

Anna Wexler, Ph.D.
Postdoctoral Fellow in Advanced Biomedical Ethics
Perelman School of Medicine, University of Pennsylvania
423 Guardian Drive, Room 1429 | Philadelphia, PA 19104

EDUCATION

University of Pennsylvania Aug 2017 –
Fellow in Advanced Biomedical Ethics, Department of Medical Ethics & Health Policy, Perelman School of Medicine

Massachusetts Institute of Technology Sep 2012 – June 2017
PhD, HASTS (History, Anthropology, Science, Technology and Society) Program. Dissertation title: “Sparking Controversy: the Contested Use of Noninvasive Electrical Brain Stimulation.” Ph.D. Committee: Professors Susan Silbey (advisor), Natasha Schüll, & Erica James.

Massachusetts Institute of Technology Sep 2003 – June 2007
Bachelor’s of Science, Brain and Cognitive Science
Bachelor’s of Science, Humanities and Science with a focus in Writing and Neuroscience

AREAS OF EXPERTISE

Core areas of expertise/interest: neuroethics, neuroscience & society, direct-to-consumer health technology, do-it-yourself (DIY) science and medicine, cognitive enhancement, neurotechnology, medical device regulation, digital health, history of electrical medicine, ethics of brain stimulation
Broad areas of expertise/interest: ethical, legal, and social implications of emerging technology; complementary & alternative medicine; off-label use; law, technology & public policy; history of bioethics and medical regulation; public understanding of science

PRIOR WORK EXPERIENCE/APPOINTMENTS

Visiting Scholar, Center for Neuroscience and Society, University of Pennsylvania	2015 – 2016
Freelance Science Writer/Editor, Tel Aviv, Israel	2008 – 2012
WGBH Filmmaker-in-Residence, Boston, MA	2007 – 2008
Research Consultant, Osher Institute, Harvard Medical School	2007 – 2008
Research Assistant, MIT Brain and Cognitive Sciences Department	2003 – 2008

SCHOLARSHIP

Journal Publications

Wexler, A. (2018). “Who uses direct-to-consumer brain stimulation products, and why? A study of home users of tDCS devices.” *Journal of Cognitive Enhancement*, 2(1): 114-134.

R. Yuste, S. Goering, G. Bi, ... D. Wasserman, **A. Wexler**, M. Whittaker, J. Wolpaw (2017). "Four ethical priorities for neurotechnologies and AI." *Nature*, 551(7679): 159-163.

A. Antal, I. Alekseichuk, M. Bikson, ... Y. Ugawa, **A. Wexler**, U. Ziemann, M. Hallett, and W. Paulus. (2017). "Low intensity transcranial electric stimulation: Safety, ethical, legal regulatory and application guidelines." *Clinical Neurophysiology*, 128(9): 1774-1809.

Wexler, A. (2017). "The Social Context of Do-It-Yourself Brain Stimulation: Neurohackers, Biohackers, and Lifehackers." *Frontiers in Human Neurosciences*, 11 (224): 1-6, <https://doi.org/10.3389/fnhum.2017.00224>.

Wexler, A. (2017). "The Medical Battery In The United States (1870-1920): Electrotherapy at Home and in the Clinic." *Journal of the History of Medicine and Allied Sciences* 72(2) 166-192.

Wexler, A., and Hamilton, Roy H. (2017). "Crowdsourced tDCS Research: Feasible or Fanciful?" *American Journal of Bioethics-Neuroscience* (8)1:50-53.

Wexler, A. (2016). "Recurrent Themes in the History of the Home Use of Electrical Stimulation: Transcranial Direct Current Stimulation (tDCS) and the Medical Battery (1870-1920)." *Brain Stimulation* 10(2):187-195.

Wexler, A. (2016). "The practices of do-it-yourself brain stimulation: implications for ethical considerations and regulatory proposals." *Journal of Medical Ethics*, 49 (4): 211-215.

