

ABSTRACT: 2019 ELAM Institutional Action Project

Project Title: Online Curriculum in Practical Research Management for Early Career Researchers

Name and Institution: Anne M. Libby, PhD, University of Colorado School of Medicine

Collaborators/Mentors: Judy G. Regensteiner, PhD, University of Colorado School of Medicine

Topic Category: Faculty Development

Background, Significance of project: Academic medicine researchers are receding from the biomedical workforce, part of the “academic brain drain.” Due to tight funding and longer training, there is a critical and time-sensitive need to enhance the success of scientists in order to retain them in academic medicine. Although trained in science, there is a significant training gap in leadership and management—including optimal ways to work with finances, people, teams, and projects. Both physician scientists and PhD scientists are insufficiently prepared to be principal investigators (PIs). Our goal is to increase researcher success at meeting scientific career goals by enabling them to optimize skills as leaders and managers.

Purpose/Objectives: During two decades of mentoring and training hundreds of biomedical researchers locally and nationally, we identified this need and in response developed effective training at our institution. We sought to expand our reach by adapting this training for universal online access by the broad biomedical science community. Such curricula would enhance early career scientist development and strengthen the biomedical workforce. We began development for an **online course on foundational skills to be a successful PI—including PI rights, roles, and responsibilities**. We aim to: (1) Develop an online course on Principal Investigator skills for early career physician scientists (2) Evaluate course engagement, effectiveness, and reach. The course will be a massive online open course (MOOC) on Coursera <https://www.coursera.org/>—accessible, searchable, and on-demand nationally and globally.

Methods/Approach/Evaluation Strategy: We participated in the CTSA Innovation Corps (I-Corps™) program, a short course for new program development using proven innovation methodologies developed by the National Science Foundation. Existing alternatives to our proposed course were inadequate due to access, cost, and insufficient tailoring to academic researchers. We conducted 35 interviews with early career researchers and mentors to understand their perspectives. Illustrative quotes are: “*Science is the easy part. We are taught how to ask scientific questions and find answers. Project management, people skills, time management is harder.*” “*Getting funded is salesmanship. Getting research done is management.*” “*Mentors tend to focus on science versus project management.*” To evaluate engagement, effectiveness, and reach we will use Coursera analytic metrics on learner demographics, course progression, and assessment scores.

Outcomes/Results: To advance this work, we participated in iCorps to conduct a needs assessment and successfully obtained a small pilot award to advance the concept. We published a commentary on training the biomedical research workforce (Lancet Diabetes & Endocrinology, Feb 7, 2019, P248-50). A grant was approved for funding by the Doris Duke Charitable Foundation. We created a new Faculty Development program in the CU Center for Women’s Health Research.

Discussion/Conclusion with Statement of Impact/Potential Impact: This online course will provide a foundation on which to build a comprehensive scientist development curriculum. Future courses will add breadth (leadership and management skills) and depth (advanced training in specific areas). Critical scientist skills include grantsmanship, scientific writing and verbal communication, networking and mentoring, and leadership.

Online Curriculum in Practical Research Management for Early Career Researchers

GOAL: Increase faculty success at meeting scientific career goals by optimizing their skills as research leaders and managers



state-of-the-art teaching, research and clinical facilities



Anne M. Libby, PhD, Professor & Vice Chair for Academic Affairs, Department of Emergency Medicine

ELAM Sponsors: **John J. Reilly, Jr. MD**, Richard Krugman Endowed Chair & Dean, School of Medicine and **Richard D. Zane, MD**, Professor & George Boedecker Endowed Chair of Emergency Medicine

ELAM Mentor: **Judith G. Regensteiner, PhD**, Professor & Judith and Joseph Wagner Chair of Women's Health Research; Director, Women in Medicine & Science and CU Center for Women's Health Research

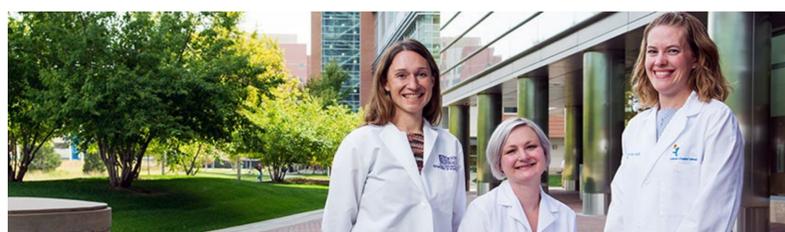
Background & Significance

"Academic brain drain"—academic medicine researchers receding from the biomedical workforce due to tight funding and longer training

Critical, time-sensitive need to enhance the success of scientists in order to retain them in academic medicine

Trained in science, yet significant training gap in leadership and management—including optimal ways to work with finances, people, teams, and projects

Both physician scientists and PhD scientists are insufficiently prepared as principal investigators (PIs)



Purpose/Objectives

To enhance early career scientist development and strengthen the biomedical workforce, over last 15 years developed effective training at the University of Colorado (CU), supported by School of Medicine, Colorado Clinical Translational Science Institute, and Center for Women's Health Research

Sought to expand reach by adapting training for broad biomedical science community as a massive online open course (MOOC) on Coursera <https://www.coursera.org/>—accessible, searchable, on-demand nationally & globally

Planned a course on successful PI foundational skills—including PI roles, rights, and responsibilities. Aims:

- (1) Develop an online course on Principal Investigator skills for early career scientists, and
- (2) Evaluate course engagement, effectiveness, and reach

Methods/Approach/Evaluation Strategy

Participated in **CTSA Innovation Corps (I-Corps™)** program, a short course in new program development using proven innovation methodologies

Existing alternatives inadequate due to access, cost, and insufficient tailoring to academic researchers

Interviewed 35 early career researchers, mentors:

"Science is the easy part. We are taught how to ask scientific questions and find answers. Project management, people skills, time management is harder."

"Getting funded is salesmanship. Getting research done is management."

"A grant it is like managing a small business."

"Mentors tend to focus on science versus project management."

Outcomes/Results/Impact

New funding: CTSA I-Corps seed grant and Doris Duke Charitable Foundation for course development

Commentary on training biomedical research workforce, *Lancet Diabetes & Endocrinology*, Feb 7, 2019, P248-50

Created Faculty Development program in CU Center for Women's Health Research

Next Steps: Comprehensive scientist development curriculum with breadth and depth in grantsmanship, scientific writing, verbal communication, networking, mentoring, management, and leadership

