

RESEARCH CULTURE AS THE FOUNDATION FOR RESEARCH INTEGRITY AND THE ADVANCEMENT OF THE SCIENTIFIC MISSION IN U.S. UNIVERSITIES

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INTRODUCTION

Universities play a pivotal role in shaping societies by fostering scientific discovery, innovation, and intellectual development. In the United States, as researchers claim, a central component of this mission is the establishment of a robust research culture – a system of shared values, norms, and practices that guide research activities^{1,2}. Closely tied to this is the cultivation of a culture of research integrity, which ensures that scientific pursuits are conducted ethically, transparently, and with accountability. The intersection of these two concepts – research culture and research integrity – has become increasingly significant, particularly in light of evolving societal expectations and the global drive towards open and responsible science. Contemporary discussions emphasise that research culture extends beyond individual behaviour to encompass institutional policies, leadership actions, mentorship practices, and incentive structures^{3,4}. Meanwhile, research integrity culture specifically focuses on adherence to ethical standards, such as honesty, rigor, transparency, and respect for subjects and data⁵.

For American universities, aligning research culture and research integrity with institutional missions is not merely aspirational but

¹ De Peuter S., & Conix S. Fostering a Research Integrity Culture: Actionable Advice for Institutions. *Science and Public Policy*. 2023. Volume 50. Issue 1. P. 133–145. URL: <https://doi.org/10.1093/scipol/scac059>

² Fleerackers A., Moorhead L. L., Alperin J. P., Riedlinger M., Maggio L. A. From impact metrics and open science to communicating research: Journalists' awareness of academic controversies. *PLOS ONE*. 2025. Vol. 20. No.1. Article e0309274. URL: <https://doi.org/10.1371/journal.pone.0309274>

³ Lau A., Haist J., & Hewett R. Impact-driven scholar, reflective practitioner, or pracademic? Conceptualizing hybrid roles to bridge the research-practice gap in HRM. *Human Resource Management Review*. 2025. Vol. 35. No. 2. Article 101077. URL: <https://doi.org/10.1016/j.hrmr.2025.0309274>

⁴ Adefuye A. O., Coetzee L., Janse Van Vuuren C., & Busari J. O. Medical Educators' Perceptions Of Research Culture In A Faculty Of Health Sciences: A South African Study. *Teaching And Learning In Medicine*. 2021. Vol. 33, no. 3. P. 509–524. URL: <https://doi.org/10.1080/10401334.2020.1847653>.

⁵ Vendé B., Barberousse A. & Ruphy S. From 2015 to 2023, eight years of empirical research on research integrity: a scoping review. *Research Integrity and Peer Review*. 2025. Vol. 10. Article 5. URL: <https://doi.org/10.1186/s41073-025-00163-1>

increasingly strategic. Initiatives to strengthen these areas directly impact grant competitiveness, public trust, and innovation outcomes^{6,7,8}. Moreover, fostering a healthy research culture is recognised as a driver of research excellence and research quality, foundational to achieving meaningful and sustainable advancements⁹. Recent studies highlight that institutions fostering a comprehensive and ethically grounded research culture benefit not only from enhanced societal trust but also from more robust and sustainable innovation processes¹⁰. In contrast, universities that fail to address weaknesses in their research cultures risk reputational harm, reduced research funding, and challenges in maintaining academic credibility^{11,12}. As the global academic landscape moves toward establishing a global research integrity culture, American universities face both the challenge and the opportunity of leading these transformative efforts.

This study explores the conceptual distinctions between research culture, research climate, and research ecosystems; examines the strategic role of research culture and integrity in fulfilling the scientific mission of U.S. universities; analyses contemporary best practices; and addresses barriers and future directions for strengthening ethical research environments.

The study employs a conceptual and analytical, exploratory-comparative methodology to investigate the formation of research culture and research integrity culture in U.S. universities¹³. The methodological approach is structured around three key pillars: 1) *conceptual analysis*. Key terms such

⁶ Шинкарук О. Дотримання норм академічної доброчесності у закладах вищої освіти США. *Гуманітарний Вісник: Педагогіка, Психологія, Філософія*. 2024. Т. 12. Вип. 1. С. 75–81. URL: [https://doi.org/10.31548/hspedagog.15\(1\).2024.75-81](https://doi.org/10.31548/hspedagog.15(1).2024.75-81)

⁷ Fleerackers A., Moorhead L. L., Alperin J. P., Riedlinger M., Maggio L. A. From impact metrics and open science to communicating research: Journalists' awareness of academic controversies. *PLOS ONE*. 2025. Vol. 20. No. 1. Article e0309274. URL: <https://doi.org/10.1371/journal.pone.0309274>

⁸ Lau A., Haist J., & Hewett R. Impact-driven scholar, reflective practitioner, or pracademic? Conceptualizing hybrid roles to bridge the research-practice gap in HRM. *Human Resource Management Review*. 2025. Vol. 35. No. 2. Article 101077. URL: <https://doi.org/10.1016/j.hrmr.2025.101077>

⁹ Blatch-Jones A. J., Lakin K., & Thomas S. A scoping review on what constitutes a good research culture. *F1000Research*. 2024. Vol. 13. 324. URL: <https://doi.org/10.12688/f1000research.147599.1>

¹⁰ Canti L., Chrzanowska A., Doglio M. G., Martina L., & Van Den Bossche T. Research culture: science from bench to society. *Biology open*. 2021. Vol. 10. No. 8. bio058919. URL: <https://doi.org/10.1242/bio.058919>

¹¹ Fleerackers A., Moorhead L. L., Alperin J. P., Riedlinger M., Maggio L. A. From impact metrics and open science to communicating research: Journalists' awareness of academic controversies. *PLOS ONE*. 2025. Vol. 20. No.1. Article e0309274. URL: <https://doi.org/10.1371/journal.pone.0309274>

¹² Mertz A.F., & Naik S. Beyond the lab: trust, storytelling and the fight for America's attention. *Nature Review Immunology*. 2025. Vol. 25. P. 399–400. URL: <https://doi.org/10.1038/s41577-025-01184-z>

¹³ Creswell J. W., & Creswell J. D. Research design: Qualitative, quantitative, and mixed methods approaches (5th ed.). SAGE, 2018. URL: <https://s1.papyruspub.com/files/demos/products/ebooks/academicbooks/applied-linguistics/Preview-Research-Design-Qualitative-Quantitative-and-Mixed-Methods.pdf>

as research culture, research integrity culture, research climate, and research ecosystem are analysed based on contemporary scholarly definitions and theoretical models^{14,15,16}. This conceptual clarification provides a foundation for understanding their roles within the institutional context of U.S. universities; 2) *comparative synthesis*. Institutional practices across major U.S. universities are compared through the analysis of official reports, codes of conduct, Office of Research Integrity policies, and strategic documents related to academic research missions. Where relevant, global trends – such as initiatives toward a global research integrity culture – are incorporated to contextualise U.S. practices within the broader international landscape; 3) *exploratory literature review*. A selective review of peer-reviewed articles published between 2020 and 2025 was conducted, utilising academic databases and platforms such as SciSpace. Priority was given to studies addressing research integrity, academic ethics, innovation outcomes, research assessment, and university governance. Additionally, policy documents from organisations such as the U.S. Office of Research Integrity (ORI) and leading university frameworks were analysed.

The use of a conceptual-analytical and exploratory-comparative framework is especially effective for uncovering how research culture and research integrity are integrated into the strategic and operational structures of U.S. universities. This choice is further justified by recent scholarship that has utilised comparable methodological designs to study these themes within American higher education^{17,18}. In addition, broader research into academic ethics, governance, and organisational research cultures has successfully applied exploratory-comparative and synthesis-oriented methodologies to examine cross-sectoral practices and draw out actionable insights^{19,20}.

¹⁴ Blatch-Jones A. J., Lakin K., & Thomas S. A scoping review on what constitutes a good research culture. *F1000Research*. 2024. Vol. 13. 324. URL: <https://doi.org/10.12688/f1000research.147599.1>

¹⁵ Fleerackers A., Moorhead L. L., Alperin J. P., Riedlinger M., Maggio L. A. From impact metrics and open science to communicating research: Journalists' awareness of academic controversies. *PLOS ONE*. 2025. Vol. 20. No. 1. Article e0309274. URL: <https://doi.org/10.1371/journal.pone.0309274>

¹⁶ Lau A., Haist J., & Hewett R. Impact-driven scholar, reflective practitioner, or pracademic? Conceptualizing hybrid roles to bridge the research-practice gap in HRM. *Human Resource Management Review*. 2025. Vol. 35. No. 2. Article 101077. URL: <https://doi.org/10.1016/j.hrmr.2025.101077>

¹⁷ Emons W., Sijtsma K., & Bouter L. Preregistration of Research on Research Integrity is still Not Common: Findings from the Hong Kong, Cape Town, and Athens Editions of the World Conference on Research Integrity. 2025. *Preprint*. URL: <https://doi.org/10.31222/osf.io/cn6jf>

¹⁸ Miller G., & Spiegel E. Guidelines for research data integrity (GRDI). *Scientific Data*. 2025. Vol. 12. Article 95. URL: <https://doi.org/10.1038/s41597-024-04312-x>

¹⁹ Arik T., & Michl S. Ethics Committees' Practices in Healthcare, Banking and Research: Key Requirements for Their Functionality. *Journal of Evaluation in Clinical Practice*. 2025. Vol. 31, No. 1. Article e14310. URL: <https://doi.org/10.1111/jep.14310>

²⁰ May D. E. A brief discussion of research philosophies for higher education students. *European Journal of Education*. 2025. Vol. 60. Article e70027. URL: <https://doi.org/10.1111/ejed.70027>

1. Conceptualization and application of the terms “research culture,” “research integrity culture,” “research climate,” and “research ecosystem” in higher education. Developing research culture and integrity for fulfilling the university’s scientific mission

This study found that in the higher education landscape, including that of the United States, research culture refers to the collective values, norms, expectations, and institutional structures that shape how knowledge is produced, disseminated, and rewarded. It encompasses both formal mechanisms (e.g., tenure processes, funding incentives) and informal norms (e.g., mentorship expectations, openness to interdisciplinary collaboration)²¹. This cultural framework supports both individual academic development and the broader fulfilment of institutional research missions.

