

TECHLAUNCH

(MT5913)

by
Prof Ignatius Rasiah

TECHLAUNCH



- **Translating technology** to real market needs... and commercialize them
- Each team is assigned a patented technology
 - from NUS R&D or local MNC, SME or startups

Program Information

- Tuesdays (from 12 Jan)
- 1 semester (13 weeks)
- Open to all graduate students at NUS
- 4 MCs credit
- Runs every semester



TECHLAUNCH

... TAKING A TECHNOLOGY TO MARKET



- A 13-week programme that...



while Learning about Engineering Leadership Skills allows the students to...

- Meet Entrepreneurs, Leaders
- Get into Multi-Disciplinary Teams and...



Lawrence Bradley
Seasoned Director
Asia Pacific Region



Eric Loh
CEO
Trendlines Medical

TECHLAUNCH

- Immerse in their chosen Market Segment



What's the Need?
Where is the Market?

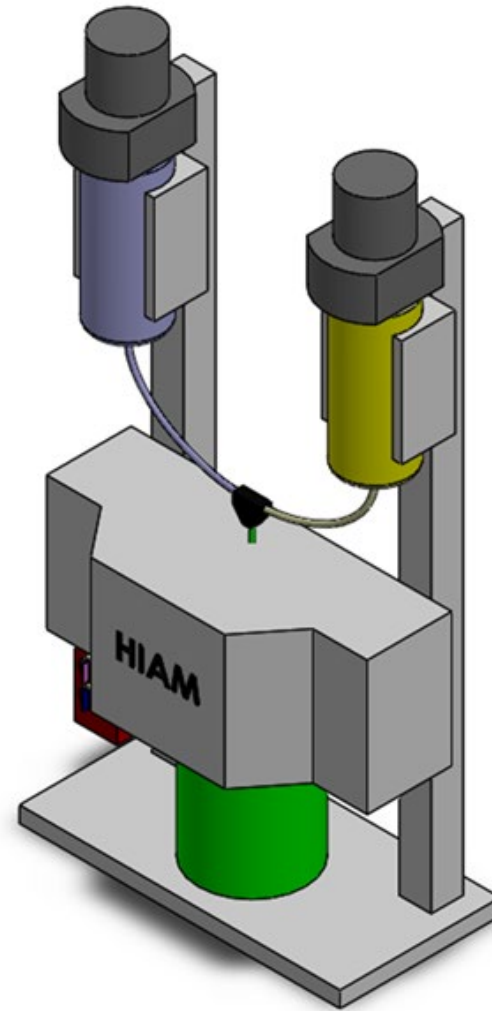
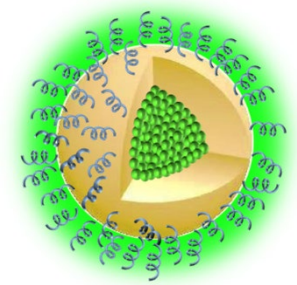


- Who are the Customers?
- How do we Do it?

Develop their own Business Model

TECHLAUNCH

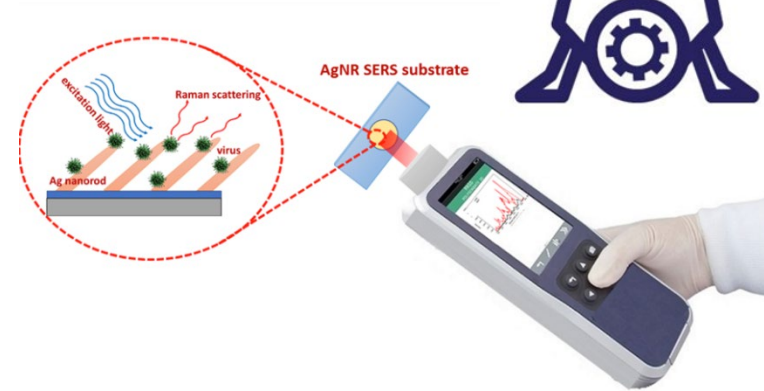
- Get Hands-on with the Technology.



