2019
OHBM
ROMA
25 years

25TH ANNUAL MEETING OF THE
ORGANIZATION FOR HUMAN BRAIN MAPPING

PR0GRAM

June 9-13, 2019
AUDITORIUM PARCO DELLA MUSICA | ROME

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WELCOME

A warm welcome to the 25th Annual Meeting of the Organization for Human Brain Mapping. We can think of no better backdrop to celebrate this 25 year milestone than Rome, the eternal city.
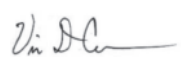
It's truly an exciting time for OHBM as we continue to evolve as a Society; and there is no doubt that the world of brain mapping continues to progress and remain cutting edge with its advancements. This is why it is so important to bring inspired people together in forums like this to share insights into best practices, learn from high quality speakers and presentations, and collaborate with our peers.

This year's programming has a line-up of amazing speakers and presentations combined with celebratory activities to honor OHBM's 25th Anniversary Meeting. Whether this is your first OHBM Annual Meeting or your 25th, we know you will enjoy the meeting and leave feeling inspired and excited to continue leading the field of neuroimaging into the future. In particular, you won't want to miss:

- The Opening Ceremonies and Talairach Lecture with Riitta Hari presenting **"Timing Matters."**

- A diversity of Keynote Lectures discussing major themes in neuroimaging science and application presented by Danielle S. Bassett; Catie Chang; Roshan Cools; Tianzi Jiang; Gil Rabinovici; Armin Raznahan; and B.T. Thomas Yeo.

- The Scientific Advisory Board Symposium that will take a look at the evolution of OHBM and the brain mapping community over the past 25 years.

- Daily poster sessions and 25th celebratory poster receptions featuring a daily aperitif.

- The popular Local Organizing Committee Symposium entitled **"Back to the Future: The legacy of Italian neuroscientists for the current brain mapping challenges."**

- Interactive roundtable discussions on two important topics: 1) OHBM's new online publishing platform – Aperture; and 2) interactive mentoring symposium and mentoring session hosted by the Student/Post Doc Special Interest Group.

- Ongoing open science education and hackathon hosted by the OHBM Open Science Special Interest Group.

- The first ever Diversity Round Table focusing on gender biases in science.

We would like to thank each of you for attending the OHBM meeting and bringing your expertise to our gathering. We look forward to seeing you in Rome for what promises to be a most stimulating and enjoyable event.
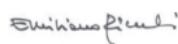
Sincerely,

Vince Calhoun,
Chair, Council

Lucina Uddin,
Chair,
Program Committee

Pietro Pietrini
Chair,
Local Organizing
Committee

Emiliano Ricciardi
Co-Chair,
Local Organizing
Committee

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OHBM 2019 PROGRAM-AT-A-GLANCE

Sunday, June 9

Educational Courses

Full Day Courses 8:00 – 16:30
Deep Learning for Human Brain Mapping
Santa Cecilia Hall

Functional MRI in Clinical Practice:
Applications, methods, and controversies
Giuseppe Sinopoli Hall

MR Diffusion Imaging: From theory to applications
Goffredo Petrassi Hall

An Introduction to Network Neuroscience:
How to build, model, and analyze connectomes
Theatre Studio

Morning Courses 8:00 – 12:00
Time-varying Connectivity in Resting-state fMRI:
Methods, interpretations, and clinical use
Studio 1

fMRI at the Resolution Scale of Cortical Columns and Layers
Studio 2

Taking Control of Your Neuroimaging Data:
Understanding artefacts and quantifying quality
Studio 3

Population Neuroscience: How to responsibly handle
big data in the age of biobanks
Choir Room

Afternoon Courses 13:00 – 16:30
Brain Parcellations and Functional Territories
Studio 1

MRS of GABA and Other Metabolites:
Methods and applications for understanding human brain function
Studio 2

The Missing Link: How to combine neuroimaging data with
computational models of behavior
Studio 3

Researchers' Guide to the Adolescent Brain
Cognitive Development (ABCD) Study
Choir Room

9:00 – 12:00
Open Science SIG Workshop
Brain Hacking 101
Guest Hall and Foyer Space

12:00 – 13:00
Open Science SIG Meeting
Guest Hall and Foyer Space

12:00 – 13:00 Lunch

17:30 – 19:30
**Opening Ceremonies and
Talairach Lecture**
Santa Cecilia Hall

Talairach Lecture: Riitta Hari
Timing Matters

19:30 – 21:00
Welcome Reception
Hanging Gardens located outside of the Parco della Musica

Monday, June 10

7:00 – 8:00
Morning Coffee with Exhibitors

8:00 – 9:15
Morning Symposia
Cognitive Atlasing: From brain images to the mind
Santa Cecilia Hall

Clinical Applications of Time-varying Neuroimaging
Giuseppe Sinopoli Hall

New Approaches for Probing the Neurobehavioral Basis of Development
Goffredo Petrassi Hall

Imaging Experience-dependent Plasticity in Humans
Theatre Studio

NIH BRAIN Initiative Funding Opportunities
Choir Room

15 minute break

9:30 – 10:15
Keynote Lecturer: Danielle Bassett
Santa Cecilia Hall

10 minute break

10:25 – 10:50
Best Paper Award Presentations
Santa Cecilia Hall

10:50 – 12:00
LOC Symposium
Back to the Future: The legacy of Italian neuroscientists
for the current brain mapping challenges
Santa Cecilia Hall

12:00 – 12:45 Lunch

12:00 – 14:30
Lunch Symposium – Siemens
Exploring New Frontiers in MRI
Theatre Studio

12:30 – 14:30
Scientific Advisory Board Symposium
A Retrospective look back at OHBM
Santa Cecilia Hall

12:45 – 14:45
**All Posters M001-M897
Software Demonstrations**
Auditorium Expo

15 minute break

14:45 – 16:00
Afternoon Symposia
Decoding Brain Heterogeneity in Psychiatry: Concepts, challenges, and methods
Santa Cecilia Hall

Lifespan Network Neuroscience: A new frontier in human brain mapping
Giuseppe Sinopoli Hall

Diversity Round Table: Using insights from social psychology and
neuroscience to address gender bias
Goffredo Petrassi Hall

Fetal Foundation of Neurocognition
Theatre Studio

15 minute break

16:15 – 17:00
Keynote Lecture: Catie Chang
Multimodal Investigation of Spontaneous BOLD Fluctuations
Santa Cecilia Hall

15 minute break

17:15 – 18:30
Oral Sessions
Emotion and Motivation and Social Neuroscience / *Santa Cecilia Hall*
Neurodevelopmental Disorders / *Giuseppe Sinopoli Hall*
Modeling and Analysis Methods – Uni/Multi-variate Analysis / *Goffredo Petrassi Hall*
Neuroinformatics and Data Sharing / *Theatre Studio*

18:30 – 19:30
Poster Reception
Auditorium Expo

Tuesday, June 11

7:00 – 8:00
Morning Coffee with Exhibitors

8:00 – 9:15
Morning Symposia

The Global Signal Strikes Back: Understanding and addressing widespread signal fluctuations in fMRI
Santa Cecilia Hall

Multi-modal Imaging Approach for Human Neuroanatomy: Integration across scales
Giuseppe Sinopoli Hall

Advances in Understanding Rapid Temporal Processing in the Human Brain
Goffredo Petrassi Hall

Longitudinal MRI Approaches for Investigating Brain and Psychological Development
Theatre Studio

15 minute break

9:30 – 10:15
Keynote Lecturer: Armin Raznahan
Integrative Neuroimaging of the Developing Brain in Health and Disease / *Santa Cecilia Hall*

15 minute break

10:30 – 11:45
Oral Sessions
Lifespan Development / *Santa Cecilia Hall*
Language / *Giuseppe Sinopoli Hall*
Modeling and Analysis: Multi-dimensional atlasing – *Goffredo Petrassi Hall*
Mapping Sensation Perception and Attention – *Theatre Studio*

11:45 – 12:45 Lunch

12:00 – 12:50
Student/Postdoc SIG Career Development and Mentoring Symposium
Goffredo Petrassi Hall
13:10 – 14:00
Student/Postdoc SIG Lunch with Mentors
Studio 1-3

12:00 – 14:30
Lunch Symposium – PHILIPS NEURO / *Theatre Studio*
Break Diagnostic Boundaries with Speed, Comfort, and Confidence

12:30 – 14:30
Publishing Roundtable
Aperture: The OHBM publishing platform roundtable
Choir Studio

12:45 – 14:45
All Posters T001-T898
Software Demonstrations
Auditorium Expo

14:45 – 16:00
Afternoon Symposia
Human Brain Mapping in the Face of Functional Heterogeneity and Functional Multiplicity
Santa Cecilia Hall
From "Open Science" to "Science": Shifting the status quo in data sharing, software, and publishing
Giuseppe Sinopoli Hall

Specialised Functional Networks in Social Behavior: Life trafectories, sex differences, diversity
Goffredo Petrassi Hall

The Dynamic Interplay Between Neuromodulation and Whole Brain Network Structure
Theatre Studio

15 minute break

16:15 – 17:00
Keynote Lecture: B.T. Thomas Yeo
Generative Models for Brain Parcellation, Disorder and Dynamics
Santa Cecilia Hall

17:00 – 18:00
Poster Reception / *Auditorium Expo*

17:00 – 19:00
Chinese Young Scholars Meeting / *Theatre Studio*

Wednesday, June 12

7:00 – 8:00
Morning Coffee with Exhibitors

8:00 – 9:15
Morning Symposia
A Tough Nut to Crack: Neurodevelopmental connectopathies
Santa Cecilia Hall

Advanced Image Analytics for Clinical Neuroimaging
Giuseppe Sinopoli Hall

The Pulsatile Integration at Multiple Time Scales in the Resting Brain
Goffredo Petrassi Hall

Do We Really Think Differently about MEG-EEG Mapping?
Theatre Studio

15 minute break

9:30 – 10:15
Keynote Lecture: Tianzi Jiang
The Human Brainnetome Atlas and its Applications in Understanding of Brain Functions and Disorders
Santa Cecilia Hall

15 minute break

10:30 – 11:45
Oral Sessions
Neurodegenerative and Vascular – *Santa Cecilia Hall*
Learning and Memory / *Giuseppe Sinopoli Hall*
Modeling and Analysis / *Goffredo Petrassi Hall*
Imaging Acquisition Methods – BOLD Signal Imaging / *Theatre Studio*
Imaging Genetics / *Choir Room*

11:45 – 12:45 Lunch

12:45 – 14:45
All Posters W001-W906
Software Demonstrations
Auditorium Expo

14:45 – 16:00
Afternoon Symposia
Transcriptomics of Brain Function: From circuitry and networks through psychiatric illness
Santa Cecilia Hall

Data Science in Neuroscience: Denser phenotyping across levels of observation
Giuseppe Sinopoli Hall

Connectivity Formation and Reconfiguration in the Brain: Empirical and in silico insights
Goffredo Petrassi Hall

EEG Potentials Evoked by Transcranial Magnetic Stimulation: Methodological issues
Theatre Studio

15 minute break

16:15 – 17:00
Keynote Lecture: Gil Rabinovici
PET Imaging in Dementia: Mapping the path from protein aggregation to neurodegeneration
Santa Cecilia Hall

15 minute break

17:15 – 18:15
General Assembly & Feedback Forum
Santa Cecilia Hall

18:15 – 19:15
Poster Reception / *Auditorium Expo*

20:00 – 2:00
Club Night / *Atlantico Disco*

Thursday, June 13

7:00 – 8:00
Morning Coffee with Exhibitors

8:00 – 9:15
Morning Symposia
Spatial Organization of Connectivity over Timescales: Multimodal insights on cognitive architectures
Santa Cecilia Hall

How Do Current Predictive Connectivity Models Meet Clinician's Needs?
Giuseppe Sinopoli Hall

Multimodal Neurofeedback: The next generation of neurofeedback for advanced brain self-regulation
Goffredo Petrassi Hall

Dissociating the Cognitive and Motor Functions of Circuits Through the Subthalamic Nucleus in Humans
Theatre Studio

15 minute break

9:30 – 10:15
Keynote Lecture: Roshan Cools
Chemistry of the Adaptive Mind
Santa Cecilia Hall

15 minute break

10:30 – 11:45
Oral Sessions
Higher Cognitive Function / *Santa Cecilia Hall*
Population Neuroscience – *Giuseppe Sinopoli Hall*
Recent Advances in Neuroanatomy – *Goffredo Petrassi Hall*
Epilepsy / *Theatre Studio*

11:45 – 12:45 Lunch

12:45 – 14:45
All Posters Th001-Th905
Software Demonstrations
Auditorium Expo

14:45 – 16:00
Closing Comments and Meeting Highlights
Santa Cecilia Hall

16:00 –17:00
Farewell Poster Reception
Auditorium Expo

CODE OF CONDUCT

INTRODUCTION

This Code of Conduct applies to all event venues and online activities managed by the Organization for Human Brain Mapping (OHBM) including the annual meeting, afternoon and evening social events, and online content posted under OHBM hash tags. We expect our Code of Conduct to be honored by everyone who participates in the OHBM community formally or informally or claims any affiliation with OHBM. This code is not exhaustive or complete. We ask community members to adhere to it as much in spirit as in letter to create a safe and positive experience for all.

DIVERSITY STATEMENT

The Organization for Human Brain Mapping (OHBM) is an international community of researchers devoted to understanding the structure and function of the human brain, an incredibly complex and diverse entity. As an organization, OHBM strongly values diversity in its membership. OHBM is therefore committed to creating an equitable environment where human diversity is welcomed and respected. While no list can hope to be comprehensive, we explicitly honor diversity in: age, culture, ethnicity, gender identity or expression, language, national origin, political beliefs, profession, race, religion, sexual orientation, and socioeconomic status.

PROMOTING DIVERSITY

In both public and private interactions, OHBM expects its members to be respectful of all community voices. Conversations should be direct, constructive, and positive. We expect members to respect and honor all forms of diversity. Community members are also encouraged to seek diverse perspectives. As an organization, we will work to ensure that our leadership council, symposia and keynote speakers, committee members, and SIGs reflect the diversity of OHBM.

APPRECIATING DIFFERENCES

OHBM members come from many cultures and backgrounds. We therefore expect community members to be respectful of different cultural practices, attitudes, and beliefs. This includes being aware of preferred titles and pronouns, as well as using a respectful tone of voice.

While we do not assume OHBM members know the cultural practices of every ethnic and cultural group, we expect members to recognize and appreciate differences within our community. This means being open to learning from and educating others, as well as educating yourself.

BEHAVIOR THAT WILL NOT BE TOLERATED

OHBM stands against discrimination in all forms and at every organizational level. Discrimination based on, but not limited to geographic location, gender, gender identity and expression, sexual orientation, disability, physical appearance, body size, accent, race, ethnicity, age or religion does not abide by OHBM's values. We do not tolerate discrimination or harassment of conference participants and organizers.

Harassment includes, but is not limited to:

- Verbal comments that reinforce social structures of dominance related to geographic location, gender, gender identity and expression, sexual orientation, disability, physical appearance, body size, race, age, religion
- Unwelcome comments regarding a person's lifestyle choices and practices, including those related to food, health, parenting, drugs, and employment
- Sexual images in public spaces, including talks and advertisements by sponsors / booths
- Deliberate intimidation, stalking, or following
- Harassing photography or recording, including logging online activity for harassment purposes and all forms of cyberbullying
- Sustained disruption of talks or other events
- Inappropriate physical contact
- Unwelcome sexual attention
- Advocating for, or encouraging, any of the above behaviour

ENFORCEMENT

OHBM expects participants to follow the rules listed above at all event venues and event-related social and online activities. Participants asked to stop any harassing behavior are expected to comply immediately. If a participant engages in harassing behavior, event organizers retain the right to take any actions to keep the event a welcoming environment for all participants. Potential actions includes, but are not limited to: warning the offender, expulsion from the specific event, or immediate expulsion from the conference [with no refund]. Event organizers may take action to redress anything designed to disrupt the event or making the environment hostile for any participants. OHBM reserves the right to report incidences of sexual misconduct to the home institution of the offender and they may take any appropriate actions.

REPORTING

If someone makes you or anyone else feel unsafe or unwelcome, please report it as soon as possible to the OHBM Executive Director and/or the OHBM Chair whose contact information can be found on the OHBM website at www.humanbrainmapping.org. Harassment reduces the value of our community for everyone. You can make a report either personally or anonymously.

ANONYMOUS REPORT

You can make an anonymous report by visiting the OHBM website, code of conduct page, and clicking on the anonymous report link. We cannot follow up an anonymous report with you directly, but we will investigate it to the best of our ability and take whatever action is necessary to prevent a recurrence.

PERSONAL REPORT

You can make a personal report by:

- Calling or messaging the OHBM Executive Office at +1 612-749-1154 or info@humanbrainmapping.org.

- Contacting a member of OHBM's Executive Office identified by staff ribbon on their badges or located behind the registration desk at the Annual Meeting.

When taking a personal report, individuals from the Diversity and Gender team will endeavor to use a location that is safe and private. We may involve event staff to ensure your report is managed properly. Once safe, we will ask you to tell us about what happened. This can be upsetting, but we will handle it with kindness and respect, and you can bring someone to support you. You will not be asked to confront anyone, and we will not reveal your identity. Your report will be treated confidentially and will be investigated to the best of our ability and we will take whatever action possible to prevent a recurrence.

Our team will be happy to help you contact hotel/venue security, local law enforcement, local support services, and to otherwise assist you to feel safe for the duration of the event. We value your attendance.

ACKNOWLEDGEMENTS

This statement has drawn material from the ADA Initiative Code of Conduct, the Apache Software Foundation Code of Conduct, and the Mozilla Community Participation Guidelines.

GENERAL INFORMATION

CONFERENCE VENUE

Auditorium Parco della Musica
Viale Pietro de Coubertin 30
00196 Rome
CF 05818521006

All events will take place at the convention centre unless otherwise noted.

REGISTRATION HOURS

Location: Cloakroom Santa Cecilia

Saturday, June 8: 15:00 – 18:00
Sunday, June 9: 7:00 – 19:00
Monday, June 10: 7:30 – 17:00
Tuesday, June 11: 7:30 – 15:00
Wednesday, June 12: 7:30 – 15:00
Thursday, June 13: 7:30 – 15:00

EXHIBIT HOURS

Location: Sinopoli + Petrassi Foyer spaces

Monday, June 10: 7:00 – 8:00 / 11:30 – 15:00
Tuesday, June 11: 7:00 – 8:00 / 11:00 – 18:30
Wednesday, June 12: 7:00 – 8:00 / 11:00 – 16:00
Thursday, June 13: 7:00 – 8:00 / 11:00 – 17:30

ABSTRACT / POSTER LISTING BOOK

You can locate the abstract / poster listing book only on our website. Posters are searchable by author and category in the mobile app. (**www.humanbrainmapping.org/2019abstracts**)

SPEAKER READY ROOM

Location: Press Lounge

Saturday, June 8: 15:00 – 18:00
Sunday, June 9: 7:00 – 19:00
Monday. June 10: 7:00 – 19:05
Tuesday, June 11: 7:00 – 18:00
Wednesday, June 12: 7:00 – 18:00
Thursday, June 13: 7:00 – 16:00

CHARGING STATION

Locations: Foyer + Auditorium Expo

A limited number of complimentary power outlets will be available.

Saturday, June 8: 15:00 – 18:00
Sunday, June 9: 7:00 – 19:30
Monday. June 10: 7:30 – 17:00
Tuesday, June 11: 7:30 – 17:00
Wednesday, June 12: 7:30 – 17:00
Thursday, June 13: 7:30 – 15:00

MOBILE APP

The 2019 Mobile App, powered by EventLink and created by Core-Apps LLC, is a native application for smartphones (iPhone and Android), a hybrid web-based app for Blackberry, and there's also a web-based version of the application for all other web browser-enabled phones.

How to Download:
For iPhone (plus, iPod Touch & iPad) and Android phones: Visit your App Store or Android Market on your phone and search for OHBM. Click on the OHBM logo/ OHBM Annual Meetings then select the 2019 Annual Meeting.

For All Other Phone Types (including BlackBerry and all other web browser-enabled phones): While on your smartphone, point your mobile browser to **http://m.core-apps.com/ohbm2019**. From there you will be directed to download the proper version of the app for your particular device, or, on some phones, you simply bookmark the page for future reference.

OHBM ART EXHIBIT

Ars Cerebri: Creativity stemming from, and at the service of, neuroscience
Location: Ticket Office Area

Monday, June 10: 7:30 – 17:00
Tuesday, June 11: 7:30 – 15:00
Wednesday, June 12: 7:30 – 15:00
Thursday, June 13: 7:30 – 15:00

Organizers: *Valentina Borghesani and Alain Dagher*

Inspired by the ancient Muses, this year exhibition will feature pieces covering multiple domains of the Arts sharing one common denominator: they are the fruits of the creativity that stems from or is inspired by neuroscientific research. Whether established or emerging, different artists and scientists will contribute their personal and unique works produced under the Muses' power of inspiration. Static as well as dynamic pieces will be exhibited during the main conference (June 9-13, 2019) in the heart of the Auditorium. In addition, we will hold a special evening event showcasing live performances on Monday, June 10.

COFFEE / TEA BREAKS

Coffee and Tea will be available at the following times:

Sunday, June 9: 7:00 – 8:30, 9.45 – 10:45 and 14:15 – 15:15
Meeting Room Foyer Space

Monday. June 10 – Thursday, June 13:
7:00 – 8:30: *Meeting Foyer Space*
12:00 – 14:45: *Meeting Foyer Space and Poster Hall*

OHBM ONDEMAND

OHBM OnDemand is an online portal designed to provide you with access to educational resources dedicated to those using neuroimaging to discover the organization of the human brain. Access videos, audio and PPT presentations from the quality scientific educational offerings during this year's meeting (as well as from the 2013-2018 OHBM Annual Meetings). OHBM OnDemand is provided at no charge. 2019 Annual Meeting materials will be posted within three weeks after the conclusion of the meeting. An announcement will be sent to all attendees announcing its availability.

ONSITE CAREER RESOURCES

We recommend using the main lobby and foyer areas to meet with prospective employers or employees.

ONLINE CAREER RESOURCES

www.humanbrainmapping.org/2019Career
OHBM has an electronic board at where Pls can post positions available notices (under "Job Openings") and individuals can post CVs (under "People Looking for Jobs") year round.

SOCIAL MEDIA

Twitter: @OHBM, hash tag **#OHBM2019**
Facebook: **facebook.com/humanbrainmapping.org**
Facebook Student Postdoc:
facebook.com/OHBMStudentandPostdocSection
LinkedIn: **linkedin.com/company/organization-for-human-brain-mapping/**

E-POSTERS

All poster presenters are encouraged to upload an electronic version of their poster (E-poster) as a pdf. To access E-Posters, please go to **https://ww5.aievolution.com/hbm1901/**

WIRELESS CONNECTION

Wireless connections will be available throughout the Auditorium Parco della Musica.
Connect to: **OHBM2019**
Password: **OHBM2019**

FOR FAMILIES

Children are welcome at OHBM! OHBM awarded childcare grants for the second year in 2019 and will continue to seek ways to make it easier for members with children to attend. As usual, there is a nursing mother room available, and this year we are adding a coloring activity near the art exhibit. Additionally, our 2019 meeting venue in Rome has a playground onsite available exclusively to OHBM attendees. All children must be attended.

EVALUATIONS

Rate sessions you attend in the OHBM app by selecting the clipboard icon on the left menu of an event. Your feedback ensures that we can continue to improve the content, format, and schedule of the meeting. Please rate the sessions and complete the quick survey.

ACCME ACCREDITATION

CME CREDIT: This activity has been planned and implemented in accordance with the Essential Areas and Policies of the Accreditation Council for Continuing Medical Education (ACCME) through sponsorship of the Organization for Human Brain Mapping. The OHBM is accredited by the ACCME to provide continuing medical education for physicians.

The Organization for Human Brain Mapping designates this educational activity for a maximum of 29.50 PRA Category 1 Credit(s)™. Physicians should only claim credit commensurate with the extent of their participation in the activity. **CME forms will only be available onsite or online on the OHBM website.**

EDUCATIONAL COURSES	CREDITS
Full Day Educational Courses 8:00 – 16:30	7.00 each
Morning Educational Courses 8:00 – 12:00	3.50 each
Afternoon Educational Courses 13:00 – 16:30	3.50 each

Maximum number of possible credits earned at Educational Courses 7.00

ANNUAL MEETING CREDITS

Talairach Lecture	0.75
Keynote Lectures	0.75 each
Symposia	1.25 each
Oral Sessions	1.25 each
LOC Symposium	1.00
Scientific Advisory Board Symposium	1.00
Career Development Mentoring Session	1.00
Publishing Roundtable	1.00
Meeting Highlights	1.00
General Assembly and Feedback Forum	0.50

Total number of possible credits earned at Annual Meeting 22.50

TOTAL NUMBER OF POSSIBLE CREDITS 29.50

ADDITIONAL ACTIVITIES DURING ANNUAL MEETING

OPEN SCIENCE SPECIAL INTEREST GROUP EVENTS

2019 OHBM OPEN SCIENCE SPECIAL INTEREST GROUP HACKATHON – BRAINHACK & TRAINTRACK
Location: Guest Hall and Foyer Space
Open daily June 9-13 from 6:00 – 18:00

The 2019 OHBM Open Science Special Interest Group BrainHack & TrainTrack took place June 6-8 at the **Mercato Centrale**, **UNA Hotels Decò Roma**, and **Palazzo Montemartini**. The goal of the BrainHack was to bring together researchers with diverse backgrounds from the OHBM community to collaborate on open science projects in neuroimaging. In parallel, the TrainTrack hosted short tutorials on data science and neuroimaging tools and best practices. The spirit of the BrainHack/TrainTrack will also be continuing into the OHBM meeting at the Auditorium Parco Della Musica in Rome from June 9-13, where a collaboration space (Guest Hall and Foyer Space) will be available in the conference venue. This space will be open to all OHBM attendees to discuss, present, and continue working on BrainHack projects and discussing TrainTrack tutorials. The BrainHack/TrainTrack was made possible by the generous support of MCIN (McGill Centre for Integrative Neuroscience), The Ludmer Center. The Mozilla Foundation, INCF (International Neuroinformatics Coordinating Facility) and the Organization for Human Brain Mapping.

Organizers
Kirstie Whitaker, Gregorgy Kiar, Roberto Toro, Katja Heuer

2019 OHBM OPEN SCIENCE SPECIAL INTEREST GROUP – OPEN SCIENCE ROOM
Open daily June 9-13 from 6:00 – 18:00
Location: Guest Hall and Foyer Space
Organizer: *Tim van Mourik, Donders Institute, Netherlands*
The Open Science SIG has organized the "Open Science Room" (Guest Hall and Foyer Space) that will be available through the meeting to all OHBM attendees to discuss, present, learn, and collaborate in the spirit of Open Science. Sessions are scheduled as a series of presentations and demonstrations focussed on the latest developments in open software, on data and code sharing, and on other open science practices. There will also be time for discussions, conversations, and questions about a variety of open science topics. You are invited to come by at any time to learn more about open science, how you can get involved, or to use the space to interact with your colleagues. See events at right, or check the mobile app, for the scheduled demonstrations, and visit **https://github.com/ohbm/OpenScienceRoom2019** for the full schedule, presentation content, and live discussions.

