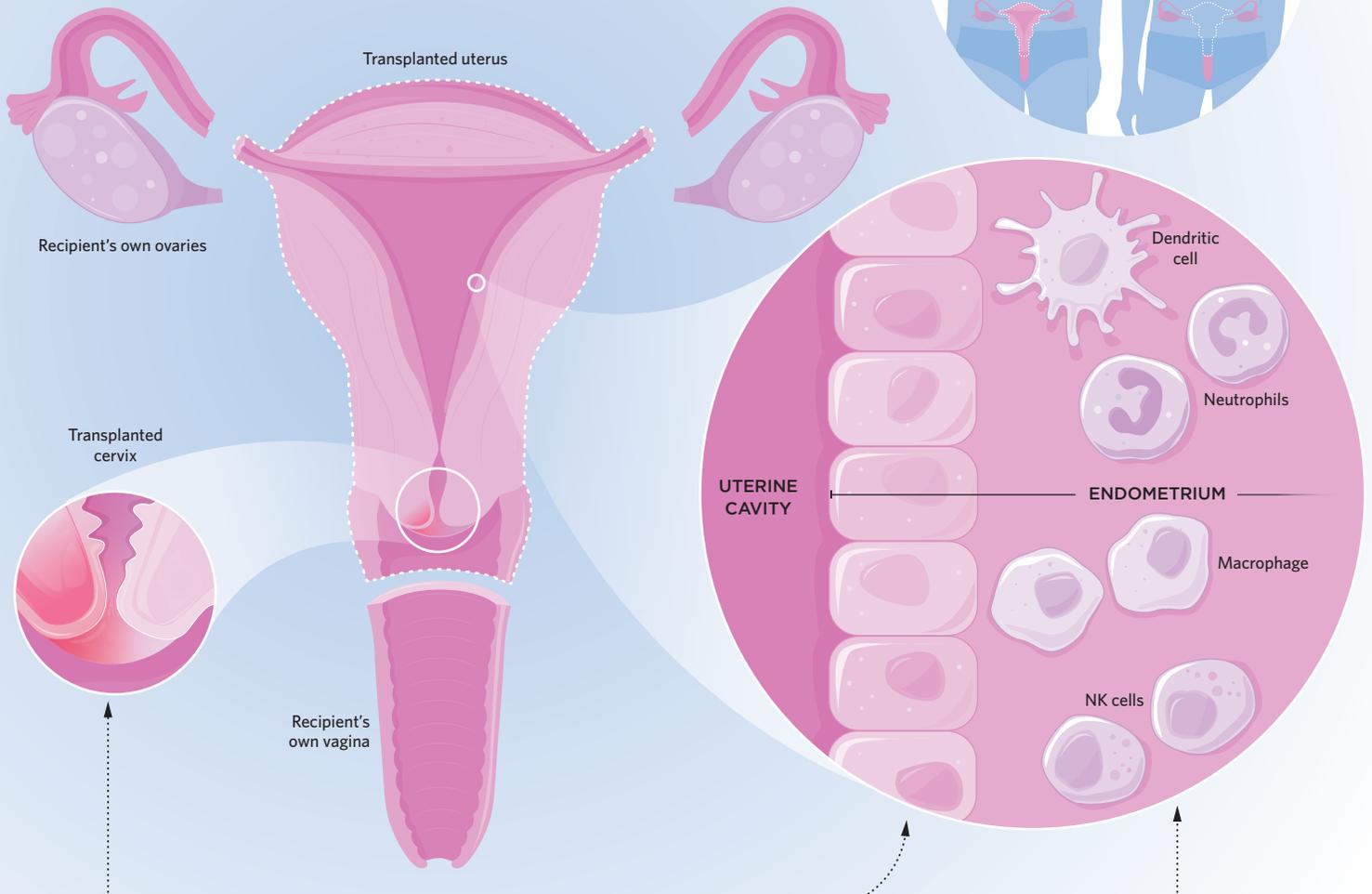
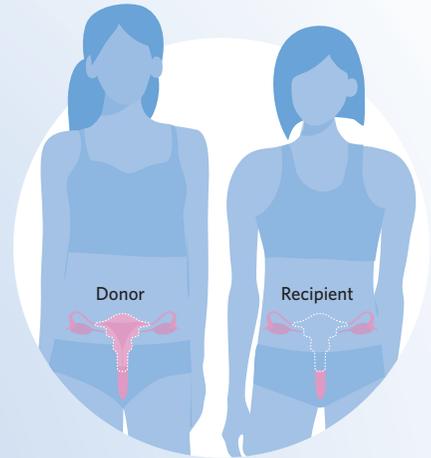


EXPLORING UTERINE AND TRANSPLANT BIOLOGY

Thanks to more than two decades of animal and clinical research, dozens of women who lacked a uterus have received the organ via donation and transplant surgery, and many of these patients have had successful pregnancies. While the procedure was developed explicitly for the purpose of rescuing a woman's reproductive capacity, scientists are taking advantage of the unique model to ask some basic research questions about endometrial turnover and other aspects of uterine biology, as well as questions about transplantation, and specifically, immune rejection of an organ. After every uterus transplant, recipients undergo regular blood draws and cervical biopsies—samples that clinical trial researchers are actively interrogating and banking for future studies. A few of those research directions are illustrated below.



IMMUNE REJECTION OF ORGAN

Immunosuppressant drugs designed to help recipients accept the transplanted uterus can be discontinued prior to having the organ removed. From cervical biopsies and other samples, researchers can watch for signs of rejection and look for biomarkers that could provide a less invasive way to test for rejection following transplant surgeries involving uteruses or other organs.

SOURCE OF UTERINE CELLS

Researchers have long wondered about the origin of the various cells that make up the internal lining, or endometrium, of the uterus, which is shed and regenerated monthly as part of a normal menstrual cycle. With uterus transplantation, researchers can look at the genetics of the cells in the uterus and determine if they came from the organ itself, with genetic signatures of the donor, or from outside the organ, with genetic signatures of the recipient.

SOURCE OF IMMUNE CELLS IN UTERUS

Immune cells called natural killer (NK) cells are important for the establishment of pregnancy and, specifically, the development of the vasculature in the placenta. As with cells that replenish the endometrium, researchers can determine whether these and other immune cells come from within the uterus or from elsewhere in the body by testing to see if they have donor or recipient genes.