OPEN INNOVATION IN SCIENCE

OIS research conference

RESEARCH CONFERENCE @ Copenhagen Business School

MAY 11–13 2026

ASSOCIATION FOR ADVANCING SCIENCE AND INNOVATION

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Welcome to the Open Innovation in Science (OIS) Research Conference 2026!

Research on Open Innovation in Science (OIS) has made great progress in understanding whether, how, and under which conditions open and collaborative practices influence the productivity and societal impact of science. The 2026 conference continues this tradition, while turning our attention to a relationship that has become increasingly pivotal: the interplay between science and policy. This year's special theme, *"Science–Policy Relations: What is the role of openness and collaboration?"*, invites us to reflect on a two-way relationship that is both consequential and contested. Science-based input into policy decisions is more crucial than ever as societies grapple with climate change, digital transformation, public health threats, and geopolitical instability. At the same time, existing channels of exchange – parliamentary scientific services, advisory councils, consultations, and expert hearings – often struggle to deliver knowledge in ways that are timely, transparent, and responsive to broader societal contexts. Rising mistrust in science in many parts of the world further complicates this landscape. Questions of legitimacy, accountability, and democratic alignment permeate both domains.

Against this backdrop, openness and collaboration offer promising – yet complex – avenues for reimagining science–policy interactions. Open access to publications, data, and methods can broaden reuse and scrutiny. AI-enabled tools may enhance scalability and integration into policy processes. More sustained co-development of policies between scientists and policymakers – sometimes in collaboration with citizens or other stakeholders – may strengthen relevance and trust. At the same time, such models raise difficult questions about credibility, responsibility, and the tensions between expertise and advocacy. Throughout the conference, we will explore these tensions and opportunities from multiple angles. And of course, the three core tracks also reflect the intellectual breadth of the OIS research community: We examine open and collaborative approaches across the entire scientific research process, the ecosystems and organizational designs that enable or constrain openness, and the micro-foundations of open science. Together, these perspectives allow us to better understand when openness enhances both scientific productivity and societal impact and when it may generate unintended consequences.

This year's plenary sessions create a dedicated space to engage deeply with the science–policy nexus. We look forward to an OIS Debate, co-sponsored by the AoM TIM Division, that brings together voices spanning research, policy, and institutional leadership. This debate embodies the very questions we seek to explore: How can evidence remain rigorous and independent while being policy-relevant and timely? How do institutional incentives and

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political realities shape what counts as usable knowledge? True to the spirit of experimentation that has characterized the OIS research community from its inception, the program also includes an OIS Experiment in which we "walk the talk" by engaging in and reflecting on novel ways of science-policy relationships. Two keynote talks on the role of openness and collaboration in these relationships will provide additional inspiration for discussion and future research – one offering a science-of-science perspective and the other a policy perspective.

In addition, we will continue last year's discussion on open university–industry collaboration models in a panel debate co-sponsored by the OIS Center at Aarhus University, exploring how and under what conditions such models create impact in corporate innovation and through deep-tech start-ups.

We are also pleased to continue our commitment to developing the next generation of scholars through the Junior Paper Development Workshop, co-sponsored by Warwick Business School.

As we gather for the 7th OIS Research Conference, we do so at a time when the relationship between science and society is under scrutiny and in transformation. By examining the relations between science, policy, industry, and society through the lens of openness and collaboration, we aim not only to analyze change but to contribute constructively to it. We hope the conversations over the conference days will challenge assumptions, bridge perspectives, and inspire new forms of inquiry and engagement.

The 2026 Organizing Team

Parallel Session I

Monday 11 May | 14:30 – 16:00

1

Paper Session 1: Geopolitical and Security Conditions for Openness and Collaboration in Science

Paper 1: When Borders Disrupt Science: Causal Evidence on Research Productivity, Talent Mobility, and Collaboration Networks from Brexit
Marc Diederichs, **Charlotte Musso**, Carolin Haeussler

Paper 2: Navigating Research Security: UK Academics' Responses and Implications for Their International Collaboration
Andrew James, **Xiuqin Li**, Cornelia Lawson

Paper 3: Tracking Scientific Decoupling in the Era of New Techno-Nationalism: The U.S. CHIPS and Science Act and International Collaboration
Lorenzo Palladini, Valentina Tartari

Paper 4: The Impact of Cyberattacks on Research Performance in Higher Education
Matthias Huegel, Stefan Buechele

Paper Session 2: Academic Engagement and Knowledge Governance

2

Paper 5: Academic Engagement with Industry, the Public Sector and Society: A Comparison of Disciplines and Gender
Sofie Cairo, Davide Cannito, Hans Christian Kongsted, Valentina Tartari

Paper 6: From Public Policy to Public Awareness: Science Communication as an Enabler of Academic Engagement in Peripheral Regions
Stefan Buechele, Guido Buenstorf, Burcu Özgün, **Pia Schoch**

Paper 7: Neither Through Cooperation nor Separation: Enacting Dual Brokerage Strategies for Innovation Performance
Pablo D'Este, Oscar Llopis, Wenceslao Arroyo-Machado, Adrián A. Diaz-Faes

SESSION 1

PAPERS 1–4

MONDAY
14:30–16:00

PAPER SESSION 1

Paper 1: When Borders Disrupt Science: Causal Evidence on Research Productivity, Talent Mobility, and Collaboration Networks from Brexit

Marc Diederichs, Charlotte Musso, Carolin Haeussler

Political fragmentation threatens global research networks. Trade wars, rising nationalism, and protectionist policies are reshaping the international landscape, and a growing trend toward deglobalization now endangers the collaborative networks that have driven scientific progress for decades. Since researchers, universities, and national science systems compete simultaneously for funding, talent, and reputation—i.e., facing multiple competitions (Buenstorf et al., 2025)—shifts in a country's position cascade through these interconnected systems, ultimately affecting individual researchers, their international collaborators and as such the global science supply chain (Esposito, 2025). As a result, national policy decisions no longer affect only domestic researchers; they ripple through global knowledge flows, disrupting partnerships that took decades to build.

Understanding how such policy reforms affect scientific collaboration becomes critical. Brexit provides a natural experiment: British voters chose to leave the EU on June 23, 2016, though formal exit occurred only on January 31, 2020, and transition ended December 31, 2020. For UK scientists, however, consequences set in immediately after the referendum. Horizon 2020 applications fell 40 percent between 2015 and 2018 (Royal Society 2019). EU researchers began leaving British universities, citing uncertain residency status and career prospects. Collaborative grants stalled as partners questioned whether UK institutions could reliably participate. Though UK researchers had been the most successful bidders for ERC grants, this leading position eroded after the referendum (European Research Council 2024). UK institutions lost an estimated nearly £1.5 billion in funding opportunities compared to pre-referendum trends (Scientists for EU 2021). Visa requirements, regulatory barriers, and funding restrictions fundamentally altered how British scientists worked with international colleagues.

This paper investigates how policy-induced barriers to cross-border research affect talent mobility, collaborative networks, and, consequently, the scientific production function. We distinguish between funding constraints and network disruption mechanisms from Brexit, analyzing their effects on researchers in the UK and their collaborators, with attention to differences based on prior scientific accomplishment and international exposure. Understanding these mechanisms and their consequences is critical for contemporary debates on scientific sovereignty versus international openness.

Our analysis builds on three literatures. First, extensive research documents that international collaboration and productivity is related (Wuchty et al. 2007; Adams 2013), yet most evidence is correlational. Few studies provide causal identification; Azoulay et al. (2010) stand as a rare exception, by showing that when superstars die, their collaborators experience lasting productivity declines. Second, geographical economics demonstrates knowledge spillovers remain locally concentrated (Jaffe et al. 1993). Reducing travel costs increases collaboration (Catalini et al. 2020;

Marioni & Roche, 2025), and face-to-face interaction substantially raises partnership probability (Boudreau et al. 2017). These mechanisms suggest Brexit's barriers should disrupt research networks. Third, existing Brexit studies remain largely descriptive (Technopolis Group 2017; Oldac & Olivos 2025), and we lack rigorous studies estimating causal effects.

We provide quasi-experimental analysis of Brexit's research impact using OpenAlex bibliometric data covering 95,674 UK researchers and comparable samples from Germany, the US, and France spanning 2010-2024. We measure researchers baseline (2010-2015) international collaboration intensity as the share of non-UK co-authors, then use difference-in-differences estimation to compare productivity changes post-2016.

Our analysis operates at three complementary levels to distinguish funding constraints from network disruption mechanisms. At the country level (Level 1), we compare researchers in the UK, France, Germany and the US to identify aggregate trends in collaboration and productivity. At the UK researcher level (Level 2), we stratify UK researchers by their pre-Brexit international exposure intensity to test whether those with more extensive international collaborations are more affected by network disruption At the non-UK researchers level (Level 3) we examine Non-UK researchers with varying UK collaboration intensity, testing whether reduced UK funding, visibility loss, and communication friction (but no direct visa/mobility barriers) impact their productivity.

Preliminary results from Level 2 reveal striking patterns. UK researchers with higher baseline international collaboration experienced larger post-Brexit declines in publications and citations. International collaboration rates fell sharply for internationally embedded researchers but increased for domestically focused researchers. Senior researchers faced larger disruptions than early-career scholars; researchers with large international networks experienced greater disruptions than researchers embedded in fewer ties. While aggregate researcher mobility remained relatively constant, composition shifted dramatically: high-performing international researchers left the UK, while weaker performers or those less internationally embedded stayed or arrived.

We have completed descriptive analyses at Level 2. Ongoing work includes descriptive time trends at Levels 1 and 3, followed by event study and difference-in-differences specifications across all levels. This structure allows us to compare heterogeneous effects. If network disruption dominates, Level 2 and Level 3 effects should align (high-intensity collaborators experience similar disruption levels regardless of being in UK or in another country). If funding constraints drive results, effects should differ substantially (UK-based researchers face visa/mobility barriers plus funding loss; non-UK researchers face only funding/visibility loss).

Brexit allows to investigate measurable effects of policy-induced barriers on research networks. The findings reveal disrupted collaboration patterns, altered researcher mobility, and productivity declines among highly integrated researchers. Quasi-experimental analysis of natural policy changes can identify mechanisms through which national reforms affect scientific productivity, informing policy debates about research openness and international collaboration. As deglobalization pressures mount worldwide, understanding how political fragmentation disrupts scientific networks becomes ever more urgent.

PAPER SESSION 1

Paper 2: Navigating Research Security: UK Academics' Responses and Implications for Their International Collaboration

Andrew James, Xiuqin Li, Cornelia Lawson

PAPER 2

1. Background

International research collaboration - sharing knowledge and pursuing common scientific goals - is central to modern science and technology. It has become a major driver of scientific excellence, productivity, and global knowledge exchange (Heringa et al., 2016; Beldengrün & Smith, 2025). In the UK, more than two-thirds of STEM outputs are internationally co-authored, and international collaboration has accounted for nearly all growth in UK science over the past two decades (Adams et al, 2022; Universities UK, 2024).

However, recent geopolitical developments have introduced a "security turn" in science and technology policy, with significant implications for international collaboration (OECD, 2025). Concerns about knowledge leakage, intellectual property theft, and foreign interference have prompted governments to implement research security measures (OECD, 2022; G7, 2024; European Council, 2024). These include vetting foreign funders and partners, screening international visitors and students, strengthening export controls, and providing research security training for academic staff.

In the UK, substantial investment has been directed toward raising awareness of research security through government initiatives (Trusted Research campaign), university associations (Universities UK), and individual institutions (online resources and staff training). There are growing concerns about a potential "chilling effect," where reputational risks or administrative burdens lead academics to avoid certain collaborations or alter research topics. However, existing studies (e.g. James et al, 2025) have focused primarily on policy frameworks and institutional compliance, leaving a gap in understanding how academics themselves are navigating research security policies and practices.

This paper examines how UK academics perceive and respond to research security policies and how these responses are shaping their international collaboration practices. Rather than focusing solely on policy design, the study foregrounds academics as key actors navigating risk, uncertainty, and responsibility in an increasingly securitised research environment. By analysing awareness, risk perceptions, and behavioural change, the paper contributes to understanding how research security is reshaping everyday academic decision-making and global research relationships.

2. Methodology

We draw on the Theory of Planned Behaviour (Ajzen, 1991; Bulgurcu et al., 2010) to examine how academics' attitudes toward research security, perceived social expectations and their perceived behavioural control – specifically, their ability to comply with security requirements without excessive burden – shape their intention to adopt research security practices and influence decisions about international collaboration. Using a mixed-methods design, we combined a large-scale survey of

UK academics (450+ responses) with 30 semi-structured interviews to provide deeper insights into awareness and behavioural responses across disciplines and career stages.

3. Results

Preliminary findings reveal significant variation in academics' awareness and interpretation of research security policies across disciplines, career stages, and collaboration profiles. Heightened security measures appear linked to behavioural changes such as increased caution in partner selection, delays in initiating collaborations, narrowing of research scope, and avoidance of collaborations perceived as sensitive because they involve a country of concern or because the researcher perceives institutional disapproval.

Our preliminary findings suggest that responsibility for research security is increasingly devolved to individual academics by universities - often without adequate communication, training, or support - requiring them to navigate ambiguous and sometimes conflicting demands with imperfect knowledge and often limited skill and experience. These negotiations occur against the backdrop of an increasingly precarious academic work life, marked by job losses, funding cuts, and mounting procedural obligations.

Early evidence from our survey suggests a "chilling effect," particularly in collaborations involving researchers from China. In interviews, several academics reported hesitancy to initiate or continue partnerships due to heightened scrutiny, perceived reputational risks, and concerns about compliance with research security requirements. While these responses aim to mitigate risk, they may inadvertently limit scientific exchange in areas where international collaboration has traditionally been strong or emerging fields (such as AI and quantum) where security concerns are significant.

PAPER SESSION 1

Paper 3: Tracking Scientific Decoupling in the Era of New Techno-Nationalism: The U.S. CHIPS and Science Act and International Collaboration

Lorenzo Palladini, Valentina Tartari

Over the past decade, technology and geopolitics have become increasingly intertwined. Geopolitical tensions now shape how states develop, regulate, and control access to critical technologies, while advances in strategic technologies themselves intensify geopolitical competition (Esposito, 2025). This interaction has given rise to what scholars and policymakers describe as "new techno-nationalism" (Luo, 2021; Moore, 2019): a policy orientation in which governments seek to steer, restrict, and promote technological development as a means of securing geopolitical advantage rather than solely economic competitiveness. Unlike earlier forms of techno-nationalism centered on domestic industrial policy, the contemporary variant is defined by outward-facing interventions such as export controls, investment screening, talent restrictions, and reshoring incentives. In the context of U.S.–China rivalry, these include bans on advanced semiconductor exports to China, the CHIPS and Science Act, and outbound investment screening mechanisms (Feakin, 2024). Central to this agenda is the belief that technological leadership underpins national power and that cross-border scientific openness poses strategic risks (White House, 2018; Capri, 2020).

While much of the debate on techno-nationalism has focused on trade, supply chains, and industrial policy, a potentially profound but less understood consequence concerns its impact on international research collaboration. Scientific research has historically thrived within transnational ecosystems in which firms, universities, and laboratories exchange knowledge across borders (Adams, 2013). International collaboration is a key driver of innovation, allowing organizations to access complementary expertise, share infrastructure, and accelerate discovery (Georghiou, 1998; Chen, Zhang & Fu, 2019). In fast-moving and science-intensive domains such as semiconductors, artificial intelligence, and telecommunications, participation in international research networks is often essential. As governments increasingly weaponize technology and tighten control over knowledge flows, these collaborative networks face growing pressure, raising concerns about the long-term consequences for scientific progress.

Scientific publications provide a particularly informative lens through which to study international research collaboration. Publications capture early-stage knowledge creation, where collaboration is most visible and least distorted by commercial or legal considerations. Co-authorship explicitly records joint scientific work across individuals and institutions, enabling systematic comparison across countries and organizational forms. By contrast, patents reflect later-stage outcomes and are often shaped by strategic behavior and institutional differences in intellectual property regimes. Many collaborative projects—especially those involving firms and universities—result in joint publications without corresponding patents, making publications a broader and more transparent indicator of cross-border knowledge exchange (Olechnicka, Ploszaj & Celińska-Janowicz, 2018). For these reasons, co-publication has become the dominant empirical measure of

international research collaboration (Wagner & Leydesdorff, 2005). A reduction in such collaboration signals fewer opportunities for knowledge exchange and collective problem-solving, with potential implications for the pace and direction of innovation.

This paper leverages the 2022 U.S. CHIPS and Science Act (hereafter, CHIPS Act) as a major policy shock to examine whether techno-nationalist policies are reshaping international collaboration in corporate science. The CHIPS Act represents one of the most ambitious techno-industrial interventions in recent U.S. history, committing over US$280 billion to strengthen domestic technological capacity, including substantial subsidies and R&D incentives for semiconductor manufacturing and equipment (CHIPS and Science Act, 2022). Beyond industrial support, the Act introduces new constraints on collaboration with Chinese entities in advanced semiconductor development, signaling a clear geopolitical intent. Embedded within a broader landscape of export controls, visa restrictions, and political scrutiny of scientific ties with China, the CHIPS Act provides a natural setting to study how techno-nationalist policies affect international scientific collaboration.

The paper addresses two research questions. First, how did the CHIPS Act affect the volume and quality of international scientific collaboration in semiconductor research involving U.S. firms? Second, did the policy strengthen the U.S. scientific position in global semiconductor research, or did it generate unintended negative consequences by disrupting access to complementary knowledge?

Empirically, the analysis treats the CHIPS Act as a policy shock occurring in 2022 and examines its effects on semiconductor-related research using topic identifiers in the OpenAlex bibliometric database. The treatment group consists of U.S. firms that coauthored at least one semiconductor-related publication with a China-based institution during the pre-treatment period from 2000 to 2021. To capture heterogeneity in exposure, alternative treatment definitions are constructed based on the intensity of prior collaboration with Chinese partners.

The analysis begins with a descriptive examination of long-term trends in U.S.–China semiconductor research collaboration. While overall corporate publishing in semiconductors has declined since the 1990s, U.S.–China coauthored semiconductor publications increased steadily until 2021, following a trajectory distinct from other international collaborations. Following the CHIPS Act, however, the number of U.S. firms collaborating with Chinese institutions declines sharply, particularly in collaborations involving Chinese universities and public research organizations. Firms with greater prior reliance on Chinese collaborators experience larger post-shock reductions, indicating heterogeneous exposure to the policy intervention.

To assess whether these changes reflect China-specific decoupling or broader shifts in international collaboration, the analysis compares post-2022 collaboration patterns with key U.S. allies, including Japan, South Korea, Germany, and the United Kingdom. To identify causal effects, the paper implements a difference-in-differences design using matched firm pairs, comparing treated U.S. firms to similar U.S. firms without prior collaboration with China, as well as to non-U.S.

PAPER 3

firms that collaborated intensively with China prior to the shock. These complementary designs isolate U.S.-specific policy effects from global trends in scientific collaboration.

The analysis further examines whether decoupling is sector-specific by testing whether U.S. firms maintain collaborations with China in less sensitive research areas, such as biology or materials science. Finally, the paper assesses changes in research quality using citation-based indicators, including field-normalized citation percentiles. Preliminary evidence suggests that firms most exposed to post-shock decoupling experience a slowdown in the production of highly cited research, consistent with reduced access to complementary expertise.

Overall, this study contributes to emerging literatures on techno-nationalism, the geopolitics of science, and global innovation systems by providing systematic evidence on how geopolitical interventions reshape international research collaboration at the knowledge frontier. The findings highlight a fundamental tension at the heart of contemporary techno-nationalism: policies designed to secure technological leadership may simultaneously disrupt the collaborative processes through which frontier scientific knowledge is produced.

PAPER SESSION 1

Paper 4: The Impact of Cyberattacks on Research Performance in Higher Education

Matthias Huegel, Stefan Buechele

Higher education institutions (HEIs) increasingly find themselves at the center of a fundamental tension between the principles of open science and the growing exposure to cyber threats. Openness, manifested in decentralized IT infrastructures, broad access rights, intensive data sharing, and international collaboration, is a cornerstone of modern science. At the same time, these characteristics expand the attack surface for cyberattacks, making universities particularly attractive and vulnerable targets. Over the past decade, cyber incidents affecting HEIs have risen sharply worldwide, with Germany experiencing a notable escalation. According to the German Federal Office for Information Security (BSI), at least 13 universities and universities of applied sciences were affected by ransomware attacks in 2023 alone (BSI 2023). Earlier incidents, such as the ransomware attack on Justus Liebig University Giessen in 2019, resulted in prolonged system outages and damages amounting to several million euros (Kost et al. 2022; Forschung & Lehre 2023b). These developments have triggered policy responses, including the introduction of minimum cybersecurity standards for universities in North Rhine-Westphalia. Yet, academic research specifically addressing cybersecurity in German higher education remains virtually nonexistent, a gap emphasized by a recent systematic review, which found no studies on Germany among the reviewed literature on cybersecurity risks in HEIs (Ulven & Wangen 2021). Despite this lack of research, cyberattacks have potentially severe consequences for university researchers.

This paper addresses this gap by examining how cyberattacks on German HEIs affect research productivity and collaboration patterns among academic scientists. Conceptually, the study is situated at the intersection of the economics of cybersecurity, the literature on research productivity, and the sociology of scientific collaboration. From an economic perspective, cybersecurity investments are often undersupplied due to incentive problems, information asymmetries, and externalities (Anderson & Moore 2006; Moore 2010; Gordon et al. 2018). Empirical evidence from the private sector suggests that cyber incidents can substantially reduce firm productivity and innovation, including declines in overall productivity (Makridis & Dean 2018) and R&D expenditures (He et al. 2020). Whether similar mechanisms operate in academic knowledge production where incentives, organizational structures, and goals differ markedly those of firms remains an open question.

HEIs represent a particularly instructive case because their commitment to openness, autonomy, and collaboration directly conflicts with stringent security regimes. Academic research increasingly relies on digital infrastructures, including email, cloud services, databases, and high-performance computing. Prior studies show that access to information technologies and administrative support is positively associated with publication output (Ding et al. 2010; Christensen et al. 2018), while internet use expands the scope and reach of scientific work (Mamun & Rahman 2016). At the same time, modern science is deeply collaborative: co-authorship

and team-based research have risen substantially, yielding productivity gains through specialization and complementary expertise (Wuchty et al. 2007; Ductor 2015; Bonaccorsi et al. 2021). Communication technologies are essential for sustaining such collaborations, especially across institutional and national borders (Hamermesh & Oster 2002). Cyberattacks that disrupt IT systems may therefore not only affect individual research output but also reshape collaboration behavior, potentially undermining the openness that universities seek to protect.

Empirically, the study focuses on two prominent cyberattacks at German universities: the Distributed denial-of-service attack (DDoS) on Kiel University in November 2019 and the ransomware attack on Justus Liebig University Giessen in December 2019. Both incidents led to substantial disruptions of research-relevant IT infrastructures, including temporary or prolonged loss of access to internal networks, email systems, databases, and internet services, thereby providing a quasi-experimental setting to study the consequences of cyber incidents for academic research.

