LMU

LUDWIG-
MAXIMILIANS-
UNIVERSITÄT
MÜNCHEN

LMU-ChAN SCIENTIFIC FORUM 2023 RE:SEARCH

Munich, 6 – 10 November 2023

LMU Munich

Peking University

Nanjing University

Shanghai Jiao Tong University

Sun Yat-sen University

Fudan University

Zhejiang University

Tongji University

The University of Hong Kong

Renmin University

The Chinese University of Hong Kong

Tsinghua University

Multifunctional drug delivery systems

Climate Risks and resilience in socio-ecosystems

Goethe, die Weimarer Klassik und die deutsch-chinesischen Literaturbeziehungen

Geophysical highlights and transformations from the core to the magnetosphere

The brain tumor micro-environment as a therapeutic target

China and Europe: Philosophies in comparison and civilizations in dialogue

PDT – a concept for One World One Health

Re: Transformations in Environment and Society

It is finally time to RE:connect in person, RE:flect on transformations and new perspectives. How do we want to RE:start our cooperation? The **LMU-ChAN Scientific Forum** provides an opportunity to "RE:search".

The Scientific Forum is a central element of the **LMU – China Academic Network (ChAN)**. Aim of the interdisciplinary conference is to support scientists to initiate and extend existing contacts and interactions within the LMU-China Academic Network.

The intention of this event is to identify common research interests and lay the foundation for new joint research projects.

During the Scientific Forum in Munich researchers from LMU have the opportunity to work together with their colleagues from the ChAN partner universities in a broad variety of subject-specific formats, such as workshops, panel discussions, work meetings, visits of institutes, guest lectures etc. These individual formats are submitted in the call below by two principal investigators and include the proposal of further researchers planned to participate in these activities.

The activities of these subject-specific groups are complemented by plenary keynotes and information sessions. Networking events offer excellent opportunities to meet colleagues and share experiences. The plenary activities will be conducted in English.

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Program Overview

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1.

Monday, 6 November 2023

12:30	Pick-up at the hotel (H'Otello) for **Pharmacy Workshop**
13:00 – 19:00	▪ **Pharmacy Workshop** ■ **Multifunctional drug delivery systems** Chair: Olivial Merkel and Huang Rongqin *> Baeyer-Hörsaal, Butenandtstraße*
16:00	Pick-up at the hotel for **LMU Tour** (by public transport)
16:30	▪ **LMU Tour** through the Main Building + transfer to the restaurant (Susanne Döring-Buchmann, Clara Thurner) *> Main Building, Meeting at the Main Entrance* *ending at restaurant for the Welcome Dinner*
17:00	Pick-up at the hotel for **Welcome Dinner** (by public transport) *note: only if you are not part of the LMU Tour*
17:30	Registration **Welcome Dinner** *> Zum Franziskaner, Residenzstraße 9*
18:00	▪ **Welcome Dinner** with welcome remarks **Hans van Ess**, Vice President for Research, LMU Munich **Stefan Lauterbach**, Head of the International Office, LMU Munich

Tuesday, 7 November 2023

08:15	Pick-up at the hotel
08:30	▪ **Registration** *> Main Building, Speerträger*
09:00	▪ **Welcome** **Francesca Biagini,** Vice President for International Affairs and Diversity, LMU Munich *> Main Building, Speerträger*

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09:10 **Keynote 1:** Starting from Qingdao's Shore:
How Collaboration Can Lead Us to a New History.
Shen Hou, Professor at the Department of History, Peking University

09:35 **Keynote 2:** Understanding climate change and extreme events – on the necessities of international collaboration
Ralph Ludwig, Professor at the Department of Geography, LMU Munich

10:00 **Introduction LMU-China Academic Network**
(Hannah Weckemann)

10:10 **Group Photo** *> Main Building, Lichthof*

10:20 **Opening of the LMU-CSC Poster Session**
> Main Building, Lichthof

10:30 Option to visit the **LMU-CSC Poster Session** + *Coffee Break*
> Main Building, Speerträger

10:30 – 12:00 **LMU-CSC Program Poster Session**
> Main Building, Lichthof

11:00 Walk to **Workshops No 2, 6, 7**
in *> Leo 30 (walking distance)*
Meeting Point at Main Building, Speerträger, 1st Floor

11:00 PARALLEL SESSIONS

11:00 – 17:30 **Climate Risks and resilience in socio-ecosystems**
Chair: Liang Emlyn Yang, Jia Haifeng
> Leo 30, Room S1
2.

11:00 – 17:30 **Goethe, die Weimarer Klassik und die deutsch-chinesischen Literaturbeziehungen**
Chair: Friedrich Vollhardt, Hu Wei
> Main Building, Room A113
3.

11:15 – 17:30 **Geophysical highlights and transformations from the core to the magnetosphere**
Chair: Stuart Gilder, Song Xiaodong
> Main Building, Senatssaal
4.

