PROGRAMME
iPSYCH ANNUAL MEETING
19-21 JUNE 2018
Dear iPSYCH employee or collaborator,

Welcome to the iPSYCH Annual Meeting 2018.

As you all know iPSYCH received its third grant of DKK 120 million from the Lundbeck Foundation earlier this year, and with this iPSYCH remains one of the largest projects in the world within the field of psychiatry research. Since 2012, iPSYCH researchers have been involved in publishing more than 500 scientific articles on mental disorders in collaboration with several international research institutions - we are very proud of this.

We are excited that once again our programme has a line-up of distinguished keynote speakers - all of them leaders within their field of research and also among our close collaborators. This meeting will mainly be single track since there will only be one parallel symposia session, where interesting results from three different research areas in iPSYCH will be presented by the iPSYCH Community. Finally, we look forward to the poster session.

We look forward to another inspiring meeting at the 6th iPSYCH Annual Meeting. These meetings allow us to keep up with the broad range of iPSYCH research and to network with your colleagues.

Best regards,
iPSYCH

Merete Nordentoft
Anders Børglum
Preben Bo Mortensen
Thomas Werge
Ole Mors
David Hougaard
Kristjar Skajaa
PROGRAMME
TUESDAY 19 JUNE

10.30 – 11.00 Arrival

11.00 – 11.15 Preben Bo Mortensen
*Welcome and opening remarks*

11.15 – 12.15 Daniel Geschwind
*Autism Genetics, 2018: One neurologists view*

12.15 – 13.15 Lunch  LOCATION: RESTAURANT

13.15 – 14.15 Preben Bo Mortensen
*Schizophrenia epidemiology*

14.15 – 15.15 James Walters
*Insights from Schizophrenia GWAS*

15.15 – 15.45 Coffee/tea break

15.45 – 16.45 Anita Thapar
*What does the world need to learn about ADHD and how can iPSYCH help fill those gaps?*

16.45 – 18.00 Business meetings
• *Epigenetics: technical approach*
• *Substance use disorder and comorbidity with major psychiatric disorders*
  Detailed information on page 24

18.30 Dinner

20.00 – 22.00 Poster session  LOCATION: OPHOLDSSTUEN, GROUND FLOOR
  DETAILED INFORMATION ON PAGE 26-27
PROGRAMME
WEDNESDAY 20 JUNE

07.00 – 08.30 Breakfast

08.30 – 09.30 Naomi Wray & Peter Visscher
Genome-phenome analyses in complex traits

09.30 – 10.00 Coffee/tea break

10.00 – 11.15 Parallel Session - Symposia
ABSTRACTS ON PAGE 22-23

The role of rare variants in psychiatric disorders
Chair: Ditte Demontis – Moderator: Jakob Grove

PRESENTATIONS:
- a) The emerging role of ultra-rare variants in ADHD risk – Ditte Demontis
- b) The role of low frequency variants in ADHD – Kalle Leppälä
- c) Analysis of rare-variants in bipolar disorder exomes – Thomas Damm Als

Disease models, molecular mechanisms and drug targets
Chair & moderator: Jane H. Christensen

PRESENTATIONS:
- a) Molecular signatures associated with antidepressant treatment in a genetic model of affective disorder – Per Qvist
- b) The role of BRD1 in mitochondrial function – Veerle Paternoster
- c) Molecular signatures underlying behavioural changes induced by environmental deprivation and enrichment – Mathias Kaas Ollendorff
- d) Valproic acid induced expression changes in developing cortical neurons provide genetic link to autism risk – Tue Fryland

11.30 – 12.30 Michael E Benros
Infections and inflammation as possible courses of severe mental disorders – paving the way for new treatment targets

12.30 – 13.30 Lunch

13.30 – 14.30 Robert H. Yolken
The genome is bigger than you think – the role of the bacteriome, virome, mycobiome and protozome in human brain disorders

14.30 – 15.00 Coffee/tea break

15.00 – 16.00 M. Daniele Fallin
Autism Research – Important questions and emerging answers

16.00 – 18.30 Business meetings
- • GWAS of treatment response in Major Depression and ADHD
- • Statistical analyses in VIA 7 and VIA 11
DETAILED INFORMATION ON PAGE 24

