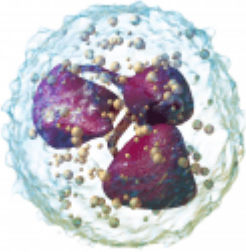


Your gut microbiome and white blood cells



In a recent study, researchers have investigated the role of intestinal bacteria composition in enhancing the recovery of the neutrophil population in the blood of mice following chemotherapy and/or stem cell transplant.

Neutropenia, the most prevalent form of granulocyte, is defined as decreased blood neutrophil levels; this condition is frequently observed in leukaemia patients or after chemotherapy. It is well known that neutropenia stimulates the process of granulocyte granulopoiesis. Uncertainty exists about the precise processes by which neutropenia promotes granulopoiesis. Researchers have shown that granulopoiesis in mouse models is significantly influenced by the gut microbiota.

Reactive granulopoiesis was previously reported to follow neutropenia brought on by hematopoietic stem cell transplantation (SCT) or cancer treatment. The team was trying to figure out how neutropenia in these two situations caused reactive granulopoiesis.

To measure the amounts of cytokines—cell signalling molecules thought to be connected to granulopoiesis—the researchers extended neutropenia in mouse models. The G-CSF and IL-17A cytokines were shown to be considerably increased. They demonstrated the importance of IL-17A for neutrophil recovery. They discovered that persistent neutropenia changes the gut

microbiota and that the IL-17A released by T cells did in fact upregulate reactive granulopoiesis.

This study showed that the alteration of the intestinal microbiota brought on by neutropenia drives reactive granulopoiesis in the bone marrow through the release of IL-17A by T cells, aiding in neutrophil recovery.

Journal article: Chen, X, et al., 2022. [Reactive granulopoiesis depends on T-cell production of IL-17A and neutropenia-associated alteration of gut microbiota.](#) *Proceedings of the National Academy of Sciences.*

Summary by Stefan Botha