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11:15 – 17:30 **PDT – a concept for One World One Health**
Chair: Ronald Sroka, Wang Xiuli
> Leo 30, Room S5
7.

11:15 – 17:30 **China and Europe: Philosophies in comparison and civilizations in dialogue**
Chair: Hans van Ess, Zang Fengyu
> Leo 30, Room S2
6.

12:30 Lunch *> Main Building, Speerträger*

13:30 PARALLEL SESSIONS

14:00 – 17:30 **The brain tumor microenvironment as a therapeutic target**
Chair: Rainer Glass, Zhang Nu
> Leo 30, Room S3
5.

15:30 Break *> Main Building, Speerträger, 1st Floor AND Leo 30, Ground Floor*

16:00 PARALLEL SESSIONS

17:30 optional: walk to restaurant

18:00 optional: **Networking Dinner** at a Chinese restaurant for interdisciplinary exchange across workshops
> Restaurant Honghong Noodle, Leopoldstraße 60-62

Wednesday, 8 November 2023

08:30 **Workshop** Registration *> Main Building, Speerträger*

09:00 PARALLEL SESSIONS

Re: Transformations in Environment and Society
Chair: Christof Mauch and Katherine Arnold
> RCC Landhaus
8.

Goethe, die Weimarer Klassik und die deutsch-chinesischen Literaturbeziehungen
Chair: Friedrich Vollhardt, Hu Wei
> Main Building, Room A 113
3.

>>

China and Europe: Philosophies in comparison and civilizations in dialogue
Chair: Hans van Ess, Zang Fengyu
> Main Building, Senatssaal

6.

10:30 *Break* *> Main Building, Speerträger*

12:30 *Lunch* *> Main Building, Speerträger*

13:30 PARALLEL SESSIONS

15:30 *Break* *> Main Building, Speerträger*

16:00 **Short Summaries** from the **Workshops**
> Main Building, Senatssaal

16:05 **Geophysical highlights and transformations from the core to the magnetosphere**
Workshop representative

16:15 **Climate Risks and resilience in socio-ecosystems**
Workshop representative

16:25 **Re: Transformations in Environment and Society**
Workshop representative

16:35 **PDT – a concept for One World One Health**
Workshop representative

16:45 **The brain tumor microenvironment as a therapeutic target**
Workshop representative

16:55 **Multifunctional drug delivery systems**
Workshop representative

17:05 **Goethe, die Weimarer Klassik und die deutsch-chinesischen Literaturbeziehungen**
Workshop representative

17:15 **China and Europe: Philosophies in comparison and civilizations in dialogue**
Workshop representative

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17:25 Wrap-up and Closing Remarks

17:40 Optional: Transfer to **Dinner**

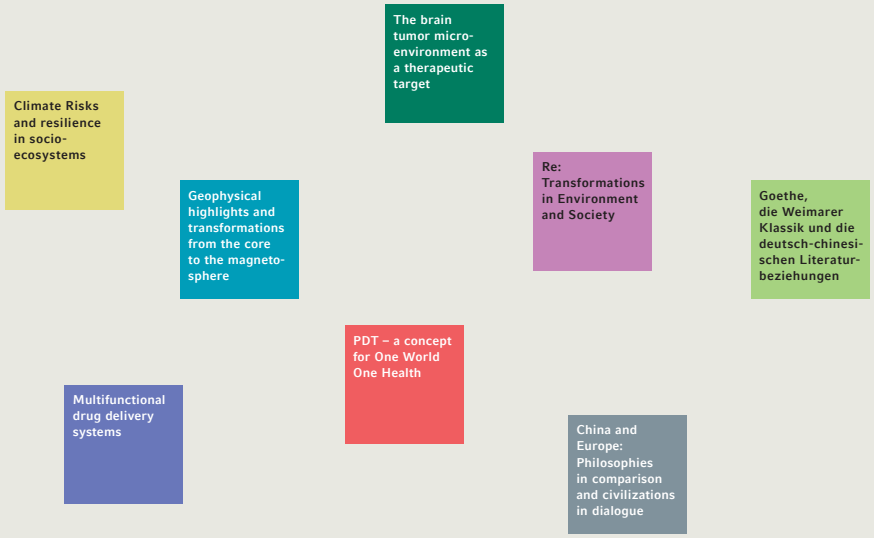
18:10 Optional: **Dinner** at a Bavarian Restaurant
results and next steps for the cooperation
> Georgenhof, Friedrichstraße 1

Thursday, 9 November 2023

Individual closed working meetings and visits to the corresponding faculties

12:30 Rachel Carson Center for Environment and Society Lunchtime Colloquium (open to all)
"**LMU-ChAN Panel:** Being an Environmental Historian in China: Pleasures and Challenges"
> Katholische Hochschulgemeinde, Leopoldstraße 11, 1. OG Saal

Workshop Program



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Monday, 6 November

International Workshop / 1

Multifunctional drug delivery systems

Chair: Olivial Merkel and Rongqin Huang

1.

