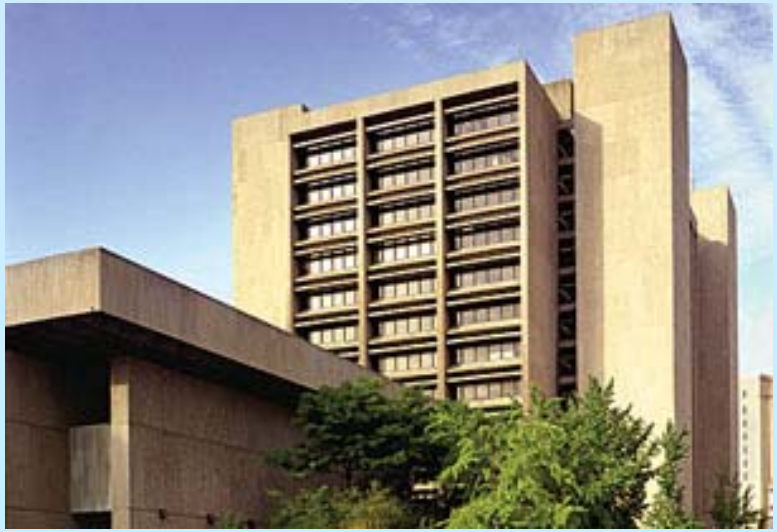
Translational Cardiovascular Bioengineering Research at the University of Pittsburgh

Photo: Center for Bioengineering


University of Pittsburgh


William Pitt Union




Cellomics

Two Organizations – Working together

University of Pittsburgh

- Department of Bioengineering ranked 14th nationally, and 6th among public institutions
- McGowan Institute for Regenerative Medicine
- Six nationally ranked schools of health sciences
- Over $603M research funding in 2005
- Ranked 7th in NIH funding
- **Exceptional history of fostering multi-disciplinary bioengineering-clinician research teams**
- Developing sophisticated intramural and extramural entrepreneurial support

UPMC | University of Pittsburgh Medical Center

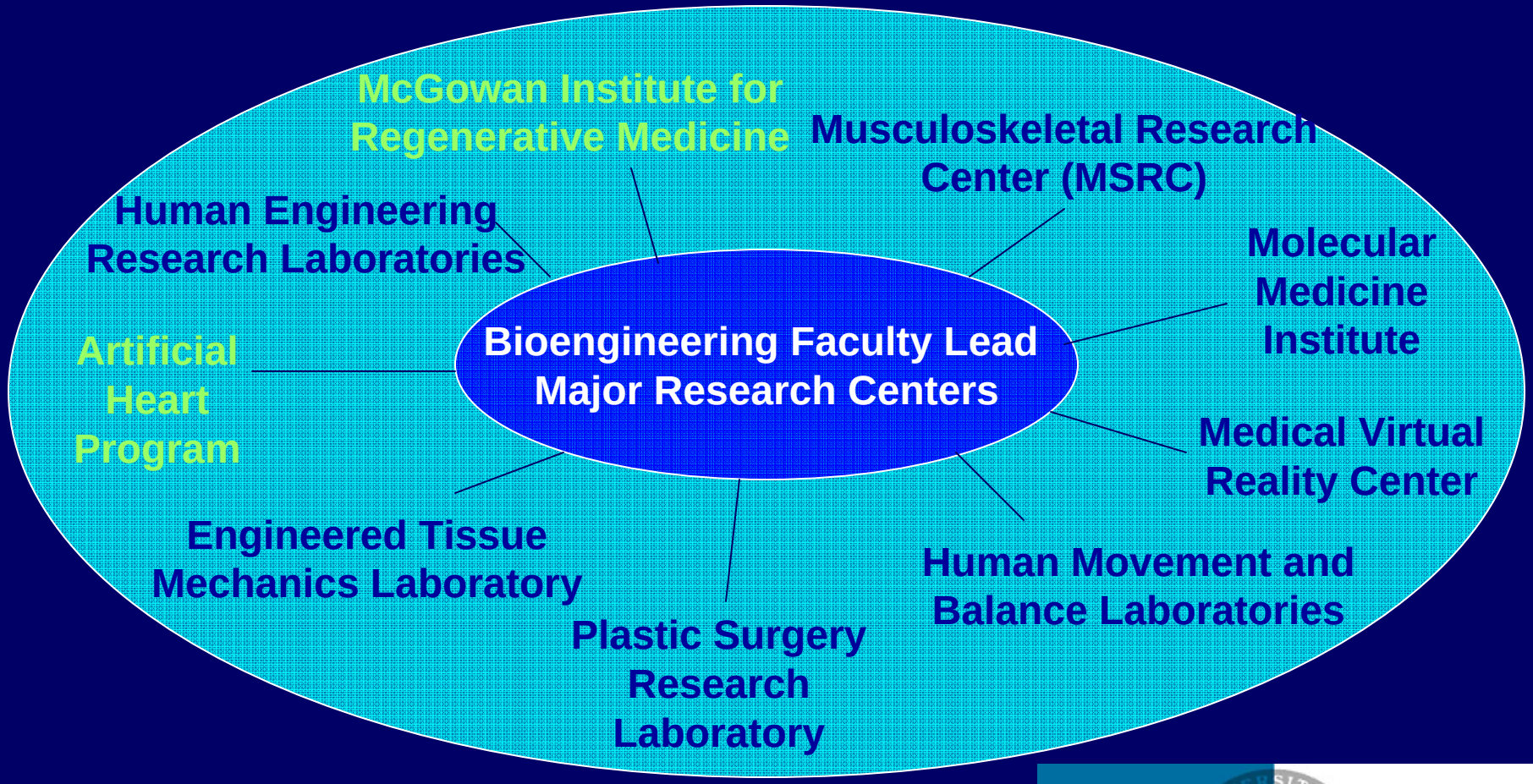
- $5.4B revenues
- 19 hospitals + a network of care facilities
- 40,000+ employees
  (Largest employer in Commonwealth of PA)
- One of the country's fastest growing health insurance plans
- Financially healthy
- Recruitment growth of 10% /year
- Biotechnology venture fund
- Diversified, entrepreneurial and willing to invest in the future

...to create a nationally and internationally renowned center of biomedical excellence

