

R. L. Rabb Science and Society Symposium

Art's Work in the Age of Biotechnology: Shaping Our Genetic Futures

Friday, October 18, 2019

The Genetic Engineering and Society (GES) Center, NC State University Libraries, and Gregg Museum of Art & Design host a full-day symposium to discuss the Art's Work/Genetic Futures exhibition. The symposium brings together artists, humanists, social/natural scientists, and members of the public, using the exhibition as a departure point for conversations about the future of biotechnology and genetics.

Biotechnology and art are fascinatingly intertwined. From our aesthetic appreciation of plants and animals which brought about breeding regimens, to art about ethics in the genomic age, these artworks invite the public into the conversation about the history, ethics, politics, and future of biotechnology.

This exhibition prompts discussion about genetics in society through provocative contemporary art and offers viewers new ways of thinking about their relationships to biotechnology. Artists have addressed issues beyond those typical in scientific conversations about biotechnology including questions of access, sex and gender, race, the rights and roles of animals, and the involvement of corporations.

When we think of art and genetics together, we reach toward understandings about the human condition, the materiality of our bodies, our role on the planet, and the consequences of biotechnology in ways that are uniquely possible through this combination of bench science and contemporary art. These analytical and speculative works help us imagine the implications of modern scientific practices, encourage us to reflect on historical and contemporary methods of genetically modifying organisms, and implicate us in the choices around biotechnology.

Art's Work/Genetic Futures challenges us to examine the line between art and science with works which entangle these disciplines in new ways. As these works collectively show, the categories of art and science are determined not by universal axioms or through practices that circumscribe bodies of knowledge. Their meanings are shaped by the conversations the pieces participate in and our interpretations of these works.

Gregg Museum of Art & Design

8:30 a.m.–12:00 p.m.

1903 Hillsborough Street

- 8:30-9:00 a.m. Visit the exhibit. Coffee, tea, and light breakfast.
- 9:00 a.m. Brief welcome and introduction: **Fred Gould and Molly Renda**
- 9:15-10:15 a.m. Lightning responses to artworks in the exhibition:
Molly Renda and collaborators on *From Teosinte to Tomorrow*
Jennifer Kuzma on Charlotte Jarvis' *In Posse: Making Female Sperm*
Darrell Stover on Joel Ong's *Terra Et Venti*
Carole Saravitz on Adam Zaretsky's *Errorarium*
Jen Balzegar on Kirsten Stolle's *Chemical Bouquet II* and *Miracle Grow*
Helen Burgess on Paul Vanouse's *America Project*
- 10:15 a.m. Brief Break
- 10:35 a.m.-12:00 p.m. Lightning responses to artworks in the exhibition:
Mark Olson on Joe Davis' *Lucky Mice*
Nora Haenn on Emeka Ikebude's *Fragments*
Amy Sheck on Jennifer Willet's *Baroque Biology*
Elizabeth Pitts on Rich Pell's *The Mermaid De-extinction Project*
Todd Kuiken on the 2018 MICA BioDesign Challenge Team's *Kerasynth*
Chris Tonelli on Aaron Ellison and David Buckley-Borden's *Novel Ecosystem Generator*
Christian Maltecca on Maria McKinney's *Sire*
Fred Gould on Ciara Redmond's *We Make Our Own Luck Here*
- 12:00 p.m. Lunch boxes available. Explore exhibits at the Gregg and at Hill Library.

D. H. Hill Jr. Library Auditorium- 2:00 p.m.-5:30 p.m.

2 Broughton Drive

2:00-2:05 p.m. Brief Welcome: **Fred Gould**

2:05-3:00 p.m. **Biotechnology as Culture**

Moderator: **Priscilla Wald**

Panelists: **Joe Davis, Jennifer Willet, Ciara Remond, Kirsten Stolle, Maria McKinney, and Rich Pell**

What is the relationship between luck and genetics? Between biotechnology and phenotypic outcomes? Between individual choices and corporate coercion? And in what ways can artists make use of the culture to make comments on biotechnology, genetics, and science more broadly? Joe Davis and Ciara Remond have both approached the concept of luck in their work, while Jennifer Willet, Rich Pell, Maria McKinney, and Kirsten Stolle have different takes on ways of using identifiable cultural markers to draw audiences into conversations about biotechnology. This panel will explore how biotechnology is culture and the ways that culture can be used to leverage new possibilities for thinking about genetic futures.

