



Research note

Interdisciplinary and collaborative work: Framing promotion and tenure practices and policies



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ABSTRACT

Interdisciplinarity and collaboration are keywords for change in the 21st century. Both, however, face challenges across the entire academic system, from administrative policies and budget formulas to disciplinary cultures of research and education. This Research Note is the first synthesis of findings from literature and models for practices and policies that recognize interdisciplinary and collaborative work in the promotion and tenure (P&T) process, brought together in a table of recommendations. Creating a culture of reward requires consistency, alignment, and comprehensiveness at all stages and levels of evaluation, from defining expectations in the initial appointment to preparing individual candidates' dossiers to incorporating appropriate criteria. Several organizations have led the way in formulating recommendations for recognizing interdisciplinary and collaborative work. Professional societies and academic administrators at local levels are also providing leadership. Institution-wide policies are rare though do exist. More often individual units are issuing guidelines for appropriate evaluation. A number of studies have also called for widening definition of what counts for consideration, including innovative, applied, and commercial research and development. The overriding lesson to emerge is the importance of a systematic and informed approach.

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1. Introduction: the need for a framework

Interdisciplinarity and collaboration are both mantras for change in the 21st century. Two reports document the current heightened interest and state of the art: *Facilitating Interdisciplinary Research* (National Research Council, 2004) and *Enhancing the Effectiveness of Team Science* (National Research Council, 2015). Not all interdisciplinary research is conducted by teams. Individuals collaborate within disciplinary and professional domains. However, the two terms are coupled increasingly because interdisciplinary collaboration is widely considered essential to addressing complex scientific and societal problems that require the expertise of more than one discipline. Both terms also appear in conjunction with the rhetoric of innovation and R&D partnerships bridging the academy and industry. Despite powerful endorsements and authoritative accounts, however, both interdisciplinary and collaborative research are unevenly institutionalized. They face

challenges across the entire academic system, from administrative policies and budget formulas to disciplinary cultures of research and education. Promotion and tenure (P&T) also loom large in accounts of barriers and disincentives.

In a preliminary data-gathering survey for the 2004 report on *Facilitating Interdisciplinary Research*, provosts ranked promotion the top of five major impediments to interdisciplinary research on their campuses. The 2015 report on *Enhancing the Effectiveness of Team Science* also noted most universities lack comprehensive and explicit criteria for evaluating individual contributions to team-based research. As a result, individuals face a double handicap. Their work is judged typically by discipline-based standards, and their contributions to collaborative research are under-valued if they are not first author on publications or principal investigator on a grant. This Research Note provides a defining framework for all parties to the P&T process, including faculty, chairs and directors, review committees and external evaluators, administrators and managers, as well as professional organizations. Without a common framework, local efforts are often hindered by lack of articulation and precedent, placing them behind peer administrators and institutions.

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1.1. Methods

The framework integrates findings from literature and models from a growing number of institutions for changing practices and policies regarding promotion and tenure for interdisciplinary and collaborative research. The literature search combined results from databases of the Wayne State University (WSU) Library System with resources on evaluation in the [National Cancer Institute's Team Science Toolkit](#) and in the folder tagged "Reward & Recognition-Promotion and Tenure" in the public [Mendeley Science of Team Science group](#). The Summon tool in the WSU QuickSearch portal accesses a wide range of databases, including PubMed, Business Source Complete, and JSTOR. In addition, the search cross-checked Web of Science, Google Scholar, and the journals *Research Policy*, *Research Evaluation*, *Journal of Higher Education*, and *Review of Higher Education*. In all cases, the search string included the terms "interdisciplinary," "collaboration," "research," "team science," "promotion," and "tenure," with Boolean combinations of those keywords.

