Spotlight

By Caroline Seydel

Colon tumors get a boost from mesenchymal stem cells

Shinagawa *et al*.
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Tumors have an ally in mesenchymal stem cells (MSCs), which play a key role in tissue regeneration and wound healing. MSCs migrate to a variety of tumors and appear to promote their growth and spread. Shinagawa, *et al.* investigated the effect of MSCs on orthotopic colon tumors in mice. They found that the cells do encourage the tumors to metastasize and the metastasized tumor cells then attract MSCs to the new sites.

Previous work has shown that MSCs can differentiate into carcinoma-associated fibroblast (CAF)-like cells when they reside in the tumor environment. Evidence is accumulating that CAFs promote tumor growth, and so the possibility that CAFs originate from MSCs is very interesting, indeed. Unlike most previous studies, Shinagawa *et al.* examined the interaction between tumors and MSCs in the tumor microenvironment using human colon cancer transplanted into the mouse colon. Implanting MSCs along with the tumor increased the tumor size, increased the number of liver metastases, and shortened the survival of the mice. By injecting labeled MSCs into the tumor-bearing mice, they observed that the cells migrated not only to the stroma around the primary tumors but also that of the metastatic liver tumors. In addition, while in the tumor stroma, the MSCs began expressing CAF markers.

This study distinguishes itself by studying orthotopic cancers rather than subcutaneous ones, in order to accurately observe the influence of the tumor microenvironment. Understanding the molecular interaction between tumor cells and MSCs could promote development of new anti-cancer strategies targeting the tumor stroma.