

All-optical long-term functional access to large-animal brains

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Clinical acceptance of a gene therapy vector depends on the degree of invasivity of the delivery route, specificity to the target cell population as well as efficient and long-term stable expression of the therapeutic sequence. We seek to optimize long-term stable functional access to the brain of preclinical large-animal models using new adeno-associated virus constructs. We designed and injected new constructs locally into the brain cortex, intravenously and intrathecally into rodent and large-animal models and compared the applicability of each construct via functional assessment using optical activity access routes as well as via immunohistochemistry. The results indicate that brain-wide long-term stable functional gene delivery is now within reach supporting the applicability of gene therapy methods for neurological conditions.

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