

# StelSys Overview

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# StelSys

- A bioscience company focused on using NASA microgravity bioreactors to develop significant products and services:
  - ✓ That benefit human health, and
  - ✓ That are commercially valuable.

# StelSys

- Progress to date:
  - ✓ Established lab operations in May, 2000
  - ✓ Licensed patents from NASA in Sept, 2000
  - ✓ Currently making progress along several fronts.

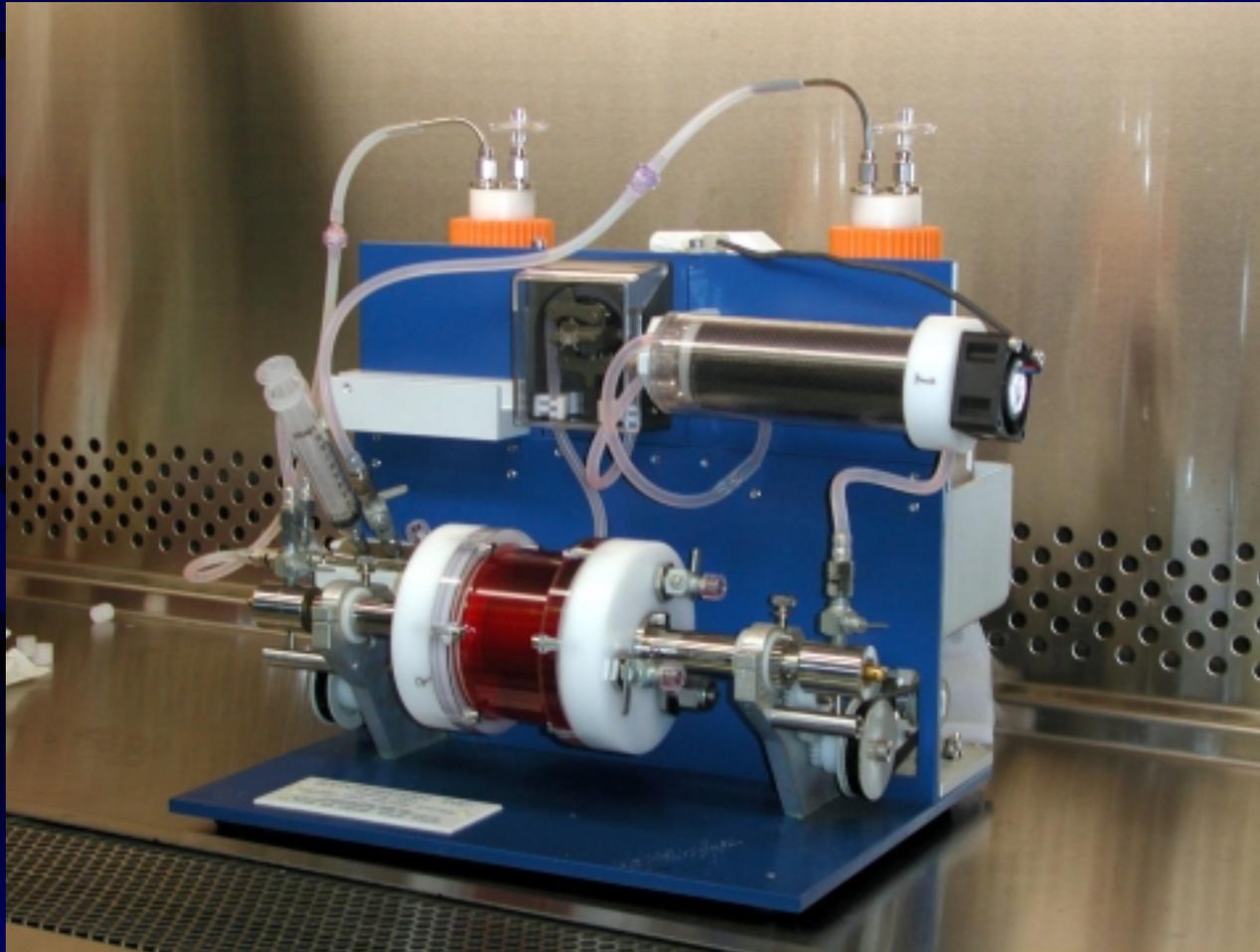
# Objectives

- Drug metabolite bioreactor
- Liver assist device
- Kidney cell bioreactor
- Infectious disease models

# Liver Assist Device

- Technical Objective
  - Adapt the hepatocyte bioreactor from the HARV to the perfusion RWV, determining the best conditions for continuous cultivation of hepatocytes.
  - Estimate capacity of system for detoxification of ammonia, etc.
- Commercial Application
  - Liver assist device

