

# KOKI Neural Modelling projects

**Balázs B Ujfalussy**

**Laboratory of Neuronal Signaling, Institute of Experimental Medicine**

**[ujfalussy.balazs@koki.hu](mailto:ujfalussy.balazs@koki.hu)**

**14. Oct 2020**

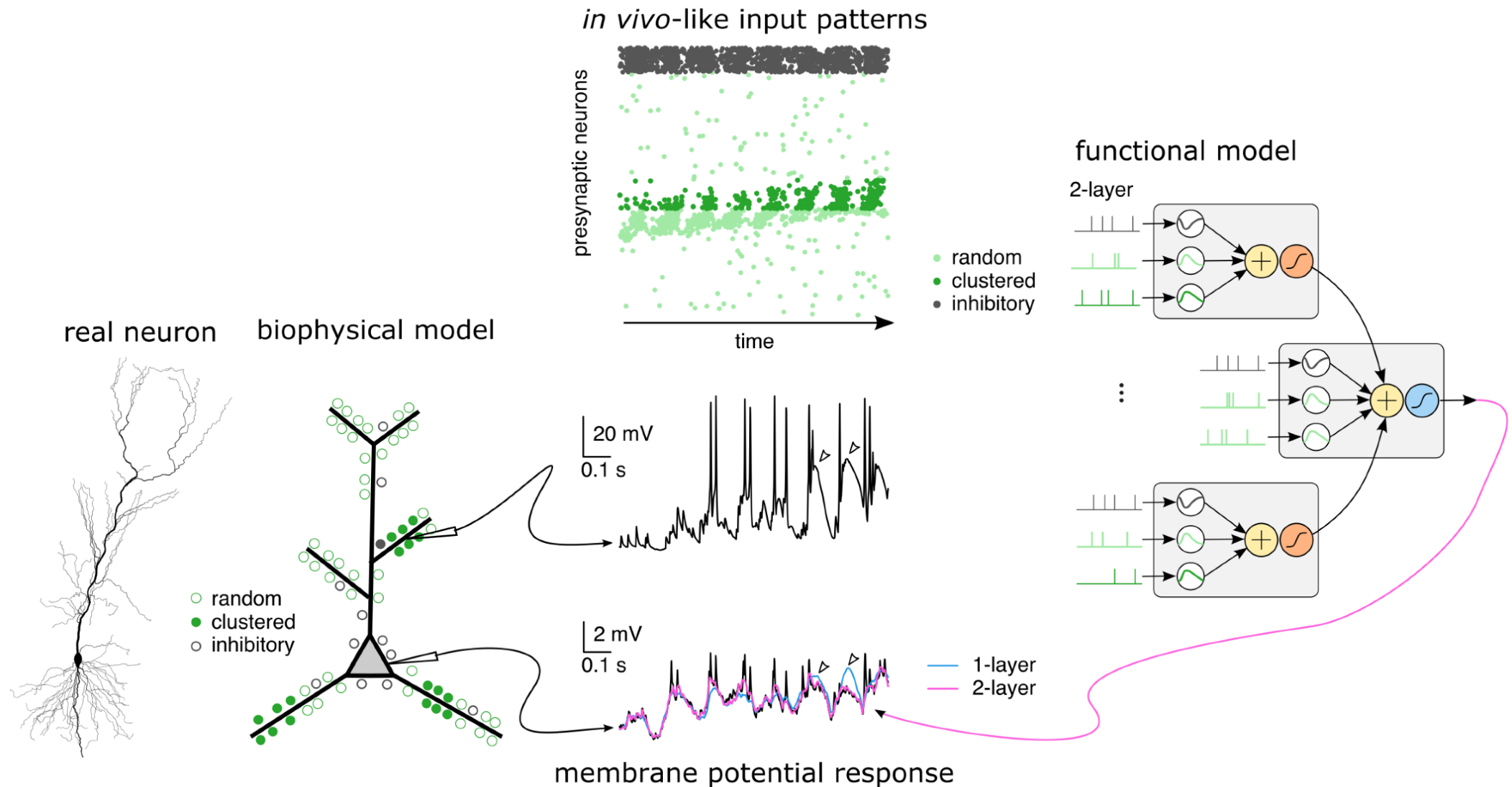


Balázs Ujfalussy

# modelling dendritic integration

How neurons respond to complex synaptic inputs?