BRAINHACK 101
Sunday, June 9, 9:00 – 12:00

2019 OHBM OpenScience Special Interest Group "Brain Hacking 101" Workshop
Organizers:
Open Science SIG, Repronim Instructor Fellows

Over the past ten years, human brain imaging emerged as a computational field with an increasing demand for open source scientific tools that enable researchers to conduct rich analyses. In this hands-on workshop, the Open Science Special Interest Group and Repronim Instructor fellows will provide a gentle introduction to the tools which are prerequisites for a productive hackathon experience. (1) Social coding platforms (github) enable small or large teams of researchers to collaborate on developing code, and keep track of the history of all changes attached with a project. (2) Software containers (docker) are a simple yet powerful technology to package an entire computational environment, which can be shared and deployed easily. (3) Scientific notebooks (jupyter) are interactive documents that mix text, mathematics, code and the results of an analysis, available for all major scientific computing languages (Python, R, Matlab/Octave). Interested participants should come equipped with a laptop and docker installed **https://www.docker.com/**.

OPENSCIENCE SIG MEETING
Sunday, June 9, 12:00 – 13:00

HACKATHON RESULTS

Monday, June 10, 13:45 – 14:30

Prior to the conference, OHBM brainhackers spent three days hacking neuroimaging projects. In this session they will present the outcomes of their work.

OPEN SCIENCE IN POLICIES AND REGULATIONS

Tuesday, June 10, 17:15 – 18:15

How are journals, granting agencies, and consortia working alongside the open science movement? This session will explore recently introduced policy changes from each of these groups, focusing on their motivations and the potential impact on the academic ecosystem.

DEMO: FROM STATISTICAL TO BIOLOGICAL VALIDITY

Tuesday, June 11, 10:30 – 11:30

The statistical significance, reproducibility, and replicability of results does not necessarily make them biologically meaningful. Current efforts towards reproducible and statistically reliable results, therefore, need to expand to also assess the biological validity of findings. This session will focus on efforts to address the biological validity of neuroimaging results, with particular emphasis on how this can be done in an open and transparent fashion.

OPEN SCIENCE Q&A

Tuesday, June 11, 12:45 – 13:30

Is there a career to be made in Open Science? What are the challenges and opportunities along the way? In this session we will interview two people that tread this path, based on your questions.

LIGHTNING TALKS: NEUROSCIENCE TOOLKIT

Tuesday, June 11, 13:45 – 14:30

Although the field is still grappling with big questions of reproducibility and replicability, practical questions such as "how do I best plot by results", or "how do I get my data in a format to use this new toolbox" still present the largest source of concern for many neuroscientists. This session will feature six lightning talks that discuss open source hands-on solutions for everyday real-world problems.

DEMO: NEW ADVANCES IN NEUROIMAGING METHODS

Wednesday, June 12, 10:30 – 11:30

In this session, the speakers will present recently developed open source methods on a variety of topics. They will walk you through a short hands-on demo with their toolbox on real data in real-time.

LIGHTNING TALKS: MULTI-MODAL RESEARCH

Wednesday, June 12, 12:45 – 13:30

Have you ever thought of combining MRI, genetics, EEG, tACS, fNIRS, or other modalities? This session will explore the possibilities of these combinations, the challenges of implementing them, and what new insights they could give us into the brain.

OPEN SCIENCE DISCUSSION PANEL

Wednesday, June 12, 13:45 – 14:30

Has the Open Science movement gone too far or not far enough? Is there too much or not enough emphasis on Open Science practices? Prominent researchers will be discussing the positive impact, potential backlashes, and a way forward for the continuing push for Open Science.

DEMO: WEB-BASED SOLUTIONS IN NEUROSCIENCE

Thursday, June 13, 10:30 – 11:30

Although the web has transformed our commerce, communication, and media consumption; its impacts are not yet fully realized in neuroimaging research. This session will explore the potential of web applications for solving neuroscientific problems.

LIGHTNING TALKS: MULTI-MODAL RESEARCH

Wednesday, June 12, 12:45 – 13:30

From cross-lab collaborations to collaboration in big consortia, working collaboratively can provide a lot of benefits to science and to scientists. Yet it may also introduce new challenges in terms of communication, data analysis, and authorship. This session will explore the benefits of collaboration and ways to overcome the challenges.

OPEN SCIENCE WRAP-UP: GELATO PARTY

Wednesday, June 12, 13:45 – 14:30

After days of discussing open source software and open science practices, we will end the week by an open session in which you can talk to the members of the Open Science Special Interest Group (OS SIG). There will be ice cream!

ADDITIONAL ACTIVITIES DURING ANNUAL MEETING

STUDENT POSTDOC SPECIAL INTEREST GROUP EVENTS

WORKSHOP – DEALING WITH DIFFICULT SITUATIONS IN THE WORKPLACE
Student and Postdoc SIG Space (Studio Room 3)
Monday, June 10, 12:00 – 13:00

In this session, participants will learn about and discuss the most complex situations that occur in the workplace, and how to counteract them through evidence-based practices. The presenter will focus predominantly on microaggressions — those words and actions that, while often seen as harmless on their own, can in total make for a toxic work environment. Participants will be given the tools to intervene — both for themselves and as bystanders on behalf of others — and will practice these skills through role play exercises.

MONDAY NIGHT SOCIAL AND GALA
Sponsored by the Student Postdoc SIG
Vyta Villa Borghese
Monday, June 10, 20:00 – 24:00

CAREER DEVELOPMENT AND MENTORING SYMPOSIUM – SECRETS BEHIND SUCCESS VOL. 2
Goffredo Petrassi Hall
Tuesday, June 11, 12:00 – 12:50

Speakers: Melanie Stefan, Veronika Cheplygina and Danielle Bassett

Due to the popularity of the theme last year, we will be holding the Career Development and Mentoring Symposium themed Secrets Behind Success vol. 2. The symposium is an open event dedicated to all early career researchers. Our speakers, Melanie Stefan, PhD (University of Edinburgh) and Veronika Cheplygina, PhD (Eindhoven University of Technology), will introduce the concept that failure is indeed part of the path to success, and discuss the true meaning of "success" and "failure" in academia. We also have the privilege of having Danielle Bassett, PhD (University of Pennsylvania), one of the keynote speakers at this year's OHBM annual meeting, to talk about rather meandering trajectories into academia, and differences between science goals and career goals.

LUNCH WITH MENTORS
*Student and Postdoc SIG Space
(Studio Rooms 1 and 2)*
Tuesday, June 11, 13:10 – 14:00

OHBM trainees will have the opportunity to engage in informal conversations on career development with both new and established PIs, as well as industry experts over a catered, pre-registered lunch. The aim of the event is to inspire and motivate the next generation of OHBM researchers, giving them an opportunity to learn from the experiences of the invited mentors. A particular emphasis will be on initiating and successfully maintaining peer-mentoring relationships. Trainees will be able to discuss any challenges they may face during their academic path and the potential opportunities for their future professional/academic career.

WORKSHOP – CONSENT FIRESIDE CHAT
Student and Postdoc SIG Space (Studio Room 3)
Tuesday, June 11, 17:30 – 19:00

In the wake of the #metoo movement, everyone's discussing consent and worrying about what is and is not allowed. So let's have a chat about consent, shall we? Join us in discussing questions such as: What is consent? How do I provide consent? How do I take it away? How can I create a work environment where everyone on my team feels safe? The chat will be peppered with interactive games and activities to practice consent skills.

WORKSHOP – OPTIMIZING CONFLICTS IN SITUATIONS OF LOWER POWER
Student and Postdoc SIG Space (Studio Room 3)
Wednesday, June 12, 12:00 – 13:00

This session will provide a practical, evidence-based model for evaluating conflict and identifying optimal communication styles to support conflict resolution. Based on Dr. Peter Coleman's model of "Making Conflict Work", this workshop will take participants through an assessment of their natural conflict styles and offer methods for improving communication in difficult situations. Discussion will be focused on conflicts where participants have less power, such as with PI's, faculty members, or other more senior colleagues. Role plays will solidify the didactic portion of the workshop and give participants a chance to practice diverse communication skills.

1-ON-1 DISCUSSION OFFICE HOURS WITH EMMA KAYWIN
Student and Postdoc SIG Space (Studio Room 3)
Wednesday, June 12, 14:00 – 17:00

Emma Kaywin is a conflict mediator and sexual health educator in New York City. She will be facilitating the series of workshops focusing on providing education and skills-based trainings in optimizing responses to conflict, sexual misconduct and consent violation. She will be available for a 1-on-1.

WELCOME RECEPTION

Sunday, June 9, 19:00 – 21:00
Hanging Gardens located outside of the Auditorium

Join us for the 2019 Annual Meeting Welcome Reception. The reception will be in the Hanging Gardens located outside of the Auditorium immediately following the Opening Ceremonies and Talairach Lecture on Sunday, June 9. The Welcome Reception will include local entertainment, local cuisine, beer, and wine. **Please make sure to wear your name badge, which will serve as your ticket to the event.** Additional guest badges are $50.00 USD.

INDUSTRY SPONSORED LUNCH SYMPOSIA

Monday, June 10
SIEMENS HEALTHINEERS

12:00 – 14:30
Theatre Studio

Exploring New Frontiers in MRI
(see speakers on page 27)

Boxed lunch available to limited number of people.

Tuesday, June 11
PHILIPS NEURO DIAGNOSITCS

12:00 – 14:30
Theatre Studio

Break Diagnostic Boundaries with Speed, Comfort, and Confidence

HEALTHY BRAIN ACTIVITIES

Pre-registration required:
Visit **www.humanbrainmapping.org/healthybrain2019**

Yoga in Hanging Gardens
Monday and Wednesday, 7:00 – 7:45

Running in Villa Borghese
Monday and Tuesday, 17:15 – 20:00

Guided Tour of the Auditorium
Monday and Tuesday, 17:15 – 20:00

City Walking Tour
Wednesday and Thursday, 17:15 – 20:00

SOFTWARE DEMONSTRATIONS

Auditorium Expo
Monday, Tuesday, Wednesday, Thursday, 12:45 – 14:45

CLUB NIGHT

Wednesday, June 12, 20:00 – 2:00
Atlantico Disco

Address: Viale dell'Oceano Atlantico 271 D, 00144 Roma

Atlantico is the only venue in Rome with the perfect capacity for medium range concerts. Atlantico has redeveloped and extended the existing Palacisalfa building, reviving its rock venue legacy and endowing it with whatever necessary to adequately host all the different aspects of live entertainment. An audio system able to convey the value of true live experience (listening to a concert, not only seeing it) allowing the right emotional interaction between the audience and the artist.

PLEASE NOTE: You must have your name badge or you will not be admitted.

Additional guest badges are $50.00 and must be purchased at the conference registration desk.

GENERAL ASSEMBLY & FEEDBACK FORUM

Wednesday, June 12, 17:15 – 18:15
Santa Cecilia Hall

The General Assembly & Feedback Forum is the top source for the latest breaking news and commentary on issues impacting the neuroimaging community and your member organization. It is also an opportunity for you to voice your opinions and questions to the Council — which helps shape future agendas. Member input will be sought on several topical issues including a report by the Chair on OHBM's recent strategic planning meeting and new initiatives under development and a report by the newly formed Communications Committee on ways members the OHBM community can remain engaged even after the meeting. The new elected leadership will be announced as well as dates and venues for future Annual Meetings. Use the ARS to submit your questions: Visit **https://gmp3.cnf.io/**.

Deep Learning for Human Brain Mapping

Full Day Course / 8:00 – 16:30
Santa Cecilia Hall
Organizers:
Ariel Rokem, University of Washington, eScience Institute, Seattle, WA, United States

Andrew Doyle, Montreal Neurological Institute, McGill University, Montreal, Canada

Deep learning is a powerful method for learning non-linear function approximations in a data-driven manner. Many parallels have been drawn between biological brains and artificial neural networks, and this exciting new tool offers several avenues to study the brain: both to analyze neuroimaging data and as a way to model cognition. Course participants will learn to write Python code that implements a deep convolutional neural network; they will apply deep learning to a variety of brain mapping data at different spatial scales; use deep learning to model cognitive processes; identify and understand the potential pitfalls of interpreting results from neural networks; and compare and contrast deep learning with other methods for analysis of brain imaging data.

A diverse set of world experts, from across three continents and from a variety of academic backgrounds and career stages, will introduce the theory underlying deep learning and teach participants how artificial neural networks are constructed and trained. We provide hands-on examples of applications where deep learning is used for mapping the human brain, across a variety of imaging scales. Participants are asked to bring laptops and actively engage with the materials, which will be posted in the weeks before the course.

Course Schedule:
8:00 – 8:40
Deep Learning Approaches: Brief introduction and application to neuroimaging
Vince Calhoun, The Mind Research Network & The University of New Mexico, Albuquerque, NM, United States

8:40 – 9:20
Hands-on Introduction to Deep Learning with Keras
Ariel Rokem, University of Washington, eScience Institute, Seattle, WA, United States

9:20 – 10:00
Revamped CNNs for Brain-Age Analyses
Saige Rutherford, University of Michigan, Psychiatry, Chelsea, MI, United States

10:00 – 10:20
BREAK

10:20 – 11:00
Hands-on Segmentation of Histological Sections in the BigBrain
Hannah Spitzer, Forschungszentrum Jülich, Jülich, Germany

11:00 – 11:40
Attention and Modeling of Cognitive Processes
Grace Lindsay, Columbia University, New York, NY, United States

11:40 – 12:00
Questions and Answers

12:00 – 13:00
LUNCH

13:00 – 13:35
Synthesizing fMRI: Applications, promises, and pitfalls
Sanmi Koyejo, University of Illinois at Urbana-Champaign, Urbana-Champaign, IL, United States

13:35 – 14:10
GANs for Cross-Modality Image Synthesis
Anders Eklund, Linköping University, Linköping, Sweden

14:10 – 14:45
Solving the Field-to-Source Inversion Problem for Quantitative Susceptibility Mapping with Deep Learning
Steffen Bollmann, Centre for Advanced Imaging, The University of Queensland, Brisbane, Australia

14:45 – 15:05
BREAK

15:05 – 15:40
Segmenting Tracts in Diffusion MRI
Jakob Wasserthal, DKFZ, Heidelberg, Germany

15:40 – 16:15
Looking Inside the Black Box
Andrew Doyle, Montreal Neurological Institute, McGill University, Montreal, Canada

16:15 – 16:30
Questions and Answers

Functional MRI in Clinical Practice: Applications, methods, and controversies

Full Day Course / 8:00 – 16:30
Giuseppe Sinopoli Hall
Organizer:
Susan Bookheimer, UCLA, Los Angeles, CA, United States

Functional MRI is clinically approved for pre-surgical planning, and increasingly has become routine for patients with epilepsy and patients with brain lesions. Nonetheless, there are no current standards accepted for clinical fMRI, including best practices for acquisition sequences, activation tasks and control conditions, optimal analysis, integration with other technologies for surgical navigation, and reporting results. This symposium will present clinical fMRI approaches that meet rigorous scientific standards while including diverse, internationally representative speakers with broad areas of expertise (Neurology, Neuropsychology, Statistics, Radiology), including members of the other organizations listed above.

Course Schedule:

8:00 – 8:15
General Introduction: The role of fMRI in clinical practice
Susan Bookheimer, UCLA, Los Angeles, CA, United States and Panel

8:15 – 8:45
Choosing Activation Tasks and Control Conditions in Language Mapping
Jeffrey Binder, Medical College of Wisconsin, Milwaukee, WI, United States

8:45 – 9:15
Memory Mapping with fMRI
Susan Bookheimer, UCLA, Los Angeles, CA, United States

9:15 – 9:30
Panel and Group Discussion: Different approaches to task and baseline choices

9:30 – 10:00
BREAK

10:00 – 10:40
Statistical Methods for Single-subject fMRI
Mark Jenkinson, University of Oxford, Oxford, Oxon, United Kingdom

10:40 – 11:10
Caveats for Single-subject fMRI Statistics
Cyril Pernet, University of Edinburgh, Edinburgh Imaging, Edinburgh, United Kingdom

11:10 – 11:40
Different Approaches to Analysis and Case Examples
Dr. Patricia Walshaw, UCLA, Los Angeles, CA, United States

11:40 – 11:50
Panel Questions and Answers

11:50 – 12:50
LUNCH

12:50 – 13:20
Functional MRI and DTI Pipeline for a Clinical Environment
Michael Zeineh, Stanford University, Stanford, CA, United States

13:20 – 14:10
Structured Reporting of Clinical fMRI Exams – An Illustrated Neuroradiologist's Perspective
Andreas Bartsch, University of Heidelberg, Heidelberg, Germany

14:10 – 14:40
In the Operating Room: Integrating intraoperative electrocortical and fiber stimulation mapping with pre-surgical maps
Natalie Voets, University of Oxford, Oxford, United Kingdom

14:40 – 14:55
Panel and Questions and Answers: Team approaches to clinical fMRI – how to best work together

14:55 – 15:15
BREAK

15:15 – 15:45
Resting-state fMRI in Language Mapping: Promises and pitfalls
Linda Douw, VU University Medical Center, University of Amsterdam, Amsterdam, Netherlands

15:45 – 16:15
Cerebrovascular Reactivity Mapping: Promises and pitfalls
Andreas Bartsch, University of Heidelberg, Heidelberg, Germany

16:15 – 16:30
Questions and Panel/Attendee General Discussion: Future directions and cross-discipline integration

MR Diffusion Imaging: From theory to applications

Full Day Course / 8:00 – 16:30
Goffredo Petrassi Hall
Organizer:
Flavio Dell'Acqua, King's College London, London, United Kingdom

By following an ideal diffusion imaging pipeline, the lectures in the morning will review the current state of the art of diffusion imaging methods and the possible pitfalls and limitations that need to be taken in account before getting to the final results. The afternoon lectures will focus on how we can apply these methods to study brain microstructure and structural connectivity in individual subjects or to look at group differences in clinical research applications. Special attention will be also given to the validation and the biological interpretation of current diffusion imaging indices and on how to use diffusion imaging in pre-clinical settings and on human ex-vivo samples. Finally, to stimulate a discussion with the participants of this course a final lecture will look at how we can integrate diffusion with other modalities and look at brain connectivity with MRI.

Course Schedule:
8:00 – 8:40
Diffusion MRI Data Acquisition
Rita Nunes, Department of Bioengineering, IST, Universidade de Lisboa, Lisbon, Portugal

8:40 – 9:20
Methodological Considerations on Analyzing Diffusion MRI Data
Alexander Leemans, Image Sciences Institute – UMC Utrecht, Utrecht, Netherlands

9:20 – 10:00
Diffusion Imaging Models 1:
From DTI to HARDI models and beyond
Flavio Dell'Acqua, King's College London, London, United Kingdom

10:00 – 10:20
BREAK

10:20 – 11:00
Diffusion Imaging Models 2:
From DTI to microstructure quantification
Gary Zhang, University College London, London, United Kingdom

11:00 – 11:40
Group Comparisons with Diffusion and Microstructure Imaging
Tim Dyrby, Danish Research Centre for Magnetic Resonance, Copenhagen University, Copenhagen, Denmark

11:40 – 12:00
Questions and Answers

12:00 – 13:00
LUNCH

13:00 – 13:40
Diffusion Tractography
Maxime Descoteaux, Université de Sherbrooke, Sherbrooke, Canada

13:40 – 14:20
Tract Analysis and Connectomics
Anastasia Yendiki, Athinoula A. Martinos Center for Biomedical Imaging, MGH & Harvard Medical School, Boston, MA, United States

14:20 – 14:40
BREAK

14:40 – 15:25
Pre-Clinical and Post Mortem Diffusion Imaging
Manisha Aggarwal, Johns Hopkins University, Baltimore, MD, United States

15:25 – 16:10
Imaging Connectivity
Saad Jbabdi, University of Oxford, Oxford, United Kingdom

16:10 – 16:20
Questions and Answers

An Introduction to Network Neuroscience: How to build, model and analyse connectomes

Full Day Course / 8:00 – 16:30
Theatre Studio
Organizers:
Alex Fornito, Monash University, Clayton, Victoria, Australia

Andrew Zalesky, University of Melbourne, Melbourne, Australia

Generating accurate and comprehensive maps of neural connectivity has become a central goal in neuroscience. Recent technical advances have led to the construction of connectomes mapped in unprecedented detail and in diverse species, ranging from C elegans to the macaque. These efforts complement large-scale endeavours in humans, such as the Human Connectome Project. Network neuroscience offers a powerful, unifying framework for modelling these diverse data with a common language, providing new opportunities to uncover conserved and species-specific network properties, and to understand how different network properties within a specific relate to specific behaviours.

This workshop will introduce attendees to the skills required to take full advantage of these diverse kinds of data. Upon completion, attendees will be able to critically appraise different approaches to network construction and analysis, and should be able to formulate new research questions that are guided by network perspective on brain organization. The flexibility of the approach means that attendees will develop insight into methods appropriate for diverse kinds of neuroimaging data, ranging from non-invasive structural and functional MRI or M/EEG in humans, to tract-tracing, calcium imaging, and other forms of physiological imaging in model species.

Course Schedule:
8:00 – 8:40
Basic Concepts of Network Neuroscience
Alex Fornito, Monash University, Clayton, Victoria, Australia

8:40 – 9:20
Defining Network Nodes and Extracting Timeseries
Janine Bijsterbosch, University of Oxford, Oxford, United Kingdom

9:20 – 10:00
Functional Connectivity: Methods and measures
Catie Chang, Vanderbilt University, Nashville, TN, United States

10:00 – 10:20
BREAK

10:20 – 11:00
Quantifying Structural Connectivity
Robert Smith, The Florey Institute of Neuroscience and Mental Health, Heidelberg, Victoria, Australia

11:00 – 11:40
Network Statistics and Null Models
Andrew Zalesky, University of Melbourne, Melbourne, Australia

11:40 – 12:00
Questions and Answers

12:00 – 13:00
LUNCH

13:00 – 13:35
Communication in Brain Networks
Bratislav Mišić, McGill University, Montreal, Canada

13:35 – 14:10
Hubs, Rich Clubs, and Neural Integration
Martijn van den Heuvel, Vrije Universiteit Amsterdam, Amsterdam, Netherlands

14:10 – 14:45
Modules in Structural and Functional Brain Networks
Richard Betzel, Department of Psychological and Brain Sciences, Indiana University, Bloomington, IN, United States

14:45 – 15:05
BREAK

15:05 – 15:40
Multilayer Brain Networks: Construction and analysis
Sarah Muldoon, University at Buffalo, SUNY, Buffalo, NY, United States

15:40 – 16:15
Applications of Network Neuroscience
Kirstie Whitaker, The Alan Turing Institute, London, United Kingdom

16:15 – 16:30
Questions and Answers

Time-varying Connectivity in Resting-state fMRI: Methods, interpretations and clinical use

Half Day Morning Course / 8:00 – 12:00
Studio 1
Organizers:
Vince Calhoun, The Mind Research Network & The University of New Mexico, Albuquerque, NM, United States

Raphaël Liégeois, École Polytechnique Fédérale de Lausanne, Lausanne, Switzerland

Recent converging evidence suggests that a static representation of FC, e.g. based on the correlation between entire fMRI time series, misses important information encoded in fMRI data. Hence, various methods have been developed in recent years to exploit the information encoded beyond such static measures. The researcher interested in exploring time-varying FC properties has to select among the multitude of proposed methods, each one having different properties and underlying assumptions. The goal of this course is to provide guidance in the choice of an adequate time-varying FC method to address a specific neuroscientific question. In the first part of the course we will recall the definitions of the most important mathematical notions required to characterize temporal fluctuations of functional connectivity. Then, we will provide an overview of the main approaches used to explore functional connectivity beyond the classical static paradigm (e.g. brain states, co-activation patterns, autoregressive models), including concrete examples of how these methods have been used in clinical applications. The second part of the course will be devoted to the interpretation of FC fluctuations. We will detail their links to micro-scale (i.e. neuronal) dynamics as well as their behavioral counterparts. We will conclude by summarizing the main remaining controversies of the field. In order to maximize learning outcomes for participants, we will discuss multiple-choice questions at the end of each talk, and take questions from the audience using the OHBM interactive tool.

Course Schedule:
8:00 – 8:35
Going Beyond the Static Functional Connectome: A theoretical and methodological framework
Maria Giulia Preti, EPFL / University of Geneva, Genève, Switzerland

8:35 – 9:10
Null Models for Brain Dynamics and Time-Varying Functional Connectivity
Manjari Narayan, Stanford University, Stanford, CA, United States

9:10 – 9:45
Time-Varying Connectivity: Data-Driven approaches and clinical applications
Vince Calhoun, The Mind Research Network & The University of New Mexico, Albuquerque, NM, United States

9:45 – 10:05
BREAK

10:05 – 10:40
The Neural Basis of Spontaneous Functional Dynamics
Shella Keilholz, Georgia Institute of Technology and Emory University, Atlanta, GA, United States

10:40 – 11:20
Modelling the Multiscale Nature of Dynamic Functional Connectivity
Michael Breakspear, QIMR Berghofer Medical Research Institute, Brisbane, Australia

11:20 – 11:55
Controversies and Open Questions in the Study of "Resting-State" Time-Varying Functional Connectivity
Dan Lurie, University of California, Berkeley, Berkeley, CA, United States

11:55 – 12:00
Questions and Answers

fMRI at the Resolution Scale of Cortical Columns and Layers

Half Day Morning Course / 8:00 – 12:00
Studio 2
Organizer:
Amir Shmuel, McGill University, Neurology, Neurosurgery, Physiology and Biomedical Engineering, Montreal, Quebec, Canada

The uniformity of the mammalian cortex has led to the proposition that there exist elementary cortical units of operation, consisting of several hundred or thousand neurons that are repeated within and across cortical areas (Lorente de No', 1938). Cortical columns and layers of neocortex are prominent examples of such structurally and functionally specialized units. Functional properties and connectivity are similar for neurons within a column but are known to vary between columns. It can therefore be argued, based on information-theory, that the optimal spatial scale for studying the relationship between brain function and behavior is that of cortical columns (and layers, for similar reasons).

With over 70 installations of large-bore ultra-high magnetic field MRI scanners around the world, the neuroimaging community has been quickly transforming its agenda, from imaging cortical areas

to imaging cortical columns and layers. However, this is not an easy transformation. The educational course will focus on cutting-edge methods of combining high-resolution functional imaging at ultra-high magnetic field and specialized analysis methods for probing fine-scale cortical representations and processing. It will critically assess the potential and limitations of different data acquisition techniques and analysis methods. It will analyze the relationship between fine-scale neuronal patterns and fMRI response patterns. It will feature studies that successfully implemented these methods, and will emphasize correct interpretation of the results.

