

Ted Cybulski, PhD

PERSONAL INFORMATION	Student, Medical Scientist Training Program Northwestern University, Feinberg School of Medicine Chicago, IL	<i>mobile:</i> 248.961.0897 <i>e-mail:</i> cyb@northwestern.edu
EDUCATION	Northwestern University , Chicago, IL Medical Student, Feinberg School of Medicine • Anticipated Year of Graduation: 2019 Ph.D., Neuroscience • Advisor: Konrad Körding • Dissertation: “Toward the Statistical and Biological Realization of DNA Polymerase as a Molecular Recorder.” 2017. Massachusetts Institute of Technology , Cambridge, MA S.B., Biological Engineering • Minor in Economics	June 2010 - Current August 2012 - August 2017 June 2010
AWARDS	Selected Poster, <i>GRC Bioanalytical Sensors, Newport, RI</i> Tau Beta Pi Engineering Honor Society, Member Herbert H. and Barbara C. Dow Scholar, <i>MIT</i>	2014 2010 - Current 2009
REFEREED PUBLICATIONS	<ol style="list-style-type: none">[1] De Paz AM, Cybulski TR, Marblestone AH, Zamft BM, Church GM, Boyden ES, Kording KP, Tyo KEJ. “High-resolution mapping of DNA polymerase fidelity using nucleotide imbalances and next-generation sequencing.” <i>Nucleic Acids Research</i>. Advance press. 2018. doi:10.1093/nar/gky296[2] Younger AKD, Su PY, Shepard AJ, Udani SV, Cybulski TR, Tyo KEJ, Leonard JN. “Development of novel metabolite-responsive transcription factors via transposon-mediated protein fusion.” <i>Protein Engineering, Design, and Selection</i>. 31(2). 2018. doi:10.1093/protein/gzy001[3] Cybulski TR, Boyden ES, Church GM, Tyo KEJ, Kording KP. “Nucleotide-time Alignment for Molecular Ticker Tapes.” <i>PLoS Computational Biology</i>. 13(5): e1005483. 2017. doi:10.1371/journal.pcbi.1005483[4] Saeb S, Cybulski TR, Kording KP, Mohr DC. “Towards Scalable Passive Sleep Monitoring using Smartphones: Opportunities and Obstacles.” <i>Journal of Medical Internet Research</i>. 19(4).e118. 2017. doi:10.2196/jmir.6821[5] Cybulski TR, Glaser JI, Marblestone AH, Zamft BM, Boyden ES, Church GM, Kording KP. “Spatial Information in Large-Scale Neural Recordings.” <i>Frontiers in Computational Neuroscience</i>. 8(172). 2014. doi:10.3389/fncom.2014.00172[6] Zhang W, Chen Y, Cybulski TR, Fabbri D, Gunter C, Lawlor P, Liebovitz D, Malin B. “Decide Now or Decide Later? Quantifying the Tradeoff between Prospective and Retrospective Access Decisions.” <i>Proceedings of the 2014 ACM SIGSAC Conference on Computer & Communications Security</i>. Paper presented at ACM SIGSAC Conference on Computer & Communications Security, Scottsdale, AZ, USA. 2014. doi:10.1145/2660267.2660341[7] Marblestone AM, Zamft BM, Maguire YG, Shapiro MG, Cybulski TR, Glaser JI, Amodei D, Stranges PB, Kalhor R, Dalrymple DA, Seo D, Alon E, Maharbiz MM, Carmena JM, Rabaey JM, Boyden ES, Church GM, Kording KP. “Physical Principles for Scalable Neural Recording.” <i>Frontiers in Computational Neuroscience</i>. 7(137). 2013. doi:10.3389/fncom.2013.00137	

