THE 5TH INTERNATIONAL CONFERENCE ON THE

SCIENCE OF SCIENCE AND INNOVATION

ICSSI 2026

June 28 – July 1, 2026 · Boulder, Colorado

Limelight Hotel & University of Colorado Boulder

http://icssi.org/

Sponsors

The organizers would like to thank the **US National Science Foundation** and the **Alfred P. Sloan Foundation** for generous support of ICSSI 2026; **Digital Science** and **Cevian Labs** for support of the hackathon; and the **BioFrontiers Institute at the University of Colorado Boulder** for administrative support.

NSF

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BioFrontiers Institute
UNIVERSITY OF COLORADO BOULDER

DIGITAL science

Cevian Labs

Sunday, June 28 – Open Data Hackathon

Location: JSCBB (Jennie Smoly Caruthers Biotechnology Building), CU Boulder Campus

9:00–10:00

Welcome & Team Formation

Participants are introduced to hackathon themes, available datasets, and team formation. Teams self-organize around open data challenges.

10:00–12:30

Hackathon Work Session I

12:30–13:30

Working lunch & project pitch lightning round

Teams present preliminary findings and receive feedback from mentors and fellow participants.

13:30–16:30

Hackathon Work Session II

16:30–17:30

Progress Read-Outs

Teams present end-of-day summaries and receive feedback from mentors and fellow participants.

Monday, June 29 – Day 1 – Morning

7:30–8:30 **Registration & Breakfast**

8:30–8:45 **Conference Opening: Welcome to ICSSI 2026**
Dan Larremore, Erin Leahey, Bhaven Sampat

8:45–9:15 **Invited Talk**
Ryan Hill – How Artificial Intelligence Shapes Science: Evidence from AlphaFold

9:15–9:45 **Invited Talk**
Chaoqun Ni – AI and the Reorganization of the Research Ecosystem

9:45–10:55 **Panel Discussion 1**
Lisa Margonelli, Tony Mills, and Heather Douglas, moderated by Bhaven Sampat
Past, Present, and Future of Social Contract for Science

10:55–11:15 Coffee Break · Atrium

11:15–11:45 **Invited Talk**
Kevin Gross – Risk, Reward, and the Choices We Face as Scholars

11:45–12:30 **Lightning Talks I** Theme: The Scientific Workforce · Chair: [to be confirmed]

How women's empowerment combats national brain drain
Alireza Javadian Sabet, Junghyun Lim, Yixiao Li, Lisa Simon and Morgan Frank

Talent Mobility as an Engine of Frontier Innovation
Qing Chang, Alireza Javadian Sabet, Ziji Ma and Morgan Frank

Racial Divergence in Mentorship Predicts Opposite Career Outcomes for White and non-White Protégés
Meijun Liu, Yi Bu, Mingze Zhang, Lizhen Liang, Ying Ding, Richard Freeman and Daniel Acuña

Stochastic dynamics can drive large differences in researcher productivity
Sam Zhang, Aanjaneya Kumar, Daniel Larremore and Aaron Clauset

Leaders and the Direction of Science: Evidence from University Presidents
Zerin Zilin Dong

Why the Nobel Prize Finds Its Winner Late
Lulin Yang, Jiaxin Pei, Donna Ginther and Lingfei Wu

Overview of NIH Science of Science Activities
Ira Kuhn and Marina Volkov

12:30–13:45 **Lunch – AMA Session with Invited Speakers**

Monday, June 29 – Day 1 – Afternoon

13:45–15:00 **Parallel Contributed Sessions – Block A**

Flatiron 2 – AI & LLMs in Research

Human–AI Collaboration in Science at Scale: A Global Large-scale Randomized Field Experiment
Binglu Wang, Weixin Liang, Jiahui Xue, Yuhui Zhang, Hancheng Cao, Dashun Wang and Yian Yin

15 minute delay [speaker unable to travel]
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Language, Not Novelty: LLM-Assisted Writing Boosts Scientific Impact for ESL Scholars
Haohan Shi and Yulin Yu

The Lagging Embrace: Pace and Patterns of LLM integration in Clinical Trials
Fan Qi, Shuang Wang and Wenjing Zhao

Helios Web Next: Real-Time, Large-Scale Science Map Visualization with Agentic Interfaces
Filipi Nascimento Silva

Flatiron 3 – Career Trajectories & Scientific Workforce

The Cost of Falling Behind: A Framework for Low-Output Periods and Career Penalties Across Scientific Fields
Casandra Rusti and Elene Chechik

The Divergence of Mobility and Attrition: A Two-Track Study of the U.S. Scientific Workforce (2011–2024)
Anthony Olejniczak, Jamie Powers and William Savage

The Network of US Interdisciplinary Faculty Hiring
Ben Aoki-Sherwood and Daniel Larremore

Interdisciplinary Ph.D.s face barriers to top university placement
Xiang Zheng, Anli Peng, Xi Hong, Cassidy R. Sugimoto, Jialin Liu and Chaoqun Ni

Departments are not Dinosaurs: Characterizing Department Sizes and Adaptation Mechanisms
Jan Bachmann, Aaron Clauset, Lisette Espín-Noboa, Gerardo Iñiguez, Fariba Karimi and Daniel Larremore

Flatiron 4 – Innovation & Disruption

15 minute delay [speaker unable to travel]
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More Investment, Less Disruption? Firm Size, Investment Scale, and Technological Change
Drini Morina, Lukas Speer and Stefanie Heiden