Course Schedule:

8:00 – 8:35
From Spins to Laminar Function: The physics of high-field, high resolution MRI
Wietske van der Zwaag, Spinoza Center, Amsterdam, Netherlands

8:35 – 9:10
Choices of Imaging Readout at 7 Tesla
David Norris, Radboud University Nijmegen, Donders Institute for Brain Cognition and Behaviour, Nijmegen, Netherlands

9:10 – 9:45
Analysis of the Spatial Specificity of BOLD and Cerebral Blood Volume fMRI: Reliable, optimized decoding and high-resolution imaging of cortical columns
Amir Shmuel, McGill University, Neurology, Neurosurgery, Physiology and Biomedical Engineering, Montreal, Quebec, Canada

9:45 – 10:05
BREAK

10:05 – 10:40
Non-BOLD Contrasts to Improve the Interpretability of High-resolution fMRI in Humans
Laurentius Huber, NIMH, Bethesda, MD, United States

10:40 – 11:20
Preprocessing and Analysis Strategies for Laminar fMRI
Jonathan Polimeni, A. A. Martinos Center for Biomedical Imaging, Harvard Medical School, Massachusetts General Hospital, Charlestown, Boston, MA, United States

11:20 – 11:55
Revealing Detailed Neural Correlates of Human Perception and Cognition Using Ultra-high Field fMRI
Rainer Goebel, Maastricht University, Maastricht, Netherlands

11:55 – 12:00
Questions and Answers

Taking Control of Your Neuroimaging Data: Understanding artefacts and quantifying quality

Half Day Morning Course / 13:00 – 16:30
Studio 3
Organizers:
Joset Etzel, Washington University in St. Louis, Psychological and Brain Sciences, Saint Louis, MO, United States

Ben Inglis, University of California, Henry H. Wheeler, Jr. Brain Imaging Center, Berkeley, CA, United States

Pradeep Reddy Raamana, Baycrest Health Sciences, Rotman Research Institute, Toronto, Ontario, Canada

Assessing the quality of neuroimaging data, whether raw data hot off the scanner or the output of a preprocessing pipeline, generally requires visual inspection, a prospect that can quickly become overwhelming in even moderately-sized datasets. Inspection is further complicated by the range of acquisitions and modalities used in neuroimaging (e.g. diffusion, anatomical, and functional MRI), each of which has its own artifact sensitivities and quality criteria. The options available for manipulation in post processing span an even larger space, with dozens of methods available for every modality. Although quality control (QC) is receiving increasing attention in the field, the large scope of the topic has led many to "black box" the metrics or conduct only the most cursory checks. This workshop aims to demystify neuroimaging QC, with talks spanning the levels from individual scans (physical origins of artefacts and how to rate their severity) to issues arising from multi-site projects (standardization, phantom calibration and other quality assurance (QA) processes). Practical suggestions will be emphasized throughout the tutorial, including currently available software, recommendations of best practices, resources for more detailed information, and sample code. Interaction with the audience will be encouraged; structuring the half-day workshop with six twenty-minute talks will allow 10 minutes for questions after each talk as well as an open-ended panel discussion at the end of the session.

Course Schedule:

8:00 – 8:35
Overview of Workshop, and Anatomical MRI Artefacts and QC Use-cases
Pradeep Reddy Raamana, Baycrest Health Sciences, Rotman Research Institute, Toronto, Ontario, Canada

8:35 – 9:10
Identifying and Correcting Physiological and Systematic Artifacts in Diffusion MRI
Alexander Leemans, Image Sciences Institute – UMC Utrecht, Utrecht, Netherlands

9:10 – 9:45
Functional MRI QC and QA
Martina Callaghan, University College London, London, United Kingdom

9:45 – 10:05
BREAK

10:05 – 10:40
QC of Functional MRI at 7T
Kamil Uludag, UM, Maastricht, Netherlands

10:40 – 11:20
Dataset QC
Joset Etzel, Washington University in St. Louis, Psychological and Brain Sciences, St. Louis, MO, United States

11:20 – 11:55
Multi-Site Project-level QA/QC
Stephen Strother, Baycrest and University of Toronto, Rotman Research Institute, Toronto, Ontario, Canada

11:55 – 12:00
Questions and Answers

Population Neuroscience: How to responsibly handle big data in the age of biobanks

Half Day Morning Course / 8:00 – 12:00
Choir Room
Organizers:
Tonya White, Erasmus MC University Medical Center, Rotterdam, Netherlands

The UK-Biobank has recently released 15,000 neuroimaging datasets that are accompanied with deep phenotyping. Many researchers have already accessed these data, and have begun demonstrating that even very small effect sizes can be statistically significant with such a large sample. The full potential of these data can be better realized with additional consideration of effect size, generalizability, bias, and confounding. For example, currently, little attention is given to the effect of confounding bias on associations between neuroimaging data and a given phenotype; at most, a few central covariates are adjusted for in statistical models. Further, generalizability of findings is often poorly described in brain mapping studies. How meaningful are results that may only apply to a highly select subgroup of the population? These crucial epidemiological aspects are lacking in most neuroscience, psychology, and brain mapping training programs, and this education session will ensure more awareness of the common mistakes and misconceptions involved in big data usage.

Course Schedule:

8:00 – 8:35
Basic Epidemiology, Confounding, and Other Biases: Why does it matter?
Mohammad Ikram, Departments of Epidemiology, Erasmus MC University Medical Centre, Rotterdam, Netherlands

8:35 – 9:10
Applied Epidemiological Concepts and Analysis Considerations: Population neuroscience in action
Henning Tiemeier, Harvard University, Boston, MA, United States

9:10 – 9:45
Scaling Up Neuroimaging Statistical Tools for Big Data
Thomas Nichols, University of Oxford, Oxford Big Data Institute, Oxford, United Kingdom

9:45 – 10:05
BREAK

10:05 – 10:40
Imaging Genetics: Important considerations with data, big and small
Anqi Qiu, National University of Singapore, Singapore, Singapore

10:40 – 11:20
Imaging Garbage In... Results Garbage Out: Or is there something you can learn by looking through one's garbage?
Tonya White, Erasmus MC University Medical Center, Rotterdam, Netherlands

11:20 – 11:55
Replication: What, when, why, and how?
Xi-Nian Zuo, Institute of Psychology, Chinese Academy of Sciences, Beijing, China

11:55 – 12:00
Questions and Answers

OPEN SCIENCE

9:00 – 12:00
2019 OHBM OpenScience Special Interest Group "Brain Hacking 101" Workshop
Guest Hall and Foyer space
Organizers:
Open Science SIG, Repronim Instructor Fellows

Over the past ten years, human brain imaging emerged as a computational field with an increasing demand for open source scientific tools that enable researchers to conduct rich analyses. In this hands-on workshop, the Open Science Special Interest Group and Repronim Instructor fellows will provide a gentle introduction to the tools which are prerequisites for a productive hackathon experience. (1) Social coding platforms (github) enable small or large teams of researchers to collaborate on developing code, and keep track of the history of all changes attached with a project. (2) Software containers (docker) are a simple yet powerful technology to package an entire computational environment, which can be shared and deployed easily. (3) Scientific notebooks

(jupyter) are interactive documents that mix text, mathematics, code and the results of an analysis, available for all major scientific computing languages (Python, R, Matlab/Octave). Interested participants should come equipped with a laptop and docker installed **https://www.docker.com/**.

OPEN SCIENCE

12:00 – 13:00
OpenScience SIG Meeting
Guest Hall and Foyer space

Brain Parcellations and Functional Territories

Half Day Afternoon Course / 13:00 – 16:30
Studio 1
Organizers:
Paula Croxson, Friedman Brain Institute, New York, NY, United States

Michel Thiebaut de Schotten, BCBLAB, Paris, France

Over the past century and a half, human brain mapping consisted in pinning small functionally responsive areas within the brain. However, the real extent of these areas and their eventual overlap remains unknown. The challenge now facing neuroscience is to define boundaries for functionally responsive areas at the group- and the individual-level. Many new approaches have become available for parcellating the brain into areas using different features including post-mortem and in vivo architectonics, tractography-based connectivity, myelin maps, variability maps, and resting state functional connectivity. However, what these methods really measure and what conclusion can be drawn, are not yet fully clear to the scientific community. This course addresses this need and is intended for a large audience of research scientists (e.g. from beginner to advanced level).

Course Schedule:
13:00 – 13:30
From Post-mortem to in Vivo Parcellations
Sarah Genon, Research Centre Jülich, Jülich, Germany

13:30 – 14:00
Structural Connectivity Parcellation
Saad Jbabdi, University of Oxford, Oxford, United Kingdom

14:00 – 14:30
Brain Variability Parcellation
Stephanie Forkel, Institute of Psychiatry, London, United Kingdom

14:30 – 14:50
BREAK

14:50 – 15:20
Multi-modal Parcellation
Matt Glasser, Washington University St Louis, St Louis, MO, United States

15:20 – 15:50
Functional Connectivity-based Parcellation
Ruby Kong, Clinical Imaging Research Center, National University of Singapore, Singapore, Singapore

15:50 – 16:20
Theoretical Applications
Daniel Margulies, NeuroconnLab, Paris, France

16:20 – 16:30
Questions and Answers

MRS of GABA and Other Metabolites: Methods and applications for understanding human brain function

Half Day Afternoon Course / 13:00 – 16:30
Studio 2
Organizers:
Charlotte Stagg, Oxford University, Oxford, United Kingdom

Nicolaas Puts, Johns Hopkins University, Radiology, Baltimore, MD, United States

As we increase our use of multimodal imaging methodologies, the interest in measuring GABA to study brain function has exponentially increased. Increasing number of researchers are using MRS to study GABA and its relationship to brain function, brain connectivity, behaviour, and dysfunction. However, we are also becoming increasingly aware that measuring GABA is difficult and requires well-designed experiments, that consider the low signal to noise of GABA, sensitivity to scanner instabilities and participant movement for example. Increasing number of papers are quantifying these biases, and understanding these are necessary to design well-suited experiments that increase rigor and reproducibility of our acquisitions, in particular for multi-site studies. Recent developments allow for multi-metabolite, multi-region acquisitions and therefore faster editing, changing the type of experiments that can be planned in the future, as well as normalization and standardization of sequences across sites and scanner platforms as studied by one of the largest multisite studies to date (Mikkelsen et al. Neuroimage, 2016).

When applied appropriately, MRS of GABA is an incredibly useful and powerful tool to study brain function. Combining MRS with other modalities, such as task- or resting-state fMRI, MEG, or behavioural metrics, has substantially changed our understanding of these functional and behavioral signals. As a neurotransmitter, much is known about the cellular and molecular systems underlying GABA function, linking macro-level functional

metrics to micro-level neuroscience. MRS has also provided us with a better understanding of disorders and plasticity, providing a window into abnormal GABA mechanisms or mechanisms of plasticity in vivo. These data allow for better understanding of such disorders and possible targets for treatment or biomarkers for treatment efficacy.

After this symposium, attendees are expected to understand the methodological considerations necessary to develop and apply MRS of GABA. Attendees will gain an insight as to how GABA measurements might inform our understanding of the link between brain chemistry, brain function and behaviour, and finally, how MRS of GABA can provide important neurochemical information in disease.

Course Schedule:

13:00 – 13:30
An Introduction to MRS and Editing
Robin de Graaf, Yale School of Medicine, New Haven, CT, United States

13:30 – 14:00
Limitations and Considerations for Data Acquisition, Analysis, and Quantification
Ashley Harris, University of Calgary, Calgary, Alberta, Canada

14:00 – 14:30
Faster Editing and Universal Sequences
Muhammad Saleh, The Johns Hopkins University School of Medicine, Russell H. Morgan Department of Radiology and Radiological Science, Baltimore, MD, United States

14:30 – 14:50
BREAK

14:50 – 15:20
The Neurochemistry of GABA, Glutamate, and Their Relation to Brain Function
Caroline Rae, University of New South Wales, Sydney, Australia

15:20 – 15:50
Changes in GABA, Neuroplasticity and Learning
Charlotte Stagg, Oxford University, Oxford, United Kingdom

15:50 – 16:20
Edited MRS and Psychiatric and Neurological Disorders
Nicolaas Puts, Johns Hopkins University, Radiology, Baltimore, MA, United States

16:20 – 16:30
Questions and Answers

The Missing Link: How to combine neuroimaging data with computational models of behavior

Half Day Afternoon Course / 13:00 – 16:30
Studio 3
Organizers:
Esin Karahan, Cardiff University Brain Research Imaging Centre, Cardiff, United Kingdom

Lorena Santamaria, Cardiff University Brain Research Imaging Centre, Cardiff, United Kingdom

Wojciech Zajkowski, Cardiff University Brain Research Imaging Centre, Cardiff, United Kingdom

Jiaxiang Zhang, Cardiff University Brain Research Imaging Centre, Cardiff, United Kingdom

Understanding how brain activity is related to behavior is arguably one of the most important agendas of neuroscience. Answering it requires not only knowing how patterns of brains activity map into overt actions, but also what are the underlying cognitive processes the brain is implementing. Cognitive computational models proved useful — in some cases groundbreaking — for the scientific community in a wide range of research areas, such as decision making, learning and memory. Modelling behaviour offers a way to see beyond raw behavioral measures, such as accuracies and reaction times, and estimate latent cognitive parameters which drive behaviour. These might include how fast information is sampled and integrated (evidence accumulation), how much we adjust our expectations based on new information (learning rates; prediction errors) or how much information do we need to make a choice (thresholds). The key challenge of the field lies in integrating cognitive models of behaviour with the rich ensemble of neural data. Neuroimaging technologies offer a plethora of ways to sample neural data, each having its benefits and drawbacks. Though location and timing of the neural activity could be determined with neuroimaging tools, it is still not clear how neural mechanisms lead to changes in behavior. In this workshop, we aim to bridge these two well-developed areas. Course participants will learn the rationale behind modelling latent cognitive processes and linking such models with neural data. They will also learn about a wide variety of applications, followed by a hands-on tutorial on the basics of implementing such analyses.

Course Schedule:

13:00 – 13:35
Defining the Missing Link: Introduction to combining neural data with cognitive models of behavior
Wojciech Zajkowski, Cardiff University Brain Research Imaging Centre, Cardiff, United Kingdom

13:35 – 14:10
Model-based Cognitive Neuroscience
Birte Forstmann, Integrative Model-based Cognitive Neuroscience Research Unit, University of Amsterdam, Amsterdam, Netherlands

14:10 – 14:45
Reinforcement Learning Models and Integration with fMRI
Jian Li, Peking University, Beijing, China

14:45 – 15:05
Questions and Answers

15:05 – 15:40
Model-based Assessment of Brain-behavior Relationships
Jean Daunizeau, Brain and Spine Institute, Paris, France

15:40 – 16:15
A Tutorial on Joint Models of Neural and Behavioral Data
Brandon Turner, The Ohio State University, Columbus, OH, United States

16:15 – 16:30
Questions and Answers

Researcher's Guide to the Adolescent Brain Cognitive Development (ABCD) Study

Half Day Afternoon Course / 13:00 – 16:30
Choir Room
Organizers:
Anders Dale, University of California San Diego, San Diego, CA, United States

Sean Hatton, UC San Diego, Neuroscience, La Jolla, CA, United States

Terry Jernigan, University of California San Diego, San Diego, CA, United States

The Adolescent Brain Cognitive Development (ABCD) Study is the largest long-term study of brain development and child health in the United States. The ABCD Research Consortium consists of a Coordinating Center, a Data Analysis and Informatics Center, and 21 research sites across the country, which have enrolled 11,874 children ages 9-10 in the study. Researchers will track their biological and behavioral development through adolescence into young adulthood. Further information on the study can be found at abcdstudy.org. With the release of the full baseline dataset in March 2019, this half-day educational course introduces the study, ways of accessing different raw and curated datasets, leveraging new analytical tools to accelerate research, and statistical considerations important in population studies. The educational course will close with a panel discussion where attendees will be able to discuss elements of the study with the people who produce and share the data.

Course Schedule:
13:00 – 13:30
The ABCD Cohort
Sandra Brown, University of California San Diego, San Diego, CA, United States

13:30 – 14:00
Physical, Behavioral and Environmental Phenotypes
Hugh Garavan, University of Vermont, Burlington, VT, United States

14:00 – 14:30
Neuroimaging Processing Pipeline and Baseline Data
Donald Hagler, University of California San Diego, San Diego, CA, United States

14:30 – 14:50
BREAK

14:50 – 15:20
Scientific Approaches and Tools in ABCD – Statistical Inferences
Wesley Thompson, University of California, San Diego, CA, United States

15:20 – 15:50
Scientific Approaches and Tools in ABCD – Integrating Genetics and Neuroimaging
Chun-Chieh Fan, Center for Human Development, University of California San Diego, San Diego, CA, United States

15:50 – 16:20
Scientific Approaches and Tools in ABCD – Twins and Structural Equation Modeling
Michael Neale, Virginia Commonwealth University, Richmond, VA, United States

16:20 – 16:30
Questions and Answers

SUNDAY, JUNE 9, 2019 | **EDUCATIONAL COURSES**

Opening Ceremonies and Talairach Lecture

17:30 – 19:30
Santa Cecilia Hall

The Opening Ceremonies is the official kick-off where attendees can gather together to celebrate the start of the 25th Annual Meeting! Here we will honor the accomplishments of our colleagues receiving special recognition during the Awards Program for OHBM's Glass Brain Award recognizing a lifetime of achievement; OHBM Early Career Investigator Award, the Education in Neuroimaging Award and the Replication Award.

Talairach Lecture

Timing Matters
Riitta Hari, prof. emerita, Aalto University, Finland

She has with her team pioneered the use of magnetoencephalography (MEG) to study sensory processing and motor control in healthy subjects and patient groups, with the main interest in the dynamics of human brain functions in naturalistic conditions. Recently she has advocated "two-person neuroscience" for the study of the brain basis of social interaction. In her OHBM talk "Timing Matters" Riitta Hari will discuss the importance of timing in human brain function.

Welcome Reception

19:30 – 21:00
Hanging Gardens and Outdoor Atrium located outside of the Parco della Musica

Join us for the 2019 Annual Meeting Welcome Reception. The reception will be held in the Hanging Gardens immediately following the Opening Ceremonies and Talairach Lecture on Sunday, June 9.

Please make sure to wear your name badge, which will serve as your ticket to the event. Additional guest badges are $50.00 USD.

MONDAY, JUNE 10, 2019 | **SCIENTIFIC PROGRAM**

MORNING SYMPOSIA
8:00 – 9:15

Cognitive Atlasing: From brain images to the mind

Santa Cecilia Hall
Organizer:
Bertrand Thirion, Parietal Team, INRIA, Gif-sur-Yvette, France

In recent years, the neuroimaging community has spent major efforts to propose new representations of brain organization that better account for functional characteristics observed in imaging, such as response magnitude to tasks, functional connectivity or variations of functional tuning along the cortical surface. The use of resting-state fMRI at a large scale, e.g., in the human Connectome project, has been key in that respect. While some consensus has been progressively reached on the units constituting the macroscopic features of brain organization, the question of functional specialization has been handled mostly separately through the framework of coordinate-based meta-analysis. The current situation is that i) the atlasing view focuses mostly on connectivity-based parcellation, i.e., the definition of edges and structure according to the large-scale connectivity differences, while ii) the cognitive view is mostly based on the coordinate-based meta-analytic framework, that has proved to be useful, but does not leverage information besides MNI coordinates.

The objective of this workshop is to discuss these different views on brain organization: namely that of a set of regions characterized by connectivity on the one hand, and regions that are also functionally specialized. To this end, we will start with current developments on coordinate-based meta-analyses that emphasize their role as a marker of brain territories and functional gradients. We will then consider the question of image-level analysis, as the increasing amount of public data calls for solutions to unify the inference made on heterogeneous data without discarding fine-scale information. We will then question the traditional static view on brain atlases, that potentially under-estimates the plasticity of functional networks observed in single individuals. Overall, we want to discuss how different levels of evidence, ranging from cross-study meta-analyses to deep phenotyping, combine into a new generation of brain atlases that better represent individual features, while blending nicely with the knowledge carried by the cognitive neuroimaging literature.

SYMPOSIA SCHEDULE:
8:00 – 8:15
Behavioral Profiling of Brain Regions across Large-scale Activation Data to Understand the Organization of Information Processing in the Human Brain
Sarah Genon, Research Centre Jülich, Jülich, Germany

8:15 – 8:30
Thinking Pragmatically about Atlases
Tal Yarkoni, University of Texas at Austin, Psychology, Austin, TX, United States

8:30 – 8:45
State-specific Parcellation of the Human Brain
Mehraveh Salehi, Yale University, New Haven, CT, United States

8:45 – 9:00
Cognitive-domain Decoding
Bertrand Thirion Presenter, Parietal Team, INRIA, Gif-sur-Yvette, France

9:00 – 9:15
Questions and Answers

Clinical Applications of Time-varying Neuroimaging

Giuseppe Sinopoli Hall
Organizers:
Alessandra Griffa, Vrije Universiteit Amsterdam, Utrecht, Netherlands

Maria Giulia Preti, EPFL / University of Geneva, Genève, Switzerland

Lorenzo Pasquini, UCSF, San Francisco, CA, United States

In recent years, time-varying neuroimaging has become an emerging area of investigation, attested among other facts, by two well-attended symposia on this topic at OHBM 2018 in Singapore. The clinical application of time-varying neuroimaging is relevant, since it can lead to more nuanced markers of dysfunctional brain organization, but also because psychiatric, developmental, and neurological disorders can be used as "lesion" models to understand the link between human behavior and subtle changes in brain function. Therefore, an overview of the clinical application of time-varying neuroimaging using distinct modalities and techniques across a variety of brain disorders, is timely and appeals to a broad audience. The symposium will be tailored to both methods oriented neuroimaging experts interested in mapping dysfunctional brain processes at finer timescales, and clinical researchers interested in the clinical application of the methods.

SYMPOSIA SCHEDULE:
8:00 – 8:15
Dynamic Functional Connectivity Biomarkers: Potential and limitations
Vince Calhoun, The Mind Research Network & The University of New Mexico, Albuquerque, NM, United States

8:15 – 8:30
Anterior Insula Time-Varying Functional Connectivity in Healthy Older Adults and Patients with Behavioral Variant Frontotemporal Dementia
Lorenzo Pasquini, University of California San Francisco, CA, United States

8:30 – 8:45
Rapid Time-scale Alterations in the Natural Patterns of Spontaneous Brain Network Synchronizations in Healthy Aging and Neurological Disease States
Tatiana Sitnikova, Massachusetts General Hospital & Harvard Medical School, Charlestown, MA, United States

8:45 – 9:00
Using Topological Data Analysis to Capture and Quantify Transitions in Intrinsic Brain Activity in Individuals with Fragile X Syndrome
Manish Saggar, Stanford University, Psychiatry, Stanford, CA, United States

9:00 – 9:15
Questions and Answers

New Approaches for Probing the Neurobehavioral Basis of Development

Goffredo Petrassi Hall
Organizers:
Beatriz Luna, University of Pittsburgh, Psychiatry, Pittsburgh, PA, United States

Theodore Satterthwaite, University of Pennsylvania, Philadelphia, PA, United States

The brain undergoes dramatic remodeling during childhood and adolescence, allowing for an expansion of behavioral and cognitive capabilities. However, behavioral deficits and neuropsychiatric syndromes are increasingly understood as disorders of brain development. Non-invasive multi-modal neuroimaging can provide insights regarding trajectories of normal brain development, define how such development relates to behavior, and delineate how abnormal brain development leads to behavioral disturbances and mental illness. Accordingly, this symposium provides an overview of cutting edge initiatives to study the developing brain using multi-modal imaging.

First, Nico Dosenbach (Washington University in St. Louis) will present new data from a sample of children whose functional brain organization was extensively characterized, allowing for personalized delineation of functional neuroanatomy. Second, Damien Fair (Oregon Health Science University) will present data from the huge ABCD study (n>10,000) that relates such individualized networks to relevant behavioral domains. Third, Ted Satterthwaite (University of Pennsylvania) will present work that uses a range of multivariate analytic techniques to integrate diverse multi-modal imaging and rich behavioral data from the Philadelphia Neurodevelopmental Cohort (n=1,601). Finally, Beatriz Luna (University of Pittsburgh), will present recent data that shows how ultra-high field 7T MRSI can inform our understanding of Glutamate and GABA development during childhood, and how such evolving neurochemical signals relate to functional connectivity and behavior.

SYMPOSIA SCHEDULE:

8:00 – 8:15
Precision Functional Mapping of Individual Child Brains
Nico Dosenbach, Washington University School of Medicine, St. Louis, MO, United States

8:15 – 8:30
New Approaches to Examining Personalized Network Organization in Studies of Brain Development: An ABCD study
Damien Fair, Oregon Health and Science University, Portland, OR, United States

8:30 – 8:45
7T MRSI Evidence for Changes in GABA/Glu Ratios Through Adolescent Development
Beatriz Luna, University of Pittsburgh, Psychiatry, Pittsburgh, PA, United States

8:45 – 9:00
Integrating Complex Data to Study Brain Development
Theodore Satterthwaite, University of Pennsylvania, Philadelphia, PA, United States

9:00 – 9:15
Questions and Answers

Imaging Experience-dependent Plasticity in Humans

Theatre Studio
Organizers:
Monika Schönauer, Princeton University, Princeton Neuroscience Institute, Princeton, NJ, United States

Svenja Brodt, University of Tübingen, Tübingen, Germany

Our brain needs to adapt continuously to daily changes in functional demands. Tracking this experience-dependent plasticity has been possible via invasive histological assessments in animals; Critically, the advent of novel MR imaging methods has recently made it possible to also observe learning-induced structural plasticity in humans, in both grey and white matter (Sagi et al., 2012; Zatorre et al., 2012; Brodt et al., 2018). Diffusion weighted imaging (DW-MRI) can reveal microstructural plasticity already hours after a learning experience (Sagi et al., 2012; Brodt et al., 2018), and the extent of learning-induced change in markers of brain microstructure correlates with behavioral performance. There is strong evidence that changes in markers of DW-MRI reflect mechanisms of learning-dependent plasticity, such as astrocyte, myelin, or synaptic remodeling. The talks in this symposium will present novel findings demonstrating that DW-MRI can be used to locate and track the development of memory engrams in humans, engendered by declarative and procedural learning. We will further pinpoint underlying biological drivers of rapid structural plasticity imaged by MRI by discussing

studies in animal models that simultaneously assessed imaging and histology. Finally, we will show how DW-MRI can shed light on plasticity in the larger connectome, particularly how function determines brain structure. Together, non-invasive and in vivo imaging of plasticity in the human brain has made it possible to assess how experience shapes our brain, and has forced us to revise our view of the brain as a hard-wired system. In this symposium we want to convince the audience that DW-MRI is a promising tool to study cognitive functions that dynamically adjust to the requirements posed by the current environment.

SYMPOSIA SCHEDULE:

8:00 – 8:15
DW-MRI Reveals Rapid Formation of Memory Engrams in the Neocortex
Svenja Brodt, University of Tübingen, Tübingen, Germany

8:15 – 8:30
Time Course of Structural Plasticity in Motor Learning: Tracking differences and commonalities between motor skill learning and visuomotor adaptation using DWI
Valeria Della Maggiore, Universidad de Buenos Aires, Buenos Aires, Argentina

8:30 – 8:45
Imaging Structural Plasticity in the Sensorimotor System
Heidi Johansen-Berg, Wellcome Centre for Integrative Neuroimaging, University of Oxford, Oxford, United Kingdom

8:45 – 9:00
The Plasticity of the Connectome
Yaniv Assaf, Tel Aviv University, Tel Aviv, Israel

9:00 – 9:15
Questions and Answers

9:15 – 9:30
BREAK

NIH BRAIN Initiative Funding Opportunities

8:00 – 9:15
Choir Room
Shumin Wang

The NIH BRAIN Initiative offers great opportunities for neuroscience research. This talk will focus on various funding opportunities and grantsmanship skills for developing responsive applications. It is expected that both senior researchers, who are looking for support of their established research program, and junior researchers, who need to jump start their research, could be benefited from the talk.

KEYNOTE LECTURE

9:30 – 10:15
Santa Cecilia Hall
Danielle S. Bassett, Eduardo D. Glandt Faculty Fellow and Associate Professor, University of Pennsylvania Department of Bioengineering, Philadelphia, PA, United States

Dr. Bassett is most well known for her work blending neural and systems engineering to identify fundamental mechanisms of cognition and disease in human brain networks. She received a B.S. in physics from Penn State University and a Ph.D. in physics from the University of Cambridge, UK as a Churchill Scholar, and as an NIH Health Sciences Scholar. She is the author of more than 200 peer-reviewed publications, which have garnered over 15500 citations, as well as numerous book chapters and teaching materials. She is the founding director of the Penn Network Visualization Program, a combined undergraduate art internship and K-12 outreach program bridging network science and the visual arts. Her work has been supported by the National Science Foundation, the National Institutes of Health, the Army Research Office, the Army Research Laboratory, the Office of Naval Research, the Department of Defense, the Alfred P Sloan Foundation, the John D and Catherine T MacArthur Foundation, the Paul Allen Foundation, the ISI Foundation, and the University of Pennsylvania.

