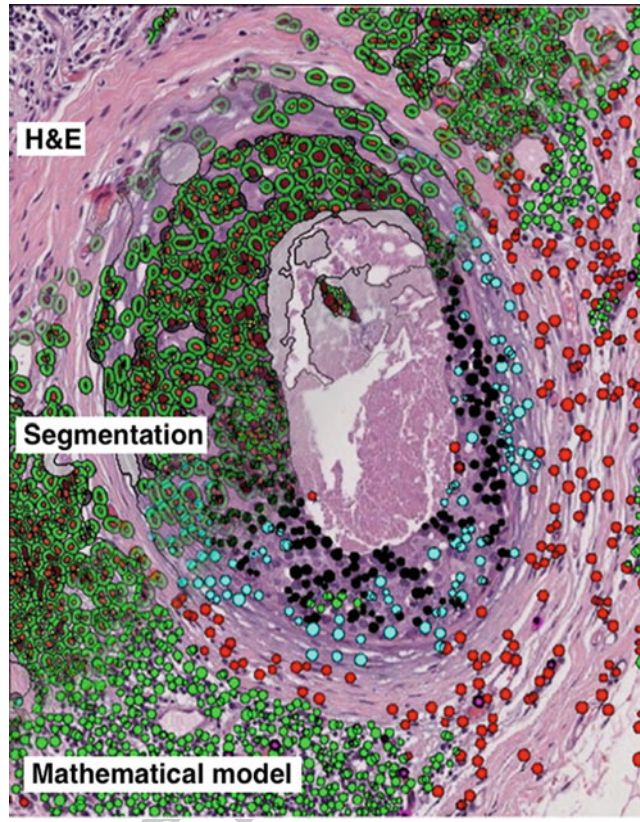

Fig. 1 A composition of three research images: a histology image in the background showing a section of breast tissue with a ductal carcinoma in situ stained with the H&E, an image of cell segmentation (green cytoplasm enclosing the red nuclei; along the diagonal) used for quantification of individual cell features, and an image of a computational agent-based model representing the same tumor tissue (black, cyan, green and red dots below the diagonal). The histology data and segmentation was provided by Mark Lloyd; the computational model by Katarzyna Rejniak; the graphics designed by Kamil Rejniak

cell migration, which is a first step in a metastatic cascade that leads to tumor spread (metastasize) to the distant organs.

In the fifth chapter, Rejniak discusses the microenvironment that the tumor cells encounter upon entering the blood or lymph circulation system. While this is a crucial step in the tumor metastatic cascade, only a small fraction of cells is able to withstand hemodynamic forces and overcome effects of blood shear in circulation. The author presents a fluid-structure interaction model to address the mechanical aspects of circulating tumor cells that allow them to survive in the intravascular fluid microenvironment.

In the sixth chapter, Lolas and co-authors discuss lymphangiogenesis, a process of the formation of new lymph vessels, and provide evidence both computational and experimental of tumor cell migration and dissemination through the lymphatic network.

The final step in the metastatic cascade is the colonization of the secondary site by tumor cells. In this new environment, tumor cells need to adapt to the