Organ Transplant Tolerance: 
The Goal of Transplantation Research at MGH

What is tolerance?

Tolerance is the practice of tricking the immune system into thinking a transplanted organ is part of its own body. Because the immune system exists to protect the human body from disease and foreign objects, organ rejection is a major concern for any transplant procedure. Successfully achieved, tolerance can prevent a transplant patient from needing to take life-long immunosuppressive drugs, which pose the risk of serious side-effects.

How does tolerance work?

Tolerance involves preparing a patient’s body before surgery and also includes transplanting donor bone marrow along with the new organ. This process produces a state known as “mixed chimerism,” an immune system that blends elements of both the donor and the recipient, allowing the donated organ to be accepted.

Has tolerance been successfully achieved in a patient?

In 2002, Mass General patient Jennifer Searl became the first person in the world in whom immune-system tolerance to a non-HLA-matched kidney transplant was intentionally induced through a combined kidney and bone marrow transplant. This success was achieved following decades of research by the Massachusetts General Hospital Transplantation Biology Research Center – under the leadership of David H. Sachs, MD – and the Mass General Clinical Transplantation Unit. Since that time, additional adult patients have benefited from this technique, and the researchers are hoping to expand this work to those who have previously received organ transplants as well as pediatric patients.