



SAFETY ASSESSMENT

Cardiovascular Models for Medical Devices

Capabilities and Expertise:

- Acute myocardial infarction studies
- Regenerative therapies (stem cells, patches)
- Multimodal cardiac function assessment (echocardiography, MRI)
- Congestive heart failure (aortic banding, pacemaker-induced, others)
- Chronic cardiac and peripheral ischemia (CLI)
- Peripheral arterial disease
- Evaluation of restenosis after vascular injury
- Electrophysiology studies
- Cardiac and vascular devices
 - Heart valves (surgical, transcatheter, intravascular)
 - Bioresorbable scaffolds
 - Stents
 - Drug coated balloons

Preclinical Safety and Efficacy Assessment of Cardiovascular Devices and Specialty Cardiovascular Studies

Charles River offers complete support for your cardiovascular work, from design and proof of concept, to GLP-compliant studies tailored to your specific study needs.

Coronary and Peripheral Studies

The surgical and interventional suites in Michigan and Canada have been specifically designed for preclinical research. Our facilities include four catheterization labs staffed by highly trained professionals, fluoroscopy (digital angiography), intravascular ultrasound, (IVUS) optical coherence tomography (OCT), echocardiography, image analysis softwares (for quantitative artery analysis), digital radiography, micro-computed tomography and clinical CT, and magnetic resonance imaging (MRI).

We can perform both coronary and peripheral interventions and have expertise with a wide variety of devices, including drug-eluting stents (DES), drug-coated balloons (DCB), bioresorbable scaffolds, venous endovascular devices, diagnostic probes, and more.

EVERY STEP OF THE WAY

Cardiac Devices

Structural cardiac disease is a rapidly advancing area of medical device development. Using the interventional suite, we routinely conduct implantation studies on several types of sophisticated cardiac devices such as aortic, mitral, and tricuspid valves using a variety of approaches, closure devices (LAA, PFO, atrial appendage), and on-pump cardiopulmonary bypass (e.g., ECMO, CABG).

A magnetic resonance imaging (MRI) scanner (Siemens 1.5 tesla Magnetom Sonata™), hybrid surgical room with computer tomography (CT) scanner (Somatom Sensation 16, Siemens) and an intracardiac echography (Siemens Acuson) are also available on-site to complement and support these studies for appropriate sizing pre-implant, delivery support, migration evaluation and device performance.

Electrophysiology (EP) Studies

Using electrophysiology study equipment like EP-Tracer, Cardiotek, and a Biosense Webster Stockert system, Charles River performs EP studies in a variety of large animal models. We have experience conducting ablation, intracardiac electrical pathway, pacemaker, cardiac defibrillator and arrhythmia, and neurostimulation studies.

Myocardial Infarction Models

Our team routinely works with challenging myocardial infarction models, having run more than sixteen GLP and/or non-GLP studies in over 500 animals in the past 3 years for the study of various treatment modalities including cell therapies, RNA-based treatments, and local drug delivery. Charles River's surgeons and interventionalists are experienced in both surgical and endovascular approaches. Evaluated parameters include LVEF, LVEDV, LVESV, wall motion and thickening (both regional and global) and infarct size, infarct percentage, area at risk, and edema.