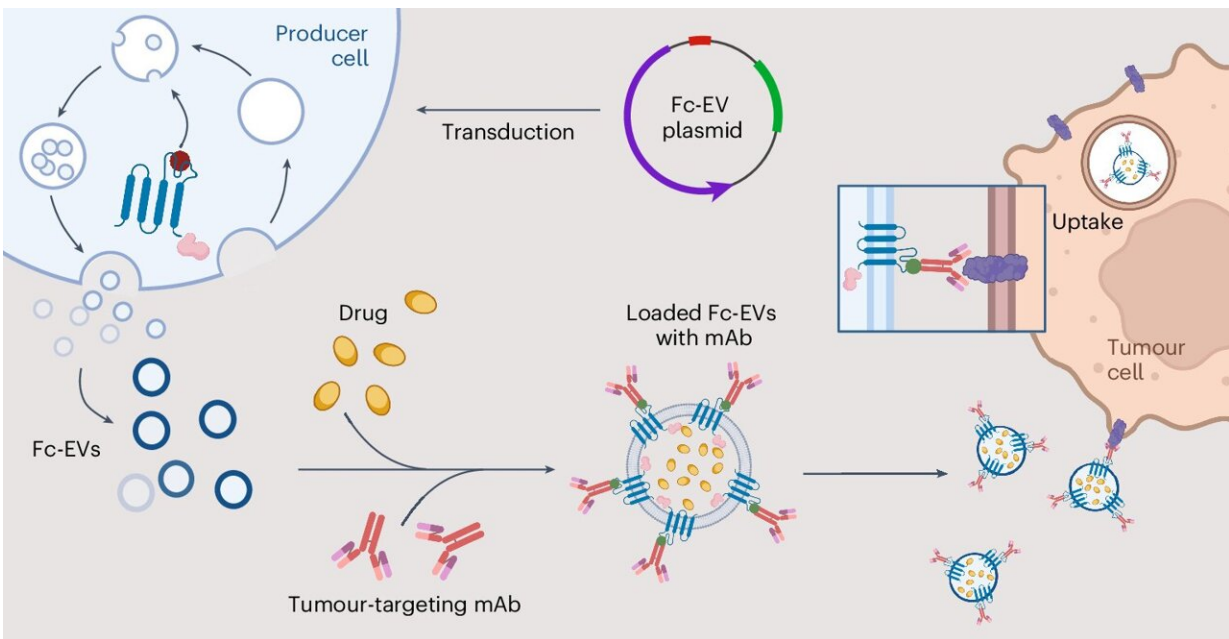


Body's 'message in a bottle' delivers targeted cancer treatment

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Engineering cells to produce EVs decorated with an antibody-binding moiety specific for the Fc domain. Credit: *Nature Biomedical Engineering* (2024). DOI: 10.1038/s41551-024-01214-6

Researchers at Karolinska Institutet in Sweden have succeeded in delivering targeted cancer treatment via small membrane bubbles that our cells use to communicate. A study, "[Antibody-displaying extracellular vesicles for targeted cancer therapy.](#)" published in *Nature Biomedical Engineering* shows that the treatment reduces tumor growth

and improves survival in mice.

When our cells communicate, they send out small membrane bubbles known as extracellular vesicles which contain various signaling molecules. Interest in these tiny bubbles, sometimes referred to as the body's "message in a bottle," has increased in recent years as they could be used to deliver medicines.

Antibodies seek out tumors

Researchers at Karolinska Institutet have now created a targeted [cancer treatment](#) by loading these bubbles with a [chemotherapeutic drug](#) and attaching antibodies against tumors to their surface. In addition to targeting tumor cells, the antibodies act as a form of immunotherapy, resulting in an enhanced therapeutic effect. The treatment reduced [tumor growth](#) and improved survival when given as an injection to mice with [breast cancer](#) or melanoma.

"By attaching different antibodies to [extracellular vesicles](#), we can target them to virtually any tissue and we can load them with other types of drugs as well," says Oscar Wiklander, physician and researcher at the Department of Laboratory Medicine, Karolinska Institutet, and joint first author with Doste Mamand, researcher at the same department. "Therefore, the treatment has the potential to be used against other diseases and cancer types."

More effective and fewer side effects

The hope is that the new treatment will be more specific and effective in eliminating tumor cells without affecting healthy tissue, compared to current treatment strategies. The researchers plan to investigate whether different combinations of antibodies and drugs can further improve

treatment.

"Among other things, we want to investigate the possibility of delivering mRNA as an [anticancer drug](#)," says the study's last author Samir EL Andaloussi, Professor at the Department of Laboratory Medicine, Karolinska Institutet.

"Ultimately, we hope this can lead to a new treatment platform that can improve treatment efficacy and reduce side effects in difficult-to-treat diseases, especially cancer."

More information: Oscar P. B. et al, Antibody-displaying extracellular vesicles for targeted cancer therapy, *Nature Biomedical Engineering* (2024). DOI: [10.1038/s41551-024-01214-6](https://doi.org/10.1038/s41551-024-01214-6).
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Provided by Karolinska Institutet

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