10:15 – 10:25
BREAK

Best Paper Award Presentations

10:25 – 10:50
Santa Cecilia Hall
The following awards will be announced:

The *Springer* Brain Topography's Editor's Choice Award

The *Wiley* Human Brain Mapping's Editor's Choice Awards

The *Elsevier* NeuroImage Best Paper Award

LOC Symposium

Back to the Future: The legacy of Italian neuroscientists for the current brain mapping challenges
10:50 – 12:00
Santa Cecilia Hall
Chairs:
Pietro Pietrini (Lucca) and Daniela Perani (Milan)

Given the long tradition of basic and clinical neuroscience in Italy, the Symposium will virtually connect with famous Italian neuroscientists and psychophysiologists to demonstrate how the legacy of their research achievements still impact current neuroimaging topics and methodological approaches.

Francesco Pavone (Florence): From Golgi's histology to current monitoring of brain rewiring

Maurizio Corbetta (Padua): From Mosso's weighing to representational function of spontaneous brain activity

Maria Concetta Morrone (Pisa): Imaging the visual system from Gennari and Santorini to brain imaging

Alessandro Bertolino (Bari): Beyond Lombroso: genes, imaging and environment in mental disorders

12:00 – 12:45
LUNCH ON OWN

Industry Symposia

SIEMENS HEALTHINEERS
Exploring New Frontiers in MRI
12:00 – 14:30
Theatre Studio

SIEMENS Healthineers

Exploring New Frontiers in MRI: *Christina Triantafyllou*

Measuring Functional Connectivity in Stroke: Approaches and considerations: *Prof. Maurizio Corbetta*

Layer Specific Brain Reading at Submillimeter Resolution fMRI with 7T MAGNETOM Terra: *Prof. Lars Muckli*

Scientific Advisory Board Symposium

A Retrospective Look Back at OHBM
12:00 – 14:30
Santa Cecilia Hall
Chair:
Peter A. Bandettini

POSTER SESSION

12:45 – 14:45
Auditorium Expo
All Posters M001-M897
Odd number posters will present from 12:45 – 13:45.
Even number posters will present 13:45 – 14:45.

SOFTWARE DEMONSTRATIONS

12:45 – 14:45
Auditorium Expo

Station 1 – 1814: A FAIR Approach to Neuroimaging Analysis with Boutiques
Gregory Kiar, McGill University, Montreal, Quebec, Canada

Station 2 – 2618: A Method for Automatic Demarcation of Sulcal and Gyral Regions on the Cortical Surface
Anand Joshi, PhD, University of Southern California, Los Angeles, CA, United States

Station 3 – 4848: A Toolbox for fMRI Co-activation Pattern Analysis: description and illustration
Thomas Bolton, Ecole Polytechnique Fédérale de Lausanne, Genève, Switzerland

Station 4 – 4420: Advancements in the CBRAIN Platform through the Integration of Community-based Tools and Standards
Shawn Brown, PhD., McGill University, McGill Centre for Integrative Neuroscience, Montreal, QC, Canada

Station 5 – 5425: AUTOMAGIC: Standardized Preprocessing of Big EEG Data
Nicolas Langer, University of Zurich, Zurich, Switzerland

Station 6 – 4300: Automated Online Code Generation for Training and Testing Machine Learning Models Using PHOTON
Ramona Leenings, University Hospital Muenster Core Unit Machine Learning in Psychiatry, Muenster, Germany

Station 7 – 2274: BIDScoin: An easy toolkit to convert your data according to the Brains Imaging Data Standard (BIDS)
Marcel Zwiers, Donders Institute for Brain, Cognition and Behavior, Nijmegen, Gelderland, Netherlands

Station 8 – 3577: Biomedical imaging ANAlysis iN Arcana (Banana): Collaborative development of analysis workflows
Thomas Close, Monash University, Chadstone, Victoria, Australia

Station 9 – 4632: BrainX3: A tool for multi-modal data integration and visualization
Antoni Gurgui, IBEC, Barcelona, Spain

AFTERNOON SYMPOSIA

14:45 – 16:00

Decoding Brain Heterogeneity in Psychiatry: Concepts, challenges, and methods

Santa Cecilia Hall
Organizers:
Christos Davatzikos, Penn U, Philadelphia, PA, United States

Dominic Dwyer, Ludwig Maximillian University, Munich, Germany

Global research funding in psychiatry has been directed towards reconceptualising mental illnesses within programmes aiming to better understand heterogeneity, such as RDoC (Insel et al., 2010), ROAMER (Schumann et al., 2014), and ERA-PerMed. A key component of these initiatives is the decomposition of heterogeneous biological data using unbiased statistical techniques that aim to identify individuals who can either be placed along continuums or divided into subgroups (Marquand et al., 2016; Schnack, 2017). In doing so, the hope is that new, biologically-based nosologies of mental illness may ultimately result in more effective research, targeted treatments, and accurate prognoses that will reduce the suffering of individuals with mental illness. Neuroimaging research plays a central and critical part in projects that have arose from this new research landscape and many of the samples have been finalised for analyses (e.g., PRONIA, Koutsouleris et al., 2018; and B-SNIP, Clementz et al., 2016). However, a critical and pressing problem is that traditional methods of decomposing heterogeneity when using clinical data cannot be used effectively in the neuroimaging domain because the data: a) have high dimensionality; b) are intercorrelated; c) are from different scanners; and d) have less participants as a ratio to data dimensions. These problems can result in unstable or unreproducible results when using traditional statistical techniques and necessitate novel approaches. Recently, machine learning methods have been effective in overcoming similar limitations for supervised learning problems, but have not been widely used in unsupervised contexts where the target labels are unknown. In this symposium, participants will be introduced to the problem of psychiatric heterogeneity, the challenges and limitations of statistical decomposition techniques will be outlined, and novel algorithms will be presented that aim to facilitate stable and reproducible results. An expert panel discussion will provide a forum for discussion around critical and controversial issues in the field. At the end of the symposium, participants will be equipped to better evaluate existing research and implement effective strategies in their own studies.

SYMPOSIA SCHEDULE:

14:45 – 15:00
Brain Heterogeneity in Psychiatry: Challenges and opportunities
Paola Dazzan, King's College London, London, United Kingdom

15:00 – 15:15
Methodological Challenges of Heterogeneity Decomposition for Neuroimaging Data
Andre Marquand, Donders Institute, Nijmegen, Netherlands

15:15 – 15:30
Using Novel Machine Learning Methods to Decompose Neuroanatomical Heterogeneity in Multi-Site Studies
Christos Davatzikos, Penn U, Philadelphia, PA, United States

15:30 – 16:00
Questions and Answers

Lifespan Network Neuroscience: A new frontier in human brain mapping

Giuseppe Sinopoli Hall
Organizer:
R. Nathan Spreng, McGill University, Neurology and Neurosurgery, Montreal, Quebec, Canada

The rapidly aging global population, and concomitant health and economic costs, has positioned human brain health at the forefront of public policy and research funding priorities. Concurrently, advances in neuroimaging hardware, neuroanalytics, and open science initiatives have led to unprecedented advances in our capacity to map human brain function at the level of dynamic, large-scale, and spatially distributed networks. These forces are aligned to position lifespan network neuroscience as the next frontier in human brain mapping. In this context, this symposium proposal, with an integrated methodological and applied focus, is perfectly timed to help shape the trajectory of the field. The talks will provide both practical (life in the trenches) recommendations for study design, data collection, and analysis methods within a lifespan context. Further, by summarizing their latest findings, each of the expert panellists will highlight the extraordinary potential of network neuroscience to elucidate the functional brain changes that parallel, preceded and, perhaps mostly importantly, predict the arc of human cognitive development. The breadth of the material to be covered in this symposium, encompassing both theory and practice, will be of broad interest to an OHBM audience. Cognitive network neuroscience has matured as a discipline over the last decade and offers exceptional promise for advancing our understanding of human development. However, existing methods cannot simply be ported into a lifespan context. This symposium will open an important and necessary discussion

with respect to both the pitfalls and the incredible potential of applying network neuroscience methods to study human lifespan development, towards the goal of developing gold-standard data acquisition and analysis protocols.

SYMPOSIA SCHEDULE:

14:45 – 15:00
Brain Networks and the Development of Human Memory Across the Lifespan
Jessica Damoiseaux, PhD, Wayne State University, Detroit, MI, United States

15:00 – 15:15
Brain Signal Variability: A novel network neuroscience – and behaviourally-relevant marker of human development
Douglas D Garrett, Max Planck UCL Centre for Computational Psychiatry & Aging Research, Berlin, Germany

15:15 – 15:30
Longitudinal Research in the Network Neuroscience of Human Development
Juan (Helen) Zhou, Duke-NUS Medical School, Singapore, Singapore

15:30 – 15:45
The Shifting Architectures of Cognition and Brain Function: A lifespan network neuroscience perspective
R Nathan Spreng, McGill University, Montreal, Quebec, Canada

15:45 – 16:00
Questions and Answers

Diversity Round Table: Using insights from social psychology and neuroscience to address gender bias

Goffredo Petrassi Hall
Organizer:
Lucina Uddin, University of Miami, Psychology, Miami, FL, United States

OHBM initially launched a Diversity and Gender Task Force in 2017 to address the growing need to recognize and address multiple forms of inequity with respect to gender balance and geographical representation on the Council (https://www. ohbmbrainmappingblog.com/blog/you-spoke-we-listened-steering-a-new-course-with-respect-to-gender-equity). Since this initiative, the task force has grown and evolved into a Committee (https://www.ohbmbrainmappingblog.com/gender--diversity-committee.html) that meets regularly to ensure that the needs of the diverse OHBM community are adequately represented at all levels of the organization and in all of its activities. As neuroscientists, the OHBM community increasingly recognizes

that our own implicit biases can hinder scientific progress. One way to combat such biases is to understand their psychological and neural origins. This first ever Diversity Round Table proposes to present the audience with recent work surrounding issues related to gender biases in academia. The goal is to facilitate productive discussions around ways in which we can begin to overcome implicit (and explicit) biases.

SYMPOSIA SCHEDULE:

14:45 – 15:25
Gender in Neuroscience Research
Anelis Kaiser, University of Freiburg, Freiburg, Germany

15:25 – 15:50
Gender Bias in (Neuro)Science: Facts, consequences, and solutions
Sarah Genon, Research Centre Jülich, Jülich, Germany

15:50 – 16:00
Questions and Answers

Fetal Foundation of Neurocognition

Theatre Studio
Organizers:
Arnaud Cachia, CNRS, Paris, France

Moriah Thomason, NYU Langone, New York, NY, United States

We propose a multinational symposium presenting cutting-edge brain imaging research focused on the beginning of human life. The brain is subject to dramatic developmental processes during the antenatal period with long-term effect on neurocognition, and yet our understanding of this critical early time in development is limited. Emergent non-invasive MRI methodologies are changing the paradigm and allowing to investigate the living human brain structure — e.g. micro- and macrostructural features of cortical and subcortical regions and their connections, including cortical sulcation/gyrification, area, and thickness, as well as diffusion characteristics and volumetrics — beginning in utero. We will present methodological challenges inherent to the analysis of this specific developmental period. We will provide insights into the relationship between fetal and neonatal brain development, brain architecture from childhood to adulthood, the heterogeneous emergence of functional architecture in the fetus and newborn, and morphological development of the cortex. We will also present new findings regarding maternal prenatal stress, the preterm brain, and relevance of prenatal brain development to later neurocognitive outcomes during childhood and adolescence. This symposium will increase researcher and clinician knowledge about emergent MRI technologies for non-invasive examination of early human brain development and its impact on later stages, and will highlight some of the newest discoveries emerging in this area. Methodologies for studying the fetal foundations of neurocognition in a longitudinal lifespan perspective will be discussed.

SYMPOSIA SCHEDULE:

14:45 – 15:00
The Preterm Brain between Nature and Nurture
Petra S Hüppi, University of Geneva, Geneva Switzerland

15:00 – 15:15
Set to Change? Early Life Factors Influencing Neurocognitive Characteristics and Trajectories through the Lifespan
Kristine Walhovd, University of Oslo, Oslo Norway

15:15 – 15:30
The Cortical Sulcal Patterns: A window on fetal life
Arnaud Cachia, CNRS, Paris, France

15:30 – 15:45
Fetal Motor Network Integrity Relates to Motor Ability in Infancy
Moriah Thomason, NYU Langone, New York, NY, United States

15:45 – 16:00
Questions and Answers

16:00 – 16:15
BREAK

KEYNOTE LECTURE

16:15 – 17:00
Santa Cecilia Hall
Multimodal Investigation of Spontaneous BOLD Fluctuations
Catie Chang, Ph.D., Vanderbilt University, Nashville, TN, United States

Spontaneous fMRI signals convey rich information about large-scale functional organization and dynamics. This lecture will discuss how multi-modal imaging can help to unravel the sources of BOLD temporal fluctuations, enabling fMRI to provide greater and more precise information about brain function.

17:00 – 17:15
BREAK

ORAL SESSIONS

17:15 – 18:30

Oral session presentations are chosen by the Program Committee from submitted abstracts using criteria of quality and timeliness; a wide spectrum of investigation is represented. Authors listed are the presenting authors, a full list of authors can be found in the Abstract / Poster Listing Booklet (**www.humanbrainmapping.org/2019Posters**), in the E-poster search (**http://ww5.aievolution.com/hbm1901/**) or in the mobile app.

Emotion and Motivation and Social Neuroscience

Santa Cecilia Hall
Chairs:
Michael Hanke, Research Centre Jülich, Institute of Neuroscience and Medicine, Brain & Behaviour (INM-7), Jülich, Germany

Ajay Satpute, Northeastern University, Boston, MA, United States

17:15 – 17:27
3556: Motivated Performance while Sleep Deprived: Reduced ACC and insula recruitment and effort-preference
Stijn Massar, Duke-NUS Medical School, Centre for Cognitive Neuroscience, Singapore, Singapore

17:27 – 17:39
1644: Emotional Experience Timecourse Explains Brain Connectivity Dynamics during Naturalistic Stimulation
Giada Lettieri, IMT School for Advanced Studies Lucca, Lucca, Italy

17:39 – 17:51
2559: Spatio-temporal Dynamics of the Cerebral Representations of Emotion in Voice
Bruno Giordano, CNRS, Marseille, France

17:51 – 18:03
3880: Mapping the Cytoarchitectonic Basis of Socio-Emotional and Cognitive Processing in the Insula
Julian Quabs, Cécile and Oskar Vogt Institute for Brain Research, Düsseldorf, Germany

18:03 – 18:15
4995: Neural Response Patterns to Experienced and Empathic Pain and Links to Altruism
Katherine O'Connell, Georgetown University, Interdisciplinary Program in Neuroscience, Washington, DC, United States

18:15 – 18:27
3966: Emotional Tagging During Hippocampal Reactivation Retrospectively Promotes Memory Integration
Yannan Zhu, Donders Institute for Brain, Cognition and Behaviour, Nijmegen, Netherlands

Neurodevelopmental Disorders

Giuseppe Sinopoli Hall
Chairs:
Mirella Dapretto, UCLA, Los Angeles, CA, United States

Andrew Michael, Duke University, Durham, NC, United States

17:15 – 17:27
1764: Neuroanatomical Underpinnings of ASD-symptomatology in 22q11.2 Deletion Syndrome and Idiopathic ASD
Anke Bletsch, Child and Adolescent Psychiatry, University Hospital, Frankfurt am Main, Germany

17:27 – 17:39
3444: Thalamic GABA: Glu ratio is related to thalamic connectivity and sensory over-responsivity in ASD
Emily Wood, UCLA, Psychiatry, Los Angeles, CA, United States

17:39 – 17:51
3516: Characterizing Individual Variation in Neural Connectivity and Behavior in the Psychosis Spectrum
Jie Lisa Ji, Yale University, New Haven, CT, United States

17:51 – 18:03
1797: Spatial Patterning of Brain Tissue Volume Deformation in Schizophrenia Reflects Network Architecture
Golia Shafiei, McGill University, McConnell Brain Imaging Centre, Montreal Neurological Institute, Montreal, Quebec, Canada

18:03 – 18:15
2110: Multimodal Neuromarkers in Schizophrenia via Cognition-guided MRI Fusion
Jing Sui, Institute of Automation, Chinese Academy of Sciences, Bejiing, China

Modeling and Analysis Methods – Uni/Multi-variate Analysis

Goffredo Petrassi Hall
Chairs:
Jeanette Mumford, University of Wisconsin - Madison, Madison, WI, United States

17:15 – 17:27
2218: Cluster Failure or Power Failure? Evaluating Sensitivity in Cluster-level Inference
Stephanie Noble, Yale University, Interdepartmental Neuroscience Program, New Haven, CT, United States

17:27 – 17:39
4554: Towards Universal Brain Encoding with Multivariate Regression and Large Scientific Corpora
Jérôme Dockès, INRIA, Saclay, France

17:39 – 17:51
3566: Multi-Scale Network Regression: A new low-rank and sparse multivariate connectivity analysis method
Cedric Huchuan Xia, University of Pennsylvania, Philadelphia, PA, United States

17:51 – 18:03
2005: Early Personalized Treatment Prediction Model Derived from Subgroups in Depression
Xinyi Wang, Southeast University, Nanjing, China

18:03 – 18:15
3917: Multivariate Meta-Analytic Tools to Explore Associations Between Cognitive Functions & Brain Regions
Fahd Alhazmi, Brooklyn College of the City University of New York, Brooklyn, NY, United States

18:15 – 18:27
3198: Sequential Encoding and Decoding of Dynamic Task Data
Cameron Higgins, University of Oxford, Oxford, Oxfordshire, United Kingdom

Neuroinformatics and Data Sharing

Theatre Studio
Chairs:
Alejandro De La Vega, University of Texas Austin, Austin, TX, United States

17:15 – 17:27
2400: Detecting and Harmonizing Scanner Differences in the ABCD Study
Dylan M Nielson, Ph.D., National Institute of Mental Health, Washtington, DC, United States

17:27 – 17:39
5154: The UK Biobank Data Parser: A tool with built in and customizable filters for brain studies
Alyssa H Zhu, University of Southern California, Marina del Rey, CA, United States

17:39 – 17:51
3554: Neuroscout: A cloud-based platform for flexible re-analysis of naturalistic fMRI datasets
Alejandro De La Vega, University of Texas Austin, Austin, TX, United States

17:51 – 18:03
4656: Orchestrating Cloud Networks for Discoverable, Accessible, Interoperable, and Reusable Neuroscience
Soichi Hayashi, Indiana University, Bloomington, IN, United States

18:03 – 18:15
1352: The MNI-NOEL 3D Myeloarchitectonic Atlas of the Human Cerebral Cortex
Seok-Jun Hong, Child Mind Institute, New York, NY, United States

18:15 – 18:27
5189: Mechanical Properties of the Human Brain: Development of an MR elastography template
Lucy V Hiscox, University of Delaware, Newark, DE, United States

ITALIAN THEMED POSTER RECEPTION

18:30 – 19:30
Auditorium Expo
Traditional Italian Aperitif and Appetizers
All Posters M001-M897

MORNING SYMPOSIA
8:00 – 9:15

The Global Signal Strikes Back: Understanding and addressing widespread signal fluctuations in fMRI

Santa Cecilia Hall
Organizer:
Alex Fornito, Monash University, Clayton, Vic, Australia

Global signal fluctuations are a major source of regional BOLD signal variance and have a strong influence on inter-regional functional connectivity estimates. Global signal regression (GSR) is the most widely used method for correcting these influences, despite persistent debate over the validity of the approach. The advantages and disadvantages of GSR have, over the past decade, resulted in a division of the fMRI community into those who use GSR and those who do not.

Recent work has clarified the nature and origins of GS fluctuations, indicating that they arise from a combination of neuronal dynamics, peripheral physiology and non-physiological sources. This new knowledge is leading to the development of better quality control pipelines, a more sophisticated understanding of the origins of BOLD signal changes, a new understanding of distributed brain dynamics, and the development of innovative denoising strategies that avoid some of the drawbacks of GSR. This concerted effort to understand global fMRI signals has only gained steam in the past few years. A symposium showcasing this work, and which brings together presenters who have approached the global signal problem from different perspectives, is therefore timely and will provide attendees with a unique opportunity to develop a detailed understanding of the challenges and complexities associated with characterizing and removing global signals from fMRI data

SYMPOSIA SCHEDULE:

8:00 – 8:15
Influences on Global fMRI Signals
Jonathan Power, National Institutes of Health, USA, Washington DC, United States

8:15 – 8:30
More than Meets the Eye: Methods for characterizing and removing large-scale structured signals from resting-state fMRI data
Kevin Aquino, Monash University, Melbourne, Australia

8:30 – 8:45
Global Signal vs. Large-scale Spatiotemporal Patterns: Sorting out contributions to individual differences
Shella Keilholz, Georgia Institute of Technology and Emory University, Atlanta, GA, United States

8:45 – 9:00
Using Temporal ICA to Selectively Remove Global Noise While Preserving Global Signal in Functional MRI Data
Matt Glasser, Washington University St Louis, St. Louis, MO, United States

9:00 – 9:15
Questions and Answers

Multi-modal Imaging Approach for Human Neuroanatomy: Integration across scales

Giuseppe Sinopoli Hall
Organizers:
Konrad Wagstyl, University of Cambridge, Cambridge, United Kingdom

Hiromasa Takemura, NICT, Center for Information and Neural Networks (CiNet), Suita-shi, Osaka, Japan

The field of human brain mapping is producing ever larger MRI datasets, including the Human Connectome Project, UK BioBank, and the developing Human Connectome Project along with many others. Similarly, with increasing MRI field strengths of 7T and beyond, we are now able to achieve sub-millimeter measures of in vivo structure and function. Emerging at the same time are large datasets describing microstructural features such as cytoarchitecture (BigBrain), tract data (PLI) and genetic expression (Allen Atlas). There is therefore a new and pressing need to equip the community with an understanding of both types of data, as well as the computational tools and eventually the neuroscientific understanding which can link indirect in vivo measures to their underlying microscale structure.

SYMPOSIA SCHEDULE:

8:00 – 8:15
Multi-modal Imaging Approach for Visual White Matter Pathways
Hiromasa Takemura, NICT, Center for Information and Neural Networks (CiNet), Suita-shi, Osaka, Japan

8:15 – 8:30
Mapping Brain Circuitry Across Scales and Modalities
Anastasia Yendiki, Athinoula A. Martinos Center for Biomedical Imaging, MGH & Harvard Medical School, Boston, MA, United States

8:30 – 8:45
Linking Cortical Microstructure to in Vivo Measures of Cortical Structure
Konrad Wagstyl, University of Cambridge, Cambridge, United Kingdom

8:45 – 9:00
A Tale of Two Hemispheres: MRI methods for crossing scales
Karla Miller, Oxford University, Oxford, United Kingdom

9:00 – 9:15
Questions and Answers

Advances in Understanding Rapid Temporal Processing in the Human Brain

Goffredo Petrassi Hall
Organizer:
Ben Harvey, Utrecht University, Experimental psychology, Utrecht, Utrecht, Netherlands

While investigations of spatial processing in the brain have been a highly productive research area, quantitative models of how temporal signals are represented and transformed in sensory and cognitive systems have only developed recently. Given the poor temporal resolution of fMRI, researchers have typically designed experiments to avoid influences of stimulus timing, keeping timing fixed for all stimuli investigated and disregarding dynamic responses to time-varying stimuli. It therefore remains unclear how neural populations in the human brain respond to stimulus timing. Our presenters describe breakthroughs in understanding both the influence of stimulus timing on neural responses as well as the neurophysiological representation of stimulus timing itself. These are closely related questions, as characterizing the representation of stimulus timing relies on quantitatively modelling the accumulation of responses with stimulus duration, timing, and rate. Using advanced neural encoding model approaches, our studies reveal novel networks displaying hierarchical processing of stimulus timing. Sensory areas respond with increasingly nonlinear integration of stimulus duration and rate. In association cortices, a network of areas shows neural tuning for stimulus duration and rate, with topographic organization and a hierarchical transformation of timing selectivity.

These breakthroughs open new directions for neuroimaging research. First, they provide new ways to study how neuroimaging responses are affected by stimulus timing. Second, they allow future neuroimaging (and particularly fMRI) experiments to use more flexible and naturalistic timing. Third, in experiments leveraging this ability, they reveal selective responses to stimulus timing throughout the brain. Further research in these directions will reveal how humans understand and interact with our dynamic environment.

SYMPOSIA SCHEDULE:
8:00 – 8:15
The Temporal Dynamics of Neuronal Responses in Human Visual Cortex
Jonathan Winawer, Department of Psychology and Center for Neural Science, New York University, New York, NY, United States

8:15 – 8:30
An Encoding Model of Temporal Processing in Human Visual Cortex
Kalanit Grill-Spector, Dept. of Psychology and Wu Tsai Neurosciences Institute, Stanford University, Stanford, CA, United States

8:30 – 8:45
Chronotopic Maps in Human Medial Premotor Cortex
Domenica Bueti, International School for Advanced Studies (SISSA), Trieste, Italy

8:45 – 9:00
A Hierarchy of Topographic Maps for Visual Event Timing in Human Association Cortex
Ben Harvey, Utrecht University, Experimental Psychology, Utrecht, Netherlands

9:00 – 9:15
Questions and Answers

BREAK
9:15 – 9:30

Longitudinal MRI Approaches for Investigating Brain and Psychological Development

Theatre Studio
Organizers:
Christian Tamnes, University of Oslo, Oslo, Norway

Budhachandra Khundrakpam, Montreal Neurological Institute, McGill University, Montreal, Canada

The vast majority of studies on the relationships between brain and psychological development have been based on cross-sectional MRI data due to reasons including cost, susceptibility of MRI scans and subsequent pre-processing for children. However, studies have consistently shown large variability in brain structure and function between individuals during development (Mills et al. 2016; Jalbrzikowski et al. 2017; Khundrakpam et al. 2017; Tamnes et al. 2017; Anandakumar et al. 2018; Herting et al. 2018), and analysis of cross-sectional data might therefore be limited with respect to detection of specific developmental changes (Kraemer et al. 2000; Haller et al. 2018). Although longitudinal MRI data, with increased statistical power, have been used to investigate neurodevelopmental trajectories e.g. (Alexander-Bloch et al. 2014;

Wierenga et al. 2014; Tamnes et al. 2017; Murty et al. 2018), such studies are few, and studies linking such changes to cognitive or behavioral developmental changes are scarce. Recent advances in neuroimaging methods, including motion correction strategies (Power et al. 2015; Godenschweger et al. 2016), combined with large scale open databases with developmental multimodal MRI data, such as the Adolescent Brain Cognitive Development (ABCD) Study (Casey et al. 2018), opens new possibilities for exploration of the psychological relevance of individual differences in structural and functional brain development. It is therefore timely and important to discuss and elaborate on the advantages of the use of longitudinal data and methods in developmental studies.

