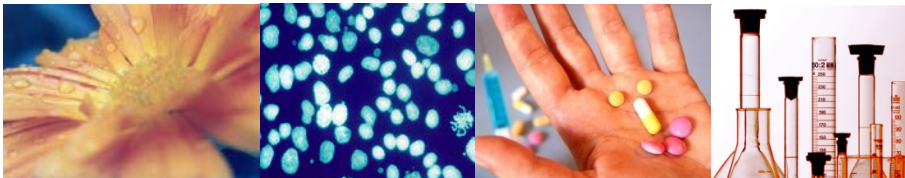


**Organotypic hippocampal slice
cultures (OHSC)
as a model to study
neurotoxicity/neuroprotection, aging
and neuroinflammation**



Organotypic hippocampal slice cultures

- *in vitro* research in single cell types (dissociated cell culture) has the limitation to study the cross-talk among various cell types
- We therefore developed the **organotypic hippocampal slice cultures (OHSC)**, which contain all cell types of the CNS (neurons, microglia, astrocytes, oligodendrocytes).
- We can label each cell type by immunohistochemistry using specific cell surface markers using confocal microscopy
- We can test compounds on their neurotoxic capabilities (e.g. chemicals, insecticides, fungicides, environmental toxins etc.)
- We can study neuroprotective effects of compounds etc. on neurotoxins such as NMDA etc.
- Furthermore, we can study health beneficial effects of natural products, nutraceuticals and food ingredients (fatty acid, flavonoids, vitamins etc.)
- We are able to investigate the specific role of microglia in neuroprotection/neurotoxicity and neuroinflammation by depleting microglia cell population (knock out/knock in)
- Moreover, we can determine markers related to synaptic plasticity such neurotrophins, synaptophysin etc.

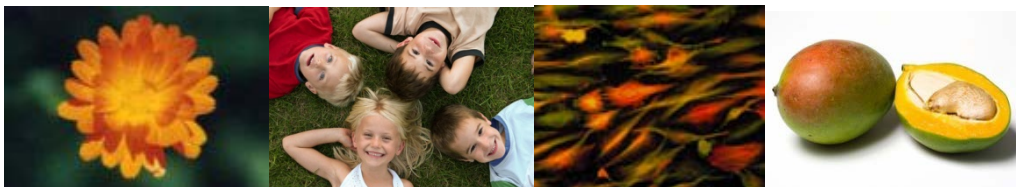


OHSC: Specific end points in respect to neurotoxicity, neurodegeneration, neuroinflammation, aging, pain etc. can be studied such as:

- Inflammatory markers: cytokines, NO, prostaglandins etc.
- Cell signalling molecules (Kinases/transcription factors)
- Epigenetics (HDACs/miRNAs)
- Neurotrophins
- Cytotoxicity and apoptosis markers
- and many others

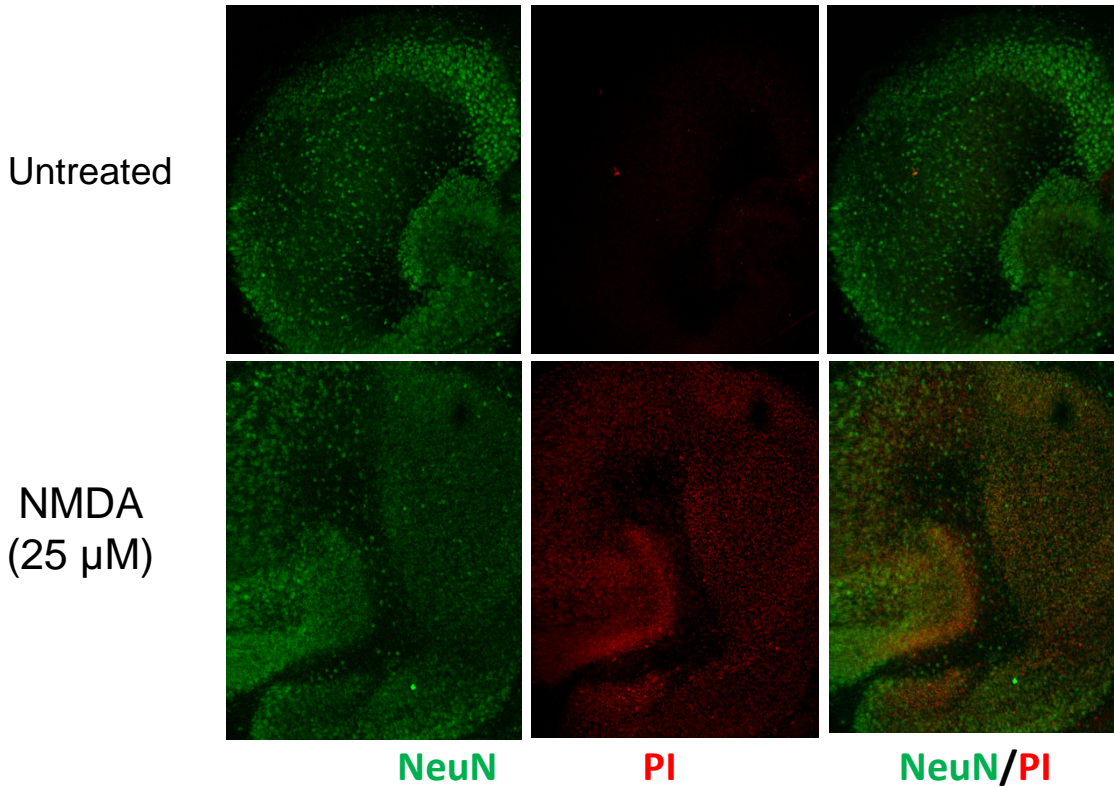
OHSC: methods used

- Immunohistochemistry (microglia, neurons, astrocytes, etc.).
- miRNA/RNA (qPCR)
- Proteins (Western blot, immunofluorescence, ELISA/EIA)





**NMDA-induced neurotoxicity in OHSC
Neurotoxicity and neuroprotection model**



***Immunofluorescence
Study (confocal images)***





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