

Immune cells in organ cavities play essential role in fast tissue repair

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While scientists have known for many years that there are cells living in the cavities surrounding various organs such as the heart, lung and liver, their function has remained unknown. A recent Cumming School of Medicine study examined these cells, and discovered they play an integral role in fast tissue repair. The study was published in the journal *Cell* this month.

Among a few types of immune [cells](#) found in body cavities, the study looked specifically at macrophages - [immune cells](#) that play a key role in clearing the body of harmful substances and microbes, such as toxins and bacteria, as well as clearing away dead tissue. Looking at cells in the [abdominal cavity](#) surrounding the liver, the study demonstrated the macrophages patrol within the cavity, and upon organ damage, adhere themselves to the damaged area for quick repair.

"The traditional thought of how organs are repaired after injury is that monocytes (a type of immune cell found in the blood) are recruited to the site of injury, move out of blood vessels, and mature into macrophages in two to three days," says Jing Wang, PhD, lead author of the study and member of the Snyder Institute for Chronic Diseases. "In our study, the mature macrophages are already in the cavity and can infiltrate the injury site in visceral organs directly, thereby initiating immediate and rapid repair."

Using animal models, researchers used intravital imaging technology to view the cells in real time, and observed their behavior in response to

both thermal injury and toxin induced injury. The cells behaved in the same way for both types of injury. Further to the observation, when the macrophage supply was depleted in the abdominal cavity, tissue repair did not take place as quickly. When the cells were reinfused back into the animal models, they resumed their role.

Wang says while the study only looked at the cells in the abdominal cavity and how they responded to liver injury, it's reasonable to hypothesize that cells in other body cavities, such as the [pleural cavity](#) surrounding the lungs, and the pericardium cavity surrounding the heart, would perform similar functions. And while the study was conducted in animal models, Wang says this research could have implications for humans as well.

"Humans have the same [body cavities](#) as mice do so we can assume we have the same cells carrying out the same role in our bodies."

Wang goes on to say this discovery could have specific implications for clinical procedures and surgeries that typically 'wash out' the involved cavity to clear out any foreign pathogens. The study suggests doing so could actually be hindering the healing process, by depleting the cavity of its [macrophages](#).

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Provided by University of Calgary

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