Voltage-gated sodium channels (Na\textsubscript{V}) in GtoPdb v.2023.1

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Abstract

Sodium channels are voltage-gated sodium-selective ion channels present in the membrane of most excitable cells. Sodium channels comprise of one pore-forming \( \alpha \) subunit, which may be associated with either one or two \( \beta \) subunits [179]. \( \alpha \)-Subunits consist of four homologous domains (I-IV), each containing six transmembrane segments (S1-S6) and a pore-forming loop. The positively charged fourth transmembrane segment (S4) acts as a voltage sensor and is involved in channel gating. The crystal structure of the bacterial NavAb channel has revealed a number of novel structural features compared to earlier potassium channel structures including a short selectivity filter with ion selectivity determined by interactions with glutamate side chains [278]. Interestingly, the pore region is penetrated by fatty acyl chains that extend into the central cavity which may allow the entry of small, hydrophobic pore-blocking drugs [278]. Auxiliary \( \beta 1, \beta 2, \beta 3 \) and \( \beta 4 \) subunits consist of a large extracellular N-terminal domain, a single transmembrane segment and a shorter cytoplasmic domain.

The nomenclature for sodium channels was proposed by Goldin et al., (2000) [146] and approved by the NC-IUPHAR Subcommittee on sodium channels (Catterall et al., 2005, [53]).

Contents

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Database links

Voltage-gated sodium channels (Na\textsubscript{V})
https://www.guidetopharmacology.org/GRAC/FamilyDisplayForward?familyId=82
Introduction to Voltage-gated sodium channels (Na\(_V\))

https://www.guidetopharmacology.org/GRAC/FamilyIntroductionForward?familyId=82

Channels and Subunits

- Na\(_V\)1.1
  https://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=578
- Na\(_V\)1.2
  https://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=579
- Na\(_V\)1.3
  https://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=580
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- Na\(_V\)1.5
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- Na\(_V\)1.6
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- Na\(_V\)1.8
  https://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=585
- Na\(_V\)1.9
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