

Example 6 (2015)

My fascination with the variety and complexity of different mammalian auditory systems has led me to the pursuit of an AuD/PhD dual degree in the field of hearing. Sound and communication have always interested me. I am trilingual and an avid guitar player and vocalist, and by pursuing a degree in human hearing I will have found the ideal combination of all my interests. How sound is conducted into the ear and how the brain perceives and interprets sound are details of human hearing that I simply cannot take for granted. I believe that my education and my previous experiences with independent research projects in the field and lab will make me a successful graduate student.

My interest in mammalian hearing was piqued during my summer 2013 fellowship at the Woods Hole Oceanographic Institution (WHOI), under the supervision of an audiologist. Throughout the summer, she and I spent considerable amounts of time discussing mammalian hearing, which continually deepened my interest in this field. I also observed CT imaging techniques performed on marine mammals, which obtained crucial information on head and neck trauma, including the inner ear. I will never forget the day a live harbor seal with an ear infection was brought in for a CT scan. The scan revealed a damaged middle ear with a missing ossicle. Apparently, the surgical vacuum instrument that had been used to remove the infection-induced caseosa in the animal's ear canal had been sized for a canine instead of a seal. Since ear shape and size differs between these species, the incus was aspirated with the caseosa, which resulted in permanent hearing loss for the seal. To me, this highlighted the importance of accurate knowledge of the auditory anatomy of different mammalian species.

Much of my past research experience focused heavily on marine mammal research, including acoustics, hearing, and anatomy. My summer research project at WHOI and my year-long undergraduate thesis research at *my college*, gave me a strong background in acoustics, vocalizations, and the physical properties of sound. At WHOI, I used spectrograms to study data on mother-calf and male-male pair dolphin vocal interactions, which had been collected previously using Digital Acoustic Recording Tags in Sarasota, Florida. For my senior thesis project, I used underwater hydrophones to observe whether masking effects would result in altered dolphin vocalizations, such as the whistle frequency. In addition to work on acoustics, I also participated in a 60-hour weeklong research project in Florida with the Sarasota Dolphin Research Program, where I helped administer hearing tests (Auditory Evoked Potentials) on wild-caught bottlenose dolphins. We measured thresholds to document general hearing trends, as part of a 40-year study of this resident dolphin population. I also volunteered at the Marine Mammal Pathobiology Laboratory in Saint Petersburg, FL, for three semesters during my undergraduate studies, where I participated in a large number manatee necropsies. I had numerous opportunities to learn about manatee anatomy and I dissected out numerous earbones, which were sent out to another lab for aging. At WHOI, I also observed and participated in numerous necropsies of stranded seals, dolphins and small whales, and was able to dissect out the earbone of a Risso's dolphin.

The combination of my research experiences involving marine mammal acoustics, hearing and anatomy, lead to my interest in human hearing. Since hearing is such a valuable part of a human life experience and certainly for me personally, clinical work would give me the opportunity to assist the hearing impaired to improve their quality of life. I would also be able to help individuals learn more about their own hearing, by explaining concepts and giving advice on how to minimize daily noise exposure. Working as a tutor and teaching assistant over the past five years has helped me realize how crucial patience and listening skills are, to communicate effectively. Furthermore, research on humans in addition to animal models, allows study results to directly benefit patients. I am therefore committed to obtaining a graduate degree in human hearing research and clinical work.

During my undergraduate studies, I gained experience in experimental design, hypothesis testing, statistics, scientific literature searches, and data analysis using MS Excel. I applied these skills in the lab and field as a research technician at the Center for Limnology, as an intern at WHOI, as a teaching assistant for Biological Oceanography labs at *my college*, and as an undergraduate student working on my thesis research project. I gained scientific writing skills throughout my undergraduate studies at *my college*, for which I received high grades. At WHOI, my research project culminated in a formal research paper and final presentation for the WHOI Biology Department, which were also well received. Both my bioacoustics research project at WHOI and my senior thesis, which culminated in a final manuscript, have allowed me to gain valuable writing, field, and lab research experience, and have helped me prepare for graduate level research.

My goal is to obtain a strong background in the field of hearing, in order to pursue a career in clinical work and research. The Communication Sciences and Disorders department at your university would provide an excellent environment to further my education and training. I am interested in your department because of the opportunity for students to gain a background in clinical work as an AuD student, while simultaneously pursuing hearing research as a PhD student. Furthermore, I am interested in your department's wide variety of courses in which students can explore both clinical and scientific aspects of hearing. During my first year as an AuD student I would also hope to gain research experience in a researcher's lab, with projects concerning binaural hearing and hearing loss. Research on how binaural hearing processes are relevant for listening in noisy environments, and how these processes alter with age, is an intriguing field of study.

By pursuing a dual degree, I hope to collaborate with other audiologists to better understand hearing processes, and to advocate proper treatment and early detection for hearing loss in people of all ages. This fall, I had the opportunity to observe audiologists at the Speech and Hearing Clinic and at the Audiology *Center*. During my observations of children in the Head Start program, children with Down's Syndrome, as well as seniors with hearing loss, I learned the importance of high quality communication skills, use of sign language, patience, technological know-how, and how to limit behavioral cues when testing younger patients. The observations also provided valuable insight into the instrumentation used in clinical work. Pursuing a combined clinical and research degree at your university would allow me to maintain a

connection between research and its clinical application. It would be an opportunity to directly apply advances in research to clinical work. Furthermore, I look forward to work as an audiologist in a clinical setting, since I enjoy working with people of different age groups, administering and interpreting a variety of tests, and working independently, yet part of a team of audiologists. Because sound is so important in my own life, I think that helping those with hearing loss would be a very fitting and rewarding career path.