

Images shed new light on inflammation (w/ Video)

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Researchers at the University of Calgary Faculty of Medicine are using an innovative new imaging technique to study how white blood cells (called neutrophils) respond to inflammation, and have revealed new targets to inhibit the response.

When the body is invaded by infection, the immune system counters by generating inflammation with deployment of white blood cells to the site of danger to kill invading bacteria. However, inappropriate inflammation occurs in the absence of infection when tissues are damaged, and this inappropriate response contributes to diseases such as heart attacks and stroke. Researchers used both experimental animal models and human white blood cells to discover that damaged tissue can release signals that attract white blood cells, and blocking these signal can prevent inappropriate inflammation.

The findings are published in the October 15th edition of Science.

"We have known how white blood cells find their way to sites of infection for many years, but understanding how, or even why white blood cells go to sites of sterile non-infectious <u>tissue damage</u> has been a real dilemma," says Dr. Paul Kubes, PhD, senior author of the study as well as Director of the Snyder Institute of Infection, Immunity and Inflammation. "Recognizing that damaged cells release "bacteria-like" signals that attract white blood cells and cause inflammation might allow for the development of a whole new class of therapeutics to combat <u>inflammatory diseases</u>."



Another remarkable aspect of the research is that scientists were able to take unprecedented real-time videos of the <u>white blood cells</u> activity at sites of inflammation. The University of Calgary is one of very few centers in the world using this imaging technology, called spinning disk confocal intravial <u>microscopy</u>, to study the <u>inflammatory response</u>.

"These powerful imaging systems allow us to tackle complicated problems by directly observing the activity of the immune system in the body. Our laboratory is perhaps the only in Canada, and amongst a select few in the world that have this technology, so it is truly a privilege to contribute to this research," says Braedon McDonald, the lead author of the study and PhD candidate.

Provided by University of Calgary

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