Citation on the research work

The work submitted by Ms. Darshana Kapri entitled, “Norepinephrine regulates mitochondrial biogenesis in the hippocampus” for the Sun Pharma Science Research Scholar Award (2021) shows a novel role of catecholamine neurotransmitter Norepinephrine in regulating mitochondria in the hippocampus.

Mitochondria have emerged as crucial regulators of neuronal function and survival. Mitochondrial content and function have been shown to be regulated neurotransmitters and their receptors. Norepinephrine is a key modulatory neurotransmitter whose role in arousal, attention, sleep and learning is deeply appreciated. It also is a profound regulator of mitochondrial biogenesis and function in several cell types. In this study address if Norepinephrine directly modulates the powerhouse organelle (mitochondria) in neurons within the hippocampus, the brain region central to learning, memory and cognitive function. We find that Norepinephrine enhances mitochondrial biogenesis and elevates ATP production in hippocampal neurons. These effects appear to be mediated via the β adrenergic receptors and master modulator of mitochondrial biogenesis PGC1a.

Dr. Vidita Vaidya
(Thesis supervisor)