Prenatal Stress and Brain Disorders in Later Life
Dear Friends and Colleagues,

We warmly welcome you to the Symposium “Prenatal Stress and Brain Disorders in Later Life”. The venue for the Symposium is the Seehotel Zeuthen situated in a lovely lake landscape on the southern outskirts of Berlin.

This symposium is the first of its kind specifically focusing on the impact of prenatal stress on programming brain function during later life with a particular emphasis on brain development and ageing. At the symposium, the latest research results and future strategies in this field will be discussed by leading experts. The scientific programme reflects the multidisciplinary character of basic, clinical, and programmatic research in this exciting field. This international gathering offers a remarkable opportunity for sharing knowledge, new findings and best practices to accelerate research advances. It will allow a better insight into the impact of prenatal stress for health and disease in our ageing population that will ultimately enable implementation of interventional strategies.

Supplementing the symposium is a summer school. This will give advanced bachelor, master and PhD students of medicine, psychology, biology, epidemiology and related disciplines an opportunity to acquire knowledge and skills for basic, animal, and clinical research in the field. The summer school will take place at the University Hospital in Jena, a town with a unique combination of a beautiful setting, strong cultural and philosophical traditions, high-tech industry and world-renowned research institutions.

We look forward to an exciting meeting in Berlin and in Jena!

Yours sincerely,

Matthias Schwab
Otto W. Witte

www.brain-age.eu
email: prenatalstress2015@brain-age.eu
Invited speakers

Bea van den Bergh, Tilburg, The Netherlands
Katharina Braun, Magdeburg, Germany
Thorsten Braun, Berlin, Germany
Sonja Entringer, Berlin, Germany
Dirk Hoyer, Jena, Germany
Suzanne King, Montreal, Canada
Stephen Matthews, Toronto, Canada
Gerlinde Metz, Lethbridge, Canada
Peter Nathanielsz, Laramie, WY, USA
Carmine Pariante, London, UK
Katri Räikkönen, Helsinki, Finland
Johannes Reul, Bristol, UK
Tessa Roseboom, Amsterdam, The Netherlands
Sven Rupprecht, Jena, Germany
Matthias Schwab, Jena, Germany
Jonathan Seckl, Edinburgh, UK
Dick Swaab, Amsterdam, The Netherlands
Moshe Szyf, Montreal, Canada

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Symposium programme

“Prenatal Stress and Brain Disorders in Later Life”

September 20-22, 2015, Berlin

Venue: Seehotel Zeuthen, Berlin, Germany

Sunday, September 20, 2015

12:00-13:00  Arrival and registration

13:00  Opening remarks
       Matthias Schwab

Stress and brain function
   Chairs: Peter Nathanielsz and Katharina Braun

13:15-14:00  Postmortem studies in mood disorders
            Dick Swaab, Amsterdam

14:00-14:45  Stress, glucocorticoid receptor function and neuropsychiatric disease
            Carmine Pariante, London

14:45-15:30  11ß-HSD: The neuronal intracellular gate keeper to glucocorticoid action
            Jonathan Seck, Edinburgh

15:30-16:00  Coffee break
Prenatal stress and vulnerability to disease  
Chairs: Tessa Roseboom and Johannes Reul  
16:00-16:45 Prenatal stress, telomere biology and programming of health and disease in later life  
Sonja Entringer, Berlin  
16:45-17:30 How does early life shape human brain function – an epigenetic perspective  
Moshe Szyf, Montreal  
17:30-18:15 Using natural disasters to study prenatal maternal stress in humans  
Suzanne King, Montreal  
18:15-19:00 Long-term behavioural consequences of prenatal stress  
Katri Räikkönen, Helsinki  
20:00 Welcome dinner  

Monday, September 21, 2015  

Prenatal stress and brain function in later life – focus on humans  
Chairs: Bea van den Bergh and Suzanne King  
09:00-09:45 Prenatal stress and neurocognitive function in children  
Bea van den Bergh, Tilburg  
09:45-10:30 Prenatal stress and development of autonomic function  
Dirk Hoyer, Jena  
10:30-11:15 Vulnerable periods during pregnancy for early ageing  
Tessa Roseboom, Amsterdam  
11:15-11:45 Coffee break  