13:30	New strategies for glioma theragnosis ■ **Ronqin Huang**, Fudan University
14:15	Lipid nanoparticles (LNPs) – a soft matter perspective on programmable nucleic acid carriers ■ **Joachim Rädler**, LMU Munich
14:45	One stone four birds: application of ginsenosides to prepare multifunctional liposomal delivery system for cancer therapy ■ **Jianxin Wang**, Fudan University
15:15	*Short break*
15:30	Mucin-based nanoparticles, films, and gels as reservoirs for drugs/drug carriers ■ **Oliver Lieleg**, LMU Munich
16:00	Chemiluminescent systems for biomolecules sensing in vitro and in vivo ■ **Zhijuan Cao**, Fudan University
16:30	Molecular chameleon carriers for dynamic nucleic acid delivery ■ **Simone Berger**, LMU Munich Spermine-based nanocarriers for pulmonary RNA delivery ■ **Olivia Merkel**, LMU Munich
17:00	*End of workshop*

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Tuesday, 7 November

International Workshop / 2

Climate Risks and resilience in socio-ecosystems

Chair: Liang Emlyn Yang, Haifeng Jia

2.

11:00 **Welcome** and **introduction of the session "Climate risk and resilience"**
- **Liang Emlyn Yang**, Department of Geography, LMU Munich
- **Prof. Dr. Haifeng Jia**, School of Environment, Tsinghua University (THU)

Performance assessment and optimization of coupled green-grey-blue system for Sponge City construction
- **Prof. Dr. Haifeng Jia,** School of Environment, Tsinghua University (THU)

Understanding and modeling social resilience to flood hazards in the Mekong basin
- **Dr. Liang Emlyn Yang**, Department of Geography, LMU Munich

Ecological restoration of wetland in a lakeshore city: case study in the eastern China
- **Dr. Yifan Fan**, Nanjing University

Flood risk management and resilience building at community level in rapidly growing cities
- **Assis. Prof. Dr. Wei Cheng**, Chinese Academy of Sciences, Beijing

12:30 *Lunch break*

13:30 Lessons learned on climate resilience in IPCC AR6 and an outlook of research needs
- **Prof. Dr. Matthias Garschagen,** Department of Geography, LMU Munich

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Resilience urban planning: Improving flood resilience through regional planning
- **Prof. Dr. Guofang Zhai**, School of Architecture, Nanjing University

Exploring the structural factors of resilience in urban drainage systems: a large-scale stochastic computational experiment
- **Prof. Dr. Xin Dong**, Tsinghua University

Can flood resilience of green-grey-blue system cope with future uncertainty?
- **Dr. Xiaoyue Zhang**, Tsinghua University

Historical materialist policy analysis to study the state of climate adaptation policymaking in China
- **Dr. Julia Teebken**, Department of Geography, LMU Munich

Reconstruction of Annual Resolution Harvest Sequences in 19 Major Agricultural Regions of Late Imperial China and Its Response to Climate Change in the Little Ice Age: 1368-1911
- **Dr. Yibo Kang**, Sun Yat-sen University

15:30 *Coffee break*

16:00 Climate risk and resilience improvement in the urban water infrastructure system
- **Prof. Dr. Ru GUO,** Tongji University

Effects of low impact development on water quality resilience in an urbanized estuary area
- **Prof. Dr. Huapeng QIN**, Peking University, Shenzhen

Applying a Systems Innovation Approach to build a climate resilient region in Europe – the Main River basin
- **Prof. Dr. Ralf Ludwig**, Department of Geography, LMU Munich

Climate Change, Human Activities and Environmental Changes in the Middle Reaches of the Yangtze River in the Mid-19th Century
- **Dr. Wei Liu**, Fudan University

17:30 end

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Tuesday, 7 + Wednesday, 8 November

International Workshop / 3

Goethe, die Weimarer Klassik und die deutsch-chinesischen Literaturbeziehungen

Chair: Friedrich Vollhardt, Wei Hu

3.

Tuesday, 7 November

11:15 *Heilig Öffentlich Geheimnis.* The Concept of Nature and its poetic presentation in Goethe's late group poems „Gott und Welt"
- **Wei Hu**, Peking University

12:00 *Stets belebter.* Naturgeschichte, Schöpfungsgedanke und Humor in Goethes „Weltseele"
- **Michael Schwingenschlögl**, Tsinghua University

14:00 Sprachursprungstheorien und die Allgemeinheit der Erkenntnis bei Salomon Maimon
- **Jonathan Schmidt-Dominé**, LMU Munich

14:45 Über Friedrich Kittlers Literaturgeschichtsschreibung und ihre Anregungen für die chinesische Germanistik
- **Yongqiang Liu**, Zhejiang University

16:00 Der Einfluss der deutschen Philosophie auf den Neuen Konfuzianismus
- **Han Liu**, Shanghai International Studies University

16:45 Die Rezeption traditioneller chinesischer Kulturzeugnisse im Rahmen der europäischen ‚Wertkrise' zu Beginn des 20. Jahrhunderts
- **Thomas Borgard**, LMU Munich

