



**The Chinese University of Hong Kong
Department of Biomedical Engineering**

**Tracking Disease Trajectories for Tailored Prevention,
Control, and Treatment**



Dr. Wenyi JIN

Licensed Surgeon
Doctor of Medicine (Surgery)
Wuhan University

Date: 12 January 2026 (Mon)

Time: 10:30 – 11:30 am

Venue: ERB1122 (William M.W. Mong Engineering Building, CUHK)

Abstract

This seminar presents deep-learning methods for disease trajectory tracking, long-horizon prediction, and prevention-oriented decision support across both population and individual levels. At the population level, we develop an deep learning pipeline that learns non-stationary, multivariate, multi-location spatiotemporal patterns and enables scenario-based policy simulation, overcoming core limitations of classical time-series models (e.g., stationarity assumptions, univariate inputs, and overly smooth forecasts). Using rheumatoid arthritis as a testbed, the framework tracks global-to-local burden dynamics and inequalities across 953 locations from 1980 to 2040, and quantifies potential health gains under practicable interventions; the same pipeline is extensible to multiple major diseases including cancers, mental health outcomes, COVID-19, and vision loss. At the individual level, Dr. JIN introduces multi-omics deep learning that can fit ultra-high-dimensional and mixed-distribution data and leverage perturbation datasets to support precision treatment. Taking neuroblastoma as an example, he derives a metabolic-reprogramming model for risk stratification, recommend targeted therapies, and validate this stratified treatment in preclinical animal models.

Biography

Dr. Wenyi JIN, a licensed surgeon, received Doctor of Medicine (Surgery) from Wuhan University and will receive a second Ph.D. in Biomedical Sciences from City University of Hong Kong. He is a senior collaborator of the Global Burden of Disease (GBD) Study and serves on the young editorial boards of several journals, including iMeta and Cell Proliferation. His work has been published in The Lancet, Annals of the Rheumatic Diseases (ARD), Trends in Cancer, The Lancet Regional Health, Theranostics, and Carbohydrate Polymers, and he published correspondences in The New England Journal of Medicine (NEJM) and The Lancet.

In the past five years, he has published 41 SCI papers, including seven papers in top-1 general medical journals (six in The Lancet and one in NEJM), one ESI highly cited paper, and 20 papers in JCR Q1 journals. His publications have a cumulative impact factor of 841, with the highest single-paper impact factor reaching 88.5, and his H-index is 16. His ARD paper was selected as an Editor's Choice article and was reported by more than 60 international media outlets, including The Times and U.S. News. Nature Reviews Rheumatology published a dedicated commentary on this work.

**** ALL ARE WELCOME ****

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