorable Mention (2015)
Co-advised with Joshua N. Leonard
Postdoctoral Fellow at UCSF (Eyquem lab and Roybal lab)
4. **Sebastian M. Bernasek** | Chemical & Biological Engineering, Northwestern University 2015–2019
Novel roles for redundant regulation during development
Co-Advised with Luis N. Amaral
Senior Machine Learning Engineer at Albert Invent
3. **Justin D. Finkle** | Molecular Biosciences, Northwestern University 2013–2019
Discovering regulatory insights from gene expression dynamics
Nicholson Fellow (2016), NU Biotechnology Training Fellow (2013), NSF GRFP Honorable Mention (2014)
Senior Bioinformatics and Computational Biology Scientist at Precede Biosciences
2. **Jia J. Wu** | Molecular Biosciences, Northwestern University 2013–2019
Data-driven strategies for optimization of human megakaryocyte culture
NSF GK-12 Fellow (2013), NU Biotechnology Training Program Cluster Awardee (2014), NIH Ruth Kirchstein NRSA award (2016)
Co-advised with William Miller
Investigator II at Novartis Institutes for Biomedical Research
1. **Albert Y. Xue** | Chemical & Biological Engineering, Northwestern University 2013–2018
Finding the needle in the haystack: applying data science to address biological questions
NU Biotechnology Training Program Cluster Awardee (2014)
Lead Data Scientist at Caterpillar Inc

Masters Students

3. **Slava S. Fazio (aka Butkovich)** | Chemical & Biological Engineering, Northwestern Univ 2018–2021
Cabell Fellow (2017), NU Biotechnology Training Program Cluster Awardee (2018)
Data Scientist at U.S. Department of Veterans Affairs
2. **M. Kasim Fassia** | Biomedical Engineering, Northwestern University 2014–2016
In silico analysis of network inference reveals logic gate dependencies
Interventional Radiologist at New York Presbyterian and Weill Cornell Medical Center

1. **August D. Oppenheimer** | Chemical & Biological Engineering, Northwestern University 2013–2015
NSF GK-12 Fellow (2013), NU Teaching Apprentice (Spring 2015)
STEM educator

Undergraduate Students

12. **Selena Xu** | Computer Science and Biochemistry, University of Washington 2026-***present***
11. **Alice Fu** | Computer Science, University of Washington 2025-***present***
10. **Navya Jain** | Applied Mathematics and Biochemistry, University of Washington 2025-***present***
9. **Danielle Vahdat** | Biology, University of Washington 2024-***present***
8. **Zimo Zhu** | Biology, University of Washington 2022-2024
7. **Isabelle Chen** | Chemical & Biological Engineering, Northwestern University 2020–2023
6. **Michael Li** | Computer Science, University of Washington 2020–2023
5. **Antonio K. A. Hazboun** | Chemical & Biological Engineering, Northwestern University 2019–2021
4. **Eduardo Munoz** | Natural Sciences AA, Cerritos Community College Summer 2018
3. **Weipeng Zhang** | Chemical & Biological Engineering, Northwestern University 2018
2. **Jessica S. Yu** | Chemical & Biological Engineering, Northwestern University 2012–2014
Alumnae of Northwestern University Graduate Fellowship (2014–2015), Richter Summer Research Grant (2013), CLP Summer Scholars Fellowship (declined)
1. **Maureen Ferries** | Chemical & Biological Engineering, Northwestern University 2012–2013

High School Students

2. **Patrick Feng** | Interlake High School 2025-***present***
1. **Alexander Weiss** | Niles North High School 2013–2014

PEER-REVIEWED PUBLICATIONS

Link to NCBI public bibliography
Bagheri trainee(s) | Lead PI(s) in **bold**/**bold** | *Co-first authors | # bioRxiv/submitted publications

42. Jung J, Dreyer KS, Dray KE, Muldoon JJ, George J, Shirman S, de Lourdes Cabezas M, D'Aquino AE, Verosloff M, Seki K, Rybnicky GA, Alam K, Bagheri N, Jewett M, Leonard J, **Mangan N**, and **Lucks J**. Developing, characterizing and modeling crispr-based point-of-use pathogen diagnostics. *ACS Synthetic Biology*, December 2024. doi: 10.1021/acssynbio.4c00469.

41. # Yu JS, Lyons B, Rafelsky SM, Theriot JA, **Bagheri N**, and **Johnson GT**. 4D hybrid model interrogates agent-level rules and parameters driving hips cell colony dynamics. *bioRxiv*, July 2024. doi: 10.1101/2024.08.12.607546.