The authors then reviewed all pertinent publications from the literature search and models identified in the scan. They also drew on their involvement in a national survey of P&T policies at 58 academic institutions that received Clinical and Translational Science Awards from the National Institutes of Health, their invited expert contributions to the National Research Council consensus study on *Enhancing the Effectiveness of Team Science*, one author's membership on an Association for Interdisciplinary Studies task force on P&T for interdisciplinary research and education, and the other author's membership on a Canadian Academy of Health Sciences panel on team science and contribution to their final report. Using discourse analysis of all sources of information, they identified similar language and patterns of argument about both barriers and success factors. These similarities and patterns formed the basis for the common framework that underscores shared themes of consistency, alignment, and comprehensiveness in creating an institutional culture of reward and strategies for preparing P&T cases for individual candidacies.

2. Creating a culture of reward

Creating a culture of reward is a comprehensive approach that spans the career life cycle, from hiring through pre-tenure and tenure review, and subsequent stages of promotion. Lest hiring seem too early, the Council of Environmental Deans and Directors (CEDD) contends the first stage in considering interdisciplinary hires should be assessing institutional readiness to support them at all levels, from the hiring unit through P&T committees and top administrative offices (Pfirman, 2011; Pfirman and Martin, 2010, 2017). The CEDD's document on supporting interdisciplinary careers emanated from the field of environmental research and education, but with the stated intention of being a template for other fields as well. Entitled "Interdisciplinary Hiring and Career Development," the document underscores the importance of a systematic approach. The Memorandum of Agreement (MOU) for a position, also known as a Letter of Agreement (LOA), is pivotal for all stages. It defines expectations about research, teaching, service, mentoring, and advising. In addition, the CEDD recommends stipulating the percentage of time devoted to each unit if positions span more than one site, as with joint appointments between departments and programs or centers and institutes that are often sites of interdisciplinary and collaborative work. Authority for tenure decisions should be specified as well. (For a model letter of hire see the National Cancer Institute's "A template for integrating interdisciplinary research and team science into the tenure track offer letter"; [National Cancer Institute, 2011](#)).

Professional societies are also playing a leadership role. The Computing Research Association's (CRA) [Best Practices Memo on "Promotion and Tenure of Interdisciplinary Faculty"](#) (2008), for instance, grounds generic recommendations in the context of computing and information science as well as engineering. Academic departments of computer and information science are increasingly recruiting and hiring faculty with interdisciplinary skills. However, tenure remains a challenge. Deans and provosts are key figures, though the Memo urges senior colleagues also be involved. In addition to paying careful attention to interdisciplinarity in job interviews, the Best Practices Memo advocates outlining expectations in the MOU to inform annual and third-year reviews, preparation of a dossier for P&T, and tenure-stage review by local committees and external reviewers. The CRA further exhorts faculty involved in a collaboration-based center or institute to seek advice on how to balance participation on large team projects with work that establishes a strong individual reputation. And, following suit, representatives from both home departments and other units should be included on review committees (Pollack and Snir, 2008).

Academic leaders play key roles at the local level as well. In a meeting on interdisciplinary research assessment at the American Association for the Advancement of Science, former provost of Duke University Peter Lange (2006) urged consistency across pre-tenure and tenure review committees, reflecting a candidate's job description as much as possible. Former Vice-Chancellor of the University of California system Judson King (2006) also joined Lange in citing deans as crucial intermediaries to ensure work is fairly represented and differing judgments of committees or external evaluators are adjudicated if necessary. Academic leaders play key roles in fostering a culture of reward as well. Duke, for example, was the first university to establish an office of interdisciplinary studies at the level of vice provost, sending a strong signal that both interdisciplinarity and team research are valued at a high level ([Interdisciplinary Studies at Duke University](#)).

