

Press release

Pseudomyxoma peritonei (PMP) is a rare cancer that is as unusual as its name. Rather than growing as a large, well-defined tumor, PMP develops as many small tumors that secrete mucus, often in copious amounts. PMP originates in the appendix, but spreads into the abdominal cavity where the mucus builds up to give PMP its nickname, “jelly belly”. Unfortunately, PMP does not respond well to intravenous chemotherapy. The standard of care is cytoreductive surgery (CRS) plus hyperthermic intraperitoneal chemotherapy (HIPEC). The surgery is usually a long 8-12 hour procedure in which the surgeon examines every organ surface (intestines, liver, kidneys, abdominal wall, etc.) and removes all visible tumors. Next, the surgeon partially stitches the patient’s abdomen and inserts tubes to circulate a heated chemotherapy solution for 90 minutes to kill remaining tumor cells. Many patients are cured by this procedure, but some relapse. Scar tissue complicates subsequent surgeries. Patients who are too ill to withstand surgery or whose cancer is too advanced have no treatment options.

Several years ago, our research group discovered that bacteria are present in these tumors and the secreted mucin. We believe that some bacteria are harmful and increase both the rate of tumor growth and mucus secretion. A pilot study involving treatment of PMP patients with antibiotics suggested improved survival among antibiotic-treated patients. We are expanding the clinical trial to confirm our early results.

While some bacterial species are detrimental, it is possible that other species could slow tumor growth or increase sensitivity to chemotherapy. We have isolated a number of bacterial species from PMP tumors and have begun to isolate compounds from some of these organisms. Compounds that caused reduced cell growth or increased cell death were selected for further study. We tested these compounds against cultured PMP cells and normal colon cells. Some compounds caused decreased oxygen consumption and/or increased cell death. So far, one compound has different effects on normal cells compared to PMP tumor cells. In the future, we may be able to use bacterial compounds to treat cancer or to improve efficacy of other cancer treatments.