Clustering on wikipedia graphs

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Melvin Gode*, Andrej Perovic* and Antoine Sicard*

Ecole Normale Supérieure Paris-Saclay, *all these authors contributed equally to this research

Introduction

Title 1

• NMDARs exist as multiple subtypes primarly defined by the type of GluN2 subunits they incorporate. These subtypes have unique biophysical, pharmacological, anatomical and signaling properties.

Title 2

• The role of GluN2B-NMDARs in synaptic physiology (LTP, LTD, excitotoxicity, etc.) is currently under debate[2,3]. GluN2B-NMDAR classical pharmacological modulators have major limitations for *in vivo* use, notably off-target effects, slow diffusion and delivery.

Results and methods

1. First approach

• NMDARs exist as multiple subtypes primarly defined by the type of GluN2 subunits they incorporate. These subtypes have unique biophysical, pharmacological, anatomical and signaling properties.

2. Second approach

A. Decrease in NMDA-EPSC photomodulation with age in pyramidal neurons

B. Decrease in NMDAR tonic current photomodulation with age in pyramidal neurons

Conclusion and perspectives

• **First opto-chemical tool** to **selectively** target NMDARs containing **two GluN2B subunits** (2B-diheteromers).

• **Decrease** of **synaptic 2B-dihet.** expression with age (GluN2B→GluN2A switch).

• **Extrasynaptic 2B-diheteromers** also undergo a **developmental regulation** of **expression**.

• In CA1 **pyramidal** cells,
- At **young** ages, 2B-dihets are **major** contributors to NMDAR **extrasynaptic** currents but **minor** to **synaptic** ones.
- At **adult** ages, 2B-dihets are **minor** contributors to both NMDAR **extrasynaptic** and **synaptic** currents.

• In CA1 **SST** interneurons, 2B-dihets are **minor** contributors to both NMDAR **extrasynaptic** and **synaptic** currents at **all ages** *(preliminary results)*.

→ Next**:** *in vivo* implementation to address currently **debated physiological roles** of 2B-dihets and investigate their **therapeutic potential**.

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