Based on bibliometric data from Scopus and institutional disambiguation using the German Kompetenznetzwerk Bibliometrie (Donner & Rimmert 2021), the paper constructs a novel dataset that captures publication output and detailed co-authorship structures before and after the attacks. The analysis proceeds on two levels. First, at the university level, a Synthetic Control Method (SCM) is applied to estimate the causal effects of the cyberattacks by comparing the affected universities to a weighted combination of unaffected institutions.

Preliminary results from this approach indicate that the cyberattacks had no statistically significant impact on key indicators of research performance. In particular, no significant effects are found on (i) the total number of publications, (ii) the number of external and international co-authors, and (iii) the number of publications where researchers act as corresponding authors, a role associated with responsibility for publication management. Second, at the individual researcher level, an event study design is employed to analyze dynamic and potentially heterogeneous effects of cyberattacks over time. Results from this part of the analysis are still pending and will be available at the time of the conference.

By providing the first systematic evidence on how cyberattacks affect academic research performance in Germany, the study contributes to a broader debate on the unintended consequences of cybersecurity risks for open science. More broadly, it highlights the need to reconcile openness and security in higher education, suggesting that cyber resilience may become an increasingly important, yet often overlooked, determinant of scientific productivity and collaboration in the digital age.

SESSION 2

PAPERS 5–7

MONDAY
14:30–16:00

PAPER SESSION 2

Paper 5: Academic Engagement with Industry, the Public Sector and Society: A Comparison of Disciplines and Gender

Sofie Cairo, Davide Cannito, Hans Christian Kongsted, Valentina Tartari

5

This paper examines how academic engagement varies across disciplines through Stokes Pasteur's Quadrant framework. While existing literature has focused on STEM disciplines in Pasteur's Quadrant, where use-inspired research generates patentable technologies and commercial products, we investigate how both STEM and the social sciences and humanities (SSH) occupy Pasteur's Quadrant but manifest use-inspiration differently. STEM fields produce codified knowledge amenable to intellectual property protection, channeling engagement through patents and spin-offs. SSH fields produce tacit, interpretive knowledge that shapes policy and improves practices, channeling engagement through consulting and public dissemination.

To address the gaps in our current knowledge, we empirically investigate the following research questions. How do scholars across the STEM fields and SSH perform academic engagement? Considering cross-field differences, what is the extent and nature of engagement, and what stakeholders do academics engage with? We then explore two important elements that influence engagement. First, we investigate if researchers in the STEM and SSH fields have the same motivations for engagement and face the same barriers. Second, we explore if a gender gap in engagement persists when extending our analysis to a broader set of fields, types of interactions, and stakeholders.

We analyze data from a population survey of 4,832 Danish academics across all eight universities, representative by discipline, seniority, gender, and affiliation, merged with bibliometric data. We employ a broad definition of academic engagement extending beyond commercialization to include knowledge transfer with private, public, and third-sector organizations, public dissemination, consultancy, and entrepreneurship.

Our analysis of academic engagement across SSH and STEM delivers important insights. Our study confirms that STEM researchers are more active in formal commercialization of their scientific findings than are researchers in SSH. Beyond commercialization, we find that STEM and SSH researchers are equally active in broad academic engagement, including academic entrepreneurship, and in engagement with industry, the public sector, third-sector parties and society at large. The predictors of broad academic engagement mirror those of high scientific productivity. Individual characteristics associated with academic engagement thus include being senior, male, well-connected and commercially experienced, though these traits have much less relevance for engagement with the public sector and society at large, and for engagement performed by academics in the SSH.

We find that academics across STEM and SSH are personally motivated to engage with partners outside the walls of the university. Motivating factors are access

to funding and knowledge from practitioners rather than personal financial gains. However, there are differences in motivational factors across SSH and STEM. Whereas STEM researchers are more likely to be motivated by access to research funding and equipment, researchers in SSH appreciate the inspiration and exchange of ideas and knowledge with practitioners.

We find that the antecedents and barriers differ across STEM and SSH. Particularly, there is less of a gender gap in engagement within the SSH. This is partially due to the nature of engagement and the parties involved. Researchers in SSH are less likely to collaborate with private partners, and more likely to collaborate with the public sector and the third sector of e.g. NGOs, where gender gaps are smaller than they are in industry. As found also for the STEM fields, individuals who are more productive in publishing are found to have higher degrees of broad academic engagement. Hence, academic engagement and research are found to be complements. This is natural as broad academic engagement is found to be more closely related to the classical academic deeds of research and teaching than commercialization and academic entrepreneurship.

Our findings contribute to a rich literature on academic engagement by broadening the scope of analysis in several dimensions. First, we consider a broader set of engagement activities, second, we include a broader set of stakeholders, and third, we compare engagement across disciplines. Additionally, our results on field differences in gender engagement gaps speak to a greater literature on gender gaps in science.

From a policy perspective, in a time where many governments are questioning the contribution and impact of SSH departments at universities and pondering plans to reduce their size or eliminate them altogether, we aim to increase the understanding of the unique engagement of SSH researchers with society, including their broad societal and commercial contributions. We thus hope to contribute to a more nuanced debate on the societal benefits and relevance of keeping the SSH fields alive.

PAPER SESSION 2

Paper 6: From Public Policy to Public Awareness: Science Communication as an Enabler of Academic Engagement in Peripheral Regions

Stefan Buechele, Guido Buenstorf, Burcu Özgün, Pia Schoch

6

Universities are increasingly expected to engage with societal actors and contribute to regional development (Perkmann et al., 2013). Such academic engagement, however, presupposes that potential partners are aware of relevant university activities and perceive them as accessible and relevant, While science and innovation policies devote substantial resources to strengthening engagement infrastructures, little empirical evidence exist on whether these policies also generate the public awareness required for new university-society linkages to emerge (D'Este & Patel, 2007; Cairney & Oliver, 2020; Grimm et al., 2013). We address this gap in the context of T!Raum, a German place-based innovation program that supports long-term, university-led transfer initiatives in structurally weak regions. By seeking to establish durable and embedded transfer infrastructure rather than temporary project networks, T!Raum provides a unique empirical setting to examine whether place-based innovation policies aimed at strengthening public awareness of academic engagement and knowledge transfer increase the visibility of innovation-related topics in regional newspapers.

Drawing on the large Regional News Syndication (RegNeS) database (Ozgun and Broekel, 2021), we construct a high-frequency panel covering 401 NUTS-3 regions between 2020 and 2024. Next, we develop three keyword sets capturing (i) a combined set including both general and initiative-specific terms (ii) general narratives related to knowledge transfer, innovation, and regional development, and (iii) initiative-specific keywords reflecting the thematic emphasis of the respective initiatives. Based on these keyword sets, we compute quarterly region-level measures of (a) the absolute number and (b) the relative share of relevant keyword mentions in newspaper coverage.

We estimated the impact of the T!Raum program, pooling all five university-led initiatives, using a difference-in-difference design with region fixed effects and cluster-robust standard errors. Pre-treatment trends for treated and control regions are parallel across all outcome measures. After program start, treated regions exhibit consistent and statistically significant increases in absolute number of engagement-related keyword mentions in newspaper articles. Using the combined keyword set, the average treatment effect amounts to approximately 217 additional keyword mentions in the post-treatment period. Mentions related to general engagement narratives increase by around 101 keyword mentions, while initiative-specific mentions rise by 116 keyword mentions. These effects emerge gradually, peak roughly after one year, and remain robust across alternative specifications. At the same time, increases in the relative share of engagement-related reporting are statistically significant but smaller in magnitude than the corresponding increases in absolute keyword mentions, indicating that the policy increased overall media volume without substantially altering the thematic composition of regional news.

Initiative-level analysis reveals some heterogeneity. Two initiatives generate large sustained visibility gains, while others exhibit more moderate or delayed effects.

Taken together, the findings demonstrate that place-based innovation and transfer policies can meaningfully increase public awareness of academic engagement in structurally weak regions. By conceptualizing regional news media as an infrastructure of science communication, the study highlights a communicative mechanism through which science policy interventions may enable openness, visibility, and the societal embedding of universities in their local environments.

PAPER SESSION 2

Paper 7: Neither Through Cooperation nor Separation: Enacting Dual Brokerage Strategies for Innovation Performance

Pablo D'Este, Oscar Llopis, Wenceslao Arroyo-Machado, Adrián A. Diaz-Faes

7

Brokerage is a central concept in network research. Its importance stems from the information access and control opportunities individuals benefit from when they intermediate between otherwise disconnected actors (Burt, 2004), and from its potential impact on idea generation and innovation performance (Fleming et al., 2007; Soda et al., 2018). Scholars have pointed out an important distinction between brokerage as structure and brokerage as behaviour. The latter perspective has allowed identification of two fundamental types of brokering strategies: a pro-cooperation strategy, which facilitates ties between unconnected alters (tertius iungens), and a separation strategy, keeping unconnected alters separate (tertius gaudens) (Grosser et al., 2019; Obstfeld et al., 2014).

Despite the increasing focus on networking behaviour, current research has primarily embraced a dichotomous perspective, contending that tertius iungens and gaudens are actor-specific and thus intrinsic to each broker (Kwon et al., 2020; Quintane et al., 2022). In this study, we challenge this perspective and propose that individuals often display a "dual brokerage strategy" by simultaneously performing pro-cooperation and separation networking strategic orientations. For instance, brokers may maintain open triads within a subset of their personal network while forging collaboration in other parts of the network. This ability to concurrently enact two brokerage strategies may have important implications for innovation performance, as it can enable a more effective mobilization of multiple types of tangible and intangible network resources.

Our study examines three interconnected issues. First, it investigates whether dual brokerage strategies represent a prevalent networking orientation. Second, it explores whether dual brokerage strategy is positively associated to distinct forms of innovation performance: idea generation and idea implementation. And finally, it compares individuals who exhibit dual brokerage strategies with those displaying either tertius iungens or gaudens brokerage strategies.

To examine these research questions, we mainly draw on primary data from a large-scale survey conducted in 2018 on a target population of 5,325 Spanish-based biomedical scientists. This setting provides a unique opportunity to investigate the relationship between scientists' networking strategies and their involvement in invention and development activities of new drugs and diagnostics. We received 1,146 valid responses (response rate of 21.5%). Respondents were asked to report their primary network of relevant contacts and their networking orientation towards cooperation and separation. They also were requested to provide information on the frequency of involvement in patent applications and in the design (and execution) of clinical trials for new drugs and diagnostic methods.

Our preliminary results show that individuals exhibit distinct networking strategies, and a significant proportion (i.e., 28% of our sample) displays a dual brokerage strategy: scientists who simultaneously exhibit pro-cooperation and separation networking orientations. Our findings show that scientists with a dual brokerage strategy are more likely to be involved in idea generation (inventions) and idea implementation (clinical trials), compared to scientists with other brokerage strategic orientations. Overall, our results suggest that scientists who are able to switch between multiple networking strategies are better equipped to effectively bridge the translational gap between knowledge production and application.

Parallel Session II

Monday 11 May | 16:30 – 17:30

3

Paper Session 3: Policy, Regulation, and the Co-Production of Scientific Knowledge

Paper 8: Regulators as Producers of Science: Evidence from a Twin-Discovery Design
Quentin Plantec, **Karine Revet**

Paper 9: Commercial Regulation and the Production of Science: Evidence from New Genomic Techniques in Agricultural Biotechnology
Elisabeth Hofmeister, Samantha Zyontz, Rosemarie Ziedonis

Paper 10: Foundational Scientific Capacity in Low- and Middle-Income Countries after TRIPS
Gabriel Cavalli, Michael Blomfield, Anita McGahan, Keyvan Vakili

4

Paper Session 4: AI and the Reconfiguration of Collaborative Knowledge Production

Paper 11: A Structured Literature Review on the Scientific Discourse around GenAI's Impact on Distant Collaboration
Lebogang Nthoiwa, Susanne Beck, Joe Nandhakumar

Paper 12: Generative AI and the Organization of Scientific Teams
Stefano Bianchini, Georgiana-Iona Coroama

Paper 13: Generative AI and Collaboration in Academic Open Innovation Ecosystems: Accelerator or Inhibitor of Innovation?
Xiangrui Zeng, **Gernot Pruschak**

SESSION 3

PAPERS 8–10

MONDAY
16:30–17:30

PAPER SESSION 3

Paper 8: Regulators as Producers of Science: Evidence from a Twin-Discovery Design

Quentin Plantec, Karine Revet

Introduction

Regulatory agencies are traditionally conceptualized as evaluators of innovation, institutions that certify, approve, and monitor new technologies. Yet, over the past two decades, many agencies have also become active producers of scientific knowledge, publishing thousands of peer-reviewed articles across domains such as food safety, toxicology, epidemiology, environmental science, and emerging technologies. This evolution raises fundamental questions about the role of regulators in innovation systems.

This study develops and tests the idea that regulatory science, i.e. the scientific work produced within regulatory agencies, constitutes a mission-oriented epistemic regime, one that prioritizes credibility, transparency, and decision support over novelty or academic influence. Building on organizational imprinting theory and the conceptualization of regulation as decision science, we propose that regulators' foundational missions of public protection and consensus-building leave enduring imprints on the kinds of scientific knowledge they produce and on how that knowledge circulates across academic, technological, and societal arenas.

While emerging literature depicts regulators as enablers of innovation (reducing uncertainty, constructing legitimacy, or shaping markets via anticipatory standards), little is known about the characteristics and impact of regulators' own scientific publications. The absence of systematic evidence is particularly striking given the rapid institutionalization of regulatory science. Our central research question is:
How does scientific knowledge produced by regulatory agencies differ from university science in its epistemic signature and diffusion patterns across innovation systems?

Data and Empirical Strategy

Answering this question requires isolating the effect of organizational origin (regulator vs. University) from confounding factors such as topic, timing, or journal prestige. We therefore construct a novel, large-scale twin-discovery dataset covering all peer-reviewed publications authored by regulatory agencies in OECD countries between 2000 and 2022 (N = 56,437).

Using OpenAlex textual embeddings, each regulatory paper is paired with its most semantically similar university-authored "twin". This design extends the simultaneous-discovery logic of Bikard (2019) to institutions: each pair represents two actors disclosing the same discovery at the same moment, thus facing identical scientific and commercial opportunities.

After screening for metadata completeness, similarity thresholds, and affiliation overlaps, we obtain a final matched set of 49,004 regulator-university pairs.

Within these twin pairs, we compare the papers across two dimensions: Epistemic characteristics, in terms of novelty (Uzzi et al., 2013), conventionality (median-z score), and disruption (Wu et al., 2019) ; and diffusion patterns across three arenas: Academic (citation counts at 3 and 5 years), developmental (patent citations, clinical-trial citations), and societal (news media, blogs, social platforms, policy documents).

We estimate Poisson, OLS, and logit models with twin fixed effects, ensuring that comparisons are made within pairs that share topic, timing, and outlet. This approach robustly isolates organizational imprinting effects.

Findings

1. Epistemic characteristics: Strong similarity, weak imprinting effects

Contrary to expectations that regulators might adopt more conservative or consensus-oriented epistemic repertoires, results indicate broad epistemic similarity between regulatory and university science. Novelty and disruption measures show no meaningful differences. Tentative evidence suggests slightly lower conventionality among regulatory papers, driven primarily by collaborations with universities. Disruption remains extremely rare (<1%), with no difference across groups.

These patterns suggest that regulators largely conform to academic epistemic norms, likely due to shared training, peer-review pressures, and widespread co-authorship with universities (≈65% of regulatory papers). Evidence of less conventional reference cores points more to cross-institutional boundary-work than to an intrinsic epistemic orientation.

2. Diffusion outcomes: Markedly different trajectories

Where regulators diverge strongly from universities is in how their science diffuses. Across matched pairs, regulator-authored papers receive about 20% fewer academic citations within both 3- and 5-year windows. They also receive fewer patent citations and fewer clinical-trial mentions, and display lower visibility in mainstream news media.

However, papers authored by regulatory agencies receive substantially more policy-document citations, confirming their high salience for governance and evidence-based rulemaking.

This duality (weak academic and developmental diffusion but strong policy diffusion) reveals a distinctive organizational imprint: regulatory science is optimized for credibility, traceability, and decision support, not for disciplinary disruption or technological appropriation.

Conceptual Contributions

1. Regulation as a mode of scientific production

Our findings reinforce the idea that regulation is not only an evaluative institution but also a scientific one, co-producing evidence infrastructures that shape innovation development and societal trust. Regulators operate at the intersection of science and policy, producing “decision-oriented science” rather than disciplinary breakthroughs.

2. Organizational imprinting at the epistemic level

We extend organizational imprinting theory by demonstrating how mission-based

organizational origins can imprint both the epistemic orientation (credibility and consensus over disruption) and the diffusion pathways (policy amplification over academic influence) of scientific outputs.

3. Innovation systems as multi-epistemic constellations

Innovation studies often conceptualize regulators as constraints or enablers; we show they are also knowledge producers, whose work underpins safety benchmarks, evidence frameworks, and governance infrastructures. Their diffusion patterns reveal an alternative pathway of scientific influence: institutional, policy-embedded, and legitimacy-oriented.

Implications for OIS scholars

For scholars of organizations, innovation, and science-policy interfaces, this work offers several insights. Innovation systems rely on multiple epistemic regimes, not solely academic or industrial science; regulatory science represents a policy-embedded regime whose knowledge production directly shapes how openness, transparency, and responsibility are institutionalized.

Regulatory science forms a structural backbone of responsible and evidence-based innovation, stabilizing standards, expectations, and public trust in ways that illustrate how scientific knowledge circulates across organizational and policy boundaries.

Understanding innovation requires examining how organizational missions and institutional logics shape knowledge trajectories, including which forms of evidence become influential in policy processes and which remain peripheral within academic or technological communities.

The twin-discovery method provides a scalable quasi-experimental approach for comparing institutional origins of scientific work, enabling OIS researchers to empirically study how collaboration, openness, and science-policy relations affect diffusion and influence across innovation ecosystems.

PAPER SESSION 3

Paper 9: Commercial Regulation and the Production of Science: Evidence from New Genomic Techniques in Agricultural Biotechnology

Elisabeth Hofmeister, Samantha Zyontz, Rosemarie Ziedonis

Can commercial regulation change the production of science? This project studies a 2018 regulatory shock in the European Union that unexpectedly curtailed the market release of gene-edited plant products but left the underlying research methods, particularly the gene-scissors CRISPR, available to scientists. The shock created a sharp contrast with the United States, where gene-edited crops faced few commercial restrictions. We use this divergence to investigate whether and how a withdrawal of commercial opportunities in a market alters the rate or direction of scientific research.

We study this along three dimensions. First, we examine if diminished commercialization prospects lead European scientists to move to more liberally regulated jurisdictions. Second, we investigate if the productivity of remaining scientists is affected, probing different mechanisms such as establishing links to institutions in more liberally regulated jurisdictions. Third, we investigate whether affected scientists change their research direction. In particular, we test whether scientists switch to less regulated alternative technologies, shift from commercial to model plants, or move away from gene-editing entirely. Throughout, we differentiate between different types of scientists, such as established scientists and post-docs.

Empirically, we exploit an unexpected court ruling in 2018, which drastically changed the commercialization prospects of gene-edited plants in the EU. We define a risk set of plant scientists working in fields where the main method, CRISPR, is eventually employed, meaning scientists had the opportunity to adopt the technology. The treatment group comprises EU plant scientists in this risk set. For identification, we first compare them to US plant scientists in a difference-in-differences framework. We then expand to a triple-differences approach by adding medical scientists as a second control group. We complement our analysis with an interview series of plant scientists.

This project will enhance the understanding of scientists' motivations and the broader impact of commercialization restrictions on academic science. Current literature offers mixed predictions. On one hand, scientists have a taste for science, prioritizing academic freedom over monetary attributes (Stern, 2004), face mobility constraints (Azoulay et al., 2017), and hesitate to switch fields (Hill et al., 2025; Myers, 2020). Evidence also suggests product market size has limited influence on academic research (Byrski et al., 2021). Yet this view has been challenged – scientists vary in their taste for science (Roach and Sauermann, 2010), may value commercialization as their societal contribution (Cohen et al., 2020), productive scientists are mobile (Ganguli, 2015; Azoulay et al., 2017), and industry does generate spillovers to academia (Sohn, 2021; Xia, 2024).

Moreover, our work will inform policy debates on regulating gene-edited plants and emerging frameworks for general-purpose technologies like AI, highlighting a

critical issue: if commercial regulation affects the production of science, this may alter the supply of knowledge and inventions to firms. After all, academic research fuels corporate innovation (Jaffe, 1989; Fleming et al., 2019; Krieger et al., 2024). Since scientists choose research directions based on local circumstances (Fry, 2023), knowledge produced in one jurisdiction may not transfer to other markets – particularly in agriculture, where plants and pests vary geographically (Moscona & Sastry, 2025).

PAPER SESSION 3

Paper 10: Foundational Scientific Capacity in Low- and Middle-Income Countries after TRIPS

Gabriel Cavalli, Michael Blomfield, Anita M. McGahan, Keyvan Vakili

10

This study examines how foundational scientific capacity (FSC) in low- and middle-income countries (LMICs) was affected by implementation of the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS), a global policy introduced in 1994 to create incentives for pharmaceutical innovation. TRIPS was intended to encourage the development and commercialization of new drugs by strengthening intellectual property protections worldwide. Yet the agreement has not generated widespread commercialization of innovative drugs for diseases primarily affecting LMICs. This outcome has prompted speculation that insufficient FSC prevented market incentives from functioning effectively. At the same time, TRIPS may have motivated actors in implementing countries to develop the prerequisite institutional and scientific capacities required for pharmaceutical innovation. In many cases, such developments required coordination among heterogeneous actors – including scientists, policymakers, and institutional advocates – who mobilized resources and aligned local institutions with global intellectual property frameworks. If so, the gradual development of FSC could eventually support the emergence of markets for medicines addressing diseases prevalent in LMICs.

The research question guiding this study is: Did TRIPS influence the development of prerequisite FSC differently across low-income countries (LICs), lower-middle-income countries (LMidICs), and upper-middle-income countries (UMidICs)? Addressing this question is theoretically important for understanding whether TRIPS stimulated the institutional foundations necessary for markets to emerge. It is also empirically important for understanding how the global community can advance progress toward addressing disease burdens in LMICs.

Prior research in strategy, innovation systems, and institutional theory emphasizes that markets for innovation depend on underlying institutional and scientific capacity. The institutions typically assumed in studies of pharmaceutical innovation – such as basic scientific research systems, clinical trial infrastructures, regulatory approval bodies, publishing institutions, academic medical training, pharmaceutical distribution networks, and enforceable legal arrangements – represent interconnected (and often taken-for-granted) elements of foundational capacity. Yet limited understanding exists regarding how these forms of capacity emerge in lower-income contexts and how their development supports the emergence of markets for the discovery and distribution of medicines.

