Jonathan L. Robinson

National Bioinformatics Infrastructure Sweden
Department of Biology and Biological Engineering
Chalmers University of Technology
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EDUCATION

Princeton University (Princeton, NJ, USA) — Jan. 2016
- Ph.D. Chemical and Biological Engineering
- M.A. Chemical and Biological Engineering

Colorado State University (Fort Collins, CO, USA) — May 2010
- B.S. Chemical and Biological Engineering
- B.S. Chemistry

HONORS AND AWARDS

Visiting scholar at Faculty of Medicine Siriraj Hospital, Mahidol University	2020
Ruth L. Kirschstein National Research Service Award (NRSA) Postdoctoral Fellowship	2018 – 2019
Princeton Emerging Alumni Scholars Award	2015
National Science Foundation (NSF) Graduate Research Fellowship	2011 – 2014
Colorado State University Employee of the Year	2010
Department of Chemistry ACS Undergraduate Analytical Chemistry Award	2010
Department of Chemical & Biological Engineering Research Excellence Award	2010
Department of Chemical & Biological Engineering Academic Excellence Award	2009
Vincent Murphy Chemical Engineering Scholarship	2009
Chemical Engineering Alumni/Faculty Scholarship	2008

POSITIONS

Bioinformatics Scientist — Jan. 2020 – Present
NATIONAL BIOINFORMATICS INFRASTRUCTURE SWEDEN
Science for Life Laboratory
Department of Biology and Biological Engineering
Chalmers University of Technology
Gothenburg, Sweden

Postdoctoral Researcher — Feb. 2016 – Dec. 2019
CHALMERS UNIVERSITY OF TECHNOLOGY
Division of Systems and Synthetic Biology
Department of Biology and Biological Engineering
Gothenburg, Sweden
Supervisor: Dr. Jens Nielsen

Doctoral Researcher — Jan. 2011 – Jan. 2016
PRINCETON UNIVERSITY
Department of Chemical and Biological Engineering
Princeton, NJ, USA
Thesis title: Exploration of Bacterial Nitric Oxide Stress Responses as a Source of Antivirulence Targets
Advisor: Dr. Mark Brynildsen
Thesis committee: Dr. Ned Wingreen, Dr. Celeste Nelson, and Dr. Stanislav Shvartsman

Undergraduate Research Assistant — Dec. 2007 – Aug. 2010
COLORADO STATE UNIVERSITY
Department of Chemical and Biological Engineering
Fort Collins, CO, USA
Advisors: Dr. Arthur Mayeno and Dr. Brad Reisfeld

FUNDING SECURED

Ruth L. Kirschstein National Research Service Award [~100k USD / 2 years] Feb. 2018 – Dec. 2019
U.S. National Institute of Health (NIH)

Big Data SEED project [640k SEK / 8 months] Mar. 2017 – Oct. 2017
Chalmers University Information & Communication Technology Area of Advance
Co-applicants: Jens Nielsen

Graduate Research Fellowship Program fellowship [~95k USD / 3 years] Jun. 2011 – May. 2014
U.S. National Science Foundation (NSF)

TEACHING AND MENTORING EXPERIENCE

Course Lectures

CHALMERS UNIVERSITY OF TECHNOLOGY

- SysBio Writing Workshop (co-organizer, unofficial course) Jul. 2018 – Oct. 2018
- Systems Biology (guest lecturer) Nov. 2016, Oct. 2017, Oct. 2018
- Metabolic Engineering (guest lecturer) Dec. 2017, Nov. 2018
- Advanced Course on Metabolic Engineering and Systems Biology (guest lecturer) Jun. 2017, Aug. 2019

Graduate Teaching Assistant

PRINCETON UNIVERSITY

- Fundamentals of Biofuels Feb. 2015 – May 2015
- Introduction to Chemical Engineering Principles Sep. 2014 – Jan. 2015

Mentor/Supervisor of Undergraduate and Graduate Students

CHALMERS UNIVERSITY OF TECHNOLOGY

- 3 Ph.D. students — Co-supervisor — Sep. 2017 – Present
- 1 Master's student — Co-supervisor — Mar. 2018 – Nov. 2018
- 2 visiting Ph.D. students — Co-supervisor — Nov. 2017 – Jun. 2018

