

Qualitative system identification for tumor modeling

Modeling and Simulation Group

Computational Sciences & Engineering Division



Problem Statement:

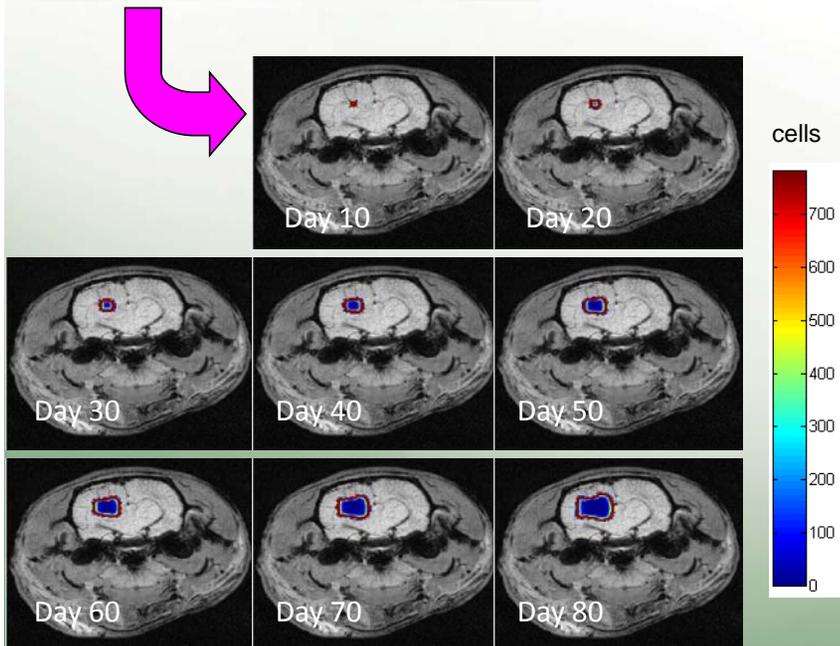
- ORNL is working with collaborators at the Vanderbilt University Institute of Imaging Science (VUIIS) to build and demonstrate a high performance, inductive reasoning engine for discovering models of tumor growth from features in time series images of mouse models of breast cancer.

Technical Approach:

- Our approach integrates fuzzy inductive reasoning, genetic algorithms, and high performance computing to enable the construction of dynamic models *directly* from imaging characteristics that correlate with disease outcome.

Benefits:

- New methods and technologies will be developed for the identification of clinically relevant, prognostic features that separate responding and non-responding tumors early in the course of therapy. A general and practical method for modeling biological processes directly from features in imaging data is envisioned.



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