

## **Seminar**

### **Dissecting the role of Toll-like Receptors Innate Immune Signaling by NMR spectroscopy**

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Sixteen years after the discovery that Toll-like receptor (TLR) 4 is responsible for the immunity response of LPS (2011 Nobel Prize in Physiology or Medicine), TLRs has been widely studied as a key component in the innate immune system. Still, a significant bottleneck in the field can be attributed to a shortage of efficient and specific small-molecule antagonists or agonists that regulate the TLR functions. Nabanita has combined her expertise in chemical biology, structural biology/ NMR spectroscopy, computational simulation, and cell assay development, aiming to develop novel TLR regulators modulating protein-protein interactions. As an example, in a recent work Das et al demonstrated the activation of TLR5 by HMGB1 protein causes neuropathic pain in rats which can be inhibited by applying TH1020 a novel TLR5 small molecule inhibitor developed in Yin lab. Finally, with the help of NMR spectroscopy Das et al, showed that the C terminal acidic tail region of HMGB1 is responsible for binding to the TLR5 extracellular domain followed by activation of TLR5 mediated NF-KB signaling cascade. The efficacy of TH1020 in pain management can open a new avenue in opioid treated neuropathic pain domain.

***Thursday, Dec 8<sup>th</sup> 2016***

***2:00 PM (Tea/Coffee at 1:45 PM)***

***Seminar Hall, TCIS***