19.00 Group photo

19.15 Gala dinner
# Programme
## Thursday 21 June

<table>
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<tr>
<th>Time</th>
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<tr>
<td>07.00 – 08.30</td>
<td>Breakfast</td>
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| 08.30 – 09.30 | Andrew McIntosh  
*What the world needs to learn about depression, and how iPSYCH can help? Part 1*  |
| 09.30 – 10.30 | Cathryn Lewis  
*What the world needs to learn about depression, and how iPSYCH can help? Part 2*  |
| 10.30 – 10.45 | Coffee/tea break                                                   |
| 10.45 – 11.45 | Rudolf Uher  
*Using what we know: Trans-diagnostic early risk identification and prevention of mental illness*  |
| 11.45 – 12.00 | Closing remarks                                                   |
| 12.00 – 12.15 | *Sandwich bag – grab and go* and departure                         |
Professor Preben Bo Mortensen
TUESDAY 19 JUNE @ 13.15 – 14.15:
SCHIZOPHRENIA EPIDEMIOLOGY

Preben Bo Mortensen is an MD, and Doctor of Medical Science. Currently, he is a full Professor at Aarhus University, Head of the National Centre for Register-based Research, and Scientific Director of iPSYCH.

He has devoted his career to identifying and pursuing ways of using the information stored in the Danish population-based registers to address research questions related to the epidemiology of psychiatric disorders.

Over the last decades, this has been extended to include biobanked material, thereby extending to large-scale population-based genetic studies as well as studies of gene-environment interactions. He has published 592 papers in peer-reviewed journals (H-index = 84) and collaborated with researchers across the globe.

Dr. Geschwind has put considerable effort into fostering large-scale collaborative patient resources for genetic research and data sharing in autism research. He has served on numerous scientific advisory boards, including the Faculty of 1000 Medicine, the Executive Committee of the American Neurological Association, the Scientific Advisory Board for the Allen Institute for Brain Science, the NIMH Advisory Council and the NIH Council of Councils. He has published over 400 papers and serves on the editorial boards of Cell, Neuron and Science. He has received several awards for his laboratory’s work and leadership including the Ruane Prize from the Brain and Behavior Foundation in 2013 and the Derek Denny-Brown Neurological Scholar Award from the American Neurological Association (ANA) in 2004. He is an elected Member of the American Association of Physicians and the National Academy of Medicine.
KEYNOTE SPEAKER

Professor James Walters

TUESDAY 19 JUNE @ 14.15 – 15.15
INSIGHTS FROM SCHIZOPHRENIA GWAS

James’s research interests centre on three areas: (i) using genetics to gain insight into the basis of psychosis and schizophrenia; (ii) studying the genetic, biological and psychosocial factors associated with treatment-resistant schizophrenia with the aim of stratifying those with psychosis to develop more personalised treatment approaches and (iii) developing large-scale methods of phenotypic data collection including on-line cognitive assessment and electronic health record linkage. In the last 5 years I have developed the CLOZUK project, the world’s largest collection of genetic samples from those with schizophrenia (17000) to help us address our research aims.

James is the Director of Research in the Division of Psychological Medicine and Clinical Neurosciences in Cardiff University, the Deputy Director of the National Centre for Mental Health and a senior member of the MRC Centre for Neuropsychiatric Genetics and Genomics. He is the Vice-Chair of the Psychiatric Genomics Consortium Schizophrenia Group and do clinical work as an honorary consultant psychiatrist with the Cardiff and Vale Early Intervention in Psychosis Service.

KEYNOTE SPEAKER

Professor Anita Thapar

TUESDAY 19 JUNE @ 15.45 – 16.45:
WHAT DOES THE WORLD NEED TO LEARN ABOUT ADHD AND HOW CAN iPSYCH HELP FILL THOSE GAPS?

Anita heads the academic Child & Adolescent Psychiatry section at the Division of Psychological Medicine and Clinical Neurosciences, Cardiff University and also directs the developmental disorders group within the MRC Centre for Neuropsychiatric Genetics and Genomics.