Disruption as an Expressive Act: Evidence from Multi-Modal Novelty Measures
Thomas Gebhart, Xiangting Wu, Alex Reineck and Russell Funk

Untapped Innovation Potential of University Research
Yifan Qian, Binglu Wang, Zihang Lin, Sirag Erkol, Zhe Wen, Jian Gao, Alicia Loffler, Benjamin Jones and Dashun Wang

Pivoting, not Leaping: Atypical Combinations with Anchored Exploration
Saeyoung Choi and Junghye Lee

15:00–15:20 Coffee Break · Atrium

15:20–16:35 **Parallel Contributed Sessions – Block B**

Flatiron 2 – Peer Review & Research Integrity

The Sources and Impacts of Idiosyncrasy in Peer Review
Kate Barnes, Aaron Clauset and Daniel Larremore

Preregistration in the lab: stories of credibility and hardship
Sven Ulpts

Are Replication Failures Reflected in Public Knowledge?
Youyou Wu

The Retraction Epidemic in Science Across Publishers, Fields, and Countries
Sara Venturini, Alessandra Urbinati, Paola Gallo, Jessica T. Davis and Alessandro Vespignani

The Performance–Risk Coupling: A Diagnostic Framework for Institutional Research Integrity in Global Science (RI²)
Lokman Meho

Flatiron 3 – Gender, Diversity & Equity in Science

The Gender Gap in Scholarly Self-Promotion on Social Media
Maalvika Bhat, Inna Smirnova, Misha Teplitskiy and Emőke-Ágnes Horvát

Parental occupation and socioeconomic origins in academic faculty
Carolina Chavez, Katie Spoon, Daniel Larremore, Daniel Acuña and Aaron Clauset

Sharing Knowledge Openly: Gender, Race, and Feminist Scholarship in Open Access Publishing
Molly King and Jeffrey Lockhart

Racial Hereditarianism in Science: Trees or Forest?
Bernard Koch, Kushan Dasgupta, BJ Moses-Rosenthal, Daniele Silvestro and Aaron Panofsky

Parenthood in Academia in Europe
Paula Nauta and Lisette Espín-Noboa

Flatiron 4 – Data, Software & Research Infrastructure

The Role of Software in Science
Eva Brown and Nicholas Weber

The Career Value of Data: How Dataset Use Diversity Shapes Scientific Impact and Retention
Yulin Yu and Yifei Xu

A digital archive reveals how a funding agency cooperated with academics to support the nascent field of genomics.
Spencer Hong, Zachary Utz, Mohammad Hosseini, Cleber Zanchettin, Heliodoro Tejedor Navarro, Kristi Homes, Kris Wetterstrand, Sarah Bates, Luis Nunes Amaral, Christopher Donohue and Thomas Stoeger

One in Eight OpenAlex Abstracts Has Integrity Issues
Seorin Kim, Vincent Holst and Vincent Ginis

Widespread Economic Impacts of Federal Research Cuts in Local Communities
Mallory Harris, Alyssa Sinclair, Elena Parkerson, Clio Andris and Joshua Weitz