40. Yu JS and **Bagheri N**. Model design choices impact biological insight: Unpacking the broad landscape of spatial-temporal model development decisions. *PLOS Computational Biology*, 20(3):e1011917, March 2024. doi: 10.1371/journal.pcbi.1011917.

39. Cain JY, Evarts JI, Yu JS, and **Bagheri N**. Incorporating temporal information during feature engineering bolsters emulation of spatio-temporal emergence. *Bioinformatics*, 40(3):btae131, March 2024. doi: 10.1093/bioinformatics/btae131.

38. S Q, Bernasek S, KD G, J O, S Y, Bagheri N, **Amaral LAN**, and **Carthew RW**. Energy metabolism modulates the regulatory impact of activators on gene expression. *Development*, 151(1), January 2024. doi: 10.1242/dev.201986.

37. Bernasek SM, Hur SSJ, Peláez-Restrepo N, Boisclair Lachance JF, Bakker R, Navarro HT, Sanchez-Luege N, Amaral LAN, Bagheri N, **Rebay I**, and **Carthew RW**. Ratiometric sensing of Pnt and Yan transcription factor levels confers ultrasensitivity to photoreceptor fate transitions in Drosophila. *Development*, 150(8):dev201467, April 2023. doi: 10.1242/dev.201467.

36. Cain JY, Yu JS, and **Bagheri N**. The in silico lab: Improving academic code using lessons from biology. *Cell Systems*, 14(1):1–6, January 2023. doi: 10.1016/j.cels.2022.11.006.

35. Prybutok AN, Yu JS, **Leonard JN**, and **Bagheri N**. Mapping CAR T-Cell Design Space Using Agent-Based Models. *Frontiers in Molecular Biosciences*, 9:849363, July 2022. doi: 10.3389/fmolb.2022.849363.

34. *Prybutok AN, *Cain JY, **Leonard JN**, and **Bagheri N**. Fighting fire with fire: deploying complexity in computational modeling to effectively characterize complex biological systems. *Current Opinions in Biotechnology*, 75:102704, June 2022. doi: 10.1016/j.copbio.2022.102704.

33. Dray KE, Muldoon JJ, Mangan NM, **Bagheri N**, and **Leonard JN**. GAMES: A Dynamic Model Development Workflow for Rigorous Characterization of Synthetic Genetic Systems. *ACS Synthetic Biology*, 11(2):1009–1029, February 2022. doi: 10.1021/acssynbio.1c00528.

32. **Bagheri N**, **Carpenter AE**, **Lundberg E**, **Plant AL**, and **Horwitz, R**. The new era of quantitative cell imaging-challenges and opportunities. *Molecular Cell*, 82(2):241–247, January 2022. doi: 10.1016/j.molcel.2021.12.024.

31. *Mousavikhamene Z, *Sykora DJ, **Mrksich, M**, and **Bagheri N**. Morphological features of single cells enable accurate automated classification of cancer from non-cancer cell lines. *Scientific Reports*, 11(1):24375, December 2021. doi: 10.1038/s41598-021-03813-8.

30. Yu JS and **Bagheri N**. Modular microenvironment components reproduce vascular dynamics de novo in a multi-scale agent-based model. *Cell Systems (Cover Story)*, 12(8):795–809.e9, August 2021. doi: 10.1016/j.cels.2021.05.007.

29. Muldoon JJ, Kandula V, Hong M, Donahue PS, Boucher JD, **Bagheri N**, and **Leonard, JN**. Model-guided design of mammalian genetic programs. *Science Advances*, 7(8):eabe9375, February 2021. doi: 10.1126/sciadv.abe9375.

28. Yu JS and **Bagheri N**. Agent-Based Models Predict Emergent Behavior of Heterogeneous Cell Populations in Dynamic Microenvironments. *Frontiers in Bioengineering and Biotechnology*, 8:249, 2020. doi: 10.3389/fbioe.2020.00249.

27. Bernasek SM, Peláez N, Carthew RW, **Bagheri N**, and **Amaral, LAN**. Fly-QMA: Automated analysis of mosaic imaginal discs in Drosophila. *PLOS Computational Biology*, 16(3):e1007406, March 2020. doi: 10.1371/journal.pcbi.1007406.

