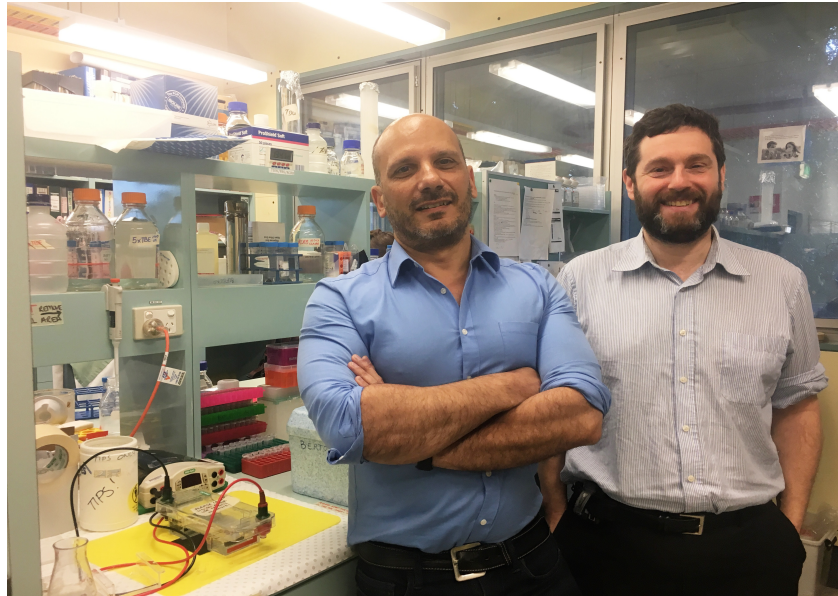


# MEDIA RELEASE

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## Scientists discover a new cell in the liver which could provide fresh clues to treating deadly liver disease.



Centenary Institute scientists have discovered a never-before identified cell which plays a vital role in preventing harmful microbes from spreading throughout the body by accessing the liver. The study, which details the new cells' role in the liver, has been published in the prestigious journal, *Immunity* (considered in the discipline of fundamental immunological research to be the top journal), and is the result of the outstanding work of Centenary's scientists, Associate Professor Patrick Bertolino (Head of Centenary's Liver Immunology Program) and Associate Professor David Bowen. The ground-breaking study has involved various collaborations internally, and with several other institutes, including the Singapore Immunology Network, University of New South Wales, Sydney University and Royal Prince Alfred Hospital.

Microbes can enter our system through the nose as we breathe them in, through the food we eat and also via our blood stream, from mosquitos for example. The liver, a highly vascularised detoxification organ, is critical to clear blood borne pathogens. Those associated with food, such as listeria, can however also enter the body by breaching the gut barrier and by directly accessing the liver outer membrane from the abdominal cavity. The way in which the liver prevents dissemination of these pathogens has been unclear until now.

It was in 1876 that scientist Karl Wilhelm von Kupffer discovered a key liver cell type which serves as a gatekeeper and prevents deadly infections by clearing blood borne harmful microbes. More than 140 years later after the discovery of Dr von Kupffer, Centenary's scientists have discovered a new type of sentinel cell in the liver's outer membrane which plays a critical role in immunity against pathogens accessing the liver from its outer membrane rather than from the blood.

Associate Professor Bertolino says, “These cells act like sentinels; they display arm-like features able to sense dangerous pathogens or microbes in their environment. When harmful microbes are detected, the same cell recruits an army of white blood cells that destroy the invaders before they cross the liver outer membrane and disseminate in the body.” The newly discovered cell’s role in protecting the liver is significant because from the liver, disease can spread rapidly. “With each heartbeat, a fifth of our blood goes through the liver, so gut bugs can be carried into the body via the liver. This is why the liver’s ability to fight disease is vitally important” says Associate Professor Bowen.

This significant milestone will deepen scientific knowledge of how the liver effectively fights disease and the new discovery is likely to inform future investigations into the battle against liver disease and liver cancers. Chronic liver disease affects more than six million Australians and the prevalence is expected to rise to more than eight million by 2030. “Now that this cell has been discovered, further tests need to be carried out to fully understand the role and how it can be targeted to treat conditions such as liver disease, liver cancer. It is conceivable that this discovery will lead to the development of better treatments for patients”, says Associate Professor Bertolino.

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