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FOR ENGINEERING AND SCIENCE

Ethics of Emerging Technologies in the Life Sciences: Multimedia Resources

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Description

This collection of TED Talks, recorded lectures, and documentaries, covers topics related to the ethics of Emerging Technology in the Life Sciences, including applications in the context of gene editing, healthcare, and general bio-engineering topics.

Body

Cho, Mildred. "Moral Frameworks for Synthetic Biology in the Age of Biohacking." Markkula Center for Applied Ethics. 2017. https://www.youtube.com/watch?v=QxTISTyfNBM&list=PL87662711E1557A7C

- 2017 Regan Lecturer Mildred Cho, Stanford Center for Biomedical Ethics, explores whether “DIY” biology is science, whether DIY biologists have any role-related moral obligations, and what the bases of moral obligations are for “traditional” or “professional” synthetic biologists.

Endy, Drew, and Hugh Whittall. "Designing Life: The Ethics of Synthetic Biology, with Professor Drew Endy of Stanford University." ***Science Gallery***

***Dublin*. 2014. https://www.youtube.com/watch?v=8d-g2dDaZpU.**

- As part of a major new initiative by President Michael D. Higgins, Science Gallery at Trinity College Dublin will explore the ethics and future directions of synthetic biology - an emerging scientific field that could ultimately permit the design of living organisms. The President of Ireland's Ethics Initiative aims to inspire discussion and understanding of some of the biggest ethical questions we face as a society. This discussion, in collaboration with the Trinity Long Room Hub, will be the closing event of GROW YOUR OWN... Science Gallery's current exhibition on synthetic biology. It will bring together Professor Drew Endy from Stanford University, one of the world's leading scientists in the field, and Hugh Whittall from the Nuffield Council on Bioethics, a group changing the way we approach ethical decisions on emerging biotechnologies, to explore the challenging issues of designing life. The discussion will be hosted by Trinity geneticist Professor Aoife McLysaght, and will address questions such as 'Who should design life?', 'How can the public steer the direction of synthetic biology research and applications?', and 'How do we make decisions on the ethics of this emerging field?". We will also be inviting the audience to get involved in the discussion, offering questions and comments at this exciting scientific juncture, as well as voting on some of the core issues and questions.

Enriquez, Juan. "We Can Reprogram Life. How to Do It Wisely." TEDTalk. 2015. https://www.ted.com/talks/juan_enriquez_we_can_reprogram_life_how_to_do_it_wise

- For four billion years, what lived and died on Earth depended on two principles: natural selection and random mutation. Then humans came along and changed everything — hybridizing plants, breeding animals, altering the environment and even purposefully evolving ourselves. Juan Enriquez provides five guidelines for a future where this ability to program life rapidly accelerates. "This is the single most exciting adventure human beings have been on," Enriquez says. "This is the single greatest superpower humans have ever had." (14:49)

ETC Group. "What Is Synthetic Biology?: Engineering Life and Livelihoods." Critical Resources on Next Generation Genetic Engineering. 2014. https://www.youtube.com/watch?v=C726wUGLdL4.

- It has been referred to as extreme genetic engineering and the new frontier of biotechnology. What is "SynBio", and how will it affect the food we eat and the farmers who provide it? This short video explains. Visit http://www.synbiowatch.org/2014/10/sy... for references and more information.

Garrett, Laurie, Endy, Drew, and Julie L. Gerberding. “Biotechnology: The Potential and Perils of Innovation.” Council on Foreign Relations. 2016. https://www.cfr.org/event/biotechnology-potential-and-perils-innovation.

- In conversation with Rodney W. Nichols, Consultant on Science and Technology Policy, Drew Endy, Associate Professor of Bioengineering at Stanford University, Laurie Garrett, CFR Senior Fellow for Global Health, and Julie Gerberding, Executive Vice President, Strategic Communications, Global Public Policy and Population Health, Merck & Co, Inc. discuss the latest developments in synthetic biology and biotechnology, their implications for U.S. national security over the next decade, and the policy prescriptions they have going forward.

Gronvall, Gigi. “Safety, Security, and the Promise of Emerging Bioscience." CGSR Seminar. 2017. https://www.youtube.com/watch?v=h4iNqisojOc.

- Synthetic biology and other emerging biotechnologies are poised to change the future of medicine, agriculture, and manufacturing. While these new advances promise vast opportunities and benefits, they also introduce new risks and considerations that must be addressed. These risks and considerations include biosecurity risks where actors could use these technologies to deliberately cause harm; safety risks where laboratory accidents could result in unforeseen consequences from people to the global environment; market risks to the competitiveness of nations that do not invest in these economy-spurring technologies; and socio-ethical considerations on when and how to apply these technologies. To address these issues, the U.S. will need to implement significant changes in current biosecurity and bioscience policies. Gigi Gronvall will discuss a path forward for the U.S. to not only minimize risks, but also maximize the benefits towards U.S. security, health, and prosperity.

Hessel, Andrew. “Andrew Hessel: Ethics and Biotechnology.” YouTube. 2016. https://www.youtube.com/watch?v=QmaS61M5AR4.

- Andrew Hessel, a futurist and catalyst in biological technology, delivers a powerful and thought-provoking talk about the interplay between ethics,

society, and life. Through the lens of his research in 3D-printing cancer-fighting viruses, he challenges us to consider how we build ethical frameworks in our careers and in our lives. Andrew Hessel at CreativeMornings New York, February 2016. Free events like this one are hosted every month in dozens of cities. Discover hundreds of talks from the world's creative community at https://creativemornings.com/talks.

Kaebnick, Greg, and Mildred Solomon. "Gene Drives: Using Our Newfound Power Over Nature Wisely." The Hastings Center. 2016. https://www.youtube.com/watch?v=rS76agd9bX4.

- Kaebnick, a member of the committee of the National Academy of Sciences, Engineering and Medicine — the leading scientific advisory group for the federal government — has only recently been free to comment on their just-released report on the responsible use of “gene drives.” This revolutionary and rapidly developing technology holds promise for addressing large-scale and persistent problems such as eradicating mosquito-borne diseases and conserving endangered species, but also risks harming entire ecosystems.

Kaebnick, Gregory E., Revkin, Andrew, Rhodes, Rosamond, and Beth Schachter. "Bioethics Bootcamp: Emerging Biotechnology: Enhancement, Microbiomes, Synthetic Biology and More." Science Writers NYC. 2012. https://www.youtube.com/watch?v=GF5yYkK4OoA.

- Bioethics Bootcamp: Finding the Must-Read Angle for Science and Medical Stories was a day-long workshop developed to help science writers who communicate advances in science and technology that frequently raise immediate or potential ethical concerns for individuals, institutions, families, and society. More information at http://bootcamp.swiny.org Bioethics Bootcamp was presented by Science Writers in New York, The Hastings Center and the City University of New York Graduate School of Journalism and was supported in part by a grant from the National Association of Science Writers. Reference to any specific commercial product, process, or service does not necessarily constitute or imply its endorsement of or recommendation by the National Association of Science Writers, and any views and opinions expressed herein do not necessarily reflect those of the National Association of Science Writers.

Kahn, Jennifer. “Gene Editing Can Now Change an Entire Species - Forever." TEDTalk. 2016. https://www.ted.com/talks/jennifer_kahn_gene_editing_can_now_change_an_entire_

- CRISPR gene drives allow scientists to change sequences of DNA and guarantee that the resulting edited genetic trait is inherited by future generations, opening up the possibility of altering entire species forever. More than anything, the technology has led to questions: How will this new power affect humanity? What are we going to use it to change? Are we gods now? Join journalist Jennifer Kahn as she ponders these questions and shares a potentially powerful application of gene drives: the development of disease-resistant mosquitoes that could knock out malaria and Zika. (12:25)

Savulescu, Julian. “Pills That Improve Morality." TEDxBarcelona. 2013. https://www.youtube.com/watch?v=DhtIFTrJQJ4.

- In his talk, Julian shows us that technology advanced rapidly but morality did not. Ethics and religions do not have the answers to the questions nowadays, also because the world - thanks to technology - is a completely different one than it was when moral rules were defined and written down. These rules need to be enhanced. The talk has been recorded at TEDxBarcelona on the 17th of May 2013. For more information please visit www.tedxbarcelona.com.

Silver, Lee. “The Perilous Ethics of Biotechnology." Big Think. 2012. https://www.youtube.com/watch?v=O9hJQYgyGw0.

- Molecular Biologist Lee Silver acknowledges that there are special bioethical considerations that come into play for those working on biotech—but insists that much of the opposition to the field is based on ignorance and loaded, misleading language.

Simoncelli, Tania. "Should You Be Able to Patent a Human Gene?" TEDTalk. 2014. https://www.ted.com/talks/tania_simoncelli_should_you_be_able_to_patent_a_human

- A decade ago, US law said human genes were patentable - which meant patent holders had the right to stop anyone from sequencing, testing or even looking at a patented gene. Troubled by the way this law both harmed patients and created a barrier to biomedical innovation, Tania Simoncelli and her colleagues

at the ACLU challenged it. In this riveting talk, hear the story of how they took a case everybody told them they would lose all the way to the Supreme Court.

TED. “New Tech, New Ethics.” TEDTalks Playlist. ND. https://www.ted.com/playlists/329/new_tech_new_morals.

- With technical advancement comes great ethical responsibility. In these talks, amazing, life-altering feats of science make us ask: How could we mess this up? (Includes some of the talks listed above)

Wolpe, Paul Root. "It’s Time to Question Bio-Engineering." TEDTalk. 2010. https://www.ted.com/talks/paul_root_wolpe_it_s_time_to_question_bio_engineering.

- Glowing dogs, mice that grow human ears, bioethicist Paul Root Wolpe describes an astonishing series of recent bio-engineering experiments, and asks: Isn't it time to set some ground rules?

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Bibliography

Parent Collection

Ethics of Emerging Technologies in the Life Sciences

Topics

Emerging Technologies

Discipline(s)

Life and Environmental Sciences
Biotechnology