Changes to P&T policies also emanate from institution-wide task forces and broad-based committees aimed at creating more favorable campus cultures for interdisciplinary work. And, they emerge from individual units. A number of schools of medicine and health science institutions have been at the forefront of revising promotion and tenure policies. The guidelines on "Faculty Appointment, Promotion, and Tenure" at the Health Science Center of [Texas A&M University \(1999\)](#) cite common reasons, including the complexity of research problems today coupled with the breadth of biomedical and healthcare projects in basic, translational, and clinical research. They require an interdisciplinary approach involving teams from multiple units as well as other institutions, government agencies, non-governmental organizations, and industry. Likewise, guidelines on "Appointment, Reappointment and Promotion of Faculty" in the Medical School at University of North Carolina-Chapel Hill (2009) admonish that emphasis on interdisciplinary team activities in biomedical sciences warrants careful consideration of related contributions.

Bunton and Mallon's (2007) report on a survey of personnel policies at medical schools over a 30-year span provides a more longitudinal perspective from the Association of American Medical Colleges (AAMC). Conducted in 2005 the AAMC canvas of 125 examples had a response rate of 100%. One finding in the period prior to the survey stood out: growing institutional recognition of interdisciplinary and team science in the P&T process. Between 2002 and 2005, 15 medical schools (12%) revised guidelines to include emphasis on interdisciplinary team science, and another 24 (19%) were contemplating a change. However, another survey of P&T policies at 58 academic institutions that received Clinical and Translational Science Awards from the National Institutes of Health (NIH) revealed 10 of 42 responding institutions did not include language specific to interdisciplinary research and/or team science

in P&T policies. Among the 32 that did, three themes appeared: recognition, criteria, and the process of evaluating team science (Falk-Krzesinski, 2013; Ku et al., 2013).

Most institutions, the AAMC survey further revealed, had criteria for participation in interdisciplinary research and/or team science. They included definitions and/or descriptions of contributions to either form of research as well as ways of recognizing related contributions. Over half the policies also highlighted the significance and prevalence of either interdisciplinary or collaborative work in advancing science, and therefore the need to consider them in P&T. Moreover, half the institutions included guidelines in their policies on preparing dossiers to demonstrate the value of contributions to teams. Yet, most policies did not offer alternative criteria to capture unique contributions, relying instead on traditional P&T criteria such as leadership, creativity, and originality with some minor modifications such as middle authorship with evidence of a “significant” role or credit for leadership on separately scored sections of a grant. Only a handful offered non-traditional P&T criteria meant to capture contributions unique to team science. Even these, though, were vague and lacked indicators, including the importance to team building and teamwork and unique contributions to team productivity. (Similar to the AAMC survey, in 2016 the Canadian Academy of Health Sciences Team Science Panel launched a survey of Canadian universities regarding team science recognition during the evaluation process, with findings to appear in a forthcoming report; Canadian Academy of Health Sciences, 2017).

A number of studies and reports have also called for widening definition of what counts for consideration, an especially important concern for individuals invested in innovative and cutting-edge research. Arise 2 (2013), a report subtitled *Advancing Research in Science and Engineering*, recommends both appointment and promotion committees reward translation of research for public benefit and knowledge export activities, including entrepreneurship. The Texas A&M Health Science Center guidelines further urge department- and college-level P&T committees to take technology commercialization into account. The challenge of navigating P&T processes, Boardman and Ponomarev (2007) also reported from a study of reward systems and university research centers, is compounded when research bridges traditional forms of “fundamental” or “basic” knowledge production and “applied” or “commercial” research and development (R&D). Conventional P&T policies are misaligned with success factors for R&D on problems that require this kind of integrated research, much of it involving teams. George Washington University’s School of Medicine and Health Sciences also suggests, when appropriate, including an explanation of leadership and collaboration between faculty and external professionals or the lay public (George Washington University, 2017).

In a noteworthy local model, a task force at the University of Kentucky’s College of Medicine (2000) advocated expanding definition of scholarship beyond the traditional criterion of Discovery in the form of basic scientific research to include Integration, Application, and Teaching following Ernest Boyer’s typology in *Scholarship Reconsidered*. In addition to expanding the definition of what constitutes “scholarship,” the task force also changed faculty designations, specified promotion procedures, enhanced faculty development, increased time for research in the probationary period, and called for appropriate criteria explicitly in annual review. It also joined others in noting the value of mentors. The American Psychological Association (2014) has especially urged assigning an experienced mentor if a faculty member is involved in a center or institute, to help balance unit-related work including team science while building a strong individual reputation.