16:35–18:00 **Monday, June 29 – Day 1 – Poster Session I**

1 → Figures as Interfaces: Toward LLM-Native Artifacts for Scientific Discovery – Yifang Wang, Rui Sheng, Erzhuo Shao, Yifan Qian, Haotian Li, Nan Cao and Dashun Wang
2 → SciSciGPT: Advancing Human-AI Collaboration in the Science of Science – Erzhuo Shao, Yifang Wang, Yifan Qian, Zhenyu Pan, Han Liu and Dashun Wang
3 → Quantifying the Translational Layer of Science – Zihang Lin, Yifan Qian, Sirag Erkol, Benjamin Jones and Dashun Wang
4 → Funding Trajectories, Scientific Careers, and the Nature of Innovation – Meiling Li, Yang Wang, Xiaoxuan Li, Aruhan Bai and Chunliang Fan
5 → What Drives Scientific Collaboration? Evidence from Co-authorship Networks – Zhaoxia Liu
6 → Metadata Enrichment of Low-Resource Scientific Data using LLM Agent – Manika Lamba, You Peng, Sophie Nikolov, Glen Layne-Worthey, John Stephen Downie
7 → Coconut Libtool 2.0: Open-Source, Non-Commercial, All-in-One Text Analysis and Visualization Tool – Manika Lamba, Faizhal Arif Santosa and Tam Le
8 → Measuring Execution Effort in Scientific Progress – Lulin Yang, Jiaxin Pei, Donna Ginther and Lingfei Wu
9 → Disentangling Specialization, Interdisciplinarity, and Brokerage: Gender and Career Outcomes in Science – Malen Cuturic, Kjersten Whittington, Megan Frederickson and Molly King
10 → The Success-Failure Field: A Structural Regularity of Innovation Search – Hong Chen, Yifan Qian, Chaoming Song and Dashun Wang
11 → From Quantity to Quality: Workforce Mismatch in AI between Academia and Industries – Jisu Woo and So Young Kim
12 → Association Between Information Acquisition on Twitter and Research Impact – Yu Ohki, Daiki Miura, Mitsuo Yoshida, Ichiro Sakata and Kimitaka Asatani
13 → Small State and Knowledge Flows: Mapping Knowledge Diffusion and Science-Technology Linkages in Luxembourg's National Science System – Juan Jose Moradel-Vasquez
14 → Uneven Exposure to Generative AI Across the Scientific Research Pipeline – Yulin Yu and Yizhou Li
15 → Dynamic Interfaces, Static Policies? – Hana Kim
16 → Evaluating Complex Core Technological Capability Using Knowledge Networks and KL Divergence – Shuhei Ikeda and Mitsuo Yoshida
17 → Global Landscape of AI Policy – Munjung Kim, Jaehyuk Park and Jisung Yoon
18 → A Dual-Network Approach to Predicting Emerging Research Keywords – Hyewon Kim and Heyoung Yang
19 → —
20 → Information services support for policymakers using the federal data ecosystem – Mary Van Allen, Anand Desai, Joshua Hawley, Esther Nolton and Cynthia Phillips
21 → Knowledge Sovereignty: A Path to Independence or Isolation? – Jianjian Gao and Alexander J. Gates
22 → Disruptive Patents and Firm Performance – Drini Morina, Milena Müller, Lukas Speer and Stefanie Heiden
23 → Whose Name Comes Up? II: Benchmarking and Intervention-Based Auditing of LLM-Based Scholar Recommendation – Lisette Espín-Noboa and Gonzalo Gabriel Mendez
24 → The Negotiated Role of Disruptive Innovation Agents: How Profession-Level Barriers Undermined ARPA-Type Program Managers in South Korea – Soul Han
25 → Driving Science with Multi-Agents and Reinforcement Learning: Are LLMs Effective for Automated Peer Review? – Pawin Taechoyotin and Daniel Acuña
26 → Combining Document Structure and Language Model for IMRaD Classification – Dongin Nam, Tzu-Kun Hsiao and Vetle Torvik
27 → How Are Public, Private, and Mixed Funding Types Associated with Multiple Dimensions of Research Impact in U.S. Biomedical Research? – Weiye Gu and Chaoqun Ni
28 → Withdrawn
29 → Predicting AI's Impact on Labor as a Machine Learning Problem: A Research Agenda for Measurement, Methodology, and Evaluation – Yong Suk Lee
30 → Mapping AI Use in Scientific Workflows: A Large Language Model–Based Framework – Rong Ni, Jiandong Zhang and Jue Wang
31 → Comprehending U.S. Research and Innovation Performance in Critical and Emerging Technologies from 2015-2024 – Anusha Natarajan
32 → LLM-Driven Content-Based Knowledge Graphs Offer A New Perspective To Study A Scientific Field: A Social Science Case Study – Seorin Kim, Vincent Holst and Vincent Ginis
33 → The Impact of University-Industry Collaboration in U.S. Biomedical and Life Sciences – Huaxia Zhou, Jane Zavisca and Erin Leahey
34 → Global Knowledge Flows in High-Tech Sectors: Evidence from Patents – Le Tang
35 → Measuring the Structural Effects of Generative AI on Scientific Citations – Seoyoung Park, Won Ik Cho, Taekho You, Jinhyuk Yun and Wonjae Lee
36 → Directional Structure of Topic Growth in Scientific Knowledge Space – Young Jin Kim, Seoyoung Park and June Young Lee
37 → —
38 → Distinguishing Types of Scientific Innovation Capacity: Exploring the Patterns and Dynamics of Knowledge Combinations and Impacts on Innovation in Biomedical Literature – Jinyu Gao, Yi Bu and Sarah Bratt
39 → Toward a Cross-Domain AI-Ready Database for Reproducibility and Replicability Studies – Rochana R. Obadage, Sarah Rajtmajer and Jian Wu
40 → Scientific Recognition in Large Language Models – Yixuan Liu, Arnab Sen Sharma, Rodrigo Dorantes-Gilardi, Ábel Elekes and Albert-László Barabási
41 → Making Sense of Research Portfolios with LLMs: A Case Study of Co-Design in Education Research – Aaron Gluck, Genelle Diaz-Silveira, Kate Henson, Mon Lin Monica Ko, Eve Manz, William R. Penuel and Maria Leonor Pacheco
42 → Persona Conditioning in LLMs Alters Research Content Quality and Value Profiles – Yuqi Zhang, Yibo Meng and Hang Jiang

43 → Adapting to LLMs: How Insiders and Outsiders Reshape Scientific Knowledge Production – Huimin Xu, Ying Ding, Yan Leng and Houjiang Liu
44 → From Open Science to Scientific Isolationism: A Conceptual Framework for Science Policy Analysis – Elena Chechik and Cassidy R. Sugimoto
45 → Understanding the Costs of Open Access – Yulia V. Sevryugina and Carolyn E.G. Cullen
46 → —
47 → Thinking Outside the Academic Box? First-Generation Faculty Collaboration – Nicolas Ferraiuolo, Julia Melkers and Luyu Du
48 → Constructing Visual Comparability: A Reflexive Framework for Comparable Images in AI-Mediated Experimental Designs – Junbin Wu
49 → More Than What's in a Name: LLM-Based Gender Classification From Pronouns, Images, and Names – Ben Aoki-Sherwood, Carolina Chavez-Ruelas, Aaron Clauset and Daniel Larremore
50 → What Would Clinical Trials Cite–and What Should They Cite? Citation Bias and the p-value Heap in Clinical Research – Jiwoong Choi
51 → Scientific Relatedness Constrains Novelty in Global Sustainable Development Goals Research – Mingze Zhang, Robin Haunschild and Meijun Liu
52 → How Do Academic Gatekeepers Evaluate Figures? An Empirical Study of Peer Review Reports Using Large Language Models – Jialin Liu and Chaoqun Ni
53 → Ethical Considerations in Large Language Models Research: Insights from Authors' Self-Reported Ethics Statements – Chieh-Li Chin and Jana Diesner
54 → The Normative Structure of AI Scientists: Behavioral Audits of Large Language Models – Yuanyi Zhen, Mengsheng Zhao and Fengli Xu

