

## Organic Chemistry Practitioner Development

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Traditionally, Organic Divisions within Departments of Chemistry train the largest number of students in chemistry doctoral programs. Yet, very little is understood about the processes by which students evolve into practicing organic chemists. As part of our ongoing efforts in the area of practitioner development, we recently found that organic chemistry graduate students finished their doctoral studies with a relatively naive understanding of the fundamental concepts and principles of organic chemistry. Furthermore, there appeared to be a significant disconnect between the students and their faculty mentors about what skills students should develop during doctoral study. To better understand this divide, we will undertake a research project guided by the following questions: 1.) What do chemistry graduate students believe it means to know chemistry?; 2.) What do chemistry graduate students believe it means to be a practicing chemist?; 3.) What are the similarities/differences in the graduate students' conceptions as a function of chemistry sub-discipline?; and 4.) How do these conceptions affect the students' approach towards their doctoral training?

In investigating these questions we will adopt a qualitative research methodology. Rather than making *a priori* assumptions regarding the students' experiences, this approach will allow us to learn directly from the participants about issues that are most pertinent to them. Specifically, we will use a phenomenographical approach. Phenomenography is an empirical research tradition which aims to reveal the limited number of ways that individuals conceptualize their experiences of a particular phenomenon. Because the goal will be to understand the individuals' conceptualizations, the primary source of data will be semi-structured, audio-taped interviews.

Once the data are collected, an REU student would participate in the data analysis phase of this project. Data analysis will begin with verbatim transcription of the interviews followed by repeated examination of the transcripts to reveal trends in the data. These trends will be further analyzed to produce categories that describe overall characteristics of the data. Time permitting, the REU student will participate in writing an article for scholarly dissemination.