

Kim Do Cuénod and Michel Cuénod were invited as guest speakers to the **1st INTERNATIONAL CONGRESS OF NEUROPSYCHOPHARMACOLOGY OF THE ASSOCIATION OF SOUTHEAST ASIAN NATIONS (ASEAN)**. The congress was organized by the Asian College of Neuropsychopharmacology (AsCNP) and took place from 28 February to 2 March, in Yogyakarta on the isle of Java (Indonesia).



Dr Luis Alameda, psychiatrist and clinician scientist at the Center for Psychiatric Neuroscience, **Dr Margot Fournier** and **Dr Ines Khadimallah**, neurobiologists and members of the research group directed by Kim Do Cuénod, are co-recipients of one of the **RESEARCH PRIZES 2019 OF THE EUROPEAN PSYCHIATRIC ASSOCIATION (EPA)**. They were rewarded for an article they published in November 2018 in *Proceedings of the National Academy of Sciences of the USA (PNAS)*, one of the most important scientific journals at the international level. The winning article belonged to the category called *Biological correlates and treatments of mental disorders*; it is entitled *Redox Dysregulation as a Link between Childhood Trauma and Psychopathological and Neurocognitive Profile in Early Psychosis Patients* (see under *News from Research – Link between childhood trauma and psychosis*).



Luis Alameda



Margot Fournier



Ines Khadimallah

OPEN HOUSE

On Saturday September 28th, 2019, the Center for Psychiatric Neuroscience (CPN, Department of Psychiatry, Lausanne University Hospital) opened its doors to the public from 11am to 5pm. Through exhibitions and interactive workshops, visitors were able to learn about the studies conducted by the CPN teams, including the Unit for Research in Schizophrenia (URS) supported by the Alamaya Foundation. It was a unique opportunity to meet the clinicians and researchers who work hand in hand to improve the understanding, detection and treatment of psychiatric disorders. On the whole, 23 workshops and presentations were available for the public, 8 of which had been set up by the URS team (see photos below). A great number of enthusiastic visitors participated in the event, to which the friends and donors of the Alamaya Foundation have all been invited.



