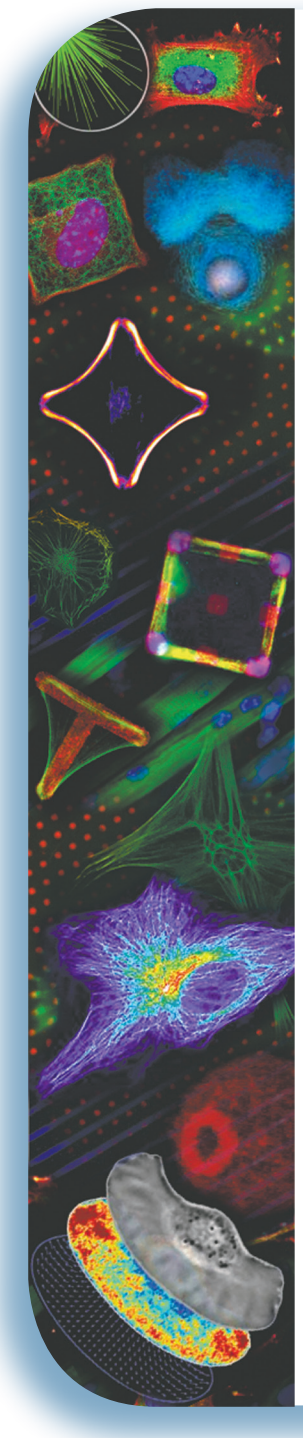

As part of our "Nano & Micro-envirmonments for Cell Biology" seminar series, we are delighted to invite you to attend this seminar to be given in english by :

Serge PICAUD

Institut de la Vision, Paris

Thursday 30 May 2013
2pm

Restoring vision in blind patients: from visual prostheses to the optogenetic therapy

Lecture room - 3rd floor
Building A - CNRS Tower
25 rue des martyrs - 38000 GRENOBLE

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Restoring vision in blind patients: from visual prostheses to the optogenetic therapy

Photoreceptors degenerate in different retinal diseases including retinal dystrophies like retinitis pigmentosa or more complex diseases such as age macular degeneration. Unfortunately, it remains very difficult or impossible to stop these degenerative processes. After the photoreceptor loss, the residual retina is still composed by two neuronal layers. Clinical trials with visual prostheses have demonstrated the possibility to restore some visual perception in patients. At the clinical trial unit headed by Pr Sahel in the National centre for Ophthalmology (Paris), one blind patient was able to read text on a computer monitor at a speed of 10 words/minutes. These performances were obtained with a retinal implant containing only 60 electrodes generating thereby at best 60 pixel images. The challenge is now to increase the pixel number and the pixel density. To achieve a cellular resolution, another strategy was recently proposed based on the expression of light-sensitive channels or pumps, the optogenetic strategy. In this case, gene therapy is used to target expression of the microbial proteins into specific neurones. Sight was recovered in blind mice and expression was obtained in postmortem human retinal tissue. This strategy is therefore getting close to clinical trials.

The talk will illustrate these strategies (retinal implants and optogenetic strategy) to explain future challenges including: 1) increasing pixel density and pixel number, 2) encoding visual information in a biomimetic manner, 3) defining the best cell targets for optogenetic therapy.

More events to come !

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