Prenatal stress and brain function in later life – focus on models  
Chairs: Otto Witte and Jonathan Seckl  
11:45-12:30 Effects of prenatal stress on fetal brain development  
Matthias Schwab, Jena
12:30-13:15 Vulnerability and resilience: adaptation to early-life adversity
Stephen Matthews, Toronto

13:15-14:15 Lunch break

14:15-15:00 Prenatal stress and long-term outcome in non-human primates
Peter Nathanielsz, Laramie

15:00-15:45 Prenatal stress and cerebrovascular disease in later life
Sven Rupprecht, Jena

15:45-16:30 Transgenerational effects of prenatal stress
Gerlinde Metz, Lethbridge

16:30-17:00 Coffee break

Mechanisms of long-term behavioural consequences of prenatal stress
Chairs: Stephen Matthews and Moshe Szyf

17:00-17:45 Prenatal stress and placental function
Thorsten Braun, Berlin

17:45-18:30 Mineralocorticoid and glucocorticoid receptor control of HPA axis and brain function
Johannes Reul, Bristol

18:30-19:15 Perinatal programming of brain circuits: from systems to molecules
Katharina Braun, Magdeburg

20:00 BBQ dinner
Tuesday, September 22, 2015

08:00-09:15  Breakfast with invited speakers

Results from the collaborative EU FP7 Research Project “BrainAge”

Human studies
Chairs: Katri Räikkönen and Sonja Etringer

09:30-09:45  Project overview
Matthias Schwab, Jena

09:45-10:00  The Dutch Hunger Winter cohort – prenatal stress and ageing
Tessa Roseboom, Amsterdam

10:00-10:15  Prenatal stress and behaviour in infants
Marion van den Heuvel, Tilburg

10:15-10:30  Prenatal stress and cognitive function at early school age
Matthias Schwab, Jena

10:30-10:45  A novel approach to determine cognitive function
Steffen Kluckow, Jena

10:45-11:00  Coffee break

11:00-11:15  Quantification of structural brain age using MRI
Christian Gaser, Jena

11:15-11:30  Prenatal stress and early structural brain ageing
Katja Franke, Jena
Animal studies
Chairs: Gerlinde Metz and Dick Swaab

11:30-11:45 Glucocorticoid-independent stress transfer from mother to fetus
Florian Rakers, Jena

11:45-12:00 Moderate prenatal nutritional stress and long-term outcomes in non-human primates
Peter Nathanielsz, Laramie

12:00-12:15 Vulnerable periods for stress during pregnancy
Christoph Bergmeier, Jena

12:15-12:30 Behavioural consequences of prenatal stress – manifestation in relation to age
Christoph Bergmeier, Jena

12:30-12:45 Interventions to modify cerebrovascular disease following prenatal stress
Sven Rupprecht, Jena

12:45-13:30 Lunch break

Mechanisms
Chairs: Carmine Pariante and Matthias Schwab

13:30-13:45 Genetic changes following prenatal stress
Juan Camilo Estrada, Madrid

13:45-14:15 Epigenetic changes following prenatal stress
Matthias Platzer, Jena

14:15-14:30 Metabolomic changes following prenatal stress
Guido Krebiehl, Innsbruck

14:30-14:45 Stress and glucocorticoid signalling
Jan Tuckermann, Ulm

14:45-15:00 Coffee break

15:00-16:30 Discussion of future directions

Farewell

Transportation of summer school attendees to Jena (2.5h)
Summer school programme

“Prenatal Stress and Brain Disorders in Later Life”

September 22-24, 2015, Jena

Target group:
Advanced Bachelor students, Master and PhD students of medicine, psychology, biology, epidemiology and related fields
Venue: Jena University Hospital, Jena, Germany

Tuesday, September 22, 2015

20:30 Internal BrainAge consortium meeting followed by dinner at the “Landgraf”, Jena
Dinner at the restaurant “Gatto Bello”, Jena for summer school attendees

