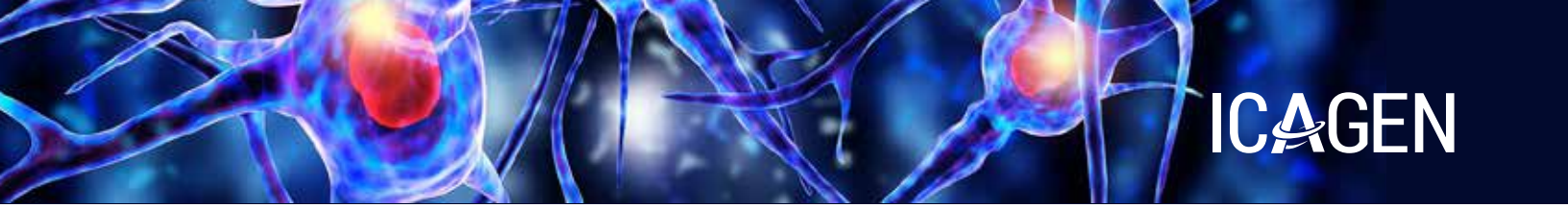

Sodium Channel Platform

Comprehensive Portfolio of Assay Tools & Technologies for the Interrogation of Na_V Channels

Voltage-gated sodium channels (Nav) are important drug development targets for a wide variety of therapeutic indications including pain, epilepsy and cardiac rhythm disorders. This class of ion channels is comprised of 9 subtypes from a single gene family, each having distinct biophysical and pharmacological characteristics.

Icagen brings more than two decades of experience in ion channel drug discovery research and development, with a record of successfully moving compounds from discovery into clinical development, both alone and in partnership with leading pharmaceutical developers. Icagen offers discovery services based on this extensive expertise, its industry-leading portfolio of cell lines including all human Nav channel subtypes, and its broad set of assay technologies.

Capabilities

- High Throughput Screening
- Sub-type Selectivity
- Species Ortholog Activity
- Target Potency
- Structure/activity Analysis
- Biophysical & Pharmacological Evaluation

Assay Technologies

Assays	$Na_V1.1$	$Na_V1.2$	$Na_V1.3$	$Na_V1.4$	$Na_V1.5$	$Na_V1.6$	$Na_V1.7$	$Na_V1.8$	$Na_V1.9$
Manual Patch Clamp	■	■	■	■	■	■	■	■	■
Automated Patch Clamp	■	■	■	■	■	■	■	■	■
Fluorescence Flux HTS Assay					■	■	■	■	■
Isotope Flux HTS Assay			■				■	■	

Cell Lines

	$Na_V1.1$	$Na_V1.2$	$Na_V1.3$	$Na_V1.4$	$Na_V1.5$	$Na_V1.6$	$Na_V1.7$	$Na_V1.8$	$Na_V1.9$
Human	■	■	■	■	■	■	■	■	■
NH Primate	■		■			■	■		
Dog	■						■		
Rat	■	■	■	■		■	■	■	■
Mouse	■		■			■	■	■	■
Binding Site/ Disease Mutants			■		■		■	■	■

High Throughput Screening

Icagen has extensive experience developing high throughput fluorescence and flux-based screening assays for numerous members of the Na_V channel family including important therapeutic targets like $Na_V1.7$ and the historically challenging $Na_V1.9$. Icagen scientists have successfully screened large compound libraries of up to 750,000 molecules to identify novel drug candidates. Icagen development of HTS assays for a broad range of the Na_V channel family provides opportunities for customers to run HTS campaigns against a Na_V channel target of interest, but also HTS counter screens against potential liability Na_V channels.

Sub-type & Species Selectivity

Icagen has cell lines stably expressing all members of the human Na_V channel family as well as numerous species orthologs (i.e. monkey, dog, rat mouse). When combined with our broad collection of automated electrophysiology assays, Icagen can provide detailed analyses of Na_V channel sub-type and species selectivity. Access to this capability can greatly aid design and interpretation of preclinical efficacy and safety studies.

