

Georgia K. Lagoudas, Ph.D.

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Biotechnology scientist with policy-making experience in White House, U.S. Senate, and Dept. of State on biotechnology, bioeconomy, COVID response. Strong communicator with developed skill set in project management.

Education

- Massachusetts Institute of Technology – Cambridge, MA** **2012 – 2018**
Ph.D. in Biological Engineering
National Science Foundation Graduate Fellow
- Rice University – Houston, TX** **2008 – 2012**
Bachelor of Science in Bioengineering
GPA: 4.00, President's Honor Roll, Magna Cum Laude

Work Experience

Advisor, Convergent Research **Feb 2024 – Present**

- Working with Convergent Research, an incubator for Focused Research Organizations, a new model of scientific research using philanthropy to launch term-limited nonprofit startups
- Serving as lead for a roadmap development of science and technology gaps for clean indoor air, including a focus on farUV (using light as an air disinfection tool). Developed an executive roadmap for a proposed Focused Research Organization on biosecurity and public health, focused on farUV light for air disinfection
- Advising on policy, advocacy, and communications needs to promote cleaner indoor air nationally

Advisor, Synonym Bio **Feb 2024 – Present**

- Serving as policy and strategy advisor to Synonym Bio, a company building infrastructure for the bioeconomy

Advisor, The Good Food Institute **Dec 2023 – Present**

- Serving as policy and strategy advisor to The Good Food Institute, a 501(c)(3) nonprofit building a sustainable, secure, and just food system with biomanufacturing and alternative food production

Senior Advisor, Biotechnology and Bioeconomy – White House Office of Science and Tech Policy **2021 – 2023**

- Served as key advisor, strategy developer, and implementation lead on multiple biotechnology and public health policy initiatives; coordinated with other White House offices (National Security Council, Domestic Policy Council, National Economic Council, and the Covid Response Team)
- Contributed to the development of [Executive Order 14081](#), Advancing Biotechnology and Biomanufacturing Innovation for a Sustainable, Safe and Secure American Bioeconomy, signed by President Biden in September 2022
- Coordinated a White House Summit to launch the [National Biotechnology and Biomanufacturing Initiative](#), as a result of Executive Order 14081, with five Cabinet members, two Congress members, and multiple CEOs
- Led the implementation of Executive Order 14081, coordinating over 150 federal employees across a dozen agencies on multiple workstreams and policy committees. Led teams to advance policy actions related to biotechnology and biomanufacturing R&D, data, workforce, biomanufacturing infrastructure, biotechnology regulation, international engagement, and biosafety and biosecurity.
- Led the drafting and release of multiple reports and White House Fact Sheets, including the [Bold Goals for U.S. Biotechnology and Biomanufacturing](#) White House report and accompanying [Fact Sheet](#)
- Led efforts to improve indoor air quality to advance the nation's public health:
 - Initiated first White House event on improving indoor air quality to reduce Covid transmission in March 2022, along with OSTP [blog post](#), elevating this topic to White House and national attention
 - Partnered with White House Covid Response Team to host an [Indoor Air Quality Summit](#), launch the Clean Air in Buildings [Challenge](#), and elevate indoor air quality as a part of the pandemic response
 - Led the release of a [White House Fact Sheet](#) in December 2022 where Federal agencies outlined commitments and actions to improve indoor air quality across the nation
 - Initiated a science-informed policy change with CDC resulting in first-ever ventilation [targets](#) for indoor air quality (5 air changes per hour) to improve health in buildings across the country

Emerging Leaders in Biosecurity Fellowship – Johns Hopkins University, Center for Health Security **July 2022 – April 2023**

- Selected as a Biosecurity Fellow (ELBI Fellowship) to participate in a part-time leadership and training program
- Participated in biosecurity and policy training events, including a visit to the United Nations in Geneva
- Coordinated a White House biosecurity policy meeting for the Fellows with senior administration officials

Science Officer – U.S. Department of State, Office of Biological Policy Staff**2020 – 2021**

