



Tiered Mentoring & Training in Computational Biology Research

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Abstract

Continuing the exponential increase in scientific and medical breakthroughs directly depends on our commitment to teaching the next generation of independent researchers. The Computational and Systems Biology (CSB) department at the University of Pittsburgh is dedicated to providing cutting-edge research experiences and first-rate training to students at the high school, undergraduate, and graduate levels, through internal, intra-, and inter-institutional programs to train our students in the rapidly evolving and highly interdisciplinary field of computational biology. Our department has implemented a Tiered Mentoring and Training (TMT) framework, which provides students and trainees at multiple levels with numerous opportunities to learn from multiple faculty, postdoctoral fellows, graduate students, and other summer undergraduates from a variety of areas and perspectives. Primarily, our trainees and trainers in this framework come from a number of formalized programs such as the joint Carnegie Mellon—University of Pittsburgh PhD Program in Computational Biology (CPCB), the Training and Experimentation in Computational Biology (TECBio) Research Experiences of Undergraduates (REU) program, and the Drug Discovery, Systems and Computational Biology (DiSCoBio) Summer Academy, which is a part of the University of Pittsburgh Cancer Institute (UPCI) Summer Academy. These tiered interactions also provide important professional development opportunities for these early-stage and nascent investigators, who will be future teachers and mentors. Moving forward, we aim to expanding our TMT framework and increase our interactions with the wider scientific and local communities.

Some challenges facing outreach programs (esp. in medical schools) and strategies to address them

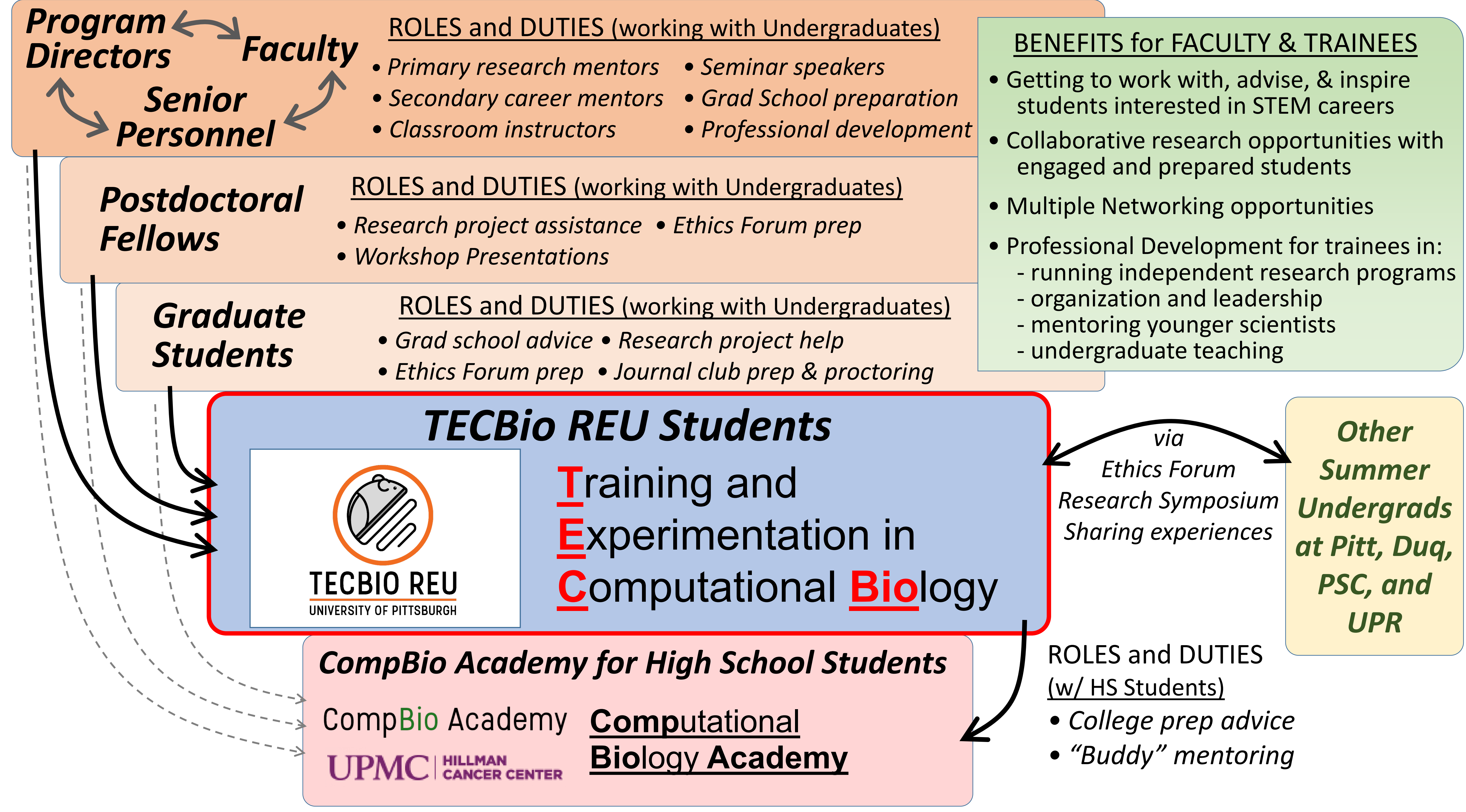
Challenges

- University and Scientific Community Engagement
- Interdisciplinary training requires a broad expertise.
 - Sustaining mentoring efforts with a small faculty.
 - Faculty availability often decreases in summer.
 - Limited/no credit in medical schools for mentoring and teaching.
 - Limited opportunities for trainees to mentor earlier-stage trainees
- Non-University Community Engagement
- Unfamiliarity with local schools, their goals, and how to engage them.
 - Need for more support from government, schools, and benefactors.

Strategies/Opportunities

- University and Scientific Community Engagement
- Recruit a deep and broad mentor pool from various institutions.
 - Involve earlier-stage scientists as mentors to reduce burden on faculty.
 - Include postdocs & students as mentors for their own professional development.
 - Maximize trainee learning opportunities through tiered mentoring and teaching.
 - Create a culture of mentoring to stress the importance of outreach to others.
- Non-University Community Engagement
- Actively engage partners at events and foster a network for science outreach.
 - Invite local politicians, teachers, and community leaders to students presentations.

Tiered Mentoring and Training Framework



2018 TECBio REU Students



2018 DiSCoBio Students



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