26. Muldoon JJ, Chuang Y, **Bagheri N**, and **Leonard, JN**. Macrophages employ quorum licensing to regulate collective activation. *Nature Communications*, 11(878), February 2020. doi: 10.1038/s41467-020-14547-y.

25. Donahue PS, Draut JW, Muldoon JJ, Edelstein HI, Bagheri N, and **Leonard, JN**. The COMET toolkit for composing customizable genetic programs in mammalian cells. *Nature Communications*, 11(779), February 2020. doi: 10.1038/s41467-019-14147-5.

24. Xue AY, Yu AM, **Lucks, JB**, and **Bagheri N**. DUETT quantitatively identifies known and novel events in nascent RNA structural dynamics from chemical probing data. *Bioinformatics*, 35(24):5103–5112, December 2019. doi: 10.1093/bioinformatics/btz449.

23. Finkle JD and **Bagheri N**. Hybrid analysis of gene dynamics predicts context-specific expression and offers regulatory insights. *Bioinformatics*, 35(22):4671–4678, November 2019. doi: 10.1093/bioinformatics/btz256.

22. Muldoon JJ, Yu JS, Fassia MK, and **Bagheri N**. Network inference performance complexity: a consequence of topological, experimental and algorithmic determinants. *Bioinformatics*, 35(18):3421–3432, September 2019. doi: 10.1093/bioinformatics/btz105.

21. Cassidy JJ, Bernasek SM, Bakker R, Giri R, Peláez N, Eder B, Bobrowska A, Bagheri N, **Amaral LAN**, and **Carthew RW**. Repressive Gene Regulation Synchronizes Development with Cellular Metabolism. *Cell*, 178(4):980–992.e17, August 2019. doi: 10.1016/j.cell.2019.06.023.

20. *Walter JM, *Ren Z, Yacoub T, Reyfman PA, Shah RD, Abdala-Valencia H, Nam K, Morgan VK, Anekalla KR, Joshi N, McQuattie-Pimentel AC, Chen CI, Chi M, Han S, Gonzalez-Gonzalez FJ, Soberanes S, Aillon RP, Watanabe S, Williams KJN, Lu Z, Paonessa J, Hountras P, Breganio M, Borkowski N, Donnelly HK, Allen JP, Amaral LA, Bharat A, Misharin AV, Bagheri N, Hauser AR, **Budinger GRS**, and **Wunderink, RG**. Multidimensional Assessment of the Host Response in Mechanically Ventilated Patients with Suspected Pneumonia. *American Journal of Respiratory and Critical Care Medicine*, 199(10):1225–1237, May 2019. doi: 10.1164/rccm.201804-0650OC.

19. Yamankurt G, Berns EJ, Xue AY, Lee A, **Bagheri N**, **Mrksich M**, and **Mirkin CA**. Exploration of the nanomedicine-design space with high-throughput screening and machine learning. *Nature Biomedical Engineering*, 3(4):318–327, April 2019. doi: 10.1038/s41551-019-0351-1.

18. Bucior BJ, Scott BN, Islamoglu T, Goswami S, Gopalan A, Yildirim T, Farha OK, **Bagheri N**, and **Snurr RQ**. Energy-based descriptors to rapidly predict hydrogen storage in metal–organic frameworks. *Molecular Systems Design & Engineering*, 4:162–174, November 2019. doi: 10.1039/C8ME00050F.

17. *Finkle JD, *Wu JJ, and **Bagheri N**. Windowed Granger causal inference strategy improves discovery of gene regulatory networks. *Proceedings of the National Academy of Sciences*, 115(9):2252–2257, February 2018. doi: 10.1073/pnas.1710936115.

16. Hartfield RM, Schwarz KA, Muldoon JJ, Bagheri N, and **Leonard JN**. Multiplexing Engineered Receptors for Multiparametric Evaluation of Environmental Ligands. *ACS Synthetic Biology*, 6(11):2042–2055, November 2017. doi: 10.1021/acssynbio.6b00279.

15. Xue AY, Szymczak LC, **Mrksich M**, and **Bagheri N**. Machine Learning on Signal-to-Noise Ratios Improves Peptide Array Design in SAMDI Mass Spectrometry. *Analytical Chemistry*, 89(17):9039–9047, September 2017. doi: 10.1021/acs.analchem.7b01728.