- Engaged with foreign partners to promote the U.S. government position on the international biological weapons treaty, the Biological Weapons Convention (BWC), and worked to diminish the threat of acquisition of biological weapons through international policy engagement, program funding, and establishment of norms and standards
- Drafted and contributed to three meeting papers presented at the Sept 2021 BWC Meeting of Experts
- Represented State Department at U.S. government interagency working group on synthetic DNA screening policies
- Supported the kick-off of a \$5 million U.S. project to strengthen BWC national implementation, working with funders and project implementers
- Drafted one pillar of the Int'l Security and Nonproliferation Bureau's Strategic Plan on countering biological threats
- Presented to 75 attendees at the UNSGM Designated Laboratories Workshop about the team's work on developing a tabletop exercise to address issues related to sample transfer in the event of an alleged biological weapon use

AAAS Congressional Science & Engineering Fellow – U.S. Senate**2019 – 2020**

Office of Senator Edward Markey (MA), Energy & Environment Team

- Won highly selective national fellowship with only two positions from hundreds of applicants to serve as a Congressional Fellow and staff Senator Markey on biotechnology and climate policy topics
- Covered issues including renewable energy, methane emissions, air pollution, health impacts of climate change, environmental justice, sustainable agriculture, sustainable chemistry, public health, biotechnology
- Led the writing and introduction of **three bills** in the Senate, one of which has become **law**:
 - *S.3734 – Bioeconomy Research and Development Act of 2020* **This bill is now law through inclusion in the CHIPS and Science Act (Title IV) – establishes a federal research initiative on engineering biology to ensure U.S. leadership in the field. Bought together bipartisan team of four senators as bill cosponsors and ensured successful, bipartisan passage of bill through Senate Commerce Committee
 - *S.4523 - Natural Gas Blowout Prevention, Oversight, and Liability Act of 2020* (regulation and prevention of natural gas well blowouts and methane emissions)
 - *S.4280 – Preventing HEAT Illness and Deaths Act of 2020* (addressing health impacts of extreme heat)
- **Air pollution:** Secured commitment from EPA to deploy an air quality monitor in Chelsea, MA, a large majority-minority city with long-term air pollution, in response to oversight letter
- **COVID-19 national response:** Initiated and composed 6 COVID oversight letters in 3 weeks to federal agencies and Administration calling for specific action; developed talking points to call for use of Defense Production Act
- Built consensus across 10 ideologically diverse Senate offices on Senate Democrats' Special Climate Committee report
- Drafted chapter on health impacts in Climate Committee report "The Case for Climate Action"
- Prepared decision memos and remarks for the Senator, staffed the Senator for committee hearings, and contributed to an op-ed published in *The Boston Globe*
- Coordinated twice-monthly Senate Climate Change Task Force chaired by Senator Markey, inviting high-level speakers
- Tracked energy, environment, and biotech legislation in Congress and partnered with other offices for co-sponsorship
- Took initiative to switch to office's Health Team to work full-time on COVID-19 pandemic response
 - Unofficial liaison for MA COVID-19 response (coordination between hospitals, biotech, univ., & governor's office)
 - Coordinated with state health groups to respond to needs and wrote talking points for Senator

Entrepreneurship Fellow – Cambridge Science Corporation, LabCentral – Cambridge, MA**June 2019**

- One month fellowship to develop business plan for a start-up company idea
- Collaborated with scientists, investors, and business partners at LabCentral, a start-up incubator
- Reached out to over 50 potential customers to define market need and inform the business model
- Presented results to investor board and laid out recommendations for next steps

Scientist, Biotechnology R&D Group – DSM Nutrition Innovation Center – Lexington, MA**2018 – 2019**

- Team member of Biotechnology R&D group that coordinated with global teams in France, Switzerland, and Netherlands (DSM is a multinational company with >20,000 employees)
- Developed agricultural animal feed products to improve microbiome health, reduce antibiotic usage, and reduce the climate impact of animal agriculture
- Launched a new program in large-scale microbiome data analysis, coordinating with 3 teams globally and leading the visioning and implementation of a project plan to advance animal microbiome product development

- Ran weekly lab microbiology experiments to analyze for bacterial growth, enzyme activity, pH change, and other measures that included sequencing and analysis of microbial mixtures
- Awarded first place in internal grant competition for a new biotechnology idea – selected among >50 applicants

Graduate Student – Broad Institute and Dept. of Biological Engineering, MIT – Cambridge, MA **2013 – 2018**

Thesis: “Expanding the limits of scale and sensitivity in microbial genomics”