End of Day 1

Tuesday, June 30 – Day 2 – Morning

7:30–8:30 **Registration & Breakfast**

8:30–9:15 **Lightning Talks II** Theme: Future Infrastructure of the Scientific Ecosystem. Chair: To be confirmed

Beyond Counting Citations: Using LLMs for Qualitative Assessment of Research-Policy Impact
Angel Luis Jaso Tamame and Euan Adie

AI-assisted writing and the structure of scientific knowledge
Erjia Yan and Chaoqun Ni

AI predictions and the expansion of scientific frontiers: Evidence from structural biology
Mengyi Sun, Sukwoong Choi and Yian Yin

How Willing Are LLMs to Commit Scientific Fraud?: A Study of 17 Commercial and Open Models
Almene De Meran Meguimtsop and Daniel Acuña

LLM-Generated or Human-Written? Comparing Review and Non-Review Papers on ArXiv
Yanai Elazar and Maria Antoniak

Thinking Like a Scientist? A Structural Study of LLM-Generated Research Methods
Francesca Carlon, Brecht Verbeken, Vincent Ginis and Andres Algaba

9:15–10:25 **Panel Discussion 2**

Jessica Hullman, Daniel Acuña, and Aaron Clauset, moderated by Misha Teplitskiy

The Future Infrastructure of the Scientific Ecosystem

10:25–10:55 **Invited Talk**

Lingfei Wu – On Scientific Memory and Innovation

10:55–11:15 Coffee Break · Atrium

11:15–11:45 **Invited Talk**

Donna Ginther – Canary in the Coal Mine? Prospects for Early Career Scientists

11:45–12:15 **Invited Talk**

Charlie Gomez – Elite Nations Drive the Convergence of Global Research Agendas

12:15–12:30 **Hackathon Readouts & Awards**

12:30–13:45 **Lunch – AMA Session with Invited Speakers**

Tuesday, June 30 – Day 2 – Afternoon

13:45–15:00 **Parallel Contributed Sessions – Block C**

Flatiron 2 – Knowledge Flow & Citation Analysis

Stop Citing Granovetter? When the Idea Spreads but Credit Doesn't
Zheng Fu, Jeffrey Shen and Zhuofan Li

Skewed Attention and the Status Bias in the Flow of Ideas Across Sciences
Renli Wu, Donghyun Kang, Wenxuan Shi and James Evans

Truth-Spots and The Geopolitics of Knowledge Production
Kyle Siler

Construction of Standardized Knowledge: A Typology of Scientific Knowledge Consumption via Citation Context Analysis
Jeonghyun Seo, Seokkyun Woo and Jisung Yoon

Beyond borrowed concepts: a semantic analysis of entropy's half-century cross-disciplinary journey between physics and economics
Bea Treena Macasaet and Justin Powell

Flatiron 3 – Geographies of Science

Quantifying and Understanding Global Disparities in Biomedical Research
Christopher Ojukwu and Daniel Acuña

Global Biomedical Research Output and Translational Orientation by Income Group
Luis M. Castillo-Chávez, Manuel J. Cobo and Jose A. Moral-Munoz

Field-Specific Networks: How Disciplines Shape the Geography of Global Scientific Recognition
Jianjian Gao and Alexander J. Gates

AI-Assisted Writing Is Growing Fastest Among Non-English-Speaking and Less Established Scientists
Jialin Liu, Yi Bu and Chaoqun Ni

Global Science Sustains U.S. Innovation
Christopher Esposito

Flatiron 4 – Innovation Ecosystems

Opening Knowledge Gaps Drives Scientific Progress
Kara Kedrick, Wenlong Yang, Thomas Gebhart, Yang Wang and Russell Funk

Subjective Perspectives within Learned Representations Predict High-Impact Innovation
Likun Cao, Rui Pan and James Evans

Epistemic diversity across language models mitigates knowledge collapse
Damian Hodel and Jevin West

A Large-Scale Disambiguated Geographic Named Entity Dataset from PubMed Abstracts
Xiaoliang Jiang, Nigel Bosch and Vetle Torvik

China Nears Sovereignty in Technological Innovation
Ziyu Chen, Christopher Esposito and Olav Sorenson

15:00–15:20 Coffee Break · Atrium

15:20–16:35 **Parallel Contributed Sessions – Block D**

Flatiron 2 – Science Communication & AI

Detecting and Linking Science Mentions in Podcasts: A Framework for Off-Channel Diffusion
Hong Chen, Misha Teplitskiy and David Jurgens

AI as Human?: Validating Large Language Models as Proxies for Human Participants in Persuasive Communication Research
Emily McKinley, Yoo Jung Oh, Abdulaziz Alhumaidy and Jingwen Zhang

Improving AI for Scientific Discovery with 6749 Scientists
Honglin Bao and James Evans

Artificial Intelligence and the Organization of Scientific Work: Evidence from Contributorship Statements and LLM Usage
Seokkyun Woo, Doah Kwak, Jeonghyun Seo and Seohyeon Park

Fiction Science of Science
Shahan Ali Memon and Jevin West

Flatiron 3 – Teams, Networks & Scientific Communities

Shared Leadership in Science
Erzhuo Shao, Giorgio Tripodi, Yifan Qian and Dashun Wang

Who and When: How Collaboration Networks Shape Researcher Entry into Emerging Subfields
Nandini Banerjee and Diego Gomez-Zara