14. Misharin AV, Morales-Nebreda L, Reyfman PA, Cuda CM, Walter JM, McQuattie-Pimentel AC, Chen CI, Anekalla KR, Joshi N, Williams KJN, Abdala-Valencia H, Yacoub TJ, Chi M, Chiu S, Gonzalez-Gonzalez FJ, Gates K, Lam AP, Nicholson TT, Homan PJ, Soberanes S, Dominguez S, Morgan VK, Saber R, Shaffer A, Hinchcliff M, Marshall SA, Bharat A, Berdnikovs S, Bhorade SM, Bartom ET, Morimoto RI, Balch WE, Sznajder JI, Chandel NS, Mutlu GM, Jain M, Gottardi CJ, Singer BD, Ridge KM, Bagheri N, Shilatifard A, **Budinger GRS**, and **Perlman H**. Monocyte-derived alveolar macrophages drive lung fibrosis and persist in the lung over the life span. *Journal of Experimental Medicine*, 214(8):2387–2404, August 2017. doi: 10.1084/jem.20162152.

13. *Stainbrook SC, *Yu JS, Reddick MP, **Bagheri N**, and **Tyo KEJ**. Modulating and evaluating receptor promiscuity through directed evolution and modeling. *Protein Engineering Design & Selection*, 30(6):455–465, June 2017. doi: 10.1093/protein/gzx018.

12. Yu JS, Xue AY, **Redei EE**, and **Bagheri N**. A support vector machine model provides an accurate transcript-level-based diagnostic for major depressive disorder. *Translational Psychiatry*, 6(10):e931, October 2016. ISSN 2158-3188. doi: 10.1038/tp.2016.198.

11. Yu JS and **Bagheri N**. Multi-class and multi-scale models of complex biological phenomena. *Current Opinions in Biotechnology*, 39:167–173, June 2016. doi: 10.1016/j.copbio.2016.04.002.

10. Ciaccio MF, Chen VC, Jones RB, and **Bagheri N**. The DIONESUS algorithm provides scalable and accurate reconstruction of dynamic phosphoproteomic networks to reveal new drug targets. *Integrative Biology (Cover Story)*, 7(7):776–791, July 2015. doi: 10.1039/c5ib00065c.

9. *Duncan MT, *Shin S, *Wu JJ, Mays Z, Weng S, **Bagheri N**, **Miller WM**, and **Shea LD**. Dynamic transcription factor activity profiles reveal key regulatory interactions during megakaryocytic and erythroid differentiation. *Biotechnology & Bioengineering*, 111(10):2082–2094, October 2014. doi: 10.1002/bit.25262.

8. Ciaccio MF, Finkle JD, Xue AY, and **Bagheri N**. A systems approach to integrative biology: an overview of statistical methods to elucidate association and architecture. *Integrative & Comparative Biology*, 54(2):296–306, July 2014. doi: 10.1093/icb/icu037.

7. *Han Q, *Bagheri N, Bradshaw EM, Hafler DA, **Lauffenburger DA**, and **Love JC**. Polyfunctional responses by human T cells result from sequential release of cytokines. *Proc Natl Acad Sci U S A*, 109(5):1607–1612, January 2012. ISSN 1091-6490. doi: 10.1073/pnas.1117194109.

6. *Bagheri N, *Shiina M, **Lauffenburger DA**, and **Korn WM**. A dynamical systems model for combinatorial cancer therapy enhances oncolytic adenovirus efficacy by MEK-inhibition. *PLOS Comput Biol*, 7(2):e1001085, February 2011. ISSN 1553-7358. doi: 10.1371/journal.pcbi.1001085.

5. Bagheri N, Lawson MJ, **Stelling J**, and **Doyle FJ**. Modeling the Drosophila melanogaster circadian oscillator via phase optimization. *J Biol Rhythms*, 23(6):525–537, December 2008. ISSN 0748-7304. doi: 10.1177/0748730408325041.

4. *Bagheri N, *Taylor SR, Meeker K, **Petzold LR**, and **Doyle FJ**. Synchrony and entrainment properties of robust circadian oscillators. *J R Soc Interface*, 5(Suppl 1):S17–28, August 2008. ISSN 1742-5689. doi: 10.1098/rsif.2008.0045.focus.

3. Bagheri N, **Stelling J**, and **Doyle FJ**. Circadian phase resetting via single and multiple control targets. *PLOS Comput Biol*, 4(7):e1000104, July 2008. ISSN 1553-7358. doi: 10.1371/journal.pcbi.1000104.

2. Bagheri N, , **Stelling J**, and **Doyle FJ**. Quantitative performance metrics for robustness in circadian rhythms. *Bioinformatics*, 23(3):358–364, February 2007. ISSN 1367-4811. doi: 10.1093/bioinformatics/btl627.