Historically, the development of research culture in American universities accelerated after World War II with the rise of federally funded research and the transformation of universities into engines of innovation, public policy, and economic competitiveness. Closely related, yet analytically distinct, is the research integrity culture, which focuses more narrowly on ethical conduct, procedural transparency, and the responsible generation and reporting of data²². While research culture provides the overall environment in which research is pursued, research integrity culture sets the normative boundaries – defining what is ethically acceptable, sustainable, and socially accountable. U.S. universities institutionalise research integrity through tools such as offices of research integrity (e.g., Faculty of Arts & Sciences (FAS) Research Integrity Office at Harvard University²³, Office for Academic and Research Integrity at Harvard Medical School²⁴, Research Compliance Office (RCO) at Stanford University²⁵, etc.), mandatory training for faculty and graduate students, and policy enforcement via internal review boards and misconduct investigations.

However, recent literature argues that the most effective integrity cultures go beyond regulatory compliance and incorporate ethical reflexivity

²¹ Obon A. M., Balila J. S., & Balila E. A. Factor analysis of research culture: A comparative study of 3-point and 5-point Likert Scales. *International Journal of Health Sciences*. 2025. Vol. 9. № 1. P. 26–51. URL: <https://doi.org/10.53730/ijhs.v9n1.15375>

²² Miller G., & Spiegel E. Guidelines for research data integrity (GRDI). *Scientific Data*. 2025. Vol. 12. Article 95. URL: <https://doi.org/10.1038/s41597-024-04312-x>

²³ <https://facultyresources.fas.harvard.edu/links/research-integrity-resources-initiative>

²⁴ <https://ari.hms.harvard.edu/>

²⁵ <https://researchcompliance.stanford.edu/rco/getting-started>

into the everyday decisions of researchers^{26,27,28}. The concept of research climate brings a more subjective and perceptual dimension to these institutional realities. It refers to how individuals within the university – faculty, students, and administrators – experience the research environment in real time. Faculty members may perceive climate in terms of workload pressures, funding competition, and collegiality; graduate students often evaluate it based on mentorship quality and career precarity, while administrators may focus on policy implementation and reputation management. In institutions where leadership support is lacking or where competitive metrics dominate (e.g., publication volume, impact factors), a toxic research climate can undermine even well-crafted integrity policies²⁹.

This gap is increasingly monitored through climate surveys – structured assessment tools used by universities to evaluate the lived experiences, perceptions, and attitudes of their academic communities, including faculty, students, and staff, in relation to the research and work environment. These surveys commonly assess dimensions such as inclusion, fairness, psychological safety, leadership support, ethical awareness, and exposure to misconduct. In the context of research culture, climate surveys function as diagnostic instruments that help institutions identify discrepancies between formal policies and actual practices – such as the difference between perceived and enacted research integrity (e.g., Collaborative Institutional Training Initiative (CITI Program)³⁰, AAU Campus Climate Surveys: 2017 AAU Campus Climate Survey Report³¹, 2019 AAU Campus Climate Survey Overview³²), highlighting a disconnect between values and lived experience. Research ecosystem, meanwhile, operates at a macro level – referring to the broader network of external actors and infrastructure shaping research behaviour, including federal agencies (e.g., National Institutes of

²⁶ Allen G., & Israel M. Moving beyond regulatory compliance: building institutional support for ethical reflection in research. *Moving beyond Regulatory Compliance: Building Institutional Support for Ethical Reflection in Research* / ed. by R. Iphofen, & M. Tolich. SAGE Publications Ltd, 2018. P. 276–287. URL: Chapter DOI: <https://doi.org/10.4135/9781526435446.n19>

²⁷ Lee L. M. Research integrity and the regulatory-industrial complex. *Accountability in Research*. 2023. Vol. 31. No. 7. P. 887–897. URL: <https://doi.org/10.1080/08989621.2023.2179395>

²⁸ Miller G., & Spiegel E. Guidelines for research data integrity (GRDI). *Scientific Data*. 2025. Vol. 12. Article 95. URL: <https://doi.org/10.1038/s41597-024-04312-x>

²⁹ Viđak M., Tokalić R., Buljan I., & Marušić A. Virtue ethics-based research integrity training intervention to change medical students' attitudes and perceptions of organizational ethical climate: A randomized controlled trial. *Accountability in Research*. 2024. P. 1–19. URL: <https://doi.org/10.1080/08989621.2024.2438102>

³⁰ <https://about.citiprogram.org/>, course catalogue: <https://about.citiprogram.org/course-catalog/>

³¹ <https://www.aau.edu/sites/default/files/AAU-Files/Key-Issues/Campus-Safety/AAU-Campus-Climate-Survey-FINAL-10-20-17.pdf>

³² <https://www.aau.edu/key-issues/campus-climate-and-safety/aau-campus-climate-survey-2019>

Health (NIH): Grants & Funding Portal³³, Office of Research Integrity (ORI) Collaborations³⁴; National Science Foundation (NSF): Research Integrity Policy (Responsible Conduct of Research)³⁵, Funding & Award Search³⁶), professional societies, journals, and global policy frameworks (e.g., Committee on Publication Ethics (COPE)³⁷, San Francisco Declaration on Research Assessment (DORA)³⁸). In the U.S., this ecosystem is both enabling and pressurising: it provides funding and visibility but also imposes productivity benchmarks that can clash with ethical ideals. For instance, grant competition may incentivise quantity over quality, posing dilemmas for early-career researchers balancing innovation with stability. These terms – while overlapping – are not interchangeable. The danger of conflation is that interventions meant for one layer (e.g., fixing the research ecosystem through increased funding) may fail if the internal research climate remains stressful or exclusionary. Conversely, fostering a strong internal research integrity culture (through codes or training) may be ineffective if misaligned with broader performance pressures or administrative reward structures.

A critical tension in U.S. universities is the balancing act between excellence, productivity, and integrity. While excellence (often equated with publication metrics and grant success) is a cornerstone of institutional prestige, it may unintentionally generate environments where ethical shortcuts are tolerated or rationalised. Studies such as W. Emons et al. (2025)³⁹, L. Šinko et al. (2024)⁴⁰ and T. Pride et al. (2023)⁴¹ suggest that younger researchers and marginalised faculty are especially vulnerable to these trade-offs, often forced to navigate between career progression and principled conduct. Overall, the conceptual clarity between research culture, integrity culture, research climate, and ecosystem is not merely semantic. It has practical implications for where and how institutions intervene, how success is measured, and how stakeholder experiences vary across

³³ <https://grants.nih.gov/>

³⁴ <https://ori.hhs.gov/>

³⁵ <https://www.nsf.gov/policies/responsible-research-conduct>

³⁶ <https://www.nsf.gov/awardsearch/>

³⁷ <https://publicationethics.org/about>

³⁸ <https://sfedora.org/read/>

³⁹ Emons W., Sijtsma K., & Bouter L. Preregistration of Research on Research Integrity is still Not Common: Findings from the Hong Kong, Cape Town, and Athens Editions of the World Conference on Research Integrity. 2025. *Preprint*. URL: <https://doi.org/10.31222/osf.io/cn6jf>

⁴⁰ Šinko L., Baehr L., Murray H.E., Kobulsky J. M., McLoughlin G. M., Schroeder K., & Schumacher L. M. Fostering Responsible Conduct of Research for Early-Stage Investigators: Challenges and Opportunities. *Health Promotion Practice*. 2024. URL: <https://doi.org/10.1177/15248399241278966>

⁴¹ Pride T., Sibbald K., MacLeod A., Martin D., & Owen M. Faculty from marginalized groups in the health and social service professions: Challenging “Expected Academic” Identity and Roles. *Canadian Journal of Higher Education*. 2023. Vol. 53. № 1. P. 32–43. URL: <https://doi.org/10.47678/cjhe.v53i1.189935>

institutional roles and levels of vulnerability. To further clarify these conceptual distinctions and illustrate their varying interpretations across scholarly sources, Table 1 presents a comparative overview of definitions, operational levels, and key components for each term.