This issue is particularly salient in global health. Although many context-specific studies document scientific and institutional development in lower-income countries, an integrated understanding of how FSC evolves across countries and over time remains limited. The heterogeneous responses of LMICs following TRIPS implementation suggest that capacity accumulation may occur through stages that remain poorly understood but are central to the emergence of functioning markets.

This observation aligns with scholarship on Grand Challenges such as health inequity, which emphasizes that missing institutions can limit the effectiveness of market-based policy interventions.

Studying these issues presents methodological challenges because reliable measures of disease diagnosis and scientific progress are often limited in LMICs. Institutional constraints complicate the collection and validation of data on disease prevalence and scientific activity, meaning that observed changes may reflect both improvements in measurement and underlying shifts in health outcomes. The analysis therefore proceeds cautiously in interpreting available evidence.

The study focuses on three elements of foundational scientific capacity: (i) disease burden identification, measured using Disability-Adjusted Life Years (DALYs); (ii) scientific collaboration between local and international researchers, captured through co-authored publications; and (iii) scientific knowledge production on locally relevant diseases, reflected in publication output. The argument advanced here is that responses to TRIPS may have influenced these elements sequentially and cumulatively as countries build institutional capacity within their local environments – first improving the identification of disease burdens, then expanding international research collaboration, and ultimately increasing local scientific knowledge production on relevant diseases.

To investigate this possibility, qualitative case examples are combined with a quantitative staggered difference-in-differences analysis of TRIPS implementation. The qualitative cases provide contextual insight into how local actors coordinated institutional responses to TRIPS, while the quantitative analysis identifies systematic patterns in FSC development across countries. The analysis indicates heterogeneous responses across income levels. In LICs, reported DALYs increase following TRIPS implementation, consistent with improved disease assessment. In LMidICs, TRIPS implementation is associated with increased international research collaboration. In UMidICs, increases are observed in publications on locally prevalent neglected diseases (i.e., communicable diseases such as malaria or tuberculosis). Together, these patterns suggest that responses to TRIPS may have contributed to the development of different components of foundational scientific capacity across stages of economic development, thereby illustrating how global policy interventions can indirectly stimulate the institutional conditions necessary for innovation in lower-income settings.

SESSION 4

PAPERS 11–13

MONDAY
16:30–17:30

PAPER SESSION 4

Paper 11: A Structured Literature Review on the Scientific Discourse around GenAI's Impact on Distant Collaboration

Lebogang Nthoiwa, Susanne Beck, Joe Nandhakumar

11

Scientific advancement increasingly depends on collaborations that span diverse expertise and knowledge domains (Fortunato et al., 2018; Beck, Bergenholtz et al., 2022). Such distant collaborations are, for instance, considered an important remedy to increasing incrementalism (Bloom et al., 2020; Fortunato et al., 2018) and declining scientific productivity (Jones, 2009; Pammolli et al., 2011) due to their capacity to create more novel and creative outcomes (Afuah & Tucci, 2012; Fleming & Sorenson, 2004; Gruber et al., 2013). However, distant collaborations carry inherent challenges such as higher communication and coordination costs (Aldrich & Herker, 1977; Levina & Vaast, 2005) and ultimately increase the risk of failure. Hence, paradoxically, the very diversity that drives novelty and creativity outcomes can also create friction, misunderstanding and conflict among collaborators (Reay & Hinings, 2009; Cummings & Kiesler, 2007). With Generative AI (GenAI) emerging in the scientific practice, it raises the question of how this new technology may help researchers tackle these challenges, if at all.

Conceptually, we build on the knowledge boundary work by Carlile (2002, 2004), investigating the potential of GenAI to serve as a boundary spanner for syntactic, semantic, and pragmatic knowledge boundaries. These boundaries capture challenges of transferring, translating and transforming knowledge across domains (Aldrich & Herker, 1977; Bechky, 2003; Carlile, 2004; Kaplan et al., 2017; Tushman & Scanlan, 1981). Empirically, we look at publications across scientific fields using GenAI to overcome specific challenges in their respective distant collaborations.

The analysis draws on a corpus of peer-reviewed articles and book chapters published between 2022 and 2025, retrieved from the Web of Science, Scopus, and Dimensions databases. The search strategy combined four key concepts: Generative AI, Collaboration, Distance, and Science to capture relevant studies on the use of generative AI in distant scientific collaboration. After applying predefined inclusion and exclusion criteria to the initial body of 599 publications, performing deduplication and validating the eligibility screening with a second researcher, 44 unique publications were retained for analysis. A concept-centric analysis (Webster & Watson, 2002) coupled with a structured, yet open coding procedure (Saldana, 2016) guided the analysis, which included both the descriptive and interpretive dimensions. Distant collaboration challenges and GenAI spanning capabilities were identified inductively through open thematic coding and then mapped deductively onto the boundary-spanning framework, categorising them as syntactic, semantic, or pragmatic knowledge boundaries. The analysis is still ongoing.

Preliminary results indicate that customised AI agent systems such as DiscipLink, PersonaFlow, and Sketcher are increasingly adopted to address collaboration

challenges, including knowledge and expertise barriers, communication gaps, and coordination difficulties. These systems simulate interdisciplinary teamwork by translating domain-specific inputs into shared representations, proposing common vocabularies, and iteratively refining outputs based on feedback, thereby mediating semantic and pragmatic knowledge boundaries through mechanisms of translation and transformation in Carlile's terms. These insights will be used to develop a research agenda to guide future research on the potential antecedents, boundary conditions, and consequences of the use of GenAI as a boundary spanning tool in science, thus highlighting both the opportunities and tensions this emerging technology presents.

This structured review contributes to two literature streams. First, it advances the organisation of science literature by synthesising insights how GenAI is already used across fields, to overcome challenges related to distant scientific collaborations (Beck et al., 2022; Fortunato et al., 2018; Wuchty et al., 2007), and thus, provide a starting point for researchers to further explore conditions that may leverage GenAI's potential. Second, this paper contributes to information systems by extending the discussion on the role of GenAI to serve as a boundary spanner (Carlile, 2004; Levina & Vaast, 2005), showing how GenAI tools can perform boundary-spanning activities across syntactic, semantic, and pragmatic knowledge boundaries.

PAPER SESSION 4

Paper 12: Generative AI and the Organization of Scientific Teams

Stefano Bianchini, Georgiana-Iona Coroama

12

The diffusion of generative artificial intelligence (GenAI), particularly large language models (LLMs), over the past few years constitutes a major technological shock to scientific work. Building on existing theories of team science, technological change, and labor reallocation, we develop a conceptual framework to study how LLMs may affect team size, team composition, and the division of scientific labor across fields.

We exploit the launch of ChatGPT as a sharp, field-wide shock and use pre- and post-publication data (~150,000 papers from which we retrieve detailed information on authors' contributions to different scientific tasks) to empirically test whether, and how, LLMs have begun to alter the organizational patterns that have shaped science over the past decades. Preliminary findings suggest that team size declines significantly after the introduction of LLMs and this effect is stronger among newly formed teams. Further results on the division of labor are forthcoming.

PAPER SESSION 4

Paper 13: Generative AI and Collaboration in Academic Open Innovation Ecosystems: Accelerator or Inhibitor of Innovation?

Xiangrui Zeng, Gernot Pruschak

13

In recent years, an increasing number of scholars have begun to address how participants in ecosystems collaborate to engage in and foster OI (e.g., Radziwon & Bogers, 2019; Thomas & Ritala, 2022, Xie & Wang, 2020). Zhang et al. (2023), for example, showed that participation in OI ecosystems promote firms' sustainable competitive advantage. However, these studies primarily assume static and stable OI ecosystems (Alam et al., 2022; Heaton & Min, 2025). Yet they are often rather dynamic and constantly evolving (Adner, 2017; Granstrand & Holgersson, 2020) as they are influenced by several external factors like competing or outside ecosystems (Heaton & Min, 2025) and technological changes (Autio et al., 2018).

The recent introduction of generative artificial intelligence (AI) acted as such a "transformative force" of technological change (Sedkaoui & Benaichouba, 2024, p.5), effectively disrupting all steps of the research, development and innovation process (Rizomyliotis et al., 2025). Prior research (Broekhuizen et al., 2023; Brynjolfsson et al., 2025) demonstrated the abilities of generative AI in rapidly generating new knowledge, thereby inspiring innovators, shortening innovation cycles, and enhancing output efficiency. However, erroneous or impractical AI-generated information may misguide project innovation directions (Bago & Bonnefon, 2024), and excessive reliance on generative AI could even curtail critical interpersonal interactions in the innovation process (Sydow et al., 2009). Overall, theoretical insights and empirical evidence regarding generative AI's role in OI ecosystems remain insufficient (Sahoo et al., 2024). Against this backdrop, we ask the following question:

RQ: How does the introduction of generative AI alter the collaboration benefits of open innovation ecosystems?

To answer the research question, we draw upon insights from the knowledge-based view and dynamic capabilities theory (Grant, 1996; Teece et al., 1997). Within OI ecosystems, diversity among collaborating entities (e.g., different types of institutions and cultural backgrounds) enables access to knowledge repositories exhibiting high heterogeneity in technological paradigms, institutional environments, and market demands (Kobarg et al., 2019; Laursen & Salter, 2006). This, in turn, contributes to enhancing the ecosystem's overall performance. However, KBV also points out that heterogeneous knowledge itself does not automatically translate into performance; rather, it is highly dependent on the ability to process and integrate complex knowledge. This process of knowledge flow, combination, and reconstruction is an ongoing evolutionary one, continuously adapting to changes in the external technological environment (Teece et al., 1997). In particular, the development of generative AI, is profoundly altering how knowledge is generated, transmitted, and integrated, thereby

reshaping the boundaries of an ecosystem's capacity to handle heterogeneous knowledge.

We contend that generative AI exerts a double-edged sword effect on knowledge interactions within open innovation ecosystems. On the one hand, it enhances the precision of identifying cutting-edge research opportunities (Hou et al., 2025; Wang et al., 2023), reduces the costs of high-quality research and cross-entity collaboration (Grimes et al., 2023; Mohammadi et al., 2026), and strengthens knowledge integration and organizational learning mechanisms (Bouschery et al., 2023). On the other hand, it also intensifies path dependency effects (Sydow et al., 2009), compresses trial-and-error and experience-driven industrial learning processes (Zahra & George, 2002), and exacerbates resource and institutional asymmetries within ecosystems (Khan et al., 2024).

To clarify the role of generative AI in OI ecosystems, we turn to data from the MSCA Doctoral Networks. These networks offer a unique setting to investigate OI ecosystems as they comprise various types of stakeholders (universities, industry, NGOs, etc.) and have been shown to catalyze innovation outcomes (Ferrer-Serrano et al., 2021). Moreover, they have taken place across numerous fields from deep tech physics up to animal archeology, thus representing a wide array of fields.

We obtain the underlying data from the European Union Funding & Tenders Portal. Following prior research, we measure academic innovation performance as the number of academic publications (Huang & Chen, 2017; Rosenberg & Nelson, 1994) while we turn to patent citations for capturing industrial innovation performance (Arora et al., 2025; Marx & Fuegi, 2020). However, as the portal does not disclose patent-related information we match publications with patent data available in Lens.org. We measure Generative AI as a dummy variable that is 1 if the publication was released on or after November 30, 2022, the release date of ChatGPT, and 0 otherwise (Goller et al., 2025; Quinn & Gutt, 2025). We estimate our models using fixed-effects regressions with standard errors clustered at the project level.

Our findings reveal that generative AI exerts heterogeneous effects on the academic and industrial performance of OI ecosystems. Specifically, the introduction of generative AI has no significant effect on academic performance while it significantly positively influences the industrial performance. Moreover, whereas it does not significantly moderate the positive relationship between participants' institutional diversity and OI ecosystem academic performance, it strengthens the positive relationship between participants' country diversity and OI ecosystem academic performance. Conversely, generative AI weakens the positive relationship between participants' institutional diversity and country diversity and OI ecosystem industrial performance.

By revealing the impact of generative AI in OI ecosystems, our research makes several contributions to theory and practice. First, unlike previous studies that focused solely on the impact of AI on individual participants in OI (Bouschery et al., 2023; McGahan et al., 2021), our research examines the role of generative AI at the

ecosystem level. Second, we enrich the literature on innovation ecosystems by empirically showing how transformative forces like generative AI impact collaboration outcomes of OI ecosystem, thereby challenging existing assumptions about the static stability of innovation ecosystems (Alam et al., 2022; Granstrand & Holgersson, 2020). Third, our research contributes to the research on strategic management of OI (Bogers et al., 2017, 2018) by systematically integrating the dynamic capability framework with the OI literature. Finally, this study demonstrates that generative AI acts as a double-edged sword that enhances overall OI ecosystem innovation performance but reduces the benefits arising from institutional and national diversity included in the OI ecosystem. Following up on our results, future research may explore additional dimensions of diversity as well as study the exact mechanisms that inhibit the positive effects of diversity on innovation performance in OI ecosystems.

OIS Practice Paper Session

Monday 11 May | 17:30 – 19:00

PP 1-12

Practice Paper 1: Recontextualizing Open Science Through Co-Designed Mandates and Policies: The Case of FedOSC
Judith Birneaux, Nienke Roelants, Marc Vanholsbeeck, Marie-Sophie Bercegeay, Anna Miglio, Francis Strobbe, Annerose Tartler-Ostrizek

Practice Paper 2: Language, AI and Science-Policy Relations: Openness and Collaboration in the UniTermGPT Project
Barbara Heinisch

Practice Paper 3: Openness and Collaboration in Science-Policy Relations: Institutional Findings from Three Innovation Funding Ecosystems
Seyed Reza Mirnezami, Ahmad Keykha, Sajedeh Sadat Hosseini, Ali Maleki

Practice Paper 4: Reframing University Technology Transfer as Public Value: Evidence from the Chilean Context
Aldonza Jaques, Ana Araya, Etienne Choupay

Practice Paper 5: Funding Open Science in the Finnish Research Community
Ilmari Jauhiainen

Practice Paper 6: The Seedcase Project: Data Engineering Tools for Building and Managing Open and FAIR Research Data
Kristiane Beicher, Signe K. Brødbæk, **Luke Johnston**, Joel Ostblom, Marton Vago

Practice Paper 7: Generating New Insights into Diseases with High Unmet Medical Need: The Impact of the Open Innovation Portal opnMe.com on Scientific Research
Markus Koester, Menorca Chaturvedi, Oliver Kraemer, Thorsten Laux, Sven Thamm, Florian Montel

Practice Paper 8: Hybrid Intelligence Foresight: Open and Collaborative Platforms for Democratizing Participatory Futures through AI-Augmented Collective Intelligence
Janet Rafner, Adam Gordon, Carina Antonia Hallin, Blanka Zana, Jacob Sherson

Practice Paper 9: Ukraine's Measures in the Field of Developing Digital Infrastructure for Open Scientific Space at the Domestic and International Levels
Anatolii Shyian, Liliia Nikiforova

Practice Paper 10: Open Science and Participatory Innovation in Early Mother–Infant Feeding Research
Anika Stephan

Practice Paper 11: Open Science and Collaboration in Horizon Europe: The Key Impact Pathway Approach
Leonardo Zanobetti, Roberto Volpe, Guillermo Kreiman Seguer, Daniel Neicu

Practice Paper 12: Liberata – Open Access Academic Publishing with Incentivized Quality Controls and Improved Scientometrics
Han Zhang, Anshuman Sabath, L. Catherine Brinson

SESS
ION
OSPP

PRACTICE PAPERS
1–12

MONDAY
17:30–19:00

PRACTICE PAPER SESSION

Practice Paper 1: Recontextualizing Open Science Through Co-Designed Mandates and Policies: The Case of FedOSC Ecosystems: Accelerator or Inhibitor of Innovation?

Judith Birneaux, Nienke Roelants, Marc Vanholsbeeck, Marie-Sophie Bercegeay, Anna Miglio, Francis Strobbe, Annerose Tartler-Ostrizek

PP 1

Open Science (OS) can support collaborative and impactful research when embedded in a coherent, workable ecosystem of services, tools, policies and infrastructure.

Since the introduction of federal OS mandates in 2017 and 2019, OS uptake in Belgium's federal research ecosystem has remained uneven across its research institutions. Two 2025 surveys document diverse publication routes, data-sharing cultures, and levels of maturity, highlighting limited operational guidance in the current OS policy and insufficient awareness across the community. The existing framework is further challenged by a changing landscape, including the growing role of research data for AI in a data-driven economy, concerns around knowledge security and cybersecurity, and the evolving EU OS agenda around equitable open access publishing and the European Open Science Cloud (EOSC). Austerity pressures and geopolitical concerns further condition the policy space in which OS evolves.

Against this backdrop, the Federal Open Science Cloud (FedOSC) project provides a living case of ecosystem co-design combining bottom-up and top-down dynamics. Supported by the Belgian Science Policy Office (BELSPO) and coordinated by Belnet, Belgium's mandated organisation in the EOSC Association, FedOSC brings together policy makers, service providers and representatives of the federal research community to articulate a unified OS vision. It addresses heterogeneous OS practices by developing shared infrastructures, harmonised policy, and facilitated community support.

FedOSC data stewards work with BELSPO to update its OS policy through an iterative co-design exercise rather than a consultative add-on. Drawing on evidence from the 2025 surveys, two interlinked task forces bring together volunteer federal scientific institutes (FSI) members and policy makers. Through ongoing dialogue, they map overlaps and divergences in practices, networks, infrastructure, and identify emerging constraints. A gap analysis between these realities, their evolving context, and the current federal OS policy informs a consolidated set of recommendations for decision makers (planned for January 2026). In this setting, diversity in tools and cultures is not treated as noise, but as a design resource that keeps recommendations realistic and context-sensitive.

At submission, recommendations remain under review and will be presented at the conference in validated form. Early directions converge on the following priorities:

boosting AI readiness through updated legal frameworks, mandatory PIDs and richer metadata, and infrastructures that enable reuse while reinforcing cybersecurity and trustworthy data flows; aggregating metadata to strengthen EOSC interoperability and enable monitoring across FSIs, accommodating local specificities; coordinating federal approaches to OS by tightening the OS peer network through shared spaces for ongoing engagement and facilitation.

All other FedOSC outputs feed into this co-designed vision, so that policy, services, and skills evolve as one coherent system. Digital services are developed in continuous release cycles and refined through user engagement and acceptance testing. Upskilling follows the same logic: a learning community across FSIs is being built through facilitating peer exchange, leveraging and showcasing local expertise rather than top-down training.

Overall, FedOSC takes up the challenge of showing that policy, infrastructure, and skills co-designed with the community can turn institutional diversity into a driver of more coherent, future-ready OS.

PRACTICE PAPER SESSION

Practice Paper 2: Language, AI and Science-Policy Relations: Openness and Collaboration in the UniTermGPT Project

Barbara Heinisch

PP 2

As generative artificial intelligence systems such as ChatGPT become increasingly embedded in professional and academic communication, questions of openness, collaboration and accountability gain renewed urgency. Language plays a central yet often underestimated role in science-policy relations, particularly in multilingual and multi-level governance contexts such as higher education. The UniTermGPT project examines how ChatGPT handles university terminology across different German language varieties (Austrian, German, Swiss and South Tyrolean German) and addresses the implications for science-policy interfaces, professional practices and responsible artificial intelligence governance.

Open innovation in science research emphasizes that societal impact depends not only on technological capability but also on the conditions under which knowledge is produced, (re-)used and circulated. In higher education, university terminology is politically and institutionally situated: it reflects national legal frameworks, institutional structures and policy traditions. Terms designating study-related or organisational concepts often differ substantially across countries (even within the same language and despite the harmonization efforts within the European Higher Education Area). When these terms are used inaccurately, inconsistently or are “normalized” by large language models, important distinctions risk being erased, potentially affecting interpretation and causing misunderstandings.

UniTermGPT addresses this challenge by combining open research practices with collaborative knowledge production across disciplinary and professional boundaries. The project compiles an open corpus of university texts from Austria, Germany, Switzerland and South Tyrol and extracts and compares terminology across these university systems. These data are contrasted with existing terminological resources and used to evaluate how ChatGPT processes language-variety-specific terminology under different prompting conditions. Selected texts are translated into English and back into German varieties (and vice versa), with outputs annotated and assessed by expert translators and terminologists (working in the university domain).

Going beyond basic research, UniTermGPT places a strong emphasis on societal impact by explicitly linking empirical research to questions of governance, professional practice and policy relevance. The project foregrounds collaboration as a prerequisite for meaningful openness, positioning translators and terminologists not merely as annotators but as co-producers of knowledge about ChatGPT’s performance and limitations. Their role extends across the research process (from jointly defining annotation methods and tools to co-developing policy briefs and practical recommendations) thereby embedding professional expertise directly into the production of policy-relevant insights. Such collaboration aligns with the principles of open innovation in science by treating translators not as end users, but as co-creators of application-oriented academic knowledge.

A key output of the project is a policy brief that translates empirical findings into recommendations for policymakers and technology providers, among others. The brief argues for responsible integration of large language models into text generation and translation workflows (in a university context) that foreground the importance of system-bound terminology and language varieties as well as the relevance of language professionals in an artificial intelligence era.

The project also speaks directly to the profession of translation and terminology work. Rather than framing large language models as a disruptive replacement, UniTermGPT demonstrates that professional expertise and domain knowledge are increasingly valuable. Translators and terminologists play a crucial role in curating data, quality assuring (domain-specific) outputs and technology development. The policy brief advocates for continued investment in these professions, recognizing them as essential actors in maintaining language diversity in the digital age.

By publishing data, methods and findings openly, the project contributes to transparency in a domain where large language models are increasingly used but rarely scrutinized in policy-sensitive contexts. Beyond the university context, the insights generated by UniTermGPT are transferable to other policy-relevant domains characterized by language-variety-specific and system-bound terminology, such as law, healthcare and public administration. In this way, the project illustrates how open and collaborative research can inform responsible use of large language models, strengthen science-policy relations and enhance the societal impact of academic knowledge.

PRACTICE PAPER SESSION

Practice Paper 3: Openness and Collaboration in Science-Policy Relations: Institutional Findings from Three Innovation Funding Ecosystems

Seyed Reza Mirnezami, Ahmad Keykha, Sajedeh Sadat Hosseini, Ali Maleki

PP 3

1. Introduction

Science-policy relations are shaped not only by how evidence is communicated, but by institutional settings that influence what knowledge is produced, how quickly it emerges, and how it becomes usable for policy (Jasanoff, 2004; Sarewitz, 2016). Although openness and collaboration are widely promoted as responses to mistrust and weak policy relevance, they are often treated as technical fixes (such as transparency mandates or open-access platforms) rather than as outcomes of deeper governance choices (OECD, 2021a). This paper argues that openness in science-policy relations is an ecosystem-level institutional outcome. Funding architectures, evaluation regimes, coordination mechanisms, and public-private boundary arrangements shape whether openness enhances trust and policy learning or instead reproduces fragmentation and exclusion. Openness, therefore, is not a transferable best practice but a governance accomplishment embedded in institutional context.

