Hello Eurekians,

Welcome to the October issue of *Eureka Briefing*. In this issue, we talk to Scott Compton and Salvatore Albani about the degree program 'Master of International Translational Medicine', hear the views of Tim Hulsen on AI and big data in 'About my research' and, as usual, highlight some recent publications from Eurekians.

But before we get started, could I ask that if you are not already connected with Eureka on LinkedIn, you take a moment to do so, making it easier to engage with fellow Eurekians!

The Master's Degree in International Translational Medicine takes place at Duke–NUS Medical School at the National University of Singapore (NUS) and online (image from Duke-NUS website).

A chat with Scott Compton and Salvatore Albani

Scott Compton (left) and Salvatore Albani (right); images from Duke–NUS Medical School website

Scott Compton and Salvatore (Salvo) Albani are directors of the degree program Master in International Translational Medicine (MITM), which is a partnership between Eureka and Duke–NUS Medical School in Singapore. Eureka Briefing chatted to Scott and Salvo — who is one of Eureka's founders — to find out more about the MITM.

First, can you give a bit of background about the MITM?

[Scott] The MITM is a two-year part-time degree that is compatible with full-time employment. There is a one-week intensive in-person course at Duke–NUS each semester, and the rest of the learning is online. To enrol,

students need at least a bachelor's degree. They must want to make a difference and want to learn the entire spectrum of how we go from a problem to a solution. It's open to international students, provided they can attend the face-to-face teaching component.

What is the rationale behind the degree?

[Salvo] The MITM aligns the ethos of Eureka with the fundamental objectives of Duke–NUS Medical School, which is to create physician scientists that are motivated to change the world. Both partners want to solve the problem of translational medicine. This occurs through understanding translational medicine and creating a new generation of leaders. The MITM is a beautiful alignment of both partners.

[Scott] The MITM also fills the gaps that traditional science and medical graduate education leaves out. In traditional graduate education, you are not taught how to carry an idea all the way through to the actual delivery of a solution to a patient. Usually, such things have to be learned through the school of hard knocks – learning from your mistakes and so on. But clearly there's got to be a better way to learn. This is where Eureka comes in. The spirit of Eureka is special – the ethos of wanting to make a difference and ensure that our work is more than just a paper with a high impact factor or promotion from associate to full professor.

What's the unique selling point of the MITM?

[Scott] Our unique selling point is Eureka. We have access to a network of people and expertise across the world that students can interact with, learn from and partner with, which is unlike any other program in the world.

The MITM uses the Eureka certificate course, the one-week immersive program that gives a flavor of many aspects of translational medicine, as a starting point and adds more academic depth to each of the content topics. At the same time, we retain what you might call the soft elements of professional development and personal development in the curriculum. These soft skills are really important as they impact decision-making, for example, choices about whether to make a difference or take the safe route to promotion or more lab space and so on.

What mechanisms are used to ensure that students make the most of online teaching?

[Scott] The one-week in-person courses that occur each semester are really important for building relationships that actually bleed into the online relationships. In addition, we ensure that the content experts who teach the course aren't just lecturing. For example, we ensure they ask questions of the students and make the students grapple with the issues at hand.

[Salvo] Also, the students' access to the Eureka network gives them the perspective that they are not isolated. That's very important. They will not be learning in an insulated environment but will have a gateway to experiences that can be very broad, real and international, including collaborations.

What do you find the most exciting about the MITM?

[Scott] The breadth of backgrounds of our students really helps with the fun of the conversations in the classroom. The diversity of backgrounds means that different students learn different things at different times, and on different levels. For example, a basic scientist may not know about clinical trials whereas a clinician may not know about the basic science behind the medicines they prescribe. And few people know much about marketing, funding or regulation issues.

The MITM is unlike most other programs that I've ever taught or run, and this is due to the students. They really think about how they can make things better in the future.

What does the future hold?

[Salvo] In the context of Eureka, we'd like to fully nest the MITM scheme in a global initiative, such as Master's degrees in other non-competing geographical areas so that Eureka really spans the globe and makes an impact. Here I mean a tangible impact that changes lives and society at large. Master's degrees are an important instrument for creating impact when they are part of a global initiative.

There's more information about the MITM on the Duke–NUS website.

What this year's students are saying:

"MITM will be a critical step for me, as a frontline healthcare provider, to achieve breakthroughs in clinical solutions through collaborations and to drive successful societal impact," Meredith Huang, Principal Respiratory Therapist at Singapore General Hospital.

"I'm excited to learn how to better utilize research resources and navigate the translational medicine landscape so more research outcomes can be applied to improve the quality of living of both the patients and the general population," Daryll Hew, Student at Duke–NUS Medical School

Translational research aims to move translate lab-based science discoveries quickly and efficiently into clinical practice (image from Pixabay).