Source: 2004 NIH Awards to Domestic Institutions of Higher Education

US News and World Report 2005 Academic Rankings of US Institutions

University of Pittsburgh Department of Bioengineering

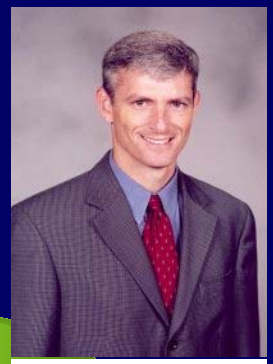


15 FT faculty collaborate with >90 2ndary faculty from 20 departments and 4 schools

Bio Engineering

Our Team

Harvey Borovetz, PhD



Mike Lovell, PhD

Department of Bioengineering

Department Of Surgery

Swanson Center for Product Innovation

McGowan Institute For Regenerative Medicine

Tim Billiar, MD

Alan J. Russell, PhD

Translational Cardiovascular Bioengineering Research at the University of Pittsburgh

Funding

Photo: Bridge Side Point, home of Pittsburgh Life Sciences Greenhouse

- **15 Phase I/II SBIR awards**
- **Two NIH 5-year contracts**
  - 1995-2000: Innovative Ventricular Assist Program (HM II)
  - 2004-2009: Pediatric Circulatory Support (PediaFlow™)
- **Two DOD 5-year contracts**
  - Intravenous Membrane Oxygenator (Hattler Catheter)
- **Significant volume of industry supported work**
  - Arrow International
  - Baxter Healthcare/Novacor/World Heart
  - Levitronix
  - Medtronic
  - Sarns 3M
  - Thermo Cardiosystems
  - Thoratec Corporation
  - Travenol Corporation
  - US Surgical
  - Vascor

Photo: Bridge Side Point, home of Pittsburgh Life Sciences Greenhouse

Translational Cardiovascular Bioengineering Research at the University of Pittsburgh

"It IS all about the patients"

SCRIPPS HOWARD

The Pittsburgh Press

Vol. 102, No. 123 Twenty Five Cents © FRIDAY, OCTOBER 25, 1985 Latest Stocks 10-

City's 1st Jarvik heart implanted

By Jeffery Fraser
The Pittsburgh Press

Thomas Gaidosh, Pittsburgh's first artificial heart recipient, suffered minor bleeding problems this morning and was returned to surgery at Presbyterian-University Hospital.

Gaidosh, a 47-year-old retired factory worker who lives on Cherry Street in Sutersville, Westmoreland County, received the Jarvik-7 artificial heart yesterday as an emergency measure to keep him alive until a donor is found.

He remained in critical condition in the intensive care unit of the hospital following the second operation, which began at 6 a.m. and lasted about one hour.

Dr. Bartley Griffith, leader of the surgical team, said the second operation was necessary because of an "unacceptable accumulation of blood" in the patient's chest. Thomas Chakurda, hospital spokesman, described the bleeding problem as minor, but offered no further details.

Surgeons removed Gaidosh's diseased heart and implanted the mechanical device in a six-hour operation which began around 4 p.m. yesterday. Hospital officials said the implant was operating "beautifully."

Gaidosh had been transferred to Presbyterian four weeks ago from West Penn Hospital. He had been waiting 2½ weeks for a heart transplant before he became gravely ill yesterday.

He suffered from idiopathic cardiomyopathy, a virus of unknown origin which attacks and weakens the heart muscles. His condition deteriorated yesterday and doctors did not expect him to survive the day without a new heart, a hospital spokesman said.

The artificial heart was implanted so Gaidosh could survive long enough to undergo transplant surgery, which doctors consider to be the best treatment for irreversible heart disease.

As soon as an acceptable donor heart becomes available, doctors would immediately transplant the natural organ into Gaidosh, Chakurda said.

Doctors were not available for comment following the implant. Assisting Griffith in surgery were Drs. Robert Hardesty and Alfredo Trento, all of whom are members of the University of Pittsburgh School of Medicine faculty. After the implant, members of the surgical team took part in a heart transplant at the hospital, sources reported.

The implant marks the first time an artificial heart was used by a Pittsburgh hospital.

Last Friday, surgeons at the Hershey Medical Center implanted a mechanical heart in Anthony Mandia, a 44-year-old Philadelphia recreation department worker. He is reported to be in critical but stable condition as he begins his second week with an artificial heart developed Pennsylvania State University.

Mandia's mechanical heart, which is similar to Jarvik-7, is also intended to be temporary. Both devi are powered by air, which is pumped into the polyu thane heart chambers through hoses that penetrate patient's chest.

Gaidosh was described as a large man who sta about 6 feet, 5 inches tall and at times weighed as m as 220 pounds. Because of his size, doctors said he wo not be competing with Mandia for the same type of do heart.

The Jarvik-7 and Penn State heart can be used permanent life-support systems, if necessary.

About 2½ years ago, Gaidosh's heart condition for him to take a disability retirement from Ena

Please see Heart.