When Zoom Overcomes Distance but Not Time Differences: Overlapping Working Hours and Global Scientific Collaboration
Zheng Fu and Zhuofan Li

The Neutral Theory of Scientific Impact Evolution
Miura Chiaki and Kohei Sembuku

Interdisciplinary Scientists are More Innovative than Interdisciplinary Teams
Yiling Lin, Zak Risha, Erin Leahey and Lingfei Wu

Flatiron 4 – Technological Innovation

Quality, Scope, and Leniency: Strategic Application Behavior at the US Patent Office
Lorenz Gschwent

Knowledge in Transit: Cross-Domain Citation Flow Predicts Patent Translation
Bruce Ian Hutchins and Baolu Yu

Spontaneous Divergence in Technological Progress
Siddharth Patwardhan, Chaoming Song and Dashun Wang

How Federal Funding Shocks Shape University Scientists' Interest and Engagement in Technology Transfer
Jane Zavisca, Dong Joon Park and Erin Leahey

Startups attenuate demographic disparities in biomedical, cultural, and commercial innovation
Šimon Trlifaj and Yian Yin

16:35–18:00 **Tuesday, June 30 – Day 2 – Poster Session II**

56 → Counterfactual LLM-based Framework for Measuring Rhetorical Style – Jingyi Qiu, Hong Chen and Zongyi Li
57 → Toward a Personalization Turn in AI-Assisted Research Infrastructure: Conceptual Divergence Analysis for Reflective Auditing – Jina Lee and Zhuofan Li
58 → Second Acts in Scientific and Creative Careers – Sirag Erkol, Giorgio Tripodi and Dashun Wang
59 → How digitization shapes scientific collaboration: evidence from electronic health records – Max Wang
60 → Withdrawn
61 → The Geography of Knowledge: Investigating the Global Imbalance in Early Childhood Education Quality Research – Yan Jiang
62 → Engineering New Social Processes of Research: Challenges to Metascience – Jeff Tsao and Stuart Buck
63 → Persistence of Pivot Penalty across Domains and Time – Yingrong Mao, Sirag Erkol and Dashun Wang
64 → Detecting and Characterizing AI-Mediated Scientific Code – David Farr, Eva Brown, Shahan Ali Memon and Nic Weber
65 → Trust and Science Diplomacy: The Impact of Science and Technology Agreements on International Relations – Alex Temple
66 → A Probabilistic Model of Mentorship in a Large-Scale Coauthorship Network – Malik Oyewale Salami and Vetle I. Torvik
67 → Why Is Women's Work More Disruptive? The Critical Role of Humble Language – Jina Lee, Charles Gomez, Sarah Bratt, Yea-Eun Kwon, Charles Lassiter and Erin Leahey
68 → Tracing Scientific Diffusion from Research to Innovation: A Case Study on NIH-funded Projects – Autumn Toney-Wails, Katherine Quinn, Rebecca Gelles, Veronica Kinoshita and Catherine Aiken
69 → The Legibility Gap: How Gender Equity Interventions Redistribute Recognition Across Cultures – Binglu Wang, Jose Cervantez, Jiahui Xue, Katherine Milkman and Dashun Wang
70 → When Data Accelerates Discovery and Deception: A Large-Scale Analysis of Data Reuse and Retractions – Yulin Yu and Chenxi Jiang
71 → Researcher Population Pyramids for Tracking Cross-National Demographics and Gender Balance – Kazuki Nakajima and Takayuki Mizuno
72 → The selective use of physics knowledge in policy: how interdisciplinary physics bridges subfields and shapes policy influence – Jeongmin Lee and Jisung Yoon
73 → Bless or Curse? An Empirical Analysis of the Effects of U.S. Export Controls on China's High-Tech Innovation Through the Lens of Entity-Listed Firms – Siqi Xie, Xuan Zeng and Masaru Yarime
74 → The Discursive Capture of Science: How Political Instrumentalization Reshapes Scientific Disciplinary Visibility in China (1979–2019) – Zhicong Chen, Jiacheng Chen and Yuanyuan Pan
75 → Mapping the Collaboration Structure of Funded Spanish Computer Science Projects – Manuel Jesus Cobo Martin, Verónica Duarte, T.T. Choji and Jose A. Moral-Munoz
76 → Is arXiv purely a preprint server? – Analysis of postprints on arXiv server – Sora Amaga, Jiro Kikkawa, Kazuhiro Kazama, Jun-Ichi Onami, Sho Sato and Mitsuo Yoshida
77 → AI's Impact on Epistemic Diversity in Science – Shahan Ali Memon, Damian Hodel and Jevin West
78 → How Does the Commercial Potential of Research Shape International Research Collaboration? – Seohyeon Park and Seokkyun Woo
79 → Mapping the Hidden Trade-Offs: A Function-Challenge Typology of LLMs – Meline Yesayan and Masaru Yarime
80 → Border Disruption and Innovation – Eric Jeong
81 → Does context shape equity? How Brazilian funding agencies institutionalize diversity and inclusion in research – Yohanna Juk and Sergio Salles Filho
82 → A Tale of Two Zones: The Impact of Time Zones on Collaboration and Knowledge Flows – Katarzyna Swiech
83 → —
84 → Tracing Knowledge Diffusion by Citation Context Embeddings – Tzu-Kun Hsiao and Vetle I. Torvik
85 → Classifying Author Contribution Statements using Sentence Embeddings – Deepanshu Malhotra, Keith A. Jacobs Jr and Vetle I. Torvik
86 → Advisor career stage and PhD advisee development – Xi Hong, Jialin Liu and Chaoqun Ni
87 → Interdisciplinary Collaboration and the Distribution of Research Productivity in Elite Engineering Research Systems – Susan Day, Kayla Brooks, William Trochim, Jason Sullivan, Michael Gooseff and Shawn Clark
88 → The intersection of data quality, research security, and gold standard science – Melissa Day and Evan Poworoznek
89 → Network Dynamics of Doctoral Advisors and Advisees – Huaxia Zhou, Weston Holland, Paolo Parigi and Charles Gomez
90 → Thanking the World: Human Annotated Dataset of Support and Sentiments in Dissertation Acknowledgments – Manika Lamba and You Peng
91 → Epistemic Collapse in Agentic Systems: When Communication Degrades Collective Discovery – David Farr, Damian Hodel, Iain J. Cruickshank, Kate Starbird and Jevin West
92 → What Makes a Rebuttal Work? LLM-Assisted Analysis of Reviewer-Author Interaction Across 42,683 ICLR Papers – Mathieu Louis, Tibo Vanleke, Andres Algaba and Vincent Ginis
93 → The Direction of Novelty: Quantifying Innovation as What Existing Knowledge Cannot Explain – Xiangting Wu and Russell Funk
94 → A Framework to Study Meaningful Interdisciplinary Discourse in Scholarly Publications – Bagyasree Sudharsan, Alexandria Leto and Maria Leonor Pacheco
95 → Pricing policies and diverse policy combinations drive major green innovation increases – Nils Rochowicz, Patrick Kloesel, Laura Menicacci, Lorenzo Romero-Fernandez, Nicolas Koch and Annika Stechemesser
96 → Forecasting therapeutic breakthroughs in biomedical research – Bruce Ian Hutchins and Salsabil Arabi
97 → Who funds Open Science?: A dashboard to track data sharing in publications across major funders – Adam Thomas, Josh Lawrimore, Dustin Moraczewski and Christoph Li
98 → Measuring and Predicting National Agility in Research – Dick Klavans
99 → Who Adopts AI in the Social Sciences? Evidence from 54,000 Faculty Careers – Nandini Banerjee, Diego Gomez-Zara and Yang Yang