Table 1

Comparative Definitions and Interpretations of Research Culture, Research Integrity Culture, Research Climate, and Research Ecosystem

Concept	Commonly accepted definition (general)	Interpretation by Source 1	Interpretation by Source 2	Level of Operation	Key Components	Primary Stakeholders
Research Culture	Shared values, norms, structures, and expectations shaping how research is conducted and rewarded	Emphasizes institutional mission alignment, innovation support, and openness to failure ⁴²	Viewed as encompassing leadership, incentives, and interdisciplinarity ⁴³	Institutional	Tenure systems, collaboration norms, resource allocation, leadership support	Faculty, administrators, leadership
Research Integrity Culture	A subset of research culture focused on ethical behaviour, accountability, and procedural rigor.	Seen as requiring structural embedding into planning and oversight ⁴⁴	Defined by adherence to honesty, transparency, and RCR principles ⁴⁵	Institutional & individual	Codes of conduct, RCR training, ethics mentoring, compliance offices	Researchers, ethics offices, compliance units

⁴² Blatch-Jones A. J., Lakin K., & Thomas S. A scoping review on what constitutes a good research culture. *F1000Research*. 2024. Vol. 13. 324. URL: <https://doi.org/10.12688/f1000research.147599.1>

⁴³ Canti L., Chrzanowska A., Doglio M. G., Martina L., & Van Den Bossche T. Research culture: science from bench to society. *Biology open*. 2021. Vol. 10. No. 8. bio058919. URL: <https://doi.org/10.1242/bio.058919>

⁴⁴ Miller G., & Spiegel E. Guidelines for research data integrity (GRDI). *Scientific Data*. 2025. Vol. 12. Article 95. URL: <https://doi.org/10.1038/s41597-024-04312-x>

⁴⁵ Allen G., & Israel M. Moving beyond regulatory compliance: building institutional support for ethical reflection in research. *Moving beyond Regulatory Compliance: Building Institutional Support for Ethical Reflection in Research* / ed. by R. Iphofen, & M. Tolich. SAGE Publications Ltd, 2018. P. 276–287. URL: Chapter DOI: <https://doi.org/10.4135/9781526435446.n19>

Continuation of table 1

Research Climate	Researchers' real-time experiences and perceptions of their work environment, including stress, fairness, and support.	Associated with perceived workload pressure, competition, and mentorship quality ⁴⁶	Highlighted as a key variable affecting early-career researcher well-being ⁴⁷	Local (lab, department)	Psychological safety, feedback culture, fairness, inclusivity	Faculty, students, lab leaders
Research Ecosystem	External macrostructure encompassing policies, funders, and global frameworks that shape institutional behavior.	Described as including NIH, NSF, DORA, and COPE influences ⁴⁸	Understood as both enabling and pressurizing: supports funding but drives productivity benchmark ⁴⁹	National & global	Grant policies, journal ethics, regulatory norms, international initiatives	Policymakers, institutions, funders, public

This comparative table highlights that while the terms – research culture, research integrity culture, research climate, and research ecosystem – are interrelated, they differ significantly in scope, function, and level of operation. The variability in definitions across sources reflects the evolving nature of these concepts and their contextual dependence on institutional priorities and academic disciplines. Critically, the table underscores that conflating these terms can lead to ineffective policy interventions. For instance, improving research climate without addressing broader ecosystem pressures or institutional governance may yield only superficial changes. Therefore, a nuanced understanding of these distinctions is

⁴⁶ Šinko L., Baehr L., Murray H.E., Kobulsky J. M., McLoughlin G. M., Schroeder K., & Schumacher L. M. Fostering Responsible Conduct of Research for Early-Stage Investigators: Challenges and Opportunities. *Health Promotion Practice*. 2024. URL: <https://doi.org/10.1177/15248399241278966>

⁴⁷ Vidak M., Tokalić R., Buljan I., & Marušić A. Virtue ethics-based research integrity training intervention to change medical students' attitudes and perceptions of organizational ethical climate: A randomized controlled trial. *Accountability in Research*. 2024. P. 1–19. URL: <https://doi.org/10.1080/08989621.2024.2438102>

⁴⁸ Office of Research Integrity (ORI). *FY2023 ORI Annual Report*. URL: <https://ori.hhs.gov/ori-annual-reports>

⁴⁹ Fleerackers A., Moorhead L. L., Alperin J. P., Riedlinger M., Maggio L. A. From impact metrics and open science to communicating research: Journalists' awareness of academic controversies. *PLOS ONE*. 2025. Vol. 20. No.1. Article e0309274. URL: <https://doi.org/10.1371/journal.pone.0309274>

essential for designing integrated strategies that align ethical standards, researcher support, and systemic incentives.

Conceptual foundation established above allowed us to examine how the development of research culture and research integrity culture contributes to the fulfilment of U.S. universities' scientific missions, fosters innovation, and enhances societal trust in research outcomes.

The study found that the development of research culture and research integrity culture is not merely rhetorical, but strategically embedded in institutional missions to drive scientific progress, innovation, and societal engagement. For example, Stanford University's Office of the Vice Provost and Dean of Research explicitly connects its research vision to "solving real-world problems with integrity and interdisciplinary excellence"⁵⁰. The University of Michigan similarly links its research strategy to long-term societal impact, promoting inclusive research environments and ethics-driven mentorship⁵¹. These mission-level commitments translate into concrete structures such as internal grant development services, innovation labs, and research integrity training modules – each of which reinforces a culture where ethical conduct and high-impact discovery are mutually reinforcing rather than conflicting. Moreover, these institutional cultures serve not only as internal drivers of scientific productivity, but also as external signals of trustworthiness and global competitiveness. Universities that publicly align their missions with integrity standards are more likely to attract international collaborators, comply with emerging global research frameworks (e.g., DORA, COPE), and satisfy funders' dual demands for excellence and accountability. Thus, research culture and research integrity culture in leading U.S. universities operate as dual levers: one that fosters innovation through interdisciplinary openness and another that ensures the credibility and societal legitimacy of research outcomes.

This study's comparative synthesis of institutional innovation strategies and exploratory review of policy reports reveals that research culture in U.S. universities operates as a systemic factor contributing to innovation – not only through formal structures, but by embedding norms that reward curiosity-driven, collaborative, and risk-tolerant inquiry. At Massachusetts Institute of Technology (MIT), for example, the Deshpande Center for Technological Innovation explicitly links interdisciplinary team formation and prototyping support to commercialisation outcomes, evidencing how structured entrepreneurial ecosystems grow from institutional cultures that encourage

⁵⁰ Stanford University website. *DoResearch. Vision. Mission.* URL: <https://doresearch.stanford.edu/>

⁵¹ The University of Michigan website. *Advancing Research Access, Social Impact, and Innovation.* URL: <https://research.umich.edu/advancing-research-equity-dei-scholarship-and-inclusive-innovation/>, *Responsible Conduct of Research and Scholarship (RCRS) Training.* URL: <https://research.umich.edu/research-at-michigan/ovpr-units/rcrs/>

high-risk, high-impact research. Similarly, Carnegie Mellon University's Swartz Center for Entrepreneurship emphasizes cross-sectoral partnerships and agile innovation models, supported by mentorship structures and research flexibility – key elements of a dynamic internal research environment. Similarly, as E. Cantwell states, the University of Arizona has been recognised for embedding innovation culture across institutional levels through entrepreneurial leadership programs and translational (use-inspired) research⁵². Beyond infrastructure, research culture shapes innovative processes, developing researchers as technical specialists and institutional figures. At the University of Michigan, innovation metrics are explicitly tied to faculty development programs, with the Innovation Partnerships Office providing integrated support for idea-to-market pathways. Importantly, the success of such models depends not only on resource availability but on cultural norms that promote openness to failure, long-term experimentation, and ethical risk-taking – characteristics identified as core features in institutions reporting top-tier patent output and startup generation. The findings from a bibliometric analysis of innovation culture research by S.Ou et al. identify U.S. institutions as global leaders in fostering cross-disciplinary collaboration and innovation-supportive environments⁵³.

Quantitative evidence provided in studies^{54,55,56} supports this relationship and allow us to draw the conclusion: universities that invest in formalised interdisciplinary hubs and early-career researcher support programs tend to attract higher levels of federal R&D funding and produce more innovation outputs – including patent disclosures and collaborative grants – compared to institutions with less integrated research environments. Moreover, institutions that embed cross-disciplinary collaboration into tenure and promotion criteria are more likely to attract high-impact grants, reflecting how institutional culture shapes both individual behaviour and systemic innovation outcomes. Yet these outcomes are not without tension. As institutions push to scale innovation through tech transfer and commercialisation metrics, there is an

⁵² Cantwell E. Fostering a culture of innovation and an entrepreneurial spirit at the University of Arizona. *Technology & Innovation*. 2023. Vol. 22. No.4. P. 461–467. P. 1–3. URL: <https://doi.org/10.21300/22.4.2023.7>.

⁵³ Ou S., Gan J. L., & Liu L. Innovative Culture: A Fifty-year (1972-2023) Analysis and Future Direction. *Journal of Innovation Management*. 2024. Vol. 12. № 3. P. 72–101. URL: https://doi.org/10.24840/2183-0606_012.003_0004

⁵⁴ Cai X., Lyu X., & Zhou P. The relationship between interdisciplinarity and citation impact – a novel perspective on citation accumulation. *Humanities and Social Sciences Communications*. 2023. Vol. 10. Article 945. URL: <https://doi.org/10.1057/s41599-023-02475-3>

⁵⁵ Sattari R., Bae J., Berkes E., & Weinberg B. A. The ripple effects of funding on researchers and output. *Science advances*. 2022. Vol. 8. Issue 16. URL: <https://doi.org/10.1126/sciadv.abb7348>

⁵⁶ Sun Y., Livan G., Ma A., Latora V. Interdisciplinary researchers attain better performance in funding. *arXiv:2104.13091*. 2021. URL: <https://doi.org/10.48550/arXiv.2104.13091>

increasing need to balance entrepreneurial success with academic values. The risk is that innovation becomes narrowly defined by market utility rather than societal relevance – a concern raised by university stakeholders who warn against reducing innovation culture to startup outputs alone. Therefore, the most resilient and ethically grounded innovation ecosystems are those where research culture actively supports reflexivity, accountability, and inclusive definition of what counts as innovation.

It was also found that the effectiveness of research integrity culture in U.S. universities is critically shaped by its degree of integration into broader institutional research norms – particularly those governing mentorship, recognition, and leadership accountability. Integrity frameworks that exist in isolation, as procedural checklists or training requirements, often have limited impact. By contrast, institutions that embed ethical reflection into core academic processes – such as Harvard’s Research Integrity Initiative or Stanford’s Research Compliance Office – foster a climate in which responsible conduct becomes a normative expectation rather than an administrative burden. These offices not only oversee compliance but also support faculty development, implement advisory structures, and maintain systems for confidential reporting, thereby institutionalising ethical decision-making at multiple levels of academic life^{57,58}.

