

Space station and space flight gravity influence immune system development

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New research findings recently published in *The FASEB Journal*, show that immune system development is affected by gravity changes, as reported by researchers from the University of Lorraine and University of Luxembourg. Astronauts are exposed to stresses, during launch and landing, which disrupts their body's natural defenses against infection. Changes to the immune system need to be investigated before astronauts undergo longer space missions.

Researchers looked at how [antibody production](#) is affected when animal development occurs onboard a space station and which part of space travel has the greatest impact on antibodies, which are the proteins that the immune system uses to protect us from diseases. To do this, they sent

Iberian ribbed newt, *Pleurodeles waltl*, embryos to the [International Space Station](#) before the newt embryos started to develop IgM antibody, which is also found in humans and is the largest antibody that circulates in blood.

Upon landing, they were compared with embryos grown on Earth. Antibody mRNAs in space and earth newts were different. The IgM antibody was doubled at landing. Findings show that gravity changes during development affect antibodies and the regeneration of [white blood cells](#), which are important in defending the body against infectious diseases. Spaceflight did not affect newt development nor did it cause inflammation.

Scientists believe that these changes could also occur in humans, and require further experimentation to see how gravity can influence the immune system and white blood cell function, which play a role in many human diseases including cancer and diabetes.

More information: Huin-Schohn C, et al. Gravity changes during animal development affect IgM heavy-chain transcription and probably lymphopoiesis. *The FASEB Journal* article fj.12-217547. E-publication, September 19, 2012. www.fasebj.org/content/early/2012/09/19/fj.12-217547.abstract

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