



## Genome editing in neurosciences

*Edition du génome et neurosciences*

*Paris - April 22, 2016*



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Innovations in molecular biology are allowing neuroscientists to study the brain with unprecedented resolution, from the level of single molecules to integrated gene circuits. Chief among these innovations is the CRISPR-Cas genome editing technology, which has the precision and scalability to tackle the complexity of the brain. This *Colloque Médecine et Recherche* brings together experts from around the world that are applying genome editing to address important challenges in neuroscience, including basic biology in model organisms that has the power to reveal systems-level insight into how the nervous system develops and functions as well as research focused on understanding and treating human neurological disorders. We hope that you will join us in Paris for this exciting day to explore how genome editing is advancing neuroscience research and meet some of the leading researchers in this field.

*Les innovations en biologie moléculaire permettent d'étudier le cerveau avec une résolution inégalée, depuis les molécules jusqu'aux circuits géniques intégrés. La principale innovation concerne une technologie de modification du génome, CRISPR-Cas, qui offre précision et flexibilité afin d'aborder l'étude de la complexité du cerveau. Ce Colloque Médecine et Recherche réunit des experts du monde entier qui utilisent les techniques de genome editing pour répondre à des questions importantes en neuroscience, y compris en biologie fondamentale à partir de l'étude d'organismes modèles, ce qui peut permettre de mieux comprendre le fonctionnement et le développement du système nerveux, mais aussi contribuer à la compréhension et au traitement des troubles neurologiques chez l'homme. Nous espérons que vous vous joindrez à nous à Paris pour découvrir comment les techniques d'édition du génome permettent de réaliser d'importants progrès dans le domaine de la recherche en neuroscience et de rencontrer quelques-uns des plus éminents spécialistes de ce domaine de recherche.*



# Program

## Scientific Committee:

**Rudolf Jaenisch** (MIT, Cambridge, USA)  
**Feng Zhang** (MIT, Cambridge, USA)  
**Fred Gage** (Salk Institute for Biological Studies, La Jolla, USA)  
**Yves Christen** (Fondation IPSEN, Paris, France)

**Registration:** Centre de Conférences et de Réceptions Etoile St-Honoré  
21-25 rue Balzac - 75008 Paris, France

- 8:30 am ———— **Yves Christen** (Fondation IPSEN, Paris, France)  
Welcoming remarks
- 8:45 am ———— **Emmanuelle Charpentier** (Umeå University, Umeå, Sweden)  
CRISPR-Cas9: origins, biology, evolution and applications
- 9:15 am ———— **Rudolf Jaenisch** (MIT, Cambridge, USA)  
PS cells, gene editing and complex diseases
- 9:45 am ———— **Jean-Stéphane Joly** (CNRS/INRA, University Paris-Saclay, Gif-sur-Yvette, France)  
Pruning the branches of the tree of life with TALEN/CRISPR scissors: progress in neurosciences
- 10:15 am ———— Posters and coffee break
- 11:00 am ———— **Myriam Heiman** (MIT, Cambridge, USA)  
Genome-wide genetic screening in the mammalian central nervous system
- 11:30 am ———— **Marius Wernig** (Institute for Stem Cell Biology and Regenerative Medicine, Stanford, USA)  
Direct lineage conversion towards the neural lineage
- 12:00 am ———— **Filippo Del Bene** (Institut Curie, Paris, France)  
Dissecting neural circuit function in the zebrafish visual system using CRISPR/Cas9 nucleases
- 12:30 pm ———— Lunch and posters
- 2:00 pm ———— **Salvatore Incontro** (University of California San Francisco, San Francisco, USA)  
Dissecting the role of synaptic proteins with CRISPR
- 2:30 pm ———— **Fred Gage** (Salk Institute for Biological Studies, La Jolla, USA)  
Studying mobile elements by gene editing
- 3:00 pm ———— **Hideyuki Okano** (Keio University, Tokyo, Japan)  
Transgenic and genome-editing technologies of non-human primates for Innovative Brain Science
- 3:30 pm ———— Posters and coffee break
- 4:00 pm ———— **Feng Zhang** (MIT, Cambridge, USA)  
Genome editing using CRISPR-Cas systems
- 4:30 pm ———— **Neville Sanjana** (Broad Institute, Cambridge, USA)  
Genome engineering and rapid human cortical neuron differentiation for understanding de novo mutations in autism
- 5:00 pm ———— **Lisa Ellerby** (Buck Institute for Research on Aging, Novato, USA)  
Using genome engineering to understand Huntington's disease
- 5:30 pm ———— Conclusion