... and work out the Product Design Requirements

TECHLAUNCH

Discuss within Teams... and figure out the Solution



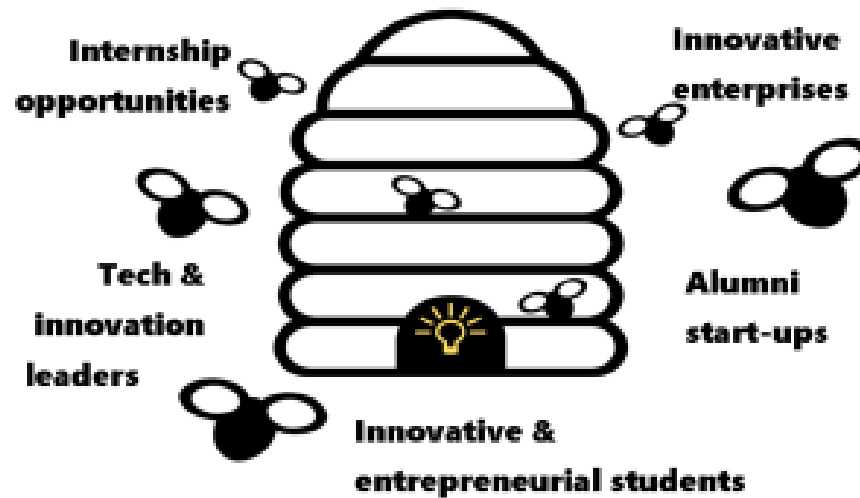
While having fun, as they develop the plans for the Startup



PRESENT YOUR PROJECTS TO
INDUSTRY: R&D DIRECTORS,
INCUBATORS, VC FUNDS

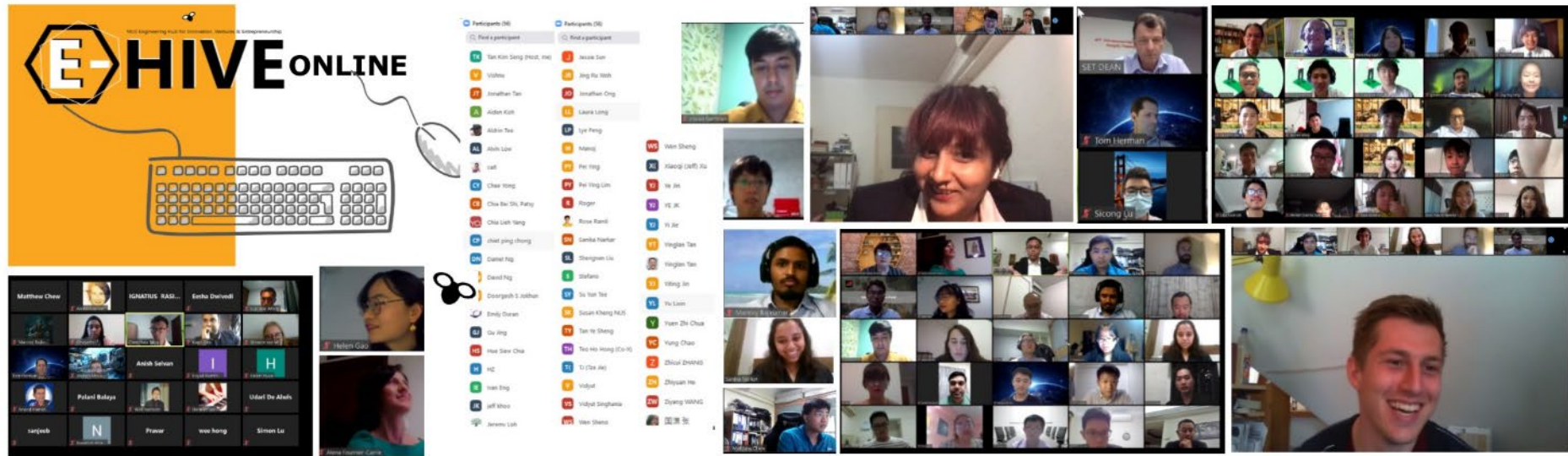


Welcome to E-HIVE!



E-HIVE – HIGHLIGHTS

PITCHING, TALKS AND FUN



PAST PROJECTS









- 70+ technologies in past 5 years
- Technologies from
 - NUS (PIs, RF/RE and PhD students)
 - A*Star
 - MNCs
 - SMEs
 - Startups



