

I first became interested in neuroscience in the 7th grade, following discussions with my father, an ophthalmologist. While in senior school and college, I read books by Dr. VS Ramachandran, John Brockman and Sir Roger Penrose and saw neurosurgeries online. I decided to pursue human biology and neuroscience and joined Manipal University for my MBBS.

In college, I found scientific research absorbing. I did 3 research projects, involving lab work, hospital-based study as well as community interaction. Two of my projects, on microbial biofilms on contact lenses and on anterior segment changes in glaucoma, were supported by the Indian Council of Medical Research. The study on biofilms was published in the Indian Journal of Medical Microbiology.

I presented a paper on the prevalence of asthma in school children, at the KARMIC conference Kolkata. The glaucoma study was presented at IGCLA, Manipal. Further, I presented 2 papers on biofilms on contact lenses, and on the use of quorum sensing inhibitors against biofilms, at my college and at MIT Manipal respectively.

I attended 3 workshops on molecular biology, clinical and laboratory medicine research and neural systems. In fact, it was the workshop at IIT-Kanpur on neural systems, which cemented my interest in neuroscience. Discussions with neuroscientist Dr. Nitin Gupta, further strengthened my resolve to specialize in this field.

I was a class representative of the Student Research Forum at my college and acted as a bridge between the administration and the students on research activities. Moreover, I helped organize medical workshops and conferences, including one on medical innovations. I was also a member of the Volunteer Services Organisation, Manipal and took part in public health awareness activities.

I graduated from medical college in August 2016, with 63% marks and started my internship training at the Dr. SPM Civil Hospital, Lucknow, culminating in my MBBS degree (August 2017)

Initially, I was looking at ways to pursue a combined career in clinical practice as well as basic neuroscience research. However, during my internship, I realized that either field, on its own, would be very demanding and that I enjoyed labs more than hospital wards! Also, as neuroscience was my passion, I decided to pursue a research career.

As a pathway to research, I pursued a Master's program in neuroscience at UCL as I felt as this would expose me to its entire breadth. Here, I worked with Prof. Matteo Carandini and Prof. Kenneth Harris, investigating multisensory coding and decision making in mice using a 2 alternative forced-choice task, based on previous work done in the same lab (Burgess et al 2017). I used neuropixels probes (Jun et al 2017) to record electrical activity from the frontal cortex in mice performing this task. The project involved training mice in the task, recording from head-fixed mice and analyzing the data in MATLAB.

I am currently looking for research opportunities in computational biology/medicine/neuroscience, thereby continuing my gradual transition to quantitative research. I have currently applied to the MPhil in Engineering at Cambridge University. My long term research interests are in the application of random matrix theory to biology and machine learning, such as in understanding neural networks and random events in genetics. Ultimately, my aim would be to develop a career portfolio that will incorporate the building blocks of research, a university faculty position and consulting with the industry.

In conclusion, I feel that my knowledge and experiences in medicine and neuroscience have given me the intellectual maturity and communication skills required for this rapidly developing research area. I strongly believe that I am prepared to make useful contributions, both to the scientific community and to society in general.