

# Ion Channels and Transporters and their Role in Calcium Signaling

<b>Description</b>	The objective of the course is to introduce participants into the complexities of calcium ( $\text{Ca}^{2+}$ ) imaging in living cells using laser-scanning confocal microscopy and fluorescent $\text{Ca}^{2+}$ indicators. Lectures will provide background information on $\text{Ca}^{2+}$ channels and transporters, on $\text{Ca}^{2+}$ indicators, on genetic $\text{Ca}^{2+}$ probes for organelle targeting and on caged $\text{Ca}^{2+}$ compounds.
<b>Eligibility</b>	Participants must have a Master degree in biology/chemistry/physics with an interest in $\text{Ca}^{2+}$ signaling and confocal imaging.
<b>Course Structure</b>	Experimental work, confocal image data acquisition in living cells, data extraction and analysis, presentation of results, lectures, demonstrations.
<b>Assessment</b>	Participation to all activities and a quiz test at the end of the course.
<b>Dates</b>	30 April 2012 - 2. May 2012
<b>Credits</b>	1.5 ECTS
<b>Facilitators</b>	Prof. Ernst Niggli, University of Bern, Department of Physiology Prof. Marcel Egger, University of Bern, Department of Physiology Prof. Ana Gomez, INSERM, Paris Prof. Natalia Shirokova, Pharmacology & Physiology, UMDNJ Newark
<b>Location</b>	University of Bern, Department of Physiology (details to follow).
<b>Registration</b>	send an Email to <a href="mailto:Sina.Henrichs@ibmm.unibe.ch">Sina.Henrichs@ibmm.unibe.ch</a>
<b>Deadline</b>	30 March 2012
<b>No of Places</b>	Maximum # of accepted students: 9 for practical part, lectures are public. Priority will be given to researchers (PhD students and post-docs) from NCCR TransCure.

	30. April 2012	1. May 2012	2. May 2012
8		Data Acquisition (Confocal Calcium Signals)	Caged Calcium & Photolysis <i>M. Egger</i>
9			Demo: Patch-Clamp
10	Confocal Microscopy and Fluorescent Calcium Indicators <i>E. Niggli</i>		Demo: Photolysis
11			
12	Lunch	Lunch	Lunch
13.30	Physiology and Pathophysiology of Ca <sup>2+</sup> Channels and Transporters <i>A. Gomèz</i>	Introduction + Journal Club	Data Presentation / Discussion
14		Analysis of Confocal Calcium Signals	
15	Genetic Ca <sup>2+</sup> probes <i>N. Shirokova</i>		Quiz & Feed-Back
16	Introduction Set-Ups		
17			
18	Discussion	Discussion	

Red = Lecture / Blue = Practical Part / Grey = Discussion