100 → Seeing Disruption Early: Semantic and Structural Signals in Scientific Citation Networks – Nandini Banerjee and Diego Gomez-Zara
101 → The Co-Evolution of Cost Knowledge and Market Scale in Low-Carbon Energy – Magdalena Klemun and Stefano Mingolla
102 → How Big, Open Data Shape Research Topics and Teams – Erin Leahey, Sarah Stueve, Jinyu Gao and Anissa Tanweer
103 → Do Venture Capitalists Venture? Herding, Career Incentives, and Startup Outcomes – Youn Baek
104 → Dataset of Automatically Classified Rhetorical Sections from 11 Million Scientific Papers – Daniel Verdi, Jacob Aarup Dalsgaard and Roberta Sinatra
105 → Mapping Quantum Computing: Sharp Social Fragmentation, Uneven Cognitive Convergence – Myungeun Hong
106 → Agentic AI Challenges Science of Science to Strengthen Its Foundations – Vincent Holst, Andres Algaba, Sylvia Wenmackers and Vincent Ginis
107 → Beyond the Individual: Agentic AI as Organizational Co-PI Reveals Hidden Collaboration Networks in Scientific Teams – Yuanyi Zhen, Yiru Zhang, Xuhua Zhang, Jiaoyang Li and Fengli Xu
108 → Hypogen: Reliable Abstract-Grounded Hypothesis Extraction with Generate-Judge-Verify Inference – Akhil Akella
109 → Stage-Aware Public Funding in Deep-Tech Innovation Systems: An Agent-Based Analysis of Signalling, Congestion, and Bankable Outcomes – Juan Luis Valero
110 → Officials' Spatial Mobility and Collaborative Innovation – Zhiyong Niu and Zixian Liu
111 → Tensor Geometry of Embedding Spaces: Frame-Invariant Measures for the Science of Science – Alexander Reineck, Thomas Gebhart and Russell Funk

18:30–20:30 **Conference Dinner** Koenig Alumni House

End of Day 2

Wednesday, July 1 – Day 3

7:30–8:30 **Registration & Breakfast**

8:30–9:20 **Lightning Talks III** Theme: The Future of Science Policy · Chair: [to be confirmed]

Scientific Misinterpretation and Information Laundering in U.S. Policy
Junsol Kim, Haohan Shi and James Evans

The Political Economy of Science Funding
Jin Ai, Jacob A. Dalsgaard, Charlotte Ren and Filipi N. Silva

Estimating Economic Losses due to Multi-year Funding at the National Institutes of Health
Elena Parkerson, Mallory Harris, Alyssa Sinclair, Clio Andris, and Joshua Weitz

Research university assortativity conditions the integration of regional innovation systems
Alexander Petersen and Andrea Montano Ramirez

Global Academic Collaborations in the Surge of AI for Research
Christian Chacua and Andres F. Castro Torres

The Rise of Large Language Models and the Direction and Impact of US Federal Research Funding
Yifan Qian, Zhe Wen, Alexander Furnas, Yue Bai, Erzhuo Shao and Dashun Wang

Faculty mid-career moves among US PhD-granting universities
Chethan Kavaraganahalli Prasanna, Sam Zhang, Aaron Clauset and Daniel Larremore

Dataset of Automatically Classified Rhetorical Sections from 11 Million Scientific Papers
Daniel Verdi, Jacob Aarup Dalsgaard and Roberta Sinatra