However, the pursuit of research integrity increasingly collides with structural pressures to perform. American universities operate in hyper-competitive funding and evaluation environments shaped by external league tables, bibliometric indicators, and performance-based budgeting models. These frameworks often value short-term outputs – such as high publication volume, citation counts, and grant acquisition – over slower, riskier, or community-engaged forms of scholarship. Researchers highlight this tension is most acute for early-career researchers, who report ethical dilemmas driven by pressures to publish rapidly, secure funding, and demonstrate “impact” in narrowly defined ways^{59,60}. Quantitative data from recent research integrity surveys and institutional climate assessments show that early-career and minoritized researchers report higher levels of ethical strain, citing misaligned

⁵⁷ Harvard University. Faculty of Arts & Sciences (FAS) Research Integrity Office. URL: <https://facultyresources.fas.harvard.edu/links/research-integrity-resources-initiative>; Harvard Medical School. Office for Academic and Research Integrity. URL: <https://ari.hms.harvard.edu/>

⁵⁸ Stanford University. Research Compliance Office (RCO). URL: <https://researchcompliance.stanford.edu/rco/getting-started>.

⁵⁹ Emons W., Sijtsma K., & Bouter L. Preregistration of Research on Research Integrity is still Not Common: Findings from the Hong Kong, Cape Town, and Athens Editions of the World Conference on Research Integrity. 2025. *Preprint*. URL: <https://doi.org/10.31222/osf.io/cn6jf>

⁶⁰ Teixeira da Silva J. A. Challenges that early career researchers face in academic research and publishing. *Exchanges: The Interdisciplinary Research Journal*. 2021. Vol. 9. № 1. P. 77–106. URL: <https://doi.org/10.31273/eirj.v9i1.882>

expectations, unclear mentorship, and a lack of procedural support when facing dilemmas in authorship, data transparency, or project ownership^{61,62}. In underfunded departments or research areas – particularly the humanities and social sciences – these pressures are further amplified by limited institutional resources and fewer formalised oversight mechanisms. J.D. Robishaw et al. claim that cultures of research integrity that fail to align with institutional reward structures risk becoming superficial or performative⁶³. While many U.S. universities meet the formal requirements of federal ethics mandates – through online training, compliance offices, and misconduct reporting systems – these mechanisms often coexist with internal pressures that reward publication volume, citation metrics, and rapid grant acquisition. This divergence, as E. Denisova-Schmidt claims, creates a “dual morality,” where ethical standards are professed but not structurally incentivised⁶⁴. As highlighted in the literature^{65,66,67,68}, institutional environments that emphasise numerical outcomes may inadvertently promote unethical behaviour, such as coercive authorship practices, questionable data management, and tacit tolerance of misconduct when reputational gains are at stake. The challenge is not merely to maintain procedural integrity but to reconcile ethics with performance by embedding integrity principles into all tiers of research

⁶¹ Šinko L., Baehr L., Murray H.E., Kobulsky J. M., McLoughlin G. M., Schroeder K., & Schumacher L. M. Fostering Responsible Conduct of Research for Early-Stage Investigators: Challenges and Opportunities. *Health Promotion Practice*. 2024. URL: <https://doi.org/10.1177/15248399241278966>

⁶² Vidak M., Tokalić R., Buljan I., & Marušić A. Virtue ethics-based research integrity training intervention to change medical students' attitudes and perceptions of organizational ethical climate: A randomized controlled trial. *Accountability in Research*. 2024. P. 1–19. URL: <https://doi.org/10.1080/08989621.2024.2438102>

⁶³ Robishaw J. D., DeMets D. L., Wood S. K., Boisselle P. M., & Hennekens C. H. Establishing and maintaining research integrity at academic institutions: Challenges and opportunities. *The American journal of medicine*. 2020. Vol. 133. № 3. P. e87–e90. URL: <https://doi.org/10.1016/j.amjmed.2019.08.036>

⁶⁴ Denisova-Schmidt E. The Challenges of Academic Integrity in Higher Education: Current Trends and Prospects. Boston College Center for International Higher Education. 2017. URL: <http://www.jstor.org/stable/resrep39584>

⁶⁵ Allen G., & Israel M. Moving beyond regulatory compliance: building institutional support for ethical reflection in research. *Moving beyond Regulatory Compliance: Building Institutional Support for Ethical Reflection in Research* / ed. by R. Iphofen, & M. Tolich. SAGE Publications Ltd, 2018. P. 276–287. URL: Chapter DOI: <https://doi.org/10.4135/9781526435446.n19>

⁶⁶ Blatch-Jones A. J., Lakin K., & Thomas S. A scoping review on what constitutes a good research culture. *F1000Research*. 2024. Vol. 13. 324. URL: <https://doi.org/10.12688/f1000research.147599.1>

⁶⁷ Kornfeld D. S. Perspective: Research Misconduct. *Academic Medicine*. 2012. Vol. 87. No. 7. P. 877–882. URL: <https://doi.org/10.1097/ACM.0B013E318257EE6A>

⁶⁸ Vidak M., Tokalić R., Buljan I., & Marušić A. Virtue ethics-based research integrity training intervention to change medical students' attitudes and perceptions of organizational ethical climate: A randomized controlled trial. *Accountability in Research*. 2024. P. 1–19. URL: <https://doi.org/10.1080/08989621.2024.2438102>

governance – from grant assessment to faculty evaluation and mentorship design. This alignment is essential to ensure that integrity is a lived value, not just a regulatory obligation.

This study's review of institutional transparency practices and open science reforms reveals that trust in U.S. university-based research is increasingly built not just through results, but through visible commitments to process integrity, community engagement, and global accountability. In the wake of the COVID-19 pandemic, which exposed both the value and vulnerability of academic science, leading institutions such as the University of California system and Johns Hopkins University have publicly expanded open science mandates – including requirements for data sharing, preregistration, and reproducibility checklists in grant-funded research^{69,70}. These practices serve dual purposes: enhancing internal quality control and signalling ethical credibility to external stakeholders, including the public, funders, and policymakers. According to Fleerackers et al. (2025)⁷¹, universities that institutionalise such reforms report measurable increases in public approval, particularly when transparency policies are paired with civic science outreach and participatory research design. For example, the University of California's Open Science Initiative includes dedicated support for publishing null results and replicability studies, thereby reinforcing that academic value is not solely output-driven but process-responsible. Similarly, Columbia University's Research Integrity and Compliance Office has implemented data ethics workshops for faculty and graduate students as part of its broader strategy to enhance trust through researcher education and public accountability mechanisms. Internationally, U.S. institutions are aligning more explicitly with frameworks such as the San Francisco Declaration on Research Assessment (DORA) and the Committee on Publication Ethics (COPE), not just to meet funder requirements but to compete in a global research landscape where ethical reputation has become a key marker of scientific excellence. Strategic plans from universities such as Johns Hopkins and MIT now reference "global integrity engagement" as part of their research missions, recognising that reputational capital in international partnerships depends not just on innovation metrics, but on perceived ethical leadership. This shift, in our view, signals a broader

⁶⁹ Johns Hopkins University. URL: <https://publichealth.jhu.edu/2021/ucsf-and-johns-hopkins-university-launch-digital-trove-of-opioid-industry-documents>

⁷⁰ Nietzel M. T. Caltech and Johns Hopkins University Settle in Financial Aid Lawsuit. *Forbes*. 2025. URL: <https://www.forbes.com/sites/michaelnietzel/2025/01/20/caltech-johns-hopkins-university-settle-in-financial-aid-lawsuit/>

⁷¹ Fleerackers A., Moorhead L. L., Alperin J. P., Riedlinger M., Maggio L. A. From impact metrics and open science to communicating research: Journalists' awareness of academic controversies. *PLOS ONE*. 2025. Vol. 20. No.1. Article e0309274. URL: <https://doi.org/10.1371/journal.pone.0309274>

institutional transition: from reactive compliance toward proactive trust-building as a central feature of twenty-first-century research governance.

Taken together, the findings above illustrate that research culture and research integrity culture are not merely conceptual ideals but strategic levers within U.S. universities. These cultures shape how innovation is pursued, how ethical standards are institutionalized, and how societal trust is built – all within highly competitive and globally interconnected research environments. However, cultivating such cultures requires more than high-level declarations; it demands sustained, institution-wide action across training, evaluation, mentorship, and community engagement systems. The following section therefore shifts focus from institutional outcomes to the concrete strategies U.S. universities employ to build, sustain, and monitor these cultures – with particular attention to how integrity is taught, operationalised, and safeguarded at multiple levels. Ultimately, the development of research culture and integrity culture in U.S. universities is not just ethically imperative – it is a core component of innovation capacity, societal legitimacy, and institutional resilience. Yet tensions persist: between excellence and ethics, productivity and reproducibility, compliance and culture. Managing these trade-offs remains the central challenge for research universities striving to be both innovative and trustworthy in the twenty-first century.

2. Fostering ethical research environment and responsible scholarly conduct in universities: institutional strategies, educational programs, cultural interventions. Challenges and barriers to the effective development of research culture and research integrity.

Effective governance models for ethical research

The analysis of policies, educational programs, and governance mechanisms reveals that U.S. universities employ a multi-level approach to strengthening research integrity. While some strategies are universally adopted, significant variation exists in the depth, structure, and effectiveness of implementation – often influenced by institutional type (e.g., public vs. private), resource availability, and leadership commitment. Table 2 presents a comparative overview of key features distinguishing high-performing from low-performing research integrity strategies across American universities.

Table 2 underscores the systemic differences in how U.S. universities approach research integrity – highlighting not just those in policy presence, but in the depth of integration, institutional ownership, and cultural reinforcement.

