'Tiny fat bubbles' can boost immunity, calm disease

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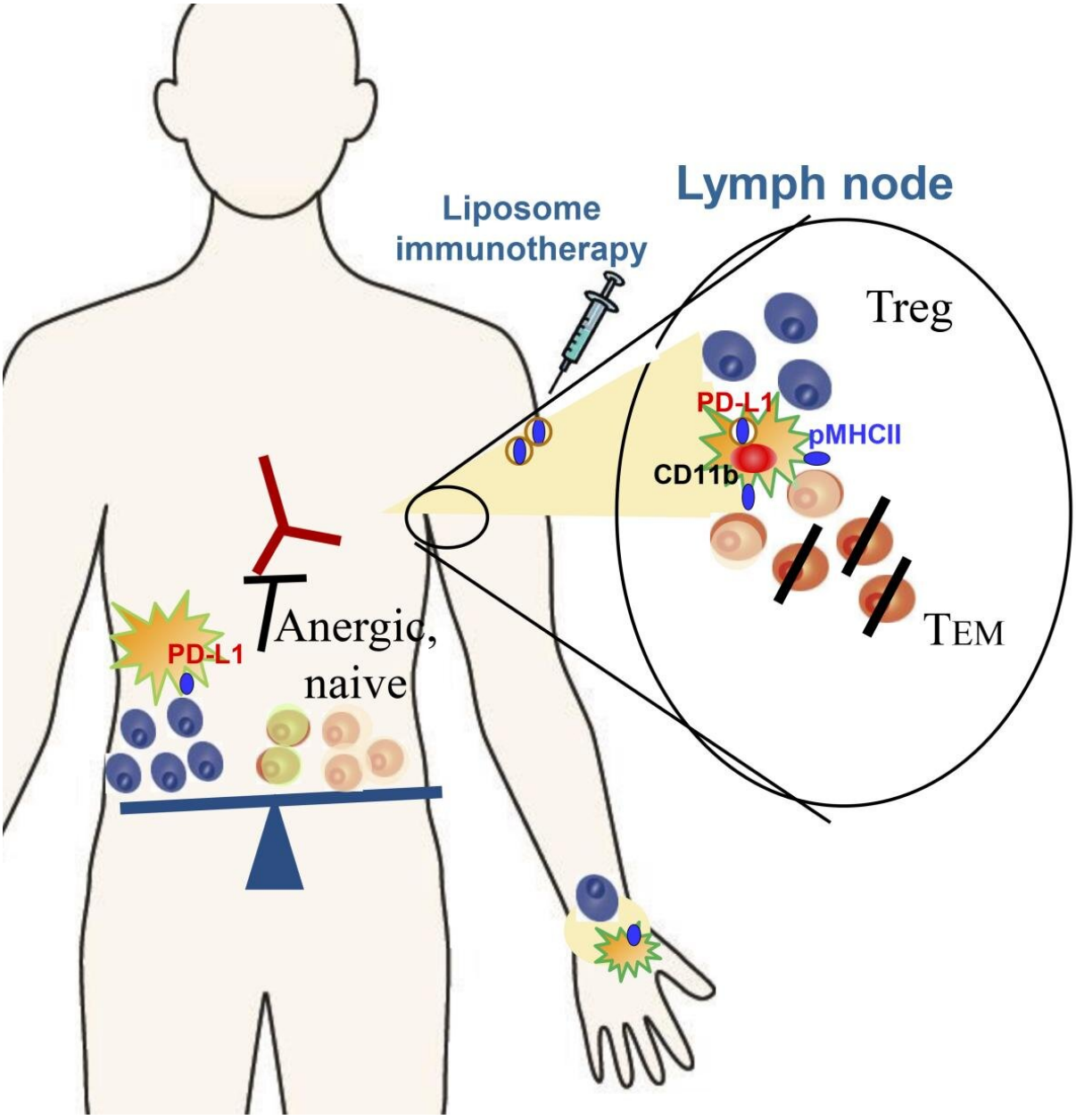

Graphical abstract, *JCI Insight*

People living with inflammatory autoimmune disease could benefit from an "immune system reboot," and researchers have isolated specific cells to target.

The University of Queensland's Professor Ranjeny Thomas said the research findings give hope for similar new immunotherapies for people with diseases like rheumatoid arthritis and vasculitis.

"People with these diseases currently require daily medications to modify or suppress their immune system," she said.

"Rheumatoid arthritis and vasculitis have a huge impact on those living with them because there is no cure, and medication generally cannot be stopped.

"We think a better strategy would be to restore and re-regulate the specific part of the immune response that has gone wrong," Professor Thomas said.

She said such "precision medicines" were a big focus for researchers seeking new ways to treat and prevent autoimmune diseases.

Her research team has reported an "antigen-specific immunotherapy," and demonstrate that it could re-regulate the rogue immune T-cells that are markers of inflammatory arthritis or vasculitis in mice.

"We found that dendritic cells—conductors of the immune system orchestra—absorb tiny fat bubbles we generated, restoring immune

regulation," Professor Thomas said.

"These fat bubbles, called liposomes, held the key to rebooting the immune system and calming the disease process.

"This study shows in mice that antigen-specific immunotherapy can be used to treat existing inflammatory autoimmune diseases, as well as to prevent future disease.

"Importantly, it shows that inflammatory activity is not a barrier to restoring regulation in the immune system."

People living with rheumatoid arthritis or vasculitis have rogue T-cells that attack the body's own tissues, escaping the normal regulation that keeps these cells in check.

The antigen-specific liposome immunotherapy treatment helps restore immune cells to healthy function.

The research brings doctors closer to understanding the best ways to use precision medicine for human inflammatory autoimmune diseases.

This research is published in *JCI Insight*.

More information: Ryan Galea et al. PD-L1 and calcitriol dependent liposomal antigen-specific regulation of systemic inflammatory autoimmune disease, *JCI Insight* (2019). DOI: 10.1172/jci.insight.126025

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