Medical Xpress

Abdominal fat cells could aid sepsis fight

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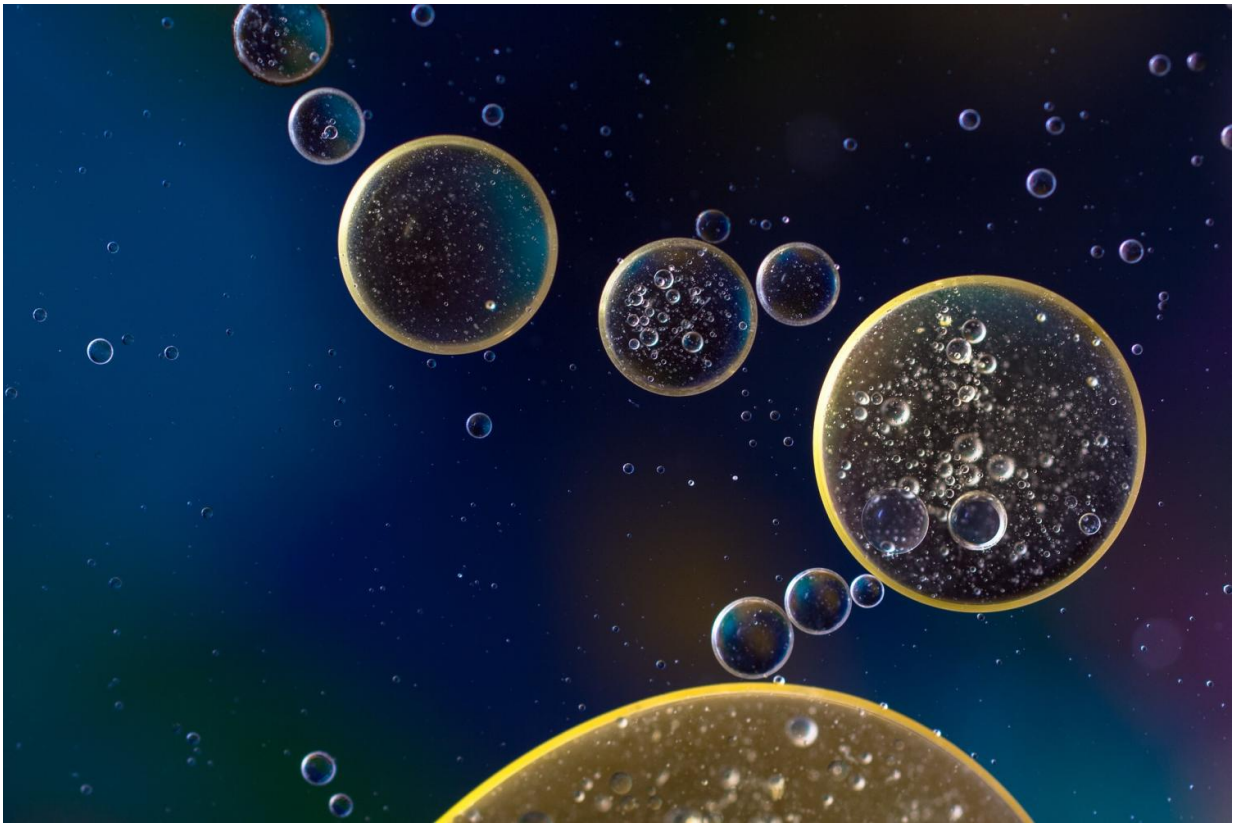

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Key cells found in abdominal fat tissue could aid the fight against life-threatening infections including sepsis, research suggests.

Experts say the cells—located in the curtain of tissue that covers the intestines—play a vital role in containing the spread of peritonitis, which

is triggered by abdominal infection after a perforation in the intestines.

The study could pave the way for new treatments to combat sepsis, which kills more than 50,000 people in the UK each year and is the leading preventable cause of death worldwide.

The findings, by a team at the University of Edinburgh, are significant because peritonitis is the second leading cause of sepsis.

RNA sequencing

Scientists used new technology called single cell RNA sequencing—which analyses cells in minute detail—and imaging techniques to study how peritonitis affects the fatty curtain, called the omentum.

They discovered a sub-type of cells on the surface of the omentum that trigger white blood cells—called neutrophils—to capture any contaminants present in the abdomen.

Future treatments

By defining the key elements responsible in the capture of peritoneal contaminants during peritonitis, experts hope the study could inform future treatments.

They says the findings might also help tackle other conditions where the omentum is important, like endometriosis, surgical adhesions and ovarian cancer metastasis.

Sepsis occurs when the immune system reacts to infection, causing symptoms such as cold hands and feet, mottled skin and a quickened

heart rate. It can quickly lead to multiple organ failure and death.

The study, published in medical journal *Immunity*, was funded by the Medical Research Council, British Heart Foundation and the Wellcome Trust.

"We hope that this discovery of how the omentum organises the capture of peritoneal contaminants will help accelerate the development of vital new treatments for patients with peritonitis," said Dr. Cécile Bénézech, University of Edinburgh's Centre for Cardiovascular Science.

"We anticipate that our study will facilitate work to design targeted treatments that help reduce the number of people who develop sepsis and often suffer permanent life-changing after effects," said Dr. Lucy Jackson-Jones, previously at the University of Edinburgh and now at Lancaster University.

More information: Lucy Helen Jackson-Jones et al. Stromal Cells Covering Omental Fat-Associated Lymphoid Clusters Trigger Formation of Neutrophil Aggregates to Capture Peritoneal Contaminants, *Immunity* (2020). DOI: 10.1016/j.immuni.2020.03.011

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