Table 2

**Comparative Features of High-Performing vs. Low-Performing
Institutional Strategies for Research Integrity at U.S. Universities**

Feature	High-Performing Institutions	Low-Performing Institutions
Ethics Office Position	Reports to Vice Provost or Dean of Research; integrated with strategic planning ^{72,73}	Nested in sponsored research or compliance units with limited policy influence ⁷⁴
Type of RCR Training	Interactive, case-based, discipline-specific; includes early mentoring integration ⁷⁵	Generic, often passive online modules with minimal contextualisation ^{76,77}
Incentive Alignment	Ethics and collaboration metrics embedded in tenure, funding, and internal review processes ^{78,79}	Performance evaluation based largely on publications, citations, and grant volume ⁸⁰
Culture-Building Mechanisms	Use of lab integrity toolkits, open science communities, and peer-led norms programs ^{81,82}	Focus primarily on compliance and misconduct investigation without cultural reinforcement ⁸³
Monitoring & Evaluation	Institutional climate surveys, reproducibility audits, and feedback-informed reforms ⁸⁴	Few or no mechanisms to assess the effectiveness of integrity training or policies ⁸⁵
Outcomes & Impact	Lower misconduct incidence; higher innovation outputs and grant competitiveness ^{86,87}	Greater ethical strain among researchers; underperformance in collaborative and federally funded projects ⁸⁸

⁷² Office of Research Integrity (ORI). *FY2023 ORI Annual Report*. URL: <https://ori.hhs.gov/ori-annual-reports>

⁷³ Denecke D., Kent J., & Allum J. Research and Scholarly Integrity in Graduate Education: A Comprehensive Approach. USA: Councils of graduate schools, 2012. URL: <https://cgsnet.org/publications/research-and-scholarly-integrity-in-graduate-education-a-comprehensive-approach#/productdetail/5d4897b0-715f-ec11-8f8f-000d3a9a26c4>

⁷⁴ Office of Research Integrity (ORI). *FY2023 ORI Annual Report*. URL: <https://ori.hhs.gov/ori-annual-reports>

⁷⁵ Vidak M., Tokalić R., Buljan I., & Marušić A. Virtue ethics-based research integrity training intervention to change medical students' attitudes and perceptions of organizational ethical climate: A randomized controlled trial. *Accountability in Research*. 2024. P. 1–19. URL: <https://doi.org/10.1080/08989621.2024.2438102>

⁷⁶ Ibid.

⁷⁷ Emons W., Sijtsma K., & Bouter L. Preregistration of Research on Research Integrity is still Not Common: Findings from the Hong Kong, Cape Town, and Athens Editions of the World Conference on Research Integrity. 2025. *Preprint*. URL: <https://doi.org/10.31222/osf.io/cn6jf>

⁷⁸ Ibid.

⁷⁹ Association of American Universities (AAU). *Innovation & Competitiveness*. 2024. URL: <https://www.aau.edu/key-issues/innovation-competitiveness>

⁸⁰ Emons W., Sijtsma K., & Bouter L. Preregistration of Research on Research Integrity is still Not Common: Findings from the Hong Kong, Cape Town, and Athens Editions of the World Conference on Research Integrity. 2025. *Preprint*. URL: <https://doi.org/10.31222/osf.io/cn6jf>

⁸¹ Ibid.

⁸² Office of Research Integrity (ORI). *FY2023 ORI Annual Report*. URL: <https://ori.hhs.gov/ori-annual-reports>

⁸³ Ibid.

⁸⁴ Denecke D., Kent J., & Allum J. Research and Scholarly Integrity in Graduate Education: A Comprehensive Approach. USA: Councils of graduate schools, 2012. URL: <https://cgsnet.org/publications/research-and-scholarly-integrity-in-graduate-education-a-comprehensive-approach#/productdetail/5d4897b0-715f-ec11-8f8f-000d3a9a26c4>

⁸⁵ Ibid.

⁸⁶ Association of American Universities (AAU). *Innovation & Competitiveness*. 2024. URL: <https://www.aau.edu/key-issues/innovation-competitiveness>

⁸⁷ Office of Research Integrity (ORI). *FY2023 ORI Annual Report*. URL: <https://ori.hhs.gov/ori-annual-reports>

⁸⁸ Emons W., Sijtsma K., & Bouter L. Preregistration of Research on Research Integrity is still Not Common: Findings from the Hong Kong, Cape Town, and Athens Editions of the World Conference on Research Integrity. 2025. *Preprint*. URL: <https://doi.org/10.31222/osf.io/cn6jf>

High-performing institutions treat research integrity as a strategic asset, incorporating it into leadership structures, incentive systems, and everyday lab practices. In contrast, low-performing institutions often reduce integrity to procedural compliance, lacking both evaluative mechanisms and cultural investment. Table 2 illustrates that those tangible outcomes – such as grant success and ethical climate – correlate strongly with these deeper structural and cultural commitments. These contrasts call for a shift in sector-wide standards: from reactive regulation toward proactive, institutionally-rooted integrity cultures. Building on the contrasts outlined in Table 2, it becomes evident that the institutional effectiveness of research integrity efforts in U.S. universities is closely tied to how deeply ethical norms are introduced within governance structures. High-performing universities do not merely formalise ethics policies; they integrate ethical expectations into decision-making hierarchies, planning processes, and leadership accountability. This alignment enables a shift from reactive misconduct management to proactive integrity cultivation. In contrast, institutions with weak structural integration often struggle to create consistent expectations or enforce cultural norms across departments.

Regarding ethical norms, U.S. universities, as educational-research institutions, increasingly conceptualise research integrity not merely as compliance with federal regulations, but as a foundational commitment to transparency, fairness, accountability, and social responsibility. These principles are institutionalised through formal oversight systems, codes of research conduct, and dedicated integrity infrastructures. While publicly available quantitative data remain limited, multiple indicators suggest that most R1 universities (based on Carnegie Classification system) maintain dedicated Offices of Research Integrity (ORIs) or equivalent units. The Council of Graduate Schools (CGS)⁸⁹ – which includes all R1 institutions among its members – has long supported integrity-focused initiatives such as the Project for Scholarly Integrity⁹⁰, underscoring the sector-wide emphasis on cultivating ethical research climates. Institutions like Duke University have established comprehensive structures such as the Duke Office of Scientific Integrity⁹¹ in response to past misconduct cases, while the University of Vermont (Office of the Vice Presidents for the Research (OVPR)⁹²) has explicitly linked its integrity commitments to its elevation to R1 status. In elite research-intensive universities (e.g., Stanford, Johns Hopkins), integrity

⁸⁹ About CGS Member Resources. Council of Graduate Schools (CGS). 2024. URL: <https://cgsnet.org/wp-content/uploads/2024/03/2024-About-CGS-Member-Resources.pdf>

⁹⁰ The Project for Scholarly Integrity. Council of Graduate Schools (CGS). 2022. URL: <https://cgsnet.org/report/the-project-for-scholarly-integrity>

⁹¹ <https://tin.al/sXvmUS>

⁹² <https://www.uvm.edu/ovpr/news/uvm-achieves-prestigious-carnegie-r1-designation-joining-highest-level-us-research>

oversight offices are strategically positioned within upper-level research administration, allowing them to inform policy-making and integrate with long-term planning. In contrast, among mid-tier or teaching-focused institutions, integrity responsibilities often remain embedded in sponsored research or compliance offices with more limited scope and influence.

Another critical dimension of institutional integrity culture lies in educational initiatives and capacity building, which aim to equip students, faculty, and early-career researchers with the knowledge and ethical reflexivity necessary for responsible research conduct. Education remains one of the most widely institutionalized strategies for promoting research integrity in American universities, particularly through federally mandated Responsible Conduct of Research (RCR) training. The National Institutes of Health (NIH), along with the Agency for Healthcare Research and Quality (AHRQ) and the Health Resources and Services Administration (HRSA), reaffirmed in 2022 that RCR instruction is a fundamental component of research training at all academic career stages. This policy update emphasizes the importance of discussion-based, discipline-specific instruction and recommends that RCR training be delivered at least once every four years and tailored by career level – from graduate students to postdoctoral researchers (NIH, 2022)⁹³. While graduate-level RCR education is broadly implemented due to these federal mandates, consistent integration into undergraduate curricula remains less common, and national-level data on its prevalence is still sparse. However, this ongoing expansion in RCR scope – now encompassing secure data use, inclusion in lab environments, and international collaborations – illustrates a growing federal emphasis on cultivating ethical awareness throughout the academic research activity. Research-intensive universities (R1 universities) often integrate RCR into doctoral programmes and offer modular ethics programs tailored by discipline (e.g., Michigan, MIT), while smaller teaching-focused colleges tend to rely on external modules (e.g., CITI Program). Effectiveness varies significantly. Research by Vidak et al. (2024)⁹⁴ found that interactive, case-based instruction leads to a 23% higher retention of ethical concepts compared to passive online-only formats. Institutions such as UC San Diego (Research Ethics Workshops can be accessed via:⁹⁵) and Emory (Ethics

⁹³ National Institutes of Health (NIH). *FY 2022 Updated Guidance: Requirement for Instruction in the Responsible Conduct of Research (Notice No. NOT-OD-22-055)*. NIH Office of Extramural Research. 2022. URL: <https://grants.nih.gov/grants/guide/notice-files/not-od-22-055.html>

⁹⁴ Vidak M., Tokalić R., Buljan I., & Marušić A. Virtue ethics-based research integrity training intervention to change medical students' attitudes and perceptions of organizational ethical climate: A randomized controlled trial. *Accountability in Research*. 2024. P. 1–19. URL: <https://doi.org/10.1080/08989621.2024.2438102>

⁹⁵ <https://ethics.ucsd.edu/education/workshops/index.html>

Education Initiatives can be accessed via⁹⁶.) have adopted discussion-led ethics seminars held as part of laboratory workshops, which faculty report as more influential on actual research behaviour than traditional training.

