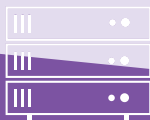# Human Brain Project Education Programme

## 2ND HBP CURRICULUM WORKSHOP SERIES
## SCIENTIFIC PROGRAMME SCHEDULES

**4-6 JULY 2018**
**KALKSCHEUNE BERLIN, GERMANY**

AS OF 25 APRIL 2018

# LATE APPLICATION IS POSSIBLE

@hbpeducation

@hbp_education

HBP Education

HBP Education Programme

https://education.humanbrainproject.eu/

# NOTES

# HBP CURRICULUM

The HBP Curriculum combines distance learning courses and complementary face-to-face workshops that provide basic lessons in the HBP core fields neuroscience, medicine and ICT for early career researchers, outside their area of specialisation. In addition, it includes courses on the subjects of ethics as well as intellectual property rights, translation and exploitation of research.

Further information:
https://education.humanbrainproject.eu/web/hbp-education-portal/hbp-curriculum

# WORKSHOP & APPLICATION INFORMATION

The Human Brain Project Curriculum Workshops take place from 4-6 July 2018 in Berlin, prior to the FENS Forum. All five workshops are held in parallel. You can apply for ONE out of five workshops:

- ICT for non-specialists
- Neurobiology for non-specialists
- Brain medicine for non-specialists
- Research, ethics and societal impact
- Entrepreneurship in neuroscience

Applications are open to the entire student community and early career researchers, regardless of whether they are affiliated with the Human Brain Project or not. Applications from young female investigators are highly encouraged.

A maximum of 30 participants per workshop will be selected by the Scientific Chair and the HBP Education Programme in a competitive selection process based on academic merit. Participants are required to submit a CV and a motivation letter with their application.

Applicants selected for participation will be informed within three weeks after the application deadline.

**Participation fee: 250,00 €**
The fee does not include travel and accommodation. Fees will be collected after participants have been selected.

**Application is mandatory.**

For more information visit:
https://education.humanbrainproject.eu/web/2nd-hbp-curriculum-workshop-series

# TARGET GROUP

The workshops address **early career researchers** who want to gain knowledge outside their area of specialisation or who are interested in learning about ethical challenges or intellectual property rights.

# ABSTRACT SUBMISSION INFORMATION

A joint poster session is organised on the evening of 5 July. If you want to present your research in the poster session, please submit an abstract with your application.

**Organisers:**
Alois Saria, Elisabeth Wintersteller, Lisa-Marie Leichter | MUI

**For inquiries please contact:**
curriculum.edu@humanbrainproject.eu

All programmes may be subject to change.

# RESEARCH, ETHICS AND SOCIETAL IMPACT
## DUAL USE AND RESPONSIBLE RESEARCH: ETHICAL CHALLENGES

This workshop aims to provide participants with insights on ethical aspects of dual-use research in neuroscience and Responsible Research and Innovation (RRI). Lectures will be given by some of the world's leading experts on dual-use in neuroscience research, and by active researchers on RRI. The topics covered will include the chemistry of the brain and dual action of drugs, novel incapacitants, ethics awareness and engagement and RRI. An important ingredient of the workshop is the use of team-based learning techniques.

**Scientific Chairs:**

Abdul K. Mohammed | LNU/KI
Manuel Guerrero | KI
Alreen Salles | UU

# WEDNESDAY 4 JULY 2018

**08:00 - 08:45**      Registration

**08:45 - 09:00**      Introduction
                       Abdul K. Mohammed | KI/LNU

**09:00 - 10:00**      The chemistry of the brain and the dual action of drugs
                       Jean-Pierre Changeux | PI

**10:00 - 10:30**      Coffee break

**10:30 - 11:15**      Dual-use brain science: Realistic capabilities; critical concerns
                       James Giordano | GU

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|---|---|
| **11:15 - 12:00** | Dual-use neuroscience, novel incapacitants and the 2018 review conference of the Chemical Weapons Convention |
| | Malcolm Dando | UoB |
| **12:00 - 13:00** | Lunch break |
| **13:00 - 14:00** | Beyond dual-use: Exploring the limits of dual-use as a guiding concept for ethical research |
| | Tara Mahfoud | KCL |
| **14:00 - 15:00** | Responsible Research and Innovation in ICT |
| | Bernd Stahl | DMU |
| **15:00 - 15:30** | Coffee break |
| **15:30 - 16:30** | Responsible Research and Innovation: The role of public engagement |
| | Simisola Akintoye | DMU |
| **16:30 - 18:00** | Round table: Dual-use and Responsible Research and Innovation |
| | J.P. Changeux, J. Giordano, M. Dando, B. Stahl, S. Akintoye, K. Nixdorff, T. Mahfoud, L. Bitsch |
| **18:00 - 21:00** | Social evening |