PRINCETON UNIVERSITY

- 1 Undergraduate — 8-week summer research project — Jul. 2015 – Aug. 2015
- 2 M.D.-Ph.D. students — 8-week rotation — May. 2015 – Jul. 2015
- 1 Ph.D. student — 3-month rotation — Mar. 2014 – May 2014
- 11 Undergraduates — 1-year senior thesis and/or junior independent work — Feb. 2013 – Dec. 2015

Completed Pedagogical Training

CHALMERS UNIVERSITY OF TECHNOLOGY

- University Teaching and Learning (CIU950) Jan. 2019 – May 2019
- Supervising Research Students (CLS905) Sep. 2019 – Dec. 2019

POSITIONS OF TRUST

Conference Organization Committee Chair — Oct. 2019

2019 Swedish Bioinformatics Workshop, Gothenburg, Sweden

- Leader of the organizing committee for the 2019 Swedish Bioinformatics Workshop
- Responsible for planning and executing program, acquiring and managing funds, and coordinating keynote speakers

Conference Session Co-Chair — Nov. 2018

2018 American Institute of Chemical Engineers Annual Meeting, Pittsburgh, PA, USA

- Processed submitted abstracts and determined which qualify for a presentation
- Facilitated presentations and proper function of session

Workshop Organizer and Leader — Oct. 2018

Chalmers Sustainability Day 2018, Chalmers University of Technology, Sweden

- Planned, organized, and led an interactive workshop on using machine learning with cancer transcriptomics
- Developed R-Shiny web application for use in the workshop

PUBLICATIONS

22. Saghaleyni R, **Robinson JL**, Sheikh MA, Bangalore P, Uhlén M, Nielsen J. Integrated Analysis of the Cancer Protein Secretory Pathway. (*In Preparation*).

21. Saghaleyni R, Malm M, Zrimec J, Guidici M, Chotteau V, Field R, Varley P, Hatton D, Grassi L, Zelezniak A, Svensson T, Uhlen M, Nielsen J, **Robinson JL**, Rockberg J. Erythropoietin Production and Secretion in HEK293F Cells is Supported by Moderated ER Stress Response and Increase in Energy Production Levels. (*In Preparation*).

20. Gustafsson J, **Robinson JL**, Inda-Díaz JS, Björnson E, Jörnsten R, Nielsen J. Dissecting Cell-to-Cell Variation in Single-Cell RNA-Seq Data. (*Under Review*).

19. Gustafsson J, **Robinson JL**, Inda-Díaz JS, Björnson E, Jörnsten R, Nielsen J. DSAVE: Tools to Investigate Variation and Purity of Subpopulations in Single-Cell RNA-Seq Data (*Under Review*).

18. Hodge K, Makjaroen J, **Robinson JL**, Khoomrung S, Pisitkun T. Deep Proteomic Deconvolution of Interferon and HBV Transfection Effects on a Hepatoblastoma Cell Line. *ACS Omega* (*In Press*).

17. **Robinson JL**, Kocabaş P, Wang H, Cholley PE, Cook D, Nilsson A, Anton M, Ferreira R, Domenzain I, Billa V, Limeta A, Hedin A, Gustafsson J, Kerkhoven EJ, Svensson T, Palsson BØ, Mardinoglu A, Hansson L, Uhlén M, Nielsen J. An Atlas of Human Metabolism. *Sci Signal* **2020**, 13, eaaz1482.

16. Uhlen M, Karlsson MJ, Hober A, Svensson AS, Scheffel J, Kotol D, Zhong W, Tebani A, Vunk H, Edfors F, Sjöstedt E, Mulder J, Mardinoglu A, Berling A, Ekblad S, Dannemeyer M, Kanje S, Rockberg J, Lundqvist M, Malm M, Volk AL, Nilsson P, Månberg A, Dodig-Crnkovic T, Pin E, Zwahlen M, Oksvold P, von Feilitzen K, Häussler RS, Hong MG, Lindskog C, Ponten F, Katona B, Vuu J, Lindström E, Nielsen J, **Robinson JL**, Ayoglu B, Mahdessian D, Sullivan D, Thul P, Danielsson F, Stadler C, Lundberg E, Voldborg B, Tegel H, Hober S, Forsström B, Schwenk JM, Fagerberg L, Sivertsson Å. The human secretome – the proteins actively secreted in human cells and tissues. *Sci Signal* **2019**, 12, eaaz0274.

15. **Robinson JL**, Feizi A, Uhlén M, and Nielsen J. A systematic investigation of the malignant functions and diagnostic potential of the cancer secretome. *Cell Reports* **2019**, 26, 2622–2635.