3:00-4:00 p.m. **Genetic Arts Intervening in the Anthropocene: Climate, Geoengineering, and Ecosystems**

Moderator: **Jason Delbourne**

Panelists: **Aaron Ellison, David Buckley Borden, Joel Ong, Jon Davis Erin Kirchner, and Rachel Rusk**

Art's Work/Genetic Futures features a number of works which investigate the way that changes on our planet are related to genetic change or biotechnological affordances. In this panel, the creators of the *Novel Ecosystem Generator*, *Kerasynth*, *Terra et Venti*, and the corn maze VR will introduce how their work grapples with global environmental change and deep time. They will discuss why art and design are great mediums for addressing the anthropocene, and what the future holds for art about these issues.

4:00-5:00 p.m. **Art and Identities: From Surveillance and Privacy to Collective Identities and Personal Choices**

Moderator: **Patsy Sibley (Women's Studies)**

Panelists: **Charlotte Jarvis, Paul Vanouse, Adam Zaretsky, and Emeka Ikebude**

Ideas about identity have swirled around developments in human genomic science since its inception. Surveillance and privacy have been investigated throughout the first generation of bioart, including cutting edge work by Paul Vanouse and Heather Dewey-Hagborg. Vanouse's more recent work, like the *America Project*, exhibited in this show grapples with collective identity. Emeka Ikebude's "Fragments" works with the opposition between individual genetic codes and microbiomes which are also largely shared with other people. Issues of diversity have been present in the work of the scientists of the human genome project and the artistic critiques of this work that followed. In other work, Adam Zaretsky asks about human genetic possibilities for the future and he will discuss how his botanical work in *Errorairum* relates to those inquiries about human futures. Charlotte Jarvis' *In Posse* brings attention to ideas about gender and feminism. This panel will discuss the relationships art draws out between science and identities.

5-5:30 p.m. **Open discussion:** How do we develop richer interfaces between artists and scientists in determining our genetic futures?

Moderators: **Fred Gould** and **Molly Renda**

The R. L. Rabb Science and Society Symposia

R. L. Rabb Science and Society Symposia are based on the premise that technological innovations from the natural sciences are likely to have the most positive effects on society and the environment when their development into products is evaluated and guided by diverse, well informed, members of society.

Dr. R. L. (Bob) Rabb, was a professor of entomology at NC State University and a pioneer in developing ecologically sound approaches for managing insect pests, well before Rachel Carson raised public awareness of the need for such approaches. Dr. Rabb took a broad and critical view of the scientific enterprise and its relevance to the quality of life on Earth. He nurtured a spirit of cooperation at NC State and in the broader entomological community. Hence, it is fitting that the endowment developed in his honor is focused on the interfaces between science, technology and society.

The endowment provides funding for symposia at NC State that will elevate appreciation within and outside the academic community for the ways in which interactions among natural sciences, social sciences and the humanities can foster flourishing societies and sustainability of all forms of life.

Symposium Participants

Helen J. Burgess is Associate Professor of English at NC State University and editor of *Hyperrhiz: New Media Cultures*. Her co-authored multimedia works include *Red Planet* (2000), *Biofutures: Owning Body Parts and Information* (2008), and *Highways of the Mind* (2014). Her installation works include “MashBOT,” “Loving Together with Roland's Bots,” and “Intimate Fields.” She is cofounder with Craig Saper of *Hyperrhiz Electric*, a multimedia monograph series imprint of Punctum Books.

Jennifer Baltzegar is earning her PhD in Genetics with a minor in Genetic Engineering and Society at NC State University. She has expertise in population genetics and approaches her work from an interdisciplinary perspective. Both her past and current work focuses on the management of wild populations and the interaction of that management with nature and society. Her current work examines the population genetic structure in the mosquito that transmits zika and dengue viruses. Baltzegar's research is important for understanding the evolutionary processes acting in the mosquito.

