



Inserm

Institut national
de la santé et de la recherche médicale



Institut NeuroMyoGène CNRS UMR 5310 / INSERM U1217

Faculté de Médecine et de Pharmacie - 8, Av. Rockefeller - 69008 LYON

Tel : (33) 0426688297 - Fax : (33) 0426688292 - www.inmg.fr

LES SÉMINAIRES DE L'INMG

Trafficking of T-type calcium channels in health and disease

Par

Norbert WEISS

(Invité par Vincent JACQUEMOND)

**Head Ion Channels and Diseases Group
Institute of Organic Chemistry and Biochemistry
166 10 Prague 6 - Czech Republic**

Lab: www.theweisslab.com

**Vendredi 9 février 2018
14 heures**

**Salle des Conférences
Médiathèque Paul Zech
Faculté de Médecine Lyon Est
8, Avenue Rockefeller
69008 LYON**

Abstract:

T-type calcium channels are key contributors to neuronal physiology where they shape electrical activity of nerve cells and contribute to the release of neurotransmitters. Alteration of T-type channel expression has been causally linked to a number of pathological conditions including neuropathic pain and absence seizure activity. Although a number of signaling pathways regulating the activity of T-type calcium channels have been reported, the molecular machinery and signaling molecules controlling the trafficking and expression of the channel protein at the plasma membrane remain largely unknown. I will present some of the basic mechanisms recently identified controlling the physiological trafficking of T-type channels, and illustrate how metabolic defects or congenital mutations can disturb this trafficking machinery and eventually leading to disease conditions.

Publications:

Proft J, Rzhpetskyy Y, Lazniewska J, Zhang FX, Snutch TP, Zamponi GW, Weiss N (2017) The *Cacna1h* mutation in the GAERS model of absence epilepsy enhances T-type Ca^{2+} currents by altering calnexin- dependent trafficking of $Ca_v3.2$ channels. *Sci Reports* 7:11513.

Weiss N, Zamponi GW (2017) Trafficking of neuronal calcium channels. *Neuronal Signaling* 1:1-16.

Lazniewska J, Rzhpetskyy Y, Zhang FX, Zamponi GW, Weiss N (2016) Cooperative roles of glucose and asparagine-linked glycosylation in T-type calcium channel expression. *Pflügers Arch – Eur J Physiol* 468:1837-1851.

Rzhpetskyy Y, Lazniewska J, Proft J, Campiglio M, Flucher B, Weiss N (2016) A $Ca_v3.2$ /Stac1 molecular complex controls T-type channel expression at the plasma membrane. *Channels (Austin)* 10:346-354.

Weiss N, Black S, Bladen C, Chen L, Zamponi GW (2013) Surface expression and function of $Ca_v3.2$ T-type calcium channels is controlled by asparagine-linked glycosylation. *Pflügers Arch – Eur J Physiol* 465:1159-1170.