Abstract (lay version) of project

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Single cell-derived clonal analysis of desmoid tumors to investigate tumor-stroma interactions

Tumors interact with the surrounding normal stromal cells where they grow. This interaction is of great clinical importance because it controls tumor progression and treatment response. Disrupting tumor-stromal interactions provides new avenues for targeted therapy as is now recognized in other cancers, such as breast and lung cancers. In desmoid tumors (DTs), it is difficult to distinguish the tumor cells from the normal cells because both populations are made of mesenchymal fibroblastic cells. By designing a method to establish cell cultures from single cells, we are able to isolate the mutant DT cell populations and normal non-mutant cells from a heterogeneous mixture of cells originating from DT patient samples. We hypothesize that the mutant cells interact with the normal cells, and that this interaction is important to maintain cell growth. We will test whether secreted factors mediate this two-way crosstalk. We will also study the role of cell-cell contact between DT cells and normal cells in modulating their growth. Drugs that can disrupt tumor-stromal interactions will be tested on DT cell cultures from patients. This work will enhance our knowledge of DT biology, and identify novel treatment approaches for DTs.