To examine this claim, the paper compares three innovation funding ecosystems: China, Germany, and the United States. It analyzes how system-level configurations shape the forms, limits, and consequences of openness and collaboration. The contribution lies in reframing openness institutionally and identifying recurring trade-offs among speed, coordination, inclusivity, and accountability across science-policy systems.

2. Analytical Lens and Data

The analysis draws on the National Innovation Systems (NIS) framework, which conceptualizes innovation as emerging from interactions among institutions, policies, and actors rather than isolated research investments (Freeman, 1987; Lundvall, 1992). This perspective foregrounds governance trade-offs that shape how scientific knowledge is generated and mobilized for policy use.

Empirically, the study relies on qualitative document analysis of national science and innovation strategies, funding-agency reports, evaluation frameworks, and international benchmarking studies, including OECD STI Outlooks and World Bank analyses (OECD, 2021a, 2023). These sources support a comparative assessment of how different systems structure openness and collaboration over time (Evans et al., 2021; Mazzucato, 2018).

3. Findings

China

China's innovation funding ecosystem is characterized by large-scale public investment, strong vertical coordination, and quasi-fiscal instruments such as public-private guidance funds (World Bank, 2019; OECD, 2023). These arrangements enable rapid mobilization of scientific capacity and close alignment between research agendas and national policy priorities, particularly in strategic domains such as artificial intelligence, clean energy, and advanced manufacturing.

The system's core strength lies in speed and directional coherence: funding priorities, research timelines, and performance indicators are tightly aligned with policy objectives, allowing evidence to be produced quickly and framed for implementation (Cao et al., 2020).

At the same time, this architecture constrains openness. Functional fragmentation across ministries limits horizontal learning and cross-sectoral coordination, especially at implementation and evaluation stages (OECD, 2023). Evaluation regimes emphasizing quantitative output indicators privilege volume and speed over epistemic diversity and reflexive learning, while regional disparities restrict participation by less-resourced institutions (Zhang et al., 2021). Collaboration is therefore often administratively orchestrated rather than deliberative, and openness functions primarily as an instrument of policy execution rather than pluralistic exchange.

Germany

Germany's innovation funding ecosystem combines institutional block funding, competitive project-based grants, and strong intermediary research organizations such as the DFG, the Fraunhofer Society, and the Helmholtz Association (EFI, 2022; OECD, 2021b). This configuration supports long-term research agendas and sustained interaction between researchers and policymakers, particularly in areas such as sustainability and digital transformation. Stable funding and standardized peer-review procedures foster cumulative knowledge production and institutional trust, while federal-state coordination reinforces credibility at the science-policy interface (DFG, 2021). Open access and data-sharing practices are widely embedded, supporting procedural transparency and epistemic legitimacy.

However, openness is unevenly distributed. Regional inequalities and barriers faced by small and medium-sized enterprises limit participation in collaborative research consortia, while gaps in late-stage venture capital constrain the scalability of publicly funded research in public-private partnerships (OECD, 2021b). Workforce precarity among early-career researchers further undermines inclusive participation and continuity. As a result, Germany institutionalizes openness procedurally, but its inclusivity and long-term impact remain shaped by structural features of its funding and labor systems.

United States

The U.S. innovation funding ecosystem is marked by functional differentiation across federal agencies operating under distinct mandates and funding models. Peer-reviewed grant systems, mission-oriented biomedical funding, and discretionary ARPA-style agencies coexist within a highly decentralized structure (Evans et al., 2021; National Science Board, 2022). This diversity supports methodological pluralism and frontier innovation. ARPA-style agencies, in particular, demonstrate how flexible program design and active project management can accelerate the translation of scientific knowledge into policy-relevant domains (Azoulay et al., 2019; Bonvillian, 2018).

Yet fragmentation presents persistent challenges. Dispersed budget authority, weak interagency coordination, and inconsistent evaluation criteria limit

system-wide learning and coherence. For policymakers, this fragmentation complicates evidence integration by producing multiple, sometimes incompatible, knowledge streams without a clear locus for synthesis or accountability. Access to federal research funding also remains concentrated among elite institutions, raising concerns about inclusivity, geographic equity, and public trust (National Science Board, 2022). While initiatives such as the CHIPS and Science Act signal renewed attention to mission alignment and equity, openness remains largely program-specific.

4. Discussion and Conclusion

Across the three cases, openness and collaboration emerge not as attributes that can be added through transparency mandates or digital platforms, but as institutionally contingent outcomes shaped by ecosystem design (Sarewitz, 2016; OECD, 2021a). Where governance capacity is misaligned with openness ambitions, efforts to increase transparency or participation risk becoming symbolic, producing visibility without coordination or access without accountability. Three cross-cutting dynamics stand out: speed-openness trade-offs in systems optimized for rapid mobilization or experimentation; stability-inclusivity tensions in systems oriented toward long-term credibility; and coordination capacity as a prerequisite for sustained collaboration across contexts. These tensions are intensified by digital acceleration. While AI and data-driven platforms can increase the speed and scale of evidence integration, they also heighten challenges related to accountability, bias, and legitimacy (Jasanoff et al., 2021).

The analysis shows that openness and collaboration in science-policy relations depend less on individual practices or technological tools than on ecosystem-level institutional design. Building science-policy systems that are trustworthy, inclusive, and usable therefore requires sustained attention to the governance foundations of openness.

PRACTICE PAPER SESSION

PP 4

Practice Paper 4: Reframing University Technology Transfer as Public Value: Evidence from the Chilean Context

Aldonza Jaques, Ana Araya, Etienne Choupay

In Chile, knowledge and technology transfer (KTT) operates as a functional subsystem within the national CTCI system, linking scientific and technological supply with demand from productive, social, and public sectors. The subsystem has expanded in actors and instruments, but still shows structural gaps: fragmented programs, weak continuity of support, unequal institutional capabilities, limited territorial reach, and misalignment between university missions, incentive systems, and KTT execution.

A defining feature is strong dependence on public funding, complemented by institutional co financing. State support has focused on strengthening Technology Transfer Offices (TTOs) within universities as the main units responsible for valuing and transferring research results. Despite sustained public investment, evaluation frameworks remain oriented toward private value proxies such as patents and licenses. This under measures collaboration, diffusion, and institutional capability building, and recent State evaluations identify weaknesses in results-based evaluation, especially for intermediate and systemic outcomes.

This study reframes university technology transfer as a public value problem. Drawing on public value theory, it proposes an evaluative framework with three dimensions: public value outcomes (societal relevance, territorial contribution, uptake beyond exclusive licensing), legitimacy and support (institutional recognition of KTT, governance clarity, conflict of interest safeguards, stakeholder trust), and operational capacity (the university's ability to build and consolidate KTT capabilities over time through stable TTO teams, institutionalized processes, and sustained resourcing).

Methodologically, the study uses a qualitative case design anchored in the Chilean university system, with a large public technical university as an illustrative case. Data includes analysis of institutional regulations and public instruments, mapping of KTT pathways, and interviews with academic leaders, TTO professionals, industry counterparts, and public agencies.

The contribution is a university centered framework to realign KTT evaluation and governance with science policy objectives, with emphasis on impact, territorial development, and sustainability.

PRACTICE PAPER SESSION

PP 5

Practice Paper 5: Funding Open Science in the Finnish Research Community

Ilmari Jauhiainen

Open science does not come for free. It requires investments to development and maintenance of infrastructure, introduction of new practices and capacity building. Finnish higher education and research community has confronted this problem by developing a roadmap for open science funding, cocreated in the communitarily led national Open Science and Research Coordination.

Finnish Open Science and Research Funding Roadmap sets out the task of changing the whole culture of research funding and transforming the existing funding channels in a way that is more in conformity with the principles and goals of open science. Since research funding comes from many sources (for instance, ministries, funding agencies, and industry), the Roadmap addresses these sources in independent recommendations, providing thus a modular model for transformation of research funding.

The Roadmap engages with the ministry level funding of Finnish RPOs and suggests taking the principles of open science into account in national funding schemes, such as the funding model of universities. It also speaks for a sustainable and coordinated funding and resourcing for the development and maintenance of the core infrastructures supporting open science.

The Roadmap tackles the systemic problem of increasing costs of research publication, benefiting mostly large, commercial publishers. It calls out a need for balancing the scales and repurposing the money provided for research publication in a fairer manner, directing it more to community developed, non-profit open publication channels, and advises RFOs and RPOs to find the means for this repurposing.

The Roadmap also provides individual organisations more detailed guidelines how to take open science into consideration in matters related to funding and resourcing of research. It contains a self-assessment tool for RFOs, for setting up their level of ambition regarding open science, suggests good practices for RFOs to promote open access to research publication, open research data and methods (including software), and various ways of community engagement, such as citizen science and open educational resources. It also speaks for an open and transparent assessment in funding research projects.

For the RPOs, the Roadmaps offers advice on how to resource their open science services, for instance, through collaboration with other RPOs and organisations in other sectors. It recommends that RPOs provide their research, teaching and support staff sufficient resources and working time to engage with open science activities, such as editorial work and peer review for open publication channels, citizen science and other community engagement, development of open educational resources and participation in national and international open science networks.

Finally, Roadmap tackles the issue of how to use funding and recourses received from organisations beyond the research community (e.g. private sector) for promoting open science. It offers good practices for individual researchers, RPOs and RFOs, in addition to suggesting some actions innational level for supporting this sort of cross-sector collaboration.

Roadmap was published in October 2025. The following years will show how well the different organisations of the Finnish higher education and research community will adopt all the recommendations of the Roadmap and what will its impact on the Finnish research culture as a whole be.

PRACTICE PAPER SESSION

PP 6

Practice Paper 6: The Seedcase Project: Data Engineering Tools for Building and Managing Open and FAIR Research Data

Kristiane Beicher, Signe K. Brødbæk, Luke Johnston, Joel Ostblom, Marton Vago

FAIR and open practices are beneficial for science as they encourage reproducible, transparent, and shareable data practices. While individual researchers are sometimes capable of implementing FAIR and open practices on their own, the availability of software and data engineering resources and tools greatly facilitates the adoption of these practices. Unfortunately, there is a lack of systemic structures to incentivise researchers, organisations, and funding agencies to appreciate the importance of software and data engineering in research contexts and to dedicate sufficient resources to implementing them in practice. A major consequence from this incentive misalignment is that researchers trying to adhere to FAIR and open practices face organisational and technical challenges with managing, sharing, building, and using research data, which in turn hampers scientific progress.

In the Seedcase Project (), we aim to resolve part of the aforementioned issues by developing a framework that facilitates the creation and management of FAIR research data. To reach this goal, we are developing a set of interoperable and modular tools that together constitute a modern, organised, and robust framework.

In addition to publishing the data engineering tools, we also publish our internal developer tools, documentation, and guides to effective collaborative practices. Through these publications, we contribute to our ultimate goal of helping researchers do “better science in less time”, not only in an academic setting in Denmark but also in industry and across the globe. Our progress towards this goal can be found in our roadmap at that lists all of our products and their development status.

The data engineering tools we’ve published so far include:

• Sprout (): A Python package that helps create and manage a standardised and organised structure for storing and describing research data as a Data Package. Using modern data engineering and management practices, Sprout promotes research data that are well designed, discoverable, well documented, and ultimately (re)usable for later analyses. This package is built around the Data Package standard ().

• `check-datapackage` (): A Python package that checks a Data Package’s metadata against the Data Package standard to ensure that the Data Package’s metadata is compliant with the standard.

• Template Data Package (): A template for creating a new Data Package that follows the Seedcase structure with the necessary files and configurations in place.

While the tools that are planned or in early development include:

• Flower (): A Python package and command-line tool to generate and display the `datapackage.json` file in a human-friendly way. In early development.

• Propagate: A planned tool to make it easier to submit and process reproducible requests for a subset of data from a larger Data Package through a machine-readable set of instructions.

• Garden: A planned tool to manage and track research projects that use a particular Data Package.

This project is funded by a Novo Nordisk Foundation grant (number NNF21OC0069462).

PRACTICE PAPER SESSION

Practice Paper 7: Generating New Insights into Diseases with High Unmet Medical Need: The Impact of the Open Innovation Portal opnMe.com on Scientific Research

Markus Koester, Menorca Chaturvedi, Oliver Kraemer, Thorsten Laux, Sven Thamm, Florian Montel

PP 7

opnMe.com, an initiative by Boehringer Ingelheim, exemplifies the advancement of open innovation in biomedical research by fostering independent science and enabling novel collaborative approaches. Since its launch, opnMe.com has engaged over 7,500 researchers from more than 80 countries, providing a global platform for scientific exchange.

The portal offers two principal benefits to external scientists. First, it provides free access to preclinical tool compounds ("molecules") targeting defined molecular pathways, without intellectual property restrictions, empowering researchers to pursue independent investigations and publish their findings. To date, more than 10,000 molecules have been distributed, resulting in over 270 peer-reviewed publications that have advanced understanding across diverse disease areas.

Second, opnMe.com serves as a "low threshold" entry point for research collaborations. Scientists with innovative ideas can respond to precisely formulated research questions posted on the portal, facilitating targeted partnerships. Seventy initiatives have been launched, spanning a broad spectrum of pharmacological and technological topics, and addressing a wide array of diseases. Oncology, in particular, has been a prominent focus, with several successful collaborations yielding impactful results.

By lowering barriers to access and collaboration, opnMe.com accelerates the translation of scientific discoveries into tangible outcomes. The platform's open and collaborative model exemplifies how industry-driven initiatives can catalyze independent research, foster global scientific networks, and address high unmet medical needs.

Conclusion: opnMe.com demonstrates the potential of open innovation portals to transform the landscape of biomedical research. Its dual approach—providing unrestricted access to research tools and facilitating targeted collaborations—has led to significant scientific outputs and fostered a culture of openness and shared progress. The ongoing success of opnMe.com underscores the value of collaborative platforms in driving innovation and addressing complex health challenges.

PRACTICE PAPER SESSION

PP 8

Practice Paper 8: Hybrid Intelligence Foresight: Open and Collaborative Platforms for Democratizing Participatory Futures through AI-Augmented Collective Intelligence

Janet Rafner, Adam Gordon, Carina Antonia Hallin, Blanka Zana, Jacob Sherson

This paper presents Hybrid Intelligence Foresight (HIF), a novel framework that operationalizes open and collaborative research practices across the entire scientific process—from citizen engagement to knowledge co-creation, data generation, and dissemination. Drawing on a longitudinal case study of the crea.visions platform, we explore the design and implementation of open, AI-enhanced civic engagement infrastructures that enable large-scale, low-barrier participation in complex socio-technical foresight processes. Our findings are based on over five years of iterative platform development and field experimentation across 11 interventions in Denmark, France, Italy, and Serbia involving more than 7,000 participants and resulting in the co-creation of over 30,000 AI-generated future imaginaries.

Traditional foresight methods, such as Delphi panels, have been widely critiqued for privileging expert voices and excluding broader public imaginaries, thereby limiting the inclusiveness, legitimacy, and scalability of participatory futures processes. In contrast, our approach leverages generative AI technologies and participatory design workflows to foster human-AI co-creativity, enabling distributed publics to visualize, articulate, and debate their visions of the future. The crea.visions platform is purpose-built to facilitate iterative, hybrid intelligence engagements across diverse stakeholders, supporting collaborative scenario generation, problem-framing, and even policy prototyping.

The HIF model contributes to the evolving landscape of open science and collective intelligence research by integrating four dimensions: (1) open data generation and reuse through user-created content and AI-generated futures artefacts; (2) community-led co-creation supported by open-source platforms; (3) cross-sectoral collaborations between academia, municipalities, NGOs, and cultural institutions; and (4) real-world dissemination mechanisms that embed co-created futures into institutional decision-making via exhibitions, strategy workshops, and municipal planning processes.

We present comparative insights across different deployment contexts—youth festivals, urban governance, and cultural heritage sites—highlighting the contingency factors that affect the success and uptake of collaborative foresight methods.

The study demonstrates three core contributions: (1) GenAI-supported platforms can democratize foresight by lowering technical and epistemic barriers to participation; (2) hybrid intelligence workflows can evolve public engagement from

passive consultation to active co-creation and dialogic imagination; and (3) embedding these participatory processes within open, institutional settings enhances public legitimacy and accelerates the uptake of collective visions into strategy and policy processes.

By integrating open collaboration, citizen science principles, and AI-augmented collective intelligence, we argue that HIF provides a model for the future of open, participatory research in public policy and foresight. We conclude by reflecting on ethical challenges, scalability issues, and the need for a more robust infrastructure of “civic foresight literacy” to support the long-term sustainability of such platforms.

PRACTICE PAPER SESSION

PP 9

Practice Paper 9: Ukraine's Measures in the Field of Developing Digital Infrastructure for Open Scientific Space at the Domestic and International Levels

Anatolii Shyian, Liliia Nikiforova

Ukrainian science has traditionally been focused mainly on domestic applications. Since the 2000s, the process of incorporating Ukrainian science into EU standards has begun. In the last 10 years, the main direction of creation has been the development of scientific infrastructure for open science and the creation of conditions for the integration of Ukrainian science into the global scientific space.

The Ministry of Education and Science of Ukraine (MES of Ukraine) has created a unified portal for Ukrainian science https://nauka.gov.ua/, which combines information about Ukrainian science (has English). This portal presents information in three main areas in an open format: 1) Science in Ukraine, 2) International cooperation, and 3) Registers. For several years now, all information about scientific grants has been presented on this portal. The portal also provides the issuance of the necessary documentation for applications through this Internet portal.

Today, preparations are underway to create a National Repository of Open Scientific Data in Ukraine, based on the FAIR principles. Currently, Ukraine does not have a single National Repository of Scientific Data; there are only institutional repositories in individual universities, institutions of the National Academy of Sciences of Ukraine, and other organizations. However, they operate locally and do not provide the proper level of coordination and centralized management of scientific data at the national level.

Therefore, initially it provided a comparative analysis of leading approaches to the formation of policies, infrastructures and technical solutions in the field of scientific data, the results of which form an empirical and methodological basis for the development of substantiated recommendations for the creation of the National Scientific Data Repository, taking into account the interdisciplinary specifics, standards for creating metadata, requirements for documentation and practices for ensuring FAIR principles.

It substantiates that the optimal solution is to create a National Scientific Data Repository based on the Dataverse platform, which has already proven its effectiveness as an infrastructure solution for managing and distributing scientific data in the USA, the European Union, Australia, Brazil, South Korea and other countries.

It is proven that the use of the Dataverse platform will ensure compliance with international standards and principles of open science, scalability and compatibility with global information networks. It examines the features of the use of Creative Commons licenses in the process of developing the National

Repository of Scientific Data (NRSD) of Ukraine based on the Dataverse platform. It is emphasized that in the modern scientific ecosystem, open access to research results is a key factor in the development of open science, ensuring transparency, reproducibility and international cooperation. It is substantiated that CC BY 4.0 is the optimal legal instrument, since it provides maximum openness, compatibility with international standards and legally binding attribution, which complies with the current legislation of Ukraine.
The need to make configuration changes to Dataverse to set CC BY 4.0 as the default license is proven. Recommendations are formulated for the formation of a legal and technical basis for the effective functioning of the NRSD.

A system of restrictions in the areas of organizational and management policies and regulatory, and legal was identifies. A space of possible alternatives (road maps) has been developed for the implementation of regulatory and educational policies.

Some criteria have been developed for calculating the effectiveness of the practical application of the above alternatives, among which open scientific data in the created state repository, an increase in the number of scientific articles, international patents, and licenses of Ukrainian scientists, an increase in the number of international grants, etc. have been highlighted.
A systematic analysis of key problems and challenges that occur in the conditions of Ukraine has allowed us to propose effective methods and technologies for solving a number of ethical problems that arise during the creation and operation of the National Repository of Scientific Data.

In particular, the business processes for ensuring copyright requirements and the distribution of intellectual property when creating and preparing for the publication of open scientific data are described in detail.

Requirements for the presentation of both primary (experimental) and secondary (theoretical, analytical) data in the National Repository of Scientific Data have been obtained. A set of criteria has been developed to manage the effectiveness of the National Repository of Scientific Data.

Thus, the necessary support has been created for the creation and functioning of the National Repository of Scientific Data in Ukraine. This is another step towards the integration of Ukrainian science into the open scientific space of Europe.

PRACTICE PAPER SESSION

Practice Paper 10: Open Science and Participatory Innovation in Early Mother–Infant Feeding Research

Anika Stephan

PP 10

Early mother–infant bonding and successful feeding are foundational determinants of infant neurodevelopment, maternal well-being, and long-term health outcomes. While physiological and clinical aspects of breastfeeding are well documented, user-centered, evidence-based research that integrates maternal anatomy, infant feeding behavior, and psychosocial bonding remains limited—particularly for families experiencing early feeding challenges. This gap hinders the translation of scientific knowledge into practical, impactful solutions.

Addressing this limitation, the present study asks how specific breastfeeding practices, feeding challenges, and the use of feeding aids shape maternal–infant bonding experiences in the first year postpartum, and how participatory co-creation can inform improved, user-centered feeding solutions.

The study employs a mixed-methods, participatory research design combining a large-scale online survey with qualitative open-ended responses collected from mothers within the first 12 months postpartum. Quantitative data capture patterns in breastfeeding practices, feeding challenges, and aid usage, while qualitative thematic analysis provides in-depth insights into emotional, physiological, and relational bonding experiences during feeding. In addition, the author engages in action field research as an embedded actor, having recently transitioned into motherhood herself. This engagement includes reflexive field notes and embodied observations of feeding practices. As an integrated approach this study enables a holistic understanding of early feeding dynamics across diverse maternal populations.

The analysis focuses on four interrelated domains: (1) breastfeeding practices and challenges, including latch difficulties, anatomical variations, and infant acceptance; (2) emotional and physiological dimensions of mother–infant bonding during feeding; (3) perceived limitations of existing feeding aids such as pacifiers and nipple shields; and (4) participatory co-creation of personalized feeding solutions, informing design principles and early-stage concepts aimed at optimizing bonding and maternal comfort.

Consistent with Open Science principles, all study protocols, survey instruments, and anonymized datasets will be made openly available to support transparency, reproducibility, and secondary research. Building on established Open Innovation in Science (OIS) approaches (Beck et al., 2020, 2021; Beck, Poetz, & Sauermann, 2022; Beck, Grimpe, Poetz, & Sauermann, 2023), mothers are actively involved in study design, interpretation, and solution development, demonstrating how participatory Open Science can accelerate socially relevant innovation.

By integrating methodological rigor, stakeholder participation, and Open Science practices, this research generates actionable insights for healthcare providers,

policymakers, and product developers. It illustrates how transparent, participatory research can bridge scientific knowledge and real-world application, contributing to improved maternal and infant health while advancing the discourse on societally engaged Open Science.