- Mentored 8 undergraduate students with independent research projects
- Won \$40k for a 1-year research project as principal investigator
- Coordinated research with Univ of Calif Irvine doctors and Harvard School of Public Health researchers
- **DNA sequencing and infectious disease:** Sequenced and analyzed 3,000 methicillin-resistant *Staphylococcus aureus* (MRSA) genomes from a clinical trial comparing MRSA treatment methods
- **Bioengineering:** Created microfluidic device for low-cost, high-throughput bacterial genome sequencing preparation. Reduced cost of sequencing by 100-fold and increased production rate to 200 per day
- **Microbiome:** Discovered correlation between lung cancer progression and the lung microbiome by analyzing the lung and gut microbiomes of experimental mice that develop lung cancer

Intern – Merrimack Pharmaceuticals – Cambridge, MA **Fall 2017**

- 4-month company internship (10 hours/week) at a biopharmaceutical company as part of MIT course
- Collaborated with Research Director to analyze RNA sequencing data for new cancer drug targets

Amgen Scholars Research Program – Dept. of Bioengineering – UC Berkeley **2011**

Designed PDMS microarray device for single-cell analysis of lung cancer cells for diagnostic tool

Undergraduate Researcher, Jennifer West Lab, Dept. of Bioengineering, Rice University **2010 – 2011**

Developed patterned hydrogels as a platform for neural stem cell growth and proliferation

MIT Summer Research Program Intern, Robert Langer Lab, Dept. of Biological Engr., MIT **2010**

Developed a porous hydrogel for utilization in spinal cord injury treatment

NanoJapan Researcher, Maruyama Lab, Dept. of Mech. Engineering, Tokyo University **2009**

Developed techniques of carbon nanotube separation using density gradient ultracentrifugation

MD Anderson Cancer Center, King Foundation Summer Research Program, Richard Behringer Lab **2008**

Created induced pluripotent stem cells and tested for embryonic stem cell characteristics

Communication Skills

Written and oral communication: MIT Biological Engineering Communication Fellow **2014 – 2016**

Trained coach to help students on scientific writing; coached over 50 clients with >150 coaching hours
Developed and presented 3 workshops on posters and grant proposals

Conflict management and peer coaching: MIT REFS Program, Founder and Fellow **2014 – 2018**

Founded conflict management program to provide coaching to graduate students and advocate for policy changes
Trained in 40-hour MIT conflict management course; coached >30 graduate students in one-on-one sessions

Graduate Teaching Assistant, MIT Department of Biological Engineering **2014**

Assisted in the Senior Engineering Design Course: mentored student teams and provided project feedback weekly
Restructured course design, objectives, and rubrics, along with developing new Final Design Showcase

Awards

Named as one of top ten women in 2023 leading the synthetic biology revolution by [Forbes](#) **2023**

BroadNext10 Research Grant **2016**

Awarded \$40k for a one-year research project at the Broad Institute, as the head principal investigator

MIT Hugh Hampton Young Fellowship **2015**

Selected as one of seven MIT graduate students to receive \$20k in recognition of academic achievement, exceptional character, and high potential for positive impact on humanity

Excellence Award in Mentorship/Teaching/Training, Broad Institute **2014**

Recognized for leadership and contribution to the NextGen Student Association and working with Broad faculty/staff to initiate new JuniorVoices scientific proposals

National Science Foundation Graduate Research Fellowship **2012**

Received \$36k tuition stipend and \$100k research funding for three years of study

MIT Momenta Presidential Fellow **2012 – 2013**

Nominated and selected from department to receive institutional MIT fellowship for one year of funding

Allen Trustee Distinguished Merit Scholarship, Rice University **2008 – 2012**

Merit-based academic scholarship for \$24,000 annually for four years given to distinguished students

Publications/Presentations

Publications:

