

Researchers keep heart muscle alive

An Ottawa heart specialist has developed a technique that allows researchers for the first time to routinely use heart tissue to predict how the heart will respond to certain drugs or treatments, reports Laura Robin in *The Citizen*.

Dr. Wilbert Keon and his research team have found a way to keep small pieces of live human heart muscle alive in test tubes.

The pieces of muscle used for the experiments are routinely removed during surgery at the Civic Hospital so a patient's heart can be hooked up to a heart-lung machine; if the piece was not used for research, it would be thrown out.

Bathed in special solutions and stimulated by electrical impulses, hundreds of pieces of human heart muscle have already been kept alive in Dr. Keon's laboratory and have responded in a statistically consistent manner.

By measuring the contractions in the tiny piece of muscle — taken only from adult patients — researchers will be able to measure the effect of different drugs and heart treatments.

And testing that has just begun shows dramatic results. Pieces of heart muscle that were chilled to 3 degrees Celsius — a temperature sometimes used now in heart surgery — did not seem to recover fully. Different solutions used to preserve the heart during surgery are to be tested next.

"Until now there hasn't been any precise way of telling whether one solution is better than another since each heart operation is different," said Gerald Taichman, Dr. Keon's co-researcher.

Every working day, a piece of heart tissue about the size and colour of a small shrimp is placed into a container of blood and ice and rushed by courier from a Civic Hospital operating table to a university laboratory on Smyth Road.

Adult patients to be hooked up to heart-lung machines during surgery at the Civic are asked to sign a consent form so the heart tissue removed to connect the machine can be used for research. If it were not used for research, the piece would be thrown out.

At the Health Sciences laboratory, run by the University of Ottawa, tiny strips from the discarded pieces of tissue are suspended in a special oxygen-rich solution and stimulated with electrical shocks to keep them pulsing.

"It's a technique I can see being used in large numbers of cardio-vascular

laboratories around the world," said Dr. Keon, who is head of the University of Ottawa's cardiac unit at the Civic Hospital and director of the research project.

Once the experiments are complete, the pieces of muscle are preserved in formaldehyde to allow further examination.

Strips of muscle from animals' hearts have been used by scientists to test heart treatments for about 20 years, but this is one of the first clinical uses of live human heart muscle.

Consistent reactions

"After about ten years of thought and four years in the laboratory we've finally reached the point where the pieces of muscle behave in a consistent, predictable way," said Dr. Keon.

"Now we can begin testing the effect of temperature, different preserving solutions that are used while the heart is stopped during surgery and drugs on the piece of muscle and see how it responds."

"This method should be more accurate than tests in animal tissue," said Gerald Taichman, another member of the research team. "It's a good way of solving clinical problems because it eliminates the middle ground — the animal."

"We're able to do tests on human tissue without invading a patient," said Dr. Keon.

Their research has just been submitted for scientific publication. The team will soon begin studying how well heart muscle recovers after being stopped for a few hours in special preserving solutions, as it is during heart surgery.

Canada's Anik C-2 satellite launched from Challenger space shuttle

Canada's *Anik C-2* satellite, the second of three advanced satellites, was deployed into orbit from the space shuttle *Challenger* on June 18.

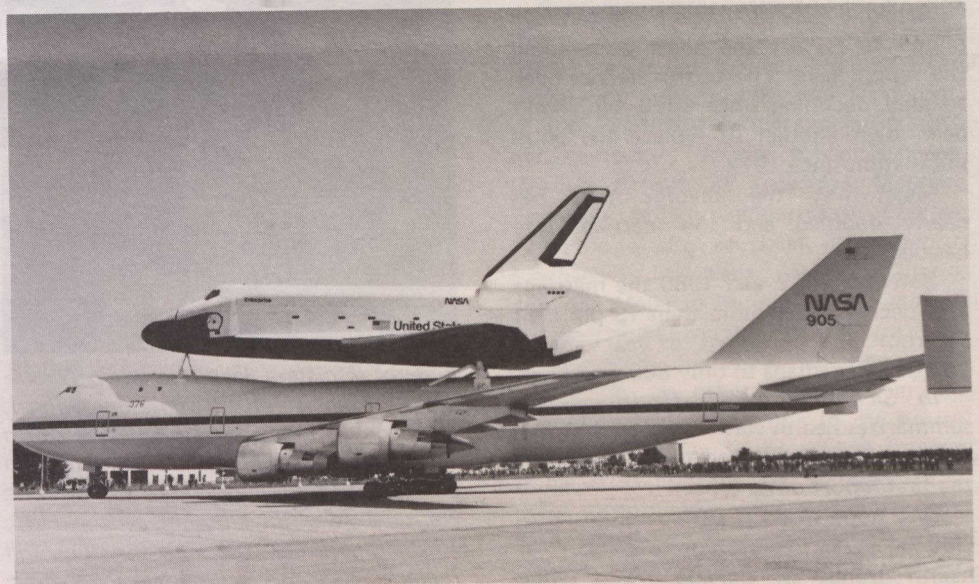
The satellite was ejected from the shuttle under the guidance of astronauts John Fabian and Sally Ride. Dr. Ride, 32, is the first American woman to go into space.

Five of *Anik C's* 16 channels have been leased to the GTE Satellite Corporation of Stamford, Connecticut until December 1984 for pay TV services. A Canada-US agreement allows Telesat to sell temporarily surplus satellite capacity on an interim basis to American com-

panies experiencing a shortage of satellite channels.

Anik C's powerful, high frequency transmission makes it ideal for delivering television signals to earth terminals with dish antennas as small as one to two metres.

The new satellite is the primary, in-orbit back-up for its identical predecessor, *Anik C-3*, which was launched on November 11, 1982, and will be available to carry east-west telecommunications traffic in southern Canada. Services currently carried on *Anik C-3* include Canadian pay TV, educational television and general long distance telecommunications traffic.



US space shuttle Enterprise perched atop a Boeing 747 during a visit to Ottawa. The shuttle is a prototype of the Challenger that recently launched Canada's second Anik C satellite.