Wednesday, September 23, 2015

09:00-09:45 Molecularbiology of glucocorticoid receptor function
Jan Tuckermann, Ulm
09:45-10:30 Interactions between the stress axis and the immune system
Sabine Hübner, Ulm
10:30-10:45 Coffee break
10:45 - 18.00 Human research class and Animal research class (for programme see following pages)
18:00 Walk and dinner at the Lobdeburg
Human research class

**Epidemiological studies**

- **10:45-11:30** Planning a human cohort study  
  Tessa Rooseboom, Amsterdam
- **11:30-12:15** Conducting a human cohort study  
  Sven Rupprecht, Jena
- **12:15-13:15** Lunch break

**Assessment of human brain function**

- **13:15-13:45** Event-related potentials in infants and young children  
  Marion van den Heuvel, Tilburg
- **13:45-14:15** Linear and nonlinear EEG analysis  
  Karin Schiecke, Jena
- **14:15-14:45** Analysis of autonomic nervous function  
  Dirk Hoyer, Jena
- **14:45-15:45** How to assess stress reactivity?  
  - Stress reactivity in children  
    Steffen Kluckow, Jena  
  - Stress reactivity in adults  
    Susanne de Rooij, Amsterdam

- **15:45-16:15** Coffee break

- **16:15-17:15** How to assess neurocognitive function?  
  - The NIH toolbox: Neurocognitive assessment from ages 3 to 85  
    Bea van den Bergh, Tilburg

- **17:15-18:00** Cerebral information capacity as an innovative approach to assess neurocognitive function (hands-on testing)  
  Steffen Kluckow, Jena
Animal research class

Animal welfare regulations
10:45-11:30 EU animal welfare regulations for animal experimentation
Harald Schubert, Jena

Animal models for prenatal stress
11:30-12:15 Rodent models of prenatal stress
Christoph Bergmeier, Jena

12:15-13:15 Lunch break

13:15-14:00 Insights into fetal development: The chronically instrumented fetal sheep
Matthias Schwab, Jena
14:00-14:45 Bridging rodents and humans: Non-human primates
Peter Nathanielsz, Laramie

Assessment of long-term effects of prenatal stress
14:45-15:30 Assessment of stress response in rodents
Christoph Bergmeier, Jena
15:30-16:15 Assessment of neurocognitive function in rodents
Gerlinde Metz, Lethbridge

16:15-16:45 Coffee break

16:45-18:00 Stress response in rodents (hands-on testing)
Christoph Bergmeier, Jena
Neurocognitive function in rodents (hands-on testing)
Gerlinde Metz, Lethbridge
Thursday, September 24, 2015

Research funding and grant proposal
09:00-09:45 Short guide to EU funding for research and innovation
Nasim Kroegel, Jena
09:45-10:30 Short guide to writing a successful grant proposal
Mareile Knees, Jena
10:30-10:45 Coffee break

Stress hormones, genetics and epigenetics
10:45-11:30 Hints and pitfalls in stress hormone and cytokine measurements
Christoph Bergmeier, Jena
11:30-12:15 Epigenetics: Measurement of DNA methylation
Matthias Platzer, Jena
12:15-13:00 Epigenetics: LINEs and the brain
Klaus Huse, Jena
13:00-14:00 Lunch break
14:00-14:45 Potentials and limits of telomere length estimation
Juan Camilo Estrada, Madrid

Structural and functional MRI measures
14:45-15:30 The BrainAge Score
Katja Franke, Jena
15:30-16:15 fMRI and MRI resting state
Carsten Klingner, Jena
16:15-16:45 Final discussion
Coffee and departure
Speaker affiliations