PRACTICE PAPER SESSION

PP 11

Practice Paper 11: Open Science and Collaboration in Horizon Europe: The Key Impact Pathway Approach

Leonardo Zanobetti, Roberto Volpe, Guillermo Kreiman Seguer, Daniel Neicu

Collaboration and open science are two key features of Horizon Europe, the European Commission's research and innovation (R&I) funding programme. Horizon Europe supports universities, research centres, businesses, and other R&I organisations through a range of actions, from fundamental science to disruptive innovation. By promoting multidisciplinarity and collaboration across borders, Horizon Europe encourages knowledge diffusion: according to the most recent data, over 29,400 distinct organisations have received funding, joining on average 3.9 projects.

Horizon Europe is underpinned by a comprehensive monitoring and evaluation framework, which is outlined in the Regulation establishing the programme. The cornerstone of Horizon Europe's monitoring and evaluation frameworks are the Key Impact Pathways (KIPs). The KIPs are nine "storylines", based on the programme's specific objectives, tracking the scientific, economic, and societal impact of the programme. Among the KIPs, one is dedicated to "fostering diffusion of knowledge and open science."

Progress along KIPs is tracked based on proxy indicators, sequentially arranged so that they capture research outputs ("short-term"), outcomes ("medium-term") and wider impact ("longer-term"). In the short term, the Commission monitors the share of research outputs available in open access; in the medium term, whether the open access outputs are actively used or cited; and in the longer term, it examines collaborations stemming from these open access products. Currently, less than five years since the start of the programme, data on outputs feeds the short-term KIPs: the results of research take several years to manifest in the data. The evidence base is now sufficiently large to put the methodology for the medium- and longer-term KIPs into practice, and extract insights relevant for the design of the next Horizon Europe programme, starting in 2028.

With this research paper, we aim to explore methodologies to construct the medium- and longer-term indicators for the KIP on "fostering diffusion of knowledge and open science", and to build analytical insights from these indicators. The methodological discussion will be accompanied by an analysis of relevant data on collaboration networks and open science, based on the European Commission's extensive Horizon Europe data repository, which gathers all the information provided by project beneficiaries. Data from beneficiary reporting is matched to both open access sources (OpenAIRE repository) and commercial databases (Scopus) to which the European Commission has access.

Overall, the paper will seek to explore the most suitable way of accounting for the role of Horizon Europe in promoting "open science" and collaboration, considering the diversity of Horizon Europe's programme components.

PRACTICE PAPER SESSION

Practice Paper 12: Liberata – Open Access Academic Publishing with Incentivized Quality Controls and Improved Scientometrics

Han Zhang, Anshuman Sabath, L. Catherine Brinson

PP 12

Liberata is an open access academic publishing platform that uses a share-based model to accredit and incentivize authors, peer reviewers, and replicators for their work in original research and quality control. Rooted in the Latin "liber" (book) and "rata" (ratio), Liberata aims to "liberate" scholarly publishing from entrenched rent-seeking behaviors and maligned incentives structures of the current academic publishing system.

Instead of traditional author orderings, Liberata introduces a continuous contribution-share system in which each contributor receives fractional ownership (shares) of a manuscript proportional to their contributions to the manuscript. These shares do not have financial value, but allow for quantification of relative contribution distances between any pair of authors, and form the basis for a rich novel set of metrics measuring academic impact.

In addition, the Liberata platform has two marketplaces for authors to exchange credit on their manuscript for peer-review and replication services respectively. Peer reviewers are still anonymous, whereas replicators are not, allowing for the two forms of quality control to be qualitatively different and not just differences in effort. A transaction implies that the authors believe a quality control service costing 's' shares (s is between 0 and 1) would yield at least 1/(1-s) additional citations while the peer reviewer or replicator believes the time cost of doing the quality control work is less than a factor of 's' the time it would take for them to do their own comparable research project start to finish by themselves. This method of incentivizing quality control allows the peer reviewers and replicators to get additional credit if the paper becomes better written and receives more citations due to the quality controllers holding shares in the work, thereby shifting the main motivation for doing good faith quality control from appeasing editors (which do not exist in the Liberata system) or meeting quotas, to getting academic credit, in short, incentivizing doing good peer review (and replication) instead of getting peer review done.

With the system's credit assignment and marketplace mechanics, a novel set of metrics are possible which more accurately represent quantities of importance in academia. Liberata's metrics are built of multiple graphs. The Shares Graph represents authors, reviewers, and replicators as nodes connected to manuscripts by weighted edges denoting contribution shares. The References Graph models citation flows as a directed acyclic network of manuscripts, where each edge weight corresponds to fractional academic capital given as credit from one work to another. Graph-theoretic analysis using Laplacian spectra, spanning tree ratios, distributions, financial metrics, and more enables accurate quantification of parameters like impactfulness, riskiness, collaborativeness, and insularity of research, as well as relative and absolute expertise of researchers, institutions, geographic regions, and time periods.

In essence, Liberata transforms academic publishing into a transparent, open-access ecosystem governed by measurable contributions and market logic. By embedding authorship, peer review, and replication within a unified share-based economy, it replaces opaque prestige systems with quantifiable academic capital—creating a scalable infrastructure for fair recognition, reproducibility, and open science.

Parallel Session III

Tuesday 12 May | 10:30 – 12:00

5

Paper Session 5: Microfoundations of Openness: Motivation, Attention, and Evaluation

Paper 14: Can Probabilities Rescue Risky Science? A Field Experiment on Grant Peer Review
Christoph Grimpe, Lakshya Katariya, **Cindy Lopes Bento**

Paper 15: Expertise and Attention: How Variance in Evaluator Experience Influences the Selection of Scientific Ideas
Priscilla Serwaah, Jacob Lund Orquin, **Lars Frederiksen**

Paper 16: Rethinking Research Assessment: Participatory Design and Incentives for Open and Collaborative Research
Marion Garaus, Nora Ruck, Anoel Alshuth, Dominik Drexel, Jonas Hofmann

Paper 17: The Itch to Know: A New Look at the Role of Interest in Science
Henry Sauermann

6

Paper Session 6: Uncertainty and Value Signals in Generating and Translating Science

Paper 18: "Who Gets In?" Corporate Affiliation, Reviewer Discourse, and Manuscript Selection in AI Research
Quentin Plantec, Etienne Capron, Florian Carichon, Romain Rampa

Paper 19: Does Fraudulent Science Hurt Biomedical Entrepreneurship? Evidence From Venture Capital
Jiancong Liu, Moksh Matta, **Yi Ding**, Haifeng Xu, Rajiv Kozhikode

Paper 20: Serendipity and Unequal Returns to Discovery
Andrés Madariaga Espinoza, Stijn Kelchtermans

Paper 21: Misleading Science Maps: Firms' Strategic Responses to Data Malpractice in Alzheimer's Research
Matteo Tranchero, Christian Fons Rosen, **Lee Fleming**

SESSION 5

PAPERS 14–17

TUESDAY
10:30–12:00

PAPER SESSION 5

Paper 14: Can Probabilities Rescue Risky Science? A Field Experiment on Grant Peer Review

Christoph Grimpe, Lakshya Katariya, Cindy Lopes Bento

14

Novel ideas underpin breakthrough innovation, yet growing evidence suggests that peer review in science funding is systematically risk-averse, disadvantaging high-risk, high-reward proposals. A key reason is that the status-quo review format bundles multiple considerations into a single overall judgment and criterion scores, leaving risk–return trade-offs implicit and hard to defend. We test whether a Subjective Expected Utility (SEU) review format can counteract this tendency in a real grant competition.

Compared to traditional evaluation forms, SEU makes reviewers state the risk–return logic explicitly. Instead of scoring proposals mainly through fixed criteria grids, reviewers identify a small set of plausible outcomes for a project (which can coincide with the ones stated in the proposal, but don't have to), assign each outcome a probability of success (0–1), and rate its scientific and social impact (1–10) with short justifications. This structure is particularly well-suited to grant evaluation because proposals often involve uncertain pathways and uneven payoffs, exactly the setting where implicit risk aversion can dominate and where explicit probabilities can clarify disagreements and trade-offs.

We implement a field experiment using 133 proposals across six disciplinary areas. Each proposal is assigned four external reviewers via an independent recruitment agency's standard procedures. The first three reviewers to confirm complete the standard evaluation (control). The fourth to confirm completes the SEU evaluation (treatment), yielding one treated and three untreated reviews per proposal. Because confirmation timing is unrelated to proposal content, assignment is effectively exogenous. The study is designed to preserve naturalistic reviewing: agency staff are unaware of the experiment, and treated reviewers are told the SEU form reflects updated funder guidelines.

Control reviewers score four standard criteria and provide an overall rating (C, B, A, A+). Treated reviewers complete (1) the SEU task and then (2) a shortened standard form, allowing us to test both direct effects on fundability and whether SEU exposure shifts conventional scoring. From SEU responses we compute Total Expected Utility (TEU) by aggregating outcome-level impacts weighted by probabilities, and we separately recover proposal-level Risk (mean success probability) and Value (mean impact), enabling a transparent risk–reward profile for each proposal.

Our primary outcome is fundability: we compare proposal rankings and funding decisions implied by the traditional approach versus TEU-based ranking under matched funding cut-offs. Crucially, we go beyond identifying whether rankings differ: leveraging full information on proposals, applicants, and reviewers, we decompose where differences come from, and whether they are driven by proposal

characteristics (risk/return profiles), PI attributes, or systematic reviewer tendencies, allowing us to identify which types of reviewers and proposals are most likely to change position under SEU.

By providing a causal test of SEU in an operational grant competition, this study informs low-cost, scalable redesigns of peer review that make risk–return trade-offs explicit and potentially improve the selection of high-risk, high-reward science.

PAPER SESSION 5

Paper 15: Expertise and Attention: How Variance in Evaluator Experience Influences the Selection of Scientific Ideas

Priscilla Serwaah, Jacob Lund Orquin, Lars Frederiksen

15

The selection of novel scientific ideas is critical for progressing innovation, yet this process increasingly occurs beyond traditional expert peer review. Scientific crowdfunding platforms like Experiment.com now enable non-experts to fund research proposals, introducing fundamental heterogeneity in evaluator expertise. This shift raises a critical question: To what extent do experts and non-experts evaluate scientific proposals differently, and what cognitive mechanisms drive these differences? Understanding these dynamics is essential, as crowdfunding may gradually reshape the landscape of scientific funding and idea selection.

Existing research examines variance among expert reviewers in traditional peer review (Boudreau et al., 2016; Criscuolo et al., 2017) and compares experts to non-experts in equity-based and reward-based crowdfunding contexts (Chen et al., 2024; Lin et al., 2023). However, two critical gaps remain. First, prior studies focus on decision outcomes (who funds what) while overlooking the cognitive mechanisms—specifically, visual attention allocation—that produce these outcomes. Second, research assumes evaluators process all available information equivalently, ignoring how expertise shapes what information evaluators actually attend to when making funding decisions. This gap is particularly problematic in scientific crowdfunding, where proposals may contain more or less technical information requiring domain knowledge to interpret.

We address these gaps by investigating how evaluator expertise shapes visual attention allocation during scientific proposal evaluation and how attention patterns influence funding decisions. We draw on attention-based view (Ocasio, 2011), which posits that what decision-makers focus on determines organizational outcomes, and research on expert cognition (Gegenfurtner et al., 2011), which demonstrates that experts exhibit superior selective attention to task-relevant stimuli. We theorize that expertise fundamentally alters attention allocation during proposal evaluation. Experts, possessing domain-specific cognitive schemas, should demonstrate focused attention on scientifically diagnostic information—research methodology, theoretical contribution, data analysis plans—while efficiently filtering aesthetic and peripheral cues. Non-experts, lacking specialised schemas, should distribute their attention more diffusely across proposal elements, potentially overemphasizing presentation quality, visual appeal, and team credentials relative to scientific merit. Critically, we argue that these attention differences mediate the relationship between expertise and funding decisions. Experts and non-experts do not simply reach different conclusions about the same information; they fundamentally process different information because they attend to different proposal elements. This attentional mechanism has been overlooked in prior research comparing expert and crowd-based evaluation.

We test these predictions using a controlled laboratory experiment combining surveys with eye-tracking technology. We recruited 58 non-expert evaluators

(individuals with no research training or experience) and 20 expert evaluators (PhD students and faculty members with active research programs) who evaluated 20 authentic scientific proposals from Experiment.com across diverse disciplines. Eye-tracking captured real-time visual attention allocation, measuring fixation duration, fixation count, and dwell time across proposal sections, including budget, methodology, team credentials, images, and scientific rationale. Participants then made funding decisions (willingness to fund, proposed funding amount) for each proposal. This design enables us to directly link attention patterns to funding outcomes while isolating the effect of expertise.

This study makes three theoretical contributions. First, we reveal the cognitive mechanisms—visual attention allocation—that produce differences between expert and non-expert evaluation of scientific ideas, moving beyond documenting outcome differences to explaining underlying processes. Second, we extend the attention-based view to innovation contexts by demonstrating how expertise shapes what information is attended to during idea selection. Third, we provide actionable insights for scientific crowdfunding platforms regarding proposal design and evaluator recruitment strategies that account for cognitive differences across evaluator populations.

PAPER SESSION 5

Paper 16: Rethinking Research Assessment: Participatory Design and Incentives for Open and Collaborative Research

Marion Garaus, Nora Ruck, Anoel Alshuth, Dominik Drexel, Jonas Hofmann

16

Research assessment systems shape which activities are valued and how research is conducted. Metrics-based frameworks often overlook contributions such as open and collaborative research, policy advice, societal engagement, interdisciplinary collaboration, and science communication (Benedictus et al., 2016). While the importance of open and collaborative science for research quality and impact is widely recognized, existing literature largely focuses on implementation at the individual level (Alessandroni et al., 2022; Branney et al., 2023). Some work extends to ecosystem-level measures, such as incentivizing open-access and open-science practices through positive recognition (Aguinis et al., 2020).

In response to criticism of purely quantitative indicators, recent international initiatives have placed open science at the center of research assessment reform. At the European level, the ERA Policy Agenda 2025–2027 identifies open science as a structural policy while the Agreement on Reforming Research Assessment (2022) promotes qualitative, peer-reviewed evaluation and emphasizes collaboration among researchers and with society. Building on these developments, Rethinking Research Assessment focuses on collaborative practices in the reform of research assessment and accompanies ongoing reforms at Sigmund Freud Private University (SFU), addressing the following research questions:

• How does participatory engagement in the reform of assessment influence the role of open and collaborative science in the reformed criteria, processes, and instruments?

• How do participatory “contact zones” mediate between diverse research cultures and institutional assessment requirements?

• What challenges and trade-offs emerge when implementing participatory reform at scale?

The project combines the practical implementation of research assessment reform with scientific investigation to generate evidence-based insights into the role assessed researchers themselves assign to open, collaborative, and socially relevant research when they are invited to participate in reforming the research assessment criteria, processes, and instruments employed by their institution. Funded through Cascade Funding as part of the Horizon Europe CoARA Boost project, the project CoARAverse in Psychology aims at piloting research assessment reform at the Faculty of Psychology of SFU before extending the approach to a university level. Researchers at the Faculty of Psychology directly affected by the reforms are engaged through a methodology grounded in Critical Participatory Action Research (CPAR; e.g., Fine et al., 2021), which shares foundational principles with citizen social science (Thomas, Schröder & Scheller,

2019). It emphasizes involving those directly affected by institutional change, centering underrepresented voices, and fostering transformation through collective action. In “Participatory Contact Zones” (PCZ; Torre et al., 2008), multiple stakeholder perspectives are brought into deliberation to co-construct research assessment criteria and practices.

The current faculty-wide CoARAverse working group includes representatives of all four research priorities, spans all career stages and reflects linguistic, cultural, and gender diversity. The working group is engaged in reforming three assessment instruments at both the individual and organizational level: The Research Report, depicting SFU’s research output on an annual basis, including open science measures, the Development Interview, recognizing diverse contributions, including “research-related care practices, and the External Research Evaluation, based on external peer-review and formative guiding questions instead of target values.

At OIS, we will present how this participatory assessment reform is implemented and scientifically accompanied as an institutional change process, focusing on how participatory engagement shapes the role of open and collaborative research practices in the reformed assessment criteria, instruments, and processes. Drawing on early empirical insights from the pilot phase, we discuss how participatory “contact zones” function as mechanisms for co-producing assessment instruments, fostering legitimacy and trust across diverse research cultures, while also addressing emerging challenges such as differing expectations, time demands, and scalability. By conceptualizing research assessment reform as a participatory process rather than a purely technical intervention, the contribution advances the literature on open and collaborative science and institutional design and offers empirically grounded insights for organizations seeking to implement CoARA-aligned reforms.

PAPER
SESSION 5

Paper 17: The Itch to Know: A New Look at the Role of Interest in Science

Henry Sauermann

17

We examine the role of personal interest as a fundamental, but underexplored, driver of scientists' behavior and the direction of scientific knowledge production. Classic and contemporary accounts of scientific work - from Darwin and Einstein to Ostrom - repeatedly highlight curiosity and fascination with particular phenomena. Yet most formal models of science still emphasize accumulated knowledge and extrinsic incentives such as career prospects, funding, or social impact. We propose that interest in specific objects of inquiry is a distinct micro-foundation of scientific behavior with important implications for openness, collaboration, and science–policy relations.

Building on psychological research on interest, we conceptualize interest as personXobject specific, often triggered by perceived novelty, and co-evolving with knowledge. Interest is thus not a generic love of "science," but a focused orientation toward specific organisms, mechanisms, materials, methods, or problems. Situational interest may be sparked when a novel or surprising object opens a perceived knowledge gap; through repeated engagement and growing competence, this situational interest can develop into more stable individual interest. Over time, interest may wane as knowledge gaps close, or deepen as new questions emerge and expectations are violated. These dynamics imply that interest can both stabilize scientists' attachment to particular research areas and redirect them toward adjacent or newly discovered objects.

We then explore empirically how interest operates in science-related education and careers using two large-scale datasets. First, we use data from the PISA 2006 study of high school students to document patterns of interest in six scientific domains (physics, chemistry, astronomy, geology, plant biology, human biology). We show that interests are strongly field-specific rather than uniform across science, and that there is substantial heterogeneity by gender and socioeconomic background. Interest in science is positively associated with science literacy scores even after controlling for demographics and perceived instrumental value, suggesting that interest and knowledge co-evolve already in school. Interest is also strongly related to science-oriented career plans, indicating that early, domain-specific interests shape who is likely to enter different parts of the scientific system.

Second, we draw on the Nature Postdoc Survey, a global survey of postdoctoral researchers, to study interest as a driver of effort and persistence in scientific careers. Among 20 different job attributes and rewards, satisfaction with the "interestingness" of work emerges as one of the strongest predictors of overall job satisfaction, and by far the strongest predictor of extra hours worked beyond contractual obligations. Interest also strongly predicts intentions to pursue an academic research career, even when controlling for perceptions of skill gaps and job market opportunities. These patterns are consistent with interest being a powerful motivator that is less subject to satiation than many extrinsic rewards.

We then use the lens of interest to reinterpret recent evidence on scientists' topic choices later in their careers. Studies of tenure decisions and topic-focused research calls show that scientists often require sizable "premia" to shift into funders' preferred topics and frequently drift back to their previous topics after grants end—even when the targeted areas appear highly productive. An interest-based perspective helps explain these puzzles: if the topics emphasized by policy-makers and funders are less interesting to scientists than their current work, large compensating differentials are needed to overcome this preference gap, and redirections may be temporary.

Finally, we outline a research agenda on interest as a micro-foundation of the rate and direction of research, including open and collaborative research. Among others, interest may shape scientists' decisions to engage in distant research areas, including interdisciplinary work on topics that pique their curiosity. Shared interest in the same topic may also explain the formation of teams – or "interest groups" – that transcend traditional disciplinary boundaries. At the same time, the interests of citizens, philanthropists, and reviewers matter for what science gets done or gets published: citizen science and crowdsourcing projects flourish in "interesting" domains like ornithology or astronomy but struggle in less popular areas, potentially biasing which data and insights are generated. Philanthropic funders' idiosyncratic interests can steer entire emerging fields, while AI systems used for reviewing, recommending, or prioritizing research may embed particular notions of "interestingness" at scale.

These micro-level interest dynamics have important consequences for science–policy alignment. If scientists' interests cluster in certain domains and diverge from policy or societal needs, open and collaborative mechanisms may either exacerbate or mitigate these misalignments, depending on whose interests become amplified. Understanding interest as a distinct, object-specific motivation therefore helps explain not only who participates in open and collaborative science, but also which problems receive attention and how scientific evidence feeds into policy processes.

SESSION 6

PAPERS 18–21

TUESDAY
10:30–12:00

PAPER SESSION 6

Paper 18: "Who Gets In?" Corporate Affiliation, Reviewer Discourse, and Manuscript Selection in AI Research

Quentin Plantec, Etienne Capron, Florian Carichon, Romain Rampa

18

Firms increasingly participate in academic publishing and selective conferences to recruit talent (e.g., Stern, 2004; Roach & Sauermann, 2010), signal quality (e.g., Polidoro & Theeke, 2012; Simeth & Cincera, 2016), complement intellectual-property strategies (e.g., Baker & Mezzetti, 2005), and shape trajectories of knowledge search (Alexy et al., 2013; Baruffaldi & Poege, 2025; Hartmann & Henkel, 2020). Yet we know surprisingly little about how corporate participation is processed at the point of scientific gatekeeping: peer review. Drawing on work on peer-review bias (e.g., Teplitskiy et al., 2018), we argue that corporate affiliation may cut in two directions: industry-linked work can trigger skepticism about transparency, conflicts of interest, or departures from Mertonian norms, but pervasive corporate embedment may also reweight what counts as "novel," "significant," or "high-quality." We examine these dynamics in AI, an extreme case where conferences dominate publication and firms possess resource complements (compute, proprietary data, deployment environments) that can shape what reviewers deem persuasive (e.g., Hartmann & Henkel, 2020).

We study the International Conference on Learning Representations (ICLR) from 2017 to 2024, one of the only major AI conferences implementing open-review principles at scale. This allows us to link (i) full texts of desk-rejected, reviewed-but-rejected, and accepted submissions, (ii) the complete corpus of referee reports, and (iii) longitudinal author-affiliation histories. Because reviewers are anonymous, we analyze outcomes at the paper level, classifying provenance (university vs. industry) and examining selection (desk rejection and acceptance) alongside review scores and review text as institutionalized evaluative discourse.

We show that first, institutional provenance predicts selection: industry involvement, especially affiliations with top AI companies, is associated with higher acceptance prospects, consistent with firms' capability to produce "review-ready" science through greater resources, infrastructure, and learned competence in meeting conference norms (e.g., Hartmann & Henkel, 2020). Second, we show that evaluative standards vary within AI as a function of sub-field corporate participation. In sub-fields with high corporate participation, the marginal payoff to novelty is weaker for university submissions, consistent with a crowd-out mechanism as criteria aligned with corporate resource complements (e.g., scale, performance demonstrations, engineering completeness) become more central to what is rewarded. In sub-fields with low corporate participation, novelty yields stronger returns for university work. Third, gatekeeping integrity is reassuring: acceptance is primarily score-driven, and among papers with closely similar reviewer scores we do not detect track-chair favoritism toward industry over academia, suggesting that nepotism-like behavior at the final decision stage does not explain observed differences.