Joe Davis is one of the most influential artists working directly with scientists. He pioneered laser carving methods at Bell Telephone Labs and the University of Cincinnati Medical Center in the 1970s. In 1981 he joined the MIT Center for Advanced Visual Studies as a research fellow and lecturer. His *Microvenus* (1986) was the first genetically engineered artwork. Davis joined the laboratory of Alexander Rich at MIT in 1989 and the Harvard laboratory of George Church in 2010 as Artist Scientist. Davis is also affiliated with the Schwartz Lab at MIT and the Seifert Laboratory at the University of Kentucky.

Jonathan Davis is a Research Triangle-based graphic designer and animator. He was a researcher for over ten years in the fields of plant biology and protein structure at the graduate and postdoctoral levels before leaving the laboratory to focus on exploring science through art, merging his experience as a scientist with a lifelong interest in computer graphics to create data-based CG works. Davis uses computer graphics and physics modeling as media to examine, explain, and explore science through art. Through his company, Scientific Studios, Davis collaborates with scientists and educators to visualize data and communicate scientific advancements.

Jason Delborne serves as Associate Professor of Science, Policy and Society in the Department of Forestry and Environmental Resources within the College of Natural Resources and the Chancellor's Faculty Excellence Program cluster in Genetic Engineering and Society at NC State University. Delborne's research focuses on highly politicized scientific controversies, such as agricultural biotechnology, nanotechnology, biofuels, and climate change. Drawing upon the highly interdisciplinary field of Science, Technology, and Society (STS), he engages various qualitative research methodologies to ask questions about how policymakers and members of the public interface with controversial science.

Aaron Ellison and **David Buckley Borden** are a Cambridge-based creative team that unites art, design, and environmental science in place-based projects. Their art installations illustrate novel ecological systems (“ecosystems”) that people create by changing the environment. In their creative practice, they engage with local communities to learn about their lives, practices, cultures, and customs, and create visual art that often uses vernacular tropes to envision our changing world. Their research-driven creations communicate abstract, often technical ecological concepts. Their installations provide spaces for thoughtful consideration and provocative discussions about how humans are altering the environment and the opportunities available to collectively rethink all our actions, for better or worse.

Diana Eusebio is an Afro-Latina fashion photographer, stylist, and activist based in Miami. Currently a rising senior at the Maryland Institute College of Art, Eusebio blends fashion and fantasy in her photography to engulf the viewer in a surreal and colorful world. Eusebio designs garments and accessories, styles sets and models, and curates them into meaningful photographs inspired by her Afro-Latina identity. From over 11,000 applicants Eusebio was recognized as a National YoungArts Finalist, and has been a US Presidential Scholar in the Arts.

Fred Gould is a distinguished university professor at NC State University. He is co-director of the Genetic Engineering and Society Center and is a member of the Entomology and Plant Pathology Department. Dr. Gould assisted in the development and deployment of insecticidal transgenic crops in ways that suppress the evolution of pest resistance and now works on strategies for engineering insect pest to cause less damage. He is a member of the National Academy of Sciences and received the Alexander von Humboldt Award for most significant agricultural research over a five-year period.

Nora Haenn teaches Anthropology and International Studies at NC State University. Her scholarship focuses on the culture and politics of environmental management, economic development, and international migration. She is the author of *Marriage after Migration: An Ethnography of Money, Romance, and Gender in Globalizing Mexico* which traces the pleasures and dangers of family life that drive international migration, and *Fields of Power, Forests of Discontent* (2005) which explains rain forest conservation from the standpoint of the rural people most impacted by environmental protection efforts.

Jim Holland is a research geneticist with the USDA Agricultural Research Service located in the Department of Crop and Soil Sciences at NC State University. He is a corn breeder and geneticist.

Emeka Ikebude is based in Dallas, where he is a doctoral candidate in arts and technology at the University of Texas at Dallas. Ikebude holds master’s degrees in art history (Ohio University) and arts and technology (UT Dallas). His artwork interrogates themes of dislocation and fragmentation from a biopolitical perspective located at the liminal intersections of tradition and modernity, and art and technology/biotechnology.

Charlotte Jarvis is an artist and lecturer working at the intersection of art and science. She approaches bodies as liminal spaces—sites for transformation, hybridization, and magic. Jarvis has been exhibited in ten international solo shows and over 100 group exhibitions at venues including the Wellcome Collection, the Victoria and Albert Museum, the Kapelica Gallery, the Guangzhou Triennial, and the Venice Biennale. Jarvis is a past resident artist at the European Bioinformatics Institute, the Netherlands Proteomics Centre, and the Hubrecht Institute. She lectures at the Royal College of Art, Goldsmiths University, the Central Academy of Fine Arts in Beijing, and Imperial College.