14. Azimi A, Caramuta S, Seashore-Ludlow B, Boström J, **Robinson JL**, Edfors F, Tuominen R, Kemper K, Krijgsman O, Peeper DS, Nielsen J, Hansson J, Brage SE, Altun M, Uhlén M, and Maddalo G. Targeting CDK2 overcomes melanoma resistance against BRAF and Hsp90 inhibitors. *Mol Syst Biol* **2018**, 14, e7858.

13. **Robinson JL** and Nielsen J. Anticancer drug discovery through genome-scale metabolic modeling. *Curr Opin Syst Biol* **2017**, 4, 1-8.

12. **Robinson JL**, Jaslove J, Murawski A, Fazen CH, and Brynildsen MP. An integrated network analysis reveals that nitric oxide reductase prevents metabolic cycling of nitric oxide by Pseudomonas aeruginosa. *Metab Eng* **2017**, 41, 67-81.

11. **Robinson JL** and Nielsen J. Integrative analysis of human omics data using biomolecular networks. *Mol BioSyst* **2016**, 12, 2953–2964.

10. Gowers GOF, **Robinson JL**, and Brynildsen MP. Starved *Escherichia coli* preserve reducing power under nitric oxide stress. *Biochem Biophys Res Commun* **2016**, 476, 29–34.

9. **Robinson JL** and Brynildsen MP. Construction and Experimental Validation of a Quantitative Kinetic Model of Nitric Oxide Stress in Enterohemorrhagic *Escherichia coli* O157:H7. *Bioengineering* **2016**, 3, 9.

8. **Robinson JL** and Brynildsen MP. Discovery and dissection of metabolic oscillations in the microaerobic nitric oxide response network of *Escherichia coli*. *Proc Natl Acad Sci U S A* **2016**, 113, E1757–E1766.

7. **Robinson JL** and Brynildsen MP (**2016**) Ensemble Modeling Enables Quantitative Exploration of Bacterial Nitric Oxide Stress Networks, in *Stress and Environmental Regulation of Gene Expression and Adaptation in Bacteria* (ed FJ de Bruijn), John Wiley & Sons, Inc., Hoboken, NJ, USA.

6. **Robinson JL** and Brynildsen MP. An ensemble-guided approach identifies ClpP as a major regulator of transcript levels in nitric oxide-stressed *Escherichia coli*. *Metab Eng* **2015**, 31, 22–34.

5. **Robinson JL**, Miller RV, and Brynildsen MP. Model-Driven Identification of Dosing Regimens that Maximize the Antimicrobial Activity of Nitric Oxide. *Metab Eng Commun* **2014**, 1, 12–18.

4. **Robinson JL**, Adolfsen KJ, and Brynildsen MP. Deciphering nitric oxide stress in bacteria with quantitative modeling. *Curr Opin Microbiol* **2014**, 19, 16–24.

3. **Robinson JL** and Brynildsen MP. A Kinetic Platform to Determine the Fate of Nitric Oxide in *Escherichia coli*. *PLoS Comput*

Biol **2013**, 9, e1003049.

2. Mayeno AN, **Robinson JL**, and Reisfeld B. Rapid Estimation of Activation Enthalpies for Cytochrome-P450-Mediated Hydroxylations. *J Comput Chem* **2011**, 32, 639–657.

1. Mayeno AN, **Robinson JL**, Yang RSH, and Reisfeld B. Predicting Activation Enthalpies of Cytochrome-P450-Mediated Hydrogen Abstractions. 2. Comparison of Semiempirical PM3, SAM1, and AM1 with a Density Functional Theory Method. *J Chem Inf Model* **2009**, 49, 1692–1703.

PRESENTATIONS

INVITED TALKS

4. Robinson JL and Nielsen J. An Atlas of Human Metabolism. SiOSB: Siriraj Omics & Systems Biology in Biomedicine 2020 conference (Jan. **2020**). Bangkok, Thailand.

3. Robinson JL and Nielsen J. Using RAVEN for reconstruction and analysis of genome-scale metabolic models. Reconstruction Workshop associated with the Centre for Digital Life Norway (Apr. **2019**). Finse, Norway.

2. Robinson JL and Nielsen J. Integrative systems biology through genome-scale metabolic models. Swedish Bioinformatics Workshop (Oct. **2018**). Örebro, Sweden.