Overall, we contribute by being among the first to open the black box of how corporate affiliation is processed inside conference peer review, rather than relying on published-only outcomes. We further theorize variation in sub-field corporate participation as a mechanism that can simultaneously advantage firms through organizational capability and reconfigure the practical standards of merit applied in evaluation, even under ostensibly anonymous review (e.g., Teplitskiy et al., 2018).

PAPER SESSION 6

Paper 19: Does Fraudulent Science Hurt Biomedical Entrepreneurship? Evidence From Venture Capital

Jiancong Liu, Moksh Matta, Yi Ding, Haifeng Xu, Rajiv Kozhikode

19

Biomedical entrepreneurship plays a critical role in translating scientific discoveries into life-enhancing and life-saving innovations. Given the long development cycles, regulatory hurdles, and high uncertainty inherent in biomedical innovation, venture capital (VC) funding is often indispensable for the survival and growth of biomedical startups. Yet, despite its societal importance, the biomedical startup ecosystem is highly vulnerable to environmental shocks that can undermine investor confidence and constrain the flow of capital. Prior research has documented how competition from incumbents, macroeconomic downturns, and regulatory changes affect venture capital investments in biomedical ventures. However, little is known about how failures in the governance of biomedical science itself—particularly scientific misconduct and subsequent article retractions—shape entrepreneurial finance.

This study examines whether and how academic retractions in biomedical science affect venture capital funding for biomedical startups. Retractions are a visible and consequential signal of failure in scientific governance, often associated with fabricated or falsified research. While prior research has primarily focused on the reputational consequences of retractions for individual scientists or the scientific community at large, we investigate whether these events also generate negative spillovers that extend into the commercialization domain. Specifically, we ask: Do biomedical article retractions reduce VC funding for biomedical startups, and if so, through what mechanisms and under what conditions?

We build our theoretical framework on the concepts of legitimacy loss and categorical generalization. Startups already suffer from a pronounced "liability of newness," as they lack established track records and depend heavily on the perceived credibility of the scientific foundations underlying their technologies. Retractions directly challenge the credibility of scientific knowledge and may therefore undermine the legitimacy of ventures associated with similar technological domains. Drawing on legitimacy theory and social identity theory, we argue that VCs may generalize from salient instances of scientific misconduct to broader categories of biomedical technologies, leading them to downgrade the perceived legitimacy and investment attractiveness of otherwise unrelated startups. Such generalizations are particularly likely under conditions of uncertainty, limited information, and risk aversion.

Empirically, we leverage a highly publicized retraction scandal in biomedical science as a quasi-natural experiment. In October 2018, Harvard Medical School and Brigham and Women's Hospital recommended the retraction of 31 biomedical articles from Dr. Piero Anversa's laboratory, which focused on cardiac stem cell research and were found to involve fabricated or falsified data. The scandal

received widespread media attention and raised concerns about the credibility of stem cell research more broadly. We exploit the timing of this event to examine changes in venture capital funding before and after the retractions.

Our primary data come from Crunchbase and include 200,173 venture capital funding events involving 73,505 startups across 150 countries between 2011 and 2022. We implement a difference-in-differences design that compares changes in VC funding for biomedical startups relative to non-biomedical startups before and after the retraction event, while controlling for startup fixed effects, time fixed effects, country-year fixed effects, and investment type fixed effects. This approach allows us to isolate the impact of the retraction shock from broader trends in venture capital markets.

Our results reveal a substantial and economically meaningful decline in VC funding for biomedical startups following the retraction scandal. Relative to non-biomedical startups, biomedical ventures experienced a significant reduction in the amount of capital raised after the retractions. Event-study analyses confirm that treatment and control groups followed parallel trends prior to the shock, supporting the validity of our identification strategy. We further examine the scope of VCs' generalization by distinguishing between startups directly related to cardiac stem cell research, other biomedical startups unrelated to cardiac or stem cell technologies, and non-biomedical health startups. The findings indicate that while the negative impact is strongest for startups directly linked to the retracted research domain, it also extends to biomedical startups working on unrelated technologies. In contrast, non-biomedical health startups are not significantly affected. These results suggest that VCs generalize within the broader biomedical category but do not extend their negative inferences indiscriminately to distant technological domains.

Recognizing that generalization is often shaped by risk preferences, we next examine heterogeneity in VC responses. We show that the negative spillover effects of retractions are significantly stronger when funding comes from more risk-averse investors. Specifically, biomedical startups unrelated to cardiac stem cell research receive less funding from VCs with prior experience of failed biomedical investments, from investors providing debt-based financing rather than equity, and from VCs operating in less mature financial markets. These findings indicate that generalization serves as a risk-management heuristic, particularly for investors who are more sensitive to downside risk.

To assess the generalizability of our findings beyond a single high-profile scandal, we construct a broader measure of exposure to biomedical retractions by compiling retractions from leading biomedical journals and computing semantic similarity between retracted articles and startup descriptions. Using this continuous measure of retraction exposure, we show that greater cumulative exposure to retractions is associated with significantly lower cumulative VC funding and fewer funding rounds. This pattern reinforces our core argument that failures in scientific governance can systematically dampen entrepreneurial finance.

Taken together, this study makes three main contributions. First, it extends research on venture capital and entrepreneurship by identifying failures in scientific

governance as an important but overlooked environmental risk for technology startups. Second, it advances the literature on academic retractions by demonstrating that their negative spillovers extend beyond science to affect commercialization and innovation outcomes. Third, it sheds light on the behavioral foundations of VC decision-making, showing how legitimacy-based generalizations and investor risk preferences jointly shape funding dynamics.

Our findings carry important implications for biomedical entrepreneurs, who must navigate not only technological and regulatory uncertainty but also institutional risks originating in the scientific ecosystem. They also underscore the broader societal costs of scientific misconduct, highlighting the need for stronger governance mechanisms to preserve trust in science and sustain investment in biomedical innovation.

PAPER SESSION 6

Paper 20: Serendipity and Unequal Returns to Discovery

Andrés Madariaga Espinoza, Stijn Kelchtermans

20

Why do some researchers benefit more than others from discovering the same idea? Although scientific discoveries are often attributed to ingenuity, accumulated expertise, or deliberate search efforts, many arise under serendipitous conditions, such as unexpected domain entry or knowledge recombination. Serendipity has attracted sustained attention in innovation studies, including recent conceptual advances clarifying its antecedents and boundaries (e.g., Busch, 2024). Much of this work treats serendipity as a distinctive event to be explained, or as a form of luck or unobserved shock that shapes which ideas are discovered. While this view is compelling, it offers limited insight into whether and how serendipity can be consequential for subsequent search behavior and for the unequal returns that the same discovery can generate.

Building on diagnosticity theory (Denrell, Liu, and Maslach, 2023), we suggest that discovery conditions vary in how much they reveal about underlying search behavior. Discoveries achieved under low predictability conditions, such as unfamiliar domains or distant search paths, are more informative because behavior in these settings is less constrained by established routines and prior experience. Serendipitous discoveries represent an especially revealing case; they arise when scientists encounter unexpected findings under such low predictability conditions, creating moments in which habitual search patterns exert weaker influence. Subsequent choices about whether to further develop an unexpected idea or drift away from it therefore provide a clearer window into individuals' latent search orientation.

Extant theory offers competing priors about how scientists respond to such discoveries. Behavioral research suggests that past success can reinforce familiar schemas and induce cognitive narrowing, leading scientists to exploit unexpected ideas intensively (Audia and Goncalo, 2007). At the same time, the recombinant uncertainty view emphasizes that unfamiliar combinations expand the space of feasible actions and increase outcome variance, making continued exploration possible (Fleming, 2001). We integrate these perspectives by arguing that serendipitous discoveries do not systematically push scientists toward either exploitation or exploration. Instead, they reveal persistent heterogeneity in how scientists search. Because these orientations can shape how aggressively scientists exploit versus continue exploring, serendipitous discovery paths predict divergent returns even when idea quality is held constant.

We examine these arguments using a within-idea research design based on "paper twins," defined as pairs of independently published articles that develop highly similar ideas within the same year. Using more than 10,000 twin pairs across eight major scientific disciplines, we measure serendipitous discovery conditions using

indicators of intellectual distance between authors' prior work and the focal discovery, as well as the atypicality of knowledge recombination embodied in the discovery. Regarding outcomes, we examine both post-discovery search trajectories and researcher-level returns to discovery. We further trace the intellectual similarity between the focal discovery and first authors' subsequent publications over a five-year window to assess how closely scientists remain tied to the original idea or move into new lines of inquiry. We also examine citation impact attributable to the researcher to capture differential returns from discovery. By conceptualizing serendipity as a diagnostic feature of discovery paths rather than as an isolated event, we explain why scientists who discover the same idea often benefit unequally from it. More broadly, we show how unplanned discoveries reveal persistent differences in how scientists search and how those differences shape scientific returns.

PAPER SESSION 6

Paper 21: Misleading Science Maps: Firms' Strategic Responses to Data Malpractice in Alzheimer's Research

Matteo Tranchero, Christian Fons Rosen, Lee Fleming

21

Why do firms invest in basic science when they could rely on published academic research? We argue that one overlooked reason is the uncertain reliability of science itself. When basic science is required for product development, corporate control of the research process serves as a substitute for the low verifiability of findings produced externally. Firms retain in-house research capabilities to assess, produce, and validate the studies needed for their innovations, particularly in domains where science is less dependable. We investigate this argument in the context of Alzheimer's preclinical research, where inappropriate image alterations provide an objective marker of unreliable data.

Using an AI-based detection tool validated through manual review, we scan the entire field and document a rising trend of data issues in published science. Problematic cases are less frequent when firms lead academic-industry collaborations and are nearly absent in fully corporate-authored research. In domains where academic science is less reliable, firms are more likely to conduct basic research internally and to build their inventions on these in-house studies. Our results identify scientific reliability as a neglected determinant of the "research boundaries" of the firm.

Parallel Session IV

Tuesday 12 May | 17:00 – 18:30

7

Paper Session 7: Crowd Science and Public Participation

Paper 22: Listening to the Crowd? Experts' Responsiveness to Knowledge versus Preference Inputs in Project Selection
Susanne Beck, Egor Burda, Marion Poetz, Henry Sauermann

Paper 23: Open to All? Unequal Participation in Citizen Science and What it Means for Open Innovation
Daniel Dörler, Gabriele Reithner, Clemens Posselt, **Barbara Heinisch**, Florian Heigl, Daniel Kräftner, Katharina T. Paul

Paper 24: Basic Psychological Needs and Crowd Science for Tackling Grand Challenges: Insights from East Africa's Coffee Sector
Caroline Kunesch, Christian Garaus

8

Paper Session 8: Data Ecosystems and Commons for Open and Collaborative Sciencee

Paper 25: Industrial Data Ecosystems: Orchestrating Multi-lateral Data Sharing for Productivity and Policy Impact
Krithika Randhawa

Paper 26: Commoning Complexity for Actionable Data: Organizing Shared Sensor Data for Societal Impact through Leveraging Relational Infrastructures
Julia Christis, Lukas Falcke, Philipp Tuertscher, Hans Berends

Paper 27: Decentralizing Science: Market and Commons Pathways
Paolo Leone

SESSION 7

PAPERS 22–24

TUESDAY
17:00–18:30

PAPER SESSION 7

Paper 22: Listening to the Crowd? Experts‘ Responsiveness to Knowledge versus Preference Inputs in Project Selection

Susanne Beck, Egor Burda, Marion Poetz, Henry Sauermann

22

Involving the public (“crowd”) in project selection using online platforms is increasingly common in innovation and science. We argue that the prevalent mechanisms to solicit crowd opinions – such as voting – confound two distinct types of inputs from the crowd: “knowledge” and “preferences”. While both inputs shape crowd decisions, we propose that these conceptually distinct types of inputs have different values for expert decision makers who eventually select among choice options. Moreover, we hypothesize that experts will incorporate crowd knowledge more extensively in their final decisions if that knowledge was provided by a self-selected crowd, while they will incorporate crowd preferences more extensively if the input comes from a randomly selected and representative crowd. To test our hypotheses, we plan to conduct a large-scale online experiment in the context of selecting medical research projects for funding, manipulating the type of crowd input (knowledge vs. preferences) and the crowd-selection mechanism (random selection vs. self-selection). Our study seeks to advance research on the role of crowds in supporting expert decision making as well as research on the effective design of online platforms for crowdsourcing. Our findings will also have broader implications for crowdsourcing practices in innovation, science, and politics.

PAPER SESSION 7

Paper 23: Open to All? Unequal Participation in Citizen Science and What it Means for Open Innovation

Daniel Dörler, Gabriele Reithner, Clemens Posselt, Barbara Heinisch, Florian Heigl, Daniel Kräftner, Katharina T. Pauls

23

Citizen science is widely promoted as a cornerstone of open and collaborative research. By inviting non-academic actors to contribute to data collection, analysis and even agenda setting, citizen science promises to democratize knowledge production, strengthen trust between science and society and enhance the societal relevance of research. Project leaders frequently emphasize inclusivity with claims such as “everyone can take part”. Yet, empirical evidence on who actually participates (and who is excluded) remains limited. This gap is particularly interesting from the perspective of open innovation in science, which seeks to understand under which conditions openness and collaboration translate into greater productivity and societal impact. This study addresses that gap by examining participation and non-participation, motivations and barriers to engagement in citizen science through a representative national survey conducted in Austria.

Drawing on data from 1,000 respondents, the study investigates awareness of citizen science, willingness to participate, prior engagement and perceived incentives and obstacles. By moving beyond analyses of active participants alone, the research adopts a more holistic perspective on the citizen science landscape, explicitly including those who are disengaged or skeptical. This approach helps examine open and collaborative practices by extending analysis beyond active participants to include non-participants, offering a novel and more comprehensive understanding of inclusion and exclusion in citizen science.

The findings challenge the assumption that citizen science initiatives are equally accessible to all. The survey reveals that participation in citizen science is unevenly distributed and shaped by both structural and motivational factors. Individuals with higher levels of formal education show significantly greater interest in participation, while older respondents and those with lower educational attainment are more likely to express disinterest.

Non-participation is driven less by opposition to science than by perceived barriers that limit engagement. The most frequently cited barrier is lack of time, followed by perceptions that participation is not fun or is tedious and boring. Additional obstacles include a perceived lack of required competences, doubts about the relevance of citizen science for everyday life and the belief that citizen science is primarily aimed at children. These findings suggest that informal exclusion mechanisms persist even in ostensibly open and accessible participation formats.

Motivations for participation are driven primarily by curiosity, which emerges as the strongest factor, followed by interest in academic research and the perception

of citizen science as a meaningful leisure activity. Respondents are also motivated by opportunities for integration into real research processes, conducting their own research and personal connections to the topic. Social motivations (such as meeting like-minded individuals and having direct contact with researchers) play a secondary role. Overall, the findings point to a mismatch between the inclusive ambitions of citizen science and the expectations and experiences of diverse societal groups, highlighting the need for more differentiated and inclusive design of open and collaborative research practices.

From an open innovation in science perspective, these findings underscore that inviting participation alone does not guarantee inclusivity. Participant recruitment and online platforms may inadvertently privilege groups already close to science, while excluding those with fewer resources and lower science capital. Citizen science thus illustrates a central tension in open and collaborative research: while lowering formal barriers, it may reproduce informal ones unless deliberate efforts are made to address them.

The study contributes to the open innovation in science literature by systematically incorporating the voices of non-participants (an approach that remains rare but is essential for evidence-based project design). Understanding why people choose not to (or cannot) engage is as important as understanding motivations for participation, particularly if citizen science is to fulfil its promise of democratizing research. These insights have practical implications for the entire academic research process. They point to the need for designing participation formats that resonate with diverse life situations and interests.

The results provide a foundation for discussing how citizen science initiatives can become more inclusive and socially robust. By offering nationally representative evidence, this study informs policymakers, research funders and citizen science practitioners about the structural conditions under which citizen science can broaden participation rather than reinforce existing inequalities. It also speaks to ongoing debates within open innovation in science about the limits of voluntarism and the responsibilities of academic institutions in fostering meaningful collaboration with society. Ultimately, the paper argues that citizen science can only live up to its inclusive ideals if openness is complemented by reflexivity, empirical evidence and sustained collaboration with those who are currently underrepresented.

PAPER SESSION 7

Paper 24: Basic Psychological Needs and Crowd Science for Tackling Grand Challenges: Insights from East Africa's Coffee Sector

Caroline Kunesch, Christian Garaus

24

Across scientific fields, the value of including citizens in open, collaborative research projects is widely recognized (Beck et al., 2022). Citizen science is considered particularly powerful for tackling grand challenges such as climate change and advancing sustainability transitions, as it involves those directly (and often disproportionately) affected (Poetz et al., 2024; Sauermann et al., 2020). A crucial area for such a transition is mitigating deforestation—one of the major drivers of climate change. This transition is increasingly prioritized by the EU, notably through the new Deforestation Regulation. The EU Deforestation Regulation requires traceability across agricultural supply chains to ensure that products such as coffee are not sourced from areas associated with clear-cutting or degradation for plantations, reducing forest health. Monitoring such unwanted land-use change is often satellite-based only, which makes it error-prone, risking false accusations of deforestation, preventing export to the EU, and thus jeopardizing smallholders' livelihoods.

Our planned research involves citizens to complement remote sensing with ground data provided by those affected—coffee smallholders in East Africa—and examines how to motivate sustained, high-quality citizen participation. Building on the open innovation in science (OIS) literature, we will co-create required technological solutions and strategies to motivate crowds to collect in situ and online data on deforestation.

Our focus on motivating contributors reflects a common theme in OIS research (Franzoni et al., 2022). Citizen science projects typically rely on participants intrinsic motivation (often stimulated through gamification) (Sauermann and Franzoni, 2015) or highlighting contributions to science or addressing grand challenges (Geoghegan et al., 2016). However, while extant literature has mainly focused on unpaid volunteers, planning such projects in contexts where citizens may rely on additional income to support their livelihoods, the ethical and socio-economic implications of rewards and their relationship with motivation must be (re-)considered (Hakley et al., 2021). Franzoni et al. (2022) call for a deeper analysis of reward effectiveness depending on the type and degree of crowd contribution to understand contributors' motivation throughout the research process, which might fundamentally differ for grand challenge-related projects in East Africa as compared to traditional contexts.

We aim to respond to this call by investigating how the degree of openness, the type of crowd contribution, and different rewards relate to contributors' motivation. We focus on the fulfillment of the basic psychological needs (autonomy, competence, relatedness) –defined in the self-determination theory (Ryan and Deci, 2000) to understand potential differences grounded in the socio-economic and political circumstances of affected smallholders.

We will employ qualitative methods, such as in-depth interviews, observations in workshops, and will use nonreactive sources for triangulation. Then, we will analyze the material using content analysis (Krippendorff, 2019).

We aim to contribute to the OIS literature by integrating insights from basic psychological needs to improve the understanding of the reward-motivation nexus in open, collaborative projects. Additionally, the context of a crowd science project in East Africa addressing the grand challenge of deforestation offers the potential to contribute novel insights to the ongoing discussion about the relationship between rewards and motivation.

SESSION 8

PAPERS 25–27

TUESDAY
17:00–18:30

PAPER SESSION 8

Paper 25: Industrial Data Ecosystems: Orchestrating Multi-lateral Data Sharing for Productivity and Policy Impact

Krithika Randhawa

25

Research Motivation

Open and collaborative practices are central to the productivity and societal impact of scientific research. Open Innovation in Science (OIS) scholarship has generated insights into how openness–through crowd science, citizen science, open data, and university–industry collaboration–shapes scientific productivity, largely at the level of projects, teams, and individual scientists (Franzoni & Sauermann, 2014; Sauermann et al., 2019; Beck et al., 2022). While this literature explains why scientists engage in openness and how collaboration influences research outputs, it remains limited in explaining how openness is organised, governed, and sustained at ecosystem scale across heterogeneous actors, including firms, public agencies, policymakers, and scientific institutions.

This gap is increasingly salient in industrial domains such as healthcare, manufacturing and energy, where scientific knowledge production, technological development, and policy implementation are intertwined. Here, openness extends beyond project-level collaboration to shared data infrastructures, governance arrangements, and coordination across science–industry–policy boundaries. We know little about such large-scale openness is designed and translated into system-level policy outcomes.

At the same time, governments and industries are investing in emergent technologies such as artificial intelligence, the Internet of Things, and digital twins. Yet, related productivity growth across sectors remains uneven, reinforcing the so-called "productivity paradox" where technological investment fails to yield aggregate gains (Brynjolfsson et al., 2017; Brynjolfsson et al., 2021). This paradox mirrors a core concern in OIS: why openness and collaboration do not automatically deliver their promised benefits.

I argue that the missing link lies in how multilateral data sharing is infrastructurally designed, governed, and embedded in ecosystems. Shifting the analytical focus of OIS to industrial data ecosystems, I ask: How do ecosystem-level designs enable open and collaborative science-based digital innovation in contexts where science, industry, and policy are tightly coupled?

Theoretical Framework

I develop a layered framework that connects OIS to productivity and policy impact, through three analytically distinct yet interdependent constructs: data spaces, consortium platforms, and digital ecosystems.

1. Data Spaces (Infrastructure Layer) are federated socio-technical infrastructures enabling secure, standardised, and sovereign data exchange across organisations and sectors. Unlike open data repositories or marketplaces, data spaces embed legal, technical, and semantic protocols that allow participants to retain control over data access and reuse (Guggenberger et al., 2025). This addresses OIS tensions

around intellectual property, misuse, and credibility, that constrain participation in open initiatives (Sauermann & Roach, 2013; Beck et al., 2023), offering an infrastructural foundation for responsible and scalable openness in science–policy contexts.

2. Consortium Platforms (Governance Layer) captures the meta-organizational arrangements through which data spaces are coordinated. Building on Ostrom's (2010) polycentric governance and work on consortium platforms (Springer et al., 2025), these arrangements distribute control and decision rights, and align incentives across scientific, industrial, and policy actors. Distinct from firm-led platforms, they embed neutrality and collective rule-making, showing how openness must be actively governed to remain scalable.

3. Digital Ecosystems (Value Creation Layer) represent networks of interdependent actors that co-create and capture value through shared infrastructures and governance. Here, openness becomes productive through collective use cases such as clinical decision support or supply chain transparency, that no single actor could develop independently (Adner, 2017; Ranganathan et al., 2025), to deliver ecosystem-level value outcomes.

Illustrative case and findings

I empirically illustrate the framework through a case analysis of International Data Spaces (IDS) and Catena-X, two prominent European data space initiatives, drawing on documentary evidence, policy materials, prior empirical studies, interviews, and observations from industry and policy events.

IDS serves as a global reference architecture for sovereign data sharing, developing standardised connectors, usage-control policies, and certification mechanisms that enable secure and interoperable data exchange while participants retain control over data use (IDSA, 2023). IDS exemplifies the infrastructure layer by reconciling openness with sovereignty, trust, and compliance—core concerns in science–policy interactions.