Erin Kirchner earned their BFA cum laude in fiber from the Maryland Institute College of Art in 2018. Kirchner was a 2018 Nike Air Max Material Design Intern and a member of the 2019 Fueling the Future of Footwear X Asics Tiger class hosted by Pensle Footwear Academy. Kirchner’s textiles-based practice concerns itself with the ethics of developing technologies, sustainability, and facilitating empathy for bodies considered “other” in Western society. By approaching these topics through the lens of “fibers,” Kirchner hopes to change how bodies and systems in power occupy and operate in the physical/digital world and to create space for marginalized bodies and experiences.

Todd Kuiken is a Senior Research Scholar at the Genetic Engineering & Society Center at NC State University. Prior to that, Kuiken was a Senior Program Associate with the Science and Technology Innovation Program at the Wilson Center where he explored the scientific and technological frontier, stimulating discovery and bringing new tools to bear on public policy challenges that emerge as science advances.

Jennifer Kuzma is the Goodnight-NCGSK Foundation Distinguished Professor in the School of Public and International Affairs, and co-founder and co-director of the Genetic Engineering and Society Center at NC State University. The Center maintains external partnerships with stakeholders locally, nationally and globally, and has led several research, education and engagement initiatives that improve dialogue, technology development, and decision making about the applications of genetic engineering.

Grace Kwon is an interdisciplinary artist interested in fiber, interactive arts, digital fabrication, and bio-fabrication. She has a deep investment in the arts education and its intersection with technology. Her website is graceyounghkwon.com and her instagram is [@glasskwon](https://www.instagram.com/glasskwon).

Christian Maltecca is a professor of quantitative genetics and breeding in the Animal Science department at NC State University. His research is focused on the genomic improvement of economically relevant traits in livestock. His main interests are in the area of genomic prediction and genome-wide association for functional traits. Additional research in his group is focused on the impact of genomic selection on long-term variation and fitness and the optimization of statistical methods and breeding schemes under genomic selection.

Maria McKinney is a member of Temple Bar Studios in Dublin. Her work was shortlisted for the MAC International Prize in 2014, selected by Hugh Mulholland, Judith Nesbitt, and Francesco Bonami. In 2019 she will realize a project about the Jersey cattle breed on the island of their origin and namesake.

Mark Olson is Assistant Professor of the Practice of Art, Art History & Visual Culture and co-founder of the S-1: Speculative Sensation Lab at Duke University. His research and teaching engages entanglements of hardware, software, and wetware in the domains of art, media, and medicine.

Joel Ong is a media artist whose work explores emergent ways of interfacing with the natural elements through the lens of digital and moist-media technologies. He is an alumnus of SymbioticA and is also an artist with the UCLA Art|Sci Collective. He is currently an assistant professor at the Department of Computational Arts at York University and is the interim director of Sensorium: Centre for Digital Arts and Technology.

Bob Patterson is an Alumni Distinguished Professor of Crop Science at NC State University. Patterson's graduate education was in Crop Physiology, Soil Fertility and Plant Nutrition, with graduate degrees from NC State University (1963) and Cornell University (1968). He began his teaching and research career at NC State in 1968. He has received numerous research and teaching awards, including many at the national level.

Richard Pell is the founder and director of the Center for PostNatural History, an organization dedicated to the collection and exposition of life-forms that have been intentionally and heritably altered through domestication, selective breeding, tissue culture, or genetic engineering. The Center for PostNatural History operates a permanent museum in Pittsburgh, Pennsylvania, and produces traveling exhibitions that have appeared in science and art museums throughout Europe and the United States, including the Victoria and Albert Museum, the Wellcome Collection, the Museum für Naturkunde, the CCCB, the ZKM, the 2008 Taipei Biennial, the Carnegie Museum of Natural History, and the LA County Natural History Museum, as well as being featured in *National Geographic*, *Nature*, *American Scientist*, *Popular Science*, and *New Scientist*.

