CRISPR gene editing of the brain could open research floodgates

[Researchers] at the Max Planck Florida Institute for Neuroscience (MPFI) have developed a new tool that, for the first time, allows precise genome editing in mature neurons, opening up vast new possibilities in neuroscience research.
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The CRISPR-Cas9 system acts to damage DNA in a specifically targeted place. The cell then subsequently repairs this damage using predominantly two opposing methods; one being non-homologous end joining (NHEJ), which tends to be error prone, and homology directed repair (HDR), which is very precise and capable of undergoing specified gene insertions. HDR is the more desired method, allowing researchers flexibility to add, modify, or delete genes depending on the intended purpose.

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When precursor brain cells mature into neurons, they are referred to as post-mitotic or nondividing cells, making the mature brain largely inaccessible to HDR – or so researchers previously thought. The team has now shown that it is possible for post-mitotic neurons of the brain to actively undergo HDR, terming the strategy “vSLENDR (viral mediated single-cell labeling of endogenous proteins by CRISPR-Cas9-mediated homology-directed repair).”

[Editor’s note: Read the full study (behind paywall)]

The GLP aggregated and excerpted this blog/article to reflect the diversity of news, opinion, and analysis. Read full, original post: Gene editing in the brain gets a major upgrade