Genetic Engineering & Society Minor Fellowship

Apply now for the Fall 2024 GES Minor. Deadline 3/15
Open to NC State graduate students in the humanities and natural and social sciences. Includes $17K stipend + in-state tuition & fees!

GO.NCSU.EDU/GES-MINOR
Zoom Q&A Session Agenda

• About the GES Center
• About the GES Graduate Minor
• Why become a fellow and benefits of the fellowship
• Meet our past students
• Recruitment process & dates
• Sequence of program activities
• Online application
• Q&A via chat box or live video*

*Please start leaving your messages in the chat box so we can begin to answer them

Genetic Engineering & Society Minor Fellowship

ZOOM Q&A
with Fred Gould & Dawn Rodriguez-Ward

Friday, March 1 @ 5PM
Register: GO.NCSU.EDU/GES-MINOR

Open to NC State graduate students in the humanities and natural and social sciences.

Application Deadline: March 15th
About the GES Center

*Integrating scientific knowledge and diverse public values in shaping the futures of biotechnology*

- Positioned at the nexus of science and technology, the social sciences and humanities
- Experts in the technical, ethical, and societal dimensions of biotechnology

**Faculty Affiliates:** Search our directory of 60+ affiliates by name or expertise at [go.ncsu.edu/ges-faculty](http://go.ncsu.edu/ges-faculty)
Interdisciplinary Graduate Education

AgBioFEWS (2018-2024) is a National Science Foundation funded graduate research training program offering PhD candidates across multidisciplinary fields of study the opportunity to examine the science, policy, and public engagement aspects and impacts of Agricultural Biotechnology on Food, Energy, and Water.

› Info at go.ncsu.edu/agbiofews

Weekly GES Colloquium

The GES Center hosts a weekly colloquium that brings in local, national and international speakers from a wide range of opinions, perspectives, and disciplines.

› Tune-in weekly at go.ncsu.edu/ges-colloq-zoom

Scholarly Publications

Our faculty have authored hundreds of publications, lead or served on multiple National Academies of Sciences reports, and published several special journal issues. In May 2018, our paper Wicked Evolution was the cover article in Science. Articles at go.ncsu.edu/ges-pubs
NSF-Funded Graduate Programs

Agricultural Biotechnology in Our Evolving Food, Energy, & Water Systems (AgBioFEWS)
- 2018-2024: $3M grant serving 34 interdisciplinary PhD fellows in 16 programs & 4 Colleges (CALS, CHASS, CNR, COS).
- Gould serves as PI
- Kuzma, Delborne, Sederoff, and Brown as Co-PI's

Integrative Graduate Education & Research Traineeship (IGERT)
- 2012-2017: Trained 23 graduate student in interdisciplinary approaches to Genetic Pest Management. Learn more at research.ncsu.edu/ges/igert
Gene Drives allow us to change the genetic makeup of an entire population of organisms, including pests and disease vectors. Concerns around the unintended consequences of manipulating entire populations of organisms, including the potential for ecological disruptions.

Microbiome Engineering involves manipulating the microorganisms that live in and on the human body, or in natural or built environments, for example, to improve health. It could lead to new treatments for conditions such as obesity, diabetes, and autoimmune diseases. Concerns include safety issues or unintended consequences, including the potential for antibiotic resistance.

Gene Editing using CRISPR/Cas allows researchers to precisely and easily modify DNA sequences. This technology has endless possible applications, e.g., to cure diseases, enhance physical and mental abilities, and even create new organisms. Concerns include the ethics of gene editing in humans, animals, and plants, particularly for non-medical purposes.

Overall, these emerging trends seem certain to have significant impacts on human health, the environment, and society. Interdisciplinary collaboration and communication are and will continue to be crucial in developing regulatory frameworks that balance innovation with safety and ethical considerations.
Collaborations: Other Universities

- UNC-CH
- NC A&T
- Iowa State
- U of Minnesota
- UNC Charlotte
- Arizona State
- Marquette
- UC San Diego
- Appalachian State
- Carnegie Mellon
- U of Florida
- Chongqing (China)
- Duke
- Cornell
- U of Illinois
- DTU (Denmark)
Collaborations: National & International
Driving Responsible Innovation in NSF Centers

- $26M, NSF-funded Center on Microbiome Engineering
  - **Kuzma** serves as Associate Director and Lead of Societal and Ethical Implications (SEI)

- $25M, NSF-funded Center on Phosphorus Sustainability
  - **Grieger** serves as Co-PI & Co-Director of Knowledge Transfer
About the GES Graduate Minor

Examines the technological, societal and ecological issues surrounding the development and potential use of genetically engineered organisms.

