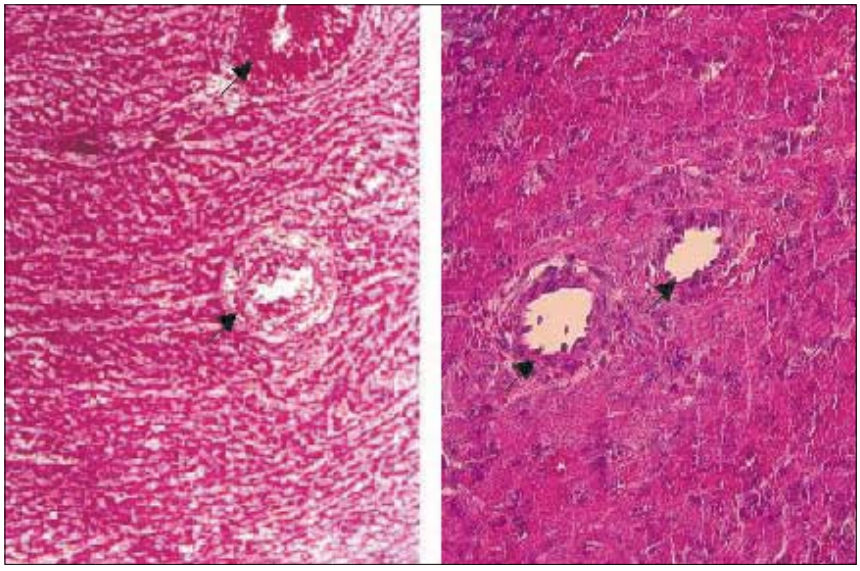
Xenotransplantation survival

The cytokines γ interferon and interleukin-12, believed to exacerbate rejection in human-to-human organ transplants, appear to have the opposite effect in xenotransplants, a group of London, Ont., researchers has discovered (*Nat Med* 2000;6:481-603).

Mice with high levels of the 2 cytokines took an average of 24 days to reject grafted rat hearts, compared with just 6 days for mice with a cytokine deficiency.

"This changes the emphasis," says David Kelvin, an immunologist at the Robarts Research Institute and the University of Western Ontario. "Before, we had thought that these molecules were a negative influence on the survival of allografts. We found that these molecules have a beneficial effect in xenograft rejections."

The cytokines were found to regulate acute vascular rejection (AVR), considered the major obstacle to successful xenotransplants. Although researchers have largely overcome the initial hyperacute rejection of xenografts, AVR sets in within days, destroying the organs within weeks or months.The prospect of regulating AVR without antirejection drugs could lead to new therapeutic strategies for controversial pig-to-human transplants. As both γ interferon and interleukin-12 are present in humans, the new findings point to a possible "genetic starting point" for preventing or minimizing graft rejection, the authors say. — *David Helwig*, London, Ont.



Arrows indicate vessels, diseased (left) and healthy (right), in rat heart grafts transplanted into mice.

Pathologists dismayed by recruiting problems

With only 18 residency positions available in the entire country, it must be very difficult to enter laboratory medicine specialties such as general pathology, right? Wrong, says Dr. Sandip SenGupta, vice-president of the Canadian Association of Pathologists. Writing in the latest issue of the CAP *Newsletter*, he said that despite the small number of positions available, one-third of them remained unfilled after the 2000 residency match. In that match, only 10 of 1084 participants listed a laboratory medicine specialty as their first program choice. He warned of a "downward spiral to oblivion" for laboratory medicine unless recruiting, including recruitment of international medical graduates, improves. "Only with an all-out offensive effort can we expect to be successful in stemming the tide and saving the profession for the next generation," he said.

Immune in the womb

A new vaccination technique developed by Saskatchewan researchers could one day protect fetuses against infectious diseases such as AIDS and hepatitis B.

Dr. Philip Griebel and colleagues at the University of Saskatchewan's Veterinary Infectious Disease Organization successfully immunized fetal lambs against a herpesvirus by injecting DNA vaccine into amniotic fluid in the fetal animals' mouths. The procedure, performed during the third trimester, elicited a strong immune response systemically and in the oral cavities of all of the lambs. Viruses transmitted from the mother at or shortly after birth typically enter an infant's body through mucous membranes in the mouth, nose or eyes.

It has long been thought that fetuses do not have fully developed immune systems, said Griebel. Thus, researchers believed in-utero vaccination would produce a tolerance rather than an immune response to an introduced pathogen. "We showed quite clearly that this is not the case," said Griebel.

If the findings, published in *Nature Medicine* (2000;6:929-32), are borne out by further research, the transmission of disease from infected mothers to their children during birth or breast-feeding could eventually be prevented. To date, providers have tried to reduce risk of disease spread by delivering babies by cesarean section or by treating the mother or baby with antibiotics.

Given that the new procedure carries some risks, it would likely be reserved for pathogens whose spread would pose a serious threat to the fetus — among them herpes simplex viruses, HIV, group B streptococci, *Haemophilus influenzae*, and *Chlamydia trachomatis*. Griebel says 2 to 3 years' research is needed before the procedure will be ready for clinical trials in humans. — *Greg Basky*, Saskatoon