

## Drug Delivery Vehicle/Plattform into brain

Novel vehicle platform for the targeted delivery of drugs into the brain parenchyma, particularly useful as platform for the delivery of biologics, like e.g. proteins or antibodies.

### Challenge

The delivery of drugs into the brain, particularly of (big) biologicals, is hampered by the blood-brain-barrier (BBB) as well as CSF-brain-barrier. Specially naked protein delivery into e.g. CSF might show undesired immunogenic side effects (e.g. meningitis). Current state-of-the-art, like liposomes, has an inefficient delivery of biologicals (like proteins and antibodies) from plasma to CSF and brain. Delivery pumps with direct protein delivery into CSF often result in meningitis and inflammatory response. Vector based delivery systems have the disadvantage that they should be applied by injection all over the brain, as well as the control of the vector.

### Our Solution

Scientists at the Universitätsmedizin Göttingen developed a designed delivery vesicle as cargo transport of drugs with higher molecular weight and of biologicals like e.g. proteins or antibodies, for targeted delivery into brain parenchyma. The targeting is achieved through a specific biomarker, which is incorporated into the designed vesicles. When the biomarker is located on the surface of vesicles it enables penetration and distribution of vesicles into brain parenchyma. The biomarker plays an important role in the natural brain delivery (see references). This novel vesicles could be used as a carrier and delivery technology platform.



### Advantages

- Safe delivery of biologicals into the brain parenchyma.
- Vesicles shield payload from immunogenic effects.
- High capacity transport and delivery.

- Specific targeting of the brain parenchyma with our specific biomarker.
- Good biodistribution within the brain

## Applications

Technology platform to be used for the delivery of biologicals, like proteins or antibodies, or drugs with higher molecular weight, into the brain, for the therapy of neurological, neurodegenerative and neuronal metabolic diseases.

## Developmental Status

Preclinical research in vitro and in vivo, with in vivo proof of principle.

## Patent Status

US20140105817A1 and EP2908800A1 patent applications have been filed. Applicants are the Georg-August-University - Medical Center Göttingen together with the Göttinger start-up AllOrphan UG.

## References

Nature Commun. (2013) 4:2123 doi: 10.1038/ncomms3123, Grapp et al.

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