# THURSDAY 5 JULY 2018

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|---|---|
| **09:00 - 10:00** | Responsible Artificial Intelligence: Ethics, governance and policy |
| | Inga Ulnicane-Ozolina | DMU |
| **10:00 - 10:30** | Coffee break |
| **10:30 - 11:30** | Ethics awareness and engagement: The impact of video games |
| | Tyr Fothergill | DMU |

| 11:30 - 12:00 | Discussion |
|---|---|
| 12:00 - 13:00 | Lunch break |
| 13:00 - 14:00 | **Cognition, plasticity and ethics**<br>Sebastian Porsdam-Mann \| HMS |
| 14:00 - 15:00 | **Team-based learning (TBL) on dual-use**<br>Malcolm Dando \| UoB<br>Kathryn Nixdorff \| TUDA<br>Simon Whitby \| UoB |
| 15:00 - 15:30 | Coffee break |
| 15:30 - 16:30 | **TBL continued**<br>Malcolm Dando \| UoB<br>Kathryn Nixdorff \| TUDA<br>Simon Whitby \| UoB |
| 16:30 - 17:00 | Discussion |
| 17:00 - 18:00 | **Data use and ethical issues in HBP**<br>Manuel Guerrero \| KI |
| 18:00 - 20:00 | Poster session |

# FRIDAY 6 JULY 2018

| 08:30 - 10:00 | **TBL continued**<br>Malcolm Dando \| UoB<br>Kathryn Nixdorff \| TUDA<br>Simon Whitby \| UoB |
|---|---|
| 10:00 - 10:30 | Coffee break |
| 10:30 -12:00 | Open discussion round |

# NEUROBIOLOGY FOR NON-SPECIALISTS - STUDYING THE BRAIN

This workshop addresses especially early career researchers who are not familiar with the field of neurobiology and/or neuroscience. It covers topics from basic neurobiology over cell biology and electrophysiology to big data handling. A major aspect will be the challenges of data collection and interpretation in a highly complex system.

**Scientific Chair:**

Christoph Schwarzer **|** MUI

MEDIZINISCHE
UNIVERSITÄT
INNSBRUCK

## WEDNESDAY 4 JULY 2018

**08:00 - 09:00**      Registration

**09:00 - 09:15**      Introduction

**09:15 - 10:00**      Basics of neurobiology I
Christoph Schwarzer | MUI

**10:00 - 10:30**      Coffee break

**10:30 - 12:00**      Basics of neurobiology II
Christoph Schwarzer | MUI

**12:00 - 13:00**      Lunch break

**13:00 - 15:00**      Histological methods and microscopic techniques in neuroscience
Maja Puchades | UiO

**15:00 - 15:30**        Coffee break

**15:30 - 17:30**        Lab visits Experimental Neurology Department
Charité

**18:00 - 21:00**        Social evening

# THURSDAY 5 JULY 2018

**08:30 - 10:00**        Cell biology methods
Team Dorette Freyer | Charité

**10:00 - 10:30**        Coffee break

**10:30 - 12:00**        Electrophysiology
Larissa Kraus | Charité

**12:00 - 13:00**        Lunch break

**13:00 - 15:00**        Experimental and clinical EEG
Pawel Fidzinski | Charité

**15:00 - 15:30**        Coffee break

**15:30 - 17:00**        Neuropharmacology
Alexandra Koschak | LFU

**17:00 - 18:00**        Data use and ethical issues in HBP
Manuel Guerrero | KI

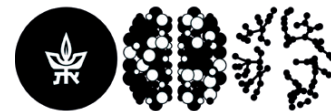**18:00 - 20:00**        Poster session

# FRIDAY 6 JULY 2018

**08:30 - 10:00**     **Models in neuroscience**
Sarah Genon | JUELICH

**10:00 - 10:30**     **Coffee break**

**10:30 - 12:00**     **Behavioural testing**
Simone Sartori | LFU

**12:00 - 13:00**     **Lunch break**

**13:00 - 14:30**     **Emics in Neuropharmacology**
Jeffrey Liu | MPG

**14:30 - 16:00**     **HBP Neuroinformatics Platform**
Yann Leprince | CEA

# NEW HORIZONS IN BRAIN MEDICINE:
## FROM RESEARCH TO CLINICS

The aim of this interactive workshop is to introduce and deepen the understanding of brain medicine for non-specialists with the most recent advances in research of neurodevelopmental, neurodegenerative and neuropsychiatric disorders. Lectures and tutorials by international experts will report the state of the art of research and treatment of brain diseases. Hands-on examples and practical tools and methodologies will be presented during a visit to a laboratory/clinic at Charité Hospital in Berlin.

