The ‘Bling’ in Detecting a Disease

One often associate scientist with chemicals, reagent bottles and maybe an untameable hairstyle. This is totally not the case for the 15 HKU students who just won the bronze award for the International Genetic Engineered Machine Competition (iGEM), representing HKU, back in November 2017.

Together with Dr. Julian A. Tanner as their main coach, the team’s presenters (Lee Ka Man, Saran Ravneet, Shukla Yash Sanjaykumar, Subah Silma and Tsang To) travelled to Boston and competed against 300 teams worldwide. iGEM was held to catalyse the advancement of synthetic biology and the development of an open community. Teams were evaluated not only on their project’s quality but also on their impact on human practice.

The team produced a technology that is not only fast and effective in diagnosis for diseases, it is quite pleasant look as well: a 2D DNA nanostructure that could be modified to detect specific diseases. There are genes or molecule in our body that would trigger particular diseases, they are called biomarkers. What the DNA nanostructure does, is to bind to biomarkers of a particular disease. It then changes its structure into 3D (how amazing is that?) and emit a fluorescence signal – if you like glow-in-dark or bling-bling objects, this one is definitely your cup of tea. Her team selected Huntington disease’s biomarker as an example, hence if fluorescence signals are detected, the patient has gotten the disease.

The project did not stop at the laboratory level, there is an additional aspect for community engagement by educating and conducting market research with secondary schools and the general public. The ‘product’ made its grand reveal at the Joint School Science Exhibition with the vision of impassioning the public in science by learning about the team’s journey in the project. Science is not all about knowledge and principles either: the team has also shared about social responsibility biosafety as well, showing that science too, have a human and communal side.

Of course, like every other large-scale operation, this could not escape the fate of having a huge and complicated budget. Team members’ problem-solving skills are put into a test: they have to ask faculty units and corporates for the laboratory works’ funding. This is not a walk in a park – surely, money does not just make its way to our pockets by merely asking.

Having the opportunity to link science to community was a unique experience that not many science students have. Apart from scientific achievement, the team’s works sure bring a sparkle in community, igniting the hopes for better and simpler diagnostics in the future.

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