Research Policy xxx (2017) xxx–xxx

Contents lists available at ScienceDirect

Research Policy

journal homepage: www.elsevier.com/locate/respol

Research note

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

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ARTICLE INFO

Article history:
Received 13 September 2016
Received in revised form 27 February 2017
Accepted 6 March 2017
Available online xxx

Keywords:
Interdisciplinary
Collaborative and team
Promotion and tenure
Organizational policy and management
Innovation

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.

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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http://dx.doi.org/10.1016/j.respol.2017.03.001
0048-7333/

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

Please cite this article in press as: Klein, J.T., Falk-Krzesinski, H.J., Interdisciplinary and collaborative work: Framing promotion and tenure practices and policies. Res. Policy (2017), http://dx.doi.org/10.1016/j.respol.2017.03.001