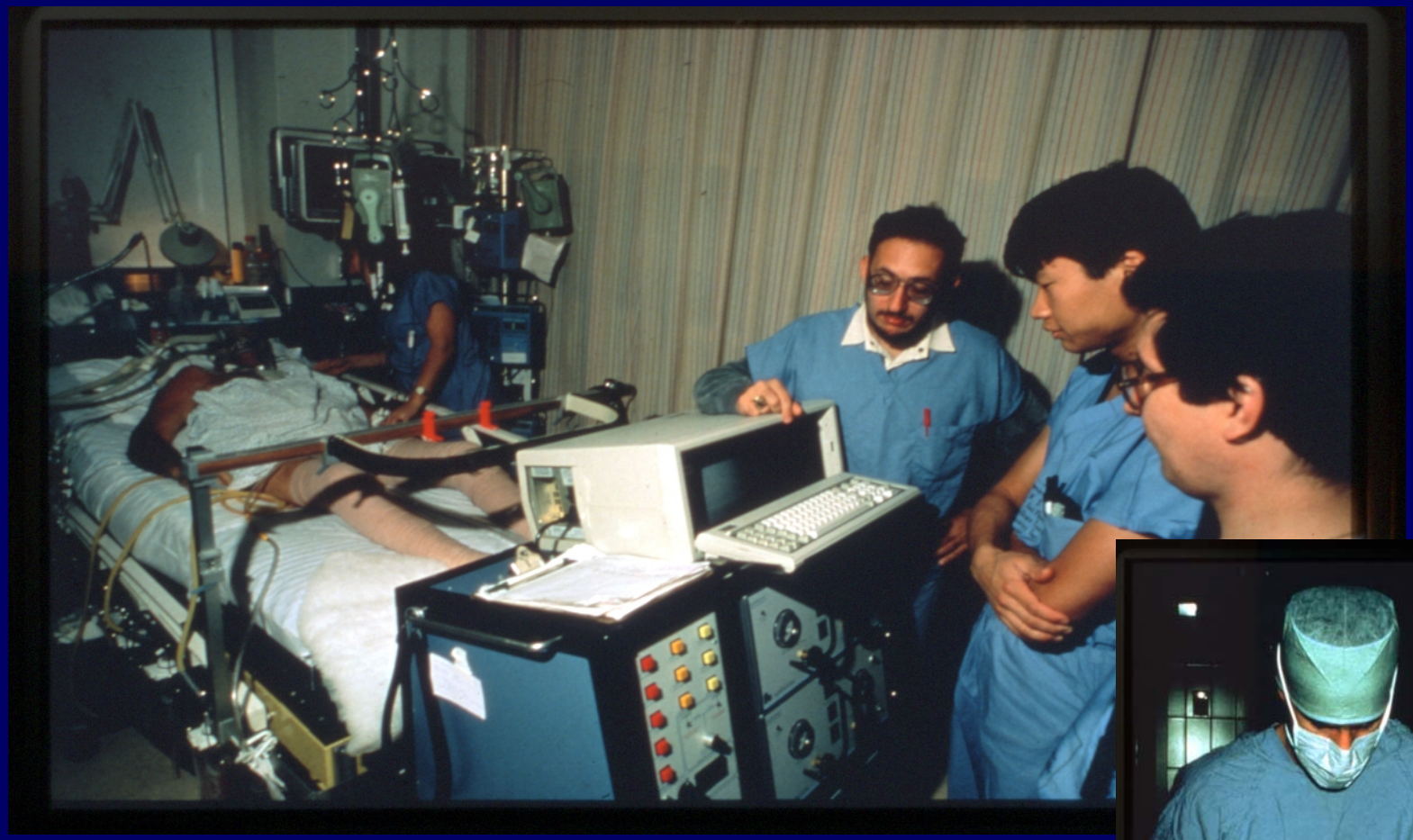

Presby
the beat goes on...

The University of Pittsburgh Medical Center
proudly presents

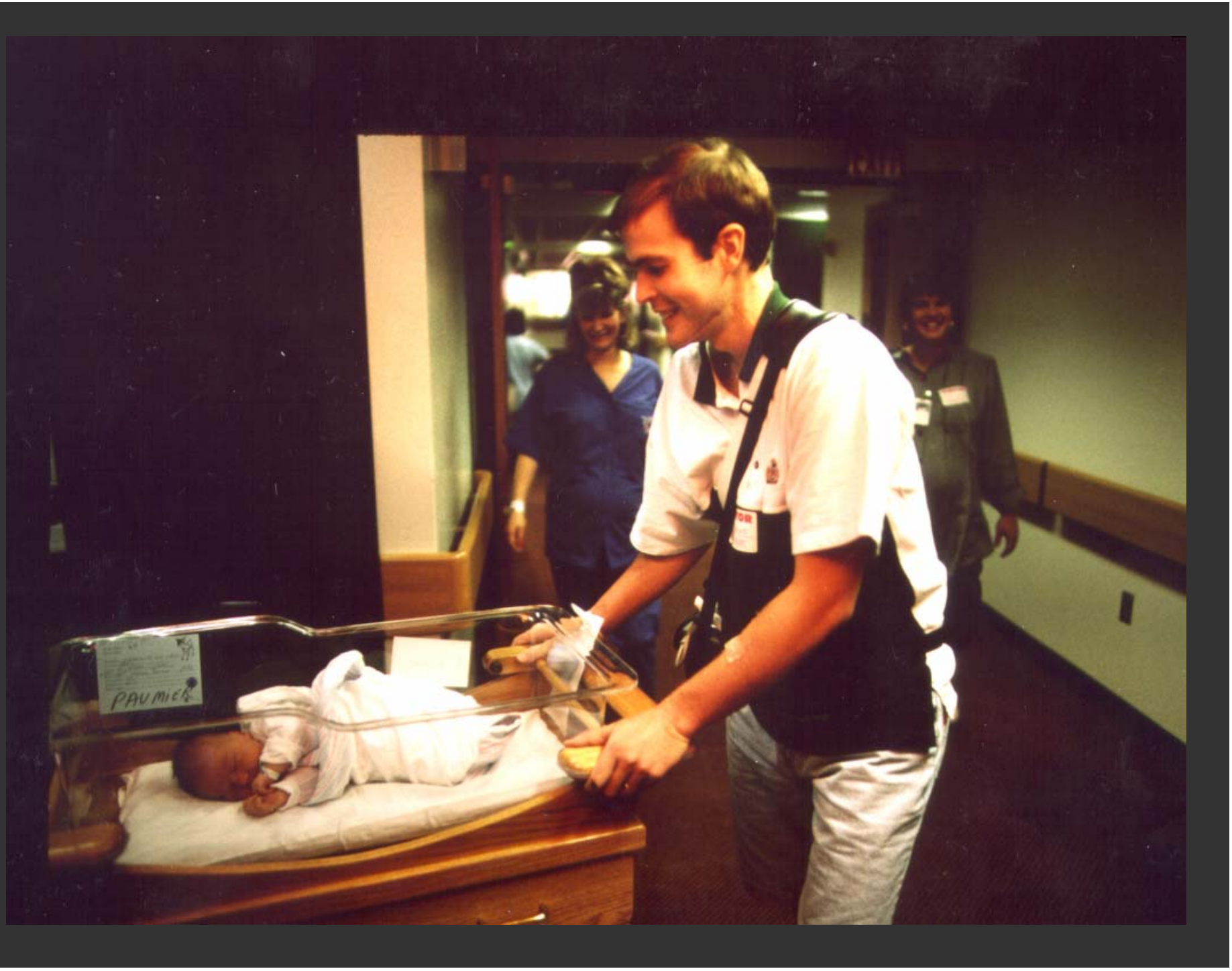
The Heart of Pittsburgh
A Gala Celebration

Saturday, October 14, 2006
Heinz Field, West Club Lounge
5:00 – 6:00 p.m.

