HHS Public Access

Author manuscript

*Nat Biotechnol*. Author manuscript; available in PMC 2017 July 06.

Published in final edited form as:

*Nat Biotechnol*. 2016 January ; 34(1): 111–113. doi:10.1038/nbt.3459.

# Preparing Future Professionals: A Career Development Course Focused on Enhancing Workforce Readiness

**Heather L. Norman-Burgdolf**[#] and **Nathan L. Vanderford**[*,†]

[#]Heather L. Norman-Burgdolf: Department of Pharmacology and Nutritional Sciences; College of Medicine; University of Kentucky; Lexington, Kentucky, USA

[*]Nathan L. Vanderford: Markey Cancer Center and Department of Toxicology and Cancer Biology; College of Medicine; University of Kentucky, Lexington, Kentucky, USA

## Abstract

Over the last decade, PhD trainees and postdoctoral scholars have become increasingly vocal regarding the misalignment in research training and career outcomes. With the unsettling shifts in the faculty job market, more and more new highly skilled PhDs are looking to transition into a variety of other professional careers despite lacking specific education and training for such careers.

The Graduate School at the University of Kentucky has developed a “Preparing Future Professionals” course to help combat the absence of sufficient “work ready” education and preparedness for graduate students and postdoctoral fellows. This course allows students to self-reflect on potential careers and their own transferable skills, provides opportunities for student engagement with PhDs in a wide variety of careers and career development specialists, and allows students to practice critical elements of the job search process including resume and cover letter building and mock interviews. Within this article, we describe the format, topics, themes, strengths, and limitations of the course. By sharing this information, we hope to provide a template for other institutions to develop similar courses that will fulfill the needs of doctoral and postdoctoral trainees.

## Introduction

Doctoral training programs across all disciplines are necessary to produce highly educated and skilled individuals [1]. It is widely accepted that PhD trainees serve as the catalyst for research and development and are vital to the infrastructure of society [1, 2]. While most students entering PhD programs anticipate obtaining a tenure-track faculty position upon graduation [3–5], less than 10% of biomedical PhDs within the United States obtain such positions within 5 years of graduation [4]. A survey of 469 doctoral students within biomedical sciences at the University of California, San Francisco demonstrated that 41.7% of first year students identified primary investigator at a research-intensive university as their primary career choice. However, by the third year of training, only 25% identified this career

[†]**Corresponding author:** Nathan L. Vanderford, University of Kentucky, 800 Rose Street, Lexington, KY 40536, Phone: 859-323-2622, nathan.vanderford@uky.edu.

as their preference [3]. Similarly, a study including 4,109 PhD trainees within life sciences, chemistry, and physics at 39 large U.S. research universities found that the attractiveness of academic careers significantly declines over the course of the doctoral training [5]. Over the course of doctoral and postdoctoral training, trainees' career preferences change for many reasons. Common reasons may include the growing competition for funding, pressures to obtain tenure and promotion, or the overall lack of available faculty positions at research-intensive institutions [3, 5–8]. Whether doctoral and postdoctoral trainees are simply interested in pursuing a professional career or are anticipating being unable to obtain a faculty position upon completion of their training, the fact is that more and more trainees are exploring careers outside of academia – taking their expertise into consulting, government, non-profit, and private sector work [2, 3, 5, 9].

Although fewer trainees are interested in academic careers by the late stages of their training and the number of students awarded PhDs each year greatly outnumbers the available academic positions [2, 10], PhD training programs continue to focus on preparing students for academic careers and pay very little attention to the growing number of opportunities for students outside academia [1, 2, 5, 9–13]. The current structure of the technical training provided during graduate school and postdoctoral fellowships does not provide the skills that align with future career aspirations of trainees and many find it difficult to transition from research positions within academia to a professional career [1, 12–15].

Graduate students and recent PhD graduates are expressing concern about the lack of preparedness they receive during their graduate training for professional careers [9, 11]. PhD trainees and postdoctoral fellows serve as the largest pool of workforce within laboratories [1, 12] and have consistent pressure to produce data for their own publications as well as data for grants written by their primary investigators [1, 16]. With the added pressure of graduating in a timely fashion for PhD trainees and obtaining a tenure-track faculty position for postdoctoral scholars, little time is protected for trainees to focus on developing other necessary skills for successful careers [1, 12–15]. This suggests that colleges and universities should be striving to provide additional resources and support to graduate students and recent PhD graduates as they strive to obtain careers within nonacademic settings [1–3, 5, 9, 17–19]. More attention should be concentrated on educating trainees on career options and how to strengthen their transferable skills through engaging and relevant experiences. Some graduate schools and institutions are beginning to realize the misalignment in graduate education versus career placement and are taking steps to begin to combat these issues with professional development courses and programs [11, 20].

