T cells: Vesicles strengthen immune response

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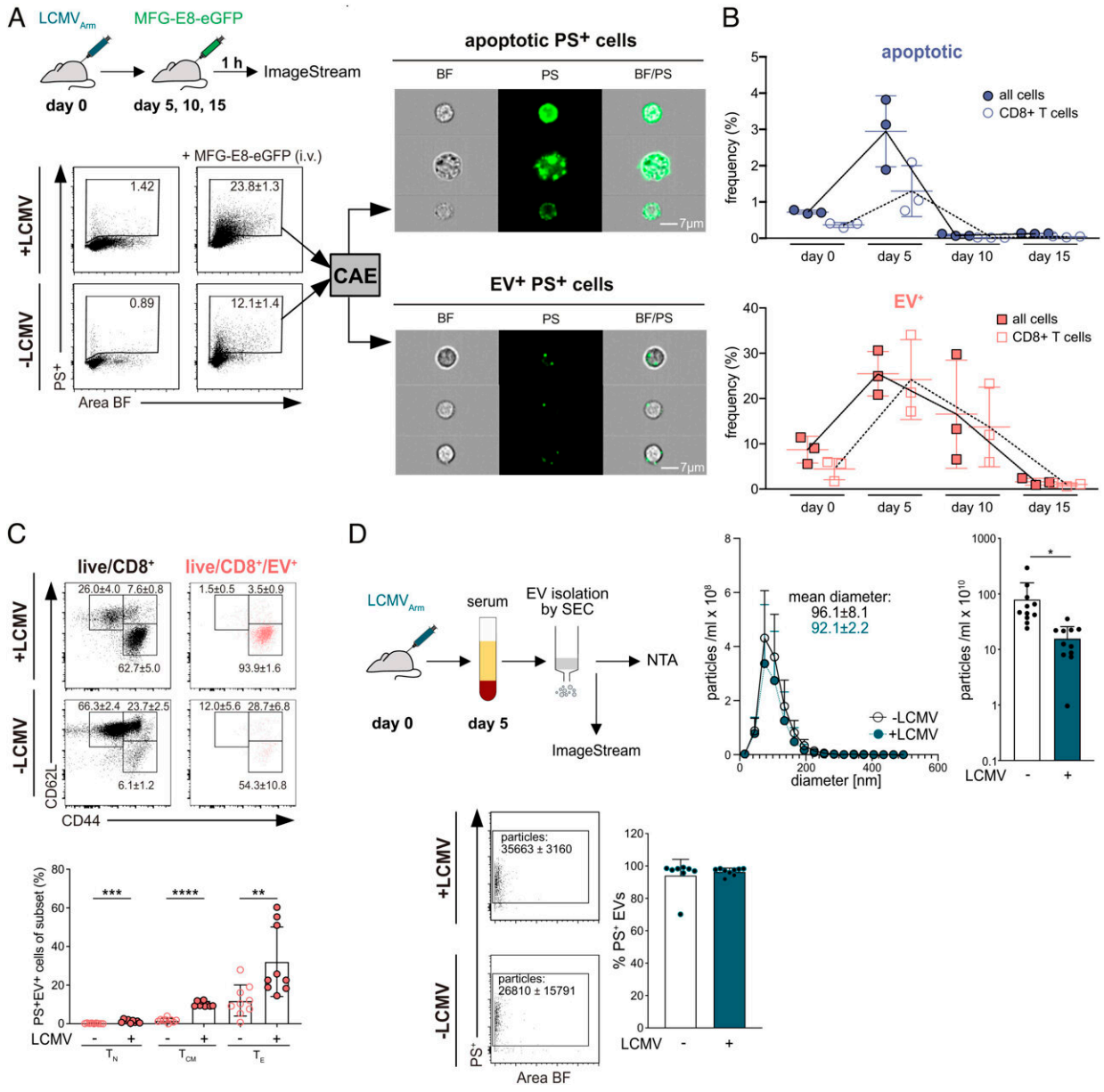

MFG-E8-eGFP detects PS+ apoptotic and PS+ EV-decorated cells in vivo.

Credit: Proceedings of the National Academy of Sciences (2023). DOI: 10.1073/pnas.2210047120

As a major component of the immune system, T cells play a critical role in fighting off viral infections. A team led by Prof. Thomas Brocker and Jan Kranich from LMU's Biomedical Center has demonstrated in a mouse model that so-called extracellular vesicles play an important part in the stimulation of these cells. The findings are published in the journal *Proceedings of the National Academy of Sciences*.

Extracellular vesicles are tiny membrane particles that are secreted by cells and play a role in cell-to-cell communication. Using a newly developed method, the scientists were able to show that already activated killer T cells—a subcategory of T cells that directly attack diseased cells—engage intensively with these vesicles.

This gives the T cells an extra activating "boost," which has the effect of promoting their proliferation and increases activation of various genes that are needed to combat the infection.

Another unexpected finding of the study was that the number of vesicles in the serum decreased after infection, whereas their number increased on T cells in the spleen. From this, the authors concluded that the binding of vesicles to cells is enhanced after an infection.

"Extracellular vesicles essentially function as a 'danger signal' for T cells, indicating that the infection has not yet been eliminated," says Kranich. "We hope to be able to use this discovery in future for therapeutic approaches aimed at strengthening the T cell response to viruses and tumors."

More information: Lisa Rausch et al, Phosphatidylserine-positive extracellular vesicles boost effector CD8 + T cell responses during viral infection, *Proceedings of the National Academy of Sciences* (2023). DOI: 10.1073/pnas.2210047120