Catena-X operationalises the IDS architecture within the German automotive sector. Governed as a neutral, non-profit consortium and supported through public–private partnerships, Catena-X coordinates over 120 organizations, including original equipment manufacturers, suppliers, technology firms, and regulators. It illustrates the governance layer, showing how consortium platforms translate infrastructural openness into coordinated participation by aligning incentives, distributing authority, and legitimising collaboration among competitors.

At the ecosystem level, Catena-X enables collective use cases such as digital product passports, carbon-footprint tracking, supply-chain traceability, and quality management. These demonstrate how multilateral data sharing converts openness into measurable productivity and policy-relevant outcomes, including reduced downtime, streamlined reporting, enhanced resilience, and sustainability compliance.

Thus, data spaces enable openness, consortium platforms govern it, and digital ecosystems transform it into collective value and productivity gains. This highlights four complementarity dimensions: technical (standards and interoperability),

strategic (aligned value logics), functional (interdependent use cases), and institutional (regulatory and policy coherence), that must be deliberately orchestrated across layers without which, data-sharing initiatives risk remaining fragmented pilots or symbolic compliance (Randhawa et al., 2024; Ritala & Karhu, 2023), a pattern observed across many government-funded digital infrastructure programs.

Contributions

First, I advance OIS research by repositioning openness as an organizational and ecosystem design problem, rather than a behavioural or project-level choice. This responds to calls to move beyond individual-, firm- or project-centric analyses in OIS (Beck et al., 2023), by showing how openness depends on the design of infrastructures, governance arrangements, and institutional rules.

Second, by integrating OIS with ecosystem and platform research (Adner, 2017; Jacobides et al., 2018; Gawer, 2021; Springer et al., 2025), the layered framework distinguishing infrastructure, governance, and value creation demonstrates how consortium platforms function as connective tissue between open data infrastructures and productive collaboration via digital ecosystems.

Third, I directly engage with Science–Policy Relations, showing how federated data ecosystems enable trusted, interoperable, and scalable data sharing across scientific, industrial, and regulatory actors, while revealing tensions around governance and control.

I conclude that productivity and policy impact from emergent technologies are not automatic outcomes of openness or digitalization. They depend on the intentional orchestration of federated data ecosystems, where infrastructures, governance, and value creation mutually reinforce one another, opening research avenues at the intersection of OIS, ecosystems, and science–policy relations.

PAPER SESSION 8

Paper 26: Commoning Complexity for Actionable Data: Organizing Shared Sensor Data for Societal Impact through Leveraging Relational Infrastructures

Julia Christis, Lukas Falcke, Philipp Tuertscher, Hans Berends

26

Data that capture physical or social phenomena in digital representations have become a pervasive element in organizational, political, and societal action (Alaimo & Kallinikos, 2022). Standardized digital data - often generated via IoT sensors - enable large-scale collaboration (Monteiro & Parmiggiani, 2019; Yoo et al., 2012), but also introduce coordination challenges in data production, use, and sharing. While standardization requires joint action, early standard-setting can cause premature closure, limit participation, and constrain future innovation.

First, setting standards for data co-production and sharing often requires a select group to impose logics that shape what is visible and actionable (Alaimo & Kallinikos, 2022), potentially undermining inclusivity and legitimacy if other stakeholders' relationships are overlooked. Second, shared data use intensifies challenges of synthetic knowledge, as digital representations simplify reality and create fixed meanings that can exclude actors outside the initial standard-setting (Monteiro & Parmiggiani, 2019; Rostain & Huising, 2024). When these issues remain unresolved, actors can use data for their own purposes - but struggle to coordinate and collaborate through the aggregated data.

This tension is especially prevalent in data commons: emerging organizational forms that enable large-scale, decentralized data sharing (Priego & Wareham, 2024). While more inclusion broadens access to data, differences in actors' knowledge, data expertise, and authority complicate the establishment of shared standards for collaboration (Marjanovic & Cecez-Kecmanovic, 2017).

Recent literature identifies two pathways for addressing standardization challenges and accommodating for actor heterogeneity. A data object–focused view suggests that misalignments between digital representations and physical reality can be reduced through scaffolding (Priego & Wareham, 2024), while a relational process view emphasizes actors' ability to repair discrepancies by developing data expertise (Rostain & Huising, 2024). However, neither fully accounts for synthetic knowing and the socio-materiality of data in data commons. While data commons presume open data contribution and use among heterogeneous actors, data are always collected, curated, and analyzed in pursuit of specific interests (Monteiro & Parmiggiani, 2019). Consequently, fully standardizing data or ensuring uniform interpretation is both difficult and potentially undesirable.

While prior work offers a useful starting point, we know little about how data commons balance the need for standardization to enable collaboration with inclusivity that accommodates heterogeneous data practices, knowledge systems, and authority. Therefore, we explore how, in the light of an emerging trade-off between standardisation and allowing for heterogeneity, members with different

data practices, knowledge systems and authority levels balance collective and individual interests in a data commons to co-produce actionable data?

To address this question, we conducted a longitudinal, single-case process study of CoSense, a national sensing community facilitated by the Dutch National Institute for Health and the Environment (HealthGov). We collected qualitative data on interactions among diverse participants, including government officials, policy advisors, project managers, citizen scientists, and data scientists, comprising 30 semi-structured interviews, 20 hours of field observations, and 409 pages of documentation. Data were analyzed using a combination of grounded theory (Strauss & Corbin, 1998) and a process approach (Langley, 1999). Our findings identify three mechanisms through which scientists and citizens progressively reconcile heterogeneity across data practices (Phase 1), knowledge systems (Phase 2), and authority (Phase 3) to co-produce actionable environmental sensor data.

Phase 1 involved the development of a shared data infrastructure to standardize the highly heterogeneous citizen data. While adoption of the national platform enabled interoperability, it also revealed the limitations of standardization, as platform functionalities limited citizens' ability to pursue local interests, which prompted a first mechanism: the modularization of citizens' data practices into local platforms that remained loosely coupled to the national CoSense infrastructure, which was better tailored to citizens' needs. This enabled the scientists and citizens to stay engaged with each other for pursuing their collective goal of producing reliable sensor data while also meeting individual interests.

In Phase 2, we observed a second mechanism: the bilateral embedding of citizens' contextual knowledge system and scientists' scientific knowledge system into citizens' and scientists' data analysis practices. Citizens integrated scientific standards into their analyses, recognizing that while standardization improved reliability of their data, averaging reduced the visibility and actionability of local pollution peaks. Conversely, scientists incorporated citizens' contextual sensor knowledge into their models, acknowledging peak data as a valuable complement to average-based measures.

Phase 3 introduced a third mechanism: the reconfiguration of authority between citizens and scientists in the debate around environmental monitoring. Initially, authority rested with scientists due to their certified equipment and formal expertise. Over time, citizens' growing scientific literacy and the recognized value of their contextual knowledge increased their influence, leading to the institutionalized use of peak data and lived experience by governments and health organizations, and it provided them with a seat at the table for reshaping the monitoring process and its impact on policy advice.

Our study bridges relational process views on data (Monteiro & Parmiggiani, 2019; Rostain & Huising, 2024) with object-centered perspectives (e.g. Alaimo & Kallinikos, 2022) by showing a punctuated pathway of standard-setting in a data commons. We demonstrate how communities initially push for standardization, uncover mismatches, and subsequently reopen the commons to reintroduce heterogeneity in data practices, knowledge systems, and authority, enabling the reconfiguration and restabilization of standards.

PAPER SESSION 8

Paper 27: Decentralizing Science: Market and Commons Pathways

Paolo Leone

27

In recent years, a growing number of initiatives have advanced decentralized approaches to scientific knowledge production, evaluation, and dissemination. These efforts arise amid critiques that the centralization of authority in publishers and journals may impede the efficient production of scientific knowledge by limiting the circulation of data and research materials, create imbalances in scientific evaluation by relying on the labor of uncompensated reviewers, and constrain innovation in scholarly dissemination by preserving outdated publication formats. Drawing on qualitative methods, including in-depth observations, interviews, and document analysis, this paper investigates two such initiatives—ResearchHub and Evidence—to examine how they enact decentralization and with what implications. The analysis shows that these initiatives developed distinct governance mechanisms, which underpin different governance forms. ResearchHub introduced a “market-based” governance system in which reviewers are compensated with research coins that can be exchanged for currency or used to request preprint reviews, pose specialized questions, or crowdfund research proposals. This token-based model aligns effort with reward, addressing exploitative dynamics in traditional evaluation systems. In contrast, Evidence fostered a “commons-based” governance system built around an open research ecosystem that supports in-depth engagement with scientific work, allowing scientists to reuse data, code, and other research materials and to reproduce analyses before and irrespective of journal publication. By comparing these cases, the paper builds on decentralization theory to illustrate alternative governance systems for science, clarifying the trade-offs between market-based and commons-based approaches and articulating the benefits, limits, and implications of decentralization.

Parallel Session V

Wednesday 13 May | 11:00 – 12:30

9

Paper Session 9: Translating Scientific Knowledge into Innovation and the Role of IP

Paper 28: The Two Sides of Intellectual Property Rights in Shaping Scientific Research in Genomics
Sina Sokhan, **Arvids Ziedonis**

Paper 29 Joining the Medicines Patent Pool: Virtuousness Is More than Its Own Reward n
Karen Ruckman, Ian McCarthy

Paper 30: The Role of Young PhD Inventors in Innovation and Entrepreneurship: Testing Cumulative Advantage
Mercedes Delgado, Julian Kolev, Fiona Murray

Paper 31: A Behavioral Process Perspective on Knowledge and Technology Transfer
Uwe Cantner, Lukas Dreier, Maximilian Goethner, Matthias Huegel, **Martin Kalthaus**, Indira Yarullina

10

Paper Session 10: Enabling Inter- and Transdisciplinary Collaborations in Science

Paper 32: Interdisciplinary Outsiders: Early-Career Pathways and the Legitimation of Cross-Boundary Science
Xin Deng, Cornelia Lawson

Paper 33: Practice Paper 13 Fairness Sustains Collaboration in Scientific Teams
Ting Xiao, Andrew Herman, Mathias Nielsen

Paper 34: Finding Common Language Through Use Cases in Interdisciplinary Research Projects
Guillaume Yon, **Patrick Pollock**, Frank Piller

SESSION 9

PAPERS 28–31

TUESDAY
11:00–12:30

PAPER SESSION 9

Paper 28: The Two Sides of Intellectual Property Rights in Shaping Scientific Research in Genomics

Sina Sokhan, Arvids Ziedonis

28

The impact of intellectual property (IP) rights, such as patents, on the conduct of scientific research and its transformation into commercial products has long been a topic of vigorous debate. Some scholars argue that patents play a facilitative role in the production of science. For example, Hellmann (2007) contends that patenting scientific inventions improves the search process between scientists generating new discoveries and firms seeking to commercialize them. In contrast, others have raised concerns that patents may impede scientific progress itself. Scotchmer (1991) suggests that patents on "upstream" discoveries, particularly broad patents, can inhibit downstream or follow–on research when innovation is cumulative. Heller and Eisenberg (1998) similarly argue that a fragmented landscape of upstream patent rights may hinder subsequent research by making the assembly of necessary licenses prohibitively costly. David (2004) and Nelson (2004) express concern that private property rights may interfere with the norms and practices of "open" science more generally.

Empirical evidence regarding these concerns is mixed: some studies report a negative im-pact of patenting on the conduct of science (e.g., Murray and Stern, 2007, Murray, Aghion, Dewatripont, Kolev, and Stern, 2016), others find no significant impact (e.g., Sampat and Williams, 2019), and still others present evidence of a positive effect especially in the corporate environment (e.g., Arora, Belenzon, Marx, and Shvadron, 2024; Marx and Scharfmann, 2024). One of the challenges in the existing empirical literature is disentangling the "restrictive" effects of patents from their incentivizing roles, making it difficult to draw clear conclusions about their overall impact on scientific research.

We simultaneously examine the effects of patent rights on research inputs, representing a restrictive effect, and on research outputs, representing the incentivizing effect. We explore these relationships in the context of genetic research, a scientific domain that belongs to "Pasteur's Quadrant," which refers to research motivated by both a quest for fundamental understanding and a concern for practical application (Stokes, 1997). We exploit a US Supreme Court decision invalidating patent protection for a class of genetic discoveries as a quasi–experimental setting to examine the causal impact of gene patenting on the advancement of genomic research. In June 2013, the US Supreme Court issued a landmark decision on the patent eligibility of isolated genes. In Association of Molecular Pathology v. Myriad Genetics, Inc. (hereafter, the Myriad case), the Court held that naturally occurring genes constitute products of nature and are therefore not eligible for patent protection. This unexpected ruling invalidated patent claims on around 4,000 genes and established clear guidelines prohibiting the patenting of naturally occurring DNA. The ruling was unexpected by gene patent owners (Sokhan, 2024), creates a quasi–experimental setting between affected and unaffected

groups. Moreover, the dual roles of DNA, as both a research input and a field of scientific discovery, make genomics a unique context for investigating both the restrictive and incentivizing effects of patent rights.

In one experiment, we examine genes as inputs to scientific research. Here, the Myriad case provides a rare opportunity because it invalidated patent claims on isolated genes while explicitly excluding closely related complementary DNAs (cDNAs) from this restriction. The Court held that cDNAs, being synthetically created in the laboratory, are not naturally occurring and thus remain patent–eligible. Using this distinction, we define a treatment group of genes with only isolated DNA claims that lost patent protection and a control group of genes with cDNA patent claims that retained protection. This experiment compares scientific publications related to these two groups before and after the Myriad ruling. In a second experiment, we shift our focus to research outputs. Specifically, we examine how the removal of patentability of DNA–related discoveries following the Myriad ruling affected the rate and direction of scientific activity. The underlying logic is that, after the ruling, scientists working in DNA–related fields faced greater challenges in securing patents for their findings and inventions. We compare publications in the field of DNA research, where patenting was removed, with those in the related field of research on DNA–binding proteins, which remained patent–eligible. This quasi–experimental design allows us to isolate the effect of patentability of research outputs on the progress of scientific research.

Our findings tell a nuanced story. Our first experiment exhibits little evidence that gene patents as research inputs affect scientific publications. This finding is consistent with prior evidence on gene patents. In their survey of patented research inputs, Walsh, Arora, and Cohen (2003) report little concern in the university community when their research inputs, such as genes, are patented, with scientists typically ignoring patents. Sampat and Williams (2019) reach a similar conclusion, finding that the trajectories of scientific publications do not differ between granted gene patent applications and those that are not granted.

In stark contrast, the results of our second experiment reveal that the removal of patentability for DNA products leads to a sharp decline in DNA–related research, while the outcome for the control group, centered on DNA–binding protein research, remains unaffected. This downward trend is evident in both academic and corporate science. We interpret these findings to suggest that, in the absence of patent–based incentives, research in genomics may stagnate.

We further examine potential mechanisms underpinning this decline and find that the removal of patentability disproportionately discourages scientists who are peripheral to the field, affiliated with US institutions, more senior in career stage, or more likely to hold patents. Surprisingly, we do not find a statistically significant difference in the post–ruling scientific output of corporate compared to academic researchers.

Taken together, the findings from these two natural experiments alleviate concerns about the restrictive effects of patent rights on research inputs, while underscoring the potential setbacks that weakening patent protection, as an incentivizing mechanism, can impose on scientific research.

PAPER SESSION 9

Paper 29: Joining the Medicines Patent Pool: Virtuousness Is More than Its Own Reward

Karen Ruckman, Ian McCarthy

29

This study investigates why pharmaceutical firms join the Medicines Patent Pool (MPP), a global health initiative designed to improve access to life-saving medicines in low- and middle-income countries (LMICs), and the organizational consequences of doing so. We conceptualize MPP participation as a form of virtuousness, motivated by humanitarian goals and collaborative norms, rather than direct profit. We examine both the motivations for joining and the effect on firms' cooperative and innovative behavior.

1. Background: The MPP as a Non-Traditional Patent Pool

Established in 2010, the MPP was initially focused on expanding access to HIV treatments. Its mission is to "increase access to, and facilitate the development of, life-saving medicines for LMICs through an innovative approach to voluntary licensing and patent pooling." Unlike traditional exclusive licensing models found in the pharmaceutical industry, the MPP negotiates non-exclusive licenses with patent holders and sublicenses these rights to generic manufacturers, often before patents expire, enabling affordable treatment access and the development of region-specific formulations (e.g., pediatric or fixed-dose combinations).

The impact has been significant. In 2000, just 611,000 people were receiving HIV treatment globally. By 2017, that number had increased to 21.7 million. From 2010 to 2024, the MPP facilitated the delivery of 51.2 billion doses across 148 countries, averted an estimated 50,000 deaths, and saved US$2.3 billion in drug costs. While initially focused on HIV, the MPP's scope now includes treatments for tuberculosis (TB), hepatitis C (HCV), COVID-19, and some cancers.

Previous research has shown that the MPP significantly increases generic drug supply in countries with strong patent protection, and results in modest gains in clinical trials and approvals for pooled compounds (Wang, 2022), the MPP improves access to drugs by increasing competition by generics producers (Martinelli et al. 2020) and that a patent's inclusion in the MPP leads to a prompt and noticeable rise its out-licensing activity (Galasso and Schankerman, 2024).

Yet, despite its success, uptake remains limited. Only 43 of the 523 drugs on the WHO Essential Medicines List (2025) are included in the MPP. We know very little about why some drug owners join the MPP while others do not.

2. The Research Question and Theoretical Framing

Joining the MPP rarely offers meaningful royalty income. For firms primarily driven by shareholder value, MPP participation may appear irrational. However, we argue that MPP participation reflects non-financial motivations: reputational benefits,

alignment with humanitarian missions, and improved collaboration. These behaviors are better understood as acts of virtue signaling.

Our research question is therefore twofold:
Why do some firms voluntarily participate in the MPP, despite the absence of financial incentives?
And what impact does this participation have on their performance, especially in terms of collaboration and innovation?

We frame MPP participation as a "virtuous act" and test whether it yields measurable benefits in cooperativeness (e.g., reduced litigation) and innovation (e.g., more multi-party clinical trials). We also examine how these outcomes are influenced by a firm's corporate social responsibility (CSR) orientation, open innovation practices, and financial stability.

3. Empirical Strategy and Data
We constructed a unique longitudinal dataset comprising 65 drugs: 21 that joined the MPP and 44 comparable candidates that did not. These drugs are owned by 20 pharmaceutical firms, including both MPP participants and non-participants.

To estimate causal effects, we use a difference-in-differences (DiD) approach, comparing changes in firm-level outcomes before and after MPP participation, relative to eligible non-participant firms. Our outcome variables include:

- Litigation activity (as a proxy for cooperativeness)
- Participation in multi-party clinical trials (as a proxy for open innovation)

We also examine interactions with pre-existing firm-level CSR initiatives, open innovation practices, and financial stability metrics.

4. Key Findings
We find that:

- MPP participation significantly reduces litigation activity, particularly as firms license more drugs through the pool. This suggests enhanced cooperativeness and a decline in adversarial legal behavior.
- Firms that join the MPP also exhibit increased joint innovation activity, as measured by multi-party clinical trials. The collaborative ethos of the MPP appears to spill over into other R&D partnerships.
- These effects are amplified for firms with strong open innovation practices and financial stability. However, CSR orientation does not enhance the benefits, suggesting that participation in the MPP may reflect a deeper commitment to collaboration than typical CSR strategies.

5. Contributions and Implications
Our study contributes to research in open innovation, intellectual property management, and global health strategy in several ways:

• Theoretically, we extend the concept of patent pooling to include virtuousness, a mode of collaboration that prioritizes equitable access over financial returns.

• Empirically, we are among the first to quantify the performance benefits of MPP participation, offering evidence that humanitarian licensing can yield organizational rewards.

• Practically, our findings suggest that policy incentives and reputational mechanisms may encourage greater industry participation in initiatives like the MPP. Voluntary patent pools can complement market-driven models, especially in under-served areas of global health.

6. Conclusion

While much of the open innovation literature focuses on strategic alliances, licensing revenues, or absorptive capacity, this study highlights an underexplored but high-impact form of open innovation: voluntary participation in humanitarian patent pools. Our findings suggest that even without direct financial incentives, firms that engage in virtuous innovation through the MPP experience meaningful benefits in collaboration and innovation.

PAPER SESSION 9

Paper 30: The Role of Young PhD Inventors in Innovation and Entrepreneurship: Testing Cumulative Advantage

Mercedes Delgado, Julian Kolev, Fiona Murray

30

More ideas and more innovation drives growth (Romer, 1990), often through a process of creative destruction via entrepreneurship (Aghion, Howitt, Brant-Collett, and García-Peñalosa, 1998). Building on recent work Delgado and Murray (2022, 2023), we study the role of young PhD inventors in the innovation economy in the context of multiple technology fields.

There are two trends at leading research universities that motivate this work. First, universities account for a large share of new (first patent) inventors in the economy (by 2024, 9% of all new inventors in the US economy were generated in patents granted to universities). Second, a large share of new inventors at the university patents are PhD students (30%)– referred as New Inventor-PhDs (i.e., those filing their first granted patent during their studies or soon after graduation). The probability of STEM PhD students becoming New Inventors has been increasing over time.

Faculty advisors that are themselves top inventors play a very important role in training their advisees to become new inventors by working together on projects that are co-patented (Delgado and Murray, 2023). This motivates the core research question: What are the long-term innovation effects of engaging in first-patenting during doctoral training? The goal is to test potential cumulative advantages in commercializing science – i.e., the idea that early success brings more success (Merton, 1968).

To examine this question, we follow a representative sample of STEM PhD graduates through their careers to assess how getting patents early might affect subsequent innovation outcomes. Specifically, we will examine the effects on entrepreneurship and innovation (patents) of PhD students becoming new inventors during their doctoral program versus a control group of students (of the same advisor) who filed a patent that did not get granted or who did not file a patent during their PhD.

Importantly, we will also study whether the long-term effects of becoming New Inventor PhDs differ for men versus women. The gender gap in innovation remains large: in the set of 2024 granted patents, women represent 14% of inventors and 10% of female patents. Thus, the importance of understanding how to improve the long-term participation of women in innovation.

Our hypothesis is that allocating more resources to universities (and faculty inventors) to train new inventors could have a large and long-lasting effect on high-quality entrepreneurship, innovation, and inclusion. Many questions arise here in terms of examining career dynamics after graduation. We will focus on areas where cumulative advantage (or disadvantage) for the scientists and the economy would be greater, and where policy and managerial interventions are possible. Therefore, we are particularly interested in their first job (location and type of organization) and innovation outcomes (the creation of impactful startups and the quantity and

quality of patents). Our hypothesis is that there are cumulative advantages of early inventorship that could benefit both male and female STEM PhD graduates: i.e., they will patent more (and sooner) and/or they will be more likely to create high quality science-based startups building on their first-patent (Guzman and Stern, 2015; Murray et al. 2024).