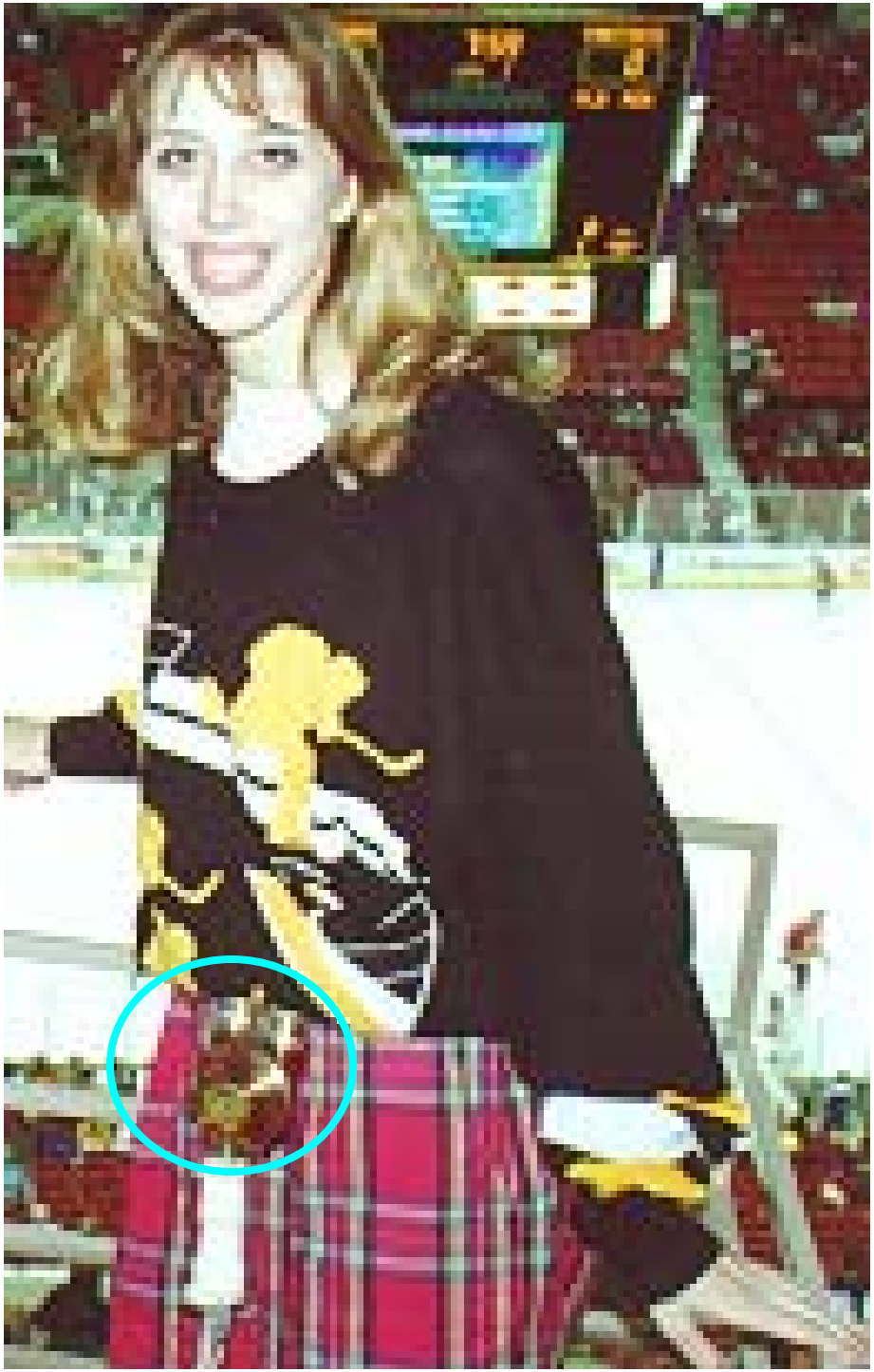
ADMIT ONE ADULT FOR V.I.P. RECEPTION



Jarvik Total Heart - 1986


PAUMIER


Turbo



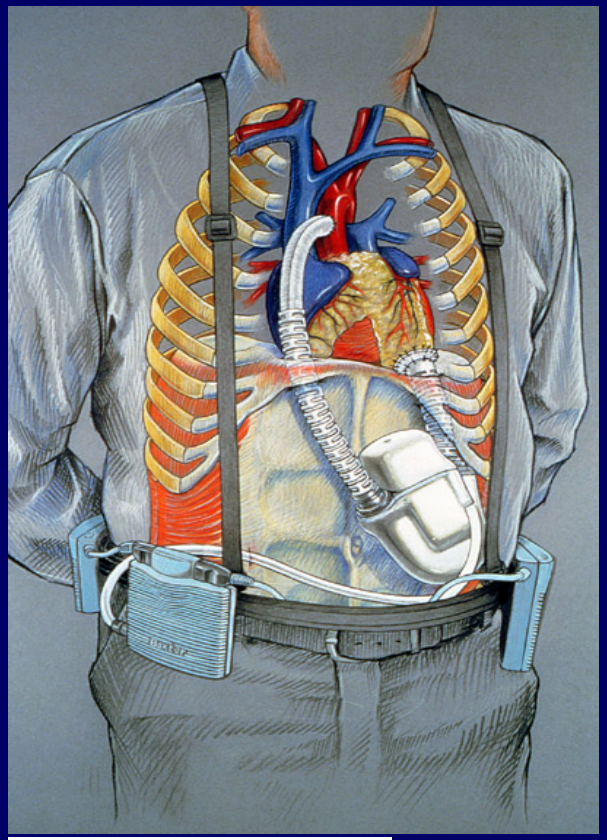
J Heart Lung Transplant. 2003 Nov;22(11):1201-8