Dr Daniella Dwir, postdoc



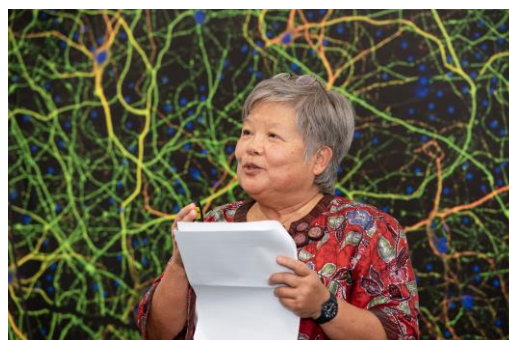
Dr Pascal Steullet, research fellow



Dr Raoul Jenni, psychologist

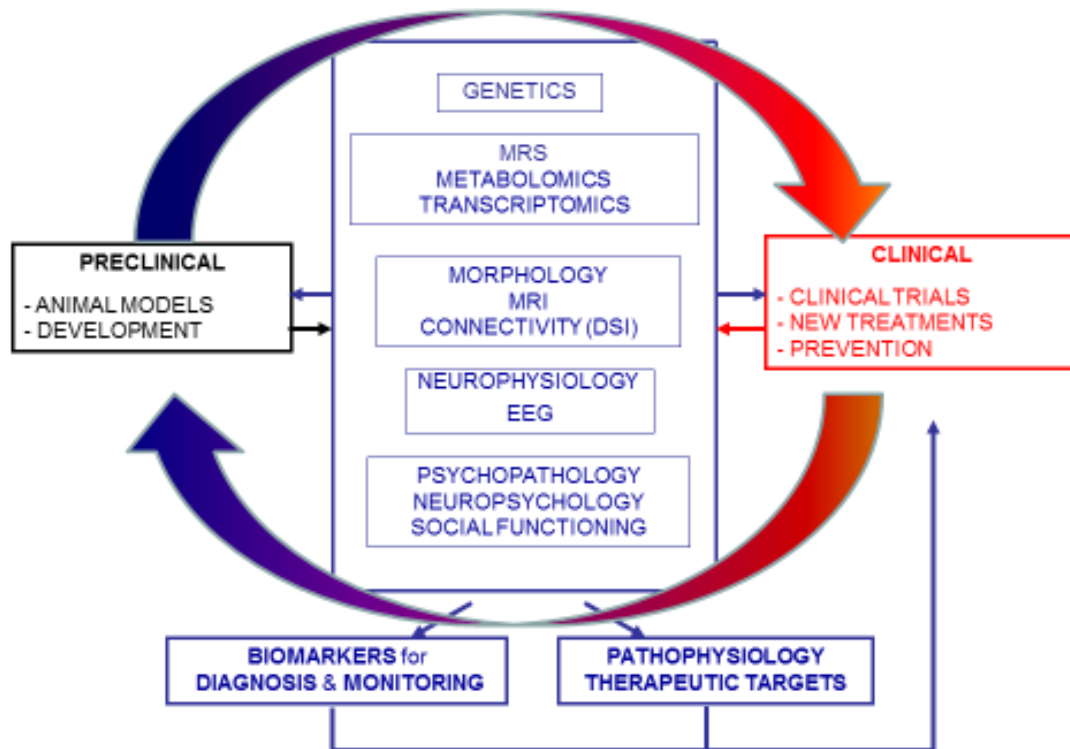


Dr Paul Klauser, clinician scientist



Prof. Kim Do Cuénod, director of the URS

NEWS FROM RESEARCH



Research conducted at the URS is based on a translational approach, which means that Prof. Kim Do Cuénod's team works both with patients (clinical research) and with experimental models (preclinical research). When anomalies are detected in the brain or blood of patients, researchers examine the models to understand the mechanisms causing these alterations. They are thus able to identify new principles and therapeutic targets, as well as biological markers (alterations in the blood, EEG or magnetic resonance imaging, which indicate a pathological status) to facilitate diagnosis, evaluate the efficiency of treatments, and promote early intervention.

TOPOLOGY ALLOWS TO PREDICT THE EVOLUTION OF PATIENTS' SOCIAL FUNCTIONING FROM THE ONSET OF THE DISEASE

With respect to early intervention in psychosis, key issues include the patient's motivation for treatment, his/her response to treatment, and the evolution of his/her functional outcome. It is thus essential to have clinical and biological markers allowing to quantify the stages of the disease, its likely evolution and response to treatment, in order to ensure the best possible therapeutic decisions. **Margot Fournier (postdoc at the URS), in collaboration with Martina Scolamiero and Kathryn Hess (Laboratory for Topology and Neuroscience, EPFL), has identified patient profiles which allow to predict their likely evolution. Thanks to a state of the art method, the *computational topological analysis* of symptoms and blood measurements, we were able to identify 3 patient categories.** Patients of group A have a more favourable evolution than those of the other groups (B & C) with respect to their functional outcome after 3 years. They also have a metabolic profile suggesting that they have a better antioxidant defense whereas as the other 2 groups, whose functional evolution is worse, show signs of oxidative stress.

Topological analysis combining symptoms and blood data thus allows to predict the evolution of patients' functional outcome at an early stage, and to optimize therapeutic strategies.

MICRO-STRUCTURAL ALTERATIONS OF THE MEDIAL AND PULVINAR THALAMIC NUCLEI

With regard to the identification of early markers of the disease, we conducted a study focusing on the thalamus; it revealed anomalies in two nuclei of the thalamus, a part of the brain which is key for the connections with the cortex. The state-of-the-art imaging method called "Neurite Orientation Dispersion and Density Imaging (NODDI)" allows to assess the microstructure of brain areas. **In patients suffering from schizophrenia, it showed alterations in two nuclei of the thalamus, the mediodorsal and the pulvinar, more so in the chronic phase than at the onset of the disease.** These two nuclei form connections with areas of the cortex involved in the pathology, and are related to memory and cognitive functions (mediodorsal nucleus) as well as to visual attention and movement perception (pulvinar).

LINK BETWEEN CHILDHOOD TRAUMA AND PSYCHOSIS

Luis Alameda, psychiatrist and clinician scientist, Margot Fournier and Ines Khadimallah, who are both neurobiologists at the URS, focused their research on about a hundred patients of the TIPP program (Treatment and Intervention in the early Phase of Psychosis, Department of Psychiatry, Lausanne University Hospital). They concentrated in particular on patients who suffered from trauma during childhood (emotional, physical, sexual abuse), a subgroup which represents approximately 25% of the cohort.

In an article published on November 19th, 2018, in the journal PNAS, they report that **patients whose antioxidant (or redox) systems are deregulated, show neuro-anatomic alterations and more pronounced clinical symptoms of the disease.** Indeed, in case of redox dysregulation, which can be diagnosed with a blood test, the volume of their hippocampus – a brain structure which is key for cognition – is smaller, and cognitive deficits as well as clinical symptoms are more severe. **These results thus suggest that a functional antioxidant system allows to reduce the impact of childhood trauma, and that restoring this system may become an important therapeutic target in psychosis. This finding is particularly interesting since it paves the way for adapting treatment in psychiatry according to blood based biomarkers.**

COLLABORATION WITH THE PHARMACEUTICAL INDUSTRY

Since several years, pharmaceutical companies have stopped investing in research in psychiatry given that it is difficult to achieve a new "blockbuster" within a commercially interesting time limit. However, the research strategy implemented by Kim Do Cuénod's group, aimed at the identification of the causes and mechanisms of psychosis as well as at the definition of biological markers, has attracted the attention of some companies. The goal of this research strategy is to be able to **intervene in the early stages of the disease, to work out preventive measures** aimed at hindering or limiting the development of the disease, and to **identify new therapeutic targets.** The **validation of these therapeutic targets** is of key interest for certain companies, which are considering to establish **scientific collaboration** with the URS. Their interest highlights the relevance of the research supported by Alamaya but is not (yet) productive on the financial level.

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