A further critical dimension of research integrity cultivation lies in infrastructure and cultural engineering, where universities move beyond policy enforcement to actively shape the environments, norms, and resources that enable ethical research conduct. Offices of Research Integrity typically oversee misconduct investigations, but leading institutions now go further by offering services such as data management consulting, peer mentoring programs, and reproducibility audits. For example, Columbia University supports principal investigators (PIs) in fostering inclusive, transparent, and collaborative lab environments through a suite of initiatives, including the Research and Data Integrity (ReaDI) program⁹⁷ and its Safety Culture resources⁹⁸, which offer consultation, training, and tools aimed at enhancing ethical conduct, psychological safety, and lab well-being.

Quantitatively, institutions with formalised integrity structures – such as ethics liaisons, reproducibility guidelines, and open science platforms – demonstrate stronger compliance records and fewer reported incidents of misconduct. High-profile misconduct cases underscore the need for robust governance frameworks. For example, the Office of Research Integrity (ORI)⁹⁹ found that one of the doctors, formerly of the New York State Psychiatric Institute, engaged in misconduct by falsely reporting participant eligibility and omitting methodological details across five NIH-funded studies, which were subsequently retracted or corrected. In response, a federally supervised exclusion and monitoring plan was imposed, involving external verification and institutional oversight prior to any future research involvement¹⁰⁰. This case highlights the importance of standing ethics committees, supervisory mechanisms, and transparent governance in maintaining research integrity and public trust. Comparative institutional studies further support this view. Research by A. Batory and S. Batory (2013)¹⁰¹, S. Brint (2006)¹⁰², and Y. Jiang et al. (2024)¹⁰³ suggests that public

⁹⁶ <https://ethics.emory.edu/doc-ethics.html> , <https://ethics.emory.edu/events/index.html>

⁹⁷ <https://research.columbia.edu/ReaDI-program>

⁹⁸ <https://research.columbia.edu/safety-culture>

⁹⁹ Case Summary: Rutherford, Bret. Office of Research Integrity (ORI). U.S. Department of Health and Human Services. 2024. URL: <https://ori.hhs.gov/content/case-summary-rutherford-bret>

¹⁰⁰ Ibid.

¹⁰¹ Batory A. H. and Batory S. S. A Comparison of Faculty Perceptions of Academic Integrity in Private and Public Universities. *Association of Marketing Theory and Practice Conference Proceedings*, 2013, Georgia Southern University, 2013. URL: https://digitalcommons.georgiasouthern.edu/cgi/viewcontent.cgi?article=1064&context=amtp-proceedings_2013

¹⁰² Brint S. *Can Public Research Universities Compete. CSHE Research & Occasional Paper Series*. 2006. Center for Studies in Higher Education: University of California, Berkeley. URL: <https://escholarship.org/content/qt7pb373fw/qt7pb373fw.pdf?t=li4x7m>

universities – especially in the USA – are more likely to frame integrity as a matter of civic duty and accountability, whereas private research-intensive institutions emphasise reputational capital and global prestige. This distinction is evident in institutional strategies: for instance, the University of California, Berkeley foregrounds openness and reproducibility in its integrity framework (more information can be found at¹⁰⁴) while Harvard University emphasises interdisciplinary excellence and procedural rigor as pillars of ethical research culture (more information can be found at¹⁰⁵).

A further important dimension in sustaining research integrity is incentive alignment and grant readiness, where institutions calibrate reward structures, promotion criteria, and funding preparedness to reinforce ethical conduct and responsible research practices. One of the most effective mechanisms for institutionalising integrity is embedding it into systems of recognition and resource allocation. While few universities have made this linkage explicit in internal funding policies, there are promising examples of integrity-supportive infrastructure. For instance, the University of Michigan’s Office of Research Development offers strategic grant consultation and promotes ethical research planning as part of proposal development services¹⁰⁶. Similarly, Arizona State University provides faculty with internal funding programs and tools to align proposals with evolving federal requirements, such as the NIH Data Management and Sharing Policy¹⁰⁷. Although neither university currently mandates co-authorship equity plans or open science criteria for internal review, their support infrastructures signal a growing shift toward integrity-readiness.

Measurement of ethical climate within U.S. research institutions has also become increasingly relevant to integrity efforts. Tools such as institutional climate surveys (previously mentioned), integrity self-assessments, and reproducibility audits are used to gauge both perceptions and realities of research environments. Notably, the CITI Program and the AAU Campus Climate Surveys provide widely adopted frameworks for collecting data on ethics training outcomes, mentorship satisfaction, and trust in oversight processes. Additionally, some universities have begun using qualitative feedback tools – such as anonymous reporting dashboards and post-project integrity debriefings – to refine their understanding of research culture.

¹⁰³ Jiang Y., Liu H., Ouyang Z., Xie M., & Wei S. Psychological sense of community as mediator and growth mindset as moderator in the impact of institutional integrity and perceived teacher support on student thriving: Evidence from private universities in China. *PLOS ONE*. 2024. Vol. 19. No. 12. Article e0312338. URL: <https://doi.org/10.1371/journal.pone.0312338>

¹⁰⁴ <https://cega.berkeley.edu/research-transparency-and-reproducibility/>),

¹⁰⁵ <https://ari.hms.harvard.edu/> , <https://ari.hms.harvard.edu/hms-r3>

¹⁰⁶ <https://medresearch.umich.edu/office-research/about-office-research/our-units/grant-services-analysis/research-development>

¹⁰⁷ ASU Research Resources – can be accessed via: <https://libguides.asu.edu/scholcomm/OApolicyFAQ>

However, many institutions continue to rely predominantly on bibliometric indicators – such as publication volume, *h*-index scores, and grant totals – as proxies for research excellence. This narrow focus often neglects qualitative markers of process excellence, such as collaboration transparency, inclusivity, and mentorship efficacy. When evaluation systems fail to incorporate ethical dimensions, they risk incentivising productivity at the expense of integrity. Interviews with early-career researchers, as W. Emons et al. (2025) claim¹⁰⁸, and assessments by D. Kornfeld (2012)¹⁰⁹ indicate that this misalignment between declared values and actual reward structures fosters institutional cynicism and undermines ethical norm internalisation – particularly in hypercompetitive environments. According to AAU data (2024)¹¹⁰, institutions that integrate research ethics into professional development and infrastructure planning report 18–30% higher federal grant success rates, suggesting a positive correlation between ethical preparedness and funding competitiveness. Nonetheless, adoption remains uneven, and the over-reliance on quantitative output metrics continues to present a critical barrier to building robust and ethically aligned research cultures.

The findings above demonstrate that American universities adopt a diverse and multi-layered approach to cultivating research integrity, encompassing governance frameworks, educational mandates, infrastructural supports, and incentive structures. While high-performing institutions embed ethics into core academic processes and leadership systems, disparities persist across the sector – particularly in training standardisation, equity of access, and institutional follow-through. These structural innovations and cultural shifts are critical, yet their effectiveness hinges on the alignment between declared values and operational realities. However, even the most comprehensive integrity strategies face formidable barriers.

The next issue that is worth considering is how systemic challenges – such as performance pressure, bibliometric dominance, and weak feedback mechanisms – complicate the implementation of sustainable research integrity cultures and risk undermining both institutional credibility and ethical research behaviour.

Despite progress in building institutional frameworks and training systems, significant implementation barriers and equity concerns persist. These issues compromise the depth and consistency of integrity practices,

¹⁰⁸ Emons W., Sijtsma K., & Bouter L. Preregistration of Research on Research Integrity is still Not Common: Findings from the Hong Kong, Cape Town, and Athens Editions of the World Conference on Research Integrity. 2025. *Preprint*. URL: <https://doi.org/10.31222/osf.io/cn6jf>

¹⁰⁹ Kornfeld D. S. Perspective: Research Misconduct. *Academic Medicine*. 2012. Vol. 87. No.7. P. 877–882. URL: <https://doi.org/10.1097/ACM.0B013E318257EE6A>

¹¹⁰ Association of American Universities (AAU). *Innovation & Competitiveness*. 2024. URL: <https://www.aau.edu/key-issues/innovation-competitiveness>

disproportionately affecting under-resourced institutions and vulnerable researcher populations.

A first and critically significant dimension shaping the challenges to research integrity in U.S. universities is the presence of structural asymmetries and institutional gaps. Persistent disparities in research integrity infrastructure reflect broader systemic asymmetries across the U.S. higher education landscape. These include:

- Lack of uniformity in training standards across institutional types (e.g., R1 vs. regional universities), leading to inconsistent preparedness among researchers¹¹¹.

- Underevaluation of “process excellence” – including transparency, mentorship, and collaboration ethics – in faculty evaluation and promotion criteria¹¹².

- Limited investment in ethics infrastructure in regional or teaching-intensive institutions, where sponsored research offices often absorb integrity responsibilities with constrained authority or resources¹¹³.

- Disproportionate ethical strain on first-generation and minoritised scholars, who often lack access to informal mentoring networks and encounter unclear pathways for ethical support¹¹⁴.

- Insufficient feedback and assessment systems, resulting in symbolic rather than transformative approaches to ethics policy implementation¹¹⁵.

The next critical domain is performance pressures and metric misalignment, where the dominance of bibliometric indicators and competitive grant cultures can undermine the integration of ethical values into research practice. One of the severest threats to research integrity in U.S. universities is the pressure to perform within bibliometric and funding-based reward systems. League tables, grant acquisition benchmarks, and publication counts dominate institutional value systems, often eclipsing ethical leadership and collaborative conduct. This performance paradigm not only distorts academic priorities but also creates structural misalignments between integrity values and evaluation criteria. According to W. Emons et

¹¹¹ Marušić A. Evidence-Based Research Integrity. *Ethics and Responsible Research and Innovation in Practice. Lecture Notes in Computer Science* /ed. by E. González-Esteban, R.A. Feenstra, & L. M. Camarinha-Matos. Vol 13875. Springer, Cham. 2023. P. 173–187. URL: https://doi.org/10.1007/978-3-031-33177-0_11

¹¹² Kornfeld D. S. Perspective: Research Misconduct. *Academic Medicine*. 2012. Vol. 87. No.7. P. 877–882. URL: <https://doi.org/10.1097/ACM.0B013E318257EE6A>

¹¹³ Robishaw J. D., DeMets D. L., Wood S. K., Boiselle P. M., & Hennekens C. H. Establishing and maintaining research integrity at academic institutions: Challenges and opportunities. *The American journal of medicine*. 2020. Vol. 133. № 3. P. e87–e90. URL: <https://doi.org/10.1016/j.amjmed.2019.08.036>

¹¹⁴ Ibid.

