

## **Understanding the assembly and structure of Leukemia Inhibitory Factor and Oncostatin-M cytokine signaling complexes.**

*Vignesh Kamath Beladi<sup>1</sup>, Courtney Zlatic<sup>1</sup>, Riley Metcalfe<sup>3</sup>, Yogesh Khandokar<sup>4</sup>, Tracy Putoczki<sup>2</sup>, Michael Griffin<sup>1</sup>*

1. The University of Melbourne. Department of Biochemistry and Pharmacology, Bio21 Institute, Parkville 3010, Melbourne
2. Walter and Eliza Hall Institute of Medical Research, Parkville 3010, Melbourne
3. Centre for Structural Biology, Centre for Cancer Research, National Cancer Institute, Frederick, Maryland 21702, USA
4. Australian Synchrotron, 800 Blackburn Rd, Clayton VIC 3168

[Vignesh.kamathbeladi@student.unimelb.edu.au](mailto:Vignesh.kamathbeladi@student.unimelb.edu.au)

Leukemia Inhibitory Factor (LIF) and Oncostatin-M (OSM) belong to the IL-6 family of cytokines. LIF and OSM display numerous common and distinct biological activities and have also been associated with pro-tumorigenic characteristics in various cancers. Past studies have revealed the structure of these cytokines and identified their signalling partners. LIF forms its signalling complex with LIFR and gp130, while OSM forms two different types of signalling complexes employing gp130 with either LIFR or OSMR. Even though there is a basic understanding of their signalling behaviour, there exists a gap in knowledge about the dynamics of signalling complex formation and promiscuity of OSM's interaction with its receptors. The focus of the current study is to discern the dynamics of LIF and OSM signalling complex assembly and structural characteristics by employing biophysical assays and cryo-electron microscopy.