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Dr. Shih-Yu Chen is a Associate Research Fellow at the Institute of Biomedical Sciences (IBMS), Academia Sinica, where he has made pioneering contributions to the field of single-cell analysis, immune function, and technology development.

Dr. Chen's research focuses on advancing the detection and quantification of biomolecules at enhanced resolutions and parameters. During his postdoctoral training in Dr. Garry Nolan's lab at Stanford University, he utilized single-cell technologies such as multiplexed imaging and mass cytometry to explore biological diversity and developed innovative tools for revealing cellular details. Among Dr. Chen's recent achievements is his contribution to the development of high-definition multiplex ion beam imaging (HD-MIBI), a technique for multiplexed biomolecular detection at the nanoscale. This technology has provided novel insights into subnuclear territories and drug distribution *in situ*. His team has also made advances in detecting accessible chromatin using mass cytometry and ion beam imaging, leading to significant findings about genome accessibility and cellular responses.

In the area of immune research, Dr. Chen has explored natural killer (NK) cell heterogeneity through high-dimensional single-cell analysis, shedding light on NK cell function in various clinical contexts. His studies have revealed the impact of NK cell receptor diversity on viral clearance and identified key metabolic and environmental factors influencing NK cell activity. His work on T cell exhaustion has also provided new insights into DNA damage response pathways and their role in immune function and therapy resistance.

Dr. Chen has developed and applied multi-omic approaches to study immune responses in disease states, including cancer and fibrotic diseases. His research has highlighted critical interactions between macrophages and fibroblasts and identified novel immune regulatory mechanisms that could inform therapeutic strategies. In the context of cancer, Dr. Chen's work has been pivotal in identifying biomarkers that can predict patient responses to immunotherapies, including cancer vaccines.

Dr. Chen holds a medical degree from National Taiwan University and completed his PhD at the University of California, Davis. He completed his postdoctoral training at Stanford University before joining the IBMS, Academia Sinica. Dr. Chen has received several awards in his career. Recent ones include the Academia Sinica Career Development Award (2021), Awards for newly hired exceptional talent from National Science and Technology Council (2019), and Newly recruited academic research award from Academia Sinica (2019).