

*To my teachers*

## ACKNOWLEDGEMENTS

Foremost, I would like to thank Professor Sarah Reisman for accepting my request to join her lab five years ago. I couldn't have asked for a more intelligent, supportive advisor and I have learned so much from her in all aspects of chemistry research throughout my graduate studies. It has been my privilege to watch this lab grow, literally as it has increased from five to twenty people, but also in the scientific advances that have been made and published over the past five years. It is certainly the start to a fantastic career and I look forward to seeing the research that comes out of Sarah's group in the future.

I have also benefited greatly from the wisdom, encouragement, and enthusiasm provided by my thesis committee. In particular, I am very grateful for all of their advice during proposal defenses. Specifically, thank you to Professor Dennis Dougherty for his participation as my committee chair and also for initiating a collaboration project with our lab. I am honored to have participated in that research and I really enjoyed learning more about the research going on in his group. On the subject of collaborations, thank you to Professor John Bercaw for his assistance with my first project at Caltech on palladium catalysis. I also owe many thanks to Professor Brian Stoltz. On that note, I should also thank my chemical grandfather, Professor John Wood, as Brian and Sarah, both incredibly gifted organic chemists, completed their own graduate research under his guidance. I appreciate all of the advice Brian has given me regarding my research over the past five years and I'm also so grateful for his enthusiasm, especially when I got my first big hit on a project. I'll always remember that.

Many thanks go out to the other teachers who inspired me to pursue chemistry in the first place. I had a great experience in my high school chemistry course taught by Ken Drews. He brought so much spirit and knowledge to that class and was incredibly dedicated to his students, as exemplified by his daily pre-school office hours. I am also grateful to Professor Christian Rojas at Barnard College. If it weren't for his organic chemistry course, I doubt I would have ended up here. Later on in college, he became both my faculty and research advisor. Although I left Barnard long ago, he has continued to provide advice with regards to my career as well as countless letters of recommendation. During college, I also spent one summer working at Johns Hopkins University in the lab of Professor John Tovar. I would like to thank him for enabling my first experience in a research group as well as my graduate student mentor in the group, Dr. Patricia Peart.

I would be remiss not to thank the incredible group of students I've worked with these past five years, the Reisman lab. One of the things I like most about this lab is its community atmosphere. Everyone is always willing to take the time to help each other with their projects no matter how busy their own schedules. I have made some great friends in this lab and I will miss everyone. In particular, I'd like to thank my project partners and friends Jane Ni and Maddi Kieffer, who worked with me on the pyrroloindoline and Friedel–Crafts projects, respectively. Thank you very much to Alex Maolanon, who graciously took over the Dougherty–Reisman collaboration project when I had to start writing up. Along those lines, thank you to Chris Marotta and Kristina Daeffler for being fantastic project partners for the collaboration. In addition, I very much appreciate Professor Nilay Hazari and Paul Oblad for their assistance in my first project

at Caltech. A special thanks goes to Dr. Scott Virgil, who has helped me with all of these projects. His extensive knowledge, combined with his assistance with both our glove box reactions and reaction analysis, made him invaluable. Thank you as well to Dr. Doug Behenna who devoted many hours to helping us with preparative HPLC. Finally, I'd also like to thank the students I have mentored; Kangway Chuang, who worked with me for only a month as that was more than enough guidance, and Nadine Currie, my mentee who recently graduated from Caltech.

Many thanks to all of the staff at Caltech who make our research possible and keep the department running smoothly. Specifically, I'd like to thank Lynne Martinez and Joelle Radford for all of their assistance throughout grad school. Thank you to Dr. Scott Ross and Dr. Dave VanderVelde for their assistance with NMR spectroscopy. Thanks to Larry Henling and Dr. Mike Day for solving all of my crystal structures, to Rick Gerhart for fixing the multitude of glassware I broke, and to Naseem Torian and Dr. Mona Shahgoli for HRMS analysis. Many thanks to Paul Carroad, Leah Mentch, Steve Gould, Joe Drew, Ron Koen, Silva Virgil, Agnes Tong, Tom Dunn, Anne Penney, Pat Anderson, Linda Symes, and our chair Professor Jackie Barton.

I have also made many friends outside of the Reisman lab while at Caltech. I have really benefited from the Stoltz group during my time here and want to especially thank all the people who moved down to the basement of Church when we got here so that we wouldn't be on our own. In particular, I would really like to thank Alex Marziale for all of his love and support during this past year, as well as some of the closest friends I have made while at Caltech, namely Sibio Lin, Renee Thomas, and Floh Vogt. A final thanks

to those who managed the GSC soccer teams and those who took care of Norah when I left town (special thanks to Chris Gilmore for annual assistance during the holidays).

There is no way I would be at this point, writing these acknowledgements, if it weren't for the support of my family. Thank you to Mom and Dad, my brother Mike, and Holly for everything and for the many trips you made to visit me during grad school. Thanks to my grandparents, Norah and my entire extended family as well, including the many who live in the Los Angeles area. Many thanks as well to my unofficial family who have stood by me for most of life, Sarah Goldberg, Becca Gifford, and Emmy Frank. Finally, I'd like to thank my grandfather, Dr. Benjamin Charles Repka, a fellow chemist who gave me the courage to keep charging ahead through grad school. Thank you everyone.