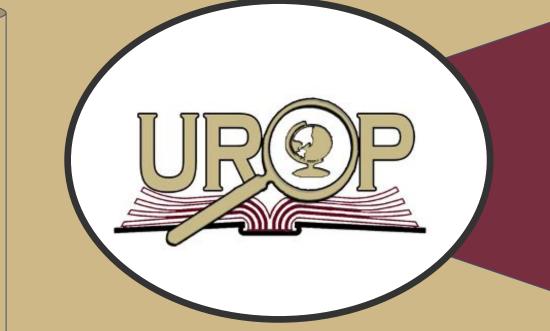# Mentor Resources and Training in Undergraduate Research Programs

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Background

Undergraduate research programs are designed to expose undergraduate students to research opportunities. Through these research opportunities, undergraduate students can develop career skills and professional relationships in their respective fields. Often students work closely with a research mentor as part of these undergraduate research experiences. Students have reported both positive and negative aspects of the relationship with their research mentors. In the article *Where's My Mentor?! Characterizing Negative Mentoring Experiences in Undergraduate Life Science Research,* Limeri et al. (2019) examine different behaviors between mentors and mentees that can result in problematic and ineffective work environments. From absenteeism to blatant abuse of power without proper training, these issues could invalidate the purpose of these programs (Limeri et al., 2019). Sometimes issues that occur in mentor-mentee relationships can be ameliorated by more available resources for mentor training.

Currently, there are resources readily available to mentors outside of their programs and colleges. The Center for the Improvement of Mentored Experiences in Research (CIMER) provides free training resources for mentors and mentees. CIMER is dedicated to establishing better learning relationships between both mentors and mentees. Their website has specific training for mentors to support them in building productive and supportive working relationships with mentees. Furthermore, CIMER also has training for mentees at different levels from novice to graduate students to better support them in becoming researchers.

Shanahan et al. (2015) identifies the 10 salient mentoring practices for creating a high-quality mentoring experience in undergraduate research. The mentoring practices outlined by Shanahan et al. (2015) promote the positive components of mentoring while outlining ways to approach the mentoring of undergraduate researchers. Specifically, they recommend the use of clear and well-scaffolded expectations and balancing rigorous expectations with emotional support and appropriate personal interest in students. Together the mentor and mentees can discuss the discuss and outline their expectations through learning contracts. Furthermore, mentors are encouraged make connections and learn about their mentees to better support their emotional needs (Shanahan et al., 2015). Practices like these from the mentors may prevent issues that were documented by Limeri et al. (2019) like misaligned expectations and lack of support. Aspects of the 10 salient mentoring practices are useful when developing an enriching mentorship relationship and preventing counterproductive environments. Eby et al. (2013) examines the content of mentoring relationships like motivation, new skills, and the desire for greater connection to better understand high quality mentoring relationships. Establishing connections between the perception of a high-quality mentoring relationship and the contents in a quantifiable way.

AURA Award Winners

Over the past seven years, the Council of Undergraduate Research (CUR) has awarded 19 schools that have shown an exceeding amount of progress in research around America the Campus-Wide Award for Undergraduate Research Accomplishments (AURA). The award is given to colleges with distinguished Undergraduate Research Programs, in which exemplify participation of students and faculty in a curriculum-based involvement, introduction, and continuation of high-quality student research. Winners of the award receive a free one-year Enhanced Institutional membership in CUR, media recognition, a plaque for the school, and the opportunity to be the featured program for a CUR webinar. These particular institutions, including FSU, have shown exemplary ideas and support for their students, making undergraduate research easily accessible. Out of the 19 schools, only 4 had mentoring resources on their public website for mentor training. For example, the University of Wisconsin-La Crosse (Figure 1) had a section of their website dedicated to mentor information, linking a "Mentor Toolkit" and forms for mentors to fill out to be a part of their undergraduate research program. By looking through the winners' websites, we can get an idea of what successful mentor training can look like, and how we can use outside resources to continue to improve mentorship relationships and expectations.

Issue (Limeri et al., 2019)	Salient Practice (Shanahan et al., 2015)	CIMER Training
Absenteeism	Dedicate time as well to one-on-one, hands-on mentoring	-Maintaining Effective Communication -Articulating Your Mentoring Philosophy and Plan
Lack of Career and Technical Support	Teach the technical skills, methods, and techniques of conducting research in the discipline. Support students' professional development through networking and explaining norms of the discipline.	-Enhancing Work-Life Integration -Fostering Independence -Promoting Mentee Research Self-Efficacy -Promoting Professional Development
Misaligned Expectations	Set clear and well-scaffolded expectations for undergraduate researchers. Balance rigorous expectations with emotional support and appropriate personal interest in students	-Aligning Expectations -Articulating Your Mentoring Philosophy and Plan

Table 1: Identifying which of the 10 salient practices and CIMER training topics which address selected mentor-mentee issues reported by Limeri et al. (2019).

Figure 1: Example of mentoring resources at the University of Wisconsin-La Crosse
https://www.uwlax.edu/staff-mentoring-program/mentor/

CIMER Training

The Center for the Improvement of Mentored Experiences in Research (CIMER) developed research-based mentor and mentee training to help improve the relationship and expectations on both sides. CIMER's *Entering Mentoring* curriculum supports new research mentors by covering topics including: **expectation alignment, promoting professional development, communication, equity and inclusion, understanding, independence, ethical behavior, and mentoring philosophy** (https://cimerproject.org/). Each section goes into detail on lesson plans for novice research mentors preparing to work with undergraduate researchers. In the curriculum, they provide examples of challenges that apply to professional research, as well as activities to practice. The topics directly address all seven negative characteristics of mentoring as, absenteeism, abuse of power, interpersonal mismatch, lack of career support, lack of psychosocial support, misaligned expectations, and unequal treatment (Table 1; Limeri et al., 2019), and tackles these traits with positive alternatives and solutions to help improve the mentor-mentee relationship. Mentors can use the CIMER training as a guide on how to create a proper, professional, and healthy relationship with their undergraduate researchers, while practicing the 10 Salient Mentoring Practices (Shanahan et al., 2015), and other training their schools may provide for them.

Future Steps for FSU

After analyzing these resources, we can conclude that mentoring resources can be helpful to help foster a symbiotic mentee-mentor relationship. Despite this, there are not a lot readily available for research mentors. FSU is working to increase mentoring resources on campus. During summer 2022, in collaboration with the Office of Research Development, a graduate student mentor training pilot program was offered to future UROP research mentors. FSU plans to expand those offerings throughout the summer of 2023 and cover more topics. Although FSU has already received the AURA award, more mentor training will be offered as UROP continues to grow, further improving the undergraduate research experience for students.

Select References

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