Wexler, A. (2016). "Seeding Controversy: Did Israel 'Invent' the Cherry Tomato?" *Gastronomica: the Journal of Critical Food Studies* 16(2):1-11.

Wexler, A. (2015). "A pragmatic analysis of the regulation of consumer transcranial direct current stimulation devices in the United States." *Journal of Law and the Biosciences*, 2 (3): 669-696. (Selected for peer commentary)

Kerr, CE, Jones, SR, Wan, Q, Pritchett, DL, Wasserman, RH, **Wexler, A.**, Villanueva, JJ, Shaw, JR, Lazar, SW, Kaptchuk, TJ, Littenberg, R, Hämäläinen, MS, & Moore. CI. (2011). Effects of mindfulness meditation training on anticipatory alpha modulation in primary somatosensory cortex. *Brain Research Bulletin*, 85, 96-103.

Saxe, R. & **Wexler, A.** (2005). Making sense of another mind: the role of the right temporo-parietal junction. *Neuropsychologia*, 43(10), 1391-1399.

Book Chapters

Wexler, A. & Reiner, P. (2017). "Home Use of tDCS: From Do-it-Yourself to Direct-to-Consumer," in L. S. M. Johnson & K. S. Rommelfanger (Eds.), *Routledge Handbook of Neuroethics* (pp. 271–284).

Book Reviews

Wexler, A. (2016). Review of *The Language of Food: A Linguist Reads the Menu* by Dan Jurafsky. *Gastronomica: the Journal of Critical Food Studies* 16(1):107.

Authored Articles for the General Public

[Zapping their Brains at Home](#) —The New York Times, July 22, 2016

[Consumer Neurotechnology: New Products, More Regulatory Complexity](#) —The Neuroethics Blog, June 14, 2016

[At Tribeca, ‘Vaxxed’ Gets Axed and Science Wins \(For Now\)](#) —Undark, March 27, 2016

[“Dialing up Your Brain Power”](#) —Slate, December 18, 2015

Invited Talks

February 5, 2018: “Direct-to-Consumer Brain Stimulation: Ethical and Regulatory Issues.”
Workshop: The Evolving Phenomenon of Direct-to-Consumer Neuroscience, Banbury Center, Cold Spring Harbor, NY, Feb 4-6, 2018.

January 24, 2018: “Outside the Ivory Tower: the Use of Noninvasive Brain Stimulation in Do-it-Yourself (DIY) Contexts and ‘Brain Wellness’ Centers,” Centre for Neurotechnology, Imperial College, London UK.

January 22, 2018: “Do-it-yourself Psychiatry,” Department of Psychiatry/Wellcome Trust Centre for Ethics & Humanities, Oxford University, Oxford, UK.

December 5, 2017: “The Future of tDCS: Ensuring Appropriate Use by Clinicians, Patients, and Consumers,” SharpBrains Virtual Summit: Brain Health and Enhancement in the Digital Age, www.sharpbrains.com.

November 1, 2017: “Regulation and DIY Use of Transcranial Stimulation,” Beth Israel Medical Center, Boston, MA.

October 26, 2017: “Transcranial Stimulation: Invasiveness and Analysis Risk,”
Workshop: Ethical Issues in Invasive and Non-invasive Neural Devices in Humans, NIH, Department of Bioethics, Bethesda, MD.

May 25, 2017: “Ethics, Regulations, and Public Policy in Cognitive Enhancement.”
Workshop: Behavioral Interventions to Enhance Cognition: Toward a Consensus on Methods, Boston, MA, May 24-25, 2017.

March 27, 2017: “Re(current) Issues in Neuroethics: The Importance of Looking to the Past to Understand the Future.” Brain Awareness Week Lecture, Northeastern University, Boston, MA.

January 25, 2017: “Do-it-yourself electrical brain stimulation: implications for ethical considerations and regulatory proposals.” Department of Cognitive Science, University of California San Diego, San Diego, CA.

January 24, 2017: “Recurrent themes in the home use of electrical stimulation: tDCS and the medical battery.” Department of History, University of California San Diego, San Diego, CA.