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Christoph Bergmeier, Dept. of Neurology, Jena University Hospital, Germany  
Katharina Braun, Center for Behavioral Brain Sciences, Otto von Guericke University, Magdeburg, Germany  
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Juan Camilo Estrada, Life Length, Madrid, Spain  
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Klaus Huse, Leibniz-Institute of Age Research, Jena, Germany  
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Mareile Knees, Research Center Service and Transfer, Friedrich Schiller University, Jena, Germany  
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Gerlinde Metz, Dept. of Neuroscience, Canadian Centre for Behavioural Neuroscience, University of Lethbridge, Canada  
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Harald Schubert, Inst. of Animal Science and Welfare, Jena University Hospital, Germany  
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Jonathan Seckl, Queen's Medical Research Institute, University of Edinburgh, UK  
Dick Swaab, Netherlands Institute for Neuroscience, KNAW, Amsterdam, The Netherlands  
Moshe Szyf, Dept. of Pharmacology & Therapeutics, McGill University, Montreal, Canada  
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Registration

Symposium
Registration fee including all meals, coffee --------------------------------- 250,- €
Registration fee including all meals, coffee and accommodation in a single room -------- 390,- €
Registration fee including all meals, coffee and accommodation in a double/twin room ------- 350,- €

Summer school
Transportation from Berlin to Jena by bus ---------------------- 30,- €
Registration fee including all meals, coffee ---------------------- 200,- €
Accommodation in a single room for two nights ------------------ 142,- €
Accommodation in a double/twin room for two nights / p.p. ------ 85,- €

Registration deadline for hotel accommodation: Friday, 04 September, 2015
For registration visit: www.brain-age.eu/registration

Layout: www.designring.de
Symposium venue

Seehotel Zeuthen, Fontaneallee 27, 15738 Zeuthen, Berlin, Germany  
http://www.seehotel-zeuthen.de

The Seehotel Zeuthen is located directly on the shore of the lovely Lake Zeuthen on the southern outskirts of Berlin.

How to get to the venue:

By train

Suitable long distance train stations are Berlin Südkreuz (most convenient) and Berlin Hauptbahnhof.
From Berlin Hauptbahnhof take any regional train from the lower level direction south to Berlin Südkreuz station.
From Berlin Südkreuz station take the S-Bahn line S46 towards Königs Wusterhausen to Zeuthen station*.

By air

From Airport Berlin Tegel take either Bus X9 or 109 to Jungfernheide, change to S-Bahn line S42 to Berlin Westkreuz station, change to S-Bahn line S46 direction Königs Wusterhausen to Zeuthen station*.
Alternatively from Airport Tegel take a taxi directly to Seehotel Zeuthen. The price from Airport Tegel is approximately 70 € with the taxi operator Thomas Schulze, phone: +49(0)172/90 88 21 4 or email: taxikablow@aol.com.

*From Airport Berlin Schönefeld take either S-Bahn line S 9 or S45 to Adlershof station, change to S-Bahn line S8 or S46 to Zeuthen station.
Alternatively Airport Berlin Schönefeld take a taxi directly to Seehotel Zeuthen. The price from Airport Schönefeld is approximately 30 € with the taxi operator Thomas Schulze, phone: +49(0)172/90 88 21 4 or email: taxikablow@aol.com.

*From Zeuthen station you can be picked up by the complimentary shuttle service which runs from 08:00 to 22:00 daily. Phone: +49(0)33762890.

Accommodation

Rooms at the venue.
Summer school venue

Jena University Hospital, Erlanger Allee 101, 07747 Jena, Germany

How to get to Jena and to the venue:

By train

From Frankfurt: At Frankfurt Airport take the Intercity Express (ICE) train to Weimar (travel time about 3 hours). From Weimar take the regional train to Jena West. For train connections and timetables use the homepage www.bahn.de. You also can buy tickets online.

From Berlin: From Berlin Tegel Airport (TXL) take the bus to Berlin Hauptbahnhof (Berlin main station). From Berlin Schönefeld Airport (SXF) take the S-Bahn to Berlin Südkreuz train station. From there take a direct Intercity Express (ICE) train to Jena Paradies station. From the city centre take the tramline 5 direction Lobeda Ost to station Platanenstrasse and cross the road to the University Hospital.

Accommodation

Rooms have been booked at the Maxx Hotel Steigenberger in Jena. www.maxx-jena.hotel.de. Take tramlines 1 or 4 from the train station Jena-Paradies or city centre to Lobeda West.

