

## Insigneo Newsletter - July 2020

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](mailto: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.

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### Scientists to develop pain-free device to detect oral cancer



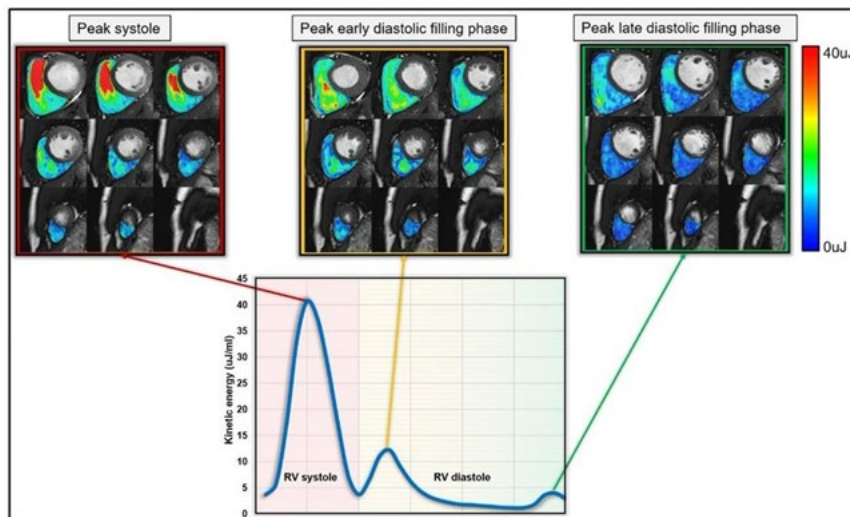
In partnership with Zilico Ltd, the University of Sheffield is working to develop a pain-free, non-invasive and instantaneous method to detect oral cancer.

£1 million in funding has been awarded to the partnership to develop a functional prototype of a new device that uses Electrical Impedance Spectroscopy (EIS) technology for the early detection of cancerous lesions.

[Read more](#)

### Healthy ageing: 4D flow cardiovascular magnetic resonance (CMR) scans offer insight into age-

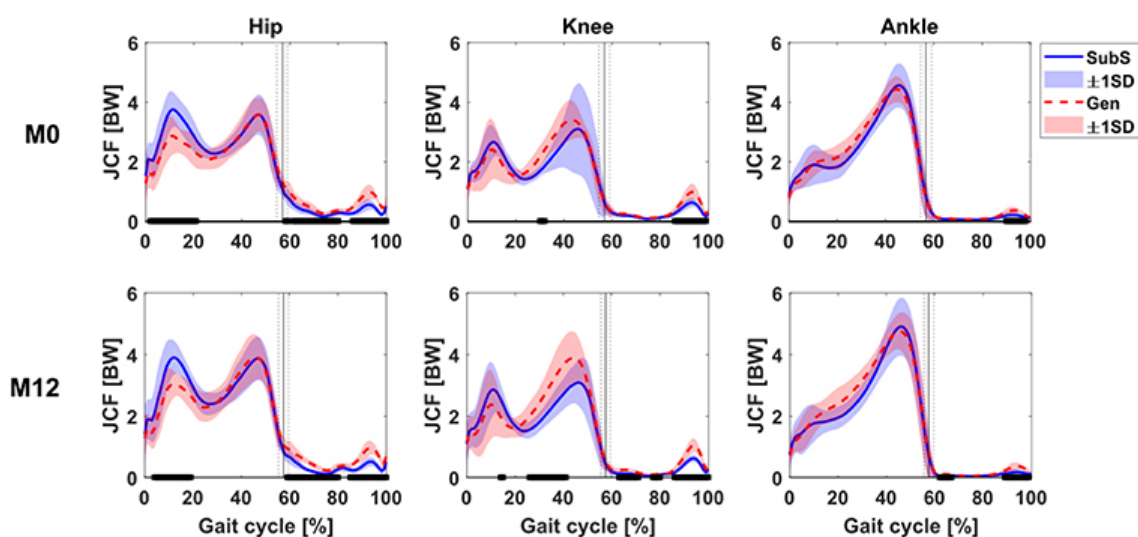
associated changes in right ventricle blood flow.