Industry Partnerships

Blood Pump Development

Baxter Healthcare

Novacor® LVAS



WORLDHEART
TECHNOLOGY for LIFE

Fluorescent Image Tracking Velocimetry

R & D Magazine 100 Award

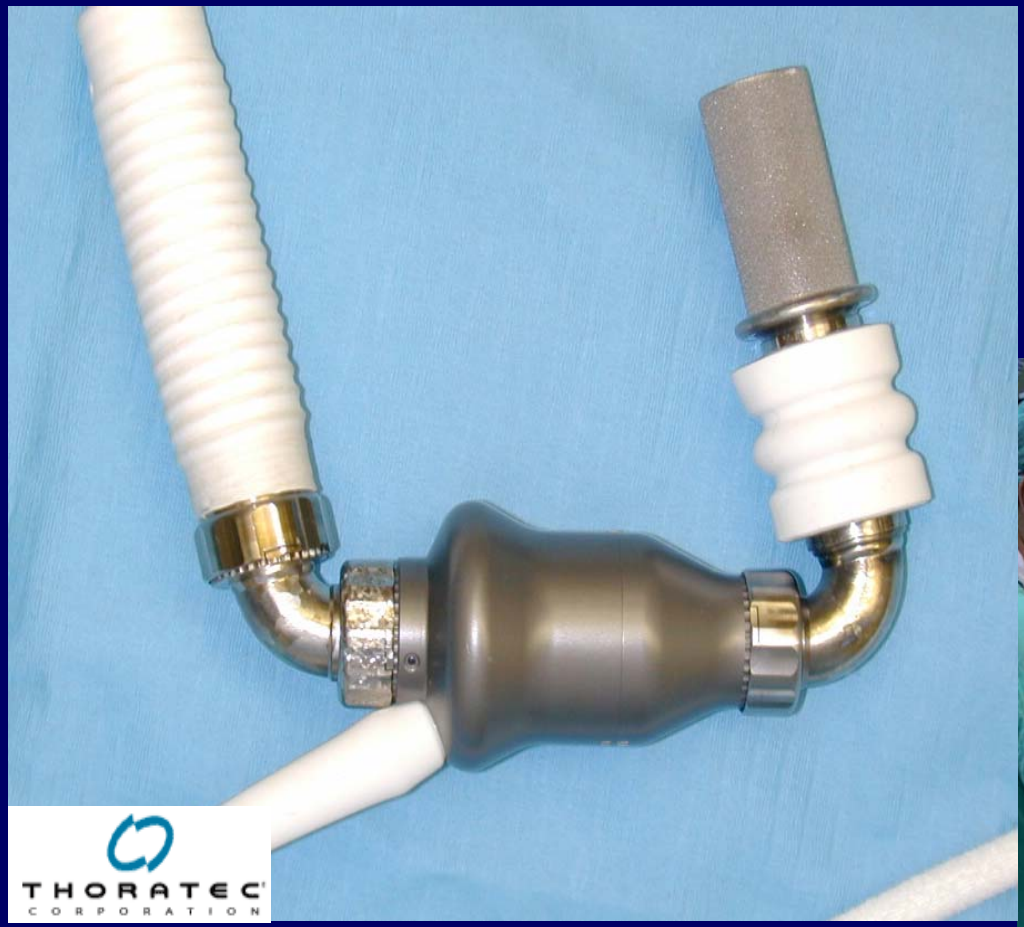
Jointly with Frank Shaffer, DOE and John Woodard, Novacor Division, Baxter Healthcare Corporation

