The researchers plan to subsequently scale this effort to reveal specific predictive gene expression and mutation signatures that could be used to stratify different patient groups and corresponding treatment options. This would help to guide future treatment strategies validated through larger clinical trials.

“Our approach is unique in the sense that we are using phenotype-driven approaches prospectively to define real-time clinical management of disease, and then investigating the genomic basis for response to identify novel prognostic biomarkers. The ultimate goal would be for this innovative strategy to be available to every cancer patient in future,” explained the study’s lead author Dr Ramanuj DasGupta, Group Leader, Cancer Therapeutics and Stratified Oncology at the GIS.

Dr DasGupta added, “To truly assess what treatments may or may not work for a given patient, we need to let the patient’s own cancer cells tell us the genetic basis for their response or lack thereof to certain treatments, instead of using historically existing cell lines. This approach would be exceptionally useful where there is a lack of treatment options, for instance in late-stage patients, or a lack of clear biomarker-driven treatment strategies.”

"To get this right takes a lot more than just the work reflected in this paper alone. There were years of struggles on both sides to get protocols in place to be able to recruit patients, grow the tumours outside of the patient’s body, testing for genetic and therapeutic vulnerabilities at the screening setup at GIS[1], and have it run like clockwork, with data analysis in a meaningful manner, making sense of the results, bringing that information back to the hospital for discussions, and finally treating the patient again. Each of these steps is herculean to say the least but this is a small step towards the future where treatment for any patient will be based on their unique characteristics and not assumptions from group studies based on other populations. This takes planning, determination, mutual respect for each other’s strength and a dedicati(to)]TJn4 260.2kcTm( )]TJET

The key research areas at the GIS include Human Genetics, Infectious Diseases, Cancer Therapeutics and Stratified Oncology, Stem Cell and Regenerative Biology, Cancer Stem Cell Biology, Computational and Systems Biology, and Translational Research.

The genomics infrastructure at the GIS is utilised to train new scientific talent, to function as a bridge for academic and industrial research, and to explore scientific questions of high impact.

For more information about GIS, please visit www.gis.a-star.edu.sg

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