Postgraduate / Postdoc position in Genoa, Italy, lab of Michael Pusch – CLC chloride/proton exchangers in genetic neurodevelopmental diseases

We are offering a 1 year postgraduate / postdoc position for our Telethon project on endosomal / lysosomal chloride / proton exchangers of the CLC family implicated in various neurodevelopmental and neurodegenerative genetic diseases. The project involves primarily the analysis of putatively disease causing CLC gene variants, deciphering molecular pathological mechanisms and investigating interactions of mutated with WT CLC subunits. Experiments are performed in heterologous expression systems using molecular biology, biochemical, fluorescence and electrophysiological techniques. Training will be provided, but expertise in at least some of the techniques is welcome. The work, carried out in collaboration with human genetics groups, has the long-term goal to use mechanistic understanding to devise rational strategies for specific pharmacological or gene-therapeutic therapies. However, the results also have an immediate impact on the life of families with children affected by CLC related neurological disorders.
Our lab is located in at the Institute of Biophysics in Genoa, Italy at the Mediterranean Sea to the south and beautiful mountains in the north.

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Further reading:

Bose S, He H, Stauber T. 2021. Neurodegeneration upon dysfunction of endosomal/lysosomal CLC chloride transporters. Front Cell Dev Biol DOI: 10.3389/fcell.2021.639231

Palmer EE, Pusch M, …, Kalscheuer VM 2022. Functional and clinical studies reveal pathophysiological complexity of CLCN4-related neurodevelopmental condition. Mol Psychiatry doi: 10.1038/s41380-022-01852-9

Zifarelli G, Pusch M, Fong P. 2022. Altered voltage-dependence of slowly activating chloride-proton antiport by late endosomal ClC-6 explains distinct neurological disorders. J Physiol doi: 10.1113/JP282737

Duncan AR, …, Pusch M, Agrawal PB. 2021. Unique variants in CLCN3, encoding an endosomal anion/proton exchanger, underlie a spectrum of neurodevelopmental disorders. Am J Hum Genet doi: 10.1016/j.ajhg.2021.06.003

Pusch M, Zifarelli G. 2020. Large transient capacitive currents in wild-type lysosomal Cl(-)/H(+) antiporter ClC-7 and residual transport activity in the proton glutamate mutant E312A. J Gen Physiol 10:10268; doi: 10.1085/jgp.202012583

Wang K, …, Gourdon P. 2019. Structure of the human ClC-1 chloride channel. Plos Biol doi: 10.1371/journal.pbio.3000218

Jentsch TJ, Pusch M. 2018. CLC Chloride Channels and Transporters: Structure, function, physiology, and disease. Physiol Rev 98:1493-1590 doi: 10.1152/physrev.00047.2017