

Accepted Manuscript

Title: Molecular fingerprinting of principal neurons in the rodent hippocampus: a neuroinformatics approach

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PII: S0731-7085(17)30794-X
DOI: <http://dx.doi.org/doi:10.1016/j.jpba.2017.03.062>
Reference: PBA 11190

To appear in: *Journal of Pharmaceutical and Biomedical Analysis*

Received date: 30-10-2016
Revised date: 5-3-2017
Accepted date: 29-3-2017

Please cite this article as: D.J.Hamilton, C.M.White, C.L.Rees, D.W.Wheeler, G.A.Ascoli, Molecular fingerprinting of principal neurons in the rodent hippocampus: a neuroinformatics approach, *Journal of Pharmaceutical and Biomedical Analysis* <http://dx.doi.org/10.1016/j.jpba.2017.03.062>

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Molecular fingerprinting of principal neurons in the rodent hippocampus: a neuroinformatics approach.
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Invitation - Journal of Pharmaceutical and Biomedical Analysis (JPBA) Special Issue dedicated to Carlo Bertucci. Submission deadline for revised manuscript: March 26, 2017.

Highlights:

- Neurons classified by morphological and molecular properties
- Online knowledge base Hippocampome.org
- Allen Brain Atlas provides a wealth of gene expression data
- Our approach yields reasonable expression/non-expression estimates for every gene in each of four hippocampal principal neuron types with >90% average confidence
- Considerably complete genetic characterization
- Newly identified biomarkers are potential pharmacological targets for major neurological and psychiatric conditions

Abstract

Neurons are often classified by their morphological and molecular properties. The online knowledge base Hippocampome.org primarily defines neuron types from the rodent hippocampal formation based on their main neurotransmitter (glutamate or GABA) and the spatial distributions of their axons and dendrites. For each neuron type, this open-access resource reports any and all published information regarding the presence or absence of known molecular markers, including calcium-binding proteins, neuropeptides, receptors, channels, transcription factors, and other molecules of biomedical relevance. The resulting chemical profile is relatively sparse: even for the best studied neuron types, the expression or lack thereof of fewer than 70 molecules has been firmly established to date. The mouse genome-wide in situ hybridization mapping of the Allen Brain Atlas provides a wealth of data that, when appropriately

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