ISSUE
04
AUGUST
2021

VANDA
A SINERGY NEWSLETTER

At a Glance

20
Principal Investigators

6
Academic and Research Institutes

15
Industry Partners

28
Collaborative Projects

Director's Message

Dear Colleagues,

We have entered the second half of 2021, a year still marked by the Covid-19 pandemic. But even though most of our activities take place online, we have some exciting updates to share with everyone.

SINERGY, together with the Asian Synthetic Biology Association, is happy to organize the **Inaugural Women in Synthetic Biology Symposium** on **30 September.** This half-day Online event aims to showcase and celebrate the scientific achievements of female synthetic biologists in Asia and to give opportunities to young members of the community to present their research in a wide forum. I encourage everyone to attend (register here) and submit an abstract to get the chance to present your research to the community.

In our latest Seed Grant round, SINERGY awarded funding to three University-Industry collaborations. I would like to congratulate Meng How Tan and Kevin Pethe from Nanyang Technological University, and Brandon Morinaka from the National University of Singapore, together with our industry partners Engine Bioscience, Vaciome, and Twist Bioscience respectively. Our next Seed Grant round is coming up in October (submission deadline **31 October 2021**).

In this issue, we are happy to introduce you to Shawn Hoon, Director of the Molecular Engineering Laboratory and Programme Leader for A*STAR's new Strategic Programme in Synthetic Biology (SIBER). Learn more about Shawn's research and Synthetic Biology vision on **page 2.** Our featured industry partner is Twist Bioscience, a company that revolutionized DNA synthesis and synthetic biology by extension. Learn more about Twist on **page 3.**

The SINERGY team grew again since our last newsletter. Mohammad Faheem is our new Outreach Executive, and he is the person behind the graphic design of this newsletter, our online material, and our social media.

Mohammad Faheem
Outreach Executive

I would also like to introduce our new SINERGY partners. **Singapore Polytechnic** and **Temasek Polytechnic** joined SINERGY as academic partners. Polytechnics are an essential part of Singapore's professional education, and we hope that our interaction will give rise to increased synthetic biology awareness for students and educators, as well as help our industry access local talents. Our two new industry partners are two local startups: **QuikPath** is active on Point-of-Care diagnostics, and **Shrooms Up**, a spinoff from the Singapore Institute of Technology, develops bioprocesses for novel food ingredients, meat analogues, and nutraceuticals. A warm welcome to all!

Matthew Chang
SINERGY Director

Sinergy
Singapore Consortium for Synthetic Biology

SINERGY Seed Grant Calling for Submissions

SINERGY provides a one-year S $50,000 seed grant for selected academic-industry collaboration research projects.
The grant call is open throughout the year with submission deadlines on 31 March and 31 October respectively.

Interested PIs and companies can find details at sinergy.sg/#grant and submit to sinergy@nus.edu.sg

SINERGY Membership

As a SINERGY member, an industry partner is entitled to apply for NRF grants, access select lab facilities at members' rate, and has other benefits such as marketing and licensing opportunities, advice and consultancy from topnotch scientists, among others.

For inquiries, please contact sinergy@nus.edu.sg

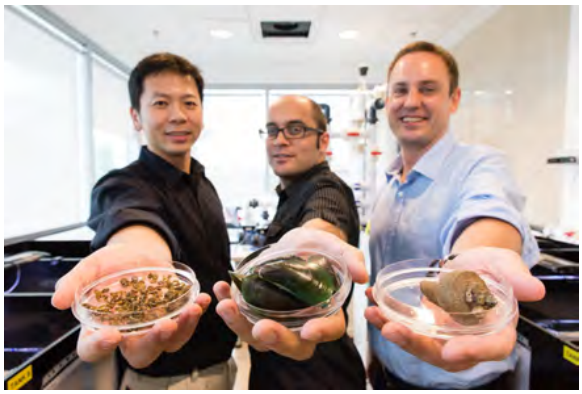
Researcher Spotlight

Shawn Hoon: Synthetic Biology at the intersection of computational and experimental techniques

Shawn Hoon obtained his PhD in 2008 from Stanford University in Genetics. He helped establish the Molecular Engineering Laboratory in 2009 with the late Sydney Brenner and continues to run the laboratory today. The lab takes an inter-disciplinary team-based approach where independent junior scientists can develop their own programmes. Alumni from the lab are now active contributors to the eco-system: ranging from start-ups, MNCs, investment firms, public agencies, and universities.