The University of Kentucky has taken steps to combat the absence of resources for nonacademic professional career options for the graduate student population and recent PhD graduates through the creation of a professional development course. This course aims to fill the gaps in the current structure of graduate training and career preferences.

## Preparing Future Professionals

### Course Description and Objectives

In 2013, the Graduate School at the University of Kentucky implemented a course titled "Preparing Future Professionals" (PFP) (modeled after a large, certificate-granting program of the same name at Florida State University) that focuses on filling the gap between traditional education and training and students' non-academic career aspirations. The course was also modeled on the University of Kentucky's successful Preparing Future Faculty course, which brings graduate students, faculty, and administrators from a range of institutional types together for panel discussions and shadowing opportunities. Participants in the new PFP course are provided the opportunity to explore potential careers outside of academia/research and to identify and develop necessary transferrable skills that are vital in today's job market. Several topics related to goal setting, career development, and enhancing workforce readiness are covered throughout the course. PFP is a two-credit hour semester-long course that can be taken as an elective within any department at the University of Kentucky. The course is open to all students and trainees including undergraduate, Master's, doctoral, postdoctoral, and non-degree seeking. Table 1 demonstrates the diverse training levels and disciplines of students that have participated in the course over the first two years.

The goals of the PFP course are for students to (1) understand the realities of the job market and the variety of career paths available, (2) realize what skills are required to transition into a career outside academia/research, (3) identify resources that can be leveraged in order to obtain a job within a chosen career path, and (4) gain an appreciation for what can be done within one's academic training to prepare for a career outside academia/research. Students have the opportunity to interact with a number of guest speakers that have either successfully obtained careers outside academia/research or who are career development experts.

### Course Format

PFP is formatted to include four major requirements for students to complete in order to accomplish the course goals. The four major requirements include self-reflection, informational interviews, career development, and student engagement. The semester begins with students identifying a career path of interest, which they will focus on throughout the duration of the course and as they complete their major requirements.

**Self-reflection—**Self-reflection allows students to determine what skills or strengths are necessary to transition into a chosen, specific career. Students are able to discuss the concept of transferable skills in relation to their chosen career path, describe the transferable skills they excel in, and determine the skills in which they are weak and define ways in which they can improve in these areas. In addition, students describe actions they can take or opportunities they can make for themselves during their training to enhance their workforce readiness. Written reflections are required to fulfill this component of the course. Written assignments over the course of the semester provide time and space for students to invest energy in self-reflection to identify personal strengths and weaknesses and develop a plan of action for future career aspirations.

**Informational interviews—**Informational interviews allow students and trainees to develop skills related to networking. Students are required to identify and contact an individual who currently has their ideal or similar career and perform an informational interview. Students are encouraged to ask about the necessary education and experiences required from an individual within their desired field. Not only does the student learn about requirements for their ideal career from the interviewee, they are able to practice other skills related to professionalism including personal appearance, etiquette, and communication.

**Career development—**Career development requires students to execute job searches, practice interview skills, and resume/cover letter building. Students and trainees must find a current job posting similar or related to their ideal career. Then, students must prepare a resume and cover letter specifically for that position and submit to the course instructor. Further, students must complete a “mock interview” for this current job opening. Students and trainees are able to obtain experience in critical components of the job search process they would otherwise not have.

**Student engagement—**Student engagement is also critical for students to accomplish the course goals. During the course, students have the opportunity to interact with a number of guest speakers that have either successfully obtained careers outside academia/research or who are career development experts. From these interactions, students facilitate class discussions sharing experiences or opinions that may be beneficial for another student. In addition, participants in the course are required to prepare three written assignments and 5–10 minute presentations regarding the specific topic or assignment for that week of class. This allows the trainee to have developed thoughts and ideas to share with the class and allows other participants in the course to comment or ask questions, which stimulates strong student-driven discussion. Although the disciplines represented by students in the course vary greatly, many realize they have similar concerns in regards to graduate school, postdoctoral training, and future career aspirations. Once participants realize that others in the class share similar experiences, a sense of camaraderie develops among students and they are much more likely to share advice and/or personal experiences.