1. Robinson JL and Nielsen J. Extracting cancer biomarkers from human -omics data. Chalmers Initiative Seminar: Digitalisation – Opportunities and Challenges (Mar. **2017**). Gothenburg, Sweden.

ORAL PRESENTATIONS

10. **Robinson JL** and Nielsen J. Integrative omics analysis of cancer protein secretion. 2017 American Institute of Chemical Engineers Annual Meeting (Nov. **2017**). Minneapolis, MN, USA.

9. **Robinson JL** and Brynildsen MP. Discovery and Dissection of Metabolic Oscillations in the Nitric Oxide Response of Escherichia coli under Microaerobiosis. 2015 American Institute of Chemical Engineers Annual Meeting (Nov. **2015**). Salt Lake City, UT, USA.

8. **Robinson JL** and Brynildsen MP. Exploration of Bacterial Nitric Oxide Stress Responses as a Source of Antivirulence Targets. Emerging Alumni Scholars Award Lecture (May **2015**). Princeton, NJ, USA.

7. **Robinson JL** and Brynildsen MP. Emergent Properties of the E. coli Nitric Oxide Response Network. 2014 American Institute of Chemical Engineers Annual Meeting (Nov. **2014**). Atlanta, GA, USA.

6. **Robinson JL** and Brynildsen MP. Model-Driven Identification of Antivirulence Targets in the Nitric Oxide Response Network of E. coli. Princeton Bioengineering Colloquium (Mar. **2014**). Princeton, NJ, USA.

5. **Robinson JL** and Brynildsen MP. Model-Driven Identification of Antivirulence Targets in the Nitric Oxide Response Network of Bacteria. Princeton Graduate Student Symposium (Oct. **2013**). Princeton, NJ, USA.

4. **Robinson JL** and Brynildsen MP. Model-Driven Identification of Clp Protease Activity as an Emergent Property of the Nitric Oxide Response Network in Escherichia coli. Molecular Genetics of Bacteria and Phages Meeting (Aug. **2013**). Madison, WI, USA.

3. **Robinson JL** and Brynildsen MP. A Kinetic Platform to Determine the Fate of Nitric Oxide in Escherichia coli. Princeton Prokaryotes Meeting (May **2013**). Princeton, NJ, USA.

2. **Robinson JL** and Brynildsen MP. A Kinetic Platform to Determine the Fate of Nitric Oxide in Bacteria. American Institute of Chemical Engineers Annual Meeting (Oct. **2012**). Pittsburgh, PA, USA.

1. **Robinson JL** and Brynildsen MP. Investigation of E. coli Biofilm Production using Elementary Mode Analysis. Princeton Biofilm Consortium (Oct. **2011**). Princeton, NJ, USA.

POSTER PRESENTATIONS

6. **Robinson JL**, Ferreira R, Gatto F, and Nielsen J. Exploring the metabolic shift associated with cancer hypermutation. 2018 American Institute of Chemical Engineers Annual Meeting (Nov. **2018**). Pittsburgh, PA, USA.

5. **Robinson JL** and Brynildsen MP. Identification of Antivirulence Targets in Bacterial Nitric Oxide Defense Networks. Princeton Bioengineering Day (Oct. **2015**). Princeton, NJ, USA.

4. **Robinson JL** and Brynildsen MP. A Kinetic Platform to Determine the Fate of Nitric Oxide in E. coli. Princeton Graduate Student Symposium (Oct. **2012**). Princeton, NJ, USA.

3. Adolfsen KJ, **Robinson JL**, Pan J, Link AJ, and Brynildsen MP. Novel Strategies to Prevent Biofouling: Connecting Physiology to Biofilm Material Properties. Princeton Center for Complex Materials NSF Site Visit (Sep. 2012). Princeton, NJ, USA.

2. **Robinson JL**, Reisfeld B, and Mayeno AN. Predicting Activation Enthalpies of Cytochrome-P450-Mediated Hydrogen Abstractions: Comparison of Semi-Empirical PM3, SAM1, and AM1 with a Density Functional Theory Method. 49th Annual Meeting of the Society of Toxicology (Mar. 2010). Salt Lake City, UT, USA.

1. **Robinson JL**, Reisfeld B, and Mayeno AN. An Updated Methodology to Predict Rates of Cytochrome P450 Mediated Hydroxylation of Aliphatic Substrates (Apr. 2008). Colorado State University Celebrate Undergraduate Research and Creativity Showcase. Fort Collins, CO, USA. *Award: Honors in the College of Engineering