

**Remarks by the Honorable Sean O'Keefe
NASA Administrator
Dedication of University of Missouri Life Sciences
Center
Columbia, Missouri
September 17, 2004**

Thank you Chancellor Deaton (Chancellor Brady Deaton) for that wonderful introduction, thank you Director Roberts (Dr. Michael Roberts) for your gracious hospitality and good afternoon ladies and gentlemen.

I'm honored to be here today, along with my good friend Senator Kit Bond. It is fitting that you plan to dedicate this wonderful Life Sciences center in Senator Bond's name to recognize his longstanding dedication to the University of Missouri and his leadership and advocacy for science and exploration.

Most fittingly for the good people of Missouri, our country's passion for exploration and discovery

stems in large measure from what happened very close to this location two centuries ago in the vast American wilderness.

Friends, 200 years ago not too far from Columbia, the Lewis and Clark Expedition set off of voyage from Camp Dubois on the east bank of the Mississippi River near St. Louis, thus beginning our young country's first epic voyage of exploration.

The stories that Meriwether Lewis and William Clark and their Corps of Discovery brought back from their two year journey opened the minds of our young Nation's citizens to an age of new possibilities.

In that same spirit, earlier this year, in January, President Bush came to NASA Headquarters to announce a vision for America's next great era of exploration, an era that will take a combination of astronaut pioneers and robotic explorers on the quest to explore.

I'm delighted that the University of Missouri's Life Sciences Center, more specifically the faculty members and young researchers who work here, will continue our NASA/MU partnership to help make our next great leaps in space possible.

In many ways, Missouri, the gateway to the west, is also becoming the life sciences gateway to the cosmos.

In the relatively short time that American astronauts have been living and working in space, we've learned that humans are remarkably adaptable to the rigors of space flight, but also that there are several human endurance challenges to be overcome.

Foremost among those challenges are the exposure that astronauts receive to space radiation, in addition to their experiencing loss of bone and muscle mass during long stays in microgravity conditions.

It still takes us a long time to get around our little neighborhood in this vast, expansive Universe. We are patiently learning the steps that are necessary to ensure our crews' health as our missions become more lengthy and complicated.

In planning for the great journey ahead, we have turned to the University of Missouri because your vision of being a national leader in Life Sciences research aligns perfectly with our requirements for keeping our crews healthy and well.

More broadly, in entering into the partnership that has led to the construction of this beautiful new facility, we knew we would be building on a very productive relationship with an institution having a gold medal reputation for producing world-class research at the frontiers of modern science.

Let me cite just a few examples of outstanding life sciences work being conducted by the University to help advance our human exploration objectives

that will be carried out in this and other university buildings.

We know that space radiation produced by the Sun and other galactic sources is more dangerous and hundreds of times more intense than radiation sources, such as medical X-rays or normal cosmic radiation we experience on Earth.

When intensely ionizing particles found in space strike human tissue, it can result in cell damage and may eventually lead to cancer. This issue will be a huge hurdle to overcome in our planning for future exploration missions. That's why we are grateful that Dr. Wynn Volkert and the bright people at the University's Center for Single Photon Emitting Cancer Imaging Agents are pioneering new, innovative methods of cancer detection and treatment.

We also know that during their six months stays onboard the International Space Station, our

Expedition crews typically experience about a 30 percent degradation in muscle mass and corresponding 10 percent loss in bone mass.

Before we feel confident in sending crews into deep space, we must arrest these conditions. For this and other reasons NASA and the National Institutes of Health have provided grants to Dr. Marc Hamilton in your Department of Biomedical Sciences to study how specific human genes react when a person is inactive, the best simulation of weightlessness on Earth.

Using cutting edge DNA microarray technologies, Dr. Hamilton is investigating whether a specific gene is active while the body is inactive. These studies will provide future scientists with data on ways to keep space explorers like our Expedition Nine International Space Station crew members Mike Fincke and Gennady Padalka in shape.

We currently use rigorous exercise regimes onboard the Space Station in an effort to maintain the power and stamina of our crew's muscles. But we are concerned that when our crews return to Earth's gravity well, some of them experience significant weakness their first hours and days back on Earth.

We are very appreciative, therefore, that Dr. Frank Booth, also of the Biomedical Sciences Department, has founded the new MU Health Activity Center, which is the focal point of an effort to bring a national, cross-disciplinary approach to investigating the effects of inactivity and exercise on the genes regulating metabolism, skeletal muscle function and fat storage. This research will also help us keep space explorers like Mike and Gennady fit.

Incidentally, if the skies cooperate tonight, you can get a good look at their home in space, as the International Space Station passes overhead at 7:36 p.m., looking like a bright star as it makes a stately

arc across the night sky from low in the northwest toward the northeast.

Now, with your new Life Sciences Center, the future holds even greater promise for a stream of cutting-edge innovative research that will help enable NASA to conduct a sustained exploration journey that will take future space explorers to heights unimagined and into frontiers unknown.

The list of projects you're working on is truly remarkable--everything from biosensors that can detect harmful chemicals or microbial growth within an enclosed environment, to nanocapsules that can deliver sustained-release drugs or reduce the size of electronic devices used to monitor astronaut's health, to methods for growing soybeans in extraterrestrial soil are the product of this University's commitment to leadership and excellence.

And as evidenced by the example of the research I just touched on, these efforts are critical to fulfilling

our exploration goals, and will also have many beneficial impacts for millions of people here on Earth.

In closing, I want to thank every one here for your support of this remarkable new Center. The University of Missouri is a national treasure and today you have a new jewel in the crown. I know this new resource is the result of a lot of hard work and dedication from many people who are here today. You have NASA's sincere appreciation for your efforts, and my own thanks for your warm hospitality.