# Training Plan, Environment, Research Facilities

Ms. Darrell is a very talented, bright, and hardworking MSTP student who is fully committed to becoming an independent research scientist. She is clearly dedicated to research and science and to becoming a highly effective and impactful physician-scientist. Ms. Darrell plans to combine her interests in bioinformatics, systems neuroscience and medicine (neurology and psychiatry), to develop new understanding, diagnostics and therapies for brain disorders. I have worked closely with Megan to develop a comprehensive and effective training program to support her training goals. Megan has already been reading the attention and autism literatures and developing and testing attention paradigms, since officially joining the lab. She has made excellent progress on these fronts as evidenced by this research proposal. During the training period, the majority of Megan's time will be spent carrying out direct, hands-on research with the goals of: 1) further developing her expertise in high-density electrophysiological recording of brain activity and the development of paradigms to probe specific brain processes, 2) developing expertise in EEG analysis (e.g., frequency analyses, source analysis, and analysis of interareal coherence in source space), 3) continuing to build her theoretical knowledge, and 4) learning about standardized clinical and cognitive assessments and testing/scoring procedures, especially for children and adolescents with autism.

# Applicant’s Qualifications and Potential for a Research Career

Megan joined my laboratory with an abiding interest in brain research in clinical populations and sensory processing and attention, merging perfectly with the goals of my lab. I was quickly impressed by her maturity, intelligence, positive attitude, work ethic, collegiality and organizational skills. Her background in research combined with her high motivation and interests prepared her to hit the ground running when she arrived. Her strong computer programming skills in Python and R and her ability to critically synthesize research literature facilitated her rapid acquisition of the fundamentals of ERP analyses and quick absorption in a major reading effort to begin to develop her own theoretical base for her work on attention in autism. Throughout the past year working closely with me and my team, she has grown tremendously as a researcher and proven to possess the qualities to become an independent physician scientist and future leader in the field. Megan is a very fast learner and natural scientific investigator.

A superb level of focus and resolve is evident in Megan’s work. I provided her with a dataset to work on when she joined the lab, to serve as a bootcamp of sorts for acquiring the techniques of the lab. Her progress was rapid and she now has a solid full draft manuscript that we will return to once this application is submitted. She has presented this work at multiple conferences, both in oral and poster presentations, and demonstrated that she has developed an impressive depth of knowledge over a short time and that she has strong communication skills. Indeed, Megan is a terrific collaborator, communicator, and overall team player. She possesses a very clear communicative style that conveys straightforward objectives and comprehensively motivates the work to be done. I have also been amazed at how invested Megan is in ensuring an educational experience for our junior team members and in mentorship in general. Being such an effective leader and natural teacher will benefit many future generations of trainees.

Megan’s passion for understanding and helping individuals with brain disorders epitomizes the mindset of a physician-scientist. Her curiosity and drive were what provided the initial impetus for this study, and she has been tireless in crafting her F30 proposal, proactively developing and refining her aims and approach while thoughtfully charting her path forward over the next years of training. Megan has demonstrated a keen sense of experimental design, developing paradigms to test her hypotheses, and testing them out with quick turnaround to assess their strength and utility to get at the constructs of interest. She has seized on this opportunity to learn invaluable grant-writing skills, and the process has clearly spurred an enormous amount of intellectual growth on her part. In short, she is highly prepared to carry out this research and benefit from this training.

In summary, Megan is making terrific progress in the PhD program, and she continues to learn and seek out the necessary training to become an excellent and creative scientist in the Neurosciences. She has a strong desire to help clinical populations through her chosen career path in translational neuroscience as a physician-scientist. I am highly confident that she will fulfill this goal, and that she will achieve her proposed research objectives under this proposal in the allotted time and acquire skills that will serve her to grow into an independent scientist. She is, without doubt, one of the best students I have had, and she has my very highest endorsement. I think that it would be well worth it for the NIH to invest in this exceptional young candidate.