His primary research approach sits at the intersection of computational and experimental techniques that has spanned **chemogenomics, biomimetics, protein engineering, diagnostics,** and **synthetic biology.** He is also a co-founder of **Proteona,** a joint A*STAR-NUS spinoff in single-cell genomics. He is presently the Director of Graduate Affairs (BMRC) and the Programme Leader for the new A*STAR Strategic Programme in Synthetic Biology, **SIBER.**

SIBER is a new programme launched by A*STAR to integrate under one umbrella, a diverse inter-disciplinary team drawn from both the Biomedical and Engineering Research Institutes to deliver new approaches and technologies that impact the bioeconomy in areas of relevance to Singapore. The scope of this programme ranges from **food, consumer care, industry biotechnology to biomedical applications.**



*Long term collaboration with **Ali Miserez** from NTU, where genomics integrated with proteomics and materials science led to the discovery and understanding of novel high-performance materials found in nature. These novel protein designs inspire how we may design new materials that can be produced sustainably using synthetic biology approaches.*

When asked about the biotechnology and bioeconomy prospects of the country, Shawn noted that Singapore is uniquely positioned to make contributions to the many challenges that the world is facing due to the current pandemic but also climate change. *"As a country with little natural resources, we have to bring to bear new technological approaches that allow us to be self-reliant; these technologies can later be exported to other countries. One opportunity is Synthetic Biology. We see how industries, ranging from Agri-food and consumer care, to biomedical sciences, are moving away from fossil fuel derived ingredients to a Biomanufacturing approach,"* Shawn noted. There are many challenges before this translates at scale and this presents many exciting research opportunities for years to come.

MEL Team with the Late Sydney Brenner. Photo by Shawn Hoon

Twist Bioscience: We make DNA

Contributed by Twist Bioscience

Twist is leveraging its unique technology to manufacture a broad range of synthetic DNA-based products, including synthetic genes, tools for Next-Generation Sequencing (NGS) preparation, and antibody libraries for drug discovery and development. Twist is also pursuing longer-term opportunities in digital data storage in DNA and biologics drug discovery. We make products for use across many industries including healthcare, industrial chemicals, agriculture, and academic research.

Twist was founded in 2013 to provide synthetic DNA for innovative research that improves health and sustainability. *"We "write" DNA on a silicon chip, which reduces the environmental impact of each and every piece of DNA created,"* said Angela Bitting, Senior Vice President, Corporate Affairs, Twist Bioscience.

With the world's largest population and fastest economic growth, we believe Asia represents an exciting opportunity to provide our products to improve health and sustainability. Across the region we are seeing exciting developments in both the public and the private sector, and we offer tools to accelerate that research. *"We have a growing team in Asia to serve our increasing number of customers that include leading institutions such as the Victoria Clinical Genetic Service, Berry Genomics and AcornMed. Stay tuned as we grow our customer base and presence all over Asia,"* Angela Bitting added.

Twist Bioscience went public on the Nasdaq stock exchange in October 2018. As a public company, we have access to capital and a supportive investor base as an important component of our success. In addition, we continue to expand our product offerings, our customer base and our revenue, taking market share as we do so.

