

MODELS OF CAMKII/NMDAR INTERACTIONS IN THE POSTSYNAPTIC NEURON

-PROJECT DESCRIPTION:-

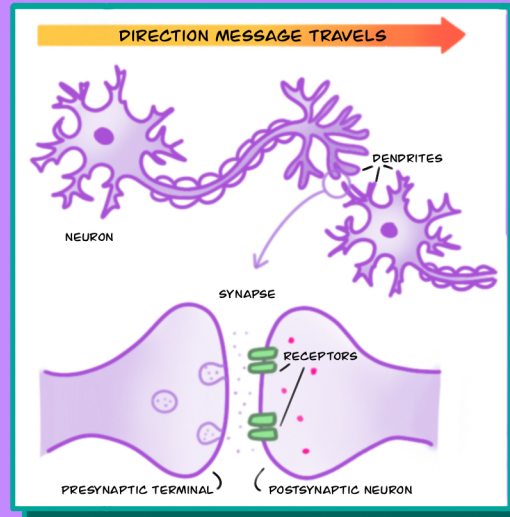
I CREATE 3D MODELS WHICH SIMULATE INTERACTIONS BETWEEN PROTEINS IMPORTANT FOR UNDERSTANDING HOW MEMORY WORKS IN ANIMAL BRAINS.

-AIM & SIGNIFICANCE:-

EXPLAIN HOW SPECIFIC MOLECULES WORK TOGETHER DURING MEMORY.

DEVELOP NEW WAYS OF 3D MODELLING TO LOOK AT COMPLEX PROCESSES IN NEURONS.

THE MOLECULES I LOOK AT HAVE BEEN SHOWN TO BE DYSFUNCTIONAL IN ALZHEIMER'S AND HUNTINGTON'S DISEASE.



-TYPE OF DATA:-

KINETIC RATES OF MOLECULE REACTIONS, MOLECULAR CONCENTRATIONS COLLECTED FROM LITERATURE AND DATABASES.

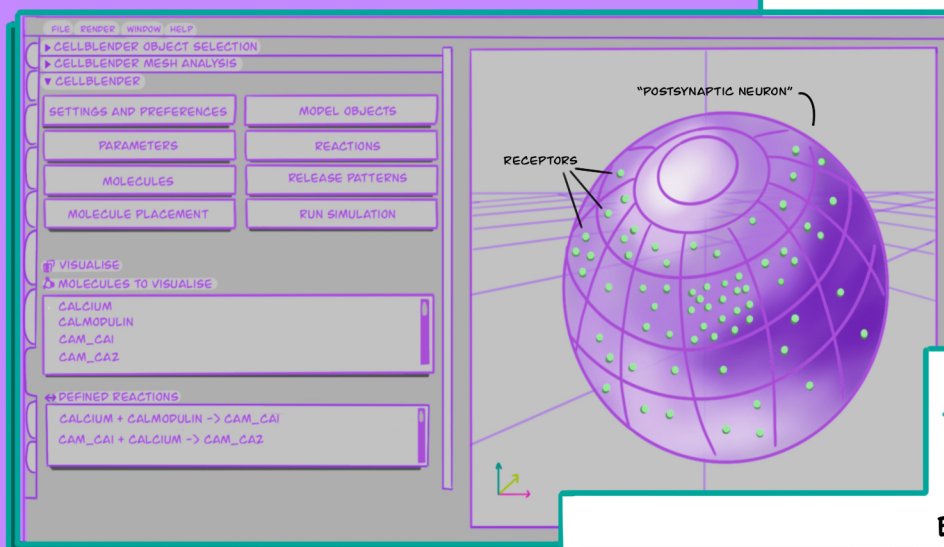
NUMBERS OBTAINED FROM EITHER WET LAB EXPERIMENTS OR MATHEMATICALLY CALCULATED.

-METHODS:-

MODELS WRITTEN WITH STANDARDISED, OPEN SOURCE MODEL LANGUAGES (PYTHON, BNGL).

SIMULATIONS RUN USING FREE, OPEN SOURCE MODELLING TOOLS.

RUN LOCALLY OR IN CLUSTER FOR 3+ HOURS IF SIMULATIONS ARE MORE COMPUTATIONALLY EXPENSIVE.



-MODEL APPLICATIONS:-

OTHER RESEARCHERS CAN BUILD FROM THESE MODELS TO CREATE FURTHER PREDICTIONS FOR POTENTIAL PHARMACOLOGICAL APPLICATIONS.

WHICH DATA HAZARDS APPLY? COMPLETE POLL HERE!



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