December 28, 2016: “Seeding Controversy: Did Israel Invent the Cherry Tomato?”
Limmud Conference, Birmingham, UK.

December 6, 2016: “Do it Yourself Brain Stimulation and Citizen Science,” American Association for the Advancement of Science (AAAS), Neuropolicy Affinity Group, Washington, DC.

November 3, 2016: “Do It Yourself Brain Stimulation: Innovation by Independent Communities” Workshop: Innovation Lab Workshop, MIT, Cambridge, MA.

September 7, 2016: “Ethical and Legal Aspects of Transcranial Stimulation,” Practical Course in Transcranial and Magnetic Electric Stimulation, German Neuroscience Society, Göttingen, Germany.

September 6, 2016: “Legal and Regulatory Aspects of Transcranial Direct Current Stimulation.” Workshop: Neurostimulation Safety Conference, Max Planck Institute, Göttingen, Germany, September 6-7, 2016.

January 21, 2016: “Beyond the FDA: the Regulation of Noninvasive Brain Stimulation.” Workshop: Human Performance Enhancement Workshop, American Academy of Arts and Sciences, Cambridge, MA, January 21-22, 2016.

November 20, 2015: “The Regulation of Noninvasive Brain Stimulation Devices.” Workshop: FDA Neurodiagnostics and Non-Invasive Brain Stimulation Medical Devices Workshop, FDA, White Oak Campus, Silver Spring, MD, November 19-20, 2015. Webcast recording available [here](#).

November 5, 2015: “From Do-it-Yourself to Direct-to-Consumer: the Regulation of Consumer Noninvasive Brain Stimulation Devices,” Center for Neuroscience and Society, University of Pennsylvania. Video recording available [here](#).

October 21, 2015: “Brain Hacking to Boost Your A-Game: The Ethics of Cognitive Enhancement in Gaming and Competition,” Harvard Center for Bioethics, Harvard University. Video recording available [here](#).

October 6, 2015: “Sparking Controversy: The Contested Use of Electrical Brain Stimulation,” Bakken Museum of Electricity and Life, Minneapolis, MN.

September 21, 2015: “Practices of Do-It-Yourself Electrical Brain Stimulation: Implications for Ethics and Regulation,” Citizen Science Working Group, National Institute of Health (NIH).

March 4, 2015: “Practices of Do-It-Yourself Electrical Brain Stimulation: Implications for Ethics and Regulation,” Pellegrino Center for Clinical Bioethics, Georgetown University, Washington DC.

Jun 27, 2011: panelist, “Picture This: The Art and Craft of Science Storytelling in Film,” World Conference of Science Journalists, Doha, Qatar.

Organized/Chaired Conference

February 4-6, 2018: “The Evolving Phenomenon of Direct-to-Consumer Neuroscience,” co-organized and co-chaired with Peter Reiner. Banbury Center, Cold Spring Harbor, NY.

Invited Panelist

January 23, 2018: Brain 2.0: A Neuroenhancement Discussion Panel, Imperial College Business School, London, UK, video recording available [here](#).

Invited Moderator

August 3, 2016: Panel Moderator: “Selective vs. Therapeutic Enhancement,” Human X Design Conference, Paley Center for Media, New York, NY.

Conference Talks

“Pushing the boundaries of ‘off-label’ medical devices: an empirical study of the use of transcranial direct current stimulation (tDCS) in clinical settings.” Ethics of Neuroscience and Neurotechnology Session, International Neuroethics Society Annual Conference, Washington DC, November 10, 2017.

“The Home Use of Transcranial Direct Current Stimulation: Separating Evidence from Speculation.” Neuroethics Affinity Group, American Society for Bioethics and Humanities, Kansas City MO, October 21, 2017.

Other talks/lectures

January 29, 2018: “Non-linear career paths,” Global Education and Career Development, MIT.

December 7, 2017: “Do-it-yourself Psychiatry,” Psychiatry Residency Guest Lecture, University of Pennsylvania Medical School, Philadelphia, PA.