SYMPOSIA SCHEDULE:

8:00 – 8:15

The Necessity of Longitudinal Imaging for Characterizing Brain Maturation

Kathryn Mills, University of Oregon, Psychology, Eugene, OR, United States

8:15 – 8:30

Trajectories of Structural Brain Development and the Emergence of Psychopathology During Adolescence

Marieke G. N. Bos Bos, Leiden University, Leiden, Netherlands

8:30 – 8:45

Developmental Trajectories of Functional Connectivity though Adolescence

Finnegan Calabro, University of Pittsburgh, Pittsburgh, PA, United States

8:45 – 9:00

Longitudinal MRI-based Maturational Coupling Approach as Indicator of Individual Brain Variability

Budhachandra Khundrakpam, Montreal Neurological Institute, McGill University, Montreal, Canada

9:00 – 9:15

Questions and Answers

KEYNOTE LECTURE

9:30 – 10:15

Santa Cecilia Hall

Integrative Neuroimaging of the Developing Brain in Health and Disease

Armin Raznahan, MD PhD, Developmental Neurogenomics Unit, NIMH, Bethesda, MD, United States

Healthy brain development involves the dazzling coordination of diverse biological processes occurring at multiple spatiotemporal scales. The complexity of this developmental dance is thought to be especially pronounced in humans, the very species in which direct access to the brain is most difficult. However, developmental perspectives are crucial if we want to advance our understanding human brain organization in health, and neuropsychiatric conditions such as autism, schizophrenia and intellectual disability. This talk will present a series of studies that harness in vivo structural magnetic resonance imaging (sMRI) data to derive spatiotemporally fine-grained models of human brain development in health and disease. A central theme across the studies presented will be that of integration — integration between different cohorts of patients and typically developing controls, and integration between different measures of brain topography as given by neuroimaging, histology and transcriptomics. A case will be made that the humble sMRI scan — which is increasingly available in ever larger datasets — has much to tell us about the molecular and cellular bases of neuropsychiatric disease, as well as the distributed brain systems that underpin behavioral variation in health and disease.

10:15 – 10:30
BREAK

ORAL SESSIONS

10:30 – 11:45

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Lifespan Development

Santa Cecilia Hall
Chairs:
Rosanna Olsen, Rotman Research Institute, Toronto, Canada

Armin Raznahan, NIMH, Bethesda, MD, United States

10:30 – 10:42
2291: Using fNIRS to Study Fronto-temporoparietal Connectivity in Awake Infants
Chiara Bulgarelli, Centre for Brain and Cognitive Development, Birkbeck College, London, United Kingdom

10:42 – 10:54
1025: Associations Between Neighborhood SES and Functional Brain Network Development
Ursula Tooley, University of Pennsylvania, Philadelphia, PA, United States

10:54 – 11:06
3117: Longitudinal Analysis of Intracortical Microstructure Profiles During Adolescent Development
Casey Paquola, Montreal Neurological Institute, Montreal, Quebec, Canada

11:06 – 11:18
5187: Spatio-Temporal Patterns of Age-Related Gene Expression and Cortical Morphology
Annie Lee, National University of Singapore, Singapore, Singapore

11:18 – 11:30
1530: Predicting Deviations from the Norm in the Developing Brain Using Cortico-Genetic Fingerprinting
Tobias Kaufmann, Norwegian Center for Mental Disorders Research, Oslo, Norway

11:30 – 11:42
1938: Functional Differentiation of Transmodal Cortices Across the Lifespan
Richard Bethlehem, University of Cambridge, Cambridge, United Kingdom

Language

Giuseppe Sinopoli Hall
Chair:
Riitta Salmelin, Department of Neuroscience and Biomedical Engineering, Aalto University, Espoo, Finland

10:30 – 10:42
4561: Links Between White Matter Microstructure and Components of Reading Vary in Reading-Related Tracts
Bryce Geeraert, University of Calgary, Calgary, Alberta, Canada

10:42 – 10:54
3108: Overlapping Connectivity Gradients Underlie Functional Multiplicity in the Anterior Temporal Lobe
Myrthe Faber, Donders Centre for Cognitive Neuroimaging, Department of Cognitive Neuroscience, Nijmegen, Netherlands

10:54 – 11:06
1643: Morse Code: A window on language encoding in the brain
Frederick Junker, University Hospital Düsseldorf, Institute of Clinical Neurosciences and Medical Psychology, Düsseldorf, Germany

11:06 – 11:18
2910: Constructing Meanings of Objects from Bits of Information
Sasa Kivisaari, Aalto University, Department of Neuroscience and Biomedical Engineering, Aalto, Finland

11:18 – 11:30
1782: Brain Circuit for Word Processing Differentiate Children with Distinct Reading and Spelling Deficits
Agnieszka Debska, The Nencki Institute of Experimental Biology Polish Academy of Sciences, Warszawa, Poland

11:30 – 11:42
4310: Resting-State Perisylvian Beta-Gamma MEG Power Predicts Words-in-Noise Recognition
Thomas Houweling, University of Zurich, Zurich, Switzerland

Modeling and Analysis: Multi-dimensional atlasing

Goffredo Petrassi Hall
Chairs:
B. T. Thomas Yeo, Department of Electrical and Computer Engineering, ASTAR-NUS Clinical Imaging Research Centre, Singapore, Singapore

Cameron Craddock, University of Texas at Austin, Austin, TX, United States

10:30 – 10:42
3592: Construction of 4D Cortical Surface Atlases for the Baby Connectome Project
Zengsi Chen, College of Science, China Jiliang University, Hangzhou, China

10:42 – 10:54
3884: Non-invasive Soma Imaging with Diffusion MRI
Marco Palombo, Centre for Medical Image Computing, UCL, London, United Kingdom

10:54 – 11:06
2592: Ultra-high-order ICA: Fine overlapping functional parcellations and spatiotemporal reconfiguration
Armin Iraji, The Mind Research Network, Albuquerque, NM, United States

11:06 – 11:18
3415: The Architecture of Functional Lateralisation and its Relationship to Callosal Connectivity
Vyacheslav Karolis, FMRIB, University of Oxford, London, United Kingdom

11:18 – 11:30
5067: Atlases of Cognition with Large-Scale Human Brain Mapping
Gael Varoquaux, Inria, Palaiseau, France

11:30 – 11:42
4786: Precision Mapping of the Human Subcortex Reveals Integrative and Network-Specific Functional Zones
Scott Marek, Washington University in St. Louis, St. Louis, MO, United States

Mapping Sensation Perception and Attention

Theatre Studio
Chairs:
Franco Pestilli, Indiana University, Bloomington, Psychological and brain sciences, Bloomington, IN, United States

Kalanit Grill-Spector, Dept. of Psychology and Wu Tsai Neurosciences Institute, Stanford University, Stanford, CA, United States

10:30 – 10:42
4987: The "Creatures" of the Human Cortical Somatosensory System
Noam Saadon-Grosman, The Hebrew University of Jerusalem, Jerusalem, Israel

10:42 – 10:54
3367: Human Visual Cortex is Organized Along Two Genetically Opposed Hierarchical Gradients
Jesse Gomez, University of California Berkeley, Helen Wills Neuroscience Institute, Berkeley, CA, United States

10:54 – 11:06
4802: The Temporal Dynamics of Neuronal Responses in Human Visual Cortex
Iris Groen, New York University, New York, NY, United States

10:06 – 11:18
1508: Selective Enhancement of Visual Perceptual Learning by Tactile Sensation During Sleep
Yoshiyuki Onuki, Jichi Medical University, Shimotsuke, Japan

11:18 – 11:30
2570: A New Attention Node in Macaque and Human Temporal Cortex Connects to Fronto-parietal Areas
Ilaria Sani, The Rockefeller University, New York, NY, United States

11:30 – 11:42
2511: How Input Modality and Visual Experience Affect the Neural Encoding of Categorical Knowledge
Stefania Mattioni, Institute of Research in Psychology (IPSY) and in Neuroscience (IoNS), University of Louvain, Louvain-la-Neuve, Belgium

11:45 – 12:45
LUNCH ON OWN

Student/Postdoc SIG Career Development and Mentoring Symposium

Secrets Behind Success vol. 2
12:00 – 12:50
Goffredo Petrassi Hall

Success and Failure in Academia
Melanie Stefan, PhD

Title TBD
Danielle Bassett, PhD

Student/Postdoc SIG Lunch with Mentors

13:10 – 14:00
Studio 1-3

Industry Symposia

PHILIPS NEURO
Break Diagnostic Boundaries with
Speed, Comfort, and Confidence
12:00 – 14:30
Theatre Studio

PHILIPS

Publishing Roundtable

Aperture: The OHBM publishing platform roundtable
12:00 – 14:30
Choir Studio

In this roundtable, we will give some updates on the progress made by the publishing committee and the Aperture working groups on the platform development, the sustainability models, and generally what we plan to publish.

We will also report further on the survey results summarized in the OHBM blog and get feedback from the community on the initiative.

POSTER SESSION

12:45 – 14:45
Auditorium Expo
All Posters T001-T898
Odd number posters will present from 12:45 – 13:45.
Even number posters will present 13:45 – 14:45.

SOFTWARE DEMONSTRATIONS

12:45 – 14:45
Auditorium Expo

Station 1 – 3169: Clustering the Brain with "CluB": A new toolbox for quantitative meta-analysis of neuroimaging data
Manuela Berlingeri, Prof.ssa, University of Urbino Carlo Bo Department of Humanistic Studies, Urbino, Italy

Station 2 – 2626: Cortical Parcellation Using Surface-based Melbourne Children's Regional Infant Brain Atlases
Christopher Adamson, PhD, Murdoch Childrens Research Institute Developmental Imaging, Parkville, VIC, Australia

Station 3 – 3426: DMRIprep: A robust, scalable preprocessing pipeline for diffusion MRI
Adam Richie-Halford, University of Washington, Seattle, WA, United States

Station 4 – 3123: FitLins: Reproducible model estimation for fMRI
Christopher Markiewicz, PhD, Stanford University Psychology, Stanford, CA, United States

Station 5 – 4714: FMRIflows: A consortium of fully automatic univariate and multivariate fMRI processing pipelines
Michael Notter, The Laboratory for Investigative Neurophysiology (The LINE), Department of Radiology, CHUV, Villars-le-Terroir, Schweiz, Switzerland

Station 6 – 2403: GiraffeTools: A web application for interactive data analysis
Tim van Mourik, Donders Institute, Nijmegen, Netherlands

Station 7 – 1713: Interactive Tool for Visual Quality Control of Cortical Parcellations
Deydeep Kothapalli, University of Southern California, Marina del Rey, CA, United States

Station 8 – 3814: LISA as a General Tool for Statistical Inference in fMRI
Gabriele Lohmann, Max Planck Institute for Biological Cybernetics, Tuebingen, Germany

Station 9 – 3819: Mask Explorer and Movement Info: User friendly tools for fMRI quality control
Martin Gajdoš, CEITEC Masaryk University, Brno, Czech Republic

Station 10 – 4591: MegaTrack Atlas: An online tool for visualisation of large tractography datasets and lesion analysis
Richard Stones, PhD, King's College London, London, United Kingdom

AFTERNOON SYMPOSIA

14:45 – 16:00

Human Brain Mapping in the Face of Functional Heterogeneity and Functional Multiplicity

Santa Cecilia Hall

Organizers:

Christian Beckmann, Donders Institute, Nijmegen, Netherlands

Marianne Oldehinkel, Monash Institute of Cognitive and Clinical Neurosciences and School of Psychological Sciences, Victoria, Australia

Koen Haak, Radboud University Medical Center, Department of Cognitive Neuroscience, Nijmegen, Netherlands

Many investigations into the functional organisation of the brain rely on attempts to parcellate the brain into patches of assumed piece-wise constant connectivity. In particular, graph-theoretical approaches to connectivity analysis are predicated on the ability to characterise nodes and the edges between them. However, there are many brain areas where the assumption of piece-wise constant organisation is violated. In visual cortex, for instance, connectivity varies continuously across the cortical surface according to two overlapping modes of change: along the representations of visual eccentricity and polar angle. Visual cortex is an example where functional organisation is governed by functional heterogeneity (continuous change) and functional multiplicity (overlapping modes), and it is becoming increasingly clear that these principles apply generally across the brain.

SYMPOSIA SCHEDULE:

14:45 – 15:00
Large-scale Gradients in Cortical Organization
Julia Huntenburg, Champalimaud Research, Lisbon, Portugal

15:00 – 15:15
Divergent Correspondences: Matching continuous functional relationship patterns across individuals and species
Georg Langs, Medical University of Vienna, Vienna, Austria

15:15 – 15:30
Understanding Brain-behaviour Relationships Using Connectopic Mapping and Spatial Statistical Modelling
Koen Haak, Donders Institute, Nijmegen, Netherlands

15:30 – 15:45
Mapping Dopamine-specific Projections in the Human Striatum with Resting-State fMRI
Marianne Oldehinkel, Monash Institute of Cognitive and Clinical Neurosciences and School of Psychological Sciences, Victoria, Australia

15:45 – 16:00
Questions and Answers

From "Open Science" to "Science": Shifting the status quo in data sharing, software, and publishing

Giuseppe Sinopoli Hall

Organizers:

Gregory Kiar, McGill University, Montreal, Quebec, Canada

Kirstie Whitaker, The Alan Turing Institute, London, United Kingdom

Elizabeth DuPre, Montreal Neurological Institute, Montreal, Canada

The Organization for Human Brain Mapping has had a thriving and vibrant open science community for many years (Abraham et al; 2014; Hanke et al, 2014; Craddock et al, 2016; Gorgolewski et al, 2016; Maumet et al, 2016; Nichols et al, 2017 among many others). In this symposium, members of the OHBM open science special interest group will present their views on what open science means today, where it's headed, and how it offers the potential to improve science through open and inclusive practices. They will summarise current standards in open neuroscience, emerging technologies, and its impacts at both the level of individual researchers as well as the broader field. Audience members will leave with concrete steps they can take to adopt open science practices within their own work and an appreciation for how open science may fundamentally reshape our research. The session will consist of four 15 minute talks and a closing panel discussion where questions will be taken from members of the audience. All presentations will be made open at the time of the talk and licensed for reuse.

SYMPOSIA SCHEDULE:

14:45 – 15:00
Open Science Today: Current best practices and emerging standards
Elizabeth DuPre, Montreal Neurological Institute, Montreal, Canada

15:00 – 15:15
Technology and Platforms Enabling Reproducible and Open Publishing
Chris Holdgraf, Berkeley Institute for Data Science, Berkeley, CA, United States

15:15 – 15:30
Will Open Science Help Your Career? Why I do it regardless
Krzysztof Gorgolewski, Stanford University, San Francisco, CA, United States

15:30 – 15:45
Diversity and Inclusion as Core Values of Open Science
Kirstie Whitaker, The Alan Turing Institute, London, United Kingdom

15:45 – 16:00
Questions and Answers

The Dynamic Interplay Between Neuromodulation and Whole Brain Network Structure

Theatre Studio
Organizer:
James Shine, The University of Sydney, Bateau Bay, NSW, Australia

The human brain is a complex adaptive system in which a vast array of behaviors arise from coordinated neural activity across diverse spatial and temporal scales. Linking the dynamic flow of activity within this large-scale neural architecture to emergent patterns of cognitive function remains an important goal for neuroscience. Here, we bring together experts from diverse backgrounds to distill ongoing research that maps the emerging relationship between the ascending arousal system and whole brain system dynamics. The presenters will describe a number of exciting approaches, including computational modeling, pharmacological fMRI, multi-modal imaging, dynamical trajectory mapping and graph theoretical neuroscience, which will be integrated together to present unique insights into the factors that constrain whole brain function. Specifically, the authors will marshall evidence to suggest that the ascending arousal system provides important constraints over whole-brain functional connectivity, imbuing the structural connectome with the flexible dynamic repertoire required to facilitate adaptive cognition.

SYMPOSIA SCHEDULE:

14:45 – 15:00
Modelling the Dynamical Neuromodulation of Functional Network States
Joana Cabral, University of Oxford, Oxford, United Kingdom

15:00 – 15:15
Human Cognition Involves the Dynamic Integration of Neural Activity and Neuromodulatory Systems
James Shine, The University of Sydney, Bateau Bay, NSW, Australia

15:15 – 15:30
Sculpting Large-scale Brain Dynamics Through Neuromodulation
Michael Breakspear, QIMR Berghofer Medical Research Institute, Brisbane, Australia

15:30 – 15:45
Pushing Beliefs, Neuromodulators, and Computational Psychiatry
Rosalyn Moran, King's College, London, United Kingdom

15:45 – 16:00
Questions and Answers

KEYNOTE LECTURE

16:15 – 17:00
Santa Cecilia Hall
Generative Models for Brain Parcellation, Disorder and Dynamics
Thomas Yeo, PhD, National University of Singapore, Singapore, Singapore

I will introduce the concept of generative models and how they can be powerful tools for analyzing brain data and providing mechanistic insights. I will show examples from my lab on how we utilize generative models to estimate brain parcellations and interrogate brain dynamics.

ITALIAN THEMED POSTER RECEPTION

17:00 – 18:00
Auditorium Expo
Sparkling Wine and Dessert
All Posters T001-T898

Chinese Young Scholars Meeting

17:00 – 19:00
Theatre Studio

The 3rd Annual Event of Chinese Young Scholars for Human Brain Mapping is supported by OHBM China Chapter and OHBM Communications Committee, under the topic of "China Roots, Global Impact!" The goal of this event is to bring together Chinese researchers with diverse backgrounds from the OHBM community to communicate, discuss, and collaborate on cutting edge neuroscience research topics and methods. This year, we will focus more on how to enhance the international collaboration between Chinese imaging scholars and International imaging scholars, thus improve the contribution of Chinese scholars to the global brain imaging community.

There are three activities in this event: Keynote Speech, Panel Discussion and Academic Networking. There will be four senior research experts to share their research and international collaboration experiences with young scholars during the Keynote Speech session. These senior research experts and several young researchers will talk with each other during the Panel Discussion session. During the Academic Networking session, participants can be free to move, talk and discuss.

SCHEDULE:

17:00 – 17:15
Keynote Speech: Russell A. Poldrack

17:15 – 17:30
Keynote Speech: Simon B. Eickhoff

17:30 – 17:45
Keynote Speech: Yu-Feng Zang

17:45 – 18:00
Keynote Speech: Yan-Chao Bi

18:00 – 18:30
Panel Discussion
Russell A. Poldrack, Simon B. Eickhoff, F. Xavier Castellanos, Yu-Feng Zang, Yan-Chao Bi, Jia-Hong Gao, Tian-Zi Jiang, Xi-Nian Zuo

18:30 – 19:00
Academic Networking

19:30 – 21:30
Dinner (Optional)

MORNING SYMPOSIA
8:00 – 9:15

A Tough Nut to Crack: Neurodevelopmental connectopathies

Santa Cecilia Hall
Organizers:
Sebastien Jacquemont, CHU Ste Justine, Montreal, Quebec, Canada

Adriana Di Martino, Child Mind Institute, Autism Center, New York, NY, United States

Long-standing theoretical models and accumulating neuroimaging evidence support the notion that most psychiatric illnesses are developmental connectopathies. Yet, the promise of neuroimaging to identify clinically useful brain markers remains unmet. On the one hand, a primary investigative research focus on phenomenology has contributed to this gap. On the other hand, disorder-related factors such as genetic complexity, high heterogeneity, transdiagnostic overlaps, as well as typical and atypical developmental changes have challenged research progress. These challenges and gaps are exquisitely exemplified by autism, a prototypical early-onset neurodevelopmental condition.

This multidisciplinary panel introduces novel empirical work. Collectively, it reflects the effort to move beyond phenomenology in order to identify the principles and mechanisms guiding the connectome organization and development, as well as its disruption in autism and related conditions. To this end, novel empirical findings from large-scale studies on idiopathic and/or genetically determined autism, using functional and structural imaging, as well as static and dynamic analyses, will be presented. The presentations will progressively guide the participating audience from advanced analytics discerning the guiding neural principles and features underlying network miswirings, to studies of imaging-genetics in humans and rodents aimed to establish more mechanistic links. This panel represents a diverse group at various professional levels across different international research and clinical institutions including Canada, Italy and the Unites States.

SYMPOSIA SCHEDULE:
8:00 – 8:15
Characterizing Resting-State BOLD Brain Signal Variability in Typical and Atypical Individuals Across Development
Jason Nomi, University of Miami, Psychology, Coral Gables, FL, United States

8:15 – 8:30
Atypical Neural Network Hierarchies and Cross-Network Coordination In ASD
Boris Bernhardt, MNI, Montreal, Canada

8:30 – 8:45
Mirror Effects of 4 Neurodevelopmental Cnvs on General Functional Connectivity and Implications for Idiopathic Autism
Clara Moreau, University of Montreal, Neurosciences, Montreal, Quebec, Canada

8:45 – 9:00
Mapping the Neuro-Connectional Landscape in Autism with Cross-Species fMRI
Alessandro Gozzi, Istituto Italiano di Tecnologia, Rovereto, Italy

9:00 – 9:15
Questions and Answers

9:15 – 9:30
BREAK

Advanced Image Analytics for Clinical Neuroimaging

Giuseppe Sinopoli Hall
Organizers:
Hugo Schnack, Brain Center Rudolf Magnus, University Medical Center Utrecht, Utrecht, Netherlands

Joost Janssen, Dept. of Child and Adolescent Psychiatry, IISGM, Hospital General Universitario Gregorio Marañón, Madrid, Spain

While to date many researchers analyze processed imaging data using some form of statistical modeling, clinical applications of these approaches are still limited. This symposium aims to highlight some of the most promising directions in this field. The innovations we want to discuss are threefold. From an imaging perspective, new measures may be needed, such as sulcal metrics. From an analysis point of view, machine learning and especially deep learning techniques open new ways to extract useful information from the data. From a clinical point of view, the performance of imaging-based diagnostic tools is hindered by the heterogeneity of the disorders, both clinically and neurobiologically. This heterogeneity is, in part, caused by artificial definitions of disorders and neglecting the influence of environmental factors. Solutions may be found by developing trans-diagnostic biomarkers — using approaches such as normative modeling and machine learning.

After attending the symposium, the participants will have greater knowledge and understanding of (i) state-of-the-art imaging measures that can be used for clinical research of mental disorders; (ii) the influence of environmental factors on these

measures; and (iii) innovative analytic methods that can be applied to such measures, including normative modeling and machine learning.

SYMPOSIA SCHEDULE:

8:00 – 8:15
Environmental Risk Factors and Brain in Severe Mental Illness: How can we deal with heterogeneity?
Ingrid Agartz, Norwegian Centre for Mental Disorders Research, Oslo, Norway

8:15 – 8:30
Novel Neuroanatomical Measures for Longitudinal Investigations of the Cortex
Joost Janssen, Dept. of Child and Adolescent Psychiatry, IISGM, Hospital General Universitario Gregorio Marañón, Madrid, Spain

8:30 – 8:45
Trans-Diagnostic Imaging Biomarkers at Different Scales
Hugo Schnack, Brain Center Rudolf Magnus, University Medical Center Utrecht, The Netherlands, Utrecht, Utrecht, Netherlands

8:45 – 9:00
Deep Learning Technology: Concepts and applications in clinical neuroimaging
Andrea Mechelli, Institute of Psychiatry, King's College London, London, United Kingdom

9:00 – 9:15
Questions and Answers

The Pulsatile Integration at Multiple Time Scales in the Resting Brain

Goffredo Petrassi Hall
Organizers:
Stefania Della Penna, University of Chieti, Department of Neuroscience, Imaging and Clinical Sciences, Chieti, Italy

Francesco de Pasquale, University of Teramo, Nemi, Roma, Italy

Showed, based on static fMRI, that spontaneous brain activity at rest is structured in networks of cortical regions (RSN) functionally specialized and integrated through way-stations of communication, namely hubs (2). In the recent years, the scenario of functional architecture at rest, as initially observed from these static data, has been enriched by several observations from different multimodal data. In fact, today we know that the spatial topology, temporal dynamics and frequency specificity play fundamental roles in the organization of spontaneous activity. This evidence has been gathered by integrating dynamic fMRI and M/EEG studies suggesting that the centrality of hubs

fluctuates over time and such dynamics seems to represent efficient mechanisms of information transfer throughout the network as modeled by its global efficiency (3). Therefore, to provide the latest advances in the analysis of the dynamics of hubs is fundamental to unravel the mechanisms of integration at rest. In fact, some of the RSNs relate to fundamental functional domains such as the internal cognition (DMN), attention (DAN) somato-motor planning (SMN) and executive functions (FPN). Thus, to understand the spatial topology and temporal features of how these networks interact will shed some light on how these domains are linked. This aspect is fundamental to understand brain function and more importantly its modulation/breakdown induced by pathology, development, or aging.

SYMPOSIA SCHEDULE:

8:00 – 8:15
Temporal Modes of Synchronization in the Dynamic Core Network at Rest
Francesco de Pasquale, University of Teramo, Nemi, Roma, Italy

8:15 – 8:30
Effects of Task on the Spectral and Temporal Dynamics of Centrality at Rest
Stefania Della Penna, University of Chieti, Department of Neuroscience, Imaging and Clinical Sciences, Chieti, Italy

8:30 – 8:45
Dynamical Effects of a Hierarchy of Timescales in the Brain
Leonardo Gollo, QIMR Berghofer, Brisbane, Australia

8:45 – 9:00
Dynamics of Large-Scale Brain Network Activity at High Spatial Resolution: Methods and applications
Dimitri Van De Ville, École Polytechnique Fédérale de Lausanne, Lausanne, Switzerland

9:00 – 9:15
Questions and Answers

Do We Really Think Differently about MEG-EEG Mapping?

Theatre Studio
Organizers:
Claudio Babiloni, PhD, Sapienza University of Rome, Rome, Italy

Margitta Seeck, MD, Université de Genève, Geneva, Switzerland

Aina Puce, PhD, Indiana University, Psychological & Brain Sciences, Bloomington, IN, United States

The proposed Symposium will unveil similarities and differences of recent Guidelines for best practices in human MEG and/or

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EEG mapping from three major international societies such as the OHBM Committee on Best Practices in Data Analysis and Sharing (COBIDAS) for MEEG, the International Federation of Clinical Neurophysiology (IFCN), and the International League Against Epilepsy (ILAE) and the possible confounding impact that they can generate for field neuroscientists.

SYMPOSIA SCHEDULE:

8:00 – 8:15
OHBM-COBIDAS MEEG Guidelines for Mapping Of MEG and EEG Source Activity and Connectivity in Brain Research
Pedro Valdes Sosa, PhD, Cuban Neuroscience Center, Havana, Cuba

8:15 – 8:30
IFCN Guidelines for Mapping Of EEG Source Activity and Connectivity in Clinical Research
Claudio Babiloni, PhD, Sapienza University of Rome, Rome, Italy

8:30 – 8:45
ILAE Guidelines for Mapping of MEG And EEG Signals in Epilepsy Research
Margitta Seeck, MD, Université de Genève, Geneva, Switzerland

8:45 – 9:00
General Interactive Discussion and Concluding Remarks
Aina Puce, PhD, Indiana University, Psychological & Brain Sciences, Bloomington, IN, United States

9:00 – 9:15
Questions and Answers

KEYNOTE LECTURE

9:30 – 10:15
Santa Cecilia Hall
The Human Brainnetome Atlas and its Applications in Understanding of Brain Functions and Disorders
Tianzi Jiang, PhD, Institute of Automation, Chinese Academy of Sciences, Beijing, China

This lecture presents the definition of the Brainnetome atlas, how to construct it with anatomical connectivity profiles, how to verify its reliability and biological mechanisms, its applications in various fields, and its multiscale and evolutionary studies.