17:00 Response zum Vortrag von Thomas Borgard
- **Qiangshi Li**, LMU Munich

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Wednesday, 8 November

11:00 Literary and historical Chinese Gardens in the »Weimarer Klassik«
- **Anna Axtner-Borsutzky**, LMU Munich

11:45 Die Entwicklung des China-Bilds im Werk von Max Frisch
- **Yanrui Zhao**, LMU Munich

13:30 Friedrich Schillers Konzept des Staates
- **Mingchao Mao**, Peking University

14:15 Goethes „Egmont"-Drama und die staatstheoretischen Debatten am Ende des 18. Jahrhunderts
- **Friedrich Vollhardt**, LMU Munich

15:00 Der ‚chinesische Geist' als ‚Gemeingut der Menschen'. Der Sinologe Richard Wilhelm (1873–1930) als Goethe-Interpret
- **Christoph Schmitt-Maaß**, LMU Munich

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Tuesday, 7 November

International Workshop / 4

Geophysical highlights and transformations from the core to the magnetosphere

Chair: Stuart Gilder, Xiaodong Song

4.

11:00	Brief Introduction: **Xiaodong Song** + **Stuart Gilder**
11:05	Ring laser technology for Earth's rotation and seismology ■ **Heiner Igel**, LMU Munich
11:30	Differential rotation of the Earth's inner core: Implications for the dynamic earth system ■ **Xiaodong Song**, Peking University
11:55	From mantle convection to seismic observations: A forward-modelling approach to better constrain mantle evolution and core-mantle-boundary heat flow ■ **Bernhard Schuberth**, LMU Munich
12:20	Wrap up
12:30	*Lunch*
13:30	Geodynamic Earth Models and links to continent-scale stratigraphy ■ **Peter Bunge**, LMU Munich
13:55	Ancient geomagnetic field intensity study on Archaeological Pottery from Xinjiang, China ■ **Baochun Huang**, Peking University
14:20	Is the Cretaceous Normal Superchron characterised by a distinct geodynamo regime? ■ **Florian Lhuillier**, LMU Munich

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14:45	SushiBar 2.0: Improved automated paleo- and rock magnetic measurement system in Munich ■ **Michael Wack**, LMU Munich
15:10	Wrap up
15:30	*Coffee Break*
16:00	Terrestrial magnetosphere: Kelvin-Helmholtz Instability associated with reconnection and Ultra Low Frequency Waves at the ground ■ **Elena Kronberg**, LMU Munich
16:25	Ocean oxygenation evolution through Cenozoic warming ■ **Liao Chang**, Peking University
16:50	The magnetic state of iron in Earth's inner core ■ **Stuart Gilder**, LMU Munich
17:15	Wrap up

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Tuesday, 7 November

International Workshop / 5

The brain tumor microenvironment as a therapeutic target

Chair: Rainer Glass, Nu Zhang

5.

14:00	Circular EZH2-encoded EZH2-92aa mediates immune evasion in glioblastoma via inhibition of surface NKG2D ligands ■ **Nu Zhang**, Sun Yat-sen University
14:30	TAMEP, a newly identified myeloid subpopulation to target tumour-angiogenesis in the brain. ■ **Roland Kälin**, LMU Munich
15:00	Transgenic mouse models differentiate TAMEP progenitors from differentiated TAMEP ■ **Ding Zhou**, LMU Munich
15:15	*Break*
15:30	TREM2 defines the protective landscape of myeloid cells in glioblastoma ■ **Yixin Gao**, Sun Yat-sen University
16:00	Paracrine Humanin signaling promotes glioma chemoresistance ■ **Jiying Cheng**, Sun Yat-sen University
16:30	Humanin controls glioblastoma neoangiogenesis ■ **Gen Li**, LMU Munich
16:45	Paracrine tumor suppression by neural precursors indicates a new class of therapeutics ■ **Rainer Glass**, LMU Munich

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Tuesday, 7 + Wednesday, 8 November

International Workshop / 6

China and Europe: Philosophies in comparison and civilizations in dialogue

Chair: Hans van Ess, Fengyu Zang
Secretary: Moritz Kuhlmann

6.

	Tuesday, 7 November
11:00 – 11:10	Opening, Welcome, Introduction to the sub-conference *> Venue: Leo 30*
	Topic 1: Rationalities in comparison
11:10 – 11:50	Wang Yangming's Theory of Heart-Mind and the Early Spread of Marxist Philosophy in China ■ **Fengyu Zang**, Renmin University Beijing
11:50 – 12:30	Rationality East, West, and Everywhere ■ **Sebastian Gäb**, LMU Munich
12:30 – 13:30	*Lunch*
	Topic 2: Rationality and Morality
13:30 – 14:10	Aristotle and Xunzi on Moral Motivation ■ **Wei Liu**, Renmin University Beijing
14:10 – 14:50	Radically evil, but not malicious. About the impossibility of reason to will otherwise ■ **Georg Sans**, Hochschule für Philosophie München
14:50 – 15:30	The Benevolent love for others in Eastern and Western Philosophy ■ **Jifen Li**, Renmin University Beijing