November 28, 2017: “Alternative pathways for neuroscience undergraduates,” Neuroscience and Law class, Virginia Polytechnic Institute.

October 17, 2017: “Pushing the boundaries of off-label use: an empirical study of the use of tDCS devices in clinical settings,” work-in-progress talk, Department of Medical Ethics & Health Policy, University of Pennsylvania, Philadelphia, PA.

Invited Workshops

November 1, 2017. Who Wins and Who Loses: The Distribution of Regulatory Impacts in the United States. University of Pennsylvania Law School, Philadelphia, PA.

May 21-24, 2017: Ethical Guidelines for Neurotechnology, Neurotechnology Center, Columbia University, New York, NY.

Conference Posters

1. Wexler, Anna and Fitz, Nicholas. “Who Actually Uses Non-Invasive Brain Stimulation Technologies, And Why? A Study Of Consumer Transcranial Direct Current Stimulation (tDCS) Device Users.”*
International Neuroethics Society Annual Meeting, San Diego, CA, November 10-11, 2016

*Winner of Elsevier Prize for Top Poster

2. Wexler, Anna. "Re(current) Issues in Neuroethics: The Importance of Looking to the Past to Understand the Future."

- Neuroethics Network, Paris, France, June 29-July 1, 2016
- International Neuroethics Society Annual Meeting, San Diego, CA, November 10-11, 2016

3. Wexler, Anna. "A Pragmatic Analysis of the Regulation of Consumer Transcranial Direct Current Stimulation (tDCS) Devices in the United States."*

International Neuroethics Society Meeting, Chicago, IL, October 15-16, 2015.

*Selected as top abstract for publication in *American Journal of Bioethics – Neuroscience*.

4. Treene, Lauren, Wexler, Anna, and Giordano, James. "Toward an integrative database of/for transcranial electrical stimulation: Defining need, and positing approaches, benefits and caveats."

International Neuroethics Society Meeting, Chicago, IL, October 15-16, 2015.

5. Wexler, Anna. "Understanding the practices of the do-it-yourself brain stimulation community: implications for regulatory proposals and ethical discussions."

- International Neuroethics Society Annual Meeting, Washington DC, November 14, 2014
- New York City Neuromodulation Conference, New York, NY, January 9-11, 2015
- Montreal Neuroethics Conference for Young Researchers, Montreal, QC, Canada, April 17, 2015.

6. Wexler, Anna. "What is a Medical Device? The Implications of the Food and Drug Administration's Definition for the Regulation of Consumer Neurotechnology"

Neuro-interventions and the Law Conference: Regulating Human Mental Capacity, Atlanta, GA, September 12-14, 2014.

7. Khalsa S.S., Rudrauf, D., Wexler, A., Naqvi N.H., Damasio, A.R., & Tranel, D. (2006). Looking within: does meditative experience enhance interoceptive awareness? Cognitive Neuroscience Society Conference, 2006.

Grants

University of Pennsylvania Biomedical Postdoctoral Program Travel Grant 2017

MIT Graduate Student Council Travel Fund Grant 2016

Bakken Museum of Electricity and Life (Minneapolis, MN), Travel Grant 2015

TEACHING EXPERIENCE

Massachusetts Institute of Technology Fall 2014
Teaching assistant, "Foundations of Internet Policy"

Massachusetts Institute of Technology Spring 2014
Teaching assistant, "Bioethics"

News Media Coverage of Research

[The Truth About Electrical Brain Stimulation](#) —Lifehacker, January 18, 2018

[No, Cherry Tomatoes Aren’t an Israeli Invention](#) —Ha’aretz, December 5, 2017

[The Strange Victorian Fashion of Self-Electrification](#) —BBC, February 15, 2017

[Do DIY Brain-Booster Devices Work?](#) —Scientific American, January 10, 2017

[Students Zap Their Brains for a Boost, for Better or for Worse](#) —NPR All Tech Considered, January 7, 2017