3. Making the case

If the mantra in real estate is location, location, location, for candidates seeking promotion and tenure for interdisciplinary and collaborative research it is explain, explain, explain. The tenure dossier has a crucial educational function because members of review committees and external letter writers are often unevenly familiar with a candidate’s accomplishments. Candidates are urged to include a description of the nature of their work in personal statements coordinated with annotation of relevant items in the curriculum vita (CV). In addition, the nature of the knowledge domain should be explained, especially in the case of cutting-edge interdisciplinary research, along with the pertinent epistemic community, qualified peers, genres of scholarship, venues of publication and presentation, funding sources, awards, public or stakeholder engagement, translational activities, and any extra service a position requires. It may also be necessary to explain why work is not included in traditional citation indexes and the slower production rate of collaborative work due to time required for gaining knowledge and skills in other fields, achieving social and intellectual cohesion on a team, and in the case of geographically distributed collaborations grappling with additional challenges of coordination and management (Cummings and Kiesler, 2005). Pfirman and Martin (2010, 2017) further recommend adding a list of frequently asked questions (FAQs) accompanied by the job ad and the MOU/LOA. All questions may not be asked, but anticipating them is better than hoping they will not arise or letting reviewers default to answers that do not apply.

As greater attention is being paid to appropriate criteria the practice of simply counting publications has come under increasing criticism, and reliance on judgments that are not anchored in literature on teamwork (Halevi, 2012). When Van Rijnsoever and Hessels (2011) looked at factors involved in interdisciplinary research collaborations they concluded that prior work experience in other universities and in firms or governmental organizations increases the propensity of this kind of team-based work. In addition, interdisciplinary collaborations occur more in strategic disciplines that are application oriented than in basic disciplines, and they focus on practical problems. Even then, however, lack of incentives in the reward system and pressure to build individual reputations result in minimizing or outright penalizing individuals’ contributions. Leahey et al. (2015) cited two concepts from the field of organizational ecology. “Reception-side penalties” occur when spanning categories and integrating domains; multi-category offerings outside the cognitive scheme of an audience can be difficult to comprehend, place, and evaluate. “Production-side penalties” are related to diffusion of resources and dilution of quality when investing in multiple categories, met in the peer review process with skepticism and disagreement on the merits of a work and criteria for judging it.

In response to the challenge of judging individual contributions in collaborative research, steps are being taken to establish greater clarity in assigning credit. In 2012, Brand et al. (2015) hosted a workshop with representatives of publishing, funding, and academic communities, aimed at exploring how credit is assigned. The 14-point Contributor Roles Taxonomy (CRediT) that resulted is applicable beyond the biomedical and life-sciences community in which it was developed. The 14 points are Conceptualization of Ideas, Methodology, Software, Validation, Formal Analysis, Investigation, Resources, Data Curation, Writing-Original Draft, Writing-Review & Editing, Visualization, Supervision Oversight, Project Administration, and Funding acquisition (Allen et al., 2014; Allen, 2015). Points are weighted differently, though, and patterns of attribution vary because disciplines have different social, cognitive, and cultural characteristics. In some cases a senior researcher is accorded first authorship but in others placed in second or even

last position. After reviewing 12 major journals over a 20-year trajectory, [Conte et al. \(2013\)](#) reported an increase in the number and percentage of publications in biomedical and clinical journals with two or more individuals in first position. This trend, they concluded, is likely to continue. However, they exhorted publishers of electronic platforms and bibliographical databases to consider changing how joint authorship is reported, including major sources such as MEDLINE, Google Scholar, Scopus, and Web of Science. (An [OpenVIVO](#) contribution schema also includes nearly 60 separate and more detailed roles than the CRediT schema, including data creation and sharing, educational material development, and funding acquisition for a project.)

