

HIGH-END INSTRUMENTATION PROPOSAL

SyncroPatch 384i – Advance Ion Channel Screening

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The Broad Institute of MIT and
Harvard

Project Summary

The Stanley Center for Psychiatric Research

The research in the group of Jen Pan, who is director of translational neurobiology at the Stanley Center for Psychiatric Research at the Broad Institute of MIT and Harvard, focuses on translating emerging genetics into biology and to enable next-generation therapeutics to treat psychiatric illnesses. In the past few years, Pan has been working on genes whose dysfunction has been implicated for psychiatric illnesses using molecular, cellular, and electrophysiological approaches, both *in vitro* and in animals.

Her group has expertise in the physiology of ion channels, part of the large protein family critical to neurons firing and muscles moving. She leads the ICE-T (ion channel electrophysiology and technology) effort enabled by Broadnext10 initiative to utilize state-of-art technologies for studying ion channels and electrogenic transporters, and to find novel ways to modulate these highly specialized membrane proteins.



**DR. JEN Q PAN, DIRECTOR OF TRANSLATIONAL
NEUROBIOLOGY**

PROJECT SUMMARY

The SyncroPatch 384PE is situated in the lab of Jen Pan PhD, Director, translational neurobiology at the Stanley Center for Psychiatric Research and has been in heavy use since early 2016. Jen's laboratory and collaborators are using SyncroPatch recordings to study the mechanism of action of ion channel modulators identified from high throughput FLIPR assays.

In addition, her group characterized genetic variants of genes that encode voltage-gated sodium and calcium channels that are implicated in schizophrenia and neurological disorders. They developed novel methods for noise analyses using the SyncroPatch that can estimate single channel conductance and surface expression (Nanion User meeting 2019). They presented a methodology to predict gain-of-function (GOF) and loss-of-function (LOF) and then validated the model by studying 50 variants on the SyncroPatch 384 system.



STANLEY CENTER
FOR PSYCHIATRIC RESEARCH

AT BROAD INSTITUTE

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