[Non-Surgical Brain Stimulation Shows Promise, but Unknowns Remain](#) —US News and World Report, August 30, 2016

[Regulation of Brain-stimulating Devices Unclear as Popularity Grows in US](#) —Voice of America, August 29, 2016

[Do-it-yourself Brain Stimulation has Hidden Risks](#) —Reuters, July 22, 2016

[The Contentious History of the Cherry Tomato](#) —Smithsonian, June 20, 2016

[Who Invented the Cherry Tomato?](#) —The Atlantic, June 14, 2016

[Brain Stimulation and You: How Does it Work and Can it Really Juice Up Your Thinking Cap?](#) —Medical News Daily, April 8, 2016

[“Stimulus Plan?”](#) —MIT News, December 18, 2015

[“Weird World of Brain Hacking”](#) —Wall Street Journal, November 10, 2015

Radio/Podcast Coverage of Research

[DIY Diagnosis](#) —Big Picture Science, August 29, 2016

[Caution, May Backfire: Neuroscientists’ Open Letter to DIY Brain Hackers](#) —WBUR, July 11, 2016

[Who Invented the Cherry Tomato?](#) —Gastropod, June 2016

[DIY tDCS Podcast: Regulating tDCS](#) —DIYtDCS, March 13, 2016

[Electrical Brain Stimulation Moves from Lab to Home, Experts Wary](#) —The Current, Canadian Broadcasting Corporation (CBC), October 13, 2015

Television Appearances

[Zapping Your Brain Into Gear](#)—ABC Local News, February 16, 2017

Public Engagement with Science

October 7, 2017: “Hacking the Brain,” StudyHall (comedy improv show featuring a guest academic scholar), Philly Improv Theater, Philadelphia, PA.

December 12, 2013: “A Crucial Choice,” Story Collider (live storytelling featuring scientists and academics), Oberon Theater, Cambridge MA.

SERVICE

Neuroethics Affinity Group Leader, American Society of Bioethics & Humanities	2018-
International Neuroethics Society Student/Post-doc Committee, member	2018-
MIT Institutional Review Board (Committee on the Use of Humans as Experimental Subjects (COUHES), member	2014-2015
MIT Committee on Intellectual Property, member	2014-2015
Planned Parenthood, volunteer	2014-2015
MIT Educational Counsel, member	2009-2011

HONORS/AWARDS

Asylum: International Jewish Artist Retreat (selected as fellow)	2013
Robert A. Boit Essay Prize, First Place	2007
DeWitt Wallace Prize for Science Writing for the Public, Second Place	2007
Walle Nauta Award for Outstanding Research	2007
Hans-Lukas Teuber Award for Outstanding Academics	2007
Austin Kelly III Essay Prize, Second Place	2007
Robert A. Boit Manuscript Prize, First Place	2005
Robert A. Boit Essay Prize, First Place	2004

AFFILIATIONS

Faculty, Harvard Course on Transcranial Stimulation	2017-
Neuroethics Women (NEW) Leaders	2016-
American Society for Bioethics & Humanities	2017-
International Neuroethics Society, member	2014-
Sattya Media Arts Collective (board member)	2013–2014
Israel Association of Science Communicators (member)	2010–2012
Explorers Club (member)	2007-2009
Sigma Xi, the Scientific Research Society (elected to membership)	2007-2008

OTHER EXPERIENCE

Film Production

[UNORTHODOX](#) (2013) Co-Director, Co-Producer, Co-Writer, Co-Editor

Feature-length, 90 minute personal documentary film about rebellious Modern Orthodox American Jewish teenagers who spend a year studying in seminary in Israel.

- Premiered at the Institute for Contemporary Art in Boston (Nov 2013) as part of the Boston Jewish Film Festival and played at over a dozen film festivals and venues in the United States, United Kingdom, Switzerland, and Israel
- Recipient of nine grants
- Successful Kickstarter campaign (2012)
- Two-dozen in-person appearances and Q&A sessions
- Available on digital outlets (iTunes, Hulu, Amazon)