- White House Office of Science and Technology [blog post](#) “Clean Indoor Air Benefits Everyone” (December 2022)
- Contributed to the following policy publications:
 - White House [report](#) “Vision, Needs, and Proposed Actions for Data for the Bioeconomy Initiative” (December 2023)
 - White House [Fact Sheet](#) “Biden-Harris Administration Announces New Bold Goals and Priorities to Advance American Biotechnology and Biomanufacturing” (March 2023)
 - White House [report](#) “Bold Goals for U.S. Biotechnology and Biomanufacturing: Harnessing Research and Development to Further Societal Goals” (March 2023)
 - White House [Fact Sheet](#) “Departments and Agencies Commit to Cleaner Indoor Air Across the Nation” (December 2022)
 - White House Office of Science and Technology Policy blog post “[Let’s Clear the Air on COVID](#)” (March 2022)
 - White House [Fact Sheet](#) “President Biden to Launch a National Biotechnology and Biomanufacturing Initiative” (September 2022)
 - White House [Executive Order](#) on Advancing Biotechnology and Biomanufacturing Innovation for a Sustainable, Safe, and Secure American Bioeconomy (September 2022)
 - Bioeconomy Research and Development Act (Title IV of the CHIPS and Science [Act](#), passed August 2022)
- C. Jin, **G. Lagoudas**, C. Zhao, S. Bullman, A. Bhutkar, B. Hu, S. Ameh, D. Sandel, X. Liang, S. Mazzilli, M. Whary, M. Meyerson, R. Germain, P. Blainey, J. Fox, T. Jacks. Commensal microbiota promote lung cancer development via $\gamma\delta$ T cells. *Cell*, 2019.
- M. Järvenpää, M. Sater, **G. Lagoudas**, P. Blainey, L. Miller, J. McKinnell, S. Huang, Y. Grad, P. Marttinen. A Bayesian model of acquisition and clearance of bacterial colonization incorporating within-host variation. *PLOS Computational Biology*, 2019.
- M. Kumar, J. Du, **G. Lagoudas**, Y. Jiao, A. Sawyer, D. Drummond, D. Lauffenburger, A. Raue. Computational analysis of single-cell transcriptomics identifies cell-cell communication associated with tumor microenvironment characteristics. *Cell Reports*, 2018.
- A. Hall, M. Yassour, J. Sauk, A. Garner, X. Jiang, T. Arthur, **G. Lagoudas**, T. Vatanen, N. Fornelos, R. Wilson, M. Bertha, M. Cohen, J. Garber, H. Khalili, D. Gevers, A. Ananthakrishnan, S. Kugathasa, E. Lander, P. Blainey, H. Vlamakis, R. Xavier, C. Huttenhower. A Novel Ruminococcus gnavus clade enriched in inflammatory bowel disease patients. *Genome Medicine*, 2017.
- S. Kanjilal, M. Sater, M. Thayer, **G. Lagoudas**, S. Kim, P. Blainey, Y. Grad. Trends in antibiotic susceptibility in Staphylococcus aureus in Boston, Massachusetts, 2000-2014. *Journal of Clinical Microbiology*, 2017.
- P. Zhao, E. Einarsson, **G. Lagoudas**, J. Shiomi, S. Chiashi, S. Maruyama. Tunable Separation of Single-Walled Carbon Nanotubes by Dual-Surfactant Density Gradient Ultracentrifugation. *Nano Research*, 2011.

Oral Presentations:

- Served as Chair for the Bioeconomy & Policy Track at the [SynBioBeta 2024](#) Conference, a global synthetic biology conference with over two thousand attendees. Coordinated two panels: (May 8, 2024)
 - *Expanding the US Bioeconomy: Federal Progress on the National Biotechnology and Biomanufacturing Initiative* – served as moderator with speakers from the White House, Dept of Energy, and Dept of Agriculture
 - *Beyond the Bold Goals: Turning the Vision for the Bioeconomy into Reality*
- Invited speaker at the National Academies of Sciences, Engineering, and Medicine [forum](#) on *Failures in Social Systems: Converging Biological, Behavioral, and Engineering Insights* (March 7, 2024)
- Invited speaker at the Society for Risk Analysis: *Interdisciplinary Perspectives on the U.S. Executive Order on Biotechnology* (December 11, 2023)
- Invited speaker at SynBioBeta 2023 (May 22, 2023):
 - *International Collaboration to Drive the Global Bioeconomy*, along with UK Member of Parliament
 - *Bioeconomy USA: Launching the National Biotechnology and Biomanufacturing Initiative*, along with 4 other government leaders from DOE, USDA, DOC, and NSF
- Invited [speaker](#) at the Council for Strategic Risks: *Advancing Biomanufacturing: US Policies & Plans* (May 16, 2023)
- [Interview](#) with World Bioeconomy Forum, Food and Agriculture Organization of the United Nations on the US bioeconomy policy and Executive Order 14081 (November 11, 2022)
- Speaker at the Health Action Alliance [event](#) “Cleaner Indoor Air for a Healthier Workforce” (April 15, 2022)
- Speaker and coordinator of the White House Office of Science and Technology Policy [Event](#) “Let’s Clear the Air: A Discussion on COVID and Clean Indoor Air”, along with Science Advisor to the President Alondra Nelson, with over 8,000 viewers (March 29, 2022)
- Invited speaker: *One week, one thousand genomes: microfluidics for molecular epidemiology*. ASM Next Gen Sequencing Conference, 2018.
- *The Lung microbiome in health and disease*. Invited lecture for high school summer students in the Minority Introduction to Engineering and Science at MIT Program, 2018.
- Invited speaker: *Engaging Scientists and Engineers in Policy Town Hall*, AAAS Annual Meeting, 2017.
- *Microfluidic Sample Preparation for Genome Sequencing of Clinical Isolates*, Broad Institute Annual Retreat – Technology Development Poster Winner Presentation, 2016.
- *Characterizing the lung microbiome and its effect in the host environment*, Biological Engineering Department Graduate Student Seminar, 2016.
- *The HeadCase: A Novel Cervical Spine Immobilization Device*, ASME Innovation Showcase at Annual Intercontinental Meeting, 2012. (1 of 10 semi-finalists)