10:15 – 10:30
BREAK

ORAL SESSIONS

10:30 – 11:45
Oral session presentations are chosen by the Program Committee from submitted abstracts using criteria of quality and timeliness; a wide spectrum of investigation is represented. Authors listed are the presenting authors, a full list of authors can be found in the Abstract / Poster Listing Booklet (**www.humanbrainmapping.org/2019Posters)**, in the E-poster search (**http://ww5.aievolution.com/hbm1901/**) or in the mobile app.

Neurodegenerative and Vascular Disorders

Santa Cecilia Hall
Chairs:
Jessica Damoiseaux, Wayne State University, Detroit, MI, United States

Michael Greicius, Department of Neurology and Neurological Sciences, FIND Lab, Stanford University, Stanford, CA, United States

10:30 – 10:42
Imaging the Locus Coeruleus in Parkinson's Disease with Ultra-high 7T MRI
Rong Ye, University of Cambridge, Clinical Neurosciences, Cambridge, United Kingdom

10:42 – 10:54
Modulating the Human Functional Connectome by Means of Deep Brain Stimulation
Andreas Horn, Charité – Universitätsmedizin Berlin, Movement Disorders and Neuromodulation Section, Berlin, Germany

10:54 – 11:06
Comparison Between Alzheimer's and Lewy Body Disease-related Atrophy Patterns Across the Disease
Seun Jeon, McGill University, Montreal Neurological Institute, Montreal, Quebec, Canada

11:06 – 11:18
Functional Connectivity Associated with Tau Levels in Aging, Alzheimer's, and Small-vessel Disease
Nicolai Franzmeier, Institute for Stroke and Dementia Research, Munich, Germany

11:18 – 11:30
Predicting Novel Definitions of Neurodegenerative Disease from CSF Protein Levels and Genotype
Eli Cornblath, University of Pennsylvania, Neuroscience, Philadelphia, PA, United States

11:30 – 11:42

Machine-learning Predictions of Stroke Recovery Using Quantitative Tractography-based Connectivity

Chun-Hung Yeh, Ph.D., The Florey Institute of Neuroscience and Mental Health, Melbourne, Victoria, Australia

Learning and Memory

Giuseppe Sinopoli Hall
Chairs:
Russel Poldrack, Stanford University, Stanford, CA, United States

Shaozheng Qin, Beijing Normal University, Beijing, China

10:30 – 10:42

Pulses of Spontaneous Activity Drive Functional Connectivity Changes in Disused Brain Networks

Dillan Newbold, Washington University School of Medicine Neurology, St. Louis, MO, United States

10:42 – 10:54

Reorganization in Cerebral and Cerebellar Cortices is not Restricted by Somatotopy

Avital Hahamy Presenter, University College London, London, Yukon, United Kingdom

10:54 – 11:06

Navigating a Semantic Space with a Distance and a Direction Code in the Human Brain

Simone Viganò, Center for Mind/Brain Sciences, University of Trento, Rovereto, Italy

11:06 – 11:18

Cross-Ttask Evidence for the Language-Specific Episodic Buffer in Left Ventral Occipitotemporal Area

Lang Qin, the University of Hong Kong, Department of Linguistics, Hong Kong, China

11:18 – 11:30

Neurochemical Modulation in the Anterior Temporal Lobe: A Combined MRS, Fmri And TMS Approach

JeYoung Jung, University of Nottingham, Nottingham, United Kingdom

11:30 – 11:42

Layer-Dependent Activity in Human Prefrontal Cortex during Working Memory

Emily Finn, PhD, National Institute of Mental Health, Washington, DC, United States

Modeling and Analysis Methods – Network Modeling

Goffredo Petrassi Hall
Chairs:
Juan (Helen) Zhou, Duke-NUS Medical School, Singapore, Singapore

10:30 – 10:42

Large-scale Synchronization of Cortical Oscillations in the Human Connectome

James Pang, QIMR Berghofer Medical Research Institute, Brisbane, Queensland, Australia

10:42 – 10:54

Estimating Directed Functional Connectivity Using Echo-state Networks

Andrea Duggento, University of Rome Tor Vergata, Rome, Italy

10:54 – 11:06

Inferring Whole-brain Effective Connectivity from FMRI Data

Stefan Frässle, Translational Neuromodeling Unit, Zurich, Switzerland

11:06 – 11:18

Fractal Dimension Enables the Functional Differentiation of Resting State Networks

Camillo Porcaro, ISTC-CNR, Rome, Italy

11:18 – 11:32

Reliability of Dynamic Network Reconfiguration: Impact of data length and cognitive states

Zhen Yang, Nathan Kline Institute for Psychiatric Research, Orangeburg, NY, United States

11:32 – 11:45

Classifying Patients with scDOC Using Multislice Modularity of Brain Networks From fMRI Data

Betty Wutzl, Osaka University, Graduate School of Information Science and Technology, Suita, Japan

Imaging Acquisition Methods – BOLD Signal Imaging

Theatre Studio
Chairs:
Peter Fox, MD, University of Texas Health Science Center San Antonio, San Antonio, TX, United States

Shella Keilholz, Georgia Institute of Technology and Emory University, Atlanta, GA, United States

10:30 – 10:42
BOLD Deactivations are not the Metabolic Opposite of Activations: Evidence from hybrid PET/fMRI
Lars Jonasson, PhD, Umeå University, Department of Integrative Medical Biology, Umeå, Sweden

10:42 – 10:54
Neurovascular Coupling: Intra- & Cross-modal Negative BOLD Responses in Visual and Sensorimotor Cortex
Ross Wilson, PhD, University of Birmingham, Birmingham, West Midlands, United Kingdom

10:54 – 11:06
The Relationship between BOLD and Neural Activity May Arise from Temporally Sparse Events
Xiaodi Zhang, Georgia Institute of Technology and Emory University, Biomedical Engineering, Atlanta, GA, United States

11:06 – 11:18
FMRI Correlates of Stimulus-triggered Changes in Systemic Physiology
Catie Chang, Vanderbilt University, Nashville, TN, United States

11:18 – 11:30
7T Combined fMRI-fMRS, Multiscale Investigation of the Motor Cortex During active and Resting States
Jacob Levenstein, University of Oxford / National Institutes of Health, Nuffield Department of Clinical Neurosciences, Oxford, United Kingdom

11:30 – 11:12
Estimating Laminar Neuronal Response Using a Hemodynamic Model of Depth-Dependent BOLD Signal
Martin Havlicek, Maastricht University, Maastricht, Netherlands

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Imaging Genetics

Choir Room
Chairs:
Jessica Turner Chair, Georgia State University, Atlanta, GA, United States

Anqi Qiu, National University of Singapore, Singapore

10:30 – 10:42
Genetic Influences on Cortical Functional Connectivity during Longitudinal Adolescent Development
Jalmar Teeuw, University Medical Center Utrecht, Utrecht, Netherlands

10:42 – 10:54
A Molecular Gradient Along the Longitudinal Axis of the Human Hippocampus Informs Brain Function
Jacob Vogel, McGill University, Montreal, Quebec, Canada

10:54 – 11:06
Multimodal Gradients across Mouse Cortex and their Human Correspondence
Ben Fulcher, School of Physics, Sydney University, Sydney, Australia

11:06 – 11:18
A BIN1 Genetic Risk Variant Is Associated with Higher Tau and Worse Memory Independent of Amyloid
Nicolai Franzmeier, Institute for Stroke and Dementia Research, Munich, Germany

11:18 – 11:30
The Oscillatory Neural Dynamics of Selective Attention are Predicted by Epigenetic Measures of Aging
Alex Wiesman, University of Nebraska Medical Center, Omaha, NE, United States

11:32 – 11:42
Brain Mediates Association Between Methylation and Audit Score: A longitudinal study
Jiayu Chen, The Mind Research Network, Albuquerque, NM, United States

11:45 – 12:45
LUNCH ON OWN

POSTER SESSION

12:45 – 14:45
Auditorium Expo
Poster Numbers W001-W906
Odd number posters will present from 12:45 – 13:45.
Even number posters will present 13:45 – 14:45.

SOFTWARE DEMONSTRATIONS

12:45 – 14:45
Auditorium Expo

Station 1 – 1418: MicroLearn: Framework for machine learning, reconstruction and microstructure modeling
Shreyas Fadnavis, Indiana University Bloomington, Intelligent Systems Engineering, Bloomington, IN, United States

Station 2 – 1586: Neuroimaging PheWAS: A free cloud computing platform for big brain-wide imaging association studies
Lu Zhao, University of Southern California, Los Angeles, CA, United States

Station 3 – 2447: Nideconv: A Python package for hierarchical, Bayesian linear deconvolution of neural signals
Gilles de Hollander, Vrije Universiteit Amsterdam, Experimental and Applied Psychology, Amsterdam, Netherlands

Station 4 – 4590: Notizia dell'AFNI: Even easier FMRI QC, with afni_proc.py's automatic HTML review
Paul Taylor, NIMH, Bethesda, MD, United States

Station 5 – 3114: Notizia dell'AFNI: Meet afni_proc.py – Your New Best Friend
Robert Cox, PhD, NIMH/NIH/DHHS/USA, Bethesda, MD, United States

Station 6 – 3684: One Thing to Bind Them All: A complete RAW data structure for auto-generation of BIDS datasets
Benjamin Poldrack, Institute of Neuroscience and Medicine, Brain & Behaviour (INM-7), Research Centre Jülich, Jülich, Germany

Station 7 – 2320: PyActigraphy, a Comprehensive Toolbox for Actigraphy Data Analysis
Grégory Hammad, University of Liège, GIGA-CRC In Vivo Imaging, Liège, Belgium

Station 8 – 1207: PyParadigm – A Python Library to Create Paradigms
Felix Knorr, TU Dresden, Psychiatry and Psychotherapy, Dresden, Saxony, Germany

Station 9 – 4860: QDECR: A flexible, extensible vertex-wise analysis framework in R
Sander Lamballais, Erasmus MC University Medical Center Rotterdam, Rotterdam, Netherlands

Station 10 – 4068: QFib: Fast and accurate compression of white matter tractograms
Sylvain Rousseau, Telecom ParisTech, Paris, France

AFTERNOON SYMPOSIUM
14:45 – 16:00

Transcriptomics of Brain Function: From circuitry and networks through psychiatric illness

Santa Cecilia Hall
Organizer:
Avram Holmes, Yale University, New Haven, CT, United States

The recent development of densely sampled gene transcriptional atlases has enabled the precise characterization of cellular and molecular associates of functional brain network architecture. Work in this domain, for instance, suggests that synchronized patterns of gene expression may contribute to the formation and maintenance of large-scale brain networks. In parallel, network-based techniques for the study of in vivo brain functioning indicate that psychiatric illness emerges from disturbances across the collective set of functional connections in the brain. Yet, despite a flurry of advances, we still remain far from a mechanistic understanding of how discrete molecular and cellular processes might serve to influence network functioning and associated vulnerability for illness onset. In this symposium, we present work that bridges genetic, transcriptional, and neuroimaging data in the study of healthy brain functioning and psychiatric illness. The analytic approaches and discoveries highlighted here advance four related lines of inquiry. We will start with a discussion of how gene-expression maps can be connected to properties of brain connectivity, how these properties are spatially embedded as gradients, and the statistical methods available for analyzing and interpreting the genetic signatures of a given brain-imaging phenotype. We will then outline a general workflow for combining brain-wide gene-expression data with neuroimaging phenotypes, focusing on the transcriptional correlates of hub connectivity across species and scales. Next, we will present evidence that the cytoarchitectural organization of cortex shapes the functioning of large-scale brain networks, underlying individual differences in

risk for schizophrenia. Finally, we will present data showing whole-brain connectivity patterns linked to transdiagnostic dimensions reflecting psychopathology, cognitive impairment, and impulsivity across a host of psychiatric illnesses, providing potential intermediate phenotypes that span diagnostic categories.

SYMPOSIA SCHEDULE:

14:45 – 15:00

Connecting Large-Scale Brain-Network Topology to the Transcriptome Reveals Multiscale Principles of Brain Organization

Ben Fulcher, School of Physics, Sydney University, Sydney, Australia

15:00 – 15:15

Transcriptional Properties of Hub Connectivity

Aurina Arnatkevičiūtė, Monash University, Victoria, Australia

15:15 – 15:30

Transcriptional Landscape of Cortical Interneurons Underlies In-Vivo Brain Function and Schizophrenia Risk

Avram Holmes, Yale University, New Haven, CT, United States

15:30 – 15:45

Whole-Brain Connectivity Variation Associated with Transdiagnostic Dimensions Reflecting General Psychopathology, Cognitive Dysfunction and Impulsivity

Valeria Kebets, ECE, CIRC, SINAPSE & MNP, National University of Singapore, Singapore

15:45 – 16:00

Questions and Answers

Data Science in Neuroscience: Denser phenotyping across levels of observation

Giuseppe Sinopoli Hall
Organizers:
Danielle Bassett, University of Pennsylvania, Philadelphia, PA, United States

Danilo Bzdok, RWTH Aachen University, Aachen, Germany

Following astronomy, particle physics, and genetics, massive data collection is currently becoming a game changer in neuroscience and medicine (House of Common, UK, 2016; National Research Council, USA, 2013). There is an always-larger interest in and pressure for data sharing, open access, and consortiums that build "big data" repositories for the healthy and diseased brain. For instance, UK Biobank is a longitudinal population study dedicated to the genetic and environmental influence on mental and other disorders. 500,000 enrolled volunteers have undergone an extensive battery of clinical diagnostics from brain scans to bone density with a >25 year follow-up. In the US, the

Precision Medicine Initiative announced in 2015 to even profile 1,000,000 individuals. There is now an unprecedented, rapidly growing opportunity to provide principled answers to human brain function and its disturbances in mental disease.

SYMPOSIA SCHEDULE:

14:45 – 15:00

Network Models to Chart the Behavioral Repertoire: Brain structure, function, and control

Danielle Bassett, University of Pennsylvania, Philadelphia, PA, United States

15:00 – 15:15

Computational Models to Simulate and Emulate Cognitive Processes Across Modalities

Pamela Douglas, UCLA/UCF, Psychiatry, Computer Science, Los Angeles, CA, United States

15:15 – 15:30

Machine Learning the Waveform Shapes in Highly Sampled Temporal Dynamics

Alexandre Gramfort, Inria, Palaiseau, France

15:30 – 15:45

Pattern-Learning Hidden Population Variation in Deeply Phenotyped Neuroimaging Cohorts

Danilo Bzdok, RWTH Aachen University, Aachen, Germany

15:45 – 16:00

Questions and Answers

Connectivity Formation and Reconfiguration in the Brain: Empirical and in silico insights

Goffredo Petrassi Hall
Organizers:
Marcus Kaiser, School of Computing Newcastle University, Newcastle, United Kingdom

Olaf Sporns, Indiana University, Bloomington, IN, United States

Alexandros Goulas, Institute of Computational Neuroscience UKE, Hamburg, Germany

Recent advancements in neuroimaging techniques have allowed the mapping of the large-scale connectional architecture of the human brain, that is, the human brain connectome. These mapping techniques have paved the way for the formal examination of the brain connectome, giving birth to network neuroscience, a thriving and central research line in neuroscience in general, and the neuroimaging community in particular.

Despite such advancements, the factors and putative mechanisms that govern connectivity formation and wiring reconfiguration in

the human brain remain elusive. The current proposal will provide a palette of contemporary approaches that fuse computational modeling and multimodal empirical data in order to provide insights into the factors and processes that lead to the intricate wiring configuration of the human brain. Comparative examination of human and non-human brains, necessary for deciphering if factors and processes shaping brain wiring are unique to the human brain or have a more universal scope, is also undertaken by part of the studies of this proposal.

In sum, the current proposal will highlight the factors and processes that govern connectivity formation and wiring reconfiguration in the brain, on a cross-modal and cross-species basis.

For enhancing the impact of the topics addressed in this symposium proposal, a Special Issue in Network Neuroscience will be linked to the symposium.

SYMPOSIA SCHEDULE:

14:45 – 15:00
Generative Models Of Connectomes
Richard Betzel, Department of Psychological and Brain Sciences, Indiana University, Bloomington, IN, United States

15:00 – 15:15
Computational Modeling of Development and Plasticity of Brain Connectomes
Claus Hilgetag, Institute of Computational Neuroscience, University Medical Center Hamburg-Eppendorf, Hamburg, Germany

15:15 – 15:30
Twin Fingerprints: Optimal Mapping of Heritable And Environmental Traits in the Human Connectome
Joaquin Goñi, School of Industrial Engineering, Purdue University, Purdue, IN, United States

15:30 – 15:45
Integrative Analysis in Network Neuroscience
Mikail Rubinov, Department of Biomedical Engineering, Vanderbilt University, Nashville, TN, United States

15:45 – 16:00
Questions and Answers

EEG Potentials evoked by Transcranial Magnetic Stimulation: Methodological issues

Theatre Studio
Organizers:
Mario Rosanova, University of Milan, Milan, Italy

So far, TMS-EEG has been exploited to measure non-invasively and directly electrophysiological parameters that are fundamental for the functioning of the human cerebral cortex, such as excitability, connectivity, and complexity in healthy and pathological conditions. However, there are still methodological controversies about the best experimental practice to conduct reliable TMS-EEG studies. This is mainly due to a lack of common standards about methodologies to acquire TMS-evoked potentials (TEPs) and to evaluate data quality.

SYMPOSIA SCHEDULE:

14:45 – 15:00
Realistic Sham Control for TMS-evoked Potentials Recordings
Hartwig Siebner, Danish Research Center for Magnetic Resonance, Copenhagen, Denmark

15:00 – 15:15
Reliable Recording and Interpretation of EEG Signals Elicited by TMS
Risto Ilmoniemi, Aalto University, Helsinki, Finland

15:15 – 15:30
TMS-EEG an Integrative Approach for Future Implementation
Carlo Miniussi, Center for Mind/Brain Sciences, University of Trento, Trento Italy

15:30 – 15:45
A Procedure to Foster the Reproducibility and the Reliability of TEPs across Laboratories
Mario Rosanova, University of Milan, Milan, Italy

15:45 – 16:00
Questions and Answers

16:00 – 16:15
BREAK

KEYNOTE LECTURE

16:15 – 17:00
Santa Cecilia Hall
PET Imaging in Dementia: Mapping the Path from Protein Aggregation to Neurodegeneration
Gil D. Rabinovici, MD, University of California San Francisco, San Francisco, CA, United States

In the past decade PET imaging has transformed the study of Alzheimer's disease (AD) and related neurodegenerative conditions by providing a window into molecular changes in the living brain along the continuum from normal aging to dementia. This talk will describe advances in imaging of amyloid plaques and tau tangles, the core neuropathological lesions that define AD. We will explore what PET, in conjunction with other structural and functional MRI, has taught us about the early evolution of AD, and describe how advances in imaging are leading to a paradigm shift in the definition of disease and approaches to drug development.

17:00 – 17:15
BREAK

GENERAL ASSEMBLY AND FEEDBACK FORUM

17:15 – 18:15
Santa Cecilia Hall
The General Assembly & Feedback Forum is the top source for the latest breaking news and commentary on issues impacting the neuroimaging community and your member organization. It is also an opportunity for you to voice your opinions and questions to the Council — which helps shape future agendas. The new elected leadership will be announced as well as dates and venues for future Annual Meetings. Use the ARS to submit your questions: Visit **https://gmp3.cnf.io/**

ITALIAN THEMED POSTER RECEPTION

18:15 – 19:15
Auditorium Expo
Roman Wine and Pizza
All Posters W001-W906

CLUB NIGHT

20:00 – 2:00
Atlantico Disco
Address: Viale dell'Oceano Atlantico 271 D, 00144 Roma

Atlantico is the only venue in Rome with the perfect capacity for medium range concerts. Atlantico has redeveloped and extended the existing Palacisalfa building, reviving its rock venue legacy and endowing it with whatever necessary to adequately host all the different aspects of live entertainment which will include a band as well as a DJ spinning all the latest hits. Shuttle buses will be available from the auditorium to Atlantico Disco. Public transportation is also available.

PLEASE NOTE: You MUST have your name badge or you will not be admitted.

Additional guest badges are $50.00 and must be purchased at the conference registration desk.

MORNING SYMPOSIA
8:00 – 9:15

Spatial Organization of Connectivity Over Timescales: Multimodal insights on cognitive architectures

Santa Cecilia Hall
Organizers:
Satu Palva, University of Glasgow, Glasgow, United Kingdom

Sepideh Sadaghiani Organizer, University of Illinois at Urbana-Champaign, Urbana, Illinois, United States

Latest advances in multimodal functional neuroimaging using various neurophysiological (magnetoencephalography (MEG), electroencephalography (EEG), electrocorticography (ECoG)), hemodynamic, and structural imaging methods have highlighted the role of structural and functional connectivity in dynamically shaping human cognitive architectures. In this symposium, each speaker will present investigations into the relationship of large-scale connectivity across different sets of imaging modalities, collectively facilitating an overarching understanding of the connectome.

Aaron Kucyi will present ECoG observations providing the most direct measure of neurophysiological connectivity and their large-scale topographic organization during resting state and active task. Mark Woolrich will discuss model-based extraction of dynamically recurring connectivity patterns at various timescales in fMRI, MEG, and rodent electrophysiology. Satu Palva will present a direct comparison of functional connectivity networks and of their cross-frequency coordination derived from ECoG and MEG. Jonathan Wirsich will show that EEG-, fMRI- and tractography-based whole-brain connectomes exhibit a shared spatial organization, and that concurrently recorded EEG- and fMRI-connectomes show linked dynamics.

Bringing these multimodal studies together gives rise to both complementary and synergistic views about the organization of neural communication in the brain. Over multiple orders of temporal magnitude — from the infraslow frequency range to fast oscillation frequencies — functional connectivity exhibits modular and widely distributed organization that is correlated with the underlying structural connectome. Although there is high topographic similarity across temporal scales, frequency-dependent variations in the functional connectivity and its dynamics shape processing across cognitive architectures. In conclusion, converging evidence suggests that the whole-brain connectome view largely born out of fMRI and structural imaging is a universal characteristic of neural communication governing neurophysiological signals over timescales. Consequently, to understand how processing is coordinated across cognitive architectures and mental states, we must take into account both the overarching intrinsic connectivity backbone as well as scale-specific functional connectivity networks and their interactions across temporal scales.

SYMPOSIA SCHEDULE:
8:00 – 8:15
Human Intracranial Electrophysiology of The Default, Dorsal Attention and Salience Networks
Aaron Kucyi, Palo Alto, CA, United States

8:15 – 8:30
Coordinated Large-Scale Brain Network Dynamics in Electrophysiology and fMRI
Mark Woolrich, Prof, University of Oxford, Oxford, United Kingdom

8:30 – 8:45
Large-Scale Brain Networks Within and Across Oscillatory Frequencies in MEG and SEEG
Satu Palva, University of Glasgow, Glasgow, United Kingdom

8:45 – 9:00
Spatio-Temporal Large-Scale Organization of the Trimodal Connectome Derived from Concurrent EEG-fMRI and Diffusion MRI
Jonathan Wirsich, University of Geneva, Geneva, Switzerland

9:00 – 9:15
Questions and Answers

How Do Current Predictive Connectivity Models Meet Clinician's Needs?

Giuseppe Sinopoli Hall
Organizers:
Gaël Gaël Varoquaux, Parietal Team, INRIA, Gif-sur-Yvette, France

Matthieu Gilson, Universitat Pompeu Fabra, Barcelona, Spain

Xenia Kobeleva, University Hospital Bonn, German Center for Neurodegenerative Diseases, Bonn, Germany

Analyses and models of the brain network are increasingly used for prediction and classification of neurological and psychiatric diseases. The growing number of available methods implies a need for communication between psychiatrists, neurologists, modelers and data scientists. This symposium will review current state-of-art predictive approaches ranging from statistical models, disease progression models to whole-brain dynamic models. Moreover, it will include a clinical researcher's point of view to understand how to formulate research questions that are relevant for real-life hospital settings.

The talks will be followed by an interactive discussion between speakers and audience which focusses on 1) how to improve current modeling tools for understanding neuropsychiatric diseases and discovering new targets for diagnosis and therapy and 2) use open-source tools to make models more reproducible and accessible to researchers with various levels of programming skills.

SYMPOSIA SCHEDULE:

8:00 – 8:15
Extracting Functional-Connectome Biomarkers with Machine Learning
Gaël Gaël Varoquaux, Parietal Team, INRIA, Gif-sur-Yvette, France

8:15 – 8:30
Effective Connectivity Extracts Clinically Relevant Prognostic Information from Resting State Activity in Stroke
Mohit Adhikari, Universitat Pompeu Fabra, Barcelona, Spain

8:30 – 8:45
Connectivity and Cell-Specific Vulnerability Shape Disease Progression in Parkinson's Disease
Alain Dagher, Montreal Neurological Institute, Montreal, Quebec, Canada

8:45 – 9:00
Connectivity-based Models in Stroke and Recovery of Function: A clinical researcher's viewpoint
Alain Dagher, Montreal Neurological Institute, Montreal, Quebec, Canada

9:00 – 9:15
Questions and Answers

Multimodal Neurofeedback: The next generation of neurofeedback for advanced brain self-regulation

Goffredo Petrassi Hall
Organizers:
Giulia Lioi, INRIA, Univ Rennes1, EMPENN, Rennes, France

Christian Barillot, CNRS, IRISA, Rennes, France

Neurofeedback (NF) belongs to the field of brain-computer interface (BCI). It provides individuals with real-time biofeedback of their brain activity and teaches them how to regulate their own brain functions by providing real-time sensory feedback of the brain "in action". Brain activity can be measured using various non-invasive sensors, such as electro-encephalography (EEG) and magneto-encephalography (MEG) for direct neuronal

activity, and functional magnetic resonance imaging (fMRI) or near-infrared spectroscopy (NIRS) for measuring related hemodynamics. Although EEG is currently the more common modality used by NF clinical practitioners, it often lacks of specificity due to its low spatial resolution. Research has therefore recently turned to explore the other brain functional modalities that target the activity of different regions of the brain more precisely. Though promising, current NF approaches suffer from the limitations of the technology, by providing either low spatial or temporal resolutions according to the sensor that is used. The future belongs to hybrid answers that combine the best of two different brain sensors. The symposium will address the sum of technological, computational challenges and potential clinical applications that can be expected in the future from this emerging technological evolution.

