

The Rotary Liver Cell Bank: Australia's first liver cell bank.

D.M.Y. Cheah, P.F.A. Wright¹, W. Hardikar, R. Jones², R. Williamson and K.J. Allen, Murdoch Children's Research Institute, Royal Children's Hospital, Parkville, Victoria; ¹Key Centre for Toxicology, RMIT-University, Melbourne, Victoria; ²Liver Transplant Unit, Austin Hospital, Heidelberg, Victoria.

With an ever-increasing number of people on the waiting list for a liver transplant, alternative therapies are being sought to alleviate this serious problem. In response to this urgent need, the Rotary Liver Cell Bank (RLCB) was launched in 2000, and is based at the Murdoch Children's Research Institute in Melbourne's Royal Children's Hospital. This is Australia's first such facility and will offer patients with certain metabolic liver diseases and dysfunctions an alternative to whole liver transplantation, through the use of liver cell transplantation (LCT).

The procedure involves the isolation of liver cells obtained from livers unable to be used for organ transplantation but consented for use in the LCT program. Liver cells are first released from the liver architecture by enzymatic dissociation. They are then washed, purified and cryopreserved using a rate-controlled freezer and stored in liquid nitrogen.

LCT has a number of advantages over conventional whole organ transplantation. These include a better donor to recipient ratio; the possibility of using less post-operative immunosuppression therapy; and the elimination of major abdominal surgery, thus reducing the inherent costs associated with surgery and hospital stay. In a number of animal models, LCT has resulted in engraftment and repopulation of the transplanted cells throughout the liver and was shown to correct disease in the recipient animals. In clinical trials, LCT has been used with modest success to ameliorate metabolic liver diseases and has also been used successfully as a bridging therapy to whole liver transplantation or spontaneous recovery in fulminant hepatic failure.

The Rotary Liver Cell Bank received human ethics approval to begin research and development work in May 2001. The period since then has seen the streamlining of the organ procurement process, and cell isolation and cryopreservation procedures. With the assistance and advice from numerous experts in Melbourne and the few existing liver cell banks overseas, the RLCB is establishing a world-class program using best possible practice to expand and improve the range of medical care in Australia.