A flexible and extensible modelling framework for the simulation of vascular tumour growth: an extension to the CHASTE open source C++ library for computational physiology and biology

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Abstract

CHASTE Cancer, Heart And Soft Tissue Environment is an open source C++ library for the computational simulation of mathematical models developed for physiology and biology. Code development has been driven by two initial applications: cardiac electrophysiology and cancer development. ... [NOTE: This is to be completed ...]

Keywords: CHASTE - agent-based simulation - multi-scale model - vascular tumour growth - on-lattice model - off-lattice model

AUTHOR SUMMARY:

- Insert a few bullets in here explaining major contributions of paper.

Contents

1 Introduction

2 Design and implementation

- Describe how the cell based simulation classes are implemented so that they are extensible and easily customisable. In particular we should aim to describe how the template method pattern and strategy pattern are employed within the Solve method (the modifiers are essentially glorified strategies).
- Emphasise composability of simulations.

3 Results and exemplar simulations

3.1 Avascular tumour spheroid growth

3.1.1 On-lattice

3.1.2 Off-lattice

3.2 Vascular tumour growth

3.2.1 On-lattice

3.2.2 Off-lattice

3.3 An off-lattice model of corneal angiogenesis on a complex domain

4 Discussion and future work