MCB AND QSB:

PRESENTING

DR. ALI ABDUL-SATER

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"Decoding TRAF1 Signaling Networks: Mechanistic Insights into Inflammatory Arthritis"

Abstract:

Chronic inflammation drives the development of inflammatory arthritis, a group of diseases that includes rheumatoid arthritis (RA), psoriatic arthritis (PsA), and gout, among others. However, the molecular signaling networks that regulate these conditions remain poorly defined. Our work identifies the adaptor protein TRAF1 as a key regulator of inflammatory signaling across multiple immune cell types. Using CRISPR/Cas9-mediated gene editing, biochemical analyses, and in vivo disease models, we show that disrupting the TRAF1-cIAP2 interaction selectively reduces NF-κB, MAPK, and inflammasome activation, leading to lower joint inflammation in models of RA and gout. In PsA, we find that TRAF1 levels are elevated in patient-derived immune and synovial cells, and that reducing TRAF1 expression diminishes the production of proinflammatory cytokines. Together, these findings reveal TRAF1 as a central signaling hub that connects innate and adaptive immune pathways and highlight its potential as a therapeutic target across inflammatory arthritis diseases.

About the Speaker:

Dr. Ali Abdul-Sater is an Associate Professor in the Faculty of Health at York University in Toronto and the Director of the PsA CARE Hub. His research program focuses on uncovering how inflammation is controlled in the body and on developing new strategies to "dial it down" in autoimmune diseases such as rheumatoid arthritis and psoriatic arthritis. His lab discovered how a key immune protein, TRAF1, regulates inflammation and immune activation, and is exploring ways to target this pathway to reduce joint damage and improve patient outcomes. Dr. Abdul-Sater's work has been supported by major federal and private funders, including the Canadian Institutes for Health Research (CIHR), Natural Sciences and Engineering Research Council of Canada (NSERC), New Frontiers in Research Fund (NFRF), the Krembil Foundation, and the Arthritis Society. He has received several prestigious awards, including the Stars Career Development Award from the Arthritis Society, the Bhagirath Singh Early Career Award in Infection and Immunity from CIHR, a Discovery Award from the Banting Foundation, the President's Emerging Research Leadership Award (PERLA) from York University, and a York University Research Chair in the Regulatory Mechanisms of Inflammation.

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