Her research focuses on the early origins and development of child neurodevelopmental disorders. Currently funded research grants include the contribution of genetic and early life exposures to ADHD and ASD trajectories, the genetics of preterm birth and its links with neurodevelopmental disorders, links between neurodevelopmental and mood disorders. Anita qualified in Medicine in Cardiff in 1985 and did a PhD in genetic epidemiology. She was Senior Lecturer in Child and Adolescent Psychiatry at the University of Manchester between 1996 and 1999. She then became the first Professor in Child and Adolescent Psychiatry in Wales in 1999.

Anita has received several prizes including the President’s Medal from the Royal College of Psychiatrists in 2015 for contributions to policy, public knowledge, education and meeting population and patient care needs.
Professor Peter Visscher

WEDNESDAY 20 JUNE @ 08.30 – 09.30:
GENOME-PHENOME ANALYSES IN COMPLEX TRAITS

Peter Visscher was born in The Netherlands from Dutch and English parents. He moved to Edinburgh in 1987 for an MSc and subsequent PhD in animal breeding and genetics, working on the estimation of genetic parameters in large livestock pedigrees. A postdoctoral period in Melbourne was followed by a return to Edinburgh, where he developed methods to map genetic loci underlying complex traits. In 1995 he moved to a faculty position at the University of Edinburgh, developing gene mapping methods and software tools, with practical applications in livestock and human populations. Visscher joined the Queensland Institute of Medical Research in 2005 and in 2011 moved to the University of Queensland where he is Professor and Chair of Quantitative Genetics. Visscher is a Senior Principal Research Fellow of the Australian National Health and Medical Research Council, was elected a Fellow of the Australian Academy of Science in 2010 and a Fellow of the Royal Society in 2018. Visscher’s research interests are focused on a better understanding of genetic variation for complex traits, including quantitative traits and disease.

Professor Naomi Wray

WEDNESDAY 20 JUNE @ 08.30 – 09.30:
GENOME-PHENOME ANALYSES IN COMPLEX TRAITS

Naomi Wray is an Australian National Health & Medical Research Council Principal Research Fellow and Fellow of the Australian Academy of Science. She holds joint Professorial positions between the Institute for Molecular Bioscience and Queensland Brain Institute at The University of Queensland, Brisbane, Australia. Her research focuses on genetics of psychiatric and neurological disorders.
KEYNOTE SPEAKER

**Postdoc**
**Michael E. Benros, PhD**

**WEDNESDAY 20 JUNE @ 11.30 – 12.30:**
**INFECTIONS AND INFLAMMATION AS POSSIBLE CAUSES OF SEVERE MENTAL DISORDERS – PAVING THE WAY FOR NEW TREATMENT TARGETS**

Dr. Michael E Benros, MD, PhD is a clinician and Research Leader into biological causes of mental disorders at the Mental Health Centre Copenhagen, Copenhagen University Hospital. He got his medical degree and PhD at Aarhus University and conducted his psychiatric and neurological residencies at the Copenhagen University Hospitals.

His research has focused on the possible role of inflammation in the aetiology of mental disorders, where he has taking advantage of the valuable data from the Danish nationwide registers and biobanks. He has been guided by the idea that maybe some of the mental disorders could be prevented or cured by focusing on the possible role of infection, autoimmune diseases and other inflammatory mechanisms. He is a board member of the Psychiatric Immunology Section of the World Psychiatric Association and the DANFUND research collaboration.

He has received a number of awards, including the prestigious Sapere Aude Research Leader award from the Independent Research Fond Denmark.

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**KEYNOTE SPEAKER**

**Professor**
**Robert H. Yolken**

**WEDNESDAY 20 JUNE @ 13.30 – 14.30:**
**THE GENOME IS BIGGER THAN YOU THINK – THE ROLE OF THE BACTERIOME, VIROME, MYCOBIOME AND PROTOZOME IN HUMAN BRAIN DISORDERS**

Dr. Yolken is the Theodore and Vada Stanley Distinguished Professor of Pediatrics at the Johns Hopkins School of Medicine. He chairs the Stanley Division of Developmental Neurovirology, the nation’s first pediatric research center designed to investigate links between early childhood infections, inflammation, and severe mental illness including schizophrenia, bipolar disorder, depression, and autism. He was Director of Pediatric Infectious Diseases at Johns Hopkins before organizing the Stanley Division. His research group is investigating whether these disorders can be associated with prior exposure to viral triggers such as herpesviruses and influenza viruses as well as eukaryotic organisms such as Candida albicans and Toxoplasma gondii. He is also interested in the role of the microbiome in inflammation as relating to psychiatric disorders.

