Mathematical modelling of a brain tumour initiation and early development: A coupled model of glioblastoma growth, pre-existing vessel co-option, angiogenesis and blood perfusion

Yan Cai1,2*, Zhiyong Li1,2, Quan Long3*

1. State Key Laboratory of Bioelectronics, Southeast University, Nanjing 210096, China; 2. School of Biological Science and Medical Engineering, Southeast University, Nanjing 210096, China;
3. Brunel Institute for Bioengineering, School of Engineering and Design, Brunel University, Uxbridge, Middlesex, UB8 3PH, UK

* E-mail: yancai@seu.edu.cn, quan.long@brunel.ac.uk

We propose a coupled mathematical modelling system to investigate glioblastoma growth in response to dynamic changes in chemical and haemodynamic microenvironments caused by pre-existing vessel co-option, re-