NUS National University of Singapore | Department of Biological Sciences Faculty of Science

SEMINAR

Thurs, 23 May 2024 | 10 am | DBS Conference Room 1

Hosted by Assoc Prof Liou Yih-Cherng

Lipopolysaccharide-binding protein and depression

By **Ren Lai**

Professor, Director of genetic resource center in Kunming Institute of Zoology, Chinese Academy of Sciences. Deputy Editor of Research and Associate Editor of Journal of Venom Research

Monoamine insufficiency is suggested to be associated with depressive features such as sadness, anhedonia, insomnia, and cognitive dysfunction, but the mechanisms that cause it are unclear. We found that the acute-phase protein lipopolysaccharide-binding protein (LBP) inhibits monoamine biosynthesis by acting as an endogenous inhibitor of dopamine-β-hydroxylase (DBH) and aromatic-L-amino-acid-decarboxylase (DDC). LBP expression was increased in individuals with depression and by diverse stress challenges in mice. LBP antibodies and LBP knockdown inhibited monoamine insufficiency and depression-like features in mice, which worsened with LBP overexpression or administration. Monoamine insufficiency and depression-like symptoms were not induced by stressful stimuli in LBP-deficient mice, further highlighting a role for LBP in stress-induced depression, and a peptide we designed that blocks LBP-DBH and LBP-DDC interactions showed anti-depression effects in mice. This study reveals an important role for LBP in regulating monoamine biosynthesis and suggests that targeting LBP may have potential as a treatment for some individuals with depression.

About the Speaker

Prof Lai obtained his PhD in Zoology and Biochemistry from Chinese Academy of Sciences and spent 2 years as a postdoc with Liverpool University before joining Kunming Institute of Zoology, Chinese Academy of Sciences in 2004. His research interests include: 1, Investigating biological surviving strategies and environmental adaptation mechanisms focusing on venomous animals and their venoms; 2, Investigating mechanisms of human diseases, such as thrombosis, pain, and infection, and developing drugs. As a senior author, he has published more than 250 papers, such as Nature Immunology, Immunity, Cell Research、Blood, Circulation Research, Science Advances, Chemical Reviews, PNAS, Nature Communications, and Current Biology. More than 100 patents have been authorized in his group. Two drugs developed by his group have been authorized for clinical trials.