

IAF/IAA SPACE LIFE SCIENCES SYMPOSIUM (A1)
Medical Care for Humans in Space (3)

Author: Dr. Rowena Christiansen
University of Melbourne, Australia, rowena.christiansen@unimelb.edu.au

HUMAN REPRODUCTION IN THE SPACE ENVIRONMENT - SOME CHALLENGES AND
CONUNDRUMS.**Abstract**

The human family is the cornerstone of our social structures and cultural transmission. However, the topic of human reproduction in space is probably the last great taboo, and the “elephant in the room” that no-one wants to talk about... but talk about we must if we are serious about becoming an inter-planetary species with settlements on other celestial bodies.

Limited research has been carried out to date with various invertebrate and vertebrate species, including mice and rats, but due to the lack of knowledge and the risks posed by space radiation, it is currently thought to be far too dangerous to experiment with human reproduction. Radiation is not the only physiological insult to the reproductive system, and there is a really fundamental question as to whether we will still be the same race of humans when we begin to produce offspring in the space environment, or will we evolve and adapt as a natural evolutionary process, leaving those populations maladapted to life on Earth? A key factor to consider is gravity... or the lack thereof.

Questions exist as to the role of gravity in key reproductive processes and in-utero development, and what its absence or diminution will mean. Suitable medical care and infrastructure will also be needed for both women and children’s health, and from a human rights perspective, the rights of the child also need to be considered in terms of exposure to dangerous and hostile extreme environments and the effects that this may potentially have on child development. Will children be able to grow and develop strong muscles and bones, and meet their developmental milestones, such as learning to walk, when they have no, or reduced, gravity to work against?

Some commentators suggest “conception in space” might form part of the attraction of space tourism. Whether this is private and personal matter, or one requiring a degree of medical management, remains to be debated.

Conclusions:

(1) We have only begun to scratch the surface of the complex physiological and ethical issues associated with human reproduction in microgravity and on other celestial bodies.

(2) The many unknowns will need to be addressed through animal experiments before we start experimenting with humans.

(3) From the ethical and human rights perspectives, before human reproduction becomes a reality, the subject will need to move from being “the elephant in the room” to being robustly discussed, in keeping with the remainder of the space program.