Dr. Yolken attended Harvard College and Harvard Medical School and received post-doctoral training at Cornell University and the National Institutes of Health before joining the faculty at Johns Hopkins in 1979. He has over 500 published peer-reviewed articles and numerous book chapters and presentations at Scientific Meetings.
**Professor Andrew McIntosh**

**Professor M. Daniele Fallin**

**THURSDAY 21 JUNE @ 08.30 – 09.30:**

**WHAT THE WORLD NEEDS TO LEARN ABOUT DEPRESSION, AND HOW iPSYCH CAN HELP? PART 1**

Andrew McIntosh is Professor of Biological Psychiatry and Director of the MRC Centre for Cognitive Ageing and Cognitive Epidemiology at the University of Edinburgh. He trained in Medicine in Scotland before completing further postgraduate training in Psychiatry and in Statistics. He leads the Generation Scotland Expert Working Group for Psychiatric Disorders and is involved in several genetic consortia. His main research interest is in developing a better understanding the causes and consequences of depression. He currently co-chairs the Psychiatric Genomics Consortium Major Depressive Disorder Working Group with Cathryn Lewis.

**WEDNESDAY 20 JUNE @ 15.00 – 16.00:**

**AUTISM RESEARCH – IMPORTANT QUESTIONS AND EMERGING ANSWERS**

M. Daniele (Dani) Fallin, PhD, is the Sylvia and Harold Halpert Professor and Chair of the Department of Mental Health and the Director of the Wendy Klag Center for Autism and Developmental Disabilities at the Johns Hopkins Bloomberg School of Public Health. She also holds joint appointments in School’s Epidemiology and Biostatistics Departments as well as in the Johns Hopkins School of Medicine’s Departments of Medicine and Psychiatry. She earned a PhD in Genetic Epidemiology at Case Western Reserve University before coming to Johns Hopkins as an Assistant Professor in Epidemiology in 2001. She has served as a standing member of two epidemiology-focused NIH study sections, including current membership of NAME, and is a past Special Editor for Genetics for the journal Epidemiology. Her research group studies how environments, behaviors, genetic variation, and epigenetic variation contribute to risk for psychiatric disease, particularly autism. She is the PI of the Maryland site of the SEED study (Study to Explore Early Development), a multi-site case-control study of autism genetic and environmental risk factors and the EARLI study (Early Autism Research Longitudinal Investigation), a prospective pregnancy cohort focused on causes of autism. She has further led GWAS and EWAS studies based on SEED, EARLI, and other autism samples.
Keynote Speaker

Professor Cathryn Lewis

THURSDAY 21 JUNE @ 09.30 – 10.30:
WHAT THE WORLD NEEDS TO LEARN ABOUT DEPRESSION, AND HOW iPSYCH CAN HELP? PART 2

Cathryn Lewis is Professor of Genetic Epidemiology & Statistics at King’s College London. She leads the Statistical Genetics Unit in the Institute of Psychiatry, Psychology & Neuroscience, and the Faculty of Life Sciences and Medicine. Her academic training is in mathematics and statistics, and she has been involved in genetic studies since her PhD studies.

She chairs the Psychiatric Genomics Consortium Major Depressive Disorder Working group, and leads the NIHR Maudsley BRC Biomarkers and Genomics theme. Her research group of 15 multi-disciplinary researchers aims to identify and characterise genetic variants conferring risk of common, complex disorders, including depression, schizophrenia, and stroke. A major research focus is risk assessment, determining how the polygenic component of common diseases can be measured accurately and communicated effectively.