Elizabeth A. Pitts is an assistant professor in the University of Pittsburgh's Composition, Literacy, Pedagogy, and Rhetoric program. She received her PhD in Communication, Rhetoric, and Digital Media from NC State University with a minor in Genetic Engineering and Society, and she also holds a BA and MA in English from Georgetown University.

Ciara Redmond is an emerging contemporary artist working in mixed media, installation, and bioart. Redmond's work explores themes of identity, genetic destiny, gender, and the relationship between science and culture. She trained in materials conservation and works with artists and galleries to find innovative solutions for displaying unusual works and materials. Redmond is from Melbourne, and currently based in Tokyo. *We Make Our Own Luck Here* was developed with support from Waseda University.

Molly Renda has served as exhibits program librarian at the NC State University Libraries since 2011. She develops, designs, and produces exhibitions in the D. H. Hill Jr. Library gallery that leverage the Libraries' Special Collections Research Center resources, as well as showcase faculty and student research and university history. Renda holds a BFA from the School of Visual Arts where she studied with Bob Blackburn and Dale Henry, and later worked at Blackburn's Printmaking Workshop. She served as executive editor for design and production for DoubleTake magazine (1994–99), published by the Center for Documentary Studies at Duke University. Her book and publication design has been recognized by *Communication Graphics*, *Graphis*, the AIGA "50 Books, 50 Covers" exhibition, and the Association of American University Presses.

Rachel Rusk was born in Ohio, and received a BFA from the Maryland Institute College of Art majoring in Fiber Arts. Rusk's work is motivated by an interest in healing and repair, and in our relationships to each other and to the natural world. Rusk was a finalist in the MoMA Biodesign Summit two years running in *Kerasynth* and *Algae-Matron* collaborations. Her collaborative work has been featured in *Forbes*, *Smithsonian* online, *Neo.Life*, and *Velocity*.

Megan Serr recently completed her PhD in Biology with a minor in Genetic Engineering and Society at NC State University. She considers herself an interdisciplinary scholar and enjoys working on the biological as well as social side to conservation. Her primary focus is on invasive species and society.

Amy Sheck is the dean of Science at the North Carolina School of Science and Mathematics where she supports the talented chemistry, biology, and physics faculty and oversees a hands-on science program for gifted and motivated high school students. Prior to coming to NCSSM, Amy conducted research in the Entomology Department of North Carolina State University and taught botany and entomology at the University of Asmara, Eritrea (East Africa). She collaborated with NC State University to showcase a live conversation from the International Space Station with astronaut-alumna Christina Koch. She organizes Lean In, Women in Science, a panel interview of 6 prominent female scientists for the NC Science Festival. She has been recognized with the UNC Board of Governors Teaching Award and humbled to have received the Outstanding Alumni Award from the NC State College of Agriculture & Life Sciences.

Patsy Sibley is a Teaching Assistant Professor of Interdisciplinary Studies at NC State University where she teaches courses in Gender Studies, Feminist Science Studies, and Science, Technology, & Society. Her research specialty centers around gendered socialization, gendered beliefs, and how individual and community choices are informed by these beliefs.

Sydney Sieh-Takatanis a New York-based fiber artist and aspiring medical illustrator focused on developing new ways of visualizing data and scientific information through weaving, embroidery, garment making, and storytelling. Sieh-Takata received her BFA in fiber from the Maryland Institute College of Art in 2018. She has been a recipient of the Barbara Kuhlman Scholarship and the Betty Cooke '46 Scholarship, and she was part of the team that represented MICA at the 2017 and 2018 Biodesign Challenges at MoMA.

Kirsten Stolle is a visual artist examining the impact of biotechnology and agribusiness on our food supply. She is a Pollock-Krasner Foundation grant recipient and her work is included in the collections of the San Jose Museum of Art, the Crocker Art Museum, and the Minneapolis Institute of Arts. Solo exhibitions include NOME, the Southeastern Center for Contemporary Art, the Turchin Center for Visual Arts, the Winthrop University Art Galleries, the Tracey Morgan Gallery, and the Jack Fischer Gallery. Group exhibitions include Balzer Projects, the Fridman Gallery, the Mint Museum, and The Billboard Creative.