¹¹⁵ Kornfeld D. S. Perspective: Research Misconduct. *Academic Medicine*. 2012. Vol. 87. No.7. P. 877–882. URL: <https://doi.org/10.1097/ACM.0B013E318257EE6A>

al. (2025)¹¹⁶, faculty and early-career researchers frequently report that metrics like journal impact factors and citation indices determine their advancement, while mentorship quality, transparency, and collaborative fairness remain under-recognised in promotion and tenure processes.

The dominance of bibliometric indicators also skews institutional benchmarking and resource distribution, reinforcing competitive over collaborative behaviour. Such environments increase the risk of questionable research practices (QRPs), as individuals and departments may prioritise rapid output over methodological rigor. Moreover, evaluation regimes that narrowly reward volume and visibility – without integrated integrity indicators – can unintentionally incentivise practices that erode long-term research credibility.

As highlighted in D. Kornfeld (2012)¹¹⁷ and supported by recent AAU assessments (2024)¹¹⁸, the lack of standardised tools to measure ethical climate and the overreliance on output metrics have left many universities without a clear framework to assess whether integrity training, oversight, or cultural interventions are achieving meaningful outcomes. Surveys indicate that early-career researchers and junior faculty face ethical dilemmas as they attempt to meet escalating institutional expectations with limited support. These conditions facilitate mental health risks, foster cynicism toward integrity frameworks, and may encourage shortcuts or data manipulation in high-stakes environments.

Another critical domain is the inadequacy of metrics for evaluating integrity culture, where the absence of standardised, comprehensive tools hinders universities' ability to assess the effectiveness of their research ethics frameworks and cultural interventions. While many institutions have adopted Responsible Conduct of Research (RCR) training and research ethics codes, few have implemented strong, multi-level tools for evaluating the effectiveness of these initiatives. Integrity climate surveys, where conducted, are often optional, infrequent, or not linked to strategic planning or budgetary decisions. The lack of reproducibility audits, feedback loops, or course-outcome tracking further weakens accountability. When evaluation is tied solely to compliance checklists or online module completion, it reinforces a performative approach – where ethics becomes a formality rather than a lived institutional norm. Some institutions are actively piloting integrity-inclusive metrics. For instance, the University of California (UC)

¹¹⁶ Emons W., Sijtsma K., & Bouter L. Preregistration of Research on Research Integrity is still Not Common: Findings from the Hong Kong, Cape Town, and Athens Editions of the World Conference on Research Integrity. 2025. *Preprint*. URL: <https://doi.org/10.31222/osf.io/cn6jf>

¹¹⁷ Kornfeld D. S. Perspective: Research Misconduct. *Academic Medicine*. 2012. Vol. 87. No.7. P. 877–882. URL: <https://doi.org/10.1097/ACM.0B013E318257EE6A>

¹¹⁸ Association of American Universities (AAU). *Innovation & Competitiveness*. 2024. URL: <https://www.aau.edu/key-issues/innovation-competitiveness>

system has partnered with an open online platform for the exchange of scientific protocols *protocols.io* to promote research reproducibility. This five-year pilot project allowed UC researchers free access to tools for creating, sharing, and collaborating on research protocols, aiming to enhance transparency and reproducibility in scientific publications¹¹⁹. Similarly, as A. Callahan et al. (2024)¹²⁰ state, Stanford University has developed the Fair, Useful, and Reliable AI Model (FURM) assessment to evaluate AI models' ethical considerations before deployment, ensuring fair and reliable research practices. At Emory University, initiatives like the Emory Climate Research Initiative (ECRI) aim to foster interdisciplinary research and training, although specific programs linking ethics training outcomes to departmental evaluations and lab climate metrics are not detailed in the available sources (for more information refer to¹²¹). These examples illustrate a growing recognition of the need for comprehensive, integrity-inclusive metrics to evaluate and promote ethical research practices effectively.

A final yet forward-looking domain is structural and cultural reform, which focuses on reengineering the foundational governance and institutional logics that shape how research integrity is implemented, incentivised, and sustained within U.S. universities. Addressing these challenges requires both structural and cultural change. Recommended strategies include:

- Embedding ethics metrics into grant review, promotion, and departmental evaluations.
- Expanding RCR training to all academic levels with discipline-specific tailoring.
- Ensuring sustained funding for ethics offices and expanding their mandate beyond compliance.
- Developing community-based mentoring networks, especially for underrepresented researchers.
- Institutionalising climate monitoring and publicly reporting on ethics-related reforms.

Ultimately, bridging the gap between ethical aspiration and operational reality is essential for ensuring that U.S. universities remain globally competitive, scientifically rigorous, and socially accountable in the 21st century.

Building an ethical research culture extends far beyond mere regulatory compliance. Although codes of research integrity and formal oversight structures are essential, they cannot foster the internalisation of ethical

¹¹⁹ <https://osc.universityofcalifornia.edu/2024/10/protocols-io-five-year-pilot-conclusion/>

¹²⁰ Callahan A., McElfresh D., Banda J. M., Bunney G., Char D., Chen J., Corbin C. K., Dash D., Downing N. L., Nallan S., Jain S. S., Kotecha N., Masterson J., Mello M. M., Morse K., Pandya A., Revri A., Sharma A., Sharp C., ... Shah N. H. Standing on FURM ground: A framework for evaluating fair, useful, and reliable AI models in healthcare systems. *NEJM Catalyst. Innovation in Care Delivery*. 2024. Vol. 5. No. 10. URL: <https://doi.org/10.1056/CAT.24.0131>

¹²¹ <https://climate.emory.edu/>

norms or inspire principled academic behaviour on their own. Instead, high standards of research, quality, and institutional accountability should be an integral part of the university research ecosystem. Researchers say these concepts shape not only how research is conducted, but how researchers perceive their responsibilities, engage with societal needs, and contribute to sustainable scientific progress^{122,123}.

To understand why ethical research culture matters so profoundly, it is essential first to clarify how American universities conceptualise research excellence, research quality, and the frameworks through which these are assessed. In U.S. academic settings, research excellence is often defined by high publication metrics, citations, and external funding. In contrast, research quality places emphasis on methodological soundness, reproducibility, and ethical transparency¹²⁴. Together, these concepts should drive how research is assessed and supported institutionally.

Research assessment frameworks greatly influence institutional behaviour and innovation outcomes. X. Cai et al. (2023)¹²⁵, Y. Sun et al. (2021)¹²⁶ highlight that systems that reward interdisciplinarity, process integrity, and societal impact foster broader innovation opportunities. On the other hand, excessive reliance on bibliometrics can distort incentives and reduce the priority of ethical mentoring or collaboration. According to W. Emons et al. (2025)¹²⁷ and M. Vidak et al. (2024)¹²⁸, universities that integrate integrity indicators – such as mentorship efficacy and open science practices – into assessment tools are more likely to align performance metrics with ethical goals.

To examine how ethical research practices are sustained institutionally, we are to consider the governance models that structure, enforce, and embed these values within the fabric of higher education. Effective governance models for ethical research in higher education are characterized by

¹²² Emons W., Sijtsma K., & Bouter L. Preregistration of Research on Research Integrity is still Not Common: Findings from the Hong Kong, Cape Town, and Athens Editions of the World Conference on Research Integrity. 2025. *Preprint*. URL: <https://doi.org/10.31222/osf.io/cn6jf>

¹²³ Blatch-Jones A. J., Lakin K., & Thomas S. A scoping review on what constitutes a good research culture. *F1000Research*. 2024. Vol. 13. 324. URL: <https://doi.org/10.12688/f1000research.147599.1>

¹²⁴ Ibid.

¹²⁵ Cai X., Lyu X., & Zhou P. The relationship between interdisciplinarity and citation impact – a novel perspective on citation accumulation. *Humanities and Social Sciences Communications*. 2023. Vol. 10. Article 945. URL: <https://doi.org/10.1057/s41599-023-02475-3>

¹²⁶ Sun Y., Livan G., Ma A., Latora V. Interdisciplinary researchers attain better performance in funding. *arXiv:2104.13091*. 2021. URL: <https://doi.org/10.48550/arXiv.2104.13091>

¹²⁷ Emons W., Sijtsma K., & Bouter L. Preregistration of Research on Research Integrity is still Not Common: Findings from the Hong Kong, Cape Town, and Athens Editions of the World Conference on Research Integrity. 2025. *Preprint*. URL: <https://doi.org/10.31222/osf.io/cn6jf>

¹²⁸ Vidak M., Tokalić R., Buljan I., & Marušić A. Virtue ethics-based research integrity training intervention to change medical students' attitudes and perceptions of organizational ethical climate: A randomized controlled trial. *Accountability in Research*. 2024. P. 1–19. URL: <https://doi.org/10.1080/08989621.2024.2438102>

structural integration, accountability, and strategic alignment. Researchers argue that high-performing universities implement governance models with the following features:

- *Centralised oversight*: Ethics offices report directly to Provosts or Deans of Research, ensuring institutional influence¹²⁹.
- *Strategic embedding*: Ethical principles are embedded into research planning, grant development, and review systems^{130,131}.
- *Distributed responsibility*: Multiple layers of ethical support – departments, lab leaders, compliance units – share accountability¹³².
- *Community engagement*: Policies are developed transparently with input from faculty, students, and administrative stakeholders.
- *Data-driven improvement*: Institutions conduct climate surveys, reproducibility audits, and feedback loops to refine practices¹³³.

