

## **The Homeostasis of Mitochondria in Nucleus Pulposus of the Intervertebral Disc**

Presenter: Xingshuo (Alice) Zhang

Abstract: The Nucleus Pulposus in the center of the intervertebral disc (IVD) is a tissue optimized to hypoxic and avascular environment. This will induce the mitochondria dysfunction. The mitochondria dysfunction will increase the concentration of so-called reactive oxygen species (ROS). These will induce mitochondria dysfunction, this positive feedback-loop triggers apoptosis at the end. To stop this loop the protection function, which is the autophagy of mitochondria, play an essential role. There are two kinds of autophagy of mitochondria, one is "non-selective macro-autophagy", another is "selective mitophagy" which is induced by a parkin-park2 pathway. When the homeostasis broke the apoptosis induced by dysfunctional mitochondria will promote the degeneration of intervertebral disc. My talk will summarize the current evidence for mitophagy in the IVD and its possible relevance for IVD degeneration.