

Precision Psychiatry: -omics and imaging biomarkers of major psychiatric disorders

Day 1: April 28th, 2025:

Welcome: Bernhard Baune

Session 1 theoretical: 9:00-10:30

Understanding psychiatric disorders in clinical psychiatry.

Chair: Bernhard Baune

o Psychopathology, clinical presentation and use of AI in mental illness.

Alessandro Serretti, Kore University of Enna, Enna, Italy

o Psychological and psychotherapeutic approaches to mental illness.

Alessandra Minelli, University of Brescia, Brescia, Italy

o Psychiatric management and psychopharmacological treatments of patients.

Bernhard Baune, University of Münster, Münster, Germany

Break: 10:30-10:45

Session 2 - theoretical: 10:45-12:15

Suicidality under the lens: neuroimaging, genetic, and biologic evidence

Chair: Giuseppe Fanelli

o Neuroimaging correlates of suicidal thoughts and behaviors in mood disorders.

Lejla Colic, Jena University Hospital, Jena, Germany

o Imaging the altered immune-inflammatory setpoints in the suicidal brain.

Francesco Benedetti, University Vita-Salute San Raffaele, Milan, Italy

o The mysterious leap from the body to the mind: the genetic overlap between inflammatory conditions, depression, and suicide.

Xenia Gonda, Semmelweis University, Budapest, Hungary

Lunch Break: 12:30-13:30

Session 3 – practical (part 1): 13:30-17:30 (including break from 15:30-15:45)

Parallel practical sessions of A) biomarkers and precision psychiatry and B) imaging genetics of suicide

A) Facilitators of molecular and genomic practical

Evelien Van Assche, University of Münster, Münster, Germany; François-Xavier Lejeune, Paris Brain Institute, Paris, France; Toni Lange, University of Münster, Münster, Germany

- o Building working groups of participants.
- o Introduction to biomarkers, predictors, stratification and personalized medicine/precision psychiatry through case studies.
- o Distribute subjects and group work on subjects.

B) Facilitators of imaging genetics practical

Martina Arenella, King's College London, London, UK; Giuseppe Fanelli, University of Bologna, Bologna, Italy; Alessandro Serretti, Kore University of Enna, Enna, Italy.

- o Building working pairs of participants.
- o Hands-on session on imaging genetics, focusing on morphological and functional brain MRI (MRI) traits relevant to suicidal phenotypes.
- o Distribute subjects and group work on subjects.

Day 2: April 29th 2025:

Welcome: Bernhard Baune

Session 4 - theoretical: 9:00-10:30

Introduction on genetics and the use of polygenic score analyses in evaluating risks (i.e., major depression, bipolar disorder, schizophrenia) and suicidal phenotypes.

Chair: Marie-Claude Portier

- o Psychiatric genetics, that sounds complex.

Evelien Van Assche, University of Münster, Münster, Germany

- o From genes to drugs: are we ready for pharmacogenetics implementation in bipolar disorder?

Alessio Squassina, University of Cagliari, Cagliari, Italy

- o Decoding the Molecular Echoes of Early Life Stress: Unraveling the miR-99b-5p and Zbp1 Pathway in Schizophrenia and Neuroinflammation

Lalit Kaurani, DZNE-Göttingen, Germany

Break: 10:30-10:45

Session 5 - theoretical: 10:45-12:15

Introduction to pharmacogenomics in major psychiatric disorders (major depression, bipolar disorder, schizophrenia) and suicidal phenotypes.

Chair: Mara Dierssen

o Pharmacogenomics of psychiatric disorders/suicide phenotypes and treatment resistance
Mara Dierssen, CRG, Barcelona, Spain

o Utility of pharmacogenomics-guided testing to optimise antidepressant treatment in major depressive disorder: limitations and future opportunities
Alessandra Minelli, University of Brescia, Brescia, Italy

o Gene expression regulation in the blood: can we detect biomarkers of psychiatric disorders?
Marie-Claude Potier, Paris Brain Institute, Paris, France

o Extracellular vesicles as a novel source of biomarkers of response to treatment in psychiatric disorders
Claudia Pisanu, Cagliari University, Italy

Lunch Break: 12:30-13:30

Session 6 – practical (part 2): 13:30-17:30 (including break from 15:30-15:45)

Parallel practical sessions of A) biomarkers and precision psychiatry and B) imaging genetics of suicide.

Facilitators:

- **A) Evelien Van Assche, University of Münster, Münster, Germany; François-Xavier, Paris Brain Institute, Paris, France; Toni Lange, University of Münster, Münster, Germany**
- **B) Martina Arenella, King's College London, London, UK; Giuseppe Fanelli, University of Bologna, Bologna, Italy; Alessandro Serretti, Kore University of Enna, Enna, Italy.**

Day 3: April 30th 2025: 9:00-10:00

Welcome: Giuseppe Fanelli

Keynote lecture

Chair: Giuseppe Fanelli

Topic and speaker

Topic: Neurostimulation in Psychiatry (final title tbd)

Prof. Chris Bervoets, Department of Psychiatry, University Psychiatric Center KU Leuven, Leuven, Belgium

Break: 10:00-10:30

Session 7 practical: 10:30-13:30

Preparation of presentations of student projects in groups A and B

o Finalizing students group work from practical sessions and preparation of presentations.
Conducted by facilitators: Evelien Van Assche, Toni Lange, François-Xavier Lejeune and Martina Arenella, Giuseppe Fanelli, Alessandro Serretti.

Lunch Break: 13:30-14:30

Session 8: 14:30-17:30 (including break from 16:00-16:15)

Presentation of projects groups

o Oral presentations by student pairs

Conducted by facilitators: Evelien Van Assche, Toni, Lange, François-Xavier Lejeune and Martina Arenella, Giuseppe Fanelli, Alessandro Serretti

Session 9: 17:30-18:00

Final session: Awards ceremony and farewell

Chairs: Bernhard Baune and Giuseppe Fanelli

o *Closing and Farewell*