

“This is really hard.”

– Minnie Driver commenting on organic chemistry in *Good Will Hunting*

Having focused the majority of the past fifteen years in the study of organic chemistry, I would have a hard time disagreeing with Minnie Driver’s analysis of the discipline. Nevertheless, such difficulty need not be a source of frustration or a general deterrent from its scientific study. In fact, when guided by dedicated and effective mentors, navigating its murky waters and overcoming some of its challenges can lead not only to personal growth, but also to a lifelong love of the field and a passion to explore new territory through independent scholarship. I have been incredibly fortunate to have had my scientific travels in chemical synthesis chartered by several such individuals; it is my goal as a teacher–scholar to similarly captain voyages of discovery for members of the next generation.

In the classroom, I hope to accomplish this end by tailoring my teaching specifically to the needs of my students at their particular level of study. For example, in an elective course designed for non-majors (such as a course on medicines and disease), my efforts are directed primarily towards chemical education in the broadest sense, with special emphasis on transmitting the enabling skills and knowledge that would permit each student to enter the larger world equipped with an informed view of the role of chemistry/science in modern life and the means to evaluate scientific and ethical issues as voting members of a democratic society.

In core and upper level courses that contain a high proportion of science majors, I strive to establish frameworks that tap into existing knowledge and build upon that base rather than emphasize rote memorization or pattern recognition of fundamental concepts. Examinations and lab-based coursework reflect this approach, with each serving as opportunities for students to apply their knowledge in novel ways instead of simply reiterating principles. As a graduate of a small liberal arts college that emphasized such training, I am especially sensitive to the power of this approach, although it requires tremendous planning and care in its execution.

For graduate students, my courses hopefully serve to catalyze the metamorphic process required for their conversion from dependent learners to independent scholars capable of deductively approaching and creatively solving problems. In organic chemistry, that goal is achieved, in part, through frequent student trips to the blackboard, whether to propose routes to target molecules, provide mechanistic arrows to account for unique transformations, or solve other challenging problems. These activities, among others, are designed to highlight the forefront of the field and push my students to consider the next generation of solutions.

In the laboratory as a principle investigator, I hope to hone each of my students’ skills to the level where they will not only have earned their right to a “black belt” in chemical synthesis, but will have exceeded their own expectations in terms of the extent of their personal and scientific development. Success in this endeavor requires that I create an environment that is as scientifically enlightening as possible, provide encouragement and inspiration when difficulties are encountered in the course of tackling challenging research problems, and emphasize effective oral and written expression skills. This intensive mentoring approach is individually tailored to each student in order to maximize his or her graduate experience as they progress on the path towards becoming a colleague. The global hope is that each of my research students will have the skills needed to reach a position of leadership in any area of inquiry that relies on the fundamental ability to create molecules and broadly impact the shape of science for decades to come.