9:20–10:30 **Panel Discussion 3**

Kaye Husbands-Fealing, Andrew Gerard, and Matt Hourihan, moderated by Cassidy Sugimoto

The Future of Science Policy: Research Needs and Opportunities

10:30–11:00 Coffee Break · Atrium

11:00–11:30 **Invited Talk**

Melinda Baldwin – In Referees We Trust? The Rise of Peer Review

11:30–12:00 **Awards & Closing Remarks**

Dan Larremore, Erin Leahey, Bhaven Sampat

End of Day 3 — End of ICSSI 2026

Abstracts & Invited Speaker Bios

Ryan Hill: How Artificial Intelligence Shapes Science: Evidence from AlphaFold

Abstract: We study how a frontier AI model affects scientific discovery by examining the release of the AlphaFold2 algorithm and its impact on structural biology and related fields of science. Structural biology is the field of science concerned with understanding the structure and function of proteins. Researchers in this field historically devoted substantial time and resources to experimentally solving three-dimensional protein structures. AlphaFold can predict these structures without running experiments. In July 2021, researchers gained access to hundreds of thousands of these AI-predicted structures virtually overnight. Yet, to date, we find that the rate of experimental structure determination has remained almost unchanged. Instead, researchers appear to use predicted structures to facilitate and complement experimental structure determination. Looking at downstream science that builds on protein structures, we find that basic research on proteins that had no structure information prior to AlphaFold increases by 15 to 40% relative to proteins that already had a structure, shifting the direction of research toward less-studied proteins. However, we find no evidence so far that more applied, early-stage drug development is targeting these proteins, though such activity may emerge in the future.

Bio: Ryan Hill is an Assistant Professor of Strategy at Northwestern Kellogg School of Management and a Faculty Research Fellow at the National Bureau of Economic Research (NBER). His research focuses on the incentives and institutions that drive science and innovation. He uses administrative data from fields like structural biology and astronomy to investigate academic competition, scientific careers, and AI in scientific discovery. He also studies the labor economics of upward mobility and early-life career formation. Ryan graduated with a PhD in economics from the Massachusetts Institute of Technology in 2020 and earned a BS in economics, mathematics, and political science from Brigham Young University in 2014.

Chaoqun Ni: AI and the Reorganization of the Research Ecosystem

Abstract: Artificial intelligence is increasingly embedded in the everyday infrastructure of scientific work. This talk examines how AI may reorganize the research ecosystem by shaping how scientists write, collaborate, cite prior work, and assess evidence. I argue that AI should be understood not only as a tool for increasing productivity, but also as a force that may alter scientific communication, research integrity, and inequalities in knowledge production. Drawing on examples from ongoing research, I discuss how the science of science can provide empirical evidence and policy-relevant frameworks for understanding and governing AI's role in the future of science.

Bio: Chaoqun Ni is an associate professor at the University of Wisconsin–Madison Information School and co-director of the Metascience Research Lab. Her research investigates how science works as a social and technical system, with a focus on how knowledge is produced, credited, evaluated, and governed. Her work brings together the science of science, scholarly communication, research integrity, and science policy to understand the changing structures of scientific work, including the growing role of AI in reshaping the research ecosystem.

Kevin Gross: Risk, reward, and the choices we face as scholars

Abstract: Scholarly research requires taking risks, as the most cautious approaches are unlikely to lead to the most rapid progress. Yet much funded scholarship purportedly plays it safe, and funding agencies bemoan the difficulty of attracting high-risk, high-return research projects. Why don't the incentives for scholarly discovery adequately impel researchers toward such projects? Here I discuss two mathematical models that highlight how particular features of scholarship simultaneously push researchers both towards and away from high-risk projects. The first model explores how the unobservability of risk and effort combines with the self-organized nature of scholarship to generate professional reward schemes that discourage risk-taking while protecting researchers' livelihoods from the vicissitudes of scientific chance. The second uses a game-theoretic view to show how competition among scholars for limited attention pushes in an opposite direction, counterbalancing incentives that favor cautious science but also forcing researchers to accept more exposure to risk than they might otherwise prefer. Both perspectives also illuminate a source of tension in academic training and collaboration in which researchers at different career stages may not agree on what degree of risk to accept. This is joint work with Carl T. Bergstrom.

Bio: Kevin Gross is a Professor of Statistics at North Carolina State University. He began his career as a population biologist and now uses mathematical approaches to study the social organization of science.

Lingfei Wu: On Scientific Memory and Innovation

Abstract: What is the relationship between scientific memory and innovation? Scientific progress depends on remembering prior ideas, yet it also requires selectively forgetting dominant ones. Without memory, knowledge cannot accumulate; without forgetting, established ideas continue to crowd out alternatives. Using data on more than 12.5 million scientists (1960–2020), we identify a robust "nostalgia effect" in science: scientists' most-cited papers were typically published two years before their careers began. As careers advance, reference age rises by roughly one month per career year, accumulating to 3.6 additional years over a 40-year career—about 36% of science's average reference age (~10 years). This pattern appears universally across fields and cohorts, and is further supported by a natural experiment surrounding the 1994 removal of mandatory academic retirement in the U.S. At the same time, scientific creativity changes with academic age: older scientists are more likely to extend and recombine existing ideas, but less likely to produce disruptive work that displaces them. Because senior scientists lead teams, review papers, mentor students, these individual-level dynamics accumulate into system-level consequences. Countries with younger scientific workforces, such as China and India, produce substantially higher shares of disruptive research (~30%) than countries with older scientific workforces, such as the U.S. and Japan (~20%). These findings suggest science policies that support early-career investigators and young international scientific talent, while also informing emerging questions about how AI may reshape memory and innovation in science.