Individual contributions are acknowledged in a variety of ways. They appear in footnotes and are flagged by asterisks, superscripts, and distinctive typefaces. Some periodicals also include contribution statements at the end of articles, while [PNAS, 2017 Proceedings of the National Academy of Science \(PNAS\)](#), *Nature*, and other journals published by the Public Library of Science (PLOS) have begun requiring a section designating roles and the convention of attribution that was used. Within the biomedical community, authorship guidelines from the [International Committee of Medical Journal Editors \(ICMJE\)](#) and the Committee on Publication Ethics further designate who should be listed as an author. *PNAS* and the [Harvard Medical School](#) stipulate “substantial intellectual contributions,” and both the American Association for Cancer Research (AACR) and PLOS ask authors to select roles from a predefined list, although other journals including *Nature* invite or require free-text contribution statements ([Cohen and Siegel, 2005](#); [Brand et al., 2015](#)). In 2015 *Cell Press*, a publisher of leading scientific journals, also formally endorsed the CRediT taxonomy of roles and updated its author guidelines to recommend CRediT in the required Contributions section.

The [University of Southern California's](#) P&T policy is a rare and exemplary model of institution-wide guidelines. In 2011 the University Committee on Appointments, Promotions, and Tenure (UCAPT) issued instructions for departments and committees when considering interdisciplinary scholarship and team science. In addition to including one or more members from units outside a candidate's home department on review committees, the UCAPT urged acknowledging publications outside a core discipline and recognizing interdisciplinary graduate teaching (cited in [Berrett, 2011](#)). Section 2.8 of the UCAPT manual, on “Collaborative Work,” suggests including letters from collaborators on the nature and impact of an individual's contribution, and Section 7.5 on “Personal Statements” advises candidates to explain its significance. The same advice holds for interdisciplinary work, including the relationship of disciplinary inputs. “Guidelines for Attributing Contributions to Research Products and Creative Works” also establish a principle of “Fair and honest attribution,” acknowledging them “in a publicly salient and obvious part of the work”: in footnotes, endnotes, the title page, comments prior to citations, or the home page of a website. In addition, administrators should comment on their importance.

In another institution-wide example, a Research Personnel Subcommittee developed a team science metric for the Mayo Clinic system. It adopted a portfolio approach to recognizing the value of well-rounded faculty, moving beyond standard proxy measures of publications, grants, and presentations to include citizenship in community service and participation as well as teaching, mentoring, and fiscal responsibility. It also distinguished Author from Collaborator in publications and grants by designating their roles ([Beebe, 2016](#)). Individual units are incentivizing and rewarding team research as well. Many faculty in the School of Arts, Media and Engineering (AME) at Arizona State University hold joint appointments, and many teams produce multi-author publications. In an exemplary practice, a committee charged with reviewing criteria

and procedures for P&T evaluation replaced the traditional hierarchy of author credit with group authoring practices for collective products and established guidelines for balancing interdisciplinary and disciplinary work across departments including use of interdisciplinary committees. It also developed a meta-matrix that evaluates standards across a spectrum of practices based on major, standard, minor, and supportive outcome categories including publications, presentations, software/hardware packages, and non-standard outcomes such as work in real world contexts. The matrix quantifies the size, strength, and diversity of an individual's network, assigning a weight of 20% to individual evaluations while depicting connectivity across the network. Reviewing preliminary findings, [Rikakis \(2009\)](#) reported improved understanding of expectations among both faculty and evaluators, greater balance between disciplinary and interdisciplinary outcomes, and growing confidence in the evaluation process, including being assessed on interdisciplinary and team activities rather than disciplinary criteria alone.

4. Conclusion: responsibility for change

Further research is needed in order to understand better the contextual dynamics of evaluating interdisciplinary and collaborative research in both particular knowledge fields and types of institutions, as well as the mid- and long-term effectiveness of changes that have been introduced. At present, though, a set of recommendations emerges from existing practices and models of handling them in the P&T process, summarized in [Table 1](#).

