



Institut NeuroMyoGène

INMG seminar

Friday November 30th 2018 11:00

Salle des Pas Perdus - 1er étage

Faculté de Médecine Lyon Est

Structures and transitions of the serotonin 5-HT₃ receptor

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The serotonin 5-HT₃ receptor is a pentameric ligand-gated ion channel. It belongs to a large family of receptors that transduce signals across the plasma membrane: upon binding of neurotransmitter molecules to extracellular sites, the receptors undergo complex conformational transitions, which result in transient opening of a pore permeable to ions. 5-HT₃ receptors are therapeutic targets for emesis and nausea, irritable bowel syndrome and depression. I will present structures of the 5-HT₃ receptor obtained by crystallography or cryo-electron microscopy. The structures, obtained in complex with inhibitors or agonists, represent snapshots in different states: inhibited, pre-active, active. Together with molecular dynamics simulations and functional recordings, they reveal the molecular mechanism of the fast neurotransmission mediated by 5HT₃ receptors.

Dr. Hugues NURY

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SELECTED PUBLICATIONS

Conformational transitions of the serotonin 5-HT₃ receptor

Polovinkin L, Hassaine G, Perot J, Neumann E, Jensen AA, Lefebvre SN, Corringer PJ, Neyton J, Chipot C, Dehez F, Schoehn G, Nury H.

Nature 2018 Oct 31 563, 275-279.

X-ray structure of the mouse serotonin 5-HT₃ receptor.

Hassaine G, Deluz C, Grasso L, Wyss R, Tol MB, Hovius R, Graff A, Stahlberg H, Tomizaki T, Desmyter A, Moreau C, Li XD, Poitevin F, Vogel H, Nury H.

Nature. 2014 Aug 21;512(7514):276-81.

Pentameric ligand-gated ion channel ELIC is activated by GABA and modulated by benzodiazepines.

Spurny R, Ramerstorfer J, Price K, Brams M, Ernst M, Nury H, Verheij M, Legrand P, Bertrand D, Bertrand S, Dougherty DA, de Esch IJ, Corringer PJ, Sieghart W, Lummis SC, Ulens C.

Proc Natl Acad Sci U S A. 2012 Oct 30;109(44):E3028-34

X-ray structures of general anaesthetics bound to a pentameric ligand-gated ion channel.

Nury H, Van Renterghem C, Weng Y, Tran A, Baaden M, Dufresne V, Changeux JP, Sonner JM, Delarue M, Corringer PJ.

Nature. 2011 Jan 20;469(7330):428-31.

X-ray structure of a pentameric ligand-gated ion channel in an apparently open conformation.

Bocquet N, Nury H, Baaden M, Le Poupon C, Changeux JP, Delarue M, Corringer PJ.

Nature. 2009 Jan 1;457(7225):111-4.
