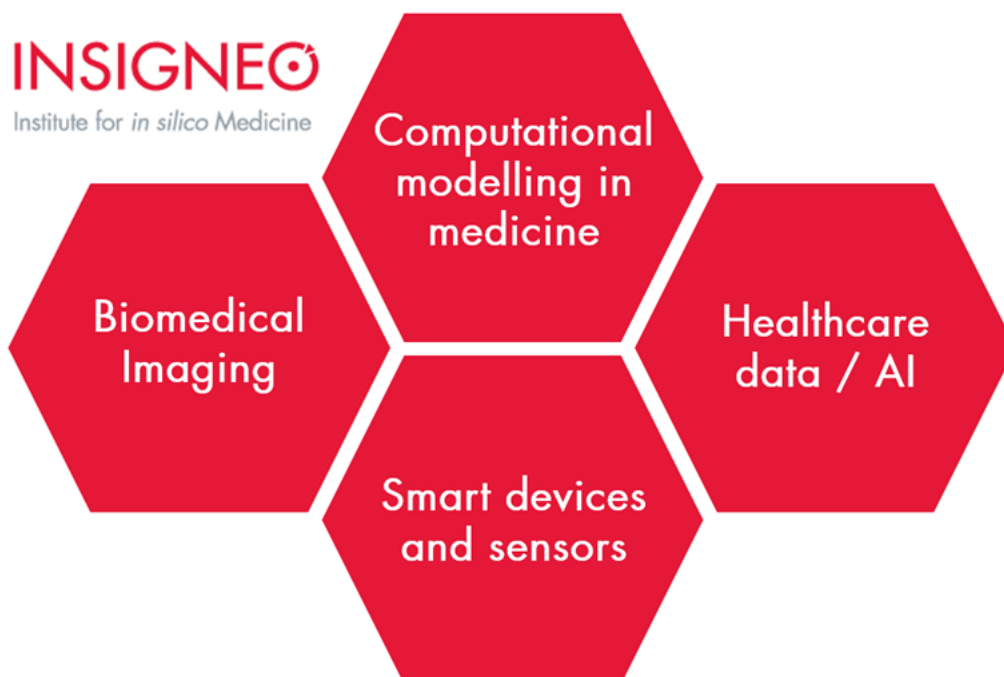


Insigneo Newsletter - May 2021

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 research theme workshop



The next step in taking forward the Insigneo Institute's vision, scope and strategy is to develop working groups in the research themes identified above. A research theme workshop will be held online on **Tuesday 29th June** (Insigneo members check your diaries).

Surgeon receives highest honour in recognition of

outstanding research into bone disease



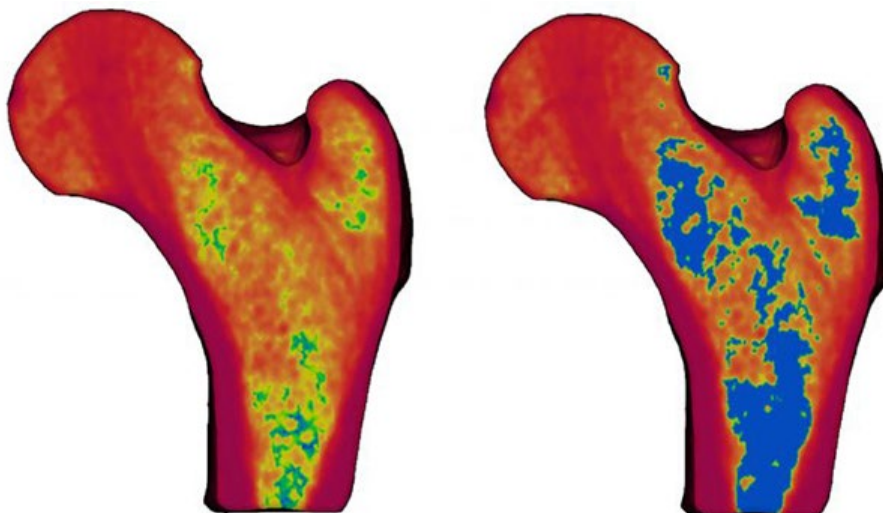
Congratulations to Insigneo member Professor Mark Wilkinson who is one of only two researchers across the UK to be given a 2021 Fellowship Award from the Orthopaedic Research Society of the United States, the world's largest professional organisation dedicated to musculoskeletal research.

The honour is the most prestigious the Society can bestow upon its 5,000 members.

Professor Wilkinson is a Consultant Orthopaedic surgeon at Sheffield Teaching Hospitals and Professor of Orthopaedics in the Department of Oncology & Metabolism at the University of Sheffield.

[Read more](#)

A systematic approach to the scale separation problem in the development of multiscale models



MultiSim researchers at the University of Sheffield's departments of Mechanical

Engineering, and Automatic Control Systems Engineering, in collaboration with colleagues at the University of Bologna, have published a paper in *PLOS One* which outlines a systematic approach for multiscale modelling.