RESEARCH
ABSTRACTS AND
PRESENTATIONS

- [1] Saeb S, **Cybulski TR**, Kording KP, Mohr DC. (May 2017) *Towards Scalable Passive Sleep Monitoring using Smartphones: Opportunities and Obstacles*. Oral presentation, poster presented at ACM Computer-Human Interaction, Denver, CO.
- [2] **Cybulski TR**, De Paz AM, Kording KP, Tyo KEJ. (March 2017) *Molecular recording of time-resolved multi-bit signals via DNA synthesis*. Flash talk, poster presented at Engineering Biology Research Consortium Retreat, Chicago, IL.
- [3] **Cybulski TR**, Boyden ES, Church GM, Tyo KEJ, Kording KP. (October 2015) *Inference of neural signals from a proposed dual-polymerase error-encoded recording system*. Poster presented at SfN Annual Meeting, Chicago, IL.
- [4] **Cybulski TR**, Kording KP. (June 2014). *Nucleotide-time Alignment for Molecular Ticker Tapes*. Poster presented at GRC Bioanalytical Sensors, Newport, RI.
- [5] **Cybulski TR**, Glaser JI, Kording KP. (July 2013). *Spatial Information in Large-Scale Neural Recordings*. Poster presented at NU MSTP Retreat, Chicago, IL.

OTHER
PRESENTATIONS

- [1] **Cybulski TR**. (November 2015). "PRISM: A Longitudinal Science and Medicine Mentoring Program." Talk presented at Learn, Serve, Lead: AAMC National Meeting 2015, Baltimore MD.

RESEARCH
EXPERIENCE

Northwestern University, Chicago, IL

Körding Laboratory, *Ph.D. Candidate*

March 2011 - August 2017

- Designed parallel dynamic algorithms to analyze the performance of DNA-based molecular recorders, implemented on GPUs
- Evaluated performance of sleep detection algorithms on data gathered from mobile phones in a large, diverse participant population
- Developed Bayesian techniques to evaluate access control of electronic health records in collaboration with researchers at Vanderbilt, University of Illinois, and Northwestern Memorial Hospital
- Quantified performance of next-generation neural imaging techniques using Fisher information

Tyo Laboratory, *Ph.D. Candidate*

April 2013 - August 2017

- Investigated use of DNA polymerase as a molecular recorder using kinetic *in vitro* experiments
- Designed, implemented analysis pipeline for gigabyte-scale next-generation sequencing data in collaboration with Northwestern biologists

Massachusetts Institute of Technology, Cambridge, MA

Sharp Laboratory, *Research Assistant*

October 2008 - June 2010

- Designed computational tools for analysis of a high-throughput miRNA extraction experiment.
- Investigated knockdown of genes by Ago2 as a function of motif content in target 3'UTRs.
- Investigated regulatory potential of cleaved tRNA and potential interactions with Ago2 using computational techniques.

MENTORING &
TEACHING
EXPERIENCE

Northwestern University, Chicago, IL

Instructor, Toyota CPS Educators Workshop

September 2015

- Created neuroscience-based curriculum and experiments for one-day teaching workshop
- Lead didactic and small-group sessions with middle-school science teachers from Chicago Public Schools

Teaching Assistant, Histology **August 2012 - September 2015**

- Taught first- and second-year medical students, provided grading assistance for exams

Director, PRISM **June 2013 - June 2015**

Assistant Director, PRISM **April 2012 - June 2013**

(Promoting Inner-City Youth in Science and Medicine)

- Constructed medical- and science-centric curriculum for after-school program at the Chicago McCormick Boys and Girls Club
- Organized and ran bi-weekly mentoring sessions for 15 students and 10 mentors
- Provided science- and medicine-related career mentorship for high school students
- Oversaw annual budget of approximately \$5,000

Mentor, Feinberg Connections **September 2011 - May 2014**

- Provided continuing career mentorship for Northwestern University freshmen regarding medical studies

SERVICE

Massachusetts Institute of Technology, Cambridge, MA

Member, Educational Council **April 2017 - Current**

- Interviewed, reviewed Chicago applicants for MIT's undergraduate program
- Served as informational resource for undergraduate applicants

Northwestern University, Chicago, IL

MSTP Admissions Committee **August 2013 - May 2015**

- Reviewed admissions materials, interviewed applicants
- Matched applicants to relevant faculty interviews

Illinois Institute of Technology, Chicago, IL

Judge, FIRST Tech Challenge **February 2012**

- Evaluated innovation, engineering merit of high school robotics team projects

ACTIVITIES

Assistant Music Director, DJ, *Chicago Independent Radio Project* **2011 - 2017**

Show Coordinator, Choreographer, *MIT Dance Troupe* **2008 - 2010**