"One of the 100 Most Technologically Significant New Products of the Year."
1992

R&D 100™

"The Oscars of Invention"- ***The Chicago Tribune***

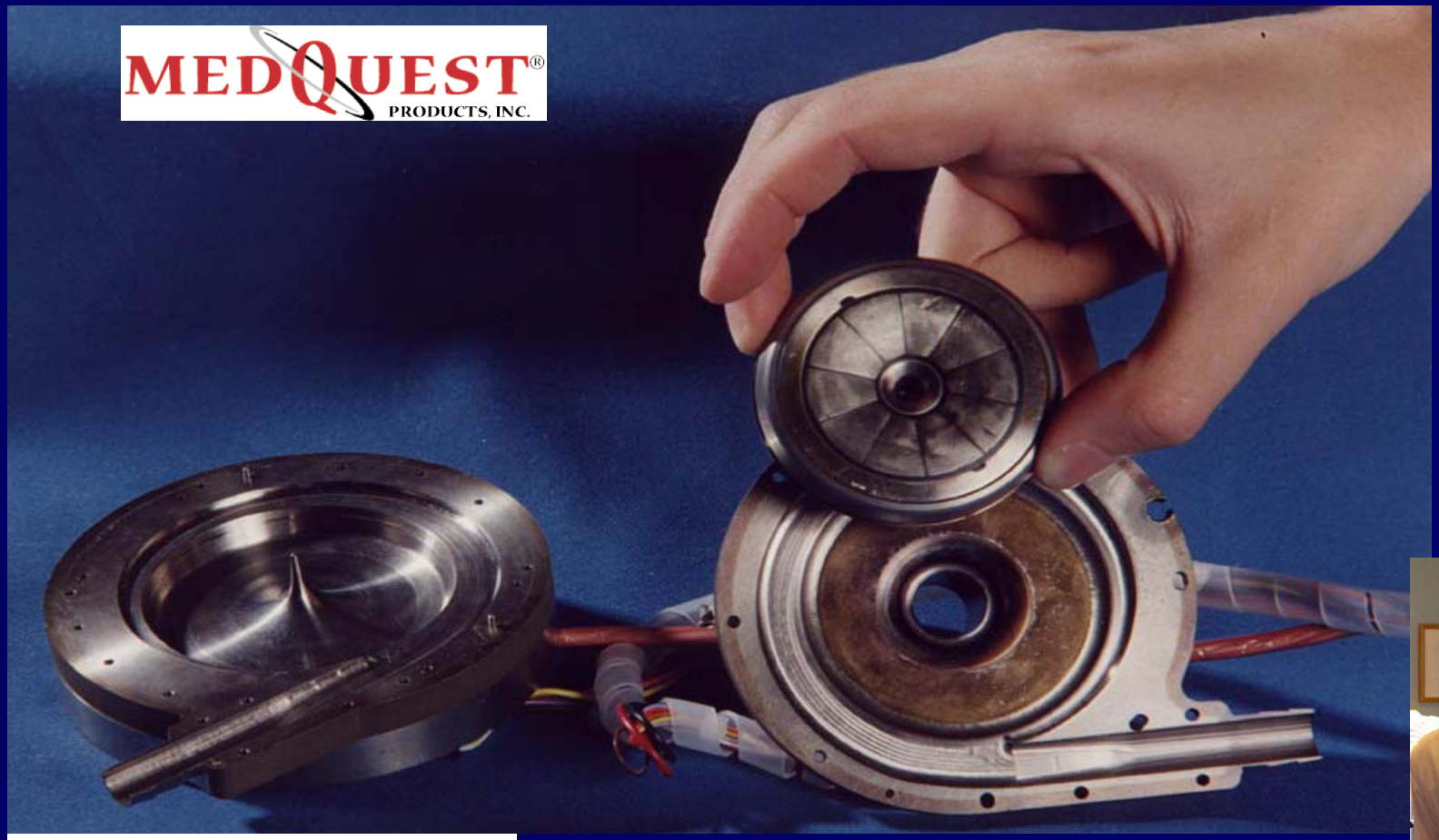
Thoratec Corporation



HM II Blood Pump & Cannulae
(NIH IVAS)

1st Clinical Implant—July 27, 2000
Sheba Medical Center
Tel Aviv, Israel

Heart Quest MagLev Pump



WORLDHEART
TECHNOLOGY for LIFE

Circulatory Support Devices for Infants/Toddlers

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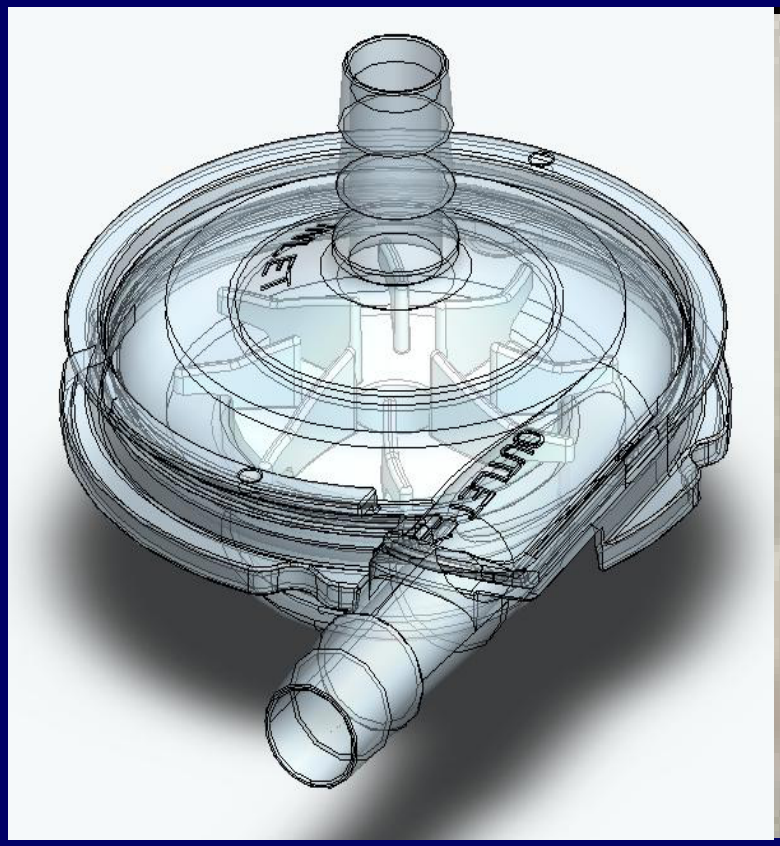
LAUNCHPOINT™
TECHNOLOGIES

Levitronix

Development of a New Pediatric VAD



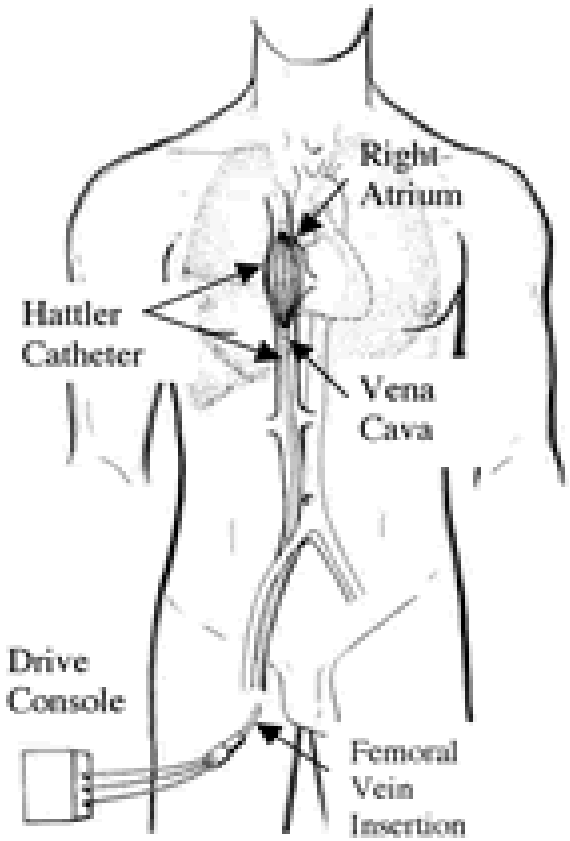
Arrow, Int'l

STAT MedEvac helicopter landing on the helipad at the University of Pittsburgh Medical Center. Insert shows IABP configuration in the back of an EC-135 helicopter.

