In silico methods in biofluid transport and biomechanics

Created on: 11-07-2019 - Last modified on: 08-11-2019

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Organisation

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Country Belgium

Geographical Area Flemish Region

SCOPE OF THE METHOD

The Method relates to	Human health
The Method is situated in	Basic Research, Translational - Applied Research
Type of method	In silico

DESCRIPTION

Method keywords

computational models

finite element modeling

computational fluid dynamics

mass transport

Scientific area keywords

biofluids

soft tissue biomechanics

blood flow

drug transport

drug administration

cardiovascular

arterial stiffness

medical devices

Method description

The scope of our research ranges from the study of flow and transport processes in blood and biological fluids in the cardiovascular system and artificial organs to biomechanical aspects of the cardiovascular and the skeleto-muscular system and medical devices. All research tracks explored by our past and present Master and PhD students relate to the study of (fluid) mechanical aspects of and transport processes in a native organ or system, in artificial organs and prosthetic devices. We hereby strive towards integration of research at different levels - often starting from a clinical problem or question - and combining computer modelling (from simple lumped parameter models to full 3D-simulation of biomechanical and fluid-structure interaction problems), experimental (hydraulic and test bench) work and in vivo data to explore and unravel the problem. As such, our work combines basic engineering with applied biomedical and clinical research. The final goal can be a better understanding of a patho-physiological problem, a better quantification (and diagnosis) of the function of an (artificial) organ or system, or design of new or improved medical devices for a better patient treatment.

REFERENCES, ASSOCIATED DOCUMENTS AND OTHER INFORMATION

Links

web-site

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