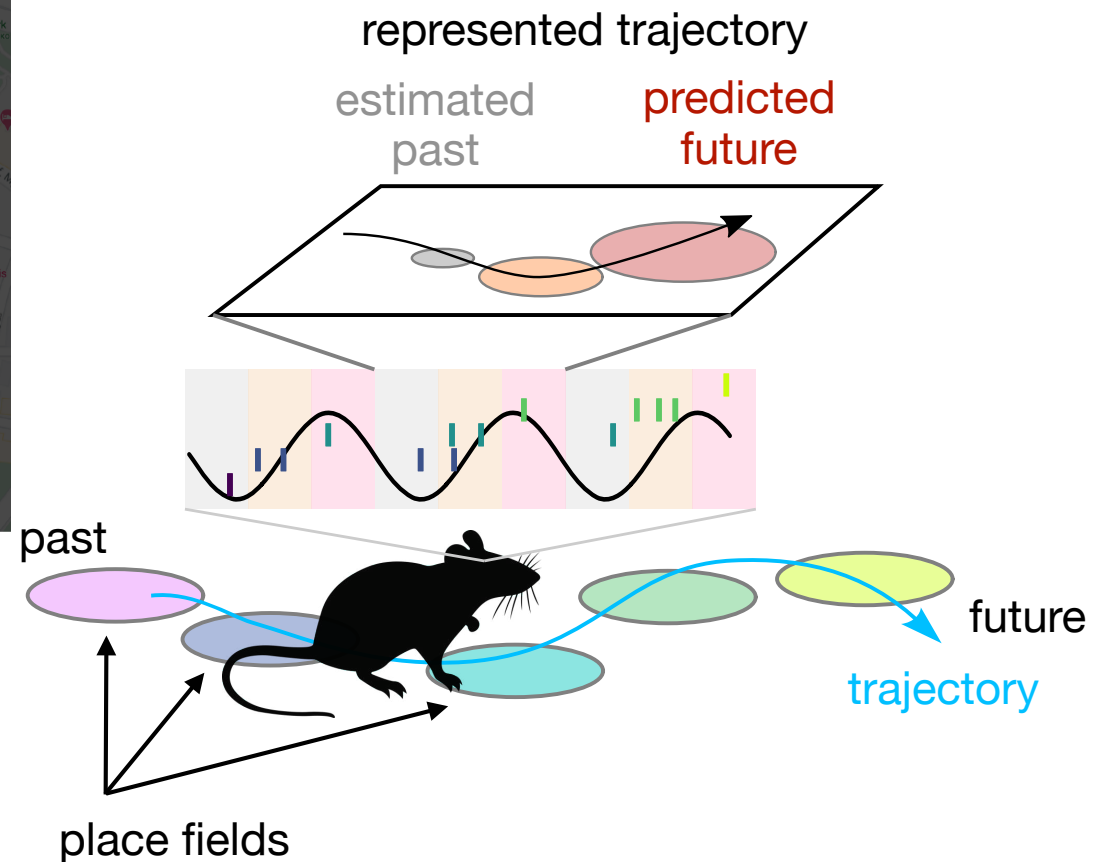
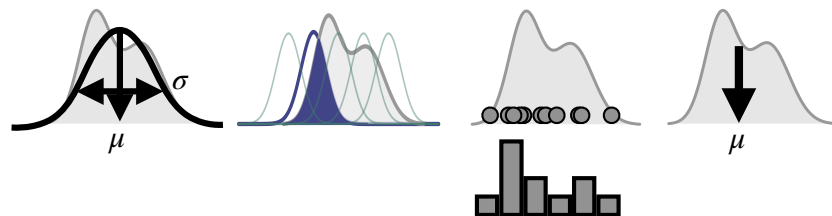
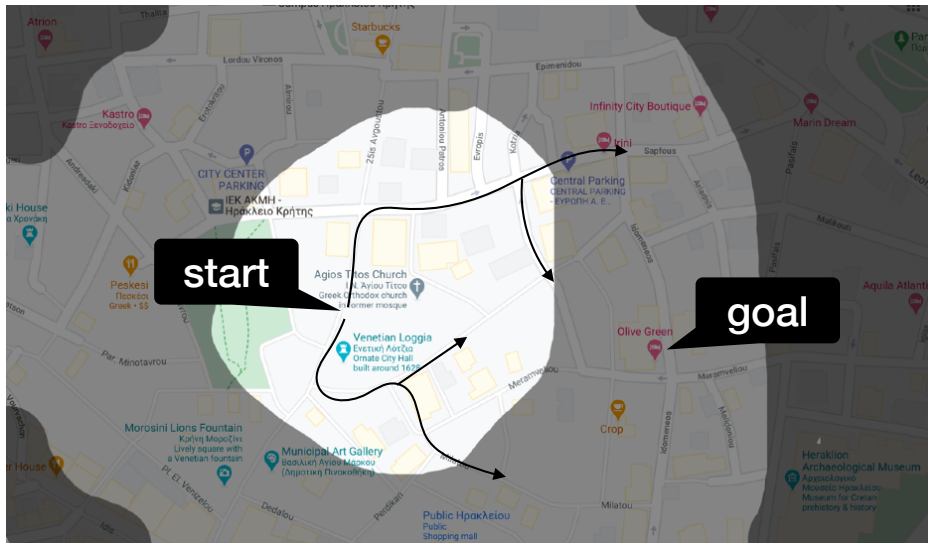
- biophysical models: mechanistic understanding
- simplified models: functional role of dendrites



# modelling spatial navigation

How do animals use models of their environment to achieve their goals?

- theory: we develop theories of how neuronal population activity can represent a trajectory during navigation
- data analysis: we test the predictions of our theory analysing neuronal activity recorded from behaving rats



# representational learning - backwards

- AI: learn useful representations from raw data for real-world tasks
- Neuroscience: discover the representations used by the brain

