COURSE INSTRUCTOR

Sloka Iyengar

Sloka is excited about The Brain course, and cannot wait to share the wonder and excitement of the brain with

educators!

Sloka received her Ph.D. in Neuroscience from the University of South Carolina (USC) School of Medicine, where she used electrophysiology to understand how neuronal circuits generate and sustain epileptic seizures. Neurons communicate with each other via electricity, and electrophysiology is a way to measure these electrical signals in the brain (for example, EEG can measure electrical signals from the scalp). In the lab though, there are more detailed ways of studying electrical signals in experimental animals.

Sloka is from Ahmedabad – a city in the western Indian state of Gujarat (Mahatma Gandhi was from Gujarat too!). She did her bachelors in pharmacy, and her first introduction to neuroscience was studying drugs that act on the brain. It was an eye-opener to know that for most neurological disorders, there is so little that we know! This radically changed her way of thinking from reading textbooks, where she was under the impression that everything had already been discovered. Neuroscience opened up an entire field of study full of questions!

After her undergraduate studies, Sloka took a year off, and worked at a shelter for stray animals called the Animal Help Foundation. As the administrator, she was in charge of stocking up medical and surgical supplies, setting up protocols for spay/ neuter of stray dogs,

organizing fundraisers, convincing local institutions to donate food and medicines, and overseeing the raptor, and the snake rescue center. She facilitated a program called Dr. Dog, where she took dogs to the Blind People's Association. Orphaned birds, puppies, and kittens were her charge – she also helped raise a baby monkey, and a baby bat! It was at this time Sloka started wondering how dogs (and people) 'know' that they're hungry, what makes snakes cold to the touch, how bats communicate, and what is the basis of maternal behavior in dogs and cats.

Knowing that the brain controls behavior, and autonomic physiology, Sloka became interested in neuroscience, and applied to a Ph.D. program at the USC School of Medicine. She was the first graduate student in the lab of Dr. David Mott – he taught her how to build electrophysiology rigs. Surprisingly enough, her experience at the animal shelter developing protocols came in use here, as the entire lab needed setting up!

She first learned a technique called 'field potential electrophysiology', where one can record electrical activity from populations of neurons. Sloka was interested in the hippocampus - a part of the brain responsible for some types of seizures, and also for learning and memory. Given that neurons in the hippocampus are arranged in an orderly way, field potential recording is a great technique to learn more about physiology, and pathology of the brain. After

months of building the rigs, Sloka finally got to record from a rat hippocampal slice! For this, you have an electrode that electrically stimulates axons, and a recording electrode amongst the dendrites, where one can 'read' electrical output. This was amazing – here was a way to not only to study, but measure neuronal activity! Sloka was hooked, and for her dissertation, Sloka studied how synaptic plasticity in regulated in epilepsy.

She then worked as a postdoctoral fellow at the Nathan Kline Institute in Orangeburg, NY, where she studied a process called postnatal neurogenesis. For a while, scientists thought that the brain cannot generate new neurons. However, research in the past few decades has shown that neurogenesis – the birth of new neurons in the hippocampus – does indeed take place in mammals. As a postdoctoral fellow, Sloka investigated the effect of postnatal neurogenesis in seizures.

Looking for a more direct way to use her training for the epilepsy community, Sloka worked as a clinical researcher at the Northeast Regional Epilepsy Group. Here, she was involved with conducting clinical trials for children and adults with epilepsy. Working at the epilepsy clinic gave her greater insight into the clinical aspect of epilepsy, and the scientific challenges that clinical neuroscience faces. At present, Sloka works as a healthcare consultant, and is using her scientific training in areas beyond neuroscience, which she finds extremely

challenging and exciting!

Sloka has been involved in neuroscience outreach, and advocacy in New York City. She developed and taught a neuroscience curriculum for high school, and middle school students at the Harlem Educational Activities Fund (HEAF). She's gearing up to teach a science course based on forensic science, and a veterinary science course this year.

Sloka is a professional dancer as well, and has been learning and performing a classical Indian dance form known as Bharatanatyam in the city. She lives in Inwood, at the northern tip of Manhattan Island and loves to go for long walks to Wave Hill in the Bronx with her husband! She loves AMNH (especially the planetarium), and is looking forward to being part of this incredible scientific community.

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