Keynote Speaker

Professor Rudolf Uher

THURSDAY 21 JUNE @ 10.45 – 11.45:
USING WHAT WE KNOW: TRANS-DIAGNOSTIC EARLY RISK IDENTIFICATION AND PREVENTION OF MENTAL ILLNESS

Dr. Rudolf Uher is the Canada Research Chair in Early Intervention and a Professor of Psychiatry at Dalhousie University. Dr Uher studied medicine and neurosciences at Charles University in Prague and trained in Psychiatry at the Maudsley Hospital in London, UK. In 2012, Dr Uher moved to Canada and launched the FORBOW program (www.forbow.org) with the aim to prevent mental illness. His research is focussed on the prevention and personalized treatment of depression, bipolar disorder and schizophrenia. Two clinical trials are on the way, testing pre-emptive early interventions in youth at high risk for developing these disorders. In addition, Dr Uher leads a study that aims to predict who will respond better to psychological or pharmacological treatment of major depressive disorder.

Dr. Uher is an author of 200 articles on mental illness, its causes and treatment. Dr Uher is the recipient of the Max Hamilton Memorial Prize (2014) and the Royal-Mach-Gaensslen Prize for Mental Health Research (2016). Dr Uher treats people with depression and bipolar disorder at the Mood Disorders Program at the Nova Scotia Health Authority in Halifax.
The role of rare variants in psychiatric disorders
Recent exome-sequencing studies of schizophrenia, ADHD and ASD have demonstrated an increased burden of deleterious ultra-rare variants in constrained genes in cases compared to controls. In this symposium, we will present the latest results from analyses of exome-sequencing data of bipolar disorder and ADHD with special focus on deleterious ultra-rare variants in constrained genes and gene-sets of interest (e.g. brain expressed genes). Additionally, analyses of low frequency variants from the exome-content of the psych-chip will be presented for ADHD.

Disease models, molecular mechanisms and drug targets
This symposium will cover how mice and cells can be used to inform about molecular signatures underlying abnormal behaviours and pathologies associated with mental disorders. These abnormalities are induced either by specific genetic manipulations or by environmental challenges. It will in parallel also cover how drugs and environmental manipulations changes molecular signatures and discuss the usability of such data for devising novel treatment strategies and understanding disease risk.

The Danish High Risk and Resilience Study – VIA 7.
Background: Familial high risk studies can provide a possibility for identifying early amendable risk factors.

Methods: From Danish nationwide registers we retrieved a cohort of 522 seven-year-old children of parents with schizophrenia (FHR-SZ, N=202), bipolar disorder (FHR-BP, N=120) or population based controls with none of these disorders (N=200). Psychopathology was assessed by reports from multiple informants including children, parents and teachers. Psychopathology was assessed dimensionally with the Child Behavior Checklist (CBCL), the Teacher’s Report Form, the ADHD-Rating Scale, the Test Observation Form and the State-Trait Anxiety Inventory for Children. Neurocognitive functions were compared across 23 standardized tests scores and four neurocognitive factors using a multivariate analysis. Social cognition is represented by assessment of theory of mind (Strange Stories-Revised, Animated Triangles) and emotion recognition (ERT CANTAB), including response latency (Strange Stories-Revised, ERT). Creative generativity is measured with Pattern Meanings. Receptive and pragmatic language is assessed in the child (TROG2) and from a teachers’ questionnaire (CCC2). Social skills are obtained from teachers’ perspective (SRS) and social functioning from the parents’ view (Vineland).

Results: Generally the children with a familial risk of schizophrenia had lower neurocognitive, social cognitive and neuromotor functioning, and more child psychiatric diagnoses, and more severe symptoms compared to control children. In most comparisons, children of parents with bipolar disorder were not different from controls, but there were some in some tests they performed poorer or had more symptoms compared to than control children. The assessment of the home environment indicated severe problems with the home environment in a higher proportion of the families with parents with schizophrenia Conclusion: Already at age seven, children at FHR-SZ and FHR-BP had higher prevalence of a broad spectrum of categorical and dimensional psychopathology compared with controls. The results emphasize the need for developing early intervention strategies towards this vulnerable group of children.
BUSINESS MEETINGS

TUESDAY 19 JUNE:
17.00 – 18.00
Epigenetics: technical approach
Participants: Anna Starnawska, Nicklas Heine Staunstrup, Goncalo Themudo, Shantel Marie Weinsheimer, Christine Søholm Hansen & Alfonso Buil Demur

Substance use disorder and comorbidity with major psychiatric disorders
Participants: Ditte Demontis, Anders Børglum, Mette Nyegaard, Merete Nordentoft, Carsten Hjorthøj & Søren Dalsgaard