## NEUROSCIENCES

- 1990 ■ Glutamate, cell death and memory
- 1991 ■ Gene transfer and therapy in the nervous system
- 1992 ■ Motor and cognitive functions of the prefrontal cortex
- 1993 ■ Temporal coding
- 1994 ■ Neurobiology of decision-making
- 1995 ■ Isolation, characterization and utilization of CNS stem cells
- 1996 ■ Normal and abnormal development of the cortex
- 1997 ■ Neuroplasticity: Building a bridge from the laboratory to the clinic
- 1998 ■ Neuroimmune interactions and neuropsychiatric diseases
- 2000 ■ Neuronal death: By accident or by design
- 2001 ■ Neurosciences at the post-genomic era
- 2003 ■ Stem cells in the nervous system: Function and clinical implications
- 2005 ■ Neurobiology of human values
- 2006 ■ Memories: Molecules and circuits
- 2007 ■ Retrotransposition, diversity & the brain
- 2008 ■ Neurobiology of «Umwelt»: How living beings perceive the world
- 2009 ■ Macro-roles for microRNAs in the life and death of neurons
- 2010 ■ Characterizing consciousness: From cognition to the clinic?
- 2011 ■ Epigenetics, brain and behavior
- 2012 ■ Programmed cells : From basic neuroscience to therapy
- 2013 ■ New frontiers in social neuroscience
- 2014 ■ Micro-, meso- and macro-connectomics of the brain
- 2015 ■ Micro-, meso- and macro-dynamics of the brain
- 2016 ■ Genome editing in neurosciences

## ALZHEIMER'S DISEASE

- 1987 ■ Immunological aspects of Alzheimer's disease and brain amyloidosis
- 1988 ■ Genetics and Alzheimer's disease
- 1988 ■ Neuronal grafting and Alzheimer's disease: Future perspectives
- 1989 ■ Biological markers of Alzheimer's disease
- 1989 ■ Imaging, cerebral topography and Alzheimer's disease
- 1990 ■ Growth factors and Alzheimer's disease
- 1991 ■ Neurophilosophy and Alzheimer's disease
- 1992 ■ Heterogeneity of Alzheimer's disease
- 1993 ■ The  $\beta$ -amyloid protein precursors in development, aging and Alzheimer's disease
- 1994 ■ Alzheimer's disease: Lessons from cell biology
- 1995 ■ Apolipoprotein E and Alzheimer's disease
- 1996 ■ Connections, cognition and Alzheimer's disease
- 1997 ■ Presenilins and Alzheimer's disease
- 1998 ■ Epidemiology of Alzheimer's disease: From gene to prevention
- 1999 ■ Fatal attractions within neurons: Intracytoplasmic protein aggregates in Alzheimer's disease and related neurodegenerative disorders
- 2000 ■ Neurodegenerative diseases: Loss of function through gain of function
- 2001 ■ Notch from neurodevelopment to neurodegeneration: keeping the fate
- 2002 ■ Immunization against Alzheimer's and other neurodegenerative diseases
- 2003 ■ The living brain and Alzheimer's disease
- 2004 ■ Genotype – proteotype – phenotype correlations in dementia

- 2006 ■ Alzheimer: 100 years and beyond

*(in partnership with Tübingen University)*

- 2007 ■ Synaptic plasticity and the mechanism of Alzheimer's disease
- 2008 ■ Intracellular traffic and neurodegenerative disorders
- 2009 ■ Diabetes, insulin and Alzheimer's disease
- 2010 ■ Two faces of evil: Cancer and neurodegeneration
- 2011 ■ Protein quality control in neurodegenerative diseases
- 2012 ■ Proteopathic seeds and neurodegenerative diseases

