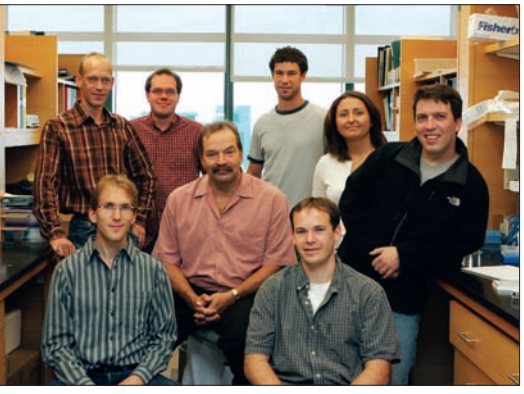
After adjusting for physical activity, DMS researchers found that children with a TV in their bedroom are more apt to be overweight; they studied 2,343 children aged 9 to 12.

A new role is discovered for mast cells

Mast cells usually get a bad rap, as the culprits behind allergies and asthma symptoms. But their reputation got a boost recently, when DMS researchers discovered that they play a crucial role in transplantation tolerance.

Blue: Mast cells, it turns out, are a bit like Jekyll and Hyde. In some situations, like during an allergic reaction, they promote inflammation and immune responses; in other situations, however, they do just the opposite. This finding is "so out of the blue!" says Dartmouth immunologist Randolph Noelle, Ph.D., who heads the lab that made the discovery.

For many years, Noelle's lab has been studying how the body rejects or accepts a transplanted organ or skin graft, and they've found a way to induce transplant tolerance in mice. "We can do a skin graft on a mouse and have it stay forever," says Noelle, without the mouse's immune system attacking the foreign skin and without the long-term use of immunosuppressive drugs. Prolonged tolerance, they noticed, was associated with two types of immune cells—regulatory T-cells and mast cells. But what were mast cells—known for promoting strong immune responses—doing in a place that was protected from immune system attacks, they wondered?



JOSEPH MEHLING

Randy Noelle—center, surrounded by members of his lab—had a paper on mast cells in *Nature*.

The researchers hypothesized that the mast cells were actually suppressing inflammation and protecting the graft. To test this theory, they tried inducing prolonged graft tolerance in mice that were deficient in mast cells. The grafts didn't take. The team then tested whether injecting such mice with lab-grown mast cells—prior to the graft transplant and the immunosuppressive treatment—made a difference. It did. These mice were able to maintain their grafts twice as long. Although other factors may be involved, "these results strongly suggest an indispensable role for mast cells" in skin transplant tolerance, Noelle and his team wrote recently in *Nature*.

The results may also explain "why mast cells are located in very specific sites within tissues (for example, nerves, vessels, hair follicles, or epithelia)," wrote a University of Oxford immunologist in an accompanying editorial. "Also, is it possible that the mast cells found within tumours contribute some immune privilege?"

Heal: High concentrations of mast cells in certain tumors often indicate a bad prognosis, Noelle explains. And other research has suggested that mast cells promote blood vessel growth and tissue remodeling—both of which help tumors grow. "What [the mast cells] are trying to do is wound heal," says Noelle. In the case of a transplant, dampening inflammation, facilitating blood vessel growth, and assisting in tissue remodeling are helpful. In cancer, those actions are anything but.

Noelle's team is now searching for molecular targets that could be used to shut down mast cell accumulation in tumors. They're also working with DHMC transplant surgeons to see if what they've found in mice correlates with what happens in humans. "We're not mast cell people," Noelle says, so "a number of us are completely retooling." JENNIFER DURGIN

Deliverables

Women who develop gestational diabetes mellitus (GDM) "are at increased risk of persistent glucose intolerance after delivery, and yet many are not retested" after giving birth, researchers at Dartmouth and Brown discovered recently. They found that less than half of women with GDM got postpartum glucose testing, but more than a third of those who did had abnormal glucose tolerance. "With the magnitude of the public health problem posed by the rising incidence of diabetes in the United States, further attention needs to be given to these high-risk women," the authors conclude in the journal *Obstetrics and Gynecology*.

Pumping iron

Since "iron deficiency is a major human nutritional problem wherever plant-based diets are common"—as Dartmouth researcher Mary Lou Guerinot, Ph.D., and her colleagues noted in the journal *Science*—learning how and where plants store iron may one day help scientists engineer more nutritious food sources. And Guerinot and her team have made such a discovery. "We have uncovered a fundamental aspect of seed biology that will ultimately aid the development of nutrient-rich seed," they wrote, to the benefit of "both human health and agricultural productivity." ■