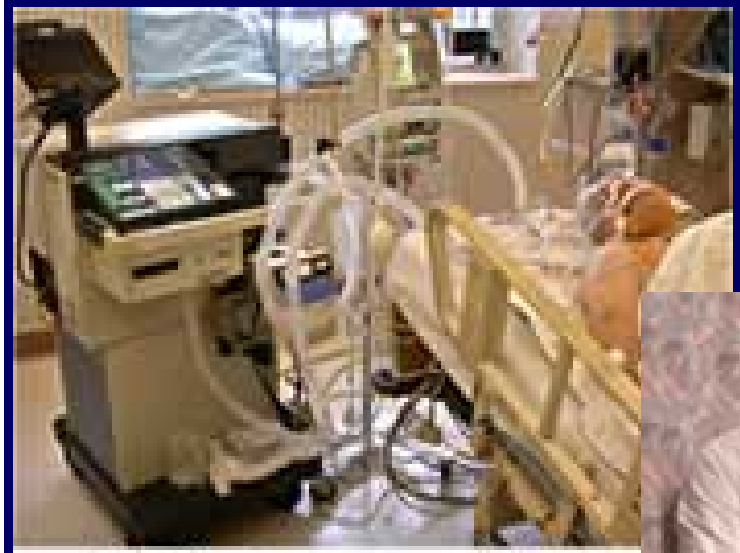
Industry Partnerships

Artificial Lung Development

ALungTechnologies



The Hattler Respiratory Catheter positioned in the human venous system.

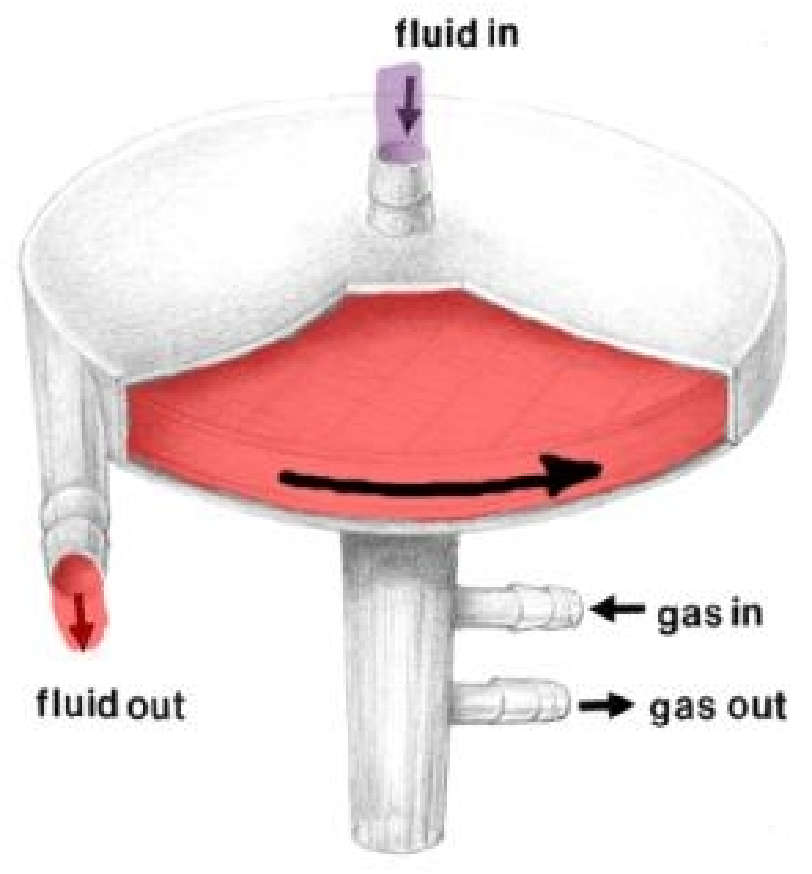


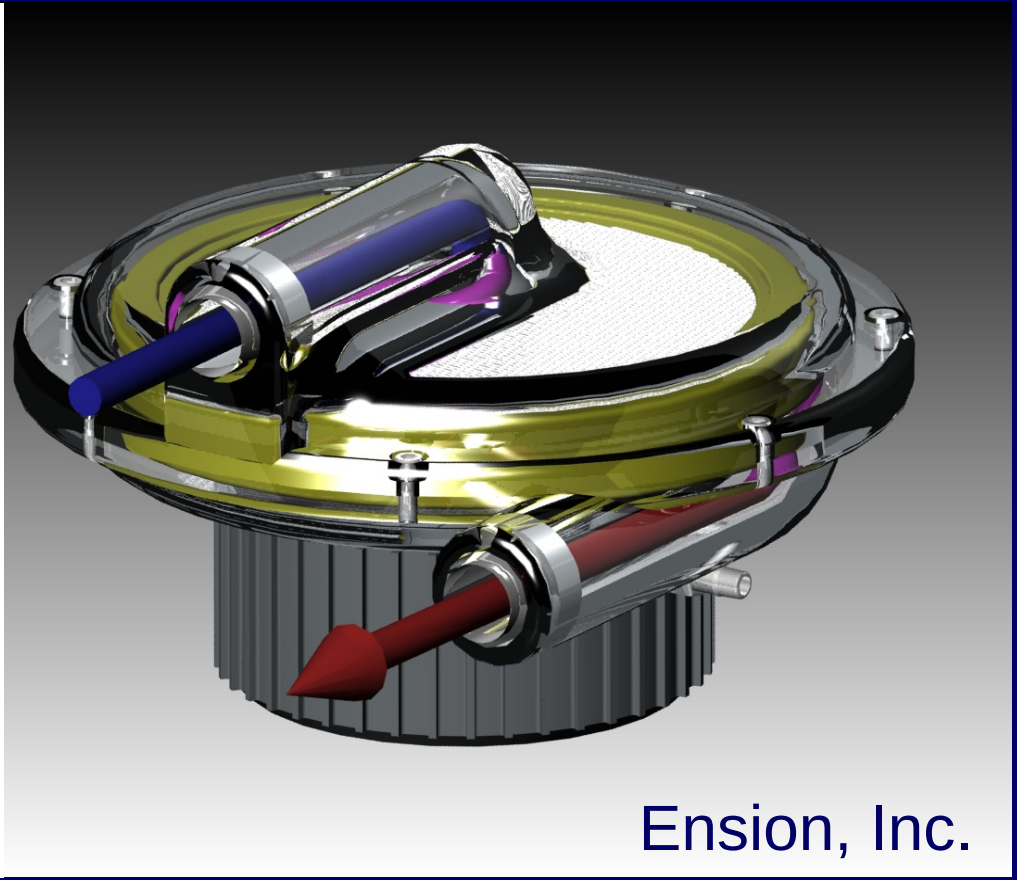
Patient on a ventilator

Patient on the Hattler Catheter (depiction)