## ENDOCRINOLOGY

- 2002 ■ Brain somatic cross-talk and the central control of metabolism
- 2002 ■ Endocrine aspects of successful aging: Of genes, hormones and lifestyles
- 2003 ■ Hormones and the brain
- 2004 ■ Deciphering growth
- 2005 ■ Insights into receptor function and new drug development targets
- 2006 ■ Hormonal control of cell cycle
- 2007 ■ Hormones and social behavior
- 2008 ■ IGFs: Local repair and survival factors throughout life-span
- 2009 ■ Novel insights in adipose cell functions
- 2010 ■ Multi-system endocrine disruption
- 2011 ■ Multiple origins of sex differences in brain. Neuroendocrine functions and their pathologies
- 2012 ■ Hormones, intrauterine health and programming
- 2013 ■ Brain crosstalk in puberty and adolescence
- 2014 ■ A time for metabolism and hormones
- 2015 ■ Stem cells in neuroendocrinology

## CANCER SCIENCE

- 2005 ■ Can cancer be treated as a chronic disease?
- 2006 ■ Are inflammation and cancer linked?
- 2007 ■ Metastasis and invasion
- 2008 ■ Metabolism and cancer
- 2009 ■ Molecular targets of cancer therapy
- 2010 ■ Stem cells and cancer
- 2011 ■ Epigenetics and cancer
- 2012 ■ Mouse models of human cancer: Are they relevant?
- 2013 ■ Cancer immunotherapy
- 2014 ■ Cancer genomics
- 2015 ■ Tumor heterogeneity and microenvironment
- 2016 ■ Tumor metabolism

## VASCULAR TREE

- 2004 ■ Origins and regeneration of the vascular tree
- 2005 ■ Life and death of the vascular tree
- 2006 ■ The vascular tree aflame!
- 2007 ■ Angiogenesis and neurogenesis
- 2008 ■ Oxygen sensing in the vascular tree

## LONGEVITY

- 1996 ■ Longevity: To the limits and beyond
- 1998 ■ The paradoxes of longevity
- 1999 ■ Sex and longevity: sexuality, gender, reproduction, parenthood
- 2001 ■ Brain and longevity
- 2004 ■ Frailty and longevity

To be returned to the Fondation IPSEN with the registration fee

## Genome editing in neurosciences

Paris - April 22, 2016

Family name / Nom .....

First name / Prénom.....

Speciality .....

Department or Unit .....

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Affiliation .....

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Street and N° .....

Area code .....

City .....

Country .....

Telephone .....

E-mail .....

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### ■ Registration Fee

120 € before March 1, 2016

150 € after March 1, 2016

Includes lunch, coffee-breaks, congress bag, proceedings

Free for students but registration is compulsory and should be sent before March 15<sup>th</sup>, 2016. Registration and lunch will be confirmed according to availability.

Student

### ■ Payment

- Cheque should be made out to 'Fondation IPSEN/ Fondation de France'

- Payment on site is possible for foreigners (cash only, no credit card please).

Form to be returned to [dominique.couzy@ipsen.com](mailto:dominique.couzy@ipsen.com)

### ■ Organization

Fondation IPSEN

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### ■ Registration

Fondation IPSEN

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### ■ Venue

Centre de Conférences

et de Réceptions Etoile St-Honoré

21-25 rue Balzac

75008 Paris

France

Public parking Etoile Friedland at 150m

Metro : Charles de Gaulle Etoile (line 1, 2 et 6) and RER A

### ■ Official language

English

### ■ Posters

Abstracts for posters should be submitted before March 1, 2016 to [dominique.couzy@ipsen.com](mailto:dominique.couzy@ipsen.com)

### ■ Lunch

Served on site

### ■ Accommodation

You will receive, along with your registration confirmation, a list of hotels located close to the venue of the meeting

Date.....

Signature :