This study looked at whether the assessment of right ventricular blood flow kinetic energy obtained from four-dimensional flow (4D flow) could overcome the issues of the current imaging techniques. 4D-flow cardiovascular magnetic resonance (CMR) is a non-invasive technique which uses time-resolved phase-contrast CMR with flow-encoding in all three spatial directions. 3D volumetric images are combined with 3D velocity encoding throughout the cardiac cycle.

[Read more](#)

## Predicting longitudinal changes in joint contact forces in a juvenile population: scaled generic versus subject-specific musculoskeletal models



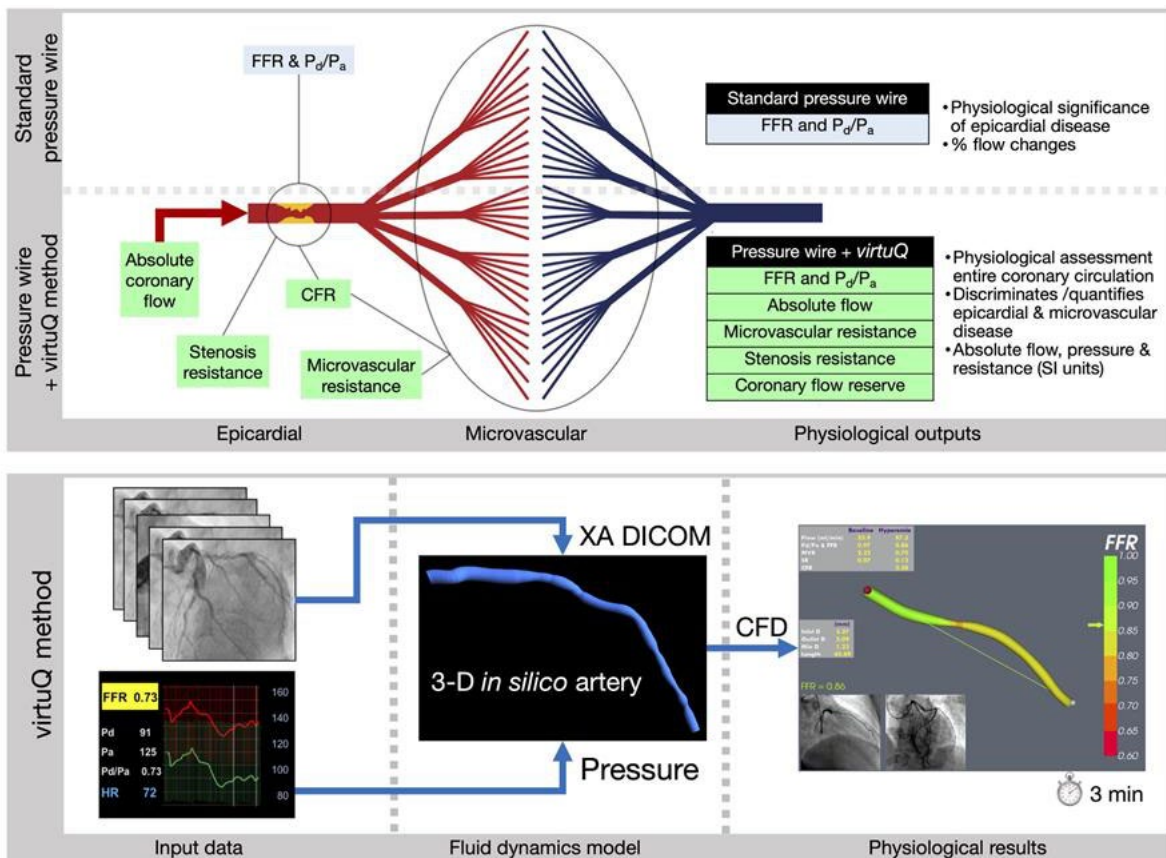
The power of three-dimensional gait analysis (3DGA) to guide treatment planning and rehabilitation in human movement musculoskeletal disorders can be further augmented by combining with musculoskeletal models.