Looking into the future, we have the following goals:

- For Synthetic Biology, we expect to continue to grow our revenue, expand our product line and diversify our customer base. We plan to have initial production in our Factory of the Future near Portland, Oregon in 2022 to deliver synthetic DNA to customers even faster
- For Next-Generation Sequencing, we expect to continue to grow our revenue, expand our product line and the diversity of our customer base. We aim to convince more customers using single-nucleotide polymorphisms (SNPs) microarrays to use Twist's NGS tools plus sequencing
- For Biopharma, we expect to sign more partnerships to discover and optimize antibody therapeutics while advancing our internal antibody targets
- For Data Storage, we are working toward an alpha chip that we believe will allow us to generate initial revenue from early access customers

Industry partner updates

Engine Biosciences raises S$57m in oversubscribed Series A

Our industry partner Engine Biosciences has raised S$57 million in an oversubscribed Series A funding round led by US-based healthcare focused venture capital firm Polaris Partners. This brings the startup's total funding to date to S$70 million.

Read more here.

Allozymes raises $5M in a successful seed round

Our industry partner Allozymes raised US $5 million in a seed financing round led by Xora Innovation, the deep science investment arm of Temasek Holdings. SOSV, TI Platform Management, and Entrepreneur First have also joined the round.

Read more here.

Vaciome is looking for a Bioprocess Engineer and a Molecular Cell Biologist

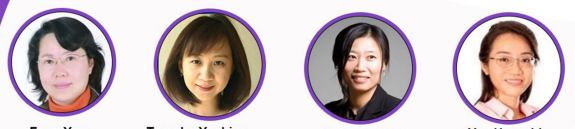
Our industry partner Vaciome develops recombinant livestock feed additives as replacements for agricultural antibiotics and hormones.

The company is looking for a Bioprocess Engineer and a Molecular Cell Biologist. Learn more about the roles and apply for the jobs through the company's LinkedIn.

Upcoming Events

Women In Synthetic Biology Symposium

Register



Thursday, 30th September, 2021, 1-4 pm SGT Via Zoom

The Asian Synthetic Biology Association (ASBA) and the Singapore Consortium for Synthetic Biology (SINERGY) are co-organizing the **Inaugural Women in Synthetic Biology Symposium**, taking place online on **30 September, 1 - 4 pm** Singapore/China Time (2-5 pm Tokyo/Seoul Time).

REGISTRATION AND ABSTRACT SUBMISSION

We invite synthetic biologist to submit an abstract and be selected to present their research (online presentation, ~10 minutes)

Best presentation award kindly provided by GenScript.

Abstract Submission Deadline: **14 September 2021**

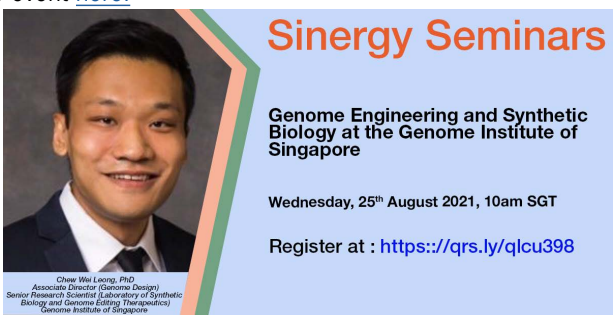
Please send your abstracts by email to **sinergy@nus.edu.sg,** indicating **"Abstract for Women in Synthetic Biology Symposium"**

The symposium is free to attend, register here.

Velia Siciliano is a Principal Investigator at Istituto Italiano di Tecnologia-IIT since September 2017. She established the Synthetic and Systems Biology Lab for Biomedicine. She is also honorary fellow of Imperial College London where she still supervises research activities.

Velia's research focus is on designing and prototyping new therapeutic approaches based on non-invasive modification of mammalian cells with a specific focus on T cells. Her work also encompasses the use of DNA or RNA circuits to study biological processes.

Register for the event here.



Chew Wei Leong is Senior Research Scientist at the Genome Institute of Singapore. His team develops technologies that make pinpoint changes to genes. His work provided the first demonstrations of multi-organ gene editing, disease gene correction with CRISPR-Cas9, and insights into the safety profile of these new nucleic acid therapeutics. More information can be found on the lab website: http://chewlab.github.io

Register for the event here.