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Transplanting gut microbiota from old mice into younger, germ-free ones can [increase the growth of neurons](#) in the brain and of the intestines, according to a study appearing in *Science Translational Medicine*. To study the effects of microbiome aging on host physiology, investigators transplanted gut microbiota of old or young mice into young germ-free recipient mice. While both groups of recipient animals experienced similar weight gain and skeletal muscle mass, the ones receiving transplants from the old donor mice showed increased neurogenesis in the hippocampus of the brain and increased intestinal growth — an effect the researchers attributed to an enrichment in butyrate-producing microbes. While additional study is warranted, the findings suggest that gut microbiota transplants from aged hosts may confer beneficial effects in responsive young recipients, the authors write.

A new study of Cas9 provides insights into the mechanisms underlying its activity in CRISPR genome editing. [As reported in Science Advances](#), a team of Chinese scientists used a single-molecule approach to examine interactions between Cas9, single guide RNAs, and DNA along the DNA sequence. They find two stable interactions flanking the protospacer adjacent motif (PAM) including, unexpectedly, one approximately 14 base pairs downstream of the PAM that is beyond the apparent footprint of Cas9 on DNA. Loss or occupation of this interaction site impairs Cas9 binding and cleavage, the study's authors write, making it critical to the interaction between Cas9 and DNA and a key consideration when it comes to improving Cas9 efficiency.

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