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Tuesday, 7 + Wednesday, 8 November

International Workshop / 6
China and Europe: Philosophies in comparison and civilizations in dialogue

15:30 – 16:10	Reason as a Source of Moral Norms in Augustine's De Libero Arbitrio ■ **Paweł Trzciąkowski**, LMU Munich
16:10 – 16:30	*Coffee/Tea Break*
16:30 – 17:20	Skepticism Across Borders: Arguments from Animal Difference in Chinese, Greek, and Arabic Philosophy ■ **Peter Adamson**, LMU Munich
17:20 – 17:30	Reflection on Day 1
17:30	Departure for Dinner

Wednesday, 8 November
> Venue: LMU main building

09:30 – 09:45	[To be determined] ■ **Christof Rapp**, LMU Munich
	Topic 3: Rationality in its Political Shapes
10:30 – 11:00	*Coffee/Tea Break*
11:00 – 11:40	Civil Society and the Modern Individual ■ **Bo Wei**, Renmin University Beijing
11:40 – 12:20	Dialectics in the Early Work of Karl Marx and in Classical Chinese Philosophy ■ **Moritz Kuhlmann**, LMU Munich and Renmin University Beijing
12:20 – 13:20	*Coffee/Tea Break*
13:20 – 14:00	Logic and/or Rationality; Logical arguments in Early China Philosophy ■ **Benoît Vermander**, Fudan University Shanghai
14:00 – 14:40	Radical Enlightenment and Secularization: A Brief Revisionist History with Reference to Seventeenth-Century England ■ **Robert Yelle**, LMU Munich
14:40 – 15:20	The Idea of Equality and Modern Chinese Thought ■ **Dennis Schilling**, LMU Munich and Renmin University Beijing
15:20 – 15:30	Reflection on Day 2
15:30 – 16:00	*Break*
16:00 – 17:30	Closing ceremony
	Dinner

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Institute of Photomedicine – LMU-LIFE-Center

Tuesday, 7 November

International Workshop / 7

PDT – a concept for One World One Health

Chairs: Ronald Sroka, Xiuli Wang
Secretary: Adrian Rühm, Linglin Zhang

7.

Introduction of LFL and **"PDT – a concept for One World One Health"**
- **Ronald Sroka**, LMU Munich

Introduction of IoP and PDT in China
- **Xiuli Wang**, Tongji University

Interstitial and intraluminal photodynamic therapy:
PDT experiences at LMU-KUM in urology and gastroenterology
- **Adrian Rühm**, LMU Munich

Updates of photodynamic therapy for acne
- **Linglin Zhang**, Tongji University

Interstitial photodynamic therapy: PDT experiences
at LMU-KUM in neurosurgery
- **Adrian Rühm**, LMU Munich

PDT in HPV-related skin diseases
- **Linglin Zhang**, Tongji University

Break 15-30min

PDT-dosimetry concepts incl daylight
- **Max Aumiller**, LMU Munich

Conventional versus daylight photodynamic therapy for actinic keratosis
- **Haiyan Zhang**, Tongji University

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Identification of bacteria-specific biomarkers through FTIR spectroscopy
- **Kiran Sankar Maiti**, LMU Munich

Antimicrobial PDT in China
- **Haiyan Zhang**, Tongji University

Antimicrobial PDT activities
- **Ronald Sroka**, LMU Munich

Overall discussion – sharing ideas – future activities – what is possible

RCC Landhaus

Wednesday, 8 November

International Workshop / 8

Re: Transformations in Environment and Society

Chair: Christof Mauch and Katherine Arnold

8.

	> RCC Landhaus, Glonn
9:15	*Arrival and Coffee*
9:30	**Tour of the Landhaus** with Landhaus Manager Moremi Zeil
10:00	**Papers** and **Planning Lunchtime Colloquium Panel**
12:00	*Lunch with the Landhaus Fellows*
13:00	**Art Tour** of the Landhaus Grounds with Karl Ludwig Schweisfurth
14:30	Return to LMU for End-of-Day Events

Abstracts

Monday, 6 November

International Workshop / 1

Multifunctional drug delivery systems

Chair: Olivial Merkel and Rongqin Huang

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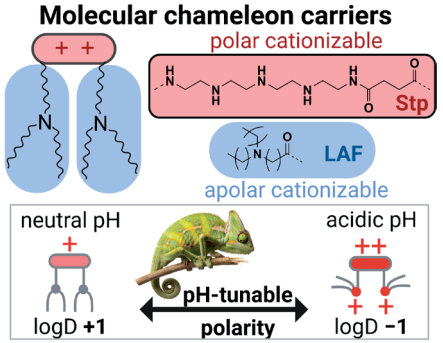
Simone **Berger**
Ludwig-Maximilians-University Munich
Pharmaceutical Biotechnology, Department of Pharmacy, and Center for NanoScience (CeNS)

