

Insights: Publications

Human placental trophoblasts confer viral resistance to recipient cells

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Placental trophoblasts form the interface between the fetal and maternal environments and serve to limit the maternal fetal spread of viruses. Here we show that cultured primary human placental trophoblasts are highly resistant to infection by a number of viruses and, importantly, confer this resistance to nonplacental recipient cells by exosome-mediated delivery of specific micro-RNAs (miRNAs). We show that miRNA members of the chromosome 19 miRNA cluster, which are almost exclusively expressed in the human placenta, are packaged within trophoblast-derived exosomes and attenuate viral replication in recipient cells by the induction of autophagy. Together, our findings identify an unprecedented paracrine and/or systemic function of placental trophoblasts that uses exosome-mediated transfer of a unique set of placental-specific effector miRNAs to directly communicate with placental or maternal target cells and regulate their immunity to viral infections.

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