SYMPOSIA SCHEDULE:

8:00 – 8:15
Real Time EEG-fMRI Integration for Advance Brain Self-Regulation with EEG and fMRI Neurofeedback
Jerzy Bodurka, Laureate Institute for Brain Research, Tulsa, OK, United States

8:15 – 8:30
fNIRS-EEG Neurofeedback Integration during Motor Task
Benjamin Blankertz, Technische Universität Berlin, Berlin, Germany

8:30 – 8:45
EEG-MEG Integration for Brain-Computer Interfaces
Fabrizio De Vico Fallani, Inria-ICM, Paris, France

8:45 – 9:00
EEG-fMRI Neurofeedback Integration for Stroke Rehabilitation
Christian Barillot, CNRS, IRISA, Rennes, France

9:00 – 9:15
Questions and Answers

9:15 – 9:30
BREAK

Dissociating the Cognitive and Motor Functions of Circuits Through the Subthalamic Nucleus in Humans

Theatre Studio
Organizer:
Adam Aron, UC San Diego, La Jolla, California, United States

The topic is timely because:

1. It fits with the NIH Human Brain Initiative attempt to measure and stimulate the human brain with in vivo methods
2. It is about dissociable spectral and anatomical signatures of basal ganglia function, and this is pertinent to adaptive deep brain stimulation, which is all the rage
3. It showcases how a focus on sub-functions across different tasks might take us to underlying functional circuits, in a way that focusing on the tasks themselves may not [and how this cuts across attention, working memory, executive control]
4. It highlights the utility of translational primate-human studies
5. It illustrates the value of connectomics derived from public data-bases towards predicting individual outcomes, recently covered by news outlets such as Scientific American, and reviewed in the New England Journal of Medicine
6. It provides an anatomical basis for motor-limbic interactions, which has been much in the news recently (recent papers in Neuron)
7. It presents discrepant views on functional roles for STN subregions which encourages debate in this clinically-relevant area

SYMPOSIA SCHEDULE:

8:00 – 8:15
Anatomical Connections of Subregions of Subthalamic Nucleus
Suzanne Haber, University of Rochester, Rochester, NY, United States

8:15 – 8:30
Testing Functional Subregions of the Subthalamic Nucleus with Model-Based 7T fMRI
Birte Forstmann, Integrative Model-based Cognitive Neuroscience Research Unit, University of Amsterdam, Amsterdam, Netherlands

8:30 – 8:45
Multi-modal diffusion MRI, DBS and Computational Modeling to Understand Network Mechanisms of Basal Ganglia Circuit Modulation in Parkinson's Disease
Wolf-Julian Neumann, Charite University of Medicine, Berlin, Germany

8:45 – 9:00
Using Simultaneous Cortical and Basal Ganglia ECoG Recordings to Test Dissociable Circuits for Conflict and Stopping
Adam Aron, UC San Diego, La Jolla, CA, United States

9:00 – 9:15
Questions and Answers

9:15 – 9:30
BREAK

KEYNOTE LECTURE

9:30 – 10:15
Santa Cecilia Hall

Chemistry of the Adaptive Mind
Roshan Cools, Radboud University, Nijmegen, The Netherlands

The human brain faces a variety of computational tradeoffs, such as the flexibility/stability tradeoff. I will argue that the major ascending neuromodulatory systems originating from the midbrain are well suited to dynamically regulate these computational tradeoffs depending on our constantly changing task demands. This working hypothesis follows from a number of general principles of chemical neuromodulation, which I will illustrate by reviewing evidence from recent pharmacological PET/fMRI studies on (cost/benefit decision making about) cognitive control. These studies also begin to elucidate the mechanisms underlying the huge variability in catecholaminergic drug effects across different individuals and behaviours.

10:15 – 10:30
BREAK

THURSDAY, JUNE 13, 2019 | **SCIENTIFIC PROGRAM**

ORAL SESSIONS

10:30 – 11:45

Oral session presentations are chosen by the Program Committee from submitted abstracts using criteria of quality and timeliness; a wide spectrum of investigation is represented. Authors listed are the presenting authors, a full list of authors can be found in the Abstract / Poster Listing Booklet (**www.humanbrainmapping.org/2019Posters**), in the E-poster search (**http://ww5.aievolution.com/hbm1901/**) or in the mobile app.

Higher Cognitive Functions

Santa Cecilia Hall
Chairs:
Cherie Marvel, Johns Hopkins University School of Medicine, Baltimore, MD, United States

10:30 – 10:45
Functional Connectivity Networks Supporting Attentional Control Differ in Term and Preterm Children
Muriah Wheelock, St. Louis, Missouri, United States

10:45 – 11:00
Attentuating Neural Threat Expression with Imagination
Marianne Reddan, M.A., University of Colorado, Boulder, Psychology and Neuroscience, Boulder, CO, United States

11:00 – 11:15
Self-controlled Decision-Making Buffers Stress Response
Rujing Zha, University of Science & Technology of China, Hefei, China

11:15 – 11:30
Basal Ganglia-cerebellar Impact on Performance after Motor Imagery with Real-time fMRI Neurofeedback
Owen Morgan, Johns Hopkins University School of Medicine, Neurology, Baltimore, MD, United States

11:30 – 11:45
3435: Toward Group Classification Models for rtfMRI Neurofeedback Using Data from a Decision-making Task
Mark Orloff, Virginia Tech, Roanoke, VA, United States

Population Neuroscience

Giuseppe Sinopoli Hall
Chairs:
Tonya White, Erasmus MC University Medical Center, Rotterdam, Netherlands

Tomáš Paus, Institute of Medical Science, University of Toronto, Toronto, Canada

10:30 – 10:42
10,000 Social Brains: Charting sexual dimorphism in the UK biobank
Hannah Kiesow, RWTH Aachen, Aachen, Germany

10:42 – 10:54
Brain Networks in UKbiobank: Polygenic risk for schizophrenia and psychotic-like experiences
Clara Alloza, The University of Edinburgh, Edinburgh, United Kingdom

10:54 – 11:06
Modelling Cognition, Aging, Cerebrovascular Health, and Brain Network Integrity in UK Biobank Data
Michele Veldsman, University of Oxford, Department of Experimental Psychology, Oxford, Oxfordshire, United Kingdom

11:06 – 11:18
Parvalbumin Interneurons Underlie In-Vivo Brain Function and Schizophrenia Risk
Kevin Anderson, MS, Yale University, Psychology, New Haven, CT, United States

11:18 – 11:30
Relationship between Video Gaming and Brain Function in a Large Sample of Children
Bader Chaarani, PhD, UVM department of Psychiatry, Psychiatry, Burlington, VT, United States

11:30 – 11:42
Association between Intelligence and Cortical Thickness in Adolescents: Evidence from the ABCD study
Qi Zhao, Fudan University, Shanghai, China

Recent Advances in Neuroanatomy

Goffredo Petrassi Hall
Chairs:
Claude Bajada, University of Malta, Faculty of Medicine and Surgery, Msida, Malta

Anneke Alkemade, University of Amsterdam, Amsterdam, Netherlands

10:30 – 10:42
A New Sulcal Landmark in Human Prefrontal Cortex
Jacob Miller, UC Berkeley, Berkeley, CA, United States

10:42 – 10:54
Anatomy and Function of Four New Cytoarchitectonic Areas in the Human Lateral Orbitofrontal Cortex
Magdalena Wojtasik, C. & O. Vogt - Institute for Brain Research, Duesseldorf, Germany

10:54 – 11:06
Evaluation of Functional Connectivity Using Retrograde Tracers in the Macaque Monkey
David Van Essen, Washington University, St. Louis, MO, United States

11:06 – 11:18
Inter-species Comparison and Alignment between Human and Non-human Primate
Ting Xu, Child Mind Institute, New York, NY, United States

11:18 – 11:30
Exploring the Relationship between Quantitative 7T MRI, Cytoarchitectonics and Gene Expression
Peter McColgan, PhD, University College London, London, United Kingdom

11:30 – 11:42
Telomere Length Change over Nine Months Relates to Multimodal Measures of Brain Structure
Lara Puhlmann, Max Planck Gesellschaft, Leipzig, Germany

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Epilepsy

Theatre Studio
Chair:
Neda Bernasconi, McGill University, Montreal, Canada

10:30 – 10:42
Conditional Generative Adversarial Networks Support the Detection of Focal Cortical Dysplasias
Bastian David, University Medical Center Bonn, Department of Epileptology, Bonn, Germany

10:42 – 10:54
Hierarchical Organization of The Cerebral Cortex is Disrupted in Temporal Lobe Epilepsy
Fatemeh Fadaie, McGill University, Montreal Neurological Institute, Montreal, Quebec, Canada

10:54 – 11:06
Distance-enriched Functional Connectomics in Drug-Resistant Temporal Lobe Epilepsy
Sara Larivière, Department of Neurology and Neurosurgery, McGill University, Montreal, Canada

11:06 – 11:18
NR4A1 Associated Multimodal Neuroimaging Patterns Impaired in Mesial Temporal Lobe Epilepsy
Dongmei Zhi, Institute of Automation, Chinese Academy of Sciences, Beijing, China

11:18 – 11:30
Characterizing the Optimal Control Energy Trajectory in Temporal Lobe Epilepsy
Xiaosong He, PhD, University of Pennsylvania, Bioengineering Philadelphia, PA, United States

11:30 – 11:42
Deep Learning DWI Connectome Improves Detection of Language Network Alteration in Epilepsy Children
Jeong-Won Jeong, PhD, Wayne State University, Pediatrics and Neurology, Detroit, MI, United States

LUNCH
11:45 – 12:45

SOFTWARE DEMONSTRATIONS

12:45 – 14:45
Auditorium Expo

Station 1 – 2124: Rapid Acceleration of the Permutation Test via Slow Random Walks in the Permutation Group
Moo Chung, University of Wisconsin, Madison, WI, United States

Station 2 – 5128: Real-time fMRI Motion Tracking: Should I stop and restart the scan?
Nathalia Esper, PUCRS, Porto Alegre, Rio Grande do Sul, Brazil

Station 3 – 1907: RtQC: An open-source toolbox for real-time fMRI quality control (live software presentation at OHBM)
Stephan Heunis, Department of Electrical Engineering, Eindhoven, Netherlands

Station 4 – 2808: SimNIBS 3: Simulation, optimization and uncertainty quantification for transcranial brain stimulation
Guilherme Bicalho Saturnino, Technical University of Denmark, Kgs. Lyngby, Denmark

Station 5 – 5191: Simulated TMS-EEG Biofeedback Using Automated Neural Architecture Search and Transfer Learning
Scott Heston, BSCS Candidate 2020, Georgia Institute Of Technology, Atlanta, GA, United States

Station 6 – 5375: Spatial Normalization in fMRIPrep
Oscar Esteban, Stanford University Psychology, Stanford, CA, United States

Station 7 – 4977: SwipesForScience: An open source gamified citizen science framework for scalable data annotation
Anisha Keshavan, PhD, University of Washington, Seattle, WA, United States

Station 8 – 4293: Tedana: Robust and extensible software for multi-echo denoising
Elizabeth DuPre, Montreal Neurological Institute, Montreal, Canada

Station 9 – 1088: The Effect of Sample Size on Brain Template Variability
Guoyuan Yang, Center for MRI Research, Peking University, Beijing, China

POSTER SESSION

12:45 – 14:45
Auditorium Expo
Poster Numbers Th001-Th905
Odd number posters will present from 12:45 – 13:45.
Even number posters will present 13:45 – 14:45.

CLOSING COMMENTS AND MEETING HIGHLIGHTS

14:45 – 16:00
Santa Cecilia Hall
During the closing, attendees will enjoy a presentation showcasing the highlights from the 2019 Annual Meeting. This year's presentation will be delivered by Bernard Mazoyer, Groupe d'Imagerie Neurofonctionnelle, Université de Bordeaux, Bordeaux, France. The recipient of the People's Choice Awards will also be announced.

ITALIAN THEMED POSTER RECEPTION

16:00 – 17:00
Auditorium Expo
Limoncello and Gelato
Poster Numbers Th001-Th905

OHBM 2019 MERIT ABSTRACT AWARDS

Congratulations to the following 2019 Merit Abstract Awardees
Sponsored by: **THE IRIS FOUNDATION**

Sara Larivière

Avital Hahamy

Jacob Miller

Giada Lettieri

Stephanie Noble

Lang Qin

Golia Shafiei

Xinyi Wang

Anke Bletsch

Alejandro De La Vega

James Pang

Noam Saadon-Grosman

Rong Ye

Bastian David

Myrthe Faber

OHBM 2019 TRAVEL STIPEND RECIPIENTS

Congratulations to the following 2019 Travel Stipend Awardees

Heejung Kim

Esmaeil Mohammadi

Julia Rodrigues

Sharmistha Jat

Andre Monteiro Paschoal

Raúl Rodríguez Cruces

Pamela Garcia

Santiago Smith Silva Rincon

DISCLOSURES

OHBM 2019 Disclosure Statements
The OHBM Program Committee reviewed all financial disclosures for speakers presenting at the Annual Meeting and determined there were no conflicts of interest.

EXHIBITOR LAYOUT

OHBM 2019
Auditorium Parco della Musica
Rome

EXHIBITION AREA

EXHIBIT HOURS

Monday, June 10: 7:00 – 8:00 & 11:30 – 15:00

Tuesday, June 11: 7:00 – 8:00 & 11:00 – 18:30

Wednesday, June 12: 7:00 – 8:00 & 11:00 – 16:00

Thursday, June 13: 7:00 – 8:00 & 11:00 – 17:30
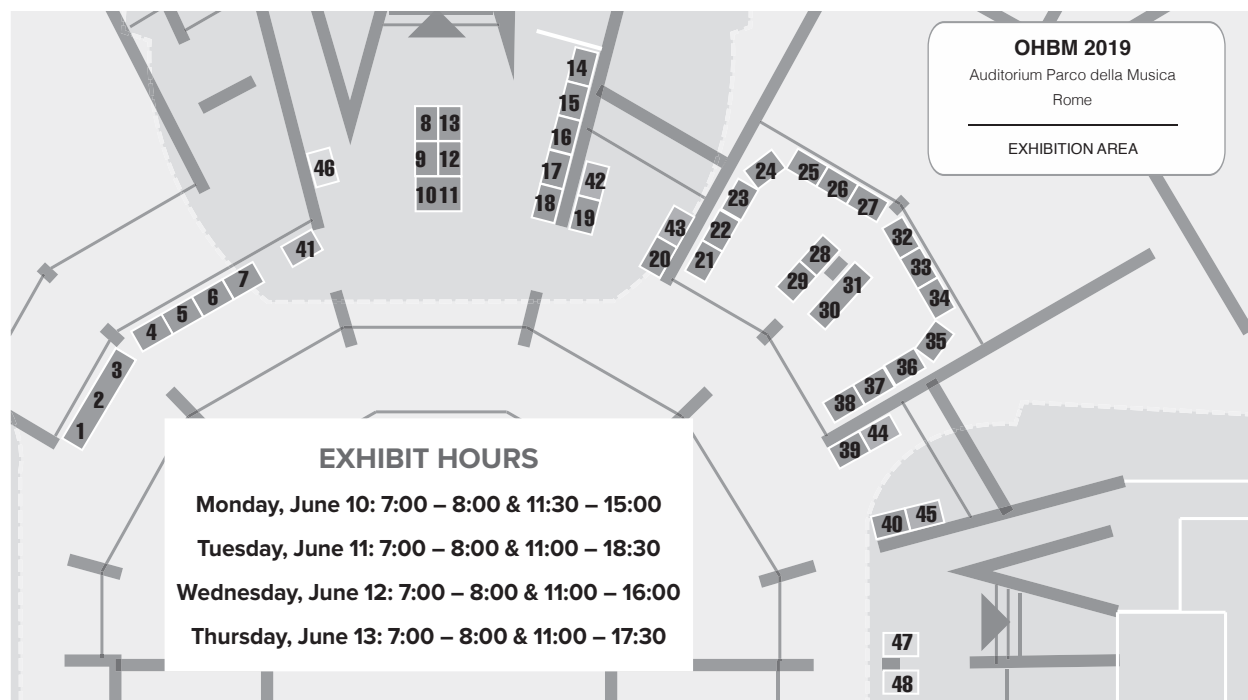
Booth	Exhibitors
34	ALA Scientific Instruments, Inc
14	Artinis Medical Systems
30, 31	BESA GmbH
9	BIOPAC Systems Inc
26	Brain Analysis Library of Spatial Maps and Atlases
7	Brain Innovation B.V.
1, 2, 3	Brain Products Gmbh
22	Brain Science Tools and Taomed
40	Brainbox Initiative
17	Brainnetome Atlas
43	CGX Systems
33	Cognistat
13	Compumedics
21	Current Designs Inc.
27	DIPY
42	FieldLine Inc.
16	flywheel.io
36	Gold Standard Phantoms
18	LOCALITE GmbH

Booth	Exhibitors
39, 44	Max Planck Institute for Human Cognitive and Brain Sciences
37	mBrainTrain
25	The MIT Press
8	NIRx Medical Technologies
38	NITRC – NeuroImaging Tools & Resources Collaboratory
29	NordicNeuroLab
23	OBELAB
19	Optoacoustics Ltd.
28	Oxford University Press
20	Phillips Neuro
6	Psychology Software Tools
10, 11	Resonance Technology, Inc.
4, 5	Rogue Research Inc
32	Seenel Imaging
24	Shenzhen Yingchi Technology Co., Ltd
12	Shimadzu
35	Skope Magnetic Resonance Technologies
41	Soterix Medical Inc
15	SR Research Ltd.

Other Events in Exhibit Hall

Monday, June 10
Coffee Break: 7:00 – 8:00
Poster Session &
    Software Demos: 12:45 – 14:45
Poster Reception: 18:30 – 19:30

Tuesday, June 11
Coffee Break: 7:00 – 8:00
Poster Session &
    Software Demos: 12:45 – 14:45
Poster Reception: 17:00 – 18:00

Wednesday, June 12
Coffee Break: 7:00 – 8:00
Poster Session &
    Software Demos: 12:45 – 14:45
Poster Reception: 18:15 – 19:15

Thursday, June 13
Coffee Break: 7:00 – 8:00
Poster Session &
    Software Demos: 12:45 – 14:45
Poster Reception: 16:00 – 17:00

ALA Scientific Instruments, Inc. . . . . Booth 34

United States
alascience.com
631-393-6401

ALA Scientific Instruments, Inc. is introducing the Bold Fantom, a tool for quality assurance protocols for functional Magnetic Resonance Imaging (fMRI). The Bold Fantom is a "dynamic" phantom designed to optimize detection sensitivity of newer task-free "resting-state" brain networks. This is the first commercial fMRI calibration device ("phantom") capable of producing a dynamic ("brain-like") signal. Quantitative characterization and subsequent correction of scanner-specific signal distortion not only will markedly improve the detection of clinically relevant biomarkers at the level of the single patient, but also will permit normalization across scanner platforms for large-scale research studies collected across multiple sites. ALA Scientific Instruments has been in business since 1986 and specializes in equipment for electrophysiology and neuroscience research.

Artinis Medical Systems . . . . Booth 14

Netherlands
www.artinis.com
+31481350980

Artinis Medical Systems is an innovative Dutch company that develops near-infrared spectroscopy (NIRS) devices. NIRS enables you to non-invasively monitor oxy-, deoxy-, and total hemoglobin concentration changes in brain and muscle tissue. NIRS is a perfect technique for functional brain imaging and can easily be combined with other modalities (such as EEG).

BESA GmbH . . . . Booths 30, 31

Germany
www.besa.de
+49 89 89809966

BESA GmbH was founded in 1995 by Professor Michael Scherg. BESA Research is the leading commercial software package for EEG and MEG data analysis. Analysis options range from pre-processing to advanced source analysis, coherence, and statistical analysis. BESA Research is used in more than 1500 universities and hospitals world-wide.

BIOPAC Systems Inc . . . . Booth 9

United States
www.biopac.com
949-228-2206

BIOPAC — industry-standard data acquisition. Amplifiers, stimulus delivery, transducers & electrodes plus powerful software & automated analysis. Complete physiological data solutions include fNIR Spectroscopy to monitor hemodynamic changes in the prefrontal cortex, MRI-optimized amplifiers for cleaner data, wireless EEG, and more. Cited in over 25,000 of publications — ask for a demo today!

BIOPAC — Inspiring people and enabling discovery about life.

Brain Analysis Library of Spatial Maps and Atlases . . . . Booth 26

United States
medicine.wustl.edu
210-857-1150

The BALSA (Brain Analysis Library of Spatial maps and Atlases) database (balsa.wustl.edu) is a repository for publicly shared neuroimaging study results (Van Essen et al., Neuroimage, 2017). BALSA capitalizes on "scene files" generated in Connectome Workbench, which enable generation and export of publication-ready figures and then easy sharing of the neuroimaging data used in those figures (see Glasser et al., Nature 2016 for an example: balsa. wustl.edu/study/show/RVVG). We are working with other developers to extend the scene file approach and BALSA integration to other neuroimaging visualization software.

Brain Innovation B.V. . . . . Booth 7

Netherlands
www.brainvoyager.com
+31 43 210 0120

Brain Products Gmbh. . . . . Booths 1, 2, 3

Germany
www.brainproducts.com
49 (0) 8105 733 84 - 0
events@brainproducts.com

Dedicated to the research and understanding of the human brain and nervous system since 1997. Our focus on positively impacting neuroscience made Brain Products the worldwide leading manufacturer of hard and software solutions for neurophysiological research. Our solutions cover a wide range of fields of ERP, BCI, EEG/fMRI, EEG/TMS, MoBI (Mobile Brain/Body Imaging), as well as infant, sports, sleep, behavioural sciences and similar disciplines. Since, for us, a solution is only a solution if it covers all the researcher's needs, we also offer a variety of psychophysiological sensors, easily integrated stimulation and analysis software, alongside free technical and scientific support.

Brain Science Tools and Taomed . . . . Booth 22

Netherlands
brainsciencetools.com
+31 30 7116469
ord@brainsciencetools.com

Brain Science Tools manufactures and distributes non-invasive neurostimulation equipment and MRI guided neuronavigation technology for clinicians and researchers. Our Neural Navigator can be used to navigate transcranial magnetic stimulation (TMS) to a functional or structural target in the brain. A novel module also allows mapping of functional motor areas on the brain surface.

EXHIBITOR LIST, CONTINUED

Brainbox Initiative. . . . . **Booth 40**
United Kingdom
www.brainbox-initiative.com
info@brainbox-initiative.com

The Brainbox Initiative is a nonprofit organisation established with the aim of supporting, developing, and promoting the work of early-career neuroscientists and helping to make neuroscience training, education, and experience accessible to everyone.

Brainnetome Atlas . . . . **Booth 17**
China
atlas.brainnetome.org
+86 10 82544523

The Brainnetome Center is a core department of Institute of Automation, Chinese Academy of Sciences (CASIA), which locates in Beijing. It is playing a leading and fundamental role in Chinese brain imaging studies. The team has created a new human brain atlas, i.e. the Human Brainnetome Atlas, which was built upon a connectivity-based parcellation framework, derived from non-invasive multimodal neuroimaging techniques.

CGX Systems. . . . . **Booth 43**
United States
www.cognionics.net
858-864-9400

CGX is the leader in high-quality EEG guided brain stimulation. Our Dry EEG headsets are preferred the world over by researchers looking for fast, accurate data collection with minimal setup.

Cognistat . . . . **Booth 33**
Canada
www.cognistat.com
1-800-922-5840

Cognistat is a rapid (20 minutes), non-invasive neurocognitive assessment that provides healthcare professionals with leading edge screening technology. Cognistat efficiently assesses cognitive functioning in five major ability areas: language (comprehension, repetition and naming), construction, memory, calculation, reasoning (Similarities and judgement). It generates individual profiles highlighting affected areas of the brain to provide a patient's functional status, the progression of illness or response to treatment. Cognistat has over 400 peer reviewed scientific publications in Dementia, Stroke, Brain Injury and other neurodegenerative conditions. Additionally research and clinical trials demonstrated the validity and reliability of Cognistat. Cognistat is administered to patients via a secured web platform under the recommendation of a healthcare professional. It not only defines cognitive strengths and weaknesses, but also identifies important factors like pain, depression and sleep deprivation that adversely affect cognitive functioning. These conditions can often be treated, leading directly to brain fitness. Cognistat can also provide specific information about the potential impact of medications that can affect brain functioning.

Compumedics . . . . **Booth 13**
Australia
www.compumedics.com.au
61384207300

Compumedics Neuroscan provides complete systems for acquiring and integrating neuroimaging data from all functional and structural data modalities and is the world's leading technology provider for high-density EEG recordings, electro-magnetic source localization, multi-modal neuroimaging and functional MRI enhancements. Our latest offering is the next generation MEG brain imaging solution, OrionLifeSpanMEG.

Current Designs Inc. . . . . **Booth 21**
United States
www.curdes.com
215-387-5456
offices@curdes.com

Current Designs' fORP provides versatile fiber optic, computer response in the MR/MEG room for complex and simple tasks. Joystick, button box, grip force, trackball, finger stick, and other options are accompanied by matching nonMR trainers. No metal and nothing magnetic in the MR/MEG room eliminates noise and safety concerns.

DIPY . . . . **Booth 27**
United States
nipy.org
819-943-0220

FieldLine Inc. . . . . **Booth 42**
www.fieldlineinc.com
info@fieldlineinc.com

FieldLine is harnessing the latest technology in optically pumped magnetometry to create large sensor arrays for MEG and other biomag applications. Our OPM sensors systems are robust, reliable, easy to operate, and can measure brain activity with higher precision than has ever been done. Please visit us to learn more about this exciting technology.

flywheel.io . . . . **Booth 16**
United States
flywheel.io
612-223-7359

Founded by researchers for researchers, Flywheel's mission is to empower scientists and clinicians across the globe with an open and extensible platform to capture, manage and analyze their data, and collaborate with other researchers. We deliver unmatched research productivity, accelerate new discoveries, and ensure scientific reproducibility. We give researchers the technology they need to do science not IT.

Gold Standard Phantoms . . . . Booth 36

United Kingdom
https://www.goldstandardphantoms.com
+44 20 76847749
sales@goldstandardphantoms.com

Gold Standard Phantoms provides Calibration and Quality Assurance in MRI, with products particularly interesting for the Brain Mapping community including QASPER, our ASL phantom, and FUNSTAR, our functional stability phantom. Attendees will also be able to join our 'GSP Cloud' for FREE, providing automatic longitudinal Quality Assurance for fMRI.

LOCALITE GmbH . . . . .Booth 18

Germany
www.localite.de/en/home
+49 2241 142174
sales@localite.de

Localite creates unique TMS navigation and planning systems for research and therapy and engages actively in research projects.

Localite's advantage is an open and permeable organization structure from customers and partners through to developers. Cooperation with leading-edge researchers and dynamic development processes allows for fast individual adaptions to customer needs and adherence to cost and delivery dates.

Max Planck Institute for Human Cognitive and Brain Sciences . . . . Booths 39, 44

Germany
www.cbs.mpg.de/en
+49 341 994000

The Max Planck School of Cognition (www.maxplanckschools.de/en/cognition) is a new initiative by the Max Planck Society, German universities and German research organizations. The school offers exceedingly bright students a superior grasp of the various methods and approaches used in the rapidly evolving field of Cognition. The school is comprised of an outstanding and world-renowned cluster of faculty researchers from diverse scientific backgrounds but with overlapping interests. They conduct innovative research in different areas of the broad field of human cognition, such as artificial intelligence, cognitive neuroscience, genetics, linguistics, mathematics, neurobiology, neurology, psychiatry, philosophy, psychology. Fellows of the School of Cognition come from different Max Planck Institutes, universities, the Helmholtz Association and the Fraunhofer-Gesellschaft.

mBrainTrain . . . . Booth 37

Serbia
381 11 4081911
info@mbraintrain.com

mBrainTrain is an innovative technology company, focused on building mobile, wearable devices that measure brain activity by means of electroencephalography (EEG). Starting from 2012, mBrainTrain continuously worked on a mission to develop a fully mobile, wearable devices for recording and utilizing brain activity.

Today, our products are present across 30 countries on 5 continents which contributed to much of the novel scientific work, with SMARTING mobile EEG system leading the way and being (as we often put it) "the choice of pioneers". This year we will go even further with a new innovative product entering the market. It will follow our mission to bring full mobility to the researchers in the world of recording and utilizing brain activity.

The MIT Press . . . . Booth 25

United States
mitpress.mit.edu
617-253-1584

The MIT Press is a leading publisher of distinguished books and journals in partnership with remarkable authors drawn from throughout the global academic community. The Press is recognized for its support of emerging fields, its global reach and its culture of experimentation in digital media.