Molecular chameleon carriers for dynamic nucleic acid delivery: *Chemical evolution of nanoparticles towards efficiency of viral vectors*

Continuous chemical evolution has recently resulted in a new class of double pH-responsive nanocarriers for dynamic delivery of various nucleic acid types. These carriers combine the benefits of both polymer- and lipid-based delivery modules and are up to several hundred-fold more potent than previous carrier generations. They contain at least two novel lipo amino fatty acids (LAFs) as cationizable apolar motifs in combination with polar cationizable aminoethylene units of succinoyl tetraethylene pentamine (Stp). The building blocks are connected by lysines via solid phase-assisted peptide synthesis into different topologies (i.e., combs, T-shapes, bundles, and U-shapes) at different ratios of Stp to LAF. The switchable polarity of the LAF is implemented by a central tertiary amine, which disrupts the hydrophobic character once protonated, resulting in pH-dependent structural and physical changes within the carriers, as evidenced by drastic changes in the logarithmic (octanol/water) distribution coefficient logD from around +1 (hydrophobic) at pH 7.4 to -1 (hydrophilic) at pH 5.5. This 'molecular chameleon character' is beneficial for dynamic and fast cargo delivery via both polyplexes and lipid nanoparticles. Screening of different topologies, Stp/LAF ratios, and LAF types identifies tailor-made carriers for the distinct formulations and nucleic acids. Top candidates are characterized by high activity in several cell lines (i.e., various tumor cells, dendritic cells, and macrophages), even in the presence of 90% serum at very low nucleic acid doses. mRNA polyplexes, for example, are still highly potent at ultra-low doses of 3 pg mRNA (~2 nanoparticles/cell), by this being comparable to viral vectors in terms of particle efficiency. Moreover, the carriers display high activity in vivo upon systemic application of 1-3 µg luciferase-encoding mRNA in mice, especially in spleen and tumor.



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Dr. Zhijuan **Cao**
Fudan University
School of Pharmacy

Chemiluminescent systems for biomolecules sensing in vitro and in vivo

Abnormal expression of multiple biomarkers, such as cellular microenvironment, small biomolecules, reactive oxygen species (ROS) and various proteases have been implicated in many diseases. Chemiluminescence (CL) has emerged as a powerful alternative way to response trace level of biomarkers due to its elimination of external light resource, thus low background and high sensitivity. Here, we will introduce our designed CL systems based on CL materials and probes for the sensing of different disease-related small biomolecules and proteases, such as DNA nucleases, biothiols and fibroblasts activating protein. These methods provide promising tools for food safety inspection, clinical diagnosis and even drug discovery.

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Siyu **Chen**
Ludwig-Maximilians-University Munich
Faculty for Chemistry and Pharmacy, Department of Pharmacy

The delivery of CRISPR-Cas9 targeting KRAS mutant in lung cancer

CRISPR-Cas9 has been proven to be an efficient and customizable genome editing tool that can be potentially used for the treatment of KRAS mutation in lung cancer. Here we report a cationic polymer system, namely lipid modified polyethylenimine (C14-PEI), that can co-deliver Cas9 mRNA and sgRNA efficiently to excise the mutated KRAS allele in lung cancer. C14-PEI is prepared from epoxytetradecane and branched PEI 600 Da in a ring opening reaction. C14-PEI shows a critical micelle concentration (CMC) at around 21 mg/L and can efficiently encapsulate mRNA as micelleplexes through electrostatic interaction. eGFP mRNA can be encapsulated by C14-PEI with 99% encapsulation efficiency at the mass ratio of 8 (w/w 8), and it showed 130-fold increased expression in A549 cells compared with the PEI control treatment group. And no significant toxicity was observed through the test of intracellular reduction of a tetrazolium salt. C14-PEI showed high efficiency to co-encapsulate Cas9 mRNA and sgRNA together based on agarose gel electrophoresis analysis. At the sgRNA to Cas9 mRNA molar ratio 10, the micelleplexes successfully mediate KRAS mutant cutting with 63% indel efficacy tested by T7EI assay. Further optimization of C14-PEI and in vivo testing will be part of subsequent studies.

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Rongqin **Huang**
Fudan University
School of Pharmacy