Advanced Lead Optimization

A more detailed understanding of the mechanism and site of action is often required during lead and clinical candidate development. Icagen scientists have extensive experience performing biophysical analysis of Na_V and other ion channel classes, which facilitates improved understanding drug mechanism of action. This capability can be combined with Icagen's success in generating cell lines expressing human disease-associated mutations of Na_V channels as well as mutations that help define location of drug candidate interaction on the channel.

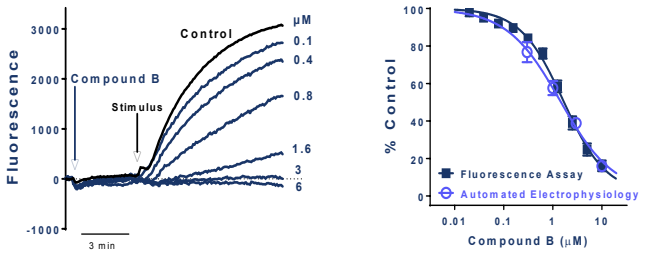

Figure 1: *Robust 384-well fluorescence-based sodium flux assays to identify novel modulators of Nav channels, including the historical challenging Nav1.9 channel. HTS assay potency correlates well with automated electrophysiology-based determinations.*

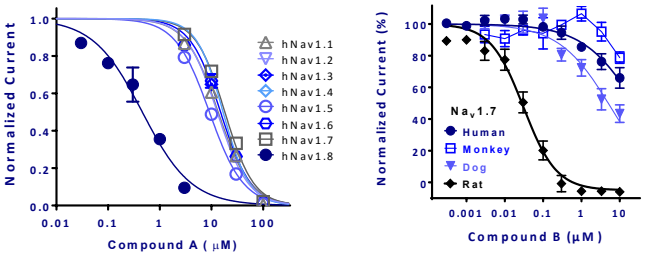

Figure 2: *Icagen's automated electrophysiology platforms and comprehensive sodium channel expressing cell line portfolio enable extensive evaluation of Nav channel subtype and species selectivity.*

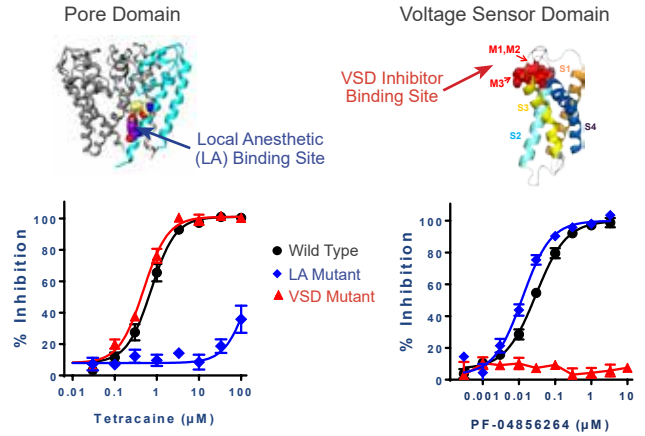

Figure 3: *The Icagen portfolio also includes a comprehensive array of other ion channel expressing cell lines and assays. This provides customers the opportunity to prosecute detailed analysis of both on target and off target effects of their compounds of interest.*

Did you know...

Icagen scientists were involved with the development of the:

- First selective small molecule inhibitors of $Na_V1.7$
- First selective $Na_V1.8$ inhibitors
- First functional expression of human recombinant $Na_V1.9$ in HEK cells and HTS assay implementation
- First description of Na_V channel voltage sensor interaction site that enables Na_V subtype selective modulator identification

For more information about working with Icagen to accelerate your Na_V research please contact us at:
info@icagen.com

ICAGEN

Tel: 919.941.5206
Email: info@icagen.com
www.icagen.com