Furthermore, women face more family constraints in their careers than men (Goldin, 2011). We want to test whether some of those barriers may be reduced for women who become new inventors during their doctoral program (versus other female PhD graduates) since they have learned to patent and their innovation skills will be more visible (i.e., they are listed as inventors on a patent) when they join another organization after graduation.

Our sample consists of over 13,000 STEM PhD graduates (1995-2015) trained in the top 25 US research universities by top inventor faculty advisors (#876). The treated group is the set of around 3,000 PhDs who become new inventors during their doctoral program. The data strategy combines multiple datasets (e.g., patent dataset, LinkedIn, and ProQuest) using novel algorithms.

The preliminary findings for the sub-sample of MIT show that New Inventor PhDs have higher likelihood of becoming entrepreneurs (versus the control group), and they also have higher patenting productivity. These New Inventors have developed impactful science-based ventures.

This paper will inform the debate about deep tech ventures and the “missing millions” in terms of STEM talent who are yet to engage in science-based innovation. The inefficient use of talent is a central concern across countries that is captured in the United Nations’ Sustainable Development Goals. Inclusion in the engagement of young STEM talent could improve innovation, resilience, and growth of countries.

PAPER SESSION 9

Paper 31: A Behavioral Process Perspective on Knowledge and Technology Transfer

Uwe Cantner, Lukas Dreier, Maximilian Goethner, Matthias Huegel, Martin Kalthaus, Indira Yarullina

31

Knowledge and technology transfer (KTT) is vital in bridging academia and industry and society, enabling the application of scientific insights and technologies beyond the realm of scientific research (Bozeman, 2000; Colyvas et al., 2002; Bengoa et al., 2021). Central to any transfer activity are individual scientists, as they are the key actors responsible for generating and transferring knowledge and technologies into application. KTT is thereby a dynamic and multi-phased process that starts with the generation of research results and concludes with their application outside the science sector (e.g. Vohora et al., 2004; Philbin, 2008; Cantner et al., 2021). Throughout this process, scientists progress through various phases, engage in phase-specific tasks, and navigate challenges along the way. Research on KTT exhibits heterogeneity in terms of the level of analysis (i.e., individual, group, organizational, institutional) and the utilization of theories and conceptualizations (Fini et al., 2019; Bengoa et al., 2021). However, a noticeable gap exists in the lack of a coherent theoretical framework that adequately explains the behavior of individual scientists in the context of KTT. To address this gap, it is essential to recognize that KTT is an intentional and goal-directed process of interaction between the academic scientists and other social entities during which the technology and the knowledge related to it is transferred (Autio and Laamanen, 1995). Hence, studying scientists' actions, decision-making, and motivations along the transfer process, allows for unraveling the intricate micro-mechanisms involved in the KTT process.

We utilize the Mindset Theory of Action Phases (MTAP) (Gollwitzer, 1990) as a framework for analysing academic engagement through this behavioural and processual lens. The MTAP distinguishes four action phases—the predecisional, preactional, actional and postactional phases—each associated with a distinct mindset: the deliberative, implemental, actional, and evaluative mindset. These mindsets reflect the shifting cognitive and motivational orientations that guide individuals as they deliberate whether to (1) engage, (2) translate intentions into concrete plans, (3) carry out engagement activities and regulate their behaviour during implementation, and (4) evaluate outcomes and draw lessons for future engagement. Applying this framework to academic engagement makes it possible to integrate both established engagement activities (e.g., collaborative research) and broader transfer pathways (e.g., mobility, societal outreach), all analysed from the vantage point of the individual scientist. This approach thus goes beyond existing reviews by conceptualising academic engagement not as a fixed outcome but as a temporally unfolding behavioural process, shaped by individual motivations, cognitive orientations, and learning processes.

We use a conceptual–theoretical research design to develop an integrative framework to explain the KTT process. The objective is to connect MTAP's psychological process logic with theoretical and empirical evidence on transfer mechanisms through an integrative Literature Review (Snyder, 2019). An Integrative Literature Review aims to critically assess, synthesize, and reconceptualize existing literature to advance theoretical understanding. Rather than seeking comprehensive coverage of all publications on a topic, it adopts a creative and selective data collection strategy to combine and synthesize insights from diverse disciplines.

Our results show that the MTAP's division of goal pursuit into four distinct and consecutive phases (pre-decisional, pre-actional, actional, and post-actional) shows congruence with existing stage models of the KTT process (e.g. Ndonzuau et al., 2002; Vohora et al., 2004; Philbin, 2008). In the MTAP's pre-decisional phase, which corresponds to the initial stages of these KTT process models, the academic scientist generates research results within an academic environment and deliberates on potential transfer opportunities (Huegel et al., 2023). The results the scientist has derived from research activity serve as the basis for the transfer activity. The scientist needs to recognize an opportunity to transfer the findings or the accumulated knowledge outside the academic sector (Vohora et al., 2004; Cantner et al., 2021). The opportunity recognition (i.e., the eureka moment), constitutes the cognitive advent of a deliberative mindset. This process involves identifying suitable matches between their knowledge and technology and the target domains. If the scientist decides to engage in the activity, they cross the metaphorical Rubicon.

The pre-actional phase utilizes an implemental mindset focusing on making detailed plans and strategies for the transfer process while preparing to implement the generated knowledge or technology. This also involves anticipating potential obstacles and integrating them into strategic considerations. Conducting market research during this phase enables the scientist to not only identify potential industry partners, but also facilitates contact with societal actors, such as civil society organizations. Scientists embarking on KTT endeavors may proactively seek support from existing organizational infrastructure, such as TTOs (Huyghe et al., 2014) or engage in patenting processes to protect their IP (Markman et al., 2005).

In the actional phase, the scientist actively engages in goal-directed behavior to carry out the planned transfer activity with an actional mindset. In the KTT domain, this could involve negotiating licensing agreements with interested companies, establishing a start-up to bring the technology to market (Wood, 2011), or, in the realm of societal engagement, collaborating with non-profit organizations and public agencies. Throughout the actional phase, the transfer project may encounter action crises. These crises could manifest as unforeseen complications with agreeing on licensing terms, or difficulties in securing the necessary resources to execute the transfer project, requiring adjustments to the transfer strategy. Given these challenges, matchmaking aspects of KTT continue to be crucial. Finding compatible matches between scientist's knowledge and the demands of involved entities, whether they are commercial partners or community stakeholders, is vital for successful implementation and sustainable outcomes (Elfenbein, 2007).

Finally, in the post-actional phase, the scientist needs an evaluational mindset to assess the outcomes of the transfer process and may make adjustments as necessary. In the KTT context, scientists may assess their own benefits from the transfer activity as well as the impact of their technology on the industry or society and use feedback from involved stakeholders to refine their transfer strategies for future projects.

Based on this conceptual framework that maps the transfer activity onto the MTAP process, we derive avenues for further research, implications for management and policy as well as theoretical implications for understanding KTT on the micro level.

SESSION 10

PAPERS 32–34

TUESDAY
11:00–12:30

PAPER SESSION 10

Paper 32: Interdisciplinary Outsiders: Early-Career Pathways and the Legitimation of Cross-Boundary Science

Xin Deng, Cornelia Lawson

32

Introduction

Interdisciplinarity has become a central pillar of contemporary science policy, widely promoted as a mechanism for addressing complex societal challenges and fostering novel knowledge recombination (Salter et al., 2017). Yet despite this rhetorical support, evaluation systems in academia remain deeply discipline-centric. Journals, peer review panels, hiring committees, and ranking systems continue to privilege mono-disciplinary contributions, generating a persistent misalignment between policy aspirations and evaluative practice (Barry et al., 2008; Rafols et al., 2012). These tensions are particularly consequential for early-career researchers (ECRs), who lack the reputational buffers that allow established scholars to absorb delays, skepticism, or rejection when venturing across disciplinary boundaries (Leahey et al., 2017). However, at the same time, ECRs are key contributors to scientific renewal and important conduits of knowledge transfer to society and industry (Arts and Veugelers, 2020; Hancock, 2021). Understanding how different interdisciplinary pathways shape their early visibility and legitimation is therefore crucial.

We conceptualize these "interdisciplinary" challenges as a form of epistemic outsiderness - a condition in which research contributions deviate from established disciplinary categories and therefore encounter barriers to visibility and legitimation. Building on the science-of-science literature, we operationalize epistemic outsiderness at the thesis level using two foundational dimensions of interdisciplinarity: variety, capturing the breadth of distinct knowledge domains referenced, and disparity, capturing the average cognitive distance between those domains (Porter and Rafols, 2009; Rafols and Meyer, 2010; Wang et al., 2015). These dimensions distinguish between broad but proximate integrations and focused yet cognitively distant recombination, therefore revealing qualitatively different routes of interdisciplinary engagement.

Routes of interdisciplinarity and epistemic outsiderness

Interdisciplinarity is a multidimensional construct, and bibliometric research has long emphasized that its components – variety, balance, and disparity – exert distinct and sometimes opposing effects on scientific recognition (Stirling, 2007; Yegros-Yegros et al., 2015; D'Este and Robinson-García, 2023). In this study, we focus on variety and disparity as the most fundamental dimensions capturing, respectively, the scope and the radicalness of cross-disciplinary integration. High variety reflects engagement with many disciplinary categories and introduces categorical ambiguity, making it difficult for evaluators to classify contributions within familiar schemas (Zuckerman, 1999; Glynn and Navis, 2013). High disparity, by contrast, reflects integration across cognitively distant domains and introduces epistemic unfamiliarity, increasing evaluators' uncertainty about methodological rigor, theoretical coherence, and intellectual fit (Van Raan, 2004; Cattani et al.,

2017). Crossing these two dimensions yields four ideal-typical routes of interdisciplinarity. We concentrate on two theoretically meaningful and empirically prevalent outsider routes among ECRs: broad-proximal (high variety, low disparity) and focused-distal (low variety, high disparity). These routes represent distinct forms of epistemic deviation without reaching the extreme case of broad-distal integration, which combines both high breadth and high distance.

Visibility–legitimation trade-offs and hypotheses

Interdisciplinary outsiders face a fundamental tension between visibility – standing out in crowded intellectual spaces – and legitimation – being accepted by discipline-based evaluative institutions (Millar, 2013; Mäkinen et al., 2025). Prior work suggests that interdisciplinary research can enhance attention and impact by generating novelty and addressing broader audiences (Wang et al., 2015; D'Este and Robinson-García, 2023). However, novelty also carries penalties, particularly when evaluators struggle to interpret or trust unfamiliar combinations (Chai and Menon, 2019).

We argue that the broad-proximal route is especially conducive to early visibility for ECRs. Although high variety introduces categorical ambiguity, the cognitive proximity of the integrated domains allows evaluators and audiences to perceive intrinsic fit, reducing interpretive difficulty (Hsu, 2006). By contrast, focused-distal work, while potentially more novel, confronts audiences with sharper epistemic distance, increasing the risk of being overlooked or discounted, especially in the absence of an established reputation. Therefore, we argue that ECRs following a broad-proximal route will experience higher early visibility than those following baseline or focused-distal routes.

Legitimation dynamics, however, operate differently. Discipline-based evaluation systems favor contributions that can be assessed using familiar schemas (Barry et al., 2008; Leahey et al., 2017). While both routes entail outsider risks, we argue that broad-proximal work remains more compatible with existing evaluative frameworks due to cognitive proximity, whereas focused-distal work imposes greater assessment burdens and skepticism. Taken together, we hypothesize that ECRs following a broad-proximal route will experience higher legitimation than those following a focused-distal route.

Contextual boundary conditions

Beyond which domains are combined, how interdisciplinary knowledge is structured and communicated shapes evaluative outcomes. We examine two moderating mechanisms: unevenness (balance) and coherence. For broad-proximal work, high variety can obscure disciplinary identity. Unevenness – where one or two domains clearly dominate – can provide evaluators with a categorical anchor, mitigating ambiguity and facilitating legitimation (Zuckerman et al., 2003; Bitektine, 2011). Therefore, we hypothesize that unevenness strengthens the legitimation of broad-proximal routes more than that of focused-distal routes.

For focused-distal work, the central challenge is epistemic distance. Coherence, capturing the extent to which distant domains are meaningfully integrated, reduces cognitive load and skepticism by making intellectual linkages legible (Rafols

and Meyer, 2010; Rafols et al., 2012). Thus, we argue that higher coherence enhances the legitimation of focused-distal routes more than that of broad-proximal routes.

Data, methods, and findings

We investigate our four hypotheses using a large-scale dataset of UK PhD graduates (2010–2015) drawn from the British Library's EThOS database, linked to Scopus publications via the DOC-TRACK methodology (Corsini et al., 2025), and to academic employment outcomes using LinkedIn data from Revelio Labs. Interdisciplinarity is measured at the PhD thesis level using OpenAlex topic categories referenced, ensuring temporal precedence and reducing publication selection bias. Visibility is proxied by early citation counts and normalized citations within three- and five-year post-defense windows. Legitimation is measured as time to first academic appointment using Cox proportional hazards models. Across specifications, all hypotheses are supported. Overall, by showing how the architecture of knowledge integration influences legitimation, our study highlights that interdisciplinarity is not only a matter of crossing boundaries, but also a matter of how young researchers craft the internal structure of those crossings.

PAPER SESSION 10

Paper 33: Fairness Sustains Collaboration in Scientific Teams

Ting Xiao, Andrew Herman, Mathias Nielsen

33

Teams are increasingly shaping the landscape of science (Wuchty et al., 2007), dominating much of the high-impact and innovative research today (Freeman et al., 2014). Yet some collaborations endure as long-term partnerships, while many others quietly dissolve after a single project (Shrum et al., 2007; Cabanac et al., 2015). Repeated collaborations, though their impact on innovation remains debated (Skilton & Dooley, 2010), help form enduring ties that lower coordination costs, enhance trust and communication, and improve the productivity of scientists (Marsden & Campbell, 1984; Dahlander & McFarland, 2013; Leahey et al., 2017). Despite extensive scholarly attention to how collaborations emerge and succeed (Guimera et al., 2005; Klug & Bagrow, 2016; Son et al., 2023), we know little about what determines whether established collaborations persist or dissolve.

One understudied mechanism affecting the persistence of collaborations over time is micro-level credit allocation. In scientific teams, authorship credit directly rewards contributions and effort, but also structures scientists' expectations of fairness, reciprocity, and trust in collaborative work. Ensuring fair alignment between scientific contributions and authorship credit might therefore be critical for maintaining relational cohesion within teams. However, as team-based research has expanded, debates over authorship ethics and concerns about free riding, unequal recognition, and potential exploitation have intensified across fields (Leahey, 2016; Gureev et al., 2019; Sweeting, 2024). Unethical or unfair practices can disappoint scientists, undermine trust, and may in some instances push talented researchers out of academia. In this sense, mechanisms put in place to ensure fairness can have consequences that extend far beyond individual research outputs, shaping the long-term productivity and trajectory of collaborative science.

Drawing on social exchange theory (Lawler, 2001; Thye et al., 2014), we hypothesize that (i) greater alignment between team contributions and credited authorship increases the likelihood of sustained collaboration, and that (ii) this effect is stronger when partners hold comparable status and have autonomy in selecting collaborators, and weaker when hierarchy constrains scientists' freedom to choose teammates.

We compiled a dataset of 61,346 scientists who coauthored PLOS ONE papers in 2017. We collected their full publication histories from their first publication year to 2025 across all journals indexed by OpenAlex, comprising a corpus of 6,546,280 publications. To account for career attrition, we restrict the sample to dyads in which both authors remained publication-active after the 2017 collaboration. The final sample consists of 197,810 unique author pairs, of which 89,991 have prior collaboration history and 107,819 are newly formed pairs.

We quantify author contributions using a novel TF-IDF-based approach applied to author contribution statements (Xiao, 2025). For each paper, we rank authors from highest to lowest based on their aggregated TF-IDF-adjusted contribution scores. We also convert author order into a rank-based measure to capture authorship credit as symbolic prestige while accounting for disciplinary conventions regarding authorship order. Contribution-credit alignment is then measured as the Kendall's τ correlation between contribution rank and authorship rank.

To examine collaboration persistence, we estimate negative binomial models for the number of repeated collaborations and cloglog survival models for the yearly hazard (likelihood) of re-collaboration. The survival analyses are implemented using a dyad-year data structure, in which author pairs enter the risk set following the focal collaboration and are right-censored at the end of the observation window or upon re-collaboration. All models are based on the contribution-credit alignment in 2017 and repeated collaboration in papers published between 2018-2025, and include controls for (i) team structure, including team size and team hierarchy; (ii) research relatedness, including research similarity (based on SPECTER embeddings), overlapping prior collaborators, and prior collaboration count; and (iii) dyadic attributes, including country combinations, gender combinations, total scientific age and age ratio, total cumulative citations and citation ratio, total prior productivity and productivity ratio, and prior team size difference.

All models are estimated at the author-pair level, with negative binomial models using two-way clustered standard errors by author and cloglog survival models using dyad-level clustering. To account for potential confounding by unobserved dyad characteristics, we stratify author pairs into high- and low-alignment groups based on the sample mean and apply entropy balancing to achieve covariate balance across research relatedness and dyadic attributes.

We document a consistent association between contribution-credit alignment and collaboration persistence. (i) In regression models that account for team structure, research relatedness, and dyadic attributes, collaborations with higher contribution-credit alignment are more likely to be renewed and generate more subsequent joint publications. (ii) The positive effect of contribution-credit alignment on repeated collaboration diminishes as collaborators accumulate prior collaboration experience. Restricting dyads to first-time collaborators, we continue to find a positive association between contribution-credit alignment and repeated collaboration. (iii) Heterogeneity analyses further show that the effect of contribution-credit alignment is concentrated in contexts where scientists have comparable status and thus greater freedom to choose collaborators. Specifically, fairness in authorship better predicts sustained collaboration in senior-senior than junior-senior dyads, and in elite-elite than non-elite-elite collaborations dyads. This suggests that early-career and less powerful scientists may be "stuck" in less fair collaborations due to dependence, hierarchy, or limited outside options.

We also find that credit alignment matters more across institutions than within institutions, which further supports the idea that autonomy to choose collaborators increases the importance of contribution-credit alignment. Finally, we show that the effect of credit alignment is attenuated when external funding is present, indicating that financial resources may partially substitute for fairness in sustaining collaboration.

Currently, we are testing the underlying causal mechanisms based on a 2×2 factorial survey experiment. The design manipulates two factors: (i) fairness of authorship allocation (fair vs. unfair; within-subjects) and (ii) collaborator status (high-status senior researchers vs. low-status early-career researchers; between-subjects). Participants evaluate two hypothetical vignettes describing completed research collaborations. In each scenario, participants are asked to imagine they contributed substantially to a project while two collaborators made minor contributions. The fairness manipulation varies whether participants receive first authorship (fair condition) or middle authorship (unfair condition). Collaborator status is manipulated by describing team members as either widely recognized scientists or early-career researchers who recently completed their PhDs. The survey experiment will be fielded in late January 2026.

PAPER SESSION 10

Paper 34: Finding Common Language Through Use Cases in Interdisciplinary Research Projects

Guillaume Yon, Patrick Pollock, Frank Piller

34

Electricity production generates almost 30% of global CO_2 emissions. The decarbonization of power systems is therefore at the heart of efforts to mitigate climate warming. However, the massive integration of renewable energy sources has created major challenges for power systems over the past decade. Wind and solar generation interface with the grid through power electronics. Unlike traditional transformers, which step voltage up and down to enable efficient long-distance transmission, power electronics regulate frequency and voltage through software. Renewable generators lack mechanical inertia, in contrast to conventional generators with large rotating turbines, whose inertia has historically contributed to grid stability. Renewables are also highly distributed, potentially numbering in the millions and installed on individual rooftops. To operate efficiently, they must be coupled with both large-scale and small-scale energy storage systems (Schwarz et al., 2026). These features have led to severe operational problems. Interactions among many power-electronic devices have contributed to major grid disturbances, including the large-scale blackouts in Spain and Portugal in the summer of 2024, and a series of incidents in Australia and the United States in recent years. Addressing these fundamental challenges in the energy grid cannot be addressed by an individual discipline alone, but require expertise from multiple fields and perspectives. Control theory provides methods to stabilize grids composed of many interacting power-electronic devices; power electronics develops the corresponding hardware; economics contribute to the market design, given that power markets are policy-driven artefacts; and power systems engineering ensures compliance with the physical constraints of electricity, including frequency, voltage, and stability.

This paper develops a historical and qualitative narrative of the emergence of a highly synergistic research effort between different scientific disciplines aiming to create a stable and resilient energy grid that will enable long-term sustainability goals to be achieved and maximize European energy independence. The analysis is based on the authors' active participation in the ERC Synergy Grant project SAFEr grid (Store-And-Forward Energy Grid) involving research groups from Germany and Denmark. The project is currently in its first year, and the research reported here is therefore exploratory. The authors have participated in project meetings and experimental activities since the project's inception and conducted in-depth interviews with principal investigators and researchers. The paper aims to make two contributions to the open innovation in science (OIS) literature. First, it provides an empirical contribution by documenting an instance of interdisciplinary "community production," in which complex system-level problems require collaboration among disciplines that have not previously worked closely together (Beck et al., 2024; Sauermann et al., 2020). We show that power systems, the backbone of economic activity, are undergoing a fundamental transformation

from largely mechanical systems to digitally controlled infrastructures. This transformation, which is central to climate mitigation, depends critically on sustained open scientific collaboration across disciplinary and institutional boundaries.

Second, the paper contributes to OIS research by examining how interdisciplinary teams develop a functional common language to support such collaboration. Existing OIS studies often conceptualize boundaries in knowledge flows using lenses derived from private-sector innovation, emphasizing incentive misalignment, coordination costs, and value capture (Beck et al., 2023). While these mechanisms may be relevant, our analysis highlights a different dimension. Drawing on approaches from the history and sociology of science and technology and on oral history interviews with scientists, we show that interdisciplinary collaboration in mission-oriented research projects is strongly shaped by the constitution of the techno-scientific problem itself.

Specifically, we focus on the role of use cases as communicative devices within the SAFEr grid project. We examine how use cases are introduced and employed to describe specific system situations that are meaningful across disciplinary boundaries and accessible to external stakeholders. In this setting, we explore the dual role of use cases to internally aim at helping interdisciplinary teams articulate, compare, and partially align their perspectives, and externally, to support communication with policymakers, industry actors, and societal stakeholders by translating complex technical challenges into situated and discussable system configurations.

Our work addresses an important gap in the literature. While boundary objects have been widely studied, the use of use cases as communicative devices in OIS settings remains unexplored (Barrett and Oborn, 2010; Carlile, 2002, 2004; Benn and Martin, 2010). In particular, little empirical work has examined how use cases may simultaneously support internal interdisciplinary sensemaking and external stakeholder engagement, and how they translate system-level complexity into actionable narratives. By analyzing the early-stage use of use cases in an interdisciplinary research consortium, this study aims to contribute to understanding how shared vocabularies and functional common language emerge in mission-oriented scientific collaborations.

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