The use of subject-specific musculoskeletal models (personalised through the inclusion of details such as an individual's bone geometry obtained from medical imaging) which provide increased accuracy and reliability in comparison with the more common scaled generic models is however limited in clinical settings due to development-associated time and effort burdens together with potential unavailability of medical imaging.

To provide an alternative, this study evaluated the ability of scaled generic models to estimate longitudinal changes in joint contact forces that are consistent with subject-specific model estimates in a group of children with Juvenile Idiopathic Arthritis. Findings suggest that within limits, scaled generic models could be used as an initial and easily implementable modelling substitute when interest is in trends rather than exact estimates.

[Read more](#)

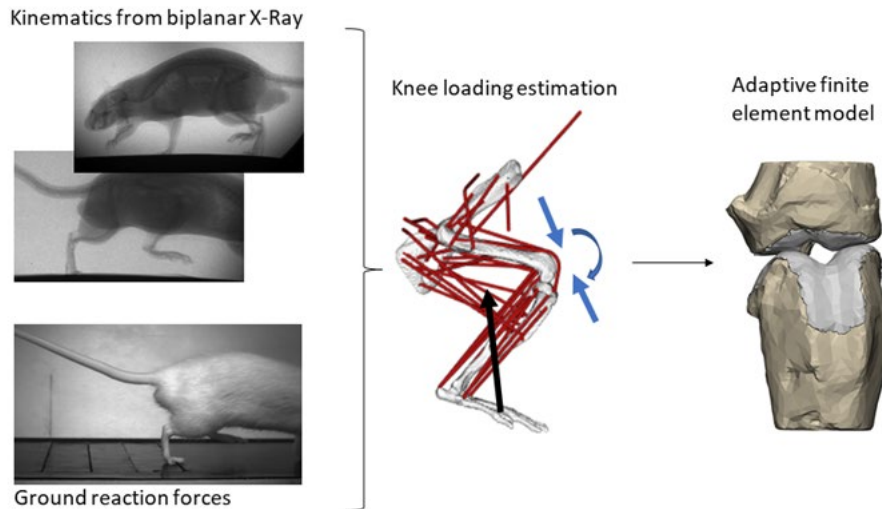
## A Novel Method for Measuring Absolute Coronary Blood Flow & Microvascular Resistance in Patients with Ischaemic Heart Disease



Researchers at the University of Sheffield's Department of Infection, Immunity and Cardiovascular Science have developed a new method for measuring absolute coronary flow and microvascular resistance that can be performed in the catheter laboratory and which could improve how patients with heart disease are diagnosed and managed.

[Read more](#)

## Junior post-doc fellowship to develop a multi-scale adaptive model of the rat knee



Dr Judith Piet has been awarded an “FWO Vlaanderen junior post-doc fellowship” to develop a multi-scale adaptive model of the rat knee. She will be based in the “Human Movement Biomechanics Research Group” led by Professor Ilse Jonkers at KU Leuven and will collaborate with the “Functional Morphology Lab Group” (University of Antwerp), the “Skeletal Biology & Engineering Research Center” (KU Leuven) and Dr Enrico Dall’Ara’s Bone Biomechanics team at the Insigneo Institute for *in silico* Medicine.

[Read more](#)

## Sheffield Academic appointed Secretary of International Cardiology Committee

# Congratulations!

Congratulations to Insigneo member Paul Evans, Professor of Cardiovascular Science at the University of Sheffield's Department of Infection, Immunity and Cardiovascular Disease, who has been appointed as Secretary of the European Society of Cardiology Council of Basic Cardiovascular Science (CBCS).

