

# CORBAN N. SWAIN

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## EDUCATION

Massachusetts Institute of Technology 2017–

- PhD Student in Biological Engineering
- National Science Foundation Graduate Research Fellow
- Lemelson Presidential Fellow

Washington University in St. Louis 2012–17

- BS in Biomedical Engineering, Magna Cum Laude
- Cumulative GPA: 3.84/4
- John B. Ervin and James E. McLeod Scholar

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## PUBLICATIONS & PRESENTATIONS

Nanoparticle-macrophage interactions: a balance between clearance and cell-specific targeting – *Bioorganic & Medicinal Chemistry* 2017

Hydrolytic charge-reversal of PEGylated polyplexes enhances intracellular unpacking and activity of siRNA – *Journal of Biomedical Materials Research Part A* 2015

A strategy for combating melanoma with oncogenic c-Myc inhibitors and targeted nanotherapy – *Nanomedicine* 2014

Surface passivation of carbon nanoparticles with branched macromolecules influences near-infrared bioimaging – *Theranostics* 2013

Platform presentation at the Biomedical Engineering Society Annual Meeting 2013

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## RESEARCH EXPERIENCE

Washington University – *Nano Research Facility* 2016–17

- Investigated graphene oxide nano-complexes for their biosensing ability
- Employed aptamers and crumpled graphene oxide for metabolite sensors.
- Mentored by Dr. Pratim Biswas and Dr. Ramesh Raliya

University of Alabama in Huntsville – *Polymer Synthesis Laboratory* 2015

- Developed novel methods to synthesize and purify glutamine homopolymers
- Mentored by Dr. Carmen Scholz and Dr. David Ulkoski

University of Michigan – *MNIMBS* 2014

- Probed the effects of surface passivation on uptake and toxicity of dendrimers
- Mentored by Dr. Sascha Goonewardena and Dr. Ryan Tsuchida

Vanderbilt University – *Advanced Therapeutics Laboratory* 2013

- Applied endosomolytic nanopolyplexes for enhanced delivery of siRNA
- Mentored by Dr. Craig Duvall and Dr. Christopher Nelson

Washington University School of Medicine – *C-TRAIN* 2012–14

- Developed facile syntheses of a novel c-Myc/Max inhibitor
- Studied a STAT3 inhibitor prodrug for targeted melanoma treatment
- Mentored by Dr. Gregory Lanza and Dr. Dipanjan Pan

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#### HONORS

- Sloan Scholar, Alfred P. Sloan Foundation's Minority PhD Program 2017
- Alpha Eta Mu Beta, biomedical engineering honor society member 2017–
- Tau Beta Pi, engineering honor society member 2016–
- Maximizing Access to Research Careers U-STAR Fellow 2014–17
- National Barry M. Goldwater Scholarship Honorable Mention 2014
- James M. McKelvey Undergraduate Research Scholar 2013–17

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#### TEACHING EXPERIENCE

- “Introduction to Biomedical Engineering” teaching assistant 2013–16
- “Organic Chemistry I” teaching assistant 2015
- 150+ hours as an independent tutor in science, math, and programming 2013–

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#### PROFESSIONAL PHOTOGRAPHY

- Photographing headshots, portraits, and events – [CORBANSWAINPHOTO.COM](http://CORBANSWAINPHOTO.COM)
- St. Louis Arch Photo Contest Grand Prize Winner 2015

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#### VOLUNTEER WORK

- 65+ hours cleaning patient rooms and preparing beds, Huntsville Hospital 2015
- Brittany Woods Middle School mentor and tutor, St. Louis MO 2012–13
- Sci-Quest: Hands-on Science Center educational assistant, Huntsville AL 2008–15