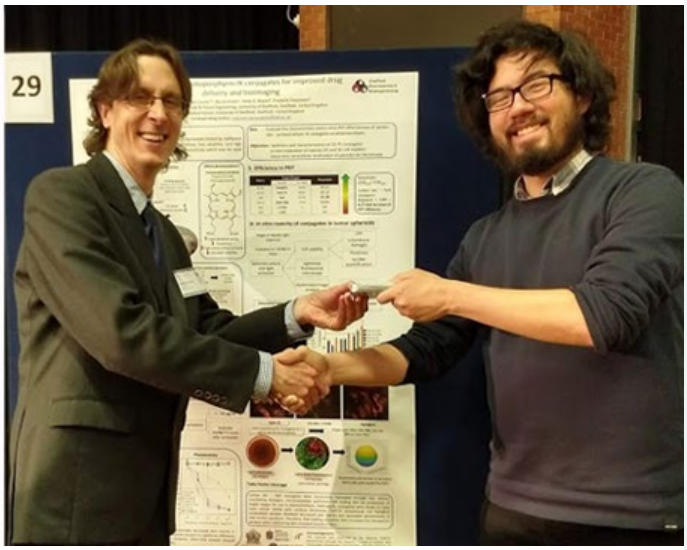
INSIGNEO Institute for *in silico* Medicine | The University Of Sheffield. | Sheffield Teaching Hospitals NHS Foundation Trust

Insigneo Newsletter - June 2019

Welcome to our monthly Insigneo newsletter!

Our monthly e-newsletter keeps you up to date with events, funding, success stories and information. We hope you will find it useful! If you would like to add information and/or events to this newsletter please email: news@insigneo.org (the newsletter will be issued during the 2nd week of the month, excluding January and August). Please ensure that you submit news and events with a minimum of one week's notice.

Insigneo Showcase poster competition winners



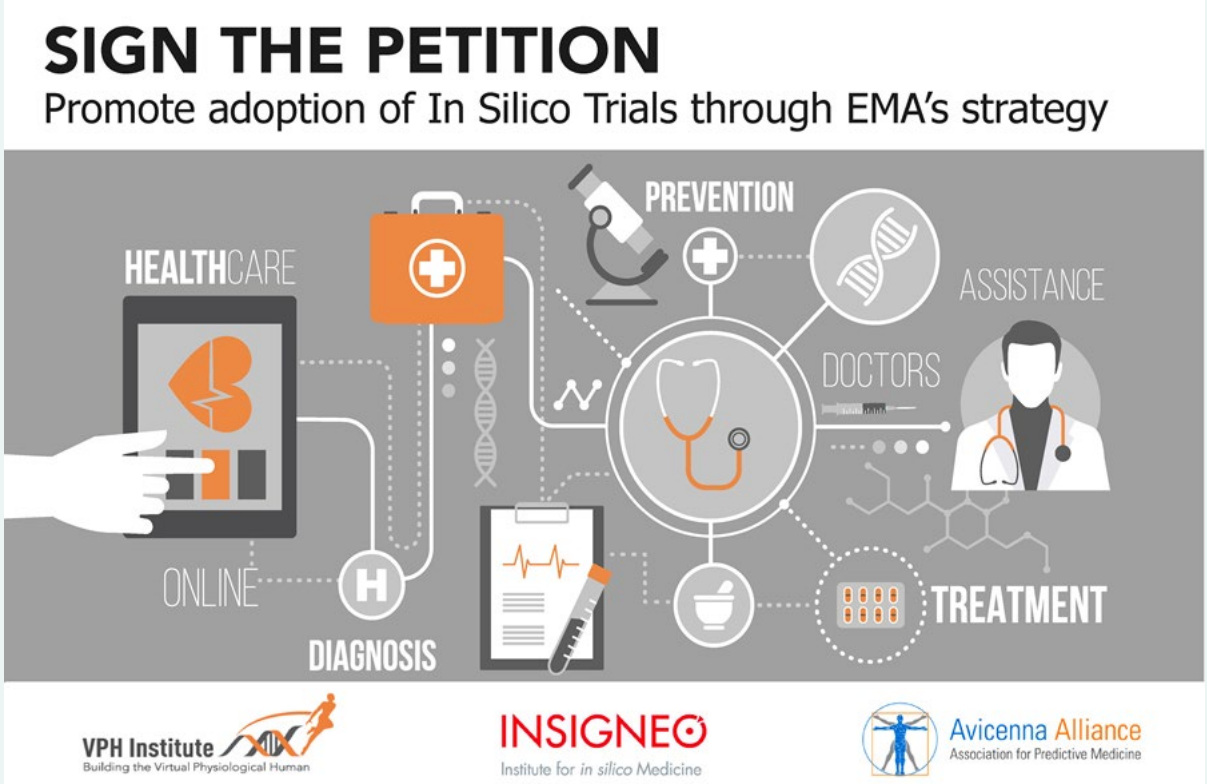
Congratulations to our Insigneo Showcase 2019 poster competition winners Rodrigo Siqueira de Souza and Jose Ricardo Aguilar Cosme!