Open to graduate students in the Humanities, Social and Natural Sciences.

Requirements:
• 9 credit hours from list of approved courses
Why become a GES Minor Fellow?

- Interdisciplinary knowledge
- Cross-discipline respect and team cohesion
- Critical thinking, reading and evaluation skills
- Experience engaging with diverse publics
- Access to 60+ GES Center affiliated faculty
- $17,000/ stipend for Fall 2024 semester + tuition + fees
Who are we looking for?

• We welcome students from diverse disciplinary backgrounds and perspectives.
• We are interested in elevating the level of public discussions on topics surrounding the use and implementation of biotechnology, not simply to be for or against biotechnology.
Has the UN Biodiversity Convention been a force for ‘good’ or ‘evil’ in how biotech crops are regulated globally?

AgBioFEWS Graduate Fellows
Modesta Nnedinso Abugu, Joseph Opoku Gakpo, Nick Loschin, and Asa Budnick
Developing a Research Agenda for Crops Bioengineered for Climate Change Mitigation

Presented by AgBioFEWS Cohort 2
Perspectives of Eastern North Carolina farmers and the impact of biotechnology

Presented by AgBioFEWS Cohort 2
Meet our Interdisciplinary Student Cohorts

2019 Cohort

2020 Cohort
Meet our students, cont.

2022 Cohort

2024 GES Minor Cohort

Your photo here
GES Minor Required Courses & Activities
Total for Minor: 9 credits

Living & Learning in Farming Communities
(Summer 2024 – optional but recommended)

GES/COM 508: Emerging Technologies, Science Communication, and Public Engagement (Fall 2024) 3 credits

GES 591: GES Colloquium weekly seminar
(Fall 2024 & Spring 2025) 1–2 credits
Additional Approved Courses

*Additional courses may be substituted at the Co-Directors’ discretion.

ANT 550 – Culture, Ecology, & Sustainable Living
BIT 510 – Manipulation of Recombinant DNA
BIT 574 – Plant Genetic Engineering
CBS 561 – Principles of Collab. & Team Science
COM 538 – Risk Communication
COM 561 – Human Communication Theory
COM 568 – Public Communication of Research
CS 518 – Intro to Regulatory Science in Agriculture
ECG 549 – Economic Development
ECG 515/ FOR 515 – Envt. & Resource Policy
ENG 515 – Rhetoric of Science and Technology
FW 511 – Human Dimensions of Wildlife Mgmt.
FW 595 – Genetics in Wildlife Management

GN 735 – Genomic Science
HI 540 – Topics in Environmental History
HI 581 – History of the Life Sciences
HI 585 – History of American Technology
NR 571 – Current Issues in Natural Resource Policy
REL 571 – Darwinism & Christianity
PA 550 – Environmental Policy
PA 552 – Science & Technology Policy
PHI 575 – Ethical Theory
PSC 520 – Fundamentals of Citizen Science
PSY 757 – Innovation and Technology
SOC 762 – Sociology of Food Systems
ST 590 A,C – Bioinformatics I/II
Recruitment Process & Dates

- **March 15**: Application due for preferred consideration
- ~Selection Committee reviews applications~
- **April 1**: Notification for fellowship award
- **April 15**: Signed contract due
Online Application: Due 3/15/2024

• Open to national and international students already enrolled in a Masters or PhD Program at NC State
• There is also the option to ‘Save and Continue’ which will generate a unique link that you may return to within 30 days.
• There is no fee to complete the application form.
• 1 page “Why are you applying to join the program?”
• 1 page Reference Letter from advisor
THANK YOU! QUESTIONS?

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Dawn Rodriguez-Ward
dtward2@ncsu.edu

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