Jena www.jena.de

Jena is attractively situated in the picturesque landscape of the Saale Valley and surprises visitors with an almost Mediterranean flair. It is one of the most popular university and college cities in Central Germany and has an outstanding reputation as a high-tech centre. Jena is an old university town and its 25,000 students make a great contribution to the Jena’s lively cultural scene and night life.

The reformator Martin Luther visited Jena at least eleven times between 1522 and 1537. During his visits, he often stayed at the Hotel “Schwarzer Bär” where you can still dine in the same rooms as Luther did.

Jena was also one of the most significant venues for Goethe and Schiller, Germany’s most famous poets. It was in Jena where Goethe’s fruitful cooperation with Schiller began. In Jena, Goethe also discovered the intermaxillary bone in humans. Schiller spent more time living in Jena than in any other city and wrote many of his most important works here, e.g. sections of Maria Stuart. A delightful place to visit is the church where Friedrich Schiller and Charlotte von Lengefeld were married in 1790. Goethe and Schiller together with Fichte, Hegel, Feuerbach, Schelling, Hufeland and the circle of Early Romantics including Tieck, the brothers August Wilhelm and Friedrich Schlegel formed an intellectual and cultural centre in Jena between 1798 and 1804.

The original student fraternity, the “Urburschenschaft” was formed in the city in 1815. Jena is also best known for the renowned Carl Zeiss works that manufacture the world famous microscopes and optical instruments founded here in the 19th century by Carl Zeiss together with Ernst Abbe and Otto Schott.
Sights near Jena

**Weimar** lies 20km west of Jena, a distance of 20 min by train. Weimar is a city rich in palaces and parks, museums and monuments, and was home to many famous poets and composers; the list of Weimar’s sights and famous historical persons is impressive. Weimar has three entries in UNESCO’s World Heritage List: Classical Weimar, the Bauhaus and Goethe’s handwritten manuscripts.

The Weimar Classic period ran from 1775-1832, which was when Goethe lived and worked in this small town. Apart from Johann Wolfgang Goethe, Friedrich Schiller, Christoph Martin Wieland and Johann Gottfried Herder contributed to the Weimar Classic period. Several famous artists and composers such as Lukas Cranach, Franz Liszt, Johann Sebastian Bach, and Richard Strauss lived in Weimar.

The Bauhaus School of architecture introduced revolutionary ideas of architecture, building and town planning between 1919 and 1933. The buildings by various Bauhaus professors including Walter Gropius, Hannes Meyer, Laszlo Moholy-Nagy and Wassily Kandinsky established the Bauhaus Style, which decisively shaped the architecture of the 20th century.

The top sights include Goethe’s Home, Goethe’s Garden House, Schiller’s Home, Franz Liszt’s Home, Friedrich Nietzsche’s Home, the Bauhaus Museum, the German National Theatre and palaces, for instance, the Wittumspalais, The Historical Library, Roman House, Belvedere Castle, Tiefurt Mansion and the Ettersburg Palace.

**Erfurt**, the capital of Thuringia, lies 50 km west of Jena, a journey of 30 min by train. Martin Luther once wrote, Erfurt „is ideally situated. There just has to be a city on a spot like this.” Many others agree that Erfurt is a charming city with magnificent examples of German Gothic architecture and a well preserved middle-aged city centre. The Krämerbrücke (Merchants’ Bridge) for instance is Erfurt’s most interesting example of secular architecture. This arched stone bridge, constructed in 1325, is the only bridge north of the Alps to be built over entirely with houses that are still used as residences.

**Eisenach** is picturesquely situated at the foot of the Wartburg Castle. The rich cultural tradition of the city is closely associated with Luther and Bach. The Bach House is the birthplace of Johann Sebastian Bach, the famous baroque composer. Wartburg Castle is one of Germany’s most famous and most popular castles and has been placed on the UNESCO World Cultural Heritage list since 1999. Martin Luther, who was excommunicated by the pope, sought refuge at the Wartburg Castle. In only 10 weeks he translated the New Testament from the original Greek texts into German.
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