The overriding need for policies and practices is consistency across phases and levels of evaluation. Recognition of interdisciplinary and collaborative work in the P&T process is not a quick fix in one part of an academic organization. It requires a systematic approach. The Association for Interdisciplinary Studies (AIS) has published the broadest set of recommendations, including not only research but also teaching and service, interdisciplinary field studies, and integrative approaches to general education. The task force that created the [AIS “Guidelines for Tenure and Promotion for Interdisciplinary Faculty” \(2016\)](#) concurred with many recommendations in this article, while also taking into account guidelines for program review from the American Studies Association, for evaluating scholarship from the National Women's Studies Association, and AIS documents for “Assessing Interdisciplinary General Education” and “Assessing Interdisciplinary Writing.” The AIS guidelines do not address collaboration in detail but concur in urging explanation of individual contributions to teamwork including teaching, mentorship of junior faculty, and inclusion of letters from chairs, PIs, and others with first-hand knowledge of a candidate's contributions to team-based work. The guidelines are organized by stages of the career life cycle and levels from top- and mid-level administrative offices to departments and programs to individual candidates.

Taking a step further back, the research community also bears responsibility. In a document on “Improving Recognition of Team Science Contributions in Biomedical Research Careers,” the [UK-based Academy of Medical Sciences \(2016\)](#) called for a comprehensive culture change in order to improve career prospects for individuals. In addition to exhorting administrators and review committees to modify policies and practices, the Academy urged employers and funders to consider making changes. Researchers, for their part, need to be responsive in their roles as team members, peer reviewers, and participants on hiring and promotion committees as well as funding panels. Affirming the University of Southern California's principle of “Fair and honest attribution,” recommendation #8 of the UK's Academy report admonishes a fair and transparent approach to allocating credit, defining areas of

Table 1
Recommendations for Recognizing Interdisciplinary and Collaborative Work* in Promotion and Tenure

Taking Preliminary Steps

- Inventory existing interdisciplinary and collaborative practices to identify their nature and extent throughout the career life cycle from hiring to pre-tenure and tenure review to subsequent stages of promotion;
- Assemble and make public endorsements of interdisciplinary and/or collaborative work in institutional documents such as strategic plans and mission statements, as imprimaturs for recognizing their value in the P&T process;
- Scrutinize current P&T practices and policies at all levels to determine if they support, marginalize, or ignore the value of interdisciplinary and collaborative work in advancing the institution's goals as well as larger imperatives such as advancing knowledge and real-world problem solving;
- Define expectations for interdisciplinary and collaborative work in job ads, the interview process, and the formal MOU/LOA;
- Insure fair representation of expectations in setting up internal review committees, including input from leaders of all pertinent units (e.g., departments, programs, and centers), and selecting external reviewers.

Revising Existing Practices and Policies

- Issue top-level endorsements of the importance of revising existing practices and written policies to be inclusive of interdisciplinary and collaborative work in the P&T process;
- Begin revising existing descriptions of practices and policies at all levels to add language recognizing their value and templates for doing so;
- Make all revised statements about practices and written policies publicly available, and continue monitoring practices at and across all levels to insure consistency in recognizing contributions;
- At the unit level, provide mentors throughout the pre-tenure process to help candidates achieve an appropriate balance of disciplinary and interdisciplinary work as well as individual and collaborative activities, then guide preparation of the P&T dossier;
- At the unit level, track progress in annual pre-tenure reviews to monitor whether and how expectations are being met and to make adjustments in document language as needed;
- At the dean's level, insure interdisciplinary and collaborative work are addressed specifically and adjudicate any conflicts that emerge from review committees and external reviewers.

