ABSTRACT
(1 page only)

TITLE OF THE PAPER:

LIFE SCIENCES UTILIZATION OF SPACE STATION FREEDOM

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DESCRIPTION: (should clearly present the purpose of your paper and include detailed information on the methods and results of your research)

Long-duration micro-gravity platforms orbiting the earth have provided insight into physiologic] changes which occur in living systems as a result of the space environment. Unmanned labs yield data at only one time period - after recovery. Crewed platforms enable data collection in mbit, but space shuttle flights are limited to approximately 2 weeks. (;mund-based models mimic the effects of unloading, but spaceflight unique effects can only be ascertained in zero gravity. All these scenarios also provide much-needed information on basic physiological functions occurring on earth, such as disease progression and natural development, but none is sufficient to answer the ever-increasing list of questions.

in order to assess the long-term effects of zero gravity on the physiological systems of humans, animals, and plants, and to ascertain the fundamentals of earth-bound development, a well-equipped human-tended orbiting platform must be established. This platform, Space Station Freedom, will concentrate research in life sciences disciplines ranging from plant and ccl] biology to musculoskeletal and cardiovascular systems. It will attempt to answer questions generated by previous research efforts such as: Do the changes observed in the human musculoskeletal system stabilize long-term or cIocs the 10ss of bone and muscle mass continue? 1 low many observed effects are deleterious as opposed to mere adjustments 10 the ncw space environment? 1 low effective are countermeasures such as exercise and drug therapy?

Aboard Space Station Freedom, the centrifuge facility will enable research ranging from near-zcm 10 greater than 1 G. 1 arger sample sizes will increase confidence in generated results. Data collected at regular intervals can be obtained by utilizing on-board crew time. Regular shuttle visits will permit resupply and return of samples for evaluation on earth. in short, Space Station Freedom will provide an excellent opportunity for scientists to delve deeper into the un answered questions surrounding the effect of gravit y in the development of life on earth.