1. **Doyle FJ**, Gunawan R, Bagheri N, Mirsky H, and To TL. Circadian rhythm: A natural, robust, multi-scale control system. *Computers & Chemical Engineering*, 30(10):1700–1711, September 2006. ISSN 0098-1354. doi: 10.1016/j.compchemeng.2006.05.029.

SERVICE TO INSTITUTES

University of Washington

- Alliance and Community Development Committee, **founding chair** — 2025-***present***
- Synthetic Biology Steering Committee — 2022–***present***
- ADVANCE Mentoring for Leadership — 2020–***present***
- Faculty Search Committee, Biology Assistant Teaching Professor — 2024-2025
- Graduate Student & Postdoc Committee, Biology — 2019–2020, 2021–2022, 2023–2024
- Life Science Building 5th Floor Pod Co-Captain — 2024-2025
- Faculty Search Committee, Chemical Engineering Full Professor — 2024
- Goldwater Scholarship Review Committee — 2022
- Faculty Search Committee, Biology Assistant Professor — 2020–2021

Allen Institute for Cell Science

- International Workshop on Data Management, **co-chair** — 2022
- International Workshop on Data Generation, **co-chair** — 2022
- International Summit on Quantitative Cell Imaging, **chair** — 2021

Northwestern University

- Founding Member, NSF-Simons Center for Quantitative Biology — 2018
- Founding Member, Center for Synthetic Biology — 2017
- Ad Hoc Reviewer, Clinical and Translational Sciences Institute TL1 — 2017
- Chicago Collaboration for Women in STEM Career Development & Leadership — 2013, 2014, 2015
- Faculty Search Committee, Chemical & Biological Engineering — 2015
- Faculty Search Committee, Biomedical Engineering — 2015
- Review Committee, Kellogg Scientists Executive Education — 2015
- Faculty Search Committee, Molecular Biosciences — 2014
- Graduate Student Admissions Committee, Interdisciplinary Biological Sciences Program — 2013

SERVICE TO GOVERNMENT AGENCIES

- **NSF Proposal Review Panels** intermittent/ongoing
- **NSF Grand Challenge Workshop** 2021
  Systems & Control Theory for Synthetic Biology
- **AFOSR Grand Challenge Workshop** 2017
  The Compositionality Problem in Synthetic Biology
- **NSF Grand Challenge Workshop** 2015
  Deciphering Genome to Phenome (G2P) Relationships
- **NSF Grand Challenge Workshop** 2013
  How Organisms Walk the Tightrope Between Stability & Change

SERVICE TO THE PROFESSION

Societies

- International Federation of Automatic Control (IFAC)
  - **Technical Area Chair** of Systems Biology & Metabolic Engineering | Triennial symposium on Dynamics and Control of Process Systems (DYCOPS) (Slovakia) 2025
  - **Planning Committee**, bid for 22nd World Congress 2016
  - **Planning Committee**, bid for 22nd World Congress 2015
  - **Task Force**, engagement of junior faculty 2015
- American Institute of Chemical Engineers (AIChE)
  - **Program Vice Chair** | Food, Pharmaceuticals, & Bioengineering (15D/E) 2022
  - **Program Vice Chair Elect** | Food, Pharmaceuticals, & Bioengineering (15D/E) 2021
- Institute of Electrical & Electronic Engineers (IEEE)
  - **Technical Council on Life Sciences**, Control Systems Society 2019–***present***
  - **Operations Co-Chair**, Conference on Decision and Control (CDC) (Miami, FL) 2018
  - **Technical Council on Systems Biology**, Control Systems Society 2017–2018
- Foundations of Systems Biology in Engineering (FOSBE)
  - **Conference Co-Chair** (Chicago, IL) 2018
  - **International Conference Planning Committee** (Magdeburg, Germany) 2016
  - **Conference Session Chair** (Boston, MA) 2015

Journals

- **Advisory Board Member**, *Cell Systems* 2020–***present***
- **Editorial Board Member**, *PLOS ONE* 2018–***present***
- **Guest Editor** of "Systems Biology 2022", *Current Opinion in Biotechnology* 2021–2022
- **Editorial Board Member**, *Processes* 2018-2020
- **Guest Editor** of "Control of Disease States", *Processes* 2018
- **Guest Co-Editor** of "Biological Networks", *Processes* 2017