Writing New Guidelines

- Support revisions and new policies by writing guidelines for all levels on appropriate evaluation, citing best practices and documents at other institutions, recommendations of pertinent professional organizations, and literature on expanding indicators of what "counts" along with related measures and qualitative strategies;
- Write guidelines for faculty, mentors, and unit-level chairs/directors on including interdisciplinary and collaborative work in dossier preparation;
- Develop guidelines for external reviewers and mid- and upper-level review committees on how to review the dossier to be inclusive and use appropriate criteria;
- Provide candidates samples of inclusive P&T portfolios at the same and other institutions and from pertinent professional organizations.

Preparing A Dossier for Promotion and Tenure

- Reference institutional endorsements of the value of interdisciplinary and collaborative work in preparing the personal statement;
- Synchronize explanation of the nature and importance of the work in personal statements synchronized with an annotated CVs;
- Add a FAQ page answering any questions that might arise, and attach a copy of the MOU/LOA specifying expectations for interdisciplinary and/or collaborative work;
- For interdisciplinary work, explain the nature of the field and its epistemic community, genres of scholarship, venues of publication and presentation, funding sources, awards, public or stakeholder engagement, and applied and translational activities;
- For collaborative work, explain the nature and importance of individual contributions, citing recognized models such as Project CRediT and USC's guidelines for "Collaborative Work."

Advancing Support in Professional Organizations

- Create or revise as needed Best-Practices guidelines for P&T in designated discipline or field to support interdisciplinary and collaborative work;
- Make public publications that highlight their importance in research and education today, including pertinent literature within the immediate discipline or field;
- Call attention to national models of Best Practices;
- Disseminate guidelines and related recommendation through the profession.

* The term "collaborative work" encompasses both team science research as well as team teaching and collaborative work within and across sciences, the social sciences, humanities, arts, and occupational professions.

responsibility, and gathering feedback as evidence of demonstrated leadership and training in team skills.

Even with a growing number of models and practices, however, institutional culture continues to resist change. For example, in 2010 the research and consulting firm Advisory Board Company analyzed how 11 universities overcame disciplinary barriers to hiring, tenuring, and promoting faculty who do interdisciplinary work. The number of institutions was small, but the focus was institution-wide. The general view was that major changes may not be needed, though none of the respondents had developed separate policies. Furthermore, some speculated that a bureaucratic approach is unlikely to result in better decisions and might have adverse effects by replacing one set of strictures with another. A number of institutions did adjust the format and presentation of tenure dossiers to better convey strengths of interdisciplinary faculty. Yet, the changes were ad hoc and responsibility was deflected to units in interdisciplinary fields such as international and area studies, American and African-American studies, social medicine, religious studies, and women and gender studies. Respondents also acknowledged the growing prominence of multi-author publications, the need for large multifaceted research teams to address complex research questions, and the fact that interdisciplinary work is often collaborative. Yet, they reaffirmed single- and primary-authored publications, even when a campus prioritizes large, multidisciplinary, team-based research (Friedman and Wardell, 2010).

This Research Note, to reiterate, is a beginning step aimed at informing practices and policies by awareness of what is happening across disciplines and institutions. Professional and higher education organizations should disseminate the findings nationally, and at the local level universities should ensure the evaluation process is informed by pertinent guidelines and models. As challenging as changing the culture of reward can be, Bunton and Mallon exhort, “Turning rhetoric into policy and practice is essential to facilitate collaborative and team-based science” (2007). Gerry Rubin of the Janelia Research Campus put the matter succinctly: “You decide you don’t want team science, or you change the review system” (qtd. in Curtin, 2008, p. 42). Pfirman and Martin (2010, 2017) likewise observed individuals pursuing interdisciplinary careers must often negotiate P&T process and structure at the same time they are trying to navigate them. Given widespread acknowledgment that research and individual careers are changing as a result of increased interdisciplinarity and collaborative research, institutional policies and practices must be intentional. If not, as Ruse (2010) put it in his blog on “Interdisciplinary Studies” in the *Chronicle of Higher Education*, hiring faculty engaged in both interdisciplinary and collaborative work but not rewarding them is at worst a form of bait and switch.

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See also:

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