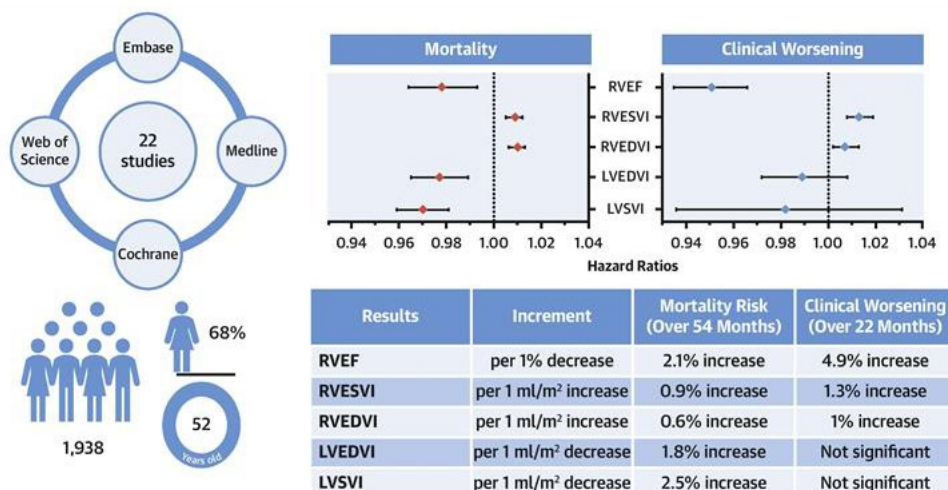
The study describes a novel approach to multiscale modelling which systematically applies an instrumentation capability based definition of scale to all aspects of multiscale model development and model credibility assessment. The application of this approach is illustrated by considering problems of significant interest to clinicians and drug developers in the area of bone health. The versatility of the approach is demonstrated by considering various combinations of available instruments for characterising the system at hand.

As the approach does not specify any mathematical form the equations must take, it could be applicable to a great variety of multiscale problems across engineering domains. The paper also discusses the complementarity of the present approach with some existing multiscale modelling approaches.

[Read more](#)

Cardiac magnetic resonance evaluation of pulmonary arterial hypertension: transforming from supplementary to primary imaging modality?

CENTRAL ILLUSTRATION: Cardiac Magnetic Resonance Imaging for Prediction of Clinical Worsening and Mortality in Pulmonary Arterial Hypertension



Alabed, S. et al. *J Am Coll Cardiol Img.* 2021;14(5):931-42.

Insigneo member Dr Samer Alabed (Cardiac MRI Research Fellow at the University of Sheffield's Department of Infection, Immunity & Cardiovascular Disease) and colleagues have published a new meta-analysis in *JACC: Cardiovascular Imaging* which confirms Cardiac magnetic resonance (CMR) imaging is an especially effective tool for evaluating patients with pulmonary arterial hypertension (PAH).

The researchers concluded that “CMR can predict clinical worsening, in addition to confirming its prognostic role, in a large cohort of patients with PAH. This study provides a strong rationale for considering CMR as a clinical trial endpoint.” They added, too, that “our findings highlight the clinical utility of CMR imaging and support further evaluation of this modality as a clinically meaningful trial endpoint for the assessment of new therapies for PAH.”

[Read more](#)

New fund for cancer research in Sheffield announced



The future of cancer research in Sheffield has received a significant boost following the creation of a new fund.

The University of Sheffield and Yorkshire Cancer Research have worked together to develop the fund, made possible following the success of three cancer drugs discovered at the university with funding from the charity.

Following clinical trials, the drugs have now become tailored treatments for cancer patients with hereditary cancers and are undergoing further trials to treat a wider range of cancer types.

The new fund is expected to support cancer research at the university for at least the next decade.

[Read more](#)

New members

We would like to introduce new member Artur Gower who has joined the Insigneo Institute recently. We are very pleased to welcome:



Dr Artur Gower

Department of Mechanical Engineering
Lecturer in Dynamics

Artur's background is in applying mathematics (BSc, MSc, PhD) to understand the mechanics of soft materials, and material microstructure.

He develops code and mathematical models for:

- Wave scattering & propagation
- Soft matter constitutive modelling
- Random media
- Inverse problems

Full profile

Research-IT Forum on the theme of 'Image processing techniques and technology'

The Research-IT forum is a regular event providing updates on developments relating to research computing covering research software, computational science, data science, qualitative and quantitative analysis and the management of research outputs. It is a forum where researchers can showcase their work in an environment conducive to creative discussion.

This event on 16 June 2021 will explore image processing at the University of Sheffield. As well as presenting an overview of the research topic, each of our speakers will discuss their image processing techniques. This can include; image generation, image comparison, image transformations, image registration, data extraction from images, image classification or image segmentation.

This online event is open to staff and students at the University of Sheffield. For more information and registration please click the link below.

