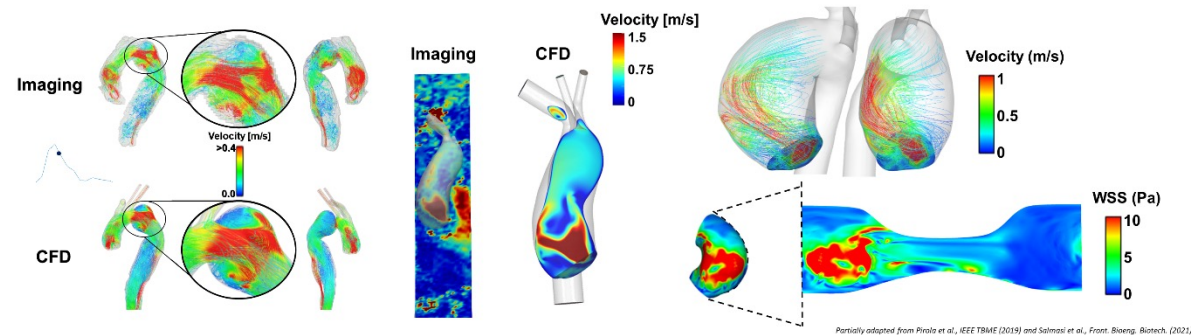


Patient-specific modelling in cardiovascular diseases: current advances and future directions

Cardiovascular diseases are amongst the leading causes of death worldwide, with death from aortic disease-related emergencies being the most common cause of death amongst conditions requiring emergency surgery in high-income countries. However, our ability to predict disease development is still limited, and patients' risk-stratification is still mainly based on geometrical parameters, without accounting for the complex interplay between blood flow and vascular walls, which continuously drives vascular remodelling in an attempt to maintain homeostasis. The combination of computational modelling and medical imaging offers a unique possibility to advance cardiovascular research through personalized solutions for diagnosis and treatment of cardiovascular disease.



This seminar will give an overview of present and future research streams for patient-specific modelling of cardiovascular and aortic haemodynamics. Dr Pirola will show how imaging data can be used to provide patient-specific models with anatomical realism, in vivo boundary conditions to minimize model assumptions, and to validate computational results. Results from recent research on aortic disease will be presented. Finally, future research directions will be discussed.

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