Rodrigo Siqueira de Souza, a research associate in computational neuroscience based in the Department of Psychology & Sheffield Robotics, won the competition with his poster ‘FootSim: modelling of tactile responses from the sole of the foot’.

In second place was Jose Ricardo Aguilar Cosme, a PhD student based in the Department of Materials Science & Engineering, with his poster ‘Carbon dot – protoporphyrin IX conjugates for improved drug delivery and bioimaging’.

Sign our petition: Promote adoption of *In Silico*

Trials through EMA's strategy



The European Medicine Agency has recently published a document that describes its strategy until 2025:

https://www.ema.europa.eu/en/documents/regulatory-procedural-guideline/ema-regulatory-science-2025-strategic-reflection_en.pdf

The EMA proposed strategy recognises the importance of emerging technologies in general and modelling and simulation, also known as *in silico* methods, in particular. However, the document tends to stress the value of *in silico* methods almost exclusively in connection with the reduction of animal experimentation. While we agree that this is a relevant application for such methods, it is not the only one and likely not the most impactful one for the patient and for the industry. The term *In Silico* Trials indicates a number of use cases, not only related to pre-clinical evaluation, but also to the reduction, refinement, and in some cases even replacement of clinical trials.

The VPH Institute together with the Avicenna Alliance, the Insigneo Institute for *in silico* Medicine and the Alma Mater Studiorum, University of Bologna has drafted an open letter, which will be sent to Prof Guido Rasi – the Director of EMA to raise our collective voices on this regard.

We wish to collect signatures on the document by as many experts in academia and industry as possible to make sure our voice is heard. We encourage you all to take a minute of your time to fill in this form and help us raising the awareness of your colleagues on this matter.

Your help will make the difference!

Sign the petition

In silico augmented clinical trials in STriTuVaD: interview with Dr Miguel Juárez

Insigneo member, Dr Miguel Juárez , a lecturer at the University of Sheffield's School of Mathematics and Statistics, has recently been interviewed about innovative mathematical approaches in *in silico* medicine applications and his role in the STriTuVaD (In Silico Trial for Tuberculosis Vaccine) project. Dr Juárez and researchers in the Department of Computer Science are part of an international consortium coordinating the research.

Read more

New online tool predicts individual risks and benefits of joint replacements

An innovative online tool devised by researchers from the University of Sheffield's Department of Oncology and Metabolism will give patients unique personalised information about the risks and benefits of having a joint replacement for the first time.

A total of over 220,000 hip and knee replacement procedures are performed in the UK each year. At the moment, patients are given very general information about the procedure either from their GP, consultant or by searching on the internet.

The easy-to-use Patient Decision Aid For Joint Replacement generates an individualised set of results for patients based on a variety of factors including: how long the implant will last, predicted pain and function levels before and after surgery and the associated risks such as death rate.

Information from more than one million patients who have already undergone hip and knee replacements, recorded by the National Joint Registry, was used to create the intuitive tool which it is hoped will both improve the success rate of joint replacements and prevent unnecessary surgery, saving the NHS money.

Read more

In profile: Ana Sofia dos Santos Leite Ferreira

Meet Ana Sofia dos Santos Leite Ferreira, a research associate at Certara UK, an organisation that provides decision support technology and consulting services for the pharmaceutical industry. Sofia studied towards her PhD in Mechanical Engineering at the University of Sheffield, focusing on computational biomechanics at the Insigneo Institute for *in silico* Medicine.

Read about Sofia's time at the University of Sheffield and her role at Certara where she is applying her knowledge to the development of physiologically-based computational models to predict the distribution, efficacy and adverse effects of medicines in pre-clinical species and in the human.

