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Boston University
Boston, Mass.--Preliminary results from an experiment that began aboard the space shuttle Discovery earlier this year, show that weightlessness does not affect the skeletal structure of chicken embryos, a finding that has provided valuable data on the potential for animal and human reproduction in space. This first-of-its-kind experiment was part of a study to determine the effects of weightlessness on the development of bone, muscle and organ tissue in animal embryos.

Michael F. Holick, M.D., Ph.D., a scientific advisor for the experiment and director of the Vitamin D, Skin and Bone Research Laboratory at Boston University School of Medicine (BUSM) where bone analysis of the chicken embryos took place, will present the findings at the Joint Meeting of the Tenth International Conference on Calcium Regulating Hormones and the Eleventh Annual Meeting of the American Society for Bone and Mineral Research in Montreal, Canada on September 14, 1989. (Holick will be available for interviews on September 5, 6 or 7).

A total of 32 eggs at different stages of gestation were placed aboard the space shuttle prior to lift-off. An identical group of 32 eggs remained on earth as the control group. The control-group eggs were turned five times a day to simulate a hen's movement on the nest. After the flight, half the spaceflight eggs and the control-group eggs were allowed to mature and hatch, while the other half were examined.

Over the past few months, Holick and Susan Hunter, Ph.D., a research assistant professor of zoology from the University of Maine, have studied and compared the embryos to identify any statistically significant differences in...
cartilage, bone and digit structure.

Since gravity appears to have a profound effect on bone mineralization, it was important to determine whether the earth's gravity was essential for initiation of bone formation. "Although the information is still very preliminary, it appears as though weightlessness does not affect the initiation or the on-going process of bone mineralization in chicken embryos," says Holick.

According to Holick, the results from this experiment have provided researchers with the first real information on the effects of weightlessness. "Analyzing the chicken embryos at various stages of development has helped us establish a base of information for further research into the effects of zero gravity on humans, chickens and other organisms. This research is the first step in addressing the problem of bone-mass loss among astronauts."

Further studies on the chicken embryos will include analysis of the inner ear which may help resolve the problem of motion sickness among astronauts.

The study--sponsored by Kentucky Fried Chicken--was conceived by John Vellinger, a student at Purdue University.

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