



Dear Colleagues,

Welcome to the July 2013 update of the POLARIS program. Supported by A\*STAR's Biomedical Research Council Strategic Positioning Fund, POLARIS represents a concerted effort by Singapore to venture into precision medicine through a consortium of A\*STAR Research Institutes and public healthcare centres. Our inaugural partners include GIS, BTI, SGH, SNEC, NCCS, and NUHS.

The POLARIS team has steadily grown over the past few months, and we are pushing ahead on many fronts. We would like to welcome our POLARIS Steering Committee, comprising members from A\*STAR (Ben Seet, Ng Huck Hui, Lam Kong Peng), SingHealth (Soo Khee Chee, Tan Puay Hoon) and NMRC (Tan Say Beng, Stephen Smith). The PSC will work with POLARIS Core leadership on issues related to governance, transparency, and national integration. PSC meetings will commence in the 3rd quarter of 2013, and we look forward to lively discussions with these key opinion-leaders about the progress and implementation of precision medicine in Singapore.

One milestone this quarter was the successful establishment of a legal agreement between A\*STAR and SingHealth concerning intellectual property (IP), revenue sharing, and commercialization rights for POLARIS activities. Full signing of the agreement is expected by the end of the month. In parallel, we have also started to engage other healthcare and research institutions in Singapore to establish new research collaborations. Initial discussions with these other parties have proved invaluable in allowing us to understand their concerns and clinical needs, which we will seek to translate into new joint projects. We are now in the process of developing a process by which other institutions can tap into the POLARIS framework.

An important international development for the field occurred in June 2013, when the US Supreme Court ruled against Myriad Genetics on the viability of the company's *BRCA1* gene patent. As summarized in a *Science Translational Medicine* editorial (1) - "The decision of the Supreme Court...delivered a surgical strike against patents that block development in genetics-based diagnostics while preserving patent protection for therapeutics, personalized medicine, and other fields of biotechnology." The Supreme Court decision opens up new avenues for academic labs to develop and deliver genetic testing assays. While the long-term ramifications of this case will only be known three to five years from now, we in POLARIS feel that this development is largely beneficial for the field, as it will accelerate the translation of genetic findings into actual clinical care.

On the ground, notable events included the acquisition of a series of Illumina HiSeq and MiSeq next-generation sequencing instruments, which will form the backbone of the POLARIS workflow. The Illumina instruments will be deployed to POLARIS labs at both A\*STAR and SingHealth sites, where they will run harmonized workflows that incorporate quality control measurements at every crucial step. To ensure high quality processing of samples, the POLARIS Bio-IT team has elected to engage the software company Genologics. Genologics has an established track-record in furnishing laboratory information management softwares (LIMS) for next-generation sequencing, and has deployed their software in several reputable clinical sequencing laboratories, including the Peter MacCallum Cancer Institute in Melbourne and even Illumina Corporation itself. At BTI, our metabolomics team has completed the tender for a new state-of-the-art mass spectrometer from Thermo Scientific, which can be applied to low sample volumes typically associated with clinical samples.

Our Disease Champions have also been hard at work, developing gene panels for eye genetic diseases, gastrointestinal cancer, and lung cancer. These conditions were specifically selected due to the research strength Singapore already has in these areas, and their status as diseases of major concern. For example, colon cancer is one of the most frequently diagnosed cancers in Singaporean males. The POLARIS GI cancer panel designed by Dr Iain Tan comprises approximately 90 genes, comprising currently actionable genes (eg KRAS, BRAF) and genes showing promising clinical utility (eg PIK3CA and PTEN). Besides designing the panels, we seek to recognize the efforts of the disease champions in creating the clinical databases required to generate the physician and patient reports for these assays.



Finally, one major highlight this quarter was our inaugural POLARIS kick-off meeting, held on July 4th in the new Academia building on the SingHealth campus (above pictures). Approximately 50-60 attendees showed up at the bright hour of 7:30 am, where they were introduced to the objectives of POLARIS and progress in the areas above. The meeting was also the venue where we officially launched our POLARIS web-site (<http://polaris.a-star.edu.sg>). The kick-off meeting ended with a lively discussion of various issues related to genetic research, such as ethical issues associated with reporting “incidental” genetic findings to patients, and the impact of HOTA (Human Organ Transplant Act) on the ability to generate clinical databases for industry collaborations. These are all important issues that should be further discussed so that we can, as a community, arrive at a general consensus on these important questions.

In closing, we refer you to a New York Times article published in April 2013 (2) describing attempts from other US centres to introduce genetic sequencing into healthcare. We hope you find it interesting.

Best regards,  
Patrick Tan  
(On behalf of the POLARIS Team)



<http://polaris.a-star.edu.sg/>

1. Richard E. Gold, Robert Cook-Deegan, and Tania Bubela. “AMP v. Myriad: A Surgical Strike on Blockbuster Business Models.” *Science Translational Medicine*, 192ed9. 3 July 2013

2. Anemona Hartocollis. "Cancer Centers Racing to Map Patients' Genes". *The New York Times*. 21 April 2013. [http://www.nytimes.com/2013/04/22/health/patients-genes-seen-as-future-of-cancer-care.html?pagewanted=all&\\_r=0](http://www.nytimes.com/2013/04/22/health/patients-genes-seen-as-future-of-cancer-care.html?pagewanted=all&_r=0)