

The Sydney Heart Bank: An international resource to help understand human heart failure while minimising the use of animals

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In 1989, with the assistance of the late Dr. Victor Chang and his colleagues at St Vincent's Hospital Sydney, we began collecting samples from explanted hearts during transplantation, in addition to donor hearts that were procured but not used for heart transplantation. Over the subsequent 25 years, this has developed into the largest human heart tissue bank in existence.

The Sydney Heart Bank (SHB) now contains >20,000 samples consisting of over 400 failing human hearts and more than 120 non-failing donor hearts. All samples have been acquired within about 40 minutes of the loss of coronary blood flow and snap frozen at -196°C (liquid nitrogen), thus effectively negating post-mortem histological changes. The tissues are derived from all four chambers of the heart and also include coronary vessels, aortas, and even more detailed samples such as papillary muscles and epicardium.

Through our collaboration with Royal Prince Alfred Hospital, we have now expanded the tissue collection to include myectomies from patients with hypertrophic obstructive cardiomyopathy (HOCM) and samples taken at the time of coronary artery bypass surgery (CAGS).

The SHB is completely not-for-profit and we have established some 60 research collaborations with laboratories both in Australia and internationally.

The aim of the SHB is to facilitate basic and clinical research into the complex molecular mechanisms that underlie heart failure using human heart tissue.