Tip Biosystems



SELECTED START-UP COMPANIES BY STUDENTS FROM TECHLAUNCH

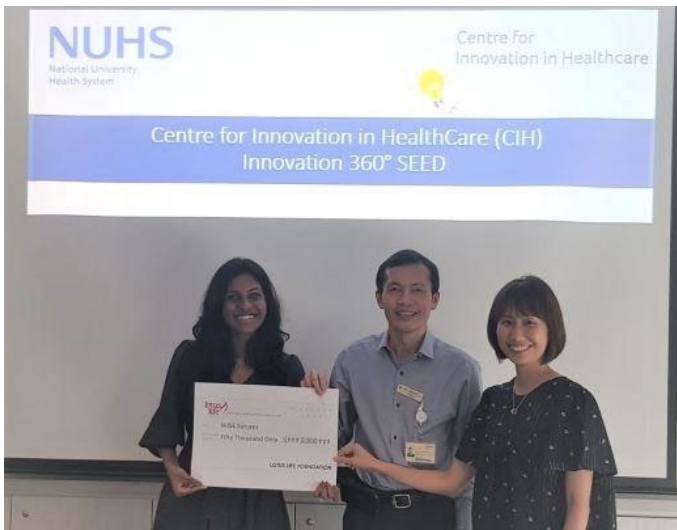
	Tech / Business	Founder	Year	Status
 Structo Empowering Dental with 3D	3D Printing for Dental Implants	Huub van Esbroeck (MOT graduate)	2014	Branches & Sales in UK, US & Asia. In Series C funding currently
 ROCESO TECHNOLOGIES	Soft Robotics for Rehab & Assistance	Jane Wang (MSc in IP Mgt)	2016	Approved by FDA. Sales partners in East Asia & India. In Series A funding
 FlexoSense	Flexible sensor to measure dynamic pressure and strain	Joo Chuan Yeo (PhD – NGS)	2016	Currently in Clinical Trials Seed stage with Angel Investors & Govt Grants.
 MICROTUBE TECHNOLOGIES	Ultrathin tubular sensor for gaming & robotics	Yu Longteng (PhD – BME)	2018	Pre-seed stage. GRIP funded. In Product Devt
 EEA	Smart phototherapy for infant jaundice	Li Shihao (PhD- BME)	2019	Clinical studies ongoing. Won pre-series A funding
 breathonix	Detects lung cancer, TB, etc from the breath	Jia Zhunan (PhD – NGS)	2019	Seed stage with GRIP. Won \$50k at Slingshot
 H2C Heat → Cool Your Energy Efficiency Partner	Tech to convert heat to cooling or electricity	Fahid Riaz (PhD - Mech Engg)	2019	Product Devt ongoing. Seed stage with GRIP
 Cellivate Technologies	Inorganic Thin Film to enhance cell growth	Viknish Krishnan Kutty (PhD – BME)	2019	Currently sampling to Cultured meat & stem cell companies. GRIP funded

RECENT STUDENTS & PROJECTS



- **Breathonix**

- CEO – Jia Zhunan
- COO – Du Fang
- Winner of \$50k at Slingshot 2019



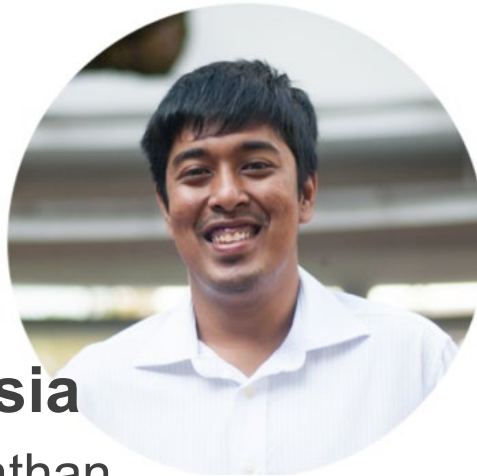
- **WISE**

- TechLead – Viveka
- Winner of \$50k from CIH/Lotus Foundation 360seed Funding

RECENT STUDENTS & PROJECTS

• Quantum TX – BICEPS Project

- CEO – Ivan Goh
- CTO – Li Jingze
- Featured in Straits Times in Dec 2019



• YSI South East Asia

- CEO – Irsyad Ramthan
- Southeast Asian community that actively tackles evolving sustainability issues
- Working with Youth from the region

New tech helps build strong muscles – sans a workout

Older folk too frail to exercise may benefit from using machine

Selma Khalik
Senior Health Correspondent

Get stronger muscles without needing to exercise.

It sounds like like advertising or a claim too good to be true.

But now, a patent on the technology has been filed out of Singapore, a machine to make this possible will soon be available on the market and thousands of older people who are too frail to exercise stand to gain.

known as ETH Zurich, to release in Singapore. “The idea presented was very convincing scientifically,” said Prof Lau, who expressed his interest to see if it could be used to improve outcomes, especially for older patients following surgery.

Today, a patient has been filed with 25% of existing 80-year-olds and ETH the remaining 20 per cent. The technology has been tested on patients at National University Hospital (NUH) and on a group of seniors in the community, and will be available commercially from the middle of next year.

The technology flows through a machine, but 10 minutes on 5 times a week for 10 weeks, and it produced good results in most of the 49 participants, aged 60 to 85, who are members of Gyn Tonic given instead by the National Foundation for Seniors.

The muscle doesn't know if it has been exercised. All it really understands is how much energy is used. It uses energy production as a feedback mechanism.

ASSOCIATE PROFESSOR ALFREDO FRANCO-ORTEGA

In three weeks with three 40 per cent decrease had Ms Maureen on her entire state. After three weeks and a 40 per cent decrease had Ms Maureen on her entire state. After three weeks and a 40 per cent decrease had Ms Maureen on her entire state.