Bio: Lingfei Wu is an Associate Professor of Information Science at the University of Pittsburgh. His research draws on big data, complexity science, and AI to study innovation and its social mechanisms. Wu's work is widely recognized in the Science of Science and Computational Social Science, with publications in Nature, Science, and PNAS. His research has been featured in The New York Times, Harvard Business Review, Forbes, The Atlantic, and Scientific American. He has advised organizations including the Novo Nordisk Foundation and the John Templeton Foundation, and his research has been supported by the NSF CAREER Award, an NIH R01, the Richard King Mellon Award, and the Oxford Martin Fellowship.

Donna Ginther: Canary in the Coal Mine? Prospects for Early Career Scientists

Abstract: Progress in science depends on innovative ecosystems that are supported by federal research funding, and young, hard-working graduate students and postdoctoral researchers. Current policy changes have reduced science funding to universities that co-produces scientific discovery and early career scientists. This talk will examine the career prospects for early career scientists in light of changing policy priorities and funding. It will examine factors affecting both supply and demand for scientists as well as the role of graduate students and postdocs in research production. It will conclude with a discussion of directions for future research and policy.

Bio: Donna Ginther is the Roy A. Roberts & Regents Distinguished Professor of Economics and Director of the Institute for Policy & Social Research at the University of Kansas and a Research Associate at the National Bureau of Economic Research. Her major fields of study are scientific labor markets, gender differences in employment outcomes, wage inequality, science policy, and investments in children. Dr. Ginther has published in several journals, including Science, Journal of the American Statistical Association, Journal of Economic Perspectives, Demography, Psychological Science in the Public Interest, and the Papers and Proceedings of the American Economic Association. She has also received research funding from the National Science Foundation and the National Institutes of Health. Dr. Ginther has advised the National Academies of Science, the National Institutes of Health, and the Alfred P. Sloan Foundation on the future of the scientific workforce. She is currently President of the Southern Economic Association and is a member of the American Economic Association Committee on Professional Climate. A native of Wisconsin, Dr. Ginther received her doctorate in economics in 1995, master's degree in economics in 1991, and bachelor of arts in economics in 1987, all from the University of Wisconsin-Madison.

Charlie Gomez: Elite Nations Drive the Convergence of Global Research Agendas

Abstract: A more interconnected global science is assumed to diversify research, yet it may instead concentrate influence and homogenize agendas if a few dominant countries shape what the rest of the world studies. Moving beyond citation analysis, we introduce text-based measures of mimetic influence (how closely a country's research vocabulary resembles another's past work) and apply them to 32 million papers across 203 fields and 221 countries (1990–2022). We document four patterns. First, a small group of elite, high-output nations exerts strong and growing agenda-setting influence over global research. Second, elite nations' agendas converge with one another far faster than non-elite nations' agendas do. Third, international influence is highly asymmetric. Non-elite nations increasingly adopt the vocabulary of elite nations' past work, while the reverse flow is weak and declining. In linguistic terms, what looks like globalization is the one-directional synchronization of the periphery to the center. Fourth, nearly every field's vocabulary is homogenizing, and research increasingly favors established over emerging terminology. These patterns hold across knowledge domains, are robust to alternative elite definitions (including one built entirely from pre-1990

indicators), and predate the adoption of large language models. We discuss their possible consequences for intellectual diversity and disruptive discovery as an open question.

Bio: Charlie Gomez is an associate professor in the School of Sociology at the University of Arizona. A computational sociologist, he studies inequality and political hierarchies in global scientific knowledge production using natural language processing, network analysis, and simulations. He leads the Global Knowledge Lab and is the recipient of a National Science Foundation CAREER Award examining how international politics shapes the field of artificial intelligence.

Melinda Baldwin: In Referees We Trust? The Rise of Peer Review

Abstract: Many modern observers consider peer review an essential mechanism that protects the trustworthiness and quality of both scientific journals and scientific grantmaking. But how did the practice of refereeing originate, and how did it become tied to scientific legitimacy in the eyes of both scientists and laymen? Peer review is now so embedded in modern science that many observers have assumed external refereeing has been a consistent part of science since the Scientific Revolution. However, as this talk will show, the practice of refereeing did not truly develop until the 19th century, and for well over a hundred years refereeing was not seen as essential or even particularly important. It was not until the late 20th century that “peer review”—a term that first came into use in the 1960s and 1970s—became seen as a prerequisite for scientific legitimacy. The image of refereeing as an essential feature of science arose first in the Cold War United States in the wake of a series of political attacks on scientific funding. To head off attempts to require Congressional review for individual scientific grants, scientists and their supporters argued that peer review was a crucial process that ensured the credibility of science as a whole. This vision of peer review took hold with remarkable speed, and today, peer review is seen as a cornerstone of science.

Bio: Melinda Baldwin is the AIP Endowed Professor in the History of Natural Sciences at the University of Maryland College Park. She holds a PhD from Princeton University, an MPhil from the University of Cambridge, and a BS from Davidson College. She is the author of the forthcoming book "In Referees We Trust? How Peer Review Became a Mark of Scientific Legitimacy," which will be published open-access by The MIT Press in October 2026.

Session Format & Venue Information

Conference Venue

Limelight Hotel Boulder · 1800 Pine St, Boulder, CO 80302
Hackathon (Sunday): Jennie Smoly Caruthers Biotechnology Building (JSCBB), CU Boulder Campus

Contact

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