New Space Exploration Vision

"This cause of exploration and discovery is not an option we choose; it is a desire written in the human heart." – President Bush

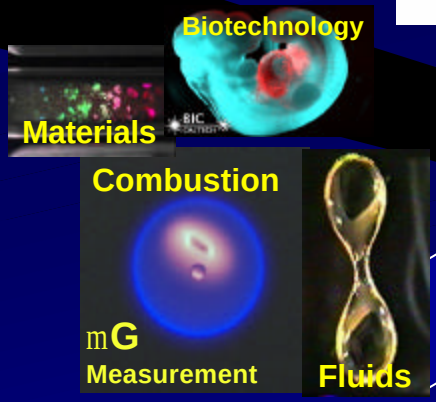
January 14, 2004

Biotechnology Drivers at NASA GRC

Goal 4 *Explore the fundamental principles of physics, chemistry and biology through research in the unique natural laboratory of space*

Goal 9 *Extend the duration & boundaries of human space flight to create new opportunities for exploration & discovery*

- ✓*Biological and Physical Research Rack (BPRR)*
- ✓*Improved Science Imaging*
- ✓*Advanced diagnostics*
- ✓*Improved cell culturing systems*



Enabling Technology for Fundamental Research

Increasing Technology Readiness Level

- ✓*Miniature, low power, reliable Vehicle & Human Space Systems*
- ✓*Biomedical diagnostics & environmental sensors*
- ✓*Radiation, bone loss countermeasures*
- ✓*Medical applications*

The John Glenn Biomedical Engineering Consortium

- ✓*Biomedical Issues*
  - •*Medical diagnostics*
  - •*Medical Treatment*
  - •*Countermeasures*

NASA BioScience & Engineering Institute

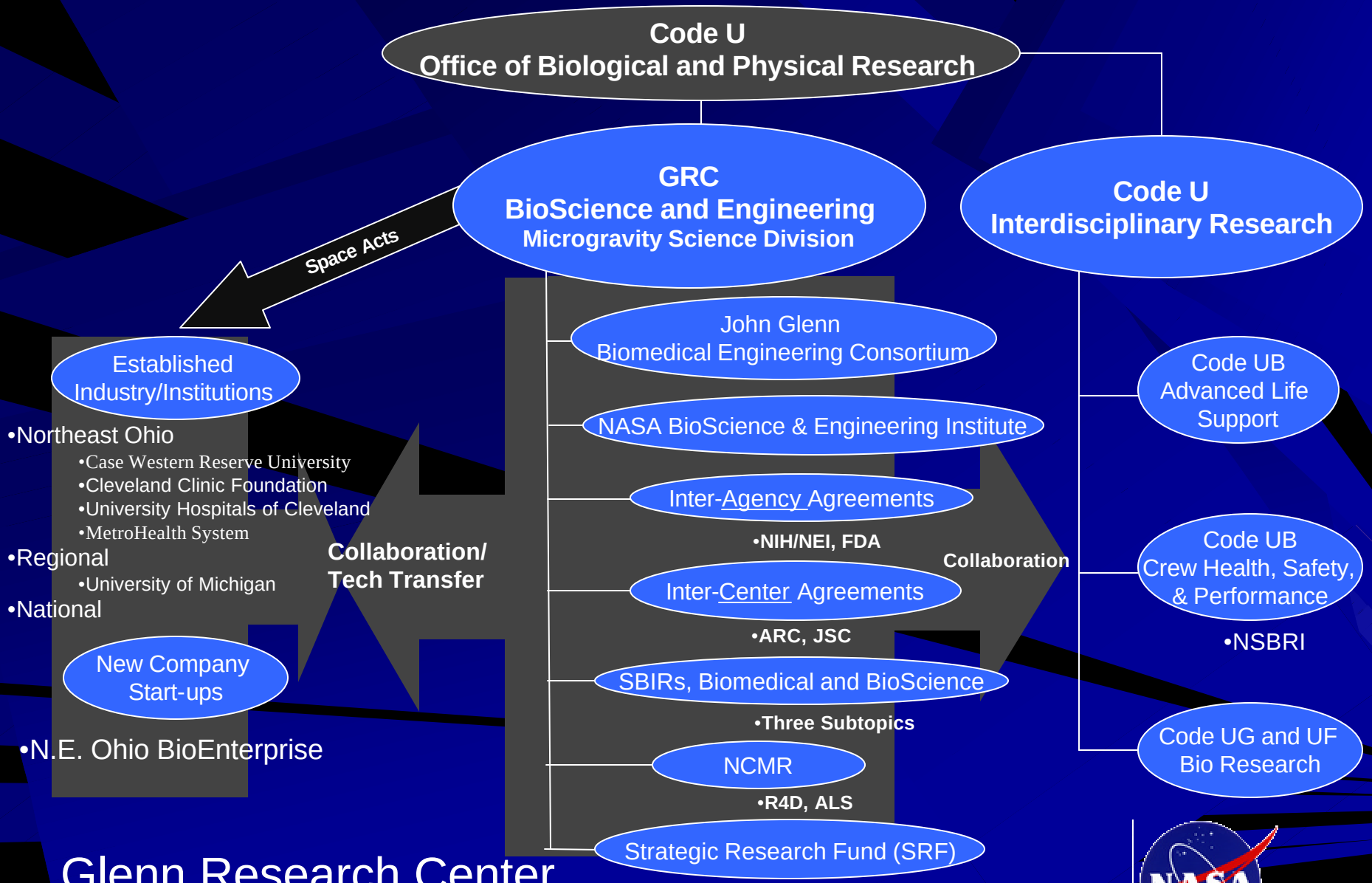
- ✓*BioMEMS*
- ✓*Bio materials*
- ✓*Transport phenomena in biology & devices*
- ✓*Lab-on-chip*
- ✓*Molecular Nanosystems*
- ✓*Tissue BioScience and Engineering*

- ✓*Fluid Modeling of Physiological, Vehicle & Cell Culturing Systems*
- ✓*Low gravity effects on fluid to cell environment*
- ✓*Fluids & combustion sensor technology for biomedical & advanced life support*
- ✓*1g g-jitter measurement of bioreactors*

Glenn Research Center

at Lewis Field

GRC BioScience and Engineering Program



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