WEDNESDAY 20 JUNE:
16.00 – 18.30
GWAS of treatment response in major depression and ADHD
Participants: Thomas Als, Anders Børglum, Ole Mors, Ditte Demontis, Henrik Berg Rasmussen, Søren Dalsgaard, Ole Köhler-Forsberg, Søren Dinesen Østergaard, Janne Thirstrup & Christiane Gasse

Statistical analyses in VIA 7 and VIA 11
Participants: Merete Nordentoft, Ole Mors, Aja Greve, Nicoline Hemager, Vibeke Bliksted, Jamal Uddin, Camilla Augusta Christiansi, Claus Thorn Ekstrøm & Rudolf Uher
POSTER SESSION
TUESDAY 19 JUNE @ 20.00 – 22.00

A Cross-Mental-Disorders GWAS in the Danish National Health Register
Andrew Schork

Associations between cognition in parents with schizophrenia or bipolar disorder and their offspring: The Danish High Risk and Resilience Study - VIA7
Aja Neergaard Greve

BIne: Human brain networks perturbed by genetics in psychiatric disorder
Natalie Petrossian & William Crotty

Brain interaction network: Identifying and investigating CACNA1C interaction partners in human neurons
Eugeniu Nacu

Contributions to the neonatal DNA methylation profile in the iPSYCH trios and twins.
Christine Saholm Hansen

Gene regulation in psychiatric disorders
Julie Donskov

Genetic Analysis of Voting Behavior in populations with and without psychiatric illness
Vivek Appadurai

Genetic prediction of transition from childhood/adolescents psychiatric disorder to schizophrenia
Sanja LaBianca

Genetic risk scores and postpartum psychiatric disorders
Trine Munk-Olsen

Genetic variation in the Major Histocompatibility Complex and association with depression
Kyle Glanville

Human brain networks perturbed by genetics in psychiatric disorders
April Kim

Identical by descent segments associated with mental disorders in iPSYCH
Anders Rosengren

Induced First-Trimester Abortion and Polygenic Risk of Psychiatric Disorders
Liselotte Petersen

Infections of the central nervous system as a risk factor for mental disorders and cognitive impairment: a nationwide register-based study
Emilie M J Pedersen

Integration of sensory and social information during decision making in schizophrenia.
Arndis Simonsen

Interaction of genetic variation and stressful life events on risk for depression investigated in a nationwide, Danish case-cohort study
Nis Suppli

Investigating the role of BRD1 in mitochondrial function
Louise Sand Kirk

iPSYCH exome sequencing update
Kyle Satterstrom

Mobility, PRS and mental disorders
Henriette Thisted Horsdal

MWAS of 2.100 ASD or ADHD cases and controls
Nicklas Staunstrup

Olfactory Identification in 7-Year-Old Children of Parents with either Schizophrenia or Bipolar Disorder
Anna Ver Loren van Themaat

Polygenic risk score and functional capacity in schizophrenia, depression and bipolar disorder
Carsten Hjorthøj

Predicting Mechanical Restraint by Applying Data Mining Techniques on Electronic Medical Records
Andreas Danilenko

The impact of rare and common genetic variation on cognitive ability and educational attainment in schizophrenia
Amir Sariaslan

The Neurobiology of BRD1 implicate Nuclear receptor mediated signaling in mental disorders
Per Qvist

The use of polygenic risk scores as a covariate in the causal association models: a simulation study
Jamal Uddin
PRACTICAL INFORMATION

VENUE OF THE MEETING
Comwell Klarskovgaard
Korsør Lystskov 30, 4220 Korsør
Location for the meeting: Auditorium, 1st floor

TRANSPORTATION (look for the bus with an iPSYCH logo)

On Tuesday 19 June
FROM VALBY
Departure from Valby St., Lyshøjgaardsvej, 2500 Valby @ 09.00

FROM AARHUS
Departure from Aarhus University, Fuglesangs Allé 4, 8210 Aarhus V. @ 07.30

On Thursday 21 June
Departure to Valby and Aarhus @ 12.15
Expected arrival at Valby St. @ 13.45 and Aarhus University @14.45

If you decide to use alternative transportation, costs must be covered by other sources.

CONTACT
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