[Register](#)

Mimics user certification course

Materialise are delighted to share with you the new Mimics Certification Course. This course will teach and accredit each person who signs up to:

- 3D segment and create accurate models
- Fix models for printing
- Designing guides in the Mimics Innovation Suite (including 3Matics)

This course is a gold standard in the industry for personal development, a proof of skill level and accuracy of work.

Understanding the foundations of MIS software create opportunities in academic research and Medical applications.

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If you are interested please email UK.Medical.Sales@Materialise.co.uk and we will come back to you in 24 hours.

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Guest Lectures, Conferences & Seminars

Insigneo events



Insigneo Seminar: A multi-scale modelling approach to gastrointestinal electrophysiology and motility

Dr Peng Du
The University of Auckland
Friday 11 June 2021, 09:00 - 10:00

11 June

[Insigneo Seminar: A multi-scale modelling approach to gastrointestinal electrophysiology and motility](#)

Other events

24 May

Sano Seminar: Jerzy Gąsowski, Collegium Medicum – Jagiellonian University, Krakow, Poland

25 May

Webinar for LifeArc & MND Association Translational Research Fund NB

25 - 27 May

Robotics and AI Industry Showcase 2021

26 May

Healthy Lifespan Institute: Transforming Ageing - Healthy Lifespans for all

27 May

nTopology, Ansys EOS, NSI, Synopsys A Journey Through Advanced Manufacturing in 2021: Part 4(/6) CT Scanning of the part and image-based inspection (NSI, Synopsys)

31 May

Sano Seminar: Bipin Indurkha - Eliza Effect and a Therapeutic Role for Robots

7 -11 June

5th VPH Barcelona Summer School: Tackling Complexity in Health & Medicine

9 June

RSE Lunch bytes: Clinical Research Software

10 June

nTopology, Ansys EOS, NSI, Synopsys A Journey Through Advanced Manufacturing in 2021: Part 5(/6) FE meshing of the part, FE simulation and validation testing (Synopsys, Ansys)

11 June

VPH Insitute: Integration Of In Silico Technologies In Healthtech Product Development

16 June

Image Processing Techniques and Technology

16 - 17 June

ICCS 2021 - International Conference on Computational Science

16 - 17 June

5th UK Patient Reported Outcome Measures (PROMs) Annual Research Conference

23 June

Synopsys Simpleware Customer Webinar Computer Models in Wound Care
Research: The Key to Innovation

24th June

nTopology, Ansys EOS, NSI, Synopsys A Journey Through Advanced
Manufacturing in 2021: Part 6(/6) Expert Panel discussion of the entire workflow and
implications on mass-production

28 - 30 June

BRS Annual Meeting 2021

11 -14 July

ESBiomech Conference 2021, Milan

25 - 29 July

ISB2021, Stockholm

6 - 7 September

BioMedEng21, Sheffield

6 - 10 September

Bone Cell & Tissue Mechanics Advanced Courses, CISM (International Centre for
Mechanical Sciences)

7 - 9 September

CMBBE 2021 Symposium 17th International Symposium on Computer Methods in
Biomechanics and Biomedical Engineering and the 5th Conference on Imaging and
Visualization

15 - 17 September

CompBioMed Conference 2021: Building the Virtual Human

22 - 27 November

Klaster LifeScience Kraków (KLSK) Life Science Open Space 2021

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

Vacancies

PhD Opportunity: Biomedical Engineering PhD Studentship – Investigating Spinal
Biomechanics in Multiple Myeloma patients for the Reduction of Surgical
Intervention

(Closing Date: 31/05/21)

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"):

A systematic approach to the scale separation problem in the development of multiscale models (PLOS One) P. Bhattacharya, Q. Li, D. Lacroix, V. Kadiramanathan, M. Viceconti

Cardiac arrhythmias and electrophysiologic responses during spontaneous hyperglycaemia in adults with type 1 diabetes mellitus (Diabetes and Metabolism) A. Bernjak, P. Novodvorsky, E. Chow, A. Iqbal, L. Sellors, S. Williams, R. A. Fawdry, J. L. B. Marques, R. M. Jacques, M. J. Campbell, P. J. Sheridan, S. R. Heller

Investigating a novel Ag/ZnO based hybrid nanofluid for sustainable machining of inconel 718 under nanofluid based minimum quantity lubrication (Journal of Manufacturing Processes) S. D. Barewar, A. Kotwani, S. S. Chougule, D. R. Unune

Finite element simulations of hyperpolarized gas DWI in micro-CT meshes of acinar airways: validating the cylinder and stretched exponential models of lung microstructural length scales (Magnetic Resonance in Medicine) H.-F. Chan, G. J. Collier, J. Parra-Robles, J. M. Wild

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Insigneo Institute
for *in silico* Medicine

F Floor- Room F19
The Pam Liversidge Building
Sir Frederick Mappin Building
The University of Sheffield
Mappin Street
Sheffield, S1 3JD

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please email news@insigneo.org

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