NIRx Medical Technologies. . . . . Booth 8

United States
nirx.net
612-605-6033

NIRx Medical Technologies is a world-leader in providing integrated solutions for functional Near-Infrared Spectroscopy neuroimaging. Our instruments are capable of fNIRS topographic and tomographic imaging, and come in a full range of wearable, mobile, portable and lab based variants. All functional NIRS systems allow for high density and whole head measurements with, outstanding signal quality. Moreover, NIRx offers dedicated solutions for multi-modal imaging. Our fNIRS instruments can be integrated with EEG (EP, ERP), TMS, tDCS, tACS, MEG, fMRI, eye-tracking, and many other stimulation or measurement devices. With a broad experience ranging from Neurofeedback and BCI research, to Translational Research and Clinical Neurology, and studies involving subject populations ranging from infants and children to adults and elderly, we are a truly scientific company that focuses on research first. Interest to find out if fNIRS can enhance your studies? Come by our booth to see our NIRS instruments in action and chat with one of our Scientific Consultants!

NITRC – NeuroImaging Tools & Resources Collaboratory . . . . Booth 38

United States
www.nitrc.org
202-986-5533

Funded by the NIH, NITRC (NeuroImaging Tools and Resources Collaboratory — www.nitrc.org) freely offers a complete solution to the problem of finding, developing, and sharing neuroimaging and neuroinformatics software tools, finding and sharing large-scale imaging datasets, and manipulating the software and the data in high-performance and cloud computing environments.

NordicNeuroLab . . . . **Booth 29**

Norway
www.nordicneurolab.com
+47 55 70 70 95

With almost two decades of experience, NordicNeuroLab provides products and solutions that define the field of functional MR imaging. From state-of-the-art post-processing and visualization software for BOLD, Diffusion/DTI and Perfusion imaging, to fMRI hardware for audio and visual stimulation, eye-tracking, and patient response collection, NordicNeuroLab products are used around the world by researchers and clinicians alike. Recently we have expanded our range with a new addition to our product family – a solution improving patient comfort and experience during MRI.

We understand the growing need for reliable and innovative tools in the emerging field of fMRI. As a result, we closely collaborate with research and clinical teams from both academic and medical centers, MRI system manufacturers and third-party vendors. Ultimately, we are dedicated to bringing the most advanced neuroimaging tools to market while making functional MRI programs easy to implement.

NordicNeuroLab takes pride in providing excellent service and support for our customers. We offer extensive warranty and service agreements, software maintenance solutions and professional installations and training.

OBELAB . . . . **Booth 23**

Republic Of Korea
www.obelab.com
+82-2-6407-3889

"OBELAB is an integrated solution company specializing in developing functional brain imaging system using fNIRS technology. Its first commercial product, NIRSIT, is a ground-breaking system that provides an unmatched spatial resolution by applying CDMA and TDMA technology and also by leveraging Diffuse Optical Tomography (DOT). The system is wireless, portable and allows collecting data anywhere with minimal set-up time. NIRSIT is being used by researchers around the world from different departments including psychiatry, neurology, rehabilitation, psychology, education, business, sports and etc."

Optoacoustics Ltd. . . . .**Booth 19**

Isreal
www.optoacoustics.com

Optoacoustics is the leader in Active Noise Cancelling audio solutions for fMRI, interventional and clinical MRI and MEG. Optoacoustics' MR-safe optical fiber microphones and headphones provide crisp, clear two-way communications in every environment.

Oxford University Press. . . . . **Booth 28**

United Kingdon
global.oup.com/?cc=us
+44 1865 354704

Oxford University Press is a department of the University of Oxford. It furthers the University's objective of excellence in research, scholarship, and education by publishing worldwide.

Philips Neuro. . . . . **Booth 20**

United States
www.usa.philips.com/healthcare/solutions/neuro
800-722-9377

Philips Neuro is committed to supporting the future of neuroscience research with multimodal neurophysiological platforms and solutions. As the advantages of high density EEG and personalized neuromodulation become increasingly clear, we pledge to serve as your trusted advisor in pursuit of new innovative initiatives. Visit us at booth 20 to discuss your ideas and recommended strategies for pursuing them.

Psychology Software Tools . . . . **Booth 6**

United States
pstnet.com
412-449-0078
sales@pstnet.com

PST - developers of E-Prime® 3.0, the world leading stimulus presentation software. E-Prime and Chronos® deliver millisecond-accurate stimulus presentation, responses, and sound output. PST also manufactures fMRI hardware solutions — Celeritas® Fiber Optic Response System, Hyperion® MRI Digital Projection System, and an MRI Simulator with MoTrak® for head motion tracking.

Resonance Technology, Inc. . . . . **Booths 10, 11**

United States
www.mrivideo.com
818-882-1997

Resonance Technology offers a complete modular state-of-the-art fMRI solution combining functional imaging task presentation with fully automated data processing, eliminating complex, time-intensive manual analysis. VisuaStim Digital with advanced Eye-tracker provides true stereoscopic display with 500,000 pixels per 0.25 square-inch, combined with ultra-realistic digital sound.

Rogue Research Inc . . . . Booths 4, 5
Canada
www.rogue-research.com
1-866-984-3888

Rogue Research, developers of the Brainsight® family of neuronavigation products, has been providing researchers with the best in neuronavigation for TMS and animal neurosurgical systems for over 18 years. Our software is the most widely used neuronavigation tool in the field of neuroscience. Our unique Brainsight NIRS system allows acquisition during TMS and simultaneous fNIRS along with EEG, fMRI or MEG. Brainsight cTMS provides unequalled control of the TMS pulse parameters. More recently, Brainsight Vet and our surgical 6-axis robot extends navigation to small animal neurosurgery. We also have the capacity to design and develop custom hardware solutions for your research needs. Come see how our turnkey solutions can help your research.

Seenel Imaging . . . . Booth 32
France
seenel-imaging.com
0033698424194

Seenel Imaging, spin off of the INSERM & University Hospital, is a company dedicated to Neuroimaging. It provides to Neuroscience Researchers, Medelopt®, a wearable functional multimodal EEG/High Density fNIRS device further to 10 years of Research. Medelopt® provides high quality measurements of changes in oxy and deoxy-haemoglobin simultaneously with electric potentials.

Shenzhen Yingchi Technology Co., Ltd . . Booth 24
China
www.ying-chi.net/en/
400 999 8239

Yingchi specializes in developing and marketing the non-invasive magnetic brain stimulation systems for depression treatment as well as clinical determination and research in the areas of neurophysiology,

Shimadzu . . . . Booth 12
Germany
www.shimadzu.eu
+49(0)203/ 7687-430

Shimadzu is one of the world leaders in analytical and medical instrumentation. The company's systems are essential tools for consumer and product safety in nearly all industrial segments including healthcare, environmental protection and sciences. Specifically in the field of imaging, Shimadzu is providing multimodal techniques like fNIRS or MALDI-MS.

Skope Magnetic Resonance Technologies . . Booth 35
Switzerland
www.skope.swiss
0041 43 500 80 60

Providing MRI data integrity to enable robust, fast and accurate MR imaging, we offer solutions for MRI methods development, MRI in neuroscience and research-oriented neuroradiology.

The Dynamic Field Camera allows precise and powerful insights into the MR system operation to support the MR methods development user. An independent measure of the environment in the scanner bore speeds up prototyping and system development, shortening development cycles

The NeuroCam is a highly integrated brain coil and field probe array, providing a single point, user-friendly solution to acquire sensitive and accurate measures of neural structure and function as required by the high-end imaging user.

Producing consistent, sensitive and reproducible MRI data with our solutions enables you to build a solid foundation to advance your fMRI and diffusion imaging as well as MR methods development.

Do you want to discuss your applications? We look forward to seeing you at the Skope booth.

Soterix Medical Inc . . . . Booth 41
United States
soterixmedical.com
888-990-8327

Soterix Medical is the leader in Noninvasive Electrical Brain Stimulation and introduced High Definition-transcranial Electrical Stimulation (HD-tES), which is the only targeted sub-threshold Neuromodulation technology.HD-tES allows coupling with research-grade monitoring technologies like EEG, MEG, fNIRS, etc. Coupled with Advanced Neurotargeting software which allows the design of optimized and individualized stimulation along with current flow visualization, HD-tES allows customizing stimulation for susceptible populations (stroke, pediatric, etc). Soterix Medical also offers a range of innovative technologies from Transcranial Magnetic Stimulation(TMS), Neuronavigation, EEG, fNIRS, Spinal Cord, Galvanic Vestibular to Animal Stimulation.

SR Research Ltd. . . . . Booth 15
Canada
www.sr-research.com
+1 613-271-8686

SR Research provides a uniform, cutting-edge eye-tracking solution whether for the behavioral lab, MRI/MEG, or other brain imaging environments. A single EyeLink 1000 Plus can be used many unique ways and always outperforms all other video-based eye-trackers, with the highest precision and accuracy around! Start with a high-precision, high-speed eye-tracker in the behavioral laboratory and add binocular head free-to-move tracking. Include fiber optic extensions and the same hardware seamlessly becomes the world's leading MRI or MEG eye-tracker. With outstanding technical specifications, portable options, flexible experiment delivery software, and incredible customer support, SR Research enables academics.

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SOFTWARE DEMONSTRATIONS

SOFTWARE DEMONSTRATIONS
Auditorium Expo

Monday, June 10, 12:45 – 14:45

Station 1 – 1814: A FAIR Approach to Neuroimaging Analysis with Boutiques
Gregory Kiar, McGill University, Montreal, Quebec, Canada

Station 2 – 2618: A Method for Automatic Demarcation of Sulcal and Gyral Regions on the Cortical Surface
Anand Joshi, PhD, University of Southern California, Los Angeles, CA, United States

Station 3 – 4848: A Toolbox for fMRI Co-activation Pattern Analysis: Description and illustration
Thomas Bolton, Ecole Polytechnique Fédérale de Lausanne, Genève, Switzerland

Station 4 – 4420: Advancements in the CBRAIN Platform through the Integration of Community-based Tools and Standards
Shawn Brown, PhD., McGill University, McGill Centre for Integrative Neuroscience, Montreal, QC, Canada

Station 5 – 5425: AUTOMAGIC: Standardized Preprocessing of Big EEG Data
Nicolas Langer, University of Zurich, Zurich, Switzerland

Station 6 – 4300: Automated Online Code Generation for Training and Testing Machine Learning Models Using PHOTON
Ramona Leenings, University Hospital Muenster Core Unit Machine Learning in Psychiatry, Muenster, Germany

Station 7 – 2274: BIDScoin: An easy toolkit to convert your data according to the Brains Imaging Data Standard (BIDS)
Marcel Zwiers, Donders Institute for Brain, Cognition and behavior, Nijmegen, Gelderland, Netherlands

Station 8 – 3577: Biomedical imaging ANAlysis iN Arcana (Banana): Collaborative development of analysis workflows
Thomas Close, Monash University, Chadstone, Victoria, Australia

Station 9 – 4632: BrainX3: A tool for multi-modal data integration and visualization
Antoni Gurgui, IBEC, Barcelona, Spain

Tuesday, June 11, 12:45 – 14:45

Station 1 – 3169: Clustering the Brain with "CluB": A new toolbox for quantitative meta-analysis of neuroimaging data
Manuela Berlingeri, Prof.ssa, University of Urbino Carlo Bo Department of Humanistic Studies, Urbino, Italy

Station 2 – 2626: Cortical Parcellation using Surface-based Melbourne Children's Regional Infant Brain Atlases
Christopher Adamson, Phd, Murdoch Childrens Research Institute Developmental Imaging, Parkville, VIC, Australia

Station 3 – 3426: DMRIprep: A robust, scalable preprocessing pipeline for diffusion MRI
Adam Richie-Halford, University of Washington, Seattle, WA, United States

Station 4 – 3123: FitLins: Reproducible model estimation for fMRI
Christopher Markiewicz, PhD, Stanford University Psychology, Stanford, CA, United States

Station 5 – 4714: FMRIflows: A consortium of fully automatic univariate and multivariate fMRI processing pipelines
Michael Notter, The Laboratory for Investigative Neurophysiology (The LINE), Department of Radiology, CHUV, Villars-le-Terroir, Schweiz, Switzerland

Station 6 – 2403: GiraffeTools: A web application for interactive data analysis
Tim van Mourik, Donders Institute, Nijmegen, Netherlands

Station 7 – 1713: Interactive Tool for Visual Quality Control of Cortical Parcellations
Deydeep Kothapalli, University of Southern California, Marina del Rey, CA, United States

Station 8 – 3814: LISA as a General Tool for Statistical Inference in fMRI
Gabriele Lohmann, Max Planck Institute for Biological Cybernetics, Tuebingen, Germany

Station 9 – 3819: Mask Explorer and Movement Info: User friendly tools for fMRI quality control
Martin Gajdoš, CEITEC Masaryk University, Brno, Czech Republic

Station 10 – 4591: MegaTrack Atlas: An online tool for visualisation of large tractography datasets and lesion analysis
Richard Stones, PhD, King's College London, London, United Kingdom

Wednesday, June 12, 12:45 – 14:45

Station 1 – 1418: MicroLearn: Framework for machine learning, reconstruction and microstructure modeling
Shreyas Fadnavis, Indiana University Bloomington, Intelligent Systems Engineering, Bloomington, IN, United States

Station 2 – 1586: Neuroimaging PheWAS: A free cloud computing platform for big brain-wide imaging association studies
Lu Zhao, University of Southern California, Los Angeles, CA, United States

Station 3 – 2447: Nideconv: A Python package for hierarchical, Bayesian linear deconvolution of neural signals
Gilles de Hollander, Vrije Universiteit Amsterdam, Experimental and Applied Psychology, Amsterdam, Netherlands

Station 4 – 4590: Notizia dell'AFNI: Even easier FMRI QC, with afni_proc.py's automatic HTML review
Paul Taylor, NIMH, Bethesda, MD, United States

Station 5 – 3114: Notizia dell'AFNI: Meet afni_proc.py – Your New Best Friend
Robert Cox, PhD, NIMH/NIH/DHHS/USA, Bethesda, MD, United States

Station 6 – 3684: One Thing to Bind Them All: A complete RAW data structure for auto-generation of BIDS datasets
Benjamin Poldrack, Institute of Neuroscience and Medicine, Brain & Behaviour (INM-7), Research Centre Jülich, Jülich, Germany

Station 7 – 2320: PyActigraphy, a Comprehensive Toolbox for Actigraphy Data Analysis
Grégory Hammad, University of Liège, GIGA-CRC In Vivo Imaging, Liège, Belgium

Station 8 – 1207: PyParadigm – A Python Library to Create Paradigms
Felix Knorr, TU Dresden, Psychiatry and Psychotherapy Dresden, Saxony, Germany

Station 9 – 4860: QDECR: A flexible, extensible vertex-wise analysis framework in R
Sander Lamballais, Erasmus MC University Medical Center Rotterdam, Rotterdam, Netherlands

Station 10 – 4068: QFib: Fast and accurate compression of white matter tractograms
Sylvain Rousseau, Telecom ParisTech, Paris, France

Thursday, June 13, 12:45 – 14:45

Station 1 – 2124: Rapid Acceleration of the Permutation Test via Slow Random Walks in the Permutation Group
Moo Chung, University of Wisconsin, Madison, WI, United States

Station 2 – 5128: Real-time fMRI Motion Tracking: Should I stop and restart the scan?
Nathalia Esper, PUCRS, Porto Alegre, Rio Grande do Sul, Brazil

Station 3 – 1907: RtQC: An open-source toolbox for real-time fMRI quality control (live software presentation at OHBM)
Stephan Heunis, Department of Electrical Engineering, Eindhoven, Netherlands

Station 4 – 2808: SimNIBS 3: Simulation, optimization and uncertainty quantification for transcranial brain stimulation
Guilherme Bicalho Saturnino, Technical University of Denmark, Kgs. Lyngby, Denmark

Station 5 – 5191: Simulated TMS-EEG Biofeedback Using Automated Neural Architecture Search and Transfer Learning
Scott Heston, BSCS Candidate 2020, Georgia Institute Of Technology, Atlanta, GA, United States

Station 6 – 5375: Spatial Normalization in fMRIPrep
Oscar Esteban, Stanford University Psychology, Stanford, CA, United States

Station 7 – 4977: SwipesForScience: An open source gamified citizen science framework for scalable data annotation
Anisha Keshavan, PhD, University of Washington, Seattle, WA, United States

Station 8 – 4293: Tedana: Robust and extensible software for multi-echo denoising
Elizabeth DuPre, Montreal Neurological Institute, Montreal, Canada

Station 9 – 1088: The Effect of Sample Size on Brain Template Variability
Guoyuan Yang, Center for MRI Research, Peking University, Beijing, China

POSTER CATEGORIES

Disorders of the Nervous System: Autism (M001-M060), Research Domain Criteria studies (RDoC) (M061-M064), Schizophrenia and Psychotic Disorders (M065-M155), Sleep Disorders (M156-M159), Stroke (M160-M210), Traumatic Brain Injury (M211-M246)

Emotion and Motivation: Emotion and Motivation Other (M247-M278), Emotional Learning (M279-M285), Emotional Perception (M286-M321), Reward and Punishment (M322-M339), Sexual Behavior (M340-M346)

Imaging Methods: MEG (M347-M400), MR Spectroscopy (M401-M414)

Modeling and Analysis Methods: Classification and Predictive Modeling (M415-M527), fMRI Connectivity and Network Modeling (M528-M774), Methods Development (M775-M871), Multivariate modeling (M872-M897)

TUESDAY POSTER CATEGORIES

Disorders of the Nervous System: Anxiety Disorders (T001-T015), Eating Disorders (T016-T027), Medical illness with CNS impact (e.g. chemotherapy, diabetes, hypertension) (T028-T043, Obsessive-Compulsive Disorder and Tourette Syndrome (T044-T055), Other Psychiatric Disorders (T056-T-79)

Imaging Methods: Anatomical MRI (T080-T168), Diffusion MRI (T169-T233)

Language: Language Acquisition (T234-T243), Language Comprehension and Semantics (T244-T278), Language Other (T279-T284, Reading and Writing (T285-T317), Speech Perception (T318-T347)

Lifespan Development: Aging (T348-T430), Lifespan Development Other (T431-T453), Normal Brain Development: Fetus to Adolescence (T454-T537)

Modeling and Analysis Methods: Bayesian Modeling (T538-T550), Segmentation and Parcellation (T551-T597), Task-Independent and Resting-State Analysis (T598-T651)

Perception and Attention: Attention: Auditory/Tactile/Motor (T652-T565), Attention: Visual (T566-T694), Chemical Senses: Olfaction, Taste (T695-T698), Consciousness and Awareness (T699-T730), Perception and Attention Other (T731-T734), Perception: Auditory/ Vestibular (T735-T757), Perception: Multisensory and Crossmodal (T758-T769), Perception: Pain and Visceral (T770-T805), Perception: Tactile/Somatosensory (T806-T818), Perception: Visual (T819-T881), Perception: Sleep and Wakefulness (T882-898)

WEDNESDAY POSTER CATEGORIES

Disorders of the Nervous System: Addictions (W001-W048), Alzheimer's Disease and Other Dementias (W049-W160), Epilepsy (W161-W208, Parkinson's Disease and Movement Disorders (W209-W278)

Genetics: Genetic Association Studies (W279-W297), Genetic Modeling and Analysis Methods (W298-W305), Genetics Other (W306-W311), Neurogenetic Syndromes (W312-W320), Transcriptomics (W321-W328)

Imaging Methods: BOLD fMRI (W329-W507), Multi-Modal Imaging (W508-W542)

Informatics: Brain Atlases (W543-W573), Databasing and Data Sharing (W574-W595), Informatics Other (W596-W609), Workflows (W610-W638)

Learning and Memory: Implicit Memory (W639-W640), Learning and Memory Other (W641-W562), Long-Term Memory (Episodic and Semantic) (W563-W687), Neural Plasticity and Recovery of Function (W688-W711), Skill Learning (W712-722), Working Memory (W723-W757)

Modeling and Analysis Methods: Diffusion MRI Modeling and Analysis (W758-W811), EEG/MEG Modeling and Analysis (W812-W863)

Physiology, Metabolism and Neurotransmission: Cerebral Metabolism and Hemodynamics (W864-W881), Neurophysiology of Imaging Signals (W882-W893), Pharmacology and Neurotransmission (W894-W902), Physiology, Metabolism and Neurotransmission Other (W903-W906)

THURSDAY POSTER CATEGORIES

Brain Stimulation Methods: Deep Brain Stimulation (Th001-Th007), Direct Electrical/Optogenetic Stimulation (Th008-Th012), Invasive Stimulation Methods Other (Th013-Th015), Non-invasive Electrical/tDCS/tACS/tRNS (Th016-Th037), Non-invasive Magnetic/TMS (Th038-Th060), Non-Invasive Stimulation Methods Other (Th061-Th071), Sonic/Ultrasound (Th072-Th074), TDCS (Th075-Th094), TMS (Th095-Th120)

Disorders of the Nervous System: Bipolar Disorder (Th121-Th131), Depressive Disorders (Th132-Th201), Disorders of the Nervous System Other (Th202-Th255)

Higher Cognitive Functions: Decision Making (Th256-Th294), Executive Function (Th295-Th334), Higher Cognitive Functions Other (Th335-Th359), Imagery (Th360-Th367), Music (Th368-Th393), Reasoning and Problem Solving, Space (Th394-Th396), Time and Number Coding (Th397-Th413)

Imaging Methods: EEG (Th414-Th482), Imaging Methods Other (Th483-Th496), Imaging of CLARITY (Th497-Th498), NIRS (Th499-Th527), Non-BOLD fMRI (Th528-Th537), Optical coherence tomography (OCT) (Th538), PET (Th539-Th548), Polarized light imaging (PLI) (Th549)

Modeling and Analysis Methods: Exploratory Modeling and Artifact Removal (Th550-Th555), Image Registration and Computational Anatomy (Th556-Th569), Motion Correction and Preprocessing (Th570-Th587), Other Methods (Th588-Th593), PET Modeling and Analysis (Th594-Th595), Univariate Modeling (Th596-Th601)
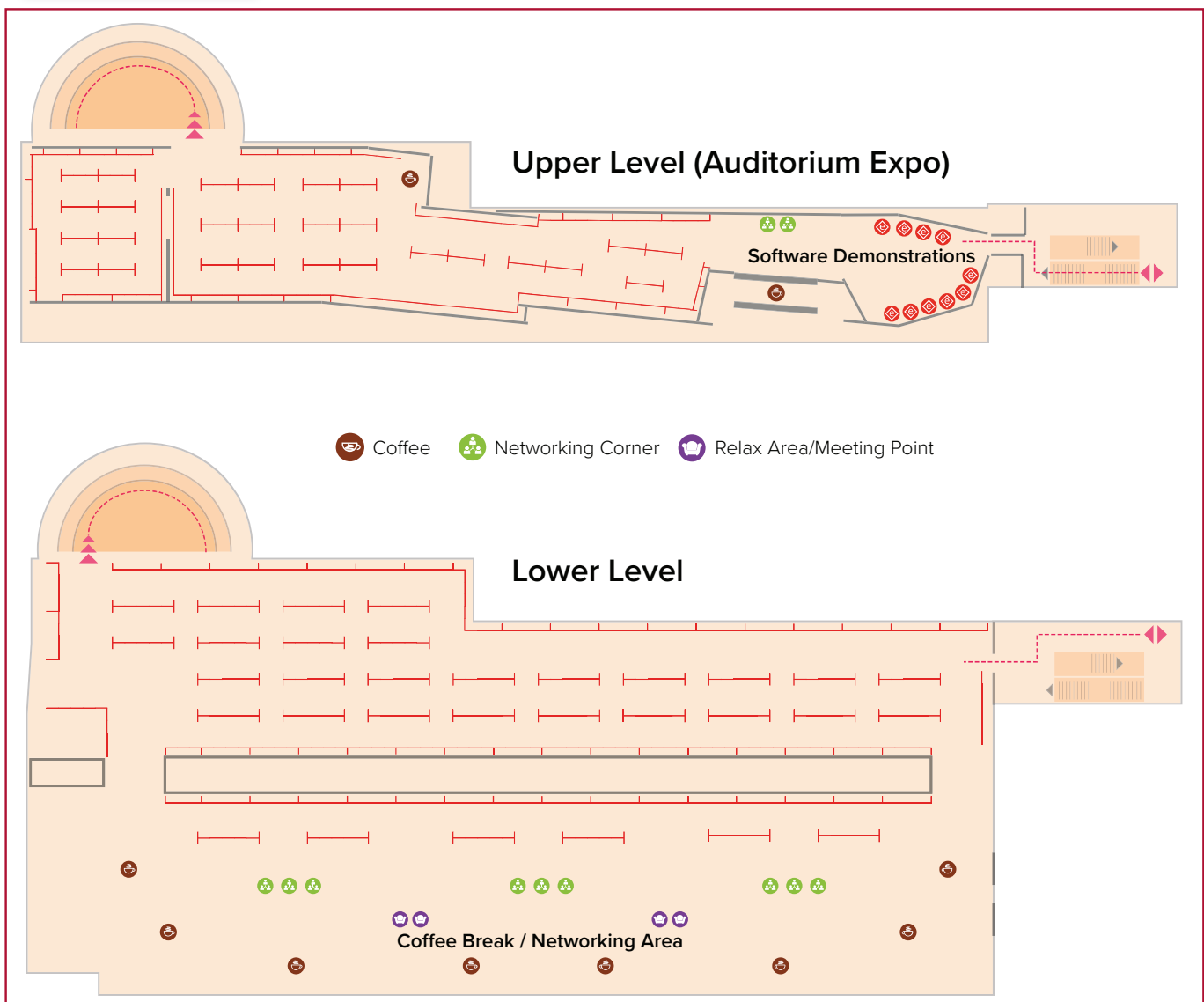
Motor Behavior: Brain Machine Interface (Th602-Th610), Mirror System (Th611-Th619), Motor Behavior Other (Th620-Th627), Motor Planning and Execution (Th628-Th647), Visuo-Motor Functions (Th648-Th657)

Neuroanatomy: Anatomy and Functional Systems (Th658-Th670), Cortical Anatomy and Brain Mapping (Th671-Th706), Cortical Cyto- and Myeloarchitecture (Th707-Th713), Normal Development (Th714-Th723), Subcortical Structures (Th724-Th742), Transmitter Receptors (Th743-Th746), White Matter Anatomy, Fiber Pathways and Connectivity (Th747-Th805)

Social Neuroscience: Self Processes (Th806-Th819), Social Cognition (Th820-Th854), Social Interaction (Th855-Th886), Social Neuroscience Other (Th887-Th905)

Please note the map is not to scale and is subject to minor changes as posters are withdrawn.

2019 OHBM Poster Display Area

ACKNOWLEDGEMENTS

Accredit	1	Auditorium Arte
	2	S.Cecilia Hall
	3	Sinopoli Hall
	4	Petrassi Hall
	5	Theatre Studio
	6	Chorus Hall
Poster Area	7	Garage ground floor
	8	Auditorium Expo
	9	S.Cecilia Foyer
	10	Archeological Foyer
Wardrobe	11	S.Cecilia wardrobe
	12	Sinopoli Foyer
	13	Resonance Hall
	14	Petrassi Foyer
Hexibition Area	15	Ticket office Foyer
Info Point	16	Sinopoli wardrobe
Networking Area	17	Petrassi wardrobe
Internet Point	18	Guest Hall
Internet Point NetWorking Area	19	Studios 1.2.3
	20	Musa Hall
	21	Press Lounge
	22	Press Room
	23	Conference Room
	24	Ludoteca
	25	Artist Corner

Organization for Human Brain Mapping
Please join us at our future meetings!

26th Annual Meeting
Montreal, Canada
June 25-29, 2020

27th Annual Meeting
Seoul Korea
June 24-28, 2021

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