Publications by Eurekians

Below are some recent publications that have Eurekians as first or last authors. Have a scroll to see if any catch your eye!

E2F1 Mediates SOX17 Deficiency-Induced Pulmonary Hypertension.
Yi D, Liu B… **Dai Z**.
Hypertension. doi: 10.1161/HYPERTENSIONAHA.123.21241.

Mitochondrial Uncoupling Inhibits Reductive Carboxylation in Cancer Cells.
Jiang H, He CJ, Li AM, He B, Li Y, Zhou MN, **Ye J**.
Mol Cancer Res. doi: 10.1158/1541-7786.MCR-23-0049.

The 17th EFMC Short Course on Medicinal Chemistry on Small Molecule Protein Degraders.
Ciulli A, O'Connor S… **Heitman LH.**
ChemMedChem. doi: 10.1002/cmdc.202300464.

Increased confidence of radiomics facilitating pretherapeutic differentiation of BRAF-altered pediatric low-grade glioma.
Kudus K, Wagner MW… **Khalvati F.**
Eur Radiol. doi: 10.1007/s00330-023-10267-1.

Economic Evaluations of Imaging Biomarker-Driven Companion Diagnostics for Cancer: A Systematic Review.
Liu S, Tan DS, Graves N, **Chacko AM.**
Appl Health Econ Health Policy. doi: 10.1007/s40258-023-00833-5.

Burden of disease and real-world treatment patterns of patients with systemic lupus erythematosus in the Australian OPAL dataset.
Ciciriello S, Littlejohn G, O'Sullivan C, Smith T, **Deakin CT.**
Clin Rheumatol. doi: 10.1007/s10067-023-06681-x.

AML/T cell interactomics uncover correlates of patient outcomes and the key role of ICAM1 in T cell killing of AML.
Sayitoglu EC, Luca BA… **Roncarolo MG**.
bioRxiv preprint doi: 10.1101/2023.09.21.558911.

Combined immunotherapy improves outcome for replication repair deficient (RRD) high-grade glioma failing anti-PD1 monotherapy: A report from the International RRD Consortium.
Das A, Fernandez NR…**Tabori U**.
Cancer Discov. doi: 10.1158/2159-8290.CD-23-0559.

Atherosclerosis progression in the APPLE trial can be predicted in young people with juvenile-onset systemic lupus erythematosus using a novel lipid metabolomic signature.
Peng J, Dönnes P… **Ciurtin C.**
Arthritis Rheumatol. doi: 10.1002/art.42722.

Shifted PAMs generate DNA overhangs and enhance SpCas9 post-catalytic complex dissociation.
Wang J, Le Gall J, **Frock RL**, Strick TR.
Nat Struct Mol Biol. doi: 10.1038/s41594-023-01104-6.

Myelomonocytic cells in giant cell arteritis activate trained immunity programs sustaining inflammation and cytokine production.
Cantoni E, Merelli I…**Cavalli G.**
Rheumatology. doi: 10.1093/rheumatology/kead061.

About my research: Tim Hulsen, Philips

What's your area of research: Big data and AI in oncology and other disease areas.

What translational research questions does your work try to address? All big data and AI healthcare research that we do is meant to be used by a clinician or patient at some point, improving the patient's life. For example, how can we help oncologists make decisions about the treatment of a cancer patient?

What excites you most about your research? The extremely large impact that big data and AI are going to have on science and technology, and society as a whole.

What's the biggest challenge that you face? Explaining to people that AI is just a tool, which, like any other tool, can be used in both positive and negative ways. We should, by creating laws specifically around AI, make

sure that research in this area can take place without any hurdles, while still preventing any negative effects in terms of privacy and security.

What does it mean to you to be a Eurekian? I am proud to have followed the excellent Certificate Course in Translational Medicine in 2014. Eureka also gives me access to a large network of translational researchers, with whom otherwise it might be difficult to contact.

And finally…..some trivia. Tim's research centers on AI and big data. The use of AI to generate images have been in the news recently, for example an image of Pope Francis in a designer white puffer jacket went viral on social media. The images are on the New Scientist website if you didn't see them. To avoid making the mistake of thinking that the Pope had a new wardrobe, what characteristics should we look out for to distinguish real photos from AI-generated images? When you've had a think, Discover Magazine highlights four tell-tale signs.

How can we tell if an image is real? (image from Pixabay)

Thank you for reading!

Charlotte Harrison
Freelance Science writer and editor

Rather than using AI to generate fake photos, I use it to transcribe my interviews – and it's really improved my workflow – no longer do I need to spend hours trying (and failing) to type quickly. What's your favorite work-related use of AI? Let us know!