

Chairman Serrano, Ranking Member Aderholt, and committee members:

Thank you for allowing me to testify on my funding priority for FY21 CJS appropriations. America has lead the world in space exploration and our nation, as the first to put humans on the moon, has set the standard for innovation. Now a new era is upon us. It's time to prepare for this next phase of space exploration and that is literally to go where no man or woman has ever gone before. Which is why I am interested in NASA science funding to explore the effects of zero gravity and deep space radiation on mammalian eukaryotic/ embryologic last development.

I'm a supporter of the 'Moon to Mars' initiative and I'm a firm believer that one day we will live in space. However, before our species can live on or travel to Mars or distance planets- important questions on procreation outside earth's gravitational effects must be answered. We must know if human pregnancy and embryo development can be achieved in these environments.

Basic questions like: can a pregnancy occur and develop on through parturition in the environment of space? Can fertilization occur, does migration of an embryo descend the Fallopian tubes, will uterine/embryo implantation take place? If not, why? How do the different biological and physiological systems develop? Are long bones long, kidneys, kidney shaped, does the vascular and nervous system develop the same or are other genes turned on or off or expressed differently to adapt to their corresponding zero gravity environment? Does the physiology of organ systems function and behave the same after developing in a zero-gravity environment?

In order to prepared for future interplanetary travel, these questions regarding embryologic development need to be answered. Studying this now on the ISS, while we have the benefit of time, will ensure we are prepared for the future of space travel.

It is important to note that this type of research can and will lead to discoveries that benefit people on earth as well. As scientists dive into zero gravity development, they may discover that genes express themselves differently. This variation of expression could be applicable to curing a disease. We won't know until the research is done.

NASA has the ability to do this type of research on the ISS. But they need the funding to do so. We have proposed a rodent because of their short gestational period ~ 21 days and NASA's familiarity with rodent models on the ISS. It's imperative that we as a nation invest in this type of cutting-edge research. Which is why I am asking you to include funding for non-human mammalian embryology/ eukaryotic experiments under the NASA science account in the Fiscal Year 2021 CJS appropriations bill.

This kind of cutting-edge research will, pardon the pun, jettison the US leadership light years ahead of any other countries research.

Thank you for your time.