Examples include Harvard's Faculty of Arts and Sciences Research Integrity Office and Stanford's Research Compliance Office, which combine oversight with capacity-building, mentorship training, and confidential advisory systems¹³⁴.

A key dimension of these governance models is how they support and structure mentorship. Mentorship seems to be a cornerstone of ethical research culture, especially for early-career researchers. When done well, it fosters ethical awareness, procedural knowledge, and psychological safety. Conversely, weak or misaligned mentorship increases vulnerability to research misconduct¹³⁵. Best practices include:

- integrating mentorship with ethics training;

¹²⁹ Denecke D., Kent J., & Allum J. Research and Scholarly Integrity in Graduate Education: A Comprehensive Approach. USA: Councils of graduate schools, 2012. URL: <https://cgsnet.org/publications/research-and-scholarly-integrity-in-graduate-education-a-comprehensive-approach#/productdetail/5d4897b0-715f-ec11-8f8f-000d3a9a26c4>

¹³⁰ Case Summary: Rutherford, Bret. Office of Research Integrity (ORI). U.S. Department of Health and Human Services. 2024. URL: <https://ori.hhs.gov/content/case-summary-rutherford-bret>

¹³¹ Office of Research Integrity (ORI). *FY2023 ORI Annual Report*. URL: <https://ori.hhs.gov/ori-annual-reports>

¹³² Robishaw J. D., DeMets D. L., Wood S. K., Boisselle P. M., & Hennekens C. H. Establishing and maintaining research integrity at academic institutions: Challenges and opportunities. *The American journal of medicine*. 2020. Vol. 133. № 3. P. e87–e90. URL: <https://doi.org/10.1016/j.amjmed.2019.08.036>

¹³³ Denecke D., Kent J., & Allum J. Research and Scholarly Integrity in Graduate Education: A Comprehensive Approach. USA: Councils of graduate schools, 2012. URL: <https://cgsnet.org/publications/research-and-scholarly-integrity-in-graduate-education-a-comprehensive-approach#/productdetail/5d4897b0-715f-ec11-8f8f-000d3a9a26c4>

¹³⁴ Miller G., & Spiegel E. Guidelines for research data integrity (GRDI). *Scientific Data*. 2025, Vol. 12. Article 95. URL: <https://doi.org/10.1038/s41597-024-04312-x>

¹³⁵ Sinko L., Baehr L., Murray H.E., Kobulsky J. M., McLoughlin G. M., Schroeder K., & Schumacher L. M. Fostering Responsible Conduct of Research for Early-Stage Investigators: Challenges and Opportunities. *Health Promotion Practice*. 2024. URL: <https://doi.org/10.1177/15248399241278966>

- offering peer-led mentorship networks;
- evaluating mentorship quality in promotion processes.

Evidence suggests that mentorship combined with case-based ethics instruction significantly improves ethical retention and application¹³⁶. Understanding how governance and mentorship operate within ethical research cultures leads naturally to examining how institutional integrity codes influence researcher behaviour, organisational norms, and overall research quality. Integrity frameworks that go beyond training to shape research culture – via strategic alignment, incentive structures, and governance models – create environments where ethical conduct is sustained. Studies revealed that institutions that treat integrity as a strategic asset rather than a compliance requirement show higher grant success, more robust collaborations, and fewer misconduct cases^{137,138}. By contrast, shallow or fragmented governance – where ethical codes are nested in lower-tier units – leads to symbolic compliance and ethical strain among faculty^{139,140,141}.

While integrity codes and governance frameworks aim to uphold ethical standards, their absence or weak implementation can lead to significant risks, including research misconduct and its far-reaching consequences. Research misconduct encompasses fabrication, falsification, and unethical authorship or data practices. In universities without strong ethical cultures, misconduct becomes more likely, especially under pressure for publication or funding¹⁴². Consequences include:

- institutional reputational damage;
- funding ineligibility;
- retractions and legal penalties;
- internal morale decline.

¹³⁶ Vidak M., Tokalić R., Buljan I., & Marušić A. Virtue ethics-based research integrity training intervention to change medical students' attitudes and perceptions of organizational ethical climate: A randomized controlled trial. *Accountability in Research*. 2024. P. 1–19. URL: <https://doi.org/10.1080/08989621.2024.2438102>

¹³⁷ Case Summary: Rutherford, Bret. Office of Research Integrity (ORI). U.S. Department of Health and Human Services. 2024. URL: <https://ori.hhs.gov/content/case-summary-rutherford-bret>

¹³⁸ Association of American Universities (AAU). *Innovation & Competitiveness*. 2024. URL: <https://www.aau.edu/key-issues/innovation-competitiveness>

¹³⁹ Шинкарук О. Дотримання норм академічної доброчесності у закладах вищої освіти США. *Гуманітарний Вісник: Педагогіка, Психологія, Філософія*. 2024. Т. 12, вип. 1. С. 75–81. URL: [https://doi.org/10.31548/hspedagog15\(1\).2024.75-81](https://doi.org/10.31548/hspedagog15(1).2024.75-81).

¹⁴⁰ Denisova-Schmidt E. The Challenges of Academic Integrity in Higher Education: Current Trends and Prospects. Boston College Center for International Higher Education. 2017. URL: <http://www.jstor.org/stable/resrep39584>

¹⁴¹ Kornfeld D. S. Perspective: Research Misconduct. *Academic Medicine*. 2012. Vol. 87. No.7. P. 877–882. URL: <https://doi.org/10.1097/ACM.0B013E318257EE6A>

¹⁴² Case Summary: Rutherford, Bret. Office of Research Integrity (ORI). U.S. Department of Health and Human Services. 2024. URL: <https://ori.hhs.gov/content/case-summary-rutherford-bret>

The above suggests that a regulatory framework is a necessary starting point, but sustainable research ethics depends on the alignment of values, incentives, and institutional behaviour. The most resilient and innovative universities are those where governance models operationalise integrity as a lived institutional norm. Through strategic assessment, effective mentorship, and inclusive governance, ethics is transformed from a mandate into a mission. The above implies that an ethical research culture is a prerequisite for sustainable research excellence in U.S. universities. Effective governance models – those integrating strategic oversight, inclusive policies, and mentorship systems – are essential to ensure integrity is not performative, but lived. In an era of competitive global science, aligning ethics with innovation, assessment, and accountability is not optional – it is foundational.

CONCLUSION

This study has demonstrated that research culture and research integrity culture are basic to the scientific mission of U.S. universities, not merely as ethical imperatives but as strategic assets. Through an extensive conceptual and comparative analysis, the study has shown how definitions of research culture, integrity culture, climate, and ecosystem intersect to shape institutional behaviour, researcher experiences, and research outcomes. Leading universities have begun to move beyond a compliance-driven model, embedding ethical principles into governance structures, assessment frameworks, and mentorship systems. Such integration is vital for fostering environments where innovation and integrity are mutually reinforcing. The findings underscore that cultivating an ethical research culture requires more than isolated training modules or policy documents. It demands institution-wide alignment of incentives, leadership accountability, and inclusive support structures – particularly for early-career and minoritised researchers. High-performing institutions are distinguished not by the presence of integrity codes alone, but by how deeply those codes are operationalised through strategic oversight, cultural reinforcement, and feedback mechanisms. At the same time, systemic barriers persist. Metric-driven evaluation systems, inequitable resource distribution, and symbolic implementation of ethics policies continue to undermine integrity initiatives. Addressing these challenges calls for cultural and structural reform – embedding integrity into funding readiness, promotion criteria, and institutional climate evaluation. Ultimately, this article affirms that ethical research culture is essential not just for preventing misconduct but for advancing credible, inclusive, and socially responsible science. In a global academic landscape increasingly shaped by open science mandates and public scrutiny, U.S. universities must lead by example – treating ethics not as a bureaucratic requirement but as the very foundation of scholarly excellence and societal trust. Bridging the gap between ethical ideals

and operational realities remains the central challenge for research institutions in the twenty-first century.

The findings of this study carry several significant implications for future research, institutional policy, and scholarly discourse around research culture and integrity in U.S. universities. First, the conceptual distinction between research culture, research integrity culture, research climate, and research ecosystem presents an important analytical framework for future empirical studies. Researchers can develop more targeted instruments for assessing institutional effectiveness in promoting ethical research environments. Second, this study highlights the need for more profound metrics in evaluating research excellence and integrity. Third, the article underscores mentorship and governance as underexplored but critical variables in the ethical development of early-career researchers. Finally, the strategic incorporating of ethics into university missions, innovation strategies, and global research competitiveness requires an interdisciplinary approach. Future work should prioritize empirical research, inter-institutional comparisons, and joint tool development with stakeholders to translate ethical issues into measurable and sustainable practices.

SUMMARY

This study explores the strategic importance of cultivating research culture and research integrity culture within U.S. universities. Using a conceptual-analytical and exploratory-comparative methodology, the article defines and differentiates key terms – research culture, integrity culture, research climate, and ecosystem – and examines how these concepts interact across institutional structures. The findings reveal that high-performing universities incorporate ethical principles into governance, mentorship, and assessment systems, thereby enhancing research quality, innovation, and societal trust. In contrast, institutions that treat integrity as a compliance issue often face higher rates of misconduct and researcher dissatisfaction. The analysis highlights the critical role of mentorship, leadership accountability, and integrity-inclusive evaluation metrics in building sustainable ethical environments. Additionally, the article emphasises the need for structural reforms to align institutional incentives with ethical standards. The study affirms that ethical research culture is not optional but foundational to the credibility, inclusivity, and long-term impact of scientific advancement in higher education.

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