**Scientific Chair:**

Illana Gozes | TAU

## WEDNESDAY 4 JULY 2018

**12:00 - 12:30**     **Registration**

**12:30 - 12:45**     **Welcome note and workshop introduction**
Illana Gozes | TAU

**12:45 - 14:00**     **Big vs small data analysis targeting "disease signatures" towards precision healthcare**
Mira Marcus-Kalish | TAU

**14:00 - 15:00**     **HBP Research Infrastructure: Application of network medicine to the understanding of neuropsychiatric diseases**
Ferath Kherif | CHUV

**15:00 - 15:30**     **Coffee break**

**15:30 - 16:30**     **Translational approaches to treating neuropsychiatric disease: Emphasis on erythropoietin**
Hannelore Ehrenreich | MPG/CMPB

**16:30 - 17:30**  **Gene & environment interaction in mental disorders**
Hans Grabe | UMG

**17:30 - 18:00**  **Q&A Session**

**18:00 - 21:00**  **Social evening**

# THURSDAY 5 JULY 2018

**08:00 - 09:00**  **The role of homocysteine in schizophrenia**
Joseph Levine | BGU

**09:00 - 10:00**  **Modern imaging techniques in neuroimmunology: Current research and clinical applications**
Paul Friedemann | Charité

**10:00 - 10:30**  **Coffee break**

**10:30 - 13:00**  **Visit to Charité Hospital - laboratory and clinical settings**
Paul Friedemann | Charité

**13:00 - 14:00**  **Lunch break**

**14:00 - 15:00**  **Oxytocin in translational neuroscience: Involvement in anxiety, fear and stress regulation**
Inga Neumann | UR

**15:00 - 15:30**  **Coffee break**

**15:30 - 16:30**  **Post-translational modulation of neurotoxicity in brain misfolding diseases**
Maria Pennuto | UNIPD

**17:00 - 18:00**   Data use and ethical issues in HBP
Manuel Guerrero | KI

**18:00 - 20:00**   Poster session

# FRIDAY 6 JULY 2018

**08:00 - 09:00**   The role of type 2 diabetes in brain and cognitive damage
Michal Beeri | SHEBA

**09:00 - 10:00**   Protective effects of PACAP in models of neurodegenerative disea-
ses, with special emphasis on Parkinson's disease
Dora Reglodi | PTE

**10:00 - 10:30**   Coffee break

**10:30 - 11:30**   Autism: From gene to drug candidate and a clinical trial plan, the
case of ADNP and CP201
Illana Gozes | TAU

**11:30 - 12:00**   Discussion

**12:00 - 13:00**   Lunch break

**13:00 - 14:00**   Insight into learning impairments and therapies for Christianson
syndrome: X-linked neurological disorder
Anne McKinney | McGill

# NEUROSCIENCE FOR ICT:
## APPLICATIONS TO COMPUTATION AND ROBOTICS

"Neuroscience for ICT: Applications to Computation and Robotics" is an interdisciplinary workshop aimed at giving an insight into Information and Communications Technology (ICT) to non-specialists. In particular, the workshop will provide the attendants with an understanding of the field of computational neuroscience and robotics.

In particular, the first day will provide the participants with a general overview of the HBP Research Infrastructure, followed by lectures on computational neuroscience where the participants gain a better understanding of the interaction between neuroscience and computation. The last session will focus on data management from a computational perspective.

During the morning session of the second day, we will provide talks from expert scientists in robotics and bio-inspired robotics. In the afternoon session, we intend to bridge the gap between computational technologies and neuroscience by providing a hands-on experience with the HBP NeuroRobotics Platform (NRP).