# Perfusion RWV for Liver Assist Device



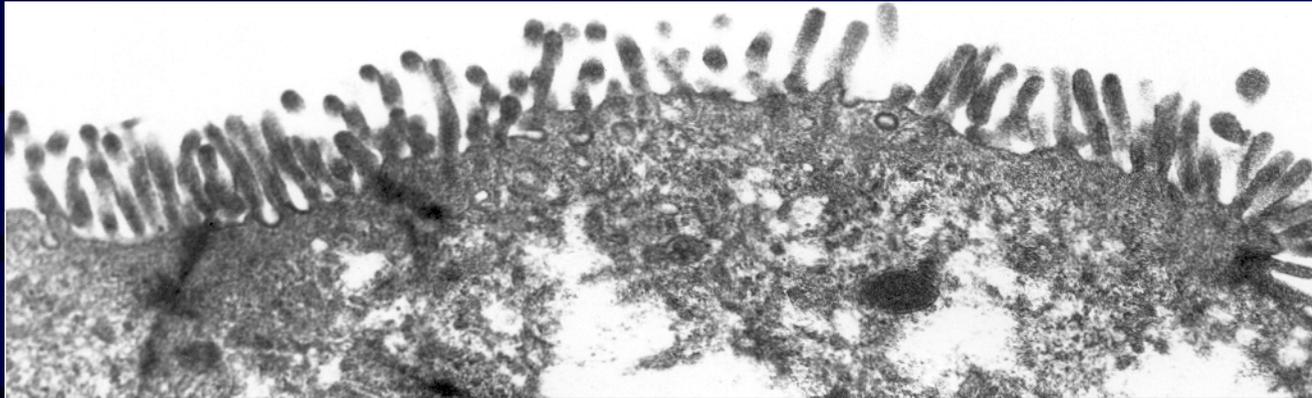
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# Infectious Disease Models

- **Technical Objective**
  - Develop models of infectious disease in order to develop new treatments and vaccines.
    - Hepatitis model system
    - *Cyclospora/Cryptosporidium* model system