Read more

Guest Lectures, Conferences & Seminars

Insigneo Events

19 June 2019
Insigneo Seminar: human *in silico* clinical trials in cardiology and pharmacology, Sheffield

11 July 2019
Insigneo Seminar: mechanobiology, Sheffield **- please register!**

23 September 2019 - Insigneo General Assembly **- save the date!**

Other events

16 - 20 June 2019
ISC high performance 2019, Frankfurt

7 - 10 July 2019
ESB 2019, Vienna

5 September 2019
General Assembly of the UK Chapter of the VPH Institute, London

12 September 2019
AMMM – Additive Manufacturing Meets Medicine 2019, Lübeck

16 - 18 September 2019
British Chapter of ISMRM Annual Meeting 2019, Sheffield

16 September 2019
15th Bath Biomechanics Symposium, Bath

25 - 27 September 2019
CompBioMed Conference 2019, London

6 December 2019
10th Annual Mellanby Centre Research Day, Sheffield – save the date!

For a full list of upcoming events visit: http://insigneo.org/events/

Vacancies

Research Software Engineer/Research Associate in Large Scale Simulation
(closing date 27/06/19)

Research Associate in Machine Learning for Medical Image Analysis
(closing date 28/06/19)

PhD opportunity: using mechanistic computational simulation and machine learning to inform instrument design for EIS-guided surgery
(closing date 31/08/19)

Publications

Research output affiliated to Insigneo in Scopus (please ensure papers are affiliated to the Insigneo Institute by including the words "Insigneo Institute for *in silico* Medicine"):

The incremental shuttle walk test predicts mortality in non-group 1 pulmonary

hypertension: results from the ASPIRE Registry (Pulmonary Circulation) C. G. Billings, R. Lewis, J. A. Hurdman, R. Condliffe, C. A. Elliot, A. A. R. Thompson, I. A. Smith, M. Austin, I. J. Armstrong, N. Hamilton, A. Charalampopoulos, I. Sabroe, A. J. Swift, A. M. Rothman, J. M. Wild, A. Lawrie, J. C. Waterhouse, D. G. Kiely

Emulsion templated scaffolds manufactured from photocurable polycaprolactone (Polymer) B. Aldemir Dikici, C. Sherborne, G. C. Reilly, F. Claeyssens

Improved biomechanical metrics of cerebral vasospasm identified via sensitivity analysis of a 1D cerebral circulation model (Journal of Biomechanics) A. Melis, F. Moura, I. Larrabide, K. Janot, R. H. Clayton, A. P. Narata, A. Marzo

Beyond episodic memory: Semantic processing as independent predictor of hippocampal/perirhinal volume in aging and mild cognitive impairment due to Alzheimer's disease (Neuropsychology) A. Venneri, M. Mitolo, L. Beltrachini, S. Varma, C. Della Pietà, C. Jahn-Carta, A. F. Frangi M. De Marco

Full-Field Strain Analysis of Bone-Biomaterial Systems Produced by the Implantation of Osteoregenerative Biomaterials in an Ovine Model (ACS Biomaterials Science and Engineering) M. Peña Fernández, E. Dall'Ara, A. J. Bodey, R. Parwani, A. H. Barber, G. W. Blunn, G. Tozzi

Linking Joint Impairment and Gait Biomechanics in Patients with Juvenile Idiopathic Arthritis (Annals of Biomedical Engineering) E. Montefiori, L. Modenese, R. Di Marco, S. Magni-Manzoni, C. Malattia, M. Petrarca, A. Ronchetti, L. Tanturri de Horatio, P. van Dijkhuizen, A. Wang, S. Wesarg, M. Viceconti, C. Mazzà

The effect of boundary and loading conditions on patient classification using finite element predicted risk of fracture (Clinical Biomechanics) Z. Altaia, M.Qasim, X. Li, M. Viceconti

Starters & Leavers

A warm welcome to:

PhD Students

Benyuan Xu - PhD student of Dr Maria-Cruz Villa-Uriol

Goodbye and thank you to:

Yang Zhang - Researcher on MultiSim
Anastasia Kadochnikova - Researcher on MultiSim

Sahand Zanjani Pour - Researcher on MultiSim
Ben Hughes - Insigneo Research Computing Support Officer

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