[Read more](#)

## Sheffield to play key role in groundbreaking new study into long-term health impacts of coronavirus



A major UK study involving researchers from the University of Sheffield into the long-term health impacts of Covid-19 on hospitalised patients has been launched.

This study is one of a number of Covid-19 studies that have been given urgent public health research status by the Department of Health and Social Care.

Around 10,000 patients are expected to take part which will make it one of the largest studies in the world to understand and improve the health of survivors after

hospitalisation from Covid-19.

[Read more](#)

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## Guest Lectures, Conferences & Seminars

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29 July 2020

Workshop: [Microsoft Azure for Research](#)

26 August 2020

[VPH2020](#)

7 September 2020

[International Winter School on \*In Silico\* Trials, Bologna](#)

14 September 2020

BioMedEng charity launch

6 - 7 September 2021

[BioMedEng21](#) - Save the date!

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

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## Publications

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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 Novel Method for Measuring Absolute Coronary Blood Flow & Microvascular Resistance in Patients with Ischaemic Heart Disease](#)**

(Cardiovascular Research) P. D Morris, R. Gosling, I. Zwierzak, H. Evans, L. Aubiniere-Robb, K. Czechowicz, P. C. Evans, D. R. Hose, P. V. Lawford, A. Narracott, J. P. Gunn

**[Predicting longitudinal changes in joint contact forces in a juvenile population: scaled generic versus subject-specific musculoskeletal models](#)**

(Computer Methods in Biomechanics and Biomedical Engineering) C. F. Hayford, E. Montefiori, E. Pratt, C. Mazzà

**[Validation of four-dimensional flow cardiovascular magnetic resonance for aortic stenosis assessment](#)** (Scientific Reports) G. T. Archer, A. Elhawaz, N.

Barker, B. Fidock, A. Rothman, R. J. van der Geest, R. Hose, N. Briffa, I. R. Hall, E. Grech, M. Bissell, A. Al-Mohammad, T. A. Treibel, A. J. Swift, J. M. Wild, P. Garg

**Age-associated changes in 4D flow CMR derived Tricuspid Valvular Flow and Right Ventricular Blood Flow Kinetic Energy** (Scientific Reports) N. Barker, H. Zafar, B. Fidock, A. Elhawaz, A. Al-Mohammad, A. Rothman, D. G. Kiely, R. J. van der Geest, J. Westenberg, A. J. Swift, J. M. Wild, S. Plein & P. Garg

**Mild parenchymal lung disease and/or low diffusion capacity impacts survival and treatment response in patients diagnosed with idiopathic pulmonary arterial hypertension** (European Respiratory Journal) R. A. Lewis, A. A. R. Thompson, C. G. Billings, A. Charalampopoulos, C. A. Elliot, N. Hamilton, C. Hill, J. Hurdman, S. Rajaram, I. Sabroe, A. J. Swift, D. G. Kiely, R. Condliffe

**Response surface methodology and artificial neural network-based models for predicting performance of wire electrical discharge machining of inconel 718 alloy** (Journal of Manufacturing and Materials Processing) V. Lalwani, P. Sharma, C. I. Pruncu, D. R. Unune

**PTH(1–34) treatment and/or mechanical loading have different osteogenic effects on the trabecular and cortical bone in the ovariectomized C57BL/6 mouse** (Scientific Reports) B. C. Roberts, H. M. Arredondo Carrera, S. Zanjani-pour, M. Boudiffa, N. Wang, A. Gartland, E. Dall'Ara

**Cognitive Deficit and White Matter Changes in Persons With Celiac Disease: A Population-Based Study** (Gastroenterology) I. D. Croall, D. S. Sanders, M. Hadjivassiliou, N. Hoggard

**Regional Nanoindentation Properties in Different Locations on the Mouse Tibia From C57BL/6 and Balb/C Female Mice** (Frontiers in Bioengineering and Biotechnology) V. Pepe, S. Oliviero, L. Cristofolini, E. Dall'Ara

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