Research

**Patient-specific diagnostic and predictive platform in HCC
– PuRPOSE Programme**

Approximately 1 million new cases of hepatocellular carcinoma (HCC) are diagnosed annually and HCC is the 2nd most important cause of cancer deaths. There is only one poorly efficacious systemic drug, Sorafenib and thus a huge unmet clinical need. HCC is highly heterogeneous and for treatment to be effective, it will have to be personalized and targeted - using **a patient-specific diagnostic and predictive platform**. Such a platform that is scientifically rigorous and clinically validated is currently not available.

This programme leverages on the relative strengths of current programs, in Singapore (the **TCR Flagship Program in Liver Cancer** and other programs) and in the Republic of Korea (the **Refractory Cancer Program** at the Samsung Medical Center **(SMC)** to develop the **world's first clinically reliable and robust platform** that will fundamentally change and improve the efficacy of HCC treatment. This personalized, targeted patient-specific diagnostic and predictive platform will be developed and validated based on precision analysis, high throughput screening and predictive outcomes using proprietary tissue manipulation techniques, patient derived AVATAR-organoid for in vitro disease simulation and in vivo PDX for therapeutic validation. We will leverage on this high throughput platform to interface with **industry** for collaborations in drug development and with **clinical services** to augment therapeutic decisions.

We aim to:

- To establish the world's leading Precision Platform in personalized clinical oncology for HCC
- To further develop the highly differentiated AVATA Precision Platform for HCC.

Our strategy:

- Integration of Genomic, Immunomic and Clinical data from patients
- Scale-up specific patient responses to therapy by leveraging on AVATAR Precision Platform
- Unique combination of Patient-derived organoid (PDO) and Patient-derived Xenograft (PDX) for drug screening
- Generation of database with predictive biomarkers for treatment response.
- Potential to uncover new biomarkers
- Cutting-edge expertise in PDO for:
- In vitro disease simulation
- Immune-competent humanized/cirrhotic mouse models