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**Forcing the way to metastasis: mechanical interactions  
between endothelial and circulating tumor cells**

Metastasis to distant organs is an ominous feature of most malignant tumors, and it is the major cause of mortality. However, no more than 0.01% of circulating tumor cells is able to withstand all steps of a metastatic cascade, such as an escape from primary tumor mass into the blood stream, circulation with the blood flow and extravasation into the new site that can be subsequently colonized. The process of tumor cells extravasation, i.e., their ability to leave the circulation system under the physiological blood flow is still poorly understood. I will present a biomechanical model of circulating tumor cells and their interactions with endothelial cells forming the vascular wall. This model will be subsequently used to analyze various modes of tumor cell translocation under the blood flow: from circulation to rolling, to crawling, to transmigration.