Biodegradable COF-based tumor-targeted drug delivery systems

The application of nanotechnology in medicine has greatly promoted the development of clinical tumor chemotherapy and provide many new drug delivery strategies for cancer treatment. In recent years, covalent organic frameworks (COF), as a new class of ordered mesoporous materials, has attracted widespread attention in the field of biomedicine due to its tunable structure, high crystallinity, and excellent biocompatibility. In the past five years, our team has been working on degradable COF-based tumor-targeted drug delivery systems. Firstly, TKD peptide-modified COF nanoparticles (OPCPT) were designed and prepared to actively target tumor sites. Responded to the acidic tumor microenvironment, the nanoparticles degraded and released 1O2 and O2. During degradation, the positively charged COF enhanced the endocytosis of OPCPT at the tumor site, and the degradation of the COF layer achieved a targeted photothermal effect by shielding and recovering photothermal properties. The generated O2 alleviated the tumor's hypoxic state and improved the efficiency of photodynamic therapy. Additionally, the production of 1O2 damaged lysosomes and mitochondria, inhibiting autophagy and metastasis while inducing cell apoptosis. These combined effects synergistically enhanced the targeted therapeutic effect on tumors, providing new strategies and application patterns for COF in tumor treatment. Secondly, a degradable COF-based nanodrug delivery system modified with T10 peptide was developed for cascade-targeted delivery of the chemotherapeutic drug doxorubicin (DOX) mediated by transferrin coronas. Under T10 mediation, the nanosystem could specifically adsorb free transferrin in the blood to form transferrin coronas on its surface. This mediated drug carriers to overcome the blood-brain barrier (BBB), enabling effective accumulation of drugs in glioma. Stimulated by the acidic microenvironment inside the cells, controlled release of DOX was achieved, enhancing the therapeutic effect of glioma chemotherapy. Lastly, utilizing the differential degradation of COF and mesoporous silica nanoparticles (MSN), a programmable nanodrug delivery system called MGPPCLP was designed and prepared. MGPPCLP could target and accumulate in the tumor microenvironment through high permeability and retention effects. Under the stimulation of the acidic microenvironment, COF orderly degraded and achieved programmed release of encapsulated drugs from MSN. Under effective interference by the tumor extracellular matrix barrier, the accumulation of gemcitabine in tumor cells was greatly improved, enhancing the therapeutic effect of pancreatic cancer chemotherapy. In summary, a series of biodegradable COF-based drug delivery systems have been well established and exhibited potentials in cancer therapy.

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References

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Pulmonary Delivery of Hybrid Polymeric Nanoparticles for Enhanced mRNA Expression

Recent advances in the field of mRNA vaccination have demonstrated significant advantages in activating immune responses and combating infectious diseases.[1][2] However, many pathogens and viruses, including SARS-CoV-2, primarily infect the host through the respiratory tract. Conventional vaccines administered via non-respiratory routes usually fail to induce protective mucosal immunity, which limits the elimination of pathogens and viruses at the first entry site and still results in the risk of acute infection. [3]

The aim of this study was to develop a pulmonary mRNA nanovaccine capable of achieving both crucial mucosal immunity and systemic immunity against infectious diseases. To accomplish this, we have innovatively designed a hybrid nanoplatform based on a non-lipid system, integrating biodegradable poly(lactide-co-glycolide) (PLGA) and poly (β-amino esters) (PBAEs) into nanoscale core-shell particles for loading and delivering mRNA, as shown in Figure 1. This integration strategy potentially endowed the nanovaccine with multifunctional capabilities, including more homogeneous particle size, enhanced stability of nano formulations, improved cellular uptake, and facilitated the endosomal escape. A comparative analysis of the post-transfection effects of eGFP mRNA and Fluc mRNA were conducted in both dendritic cells and lung epithelial cells between the nanopolyplex system and the nanohybrid system. In the future, we will implement a pulmonary delivery strategy in animal models to investigate whether this mRNA nanovaccine can induce robust mucosal and systemic immunity against infectious diseases.

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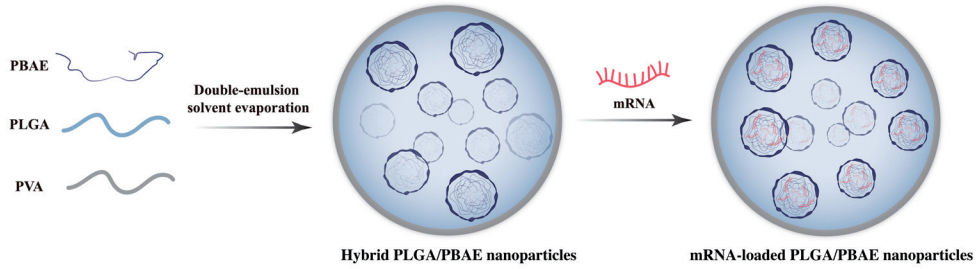

Figure 1. Schematic diagram of the preparation of hybrid PLGA/PBAE nanoparticles and mRNA loading process.

Acknowledgement: China Scholarship Coucil

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Olivia M. **Merkel**
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Department of Pharmacy

New Approaches for Therapeutic Pulmonary RNA Delivery

Delivery poses a significant challenge in realizing the potential of RNA medicines. While existing siRNA drugs target the liver, the lung offers opportunities for treating previously untargeted conditions using RNA therapeutics. Our lab designs inhalable and biocompatible nanocarriers to efficiently deliver siRNA to the lung.

We use biodegradable cationic Poly(beta-amino ester)s, which can facilitate nucleic acid delivery both *in vitro* and *in vivo*. Instead of the traditional trial-and-error approach, we employ a combination of Design-of-Experiments (DoE), Molecular Dynamics Simulations, and Machine Learning (ML) to expedite the discovery and optimization of siRNA nanocarriers, saving wet-lab resources.