## Strengths and Limitations

Consistent with previous literature there are limitations to providing work force readiness for graduate trainees and postdoctoral fellows [1]. The absence of departmental and faculty support was a common concern vocalized by PhD trainees and postdoctoral fellows. It is common for mentors to be unsupportive of their trainees participating in an elective course rather than spending time generating data within the laboratory [1]. Similarly, many trainees are funded through training grants and fellowships that pay for minimum tuition. When trainees choose to enroll in a course unrelated to their research, many departments may be reluctant to use their funds to pay, which leaves no other option but for trainees to pay out of pocket. This alone could deter many from enrolling in professional development courses. Incorporating a similar course into the required curriculum for all disciplines would help alleviate the tension so often felt by doctoral trainees and postdoctoral fellows.

In addition, diversity of disciplines represented by course participants serves as both a weakness and a strength. One former student suggested that multiple sections of PFP should be offered with each focusing on specific disciplines such as biomedical sciences, engineering, or the humanities. This would allow students with similar interests and training to have more specific discussions regarding potential careers within their respective fields. On the other hand, students also stressed the diversity of the class as a strength. Another student commented that although it is difficult to develop a course for such a diverse audience, this class was presented in a manner that was applicable to all participants regardless of classification or discipline. Ultimately, hearing perspectives and experiences from doctoral trainees and postdoctoral fellows in a variety of fields is enriching and informative and is a major benefit of the structure of the course.

Finally, a strength of the course is the ability to adapt to the specific needs of the participants. Recognizing the classification of course participants and the distribution of disciplines is different each semester, the topics/themes and guest speakers can be adjusted. For example, the first offering of PFP utilized more guest speakers in industry positions educating participants on nonacademic careers. The second course offering stressed career development and workforce readiness skill building. Together, the format of the course and the topics/themes addressed allowed participants to chart future paths and focus on mechanisms to reach their goals in a timely fashion.

## Conclusion

As trainees progress through their doctoral program or postdoctoral fellowship, it becomes increasingly difficult to obtain resources or beneficial experiences for future career aspirations. Trainees begin to feel pressured to publish and complete their research projects in timely fashions. This intensified burden robs all time, energy, and focus away from strengthening workforce readiness whether that is through informational interviews, career development opportunities, or classes/programs offered by a university focused on preparing future professionals. Many trainees may also feel as though it is too late to obtain any beneficial knowledge in regards to career development. Because of this, it is critical that trainees are exposed to resources early in their training that enhances their workforce readiness. Not only does this help students identify “non-traditional” career options early in their training, it also provides them more time to create necessary experiences required for their future career aspiration and identify and strengthen key skills required for that career. To address this issue, departments and colleges – regardless of discipline – should incorporate professional development curricula into required coursework or provide related courses as electives and become more accepting of students utilizing credits on career development courses [1, 9, 12, 13, 18, 19].

Many schools are aware of the concerns expressed by doctoral trainees and postdoctoral fellows and are interested in providing additional resources for their training. We believe the format of this course could easily be implemented within specific departments or available to a broader audience as demonstrated at the University of Kentucky. Realigning pre- and postdoctoral training with future career aspirations is a multi-tiered issue; however, institutions have the greatest leverage in creating lasting and effective change. Institutions

can alleviate the tension and burden of young trainees by providing career development training [18], establishing collaborations between academia and industry, facilitating networking between former and current trainees, intervening and advocating for the trainee population when resistance is met by faculty [9], and providing compensation for students who seek out valuable and worthwhile experiential learning opportunities (e.g. internships, preceptorships, and networking opportunities) [21]. As demonstrated by participating students' input, providing a course like PFP may help reduce the burden many trainees experience in regards to their future career development and workforce readiness.

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**Table 1**

Demographics of Participants in Preparing Future Professionals, 2014–2015 (n=35)

| ***Classification*** | ***No. of Students*** | ***Majors/Disciplines*** |
|---|---|---|
| Postdoctoral Fellows | 2 | Medicine; Plant & Soil Science |
| PhD Trainees | 16 | Higher Education; English; Materials Science & Engineering; Nursing; Social Work; Plant Physiology; Plant & Soil Sciences; Special Education; Experimental Psychology; Toxicology; Nutritional Sciences |
| Master's Students | 14 | Pharmaceutical Sciences; Medical Sciences; Biomedical Engineering; Social & Philosophical Studies; Plant & Soil Science; Agricultural Economics; Civil Engineering; Mechanical Engineering; Art History; Nutritional Sciences; Animal & Food Science |
| Undergraduate | 2 | Psychology; Agricultural Biotechnology |
| Non-degree Seeking | 1 | N/A |