Article

15 January 2018

Grid scale drives the scale and long-term stability of place maps

Caitlin S. Mallory , Kiah Hardcastle , Jason S. Bant  & Lisa M. Giocomo

How entorhinal grid cells control hippocampal coding and behavior remains elusive. The authors report that increasing the spatial scale of grid cells expands the scale and reduces the stability of place fields, impairing spatial memory in mice.

Technical Report

15 January 2018

In vivo simultaneous transcriptional activation of multiple genes in the brain using CRISPR–dCas9-activator transgenic mice

Haibo Zhou , Junlai Liu , Changyang Zhou , Ni Gao , Zhiping Rao , He Li , Xinde Hu , Changlin Li , Xuan Yao , Xiaowen Shen , Yidi Sun , Yu Wei , Fei Liu , Wenqin Ying , Junming Zhang , Cheng Tang , Xu Zhang , Huatai Xu , Linyu Shi , Leping Cheng , Pengyu Huang  & Hui Yang

dCas9-mediated activation has been verified and widely used in vitro. Here the authors generated a potent in vivo activation platform and applied it to control the transcription of multiple genetic elements in the mammalian brain.

Resource

15 January 2018

Conserved properties of dentate gyrus neurogenesis across postnatal development revealed by single-cell RNA sequencing

Hannah Hochgerner , Amit Zeisel , Peter Lönnerberg  & Sten Linnarsson

Using single-cell RNA-seq, the authors show that early developmental neurogenesis in the dentate gyrus of the hippocampus is largely conserved in the adult, but with a perinatal transformation of stem cells to an adult type.

Article

15 January 2018

Dietary salt promotes neurovascular and cognitive dysfunction through a gut-initiated TH17 response

Giuseppe Faraco , David Brea , Lidia Garcia-Bonilla , Gang Wang , Gianfranco Racchumi , Haejoo Chang , Izaskun Buendia , Monica M. Santisteban , Steven G. Segarra , Kenzo Koizumi , Yukio Sugiyama , Michelle Murphy , Henning Voss , Joseph Anrather  & Costantino Iadecola

A salt-rich diet promotes cerebrovascular diseases and dementia. This study shows that high dietary salt in mice induces a TH17 response in the gut leading to cerebral endothelial dysfunction and cognitive impairment via circulating IL-17.

Article

15 January 2018

Dentate network activity is necessary for spatial working memory by supporting CA3 sharp-wave ripple generation and prospective firing of CA3 neurons

Takuya Sasaki , Verónica C. Piatti , Ernie Hwaun , Siavash Ahmadi , John E. Lisman , Stefan Leutgeb  & Jill K. Leutgeb

Sasaki et al. reveal that the dentate gyrus not only performs pattern separation but also has a direct role in organizing memory-guided behavior by coordinating the planning of future actions.

Article

15 January 2018

N6-methyladenosine RNA modification regulates embryonic neural stem cell self-renewal through histone modifications

Yang Wang , Yue Li , Minghui Yue , Jun Wang , Sandeep Kumar , Robert J. Wechsler-Reya , Zhaolei Zhang , Yuya Ogawa , Manolis Kellis , Gregg Duester  & Jing Crystal Zhao

Using a genetic approach, Wang et al. demonstrate an essential function for m6A mRNA modification in promoting neural stem cell proliferation and reveal interactions between m6A and histone modification as a novel gene regulatory mechanism.