Our previous work yielded hydrophobically-modified spermine-based Poly(β-amino ester)s (PBAEs), which efficiently encapsulate siRNA into sub-100 nm nanoparticles with a low polymer excess ratio (N/P 5-10). These formulations resulted in up to 95% GFP silencing *in vitro* and successfully delivered siRNA for gene silencing in various culture models, including air-liquid-interface cultures and targeting mutated *KRAS* expression, inhibiting cell migration.

Comparing polymer backbones, polyacrylamide (PAA)-based polyspermines showed more efficient siRNA delivery and gene silencing in air-liquid-interface cultures compared to Lipofectamine, with a better safety profile both *in vitro* and *in vivo*. When administered intratracheally in mice, PAA-based polyplexes were efficiently taken up by Type II pneumocytes and avoided recognition by lung macrophages. In human lung tissue from patients suffering from lung fibrosis, the former mediated more efficient *PAR2* silencing than commercially available transfection reagents, resulting in more pronounced reduction of *Collagen I* levels.

Further *in vivo* efficacy experiments are ongoing, but based on our preliminary data, polyspermines appear highly promising for RNA formulation and delivery, with an excellent safety profile in the lungs.

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Joachim O. **Rädler**
Ludwig-Maximilians-Universität München
Faculty of Physics and Center for NanoScience

Lipid nanoparticles (LNPs) – a soft matter perspective on programmable nucleic acid carriers

Lipid Nanoparticles (LNPs) represent the most advanced technology for delivery of nucleic acid. The particles exhibit a well designed core-shell structure containing ordered lipid mesophases that encapsulate nucleic acid. We discuss distinct pH dependent structural transitions in bulk phases of cationic ionizable lipids (CILs) and their role in nucleic acid transfer.

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Jianxin **Wang**
Fudan University
School of Pharmacy

One stone fourbirds: application of ginsenosides to prepare multifunctional liposomal delivery system for cancer therapy

Liposomes hold great potential in anti-cancer drug delivery and the targeting treatment of tumors. However, the clinical therapeutic efficacy of liposomes is still limited by the complexity of tumor microenvironment (TME), insufficient accumulation in tumor sites. Meanwhile, the manufacturing difficulties caused by multi-components to realize long blood circulation, active targeting, responsive release restrict the development of liposomes greatly. Herein, we developed a ginsenosides based multifunctional liposome system to effectively address these challenges. Both cholesterol and PEG were substituted by ginsenoside Rg3or Rh2, which works as membrane stabilizer, long-circulating stealther, active targeting ligand, and chemotherapy adjuvant at the same time. Firstly, ginsenoside could keep the stability of liposomes and avoid the shortcomings caused by cholesterol. Secondly, ginsenoside -lipo showed a specifically prolonged circulation behavior in the blood. Thirdly, the accumulation of the liposomes in the tumor was significantly enhanced by the interaction of glucose transporter of tumor cells with ginsenoside. Fourth, ginsenoside -lipo could remodel the structure and reverse the immunosuppressive environment in TME. The targeting distribution and anti-cancer effect of paclitaxel-loaded ginsenoside-lipo were evaluated and confirmed in various tumour cells and animal models, including BGC823 cell, SNU-16 cell, MDA-MB-231 cell, 4T1 breast carcinoma xenograft model and gastric cancer PDX model. Ginsenoside Rg3-Lp/DTX exhibited excellent metastasis inhibition capacity by CTC (“seeds”) neutralization and MN (“soil”) inhibition, which had great clinical translation prospects for anti-metastasis treatment with enhanced therapeutic efficacy and simple preparation process. Therefore, ginsenoside-lipo provides an innovative potential system with multiple functions for anti-cancer drug delivery.

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Tuesday, 7 November

International Workshop / 2

Climate Risks and resilience in socio-ecosystems

Chair: Liang Emlyn Yang, Haifeng Jia

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Dr. Xin **Dong**
Tsinghua University
School of Environment

Exploring the structural factors of resilience in urban drainage systems: a large-scale stochastic computational experiment

The focus of infrastructure design and management has turned from a reliability-based approach to a resilience-based one. Resilience is a system's ability to maintain its function and minimize failure consequences when faced with exceptional conditions. This study carried out a large-scale computational experiment to study how resilience was affected by system's structure in a combined sewer system. We built a stochastic generation model, involving a random sampling of facility locations and a graph-based random walk sampling algorithm to generate various layouts of pipelines. The performance of these virtual systems were assessed in the Storm Water Management Model. We applied statistical techniques on these samples to study the relation between resilience and system structure. Results showed that the number of combined sewer overflow (CSO) outfalls was a more important factor of resilience compared to the number of wastewater treatment plants (WWTPs). Some locations were found more preferable for WWTP or CSO outfall placement, while adding WWTPs or outfalls at