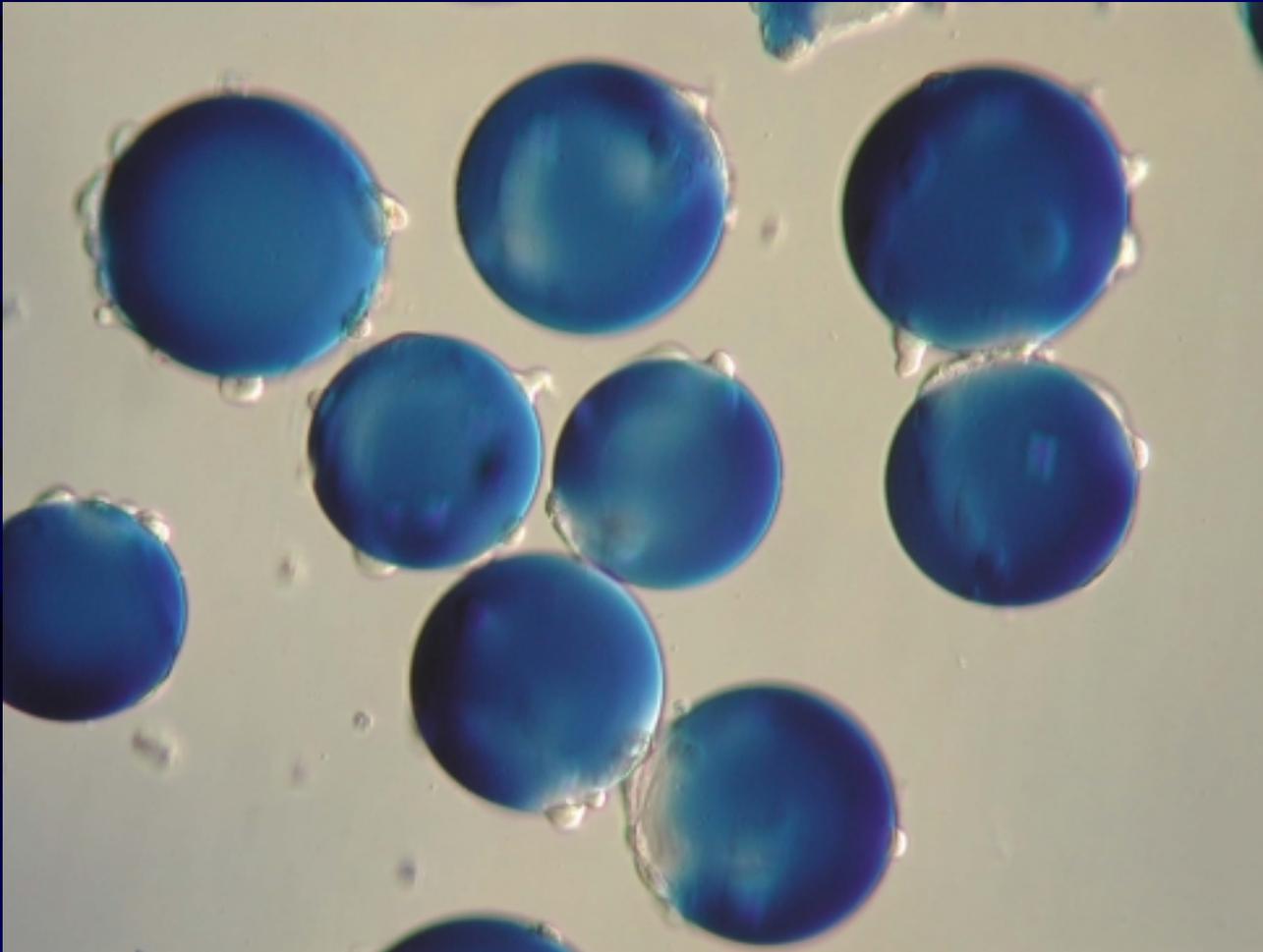
# Caco-2 Cells Differentiation in STLV



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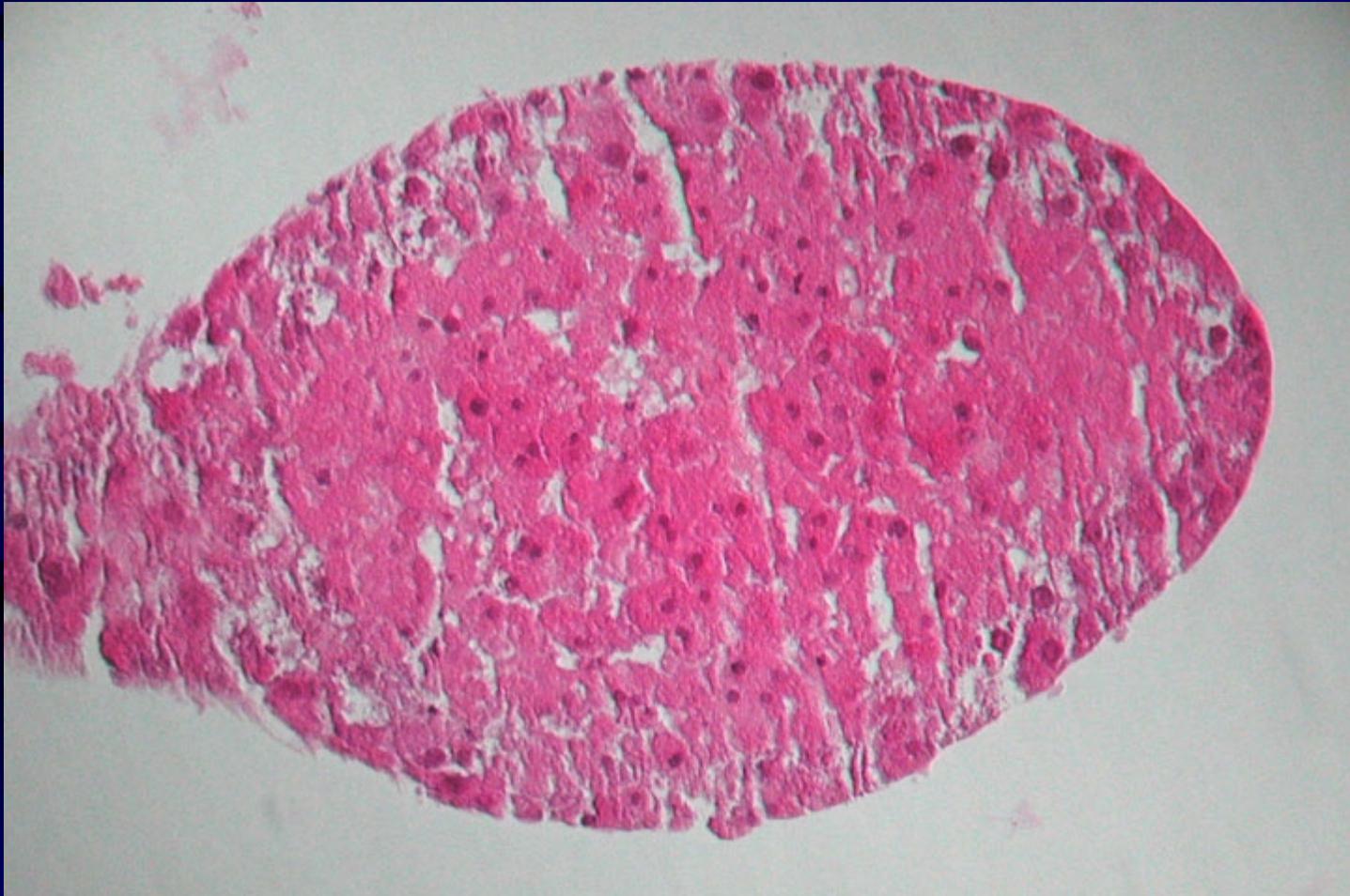
# Human Kidney Cells in STL<sub>V</sub> 4-Day Culture



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# H&E Staining of Spheroid from HARV



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# Summary of R&D Progress

- Liver and kidney cells successfully cultured and maintained for long duration in microgravity bioreactors.
- Initial stages complete – towards development of Liver Assist Device and Hepatocyte Bioreactor.
- Preliminary development steps have been accomplished for infectivity models.

# Flight Experiment

- Tentatively planned for UF-2 mission in May.
- Will send liver cells to ISS.
- Commercial research mission.