

Department of Molecular and Cellular Biology
Graduate Seminar MCB*6500

Friday, April 12th, 2024 @ 12:00 p.m.

presented by:

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**"Unveiling the Impact of Mast Cell Specific Receptor,
MRGPRX2, on *Streptococcus pneumoniae*-Induced
Meningitis"**

The clinical challenge posed by pneumococcal meningitis, with its heightened profile due to increasing antibiotic resistance, demands a reassessment of potential interventions. Within this context, the role of mast cells - sentinels of the innate immune system - has come under scrutiny. Although mast cells are traditionally recognized for their contributions to allergy and inflammation, recent insights reveal their significance in pathogen recognition and defense. The presence of the mast cell-specific receptor, MRGPRX2, within the meninges suggests a specialized function in this unique anatomical boundary. The activation of MRGPRX2 by bacterial quorum sensing molecules and neuropeptides, could represent a critical response to the infiltration of *Streptococcus pneumoniae* during meningitis. The action mediated by this receptor is thought to increase the permeability of the blood-brain barrier, enabling immune cells to penetrate more effectively to the site of infection, which in turn promotes the elimination of bacteria. The research seeks to dissect how mast cells, notably through activation of the MRGPRX2 receptor in the meninges, play a part in the development and progression of pneumococcal meningitis. The elucidation of these interactions may pivot towards innovative therapeutic approaches, spotlighting MRGPRX2 as a potential target to combat the urgent issue of antibiotic-resistant bacterial infections.