Poster Presentations:

- *One week, one thousand genomes: microfluidics for molecular epidemiology*, International Conference on Emerging Infectious Diseases (hosted by CDC), 2018.
- *Lung Microbiome Characterization in Rodent Models and WGS Sample Prep*, Microbiome in Health and Disease Keystone Conference, 2017.
- *Microfluidic Sample Preparation for Genome Sequencing of Clinical Isolates*, Broad Institute Annual Retreat, 2016.
- *Lung Microbiome Characterization in Immunodeficient Mouse Models*, Human Immunity and the Microbiome in Health and Disease Conference, 2015.
- *A Breath of (Fresh) Air: Identifying the Pulmonary Microbiome*, Broad Institute Annual Retreat, 2014.

Professional Service and Leadership

AAAS Science and Technology Policy Fellowship Program mentor and volunteer

2022 – Present

- Serve as a volunteer on panels and career chats to support current or incoming Science Policy Fellows
- Mentor prospective and current science policy Fellows and help navigate the government ecosystem

National Outdoor Leadership School (NOLS), *Instructor*

2021 – Present

- Competitive application to be selected as a candidate for the instructor program; successfully completed the 21-day outdoor leadership instructor course (Wind River Range, Wyoming)

- Teach outdoor curriculum on risk management, leadership skills, communication, environmental studies, and wilderness skills to students of all ages while traversing the backcountry with days or weeks of independent travel
- Serve as responsible party for groups of 12-15 students, coordinating with other instructors on curriculum content and course decisions, and navigate challenging situations such as evacuation, medical issues, or extreme weather.

Broad Institute Genetics and Evolution Outreach Program, *Volunteer* **2014 – 2018**

- Worked alongside local 8th grade science teachers to develop new genetics and evolution curriculum
- Developed lectures and taught 2-3 classes per semester in science topics related to genomics and health

MIT Science Policy Initiative, *Alumni Relations Officer* **2014 – 2017**

- Initiated formation of Alumni Relations Officer position; developed new alumni database with >100 alumni
- Coordinated annual trips to MIT Washington Office, federal science agencies, and Congressional offices
- Organized speaker panel at 2017 AAAS Annual Meeting and first-annual student networking reception

Broad Institute Graduate Student and Postdoc Association, *Vice Chair* **2013 – 2014**

- Organized activities for Broad community, including industry panels, graduate student seminars, faculty lunches
- Developed JuniorVoices initiative to gather student research proposals and present to Broad Institute Leadership

MIT Sidney Pacific Graduate Residence, *Officer* **2013 – 2015**

- Served as Co-Chair of the Committee on Scholarly Interactions (2014-15), hosting the MIT Presidential Fellows Lecture Series five times annually and small-group discussions monthly
- Mentored and hosted community events for 60 graduate students as Hall Councilor (2013-14)

Rice University Student Association, *Student Body President* **2011 – 2012**

- Led student government of 65 officers and 3,800 student body
- Formed and led joint student/administrator committee to allocate \$6 million in funds for students and campus

Member of MIT Cycling and Triathlon Clubs (2012-2017) and marathon runner (10 full, incl. Boston Marathon); certified Wilderness First Responder