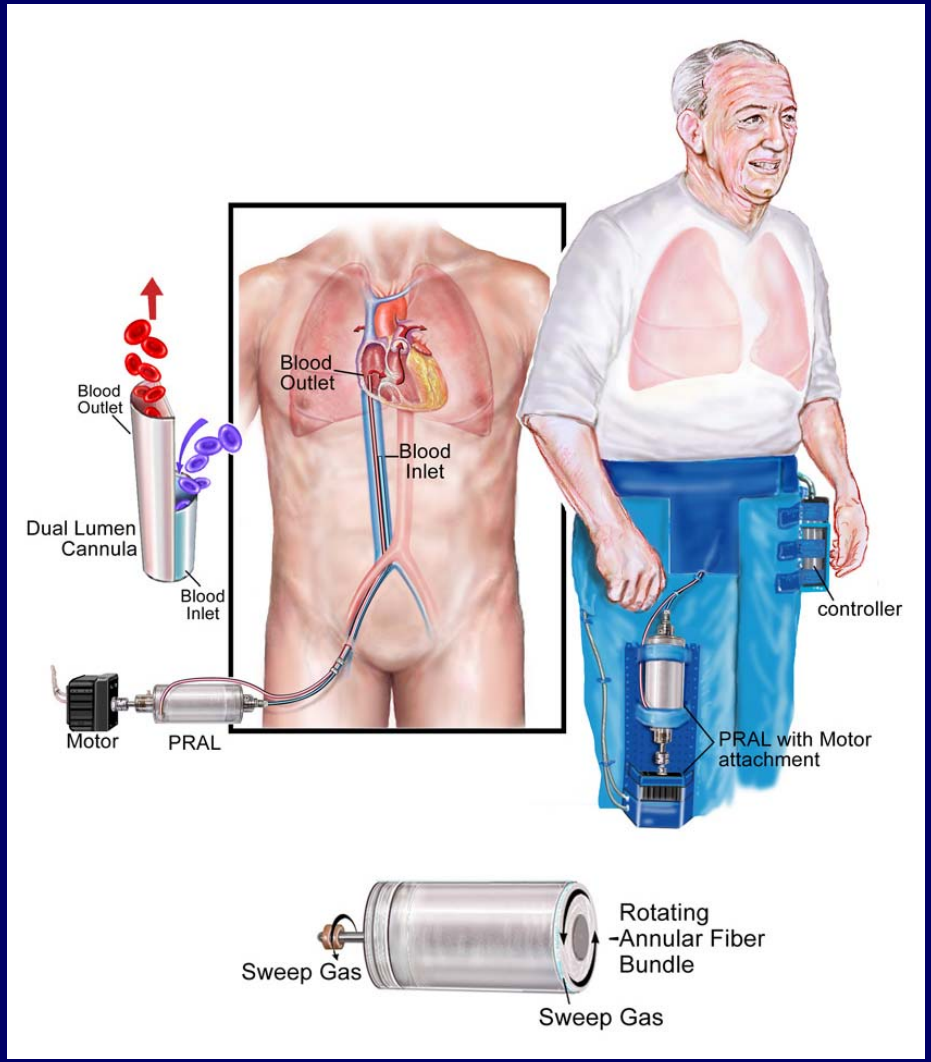
Ension Inc.

pediatric Cardiopulmonary Assist System (pCAS)





Paracorporeal Respiratory Assist Lung



ALungTechnologies

Patient Partnerships

Vital Engineering

Vital Engineering

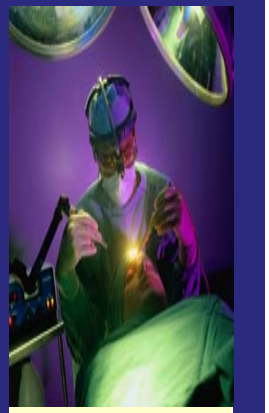
A program of the University of Pittsburgh Medical Center

The Vital Engineering Team includes dozens of Part-time Artificial Heart Bioengineers (Graduate Students) and Technicians (Undergraduates)

Great Ideas

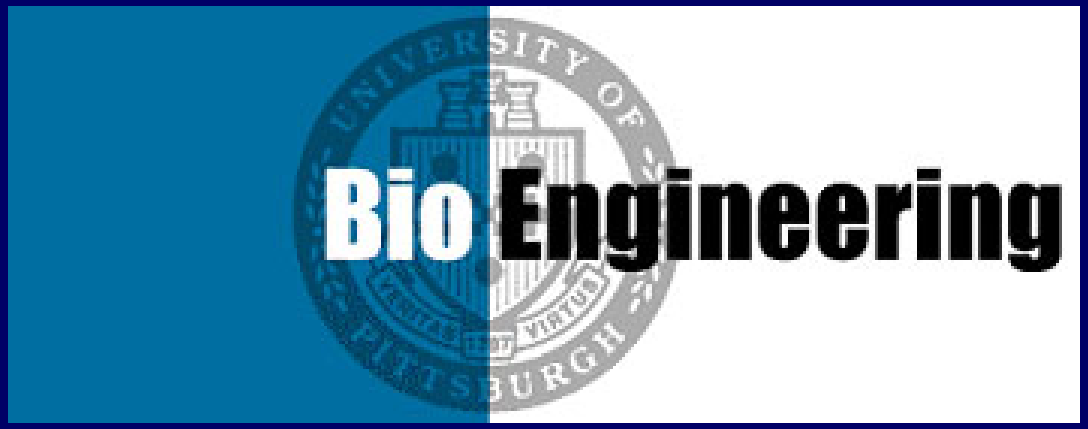
- ✓Intellectual Property Protection
- ✓Market knowledge
- ✓Clinical Development Plan
- ✓Regulatory Planning
- ✓Prototype Development
- ✓Manufacturability
- ✓Serviceability
- ✓Cost vs. Price
- ✓Design Optimization
- ✓Business Plan
- ✓License to a new or existing company

Cardiovascular BioE Translational Research



Great Products And Services

Department of Bioengineering / MIRM



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