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Study in Singapore debunks prevalence of microbiomes in blood of healthy humans

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An important move toward more informed decision-making in medical therapeutics



Scientists from A*STAR's Genome Institute of Singapore (GIS) have ascertained that there is no stable microbial community residing in the bloodstream of healthy humans. This is an important discovery as blood donations are a crucial part of medical practice.

Understanding the types of microbes that are found in blood could allow for the development of better microbial tests in blood donations, which would minimise the risk of transfusion-related infections.

Traditionally, the bloodstream of healthy individuals is understood not to contain any microbes, but recent studies have suggested the presence of a blood 'microbiome', which refers to a community of fungi, bacteria, and viruses in the blood.

To investigate the accuracy of these claims, scientists at A*STAR's GIS analysed the population-scale sequencing data from "SG10K_Health", which is the headline project of the Singapore National Precision Medicine programme (NPM Phase 1). After accounting for contamination that is rife in microbiome investigations, the team found that microbes were only rarely and sporadically detected in blood, instead of existing as communities.

The scientists also found evidence that certain bacteria in the blood of healthy individuals may have undergone recent DNA replication, suggesting that these bacteria are actively reproducing and potentially transiting through the bloodstream between body sites. Their findings suggest that live microbes do occasionally enter the bloodstream from other body sites without causing disease, but there is no core set of species colonising the blood of healthy individuals.