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New A*Star lab to make chemicals from agri waste

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Singapore: The Institute of Chemical and Engineering Sciences (ICES), a research institute of the Agency for Science, Technology and Research (A*STAR), officially opened its Metabolic Engineering Research Laboratory (MERL) in Biopolis. The new laboratory will design and engineer microbial cellular factories capable of cost-effectively producing high value chemicals from agricultural waste.

By creating new technologies and know-how, the laboratory will develop new strategies and applications for efficient biomass utilization. It will also focus on developing new computational and experimental approaches for synthetic biology and metabolic engineering applications to accelerate the engineering of the cellular factories.

The development of a bio-economy based on renewable plant biomass has emerged as a key priority for many countries. By 2015, the global bio-renewable chemicals market is estimated to be $6.8 billion. The fast growing biorenewable chemicals industry not only represents a shift as the traditional petrochemical industry re-invents itself in the light of a carbon-constrained future, but it offers a valuable economic opportunity for Singapore to renew its chemical industry and maintain its advantage as a leading chemical hub in the region.

The MERL laboratory will work for the benefit of a sustainable chemicals industry, which is looking for green alternatives to traditional petrochemical routes. The technology developments from MERL will provide sustainable routes for the production of chemicals such as acrylic acid, butadiene, and adipic acid from biorenewable sources. The systems biology and metabolic engineering toolbox that the laboratory develops can serve as an enabling platform for the biofuels, pharmaceutical and nutraceutical industries.

"We will collaborate with the scientific community and industry to address technological capabilities essential to form the foundation for bioprocess development activities. The 10-member research team will develop applications using novel and sustainable biological processes as an alternative route to conventional chemical processes," said Professor Zhao Huimin, the key scientist for MERL biomass programme.