**Scientific Chair:**

Alois Knoll **|** TUM

Technical
University
of Munich

## THURSDAY 5 JULY 2018

**09:00 - 10:00**     **Welcome and introduction**
Cristina Iobbi | TUM

**10:00 - 10:30**     **Coffee break**

**10:30 - 12:00**     **Introduction to HBP Research Infrastructure**
tbc

**12:00 - 13:00**     **Lunch break**

| 13:00 - 14:00 | **Bridging the gaps: Computation and neuroscience - neuroscience and computation I**<br>Egidio D'Angelo \| UNIPV |
|---|---|

| 14:00 - 15:00 | **Bridging the gaps: Computation and neuroscience - neuroscience and computation II**<br>Carmen Lupascu \| CNR |
|---|---|

| 15:00 - 15:30 | **Coffee break** |
|---|---|

| 15:30 - 17:00 | **Data generation from a computational perspective**<br>Anna Lührs \| JUELICH |
|---|---|

| 17:00 - 18:00 | **Data use and ethical issues in HBP**<br>Manuel Guerrero \| KI |
|---|---|

| 18:00 - 20:00 | **Poster session** |
|---|---|

# FRIDAY 6 JULY 2018

| 09:00 - 10:00 | **Bio-inspired control architecture for mobile robotics**<br>Yannick Morel \| TUM |
|---|---|

| 10:00 - 10:30 | **Coffee break** |
|---|---|

| 10:30 - 12:00 | **Neuroscience and robotics**<br>tbc |
|---|---|

| 12:00 - 13:00 | **Lunch break** |
|---|---|

| 13:00 - 14:00 | **Introduction to Neurorobotics and the NRP**<br>Fabrice Morin \| TUM |
|---|---|

| 14:00 - 16:00 | **Demo experiment** |
|---|---|

# ENTREPRENEURSHIP IN NEUROSCIENCE - TURNING SCIENCE INTO INVENTION & INNOVATION

This "hackathon" style workshop is a hands-on intensive experience complementing the theoretical aspects of the online course on intellectual property rights, translation and exploitation of research. Students will work in small multi-disciplinary teams to assemble joint applied research proposals in the wide range of fields in brain science. Experienced entrepreneurs, top executives at the interface between academia and industry and researchers from academia will present, mentor and advise on the translational aspects of the offered projects including how to advance their proposal from the lab to market, understand the problems and accordingly define the needs in the chosen field, how to choose or identify the target population, patentability options and how to build a business model. Finally, they will present their proposals to industry and academy experts. The workshop is a unique experience of diving into the entrepreneurial world, learning how to incorporate innovation and entrepreneurship mindset and concepts into day-to-day research work and beyond.

**Scientific Chair:**

Dana Bar-On **|** TAU

**Kindly supported by:**

# WEDNESDAY 4 JULY 2018

**08:30 - 09:00**     Registration

**09:00 - 09:15**     Introduction and guidelines for the workshop
Dana Bar-On | TAU

**09:15 - 10:00**     I-TED - Personal presentations of all participants
Dana Bar-On | TAU

**10:00 - 10:30**     Coffee break

**10:30 - 11:15**     Presenting the applied neuroscience projects: Science & technology
- Division into working groups
Dana Bar-On | TAU

**11:15 - 12:00**     Blue Ocean Strategy for innovation - Mini-Workshop
Yesha Sivan | TAU

**12:00 - 13:00**     Lunch break

**13:00 - 15:00**     Blue Ocean Strategy for innovation - Mini-Workshop
Yesha Sivan | TAU

**15:00 - 15:30**     Coffee break

**15:30 - 17:00**     Product-market fit
Michael Ehrlich | NJIT

**17:00 - 18:00**     End of the day team work:
Starting to design the project presentation

**18:00 - 21:00**     Social evening

# THURSDAY 5 JULY 2018

**08:30 - 10:00**    **Interactive patents & IP Mini-Workshop**
Ute Kilger | Boehmert&Boehmert

**10:00 - 10:30**    **Coffee break**

**10:30 - 12:00**    **Team work**

**12:00 - 13:00**    **Lunch break**

**13:00 - 15:00**    **Team work**

**15:00 - 15:30**    **Coffee break**

**15:30 - 17:00**    **Next-gen-innovators - Career development Mini-Workshop with host researchers - Entrepreneurs and student open discussion**
Craig Curtis Garner | SPARK Berlin
Vedrana Högqvist-Tabor | Boost Health

**17:00 - 18:00**    **Data use and ethical issues in HBP**
Manuel Guerrero | KI

**18:00 - 20:00**    **Poster session / Team work**

# FRIDAY 6 JULY 2018

**08:30 - 09:00**      Team work

**09:00 - 10:00**      Dry runs with mentor review (one team at a time) / Team work

**10:00 - 10:30**      Coffee break

**10:30 - 12:00**      Team work

**12:00 - 13:00**      Lunch break

**13:00 - 14:00**      Dry runs with mentor review (one team at a time) / Team work

**14:00 - 15:00**      Group presentations in front of the jury
5 min presentations and 5 min Q&A for each team

**15:00 - 15:30**      Coffee break

**15:30 - 16:00**      Final discussion, feedback and summary