

BIOMEDICAL & SENSORS FRONTIERS



Chandra Mohan, M.D., Ph.D.

Ph.D. – Tufts University in Boston
Hugh Roy and Lillie Cranz Cullen Endowed Professor

Dr. Mohan is one of the nation's leading lupus researchers. He completed his medical training in Pathology and Rheumatology at the National University of Singapore and the Singapore General Hospital. He obtained his doctoral degree from Tufts University in Boston, where his doctoral thesis was focused on the cellular immunology of lupus. His post-doctoral training was focused on the genetic analysis of murine lupus.

Dr. Mohan's laboratory conducts research on disease biomarkers and pathogenic mechanisms, primarily in autoimmune diseases and selected cancers. He has published extensively in the area of autoimmune diseases. He recently received a major grant from the National Institutes of Health (NIH), which he shares with Dr. Tianfu Wu, an assistant professor of biomedical engineering at University of Houston. Funding from this grant will be used to develop early detection and home monitoring tests for lupus nephritis. Select highlights for research related to various autoimmune diseases and cancers addressed in Dr. Mohan's laboratory are listed below.

Publications

1. Varadarajan N and Mohan C. Elucidating the molecular circuitry of autoimmunity. *Nature Immunology*. 2019. DOI: 10.1038/s41590-019-0436-8
2. Qin L, Stanley S, Ding H, Zhang T, Truong VTT, Celhar T, Fairhurst A, Pedroza C, Petri, Saxena R, Mohan C. Urinary pro-thrombotic, anti-thrombotic, and fibrinolytic molecules as biomarkers of lupus nephritis. 2019. DOI: 10.1186/s13075-019-1959-y
3. Du Y, Ding H, Vanarsa K, Soomro S, Baig S, Hicks J, Mohan C. Low Dose Epigallocatechin Gallate Alleviates Experimental Colitis by Subduing Inflammatory Cells and Cytokines, and Improving Intestinal Permeability. *Nutrients*. 2019. DOI: 10.3390/nu11081743
4. Chakraborty A, Dasari S, Long W, Mohan C. Urine protein biomarkers for the detection, surveillance, and treatment response prediction of bladder cancer. *Am J Cancer Res*. 2019; 9(6): 1104-1117
5. Nair A, Liu CH, Singh M, Das S, LeT, Du Y, Soomro S, Aglyamov S, Mohan C, Larin KV. Assessing colitis ex vivo using optical coherence elastography in a murine model. *Quantitative Imaging in Medicine and Surgery*. 2019. DOI: 10.21037/qims.2019.06.03
6. Quin L, Du Y, Ding H, Haque A, Hicks J, Pedroza C, Mohan C. Bradykinin 1 receptor blockade subdues systemic autoimmunity, renal inflammation, and blood pressure in murine lupus nephritis. *Arthritis Research & therapy*. 2019 DOI: 10.1186/s13075-018-1774-x
7. Stanley S, Mok CC, Vanarsa K, Habazi D, Li J, Pedroza C, Saxena R, Mohan C. Identification of Low-Abundance Urinary Biomarkers in Lupus Nephritis using Electrochemiluminescence Immunoassays. *Arthritis & Rheumatology* 2019. DOI: 10.1002/art.40813
8. Mahendra A, Yang X, Abnouf S, Adolacion JRT, Park D, Soomro S, Roszik J, Coarfa C, Romain G, Wanzeck K, Louis Bridges S Jr, Aggarwal A, Qiu P, Agarwal SK, Mohan C, Varadarajan N. Beyond autoantibodies: Biological roles of human autoreactive B cells in rheumatoid arthritis revealed by RNA-sequencing. *Arthritis Rheumatol*. 2018 Nov 8. doi: 10.1002/art.40772. Epub 2019 Feb 23
9. Mok, C. C., Soliman, S., Ho, L. Y., Mohamed, F. A., Mohamed, F. I., @Mohan, C. (2018). Urinary angiotensin, CXCL4 and VCAM-1 as biomarkers of lupus nephritis. *Arthritis research & therapy*, 20(1), 6.



IDENTIFYING PROTEIN BIOMARKERS THAT CAN BE USED AS EARLY DIAGNOSTICS OR TO MONITOR DISEASE PROGRESSION OR RESPONSE TO TREATMENT

Dr. Mohan's laboratory is conducting research to identify protein biomarkers in body fluids of patients with autoimmune diseases (systemic lupus erythematosus, inflammatory bowel diseases, systemic sclerosis, Sjorgen's syndrome, ankylosing spondylitis, and rheumatoid arthritis) and cancer (colorectal and bladder cancers). He is also contemplating using the biomarkers in clinical trials. The goal is to transform the biomarkers into diagnostic test panels or kits suitable for laboratory-based assays or for simple "point-of-care" assays.

IDENTIFYING THERAPEUTIC TARGETS THAT CAN BE USED TO UNDERSTAND DISEASE PATHOGENESIS AND TO IDENTIFY COMPOUNDS FOR TREATMENT OF THE DISEASE

Dr. Mohan's laboratory is conducting research to identify new therapeutic targets for diseases such as lupus nephritis, inflammatory bowel diseases, autoimmune renal disease. He is also conducting research to identify compounds that can be used to treat diseases such as systemic lupus erythematosus, lupus nephritis, inflammatory bowel diseases, systemic sclerosis, and rheumatoid arthritis.