Retiree Maureen Sook on the Biceps machine at the Centre for Innovation in Healthcare co-working space, with QuantumTX CEO Ivan Goh (far left) and NUS Associate Professor Alfredo Franco-Ortega. Ms Sook, who used to lean on her crutches while climbing the stairs, is now able to climb the stairs unaided after using the device over 10 weeks. (PHOTO: LIM WENJIE)

It's not just muscles that could get a boost from Biceps

The target was to increase the muscle mass in older people who may be too frail to exercise normally. But the benefits of the Biceps Plus, using Currents Electro-Stim (CES) system, machine are more far-reaching.

Apart from the strengthening of muscles, which has been tested in clinical trials, will now look at whether the technology can have wider health benefits.

Associate Professor Alfredo Franco-Ortega of the department of surgery at the Yong Loo Lin School of Medicine at the National University of Singapore (NUS) said that aside from the localized improvement to muscles, there appears to be “real changes of the electrolyte systems that get distributed throughout the body.”

“The muscle is basically a wireless system. When it is activated, it releases agents that locally improve bone and cartilage. We are very happy that this is the case,” he said.

For example, blood tests showed that the participants had changes in the levels of agents that are associated with metabolic dysfunction, cardiovascular disease and neural decline after using the machine.

Prof Franco-Ortega said: “The changes were significant. In some cases, it was 30 per cent, and in some cases, it was 40 per cent.”

He now has the go-ahead from National University Hospital (NUH) to test the machine on patients with osteoporosis and diabetes.

The trial on cognition and brain health has started. It will have 24 people, half of whom will use the machine, with the other half acting as the control group.

“Muscles feed the brain, both structurally and, in a way, cognitively,” he said. This is why exercise is good for the brain. He hopes the Biceps machine can provide the same function.

The diabetes trial is expected to start next year. It will show if the low-level electromagnetic fields can activate muscles and improve the absorption of sugar.

If it works, it could help diabetics control the amount of sugar in their blood, which is what causes all the damage to the body.

only take you so far. The results are very promising, but everything has to be reproduced in humans because in humans, it can actually stimulate a different way.

Meanwhile, Dr Teresa Yao, faculty director of NUS’ In-Place, is trying the technology on her patients.

“The results from human trials are exciting, and we would be interested to see if these electromagnetic fields can be used to improve animal health as well.”

He said: “We have 10 years of research, and maybe 10 years of annual research. But several studies

TECHLAUNCH: PROJECTS FOR THIS SEMESTER



Probiotic: A cereal based Probiotic Drink from unsold surplus bread from the market

AI on the Edge: A cutting-edge software solution that minimizes the loss of an AI model's predictive powers for use in Edge devices

SUPRA: Intelligent and portable perimetry device for visual field testing in the field of Ophthalmology

Nano Mold: New manufacturing methods that can structure micron & nanoscale features onto a 3D molded plastic in a one shot

Widuz: Treated bamboo as a sustainable and environmentally friendly scaffolding for buildings

WHAT DO YOU GET FROM THIS MODULE?



Personal Development

- Meet and learn from guests speakers
 - CEOs, Entrepreneurs and industry leaders
- Learn to translate from **Tech** to **Product** to **Value** to customers
- Dabble with **Business functions** in a safe environment
- Get actual experience of **Entrepreneurship**
- Learn **Engineering Leadership skills**
 - Leadership styles, team development, communication, etc...
- Work with the **Business, Sales & Marketing**
 - Discover new markets!

WHAT NEXT?....

STEP 1:

For All Students - If you are interested then:

- Sign up for the course and your project by clicking on the QR code below



TechLaunch

https://nus.syd1.qualtrics.com/jfe/form/SV_5jBJIWp9mmJKA7j

Attend the first class on Zoom

- MT5913 (TechLaunch) – 6pm on 12th Jan 2021

STEP 2

For ISEM Students:

- Sign up for the course on <http://www.nus.edu.sg/ModReg/>
 - 1st round was open on 30th Dec and closes on 31st Dec at 5pm

For all other Students:

- Utilize the **[Submit Module Requests]** function to request for non-programme requirement modules (i.e. cross-faculty modules).
 - 2nd round is open today 4th Jan & closes on 5th Jan at 12noon
 - The request will go through a two-step approval process: it is first routed to the home department for decision before approved requests are routed to the module host(s) for final assessment
- Round 3 – starts on 7th Jan at 9am & closes on 8th Jan at 12noon
- Appeals are done on the 3rd round

Q & A

For further assistance contact:

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FOR MORE INFORMATION

Please visit our IEL website: <http://www.eng.nus.edu.sg/iel/>

Or connect with us on

LinkedIn: <https://www.linkedin.com/groups/10328061>

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