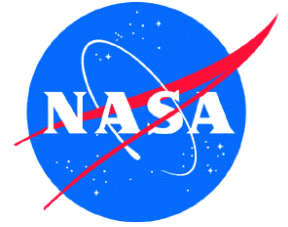


NASA INFORMATION

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Immune System

When most of us come down with a cold or flu-like symptoms, we feel terrible so we may take a few days off from work. But if an astronaut becomes sick just before a mission or even while in space, the consequences can be very serious not to mention costly and disruptive.

An astronaut with a cold or flu could not perform a spacewalk or basic duties while in orbit. Sometimes living and working in space may also make it easier for astronauts to become sick or develop diseases.

That's why it's important to learn how the body's defense systems change in space. It helps us to understand many illnesses and their effects on the human immune system.

Studies conducted in astronauts before, during and immediately after spaceflight have demonstrated that spaceflight alters some aspects of the immune system. The immune system is a complex network of organs, vessels, and highly specialized cells that protects the body from infection.

Scientists at NASA Johnson Space Center are interested in understanding precisely how the immune system is regulated and whether shifts in that regulation during spaceflight might have long-term health effects, such as altered susceptibility to allergies, autoimmune disease, malignancy, or infections during flight.

A recent NASA-funded study shows that crewmembers returning from longer missions in space may briefly be more susceptible to infections than they had been prior to launch because their neutrophils, the most prominent white cell type, become less efficient in destroying infectious agents.

Countermeasures include environmental monitoring systems, immune system activators, viral suppression agents, antiseptic treatments, wound healing promoters, antibiotic susceptibility testing, preflight screening criteria, in-flight microbial identification capability and hematological monitoring.