Ava Pardis Soleimany

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EDUCATION

Harvard University, Cambridge, MA   2016–present
PhD Candidate, Biophysics Program

Massachusetts Institute of Technology (MIT), Cambridge, MA   2012–2016
Bachelor of Science, Computer Science and Molecular Biology
GPA: 5.0/5.0 **Concentration**: Education

EXPERIENCE

Laboratory for Multiscale Regenerative Technologies, MIT   April 2017–Present
Thesis research on engineering novel technologies for disease diagnosis and monitoring via multiplexed protease activity profiling both *in vivo* and *ex vivo*.

Laboratory for Multiscale Regenerative Technologies, MIT   January 2017–April 2017
Rotation project studying magnetotactic bacteria and potential applications for living cancer therapy.

Molecular Systems Lab, Harvard Wyss Institute   September 2016–December 2016
Rotation project on strategies for conditional genome editing.

Synthetic Biology Group, MIT RLE   September 2013–June 2016
Synthetic recombinase-based state machines in living cells.

Seven Bridges Genomics   June 2015–September 2015
Development of the Seven Bridge Cancer Genomics Cloud and extensions to the Seven Bridges API.

Wang Genomics Lab, Keck School of Medicine, USC   May 2013–September 2013
Single cell transcriptomics.

ALEKS Corporation, Irvine, CA   June 2011–August 2012
Creation of example problems for a new Pre-Algebra textbook written as a supplement to the ALEKS learning software.

Chubb-Wright Lab, University of California, Irvine   February 2011–August 2011
Psychophysical representation of visual texture recognition.

PUBLICATIONS *Contributed equally.

[8] Kirkpatrick, J.D.*, Warren, A.D.*, **Soleimany, A.P.***, Westcott, P.M.K., Voog, J.C., Martin-Alonso, C., Fleming, H.E., Tammela, T., Jacks, T., Bhatia, S.N. Noninvasive lung cancer detection via pulmonary protease profiling. *In revision.*

[7] Mehta, N.K., Pradhan, R.V., **Soleimany, A.P.**, Moynihan, K.D., Rothschilds, A.M., Momin, N., Rakhra, K., Mata-Fink, J., Bhatia, S.N., Wittrup, K.D., Irvine, D.J. Pharmacokinetic tuning of protein-antigen fusions to enhance the potency of therapeutic T cell vaccines. *In revision.*

[6] Loynachan, C.N.*, **Soleimany, A.P.***, Dudani, J.S., Lin, Y., Najer, A., Bekdemir, A., Chen, Q., Bhatia, S.N., Stevens, M.M. Renal clearable catalytic gold nanoclusters for *in vivo* disease monitoring. *Nature Nanotechnology, in press.*

[5] Amini, A.*, **Soleimany, A.***, Schwarting, W., Bhatia, S.N., Rus, D. Uncovering and mitigating algorithmic bias through learned latent structure. *AAAI/ACM Conference on Artificial Intelligence, Ethics, and Society*, 2019.

[4] Schurle, S., **Soleimany, A.P.**, . . . , Bhatia, S.N. Synthetic and living micropropellers for convection-enhanced nanoparticle transport. *Science Advances*, 2019.

[3] Chen, Y., et al. Single-cell digital lysates generated by phase-switch microfluidic device reveal transcriptome perturbation of cell cycle. *ACS Nano*, 2018. (11th out of 18 authors.)

[2] Amini, A., **Soleimany, A.**, Karaman, S, Rus, D. Spatial uncertainty sampling for end-to-end control. *Neural Information Processing Systems Workshop on Bayesian Deep Learning*, 2017.

[1] Roquet, N., **Soleimany, A.P.**, Ferris, A.C., Aaronson, S., Lu, T.K. Synthetic recombinase-based state machines in living cells. *Science*, 2016.

TEACHING

Lead Organizer and Lecturer, Introduction to Deep Learning (6.S191), MIT   January 2018, January 2019
Developed, organized, and taught MIT's official introductory course on deep learning methods and applications to a class of over 300 students.

Teaching Assistant, General Biochemistry (7.05), MIT   Spring 2015, Spring 2016
Lectured on course material in a weekly recitation section of 25 students. Led review sessions open to the 200 students in the course, wrote problem sets, and facilitated and graded exams.

Visiting Teacher, Liceo Scientifico Nomentano, Rome, Italy   January 2014
Taught physics, chemistry, and English to Italian high school students as a full time teacher.

Tutor, Biology Department, MIT   September 2013–June 2016

Tutor, Chemistry Department, MIT   Spring 2014

AWARDS

Henry Ford II Scholar Award, MIT   2016
To a senior engineering student who has maintained a cumulative average of 5.0 at the end of his/her seventh term and has exceptional potential for leadership.

AMITA Senior Academic Award, MIT   2016
To an outstanding senior woman who has demonstrated the highest level of academic excellence through her coursework and related professional activities at MIT.

Vikki Auzenne Memorial Womens Tennis Leadership Award, MIT   2016
To a member of the MIT varsity womens tennis team who best exemplifies the qualities of leadership through mentoring, advising, and counseling others, both on and off the court.

SuperUROP Outstanding Research Project Award, MIT   2015

MIT-EECS Wertheimer Undergraduate Research and Innovation Scholar   2014-2015

LEADERSHIP

MIT Varsity Women's Tennis, Captain 2014-2016   2012-2016

MIT Leadership Training Institute, Managing Director 2014-2016   2012-2016
Directed a service-focused leadership program for underserved high school students from the Boston area.

MIT Freshman Leadership Program, Counselor   2014-2016
Developed and counseled in annual pre-orientation program for MIT freshmen centered on personal empowerment, inclusivity and diversity, and leadership skill-building.

MIT Community Catalyst Leadership Program   2014-2016
Engaged in mentoring relationship with MIT alumnus.

SKILLS

Laboratory skills: experience with small animal pre-clinical models, including injections (intravenous, intraperotineal, subcutaneous), blood collection, urine collection, necropsy, MR and intravital imaging; immunohistochemistry; cryosectioning; enzyme activity assays; nanoparticle synthesis and characterization; ICP-MS; Western blotting; ELISA; mammalian and bacterial cell culture; plasmid construction/cloning; PCR and qPCR; FACS
Programming and data analysis: Python; Java; MATLAB; Unix/BASH; R; deep learning including CNNs, RNNs; machine learning including SVM, KNN, decision trees, random forest; bioinformatics tools
Languages: English (native), Farsi (fluent)