



BiophysTO Lunchtime Seminar Series

Date

Thursday, Sept 14, 2023
12:00 – 1:00 pm

Location

60 St. George Street.
Room MP 606

Dr. Naoto Hirano

Department of Immunology, University of Toronto
Princess Margaret Cancer Centre, University Health Network

Immuno-Bioengineering Approaches in Cancer Immunotherapy

Synthetic biology is a fast-growing multidisciplinary area of research studying innovative and disruptive approaches for creating new biological systems or re-designing existing ones. Synthetic biology approaches in immunology have facilitated scientific discoveries and inventions to investigate the immune system, which protects humans from illness and infection through multiple layers of defence. For example, adoptive immunotherapies based on genetic and cellular engineering such as the adoptive transfer of T-cells redirected with a synthetic Chimeric Antigen Receptor (CAR) gene have achieved great successes in the clinic and benefited patients with intractable cancer. In this presentation, I would like to share our experiences and insights in synthetic biology approaches in cancer immunology and immunotherapy (Butler, et al., *Sci Transl Med.* 2011; Butler and Hirano, *Immunol Rev.* 2014; Ochi, et al., *Cancer Immunol Res.* 2015; Kagoya, et al., *Nat Med.* 2018; Benveniste, et al., *Sci Immunol.* 2018; Kagoya, Guo, et al., *Cancer Immunol Res.* 2020; Murata, et al., *eLife.* 2020; Sugata and Matsunaga, et al., *Nat Biotechnol.* 2021; Murata, et al. *J Immunol.* 2022; Wang C-H, et al., Unpublished. 2023).

Bio: Dr. Hirano is currently Senior Scientist at the Princess Margaret Cancer Centre, University Health Network and Professor of Medicine in the Department of Immunology, University of Toronto. He is also Chair of Immuno-Oncology Program and Associate Director for Research of Tumor Immunotherapy Program at the Princess Margaret Cancer Centre. Before being recruited to Toronto in 2011, Dr. Hirano was Assistant Professor of Medicine at the Dana-Farber Cancer Institute, Harvard Medical School. Dr. Hirano's laboratory specializes in cancer immunotherapy, investigating and designing therapeutics using the power of the immune system to fight cancer. **Host: Prof. Sid Goyal**



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