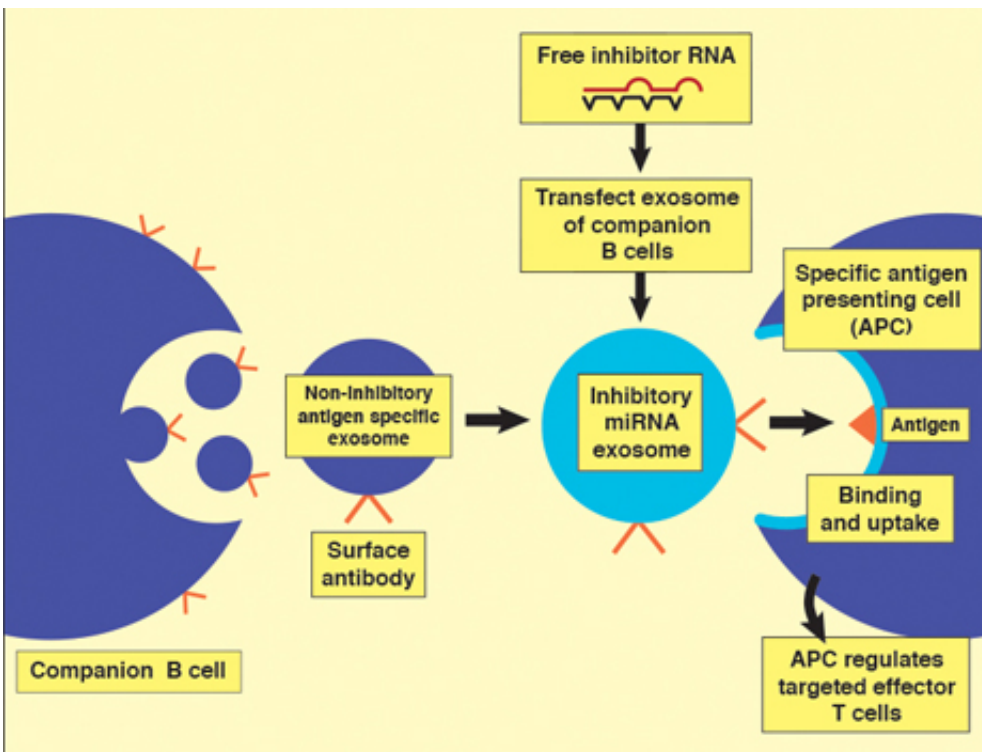


Lab uncovers new pathway for passing genetic messages between cells

May 4 2015, by Ziba Kashef



A Yale-led research team has described a novel pathway for the delivery of microRNA (miRNA), the tiny RNA molecules that can move between cells to regulate gene expression.

The study was published on April 29 by *PLOS ONE*.

Scientists previously described how miRNA transfers genetic regulatory information from cell to cell within protective nano-vesicles (sacs) known as exosomes. In this study, the Yale team—led by professor of medicine (immunology) Philip Askenase in collaboration with visiting professor Krzysztof Bryniarski from Jagiellonian University in Krakow Poland—examined how miRNA from mouse immune T [cells](#) are delivered independently of these vesicles.

Although such "free" extracellular RNA, or exRNA, is the dominant form of RNA in the circulation, the function of exRNA was not known. However, the researchers discovered that exRNA can associate with exosomes from companion cells of the targeted cells (in this case, companion immune system B cells) to transfer the genetic messages via specific structures (antigens) on the final targeted cell.

The findings are significant, say the researchers, because they show not only how freely circulating miRNA transfers between cells, but also how it can influence the function of targeted cells in an antigen-specific way. The research provides a model for future study of miRNA information transfer between cells, and as a basis for the potential development of unique RNA genetic therapies for human diseases, including allergy, autoimmunity, and even cancer.

More information: "Free Extracellular miRNA Functionally Targets Cells by Transfecting Exosomes from Their Companion Cells." *PLoS ONE* 10(4): e0122991. [DOI: 10.1371/journal.pone.0122991](https://doi.org/10.1371/journal.pone.0122991)

Provided by Yale University

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