Darrell Stover is a cultural historian, science communicator, and performance poet. His career life has always been an intersection of science and art sifted through history with an emphasis on community and individual empowerment through the same. He is on the faculty at NC State University where he teaches “Black Popular Culture: From the Blues to Afrofuturism” and “Intro to Science, Technology, and Society.” His interest is to unfold hidden narratives of biology research via performance and display art.

Chris Tonelli is a founding editor of the independent poetry press Birds, LLC. He is the author of two collections of poetry, most recently *Whatever Stasis* (Barrelhouse Books, 2018). Tonelli is the co-director of the North Carolina Book Festival, works in the Libraries at NC State University, and co-owns So & So Books.

Paul Vanouse is an artist and professor of art at the University at Buffalo, where he is the founding director of the Coalesce Center for Biological Art. His bio-media and interactive cinema projects have been exhibited in over 25 countries and widely across the US. Venues have included the Walker Art Center, the New Museum, the Museo Nacional de Bellas Artes, Haus der Kulturen der Welt, ZKM Karlsruhe, and the Albright-Knox Art Gallery.

Priscilla Wald is the R. Florence Brinkley Professor of English at Duke University. She teaches and works on US literature and culture, particularly literature of the late-18th to mid-20th centuries, contemporary narratives of science and medicine, science fiction literature and film, law and literature, and environmental studies. Her current work focuses on the intersections among law, literature, science, and medicine.

Jennifer Willet is a Canada Research Chair in Art, Science, and Ecology and an associate professor in the School of Creative Arts at the University of Windsor. She is an internationally recognized artist and curator whose contributions influenced the development of the field of bioart. In 2009 she opened INCUBATOR: Hybrid Laboratory at the Intersection of Art, Science, and Ecology, the first bioart lab in Canada.

Adam Zaretsky is a Wet-Lab BioArt Practitioner mixing ecology, biotechnology, non-human relations, body performance, and gastronomy. Zaretsky runs the public life arts school VASTAL (Vivoarts School for Transgenic Aesthetics, Ltd.) at universities (including San Francisco State University, SymbioticA at the University of Western Australia, the Rensselaer Polytechnic Institute, the University of Leiden, Carnegie Mellon University, and New York University). His art practice focuses on an array of legal, ethical, social, and libidinal implications of biotechnological materials and methods with a focus on transgenic humans.

Visit Art's Work in the Age of Biotechnology: Shaping Our Genetic Futures

The exhibition is on display at the Gregg Museum of Art & Design, the D. H. Hill Jr. Exhibit Gallery, the James B. Hunt Jr. Library lobby, and at the North Carolina Museum of Art's Ann and Jim Goodnight Museum Park.

Scientific support provided by: Carole Saravitz and her team at the NC State University Phytotron; Joe Chiera, Chuck Gibbs, and Sam Cho; Anna Stepanova and Javier Brumos Fuentes from the Department of Plant and Microbial Biology; Eli Horstein of the Sederoff Lab Department of Plant and Microbial Biology; Candace Morales and the IACUC office; and Yael Allen, MA IRB Coordinator for the Outreach and Education Institutional Review Board (IRB) Office.

This exhibition and symposium were underwritten by the NC State University Libraries' Goodnight Educational Foundation Endowment for Special Collections, the Eastman Chemical Company University Engagement Fund (through NC State University Foundations), the R. L. Rabb Science and Society Symposia fund, and anonymous donors.

Maria McKinney's series, *Sire*, has been made possible with support from Culture Ireland / Cultúr Éireann

Catalog

A full-color, 144-page, printed catalog of the exhibition is available through UNC Press. The catalog is viewable on the Libraries website and is for sale at the front desk of the Gregg Museum of Art & Design.

The **Genetic Engineering and Society (GES)** Center at NC State University serves as an international hub of interdisciplinary research, engaged scholarship, and inclusive dialogues surrounding opportunities and challenges associated with genetic engineering and society.

The **NC State University Libraries** is the gateway to knowledge for the university community and partners. We define the leading edge of information services and collections to support the university's mission and to further knowledge in the world.

As part of a research-extensive, land-grant university, the **Gregg Museum of Art & Design** inspires creativity, innovation, and the expression of ideas. The Gregg Museum makes its collections and activities freely accessible to the university, community, and to the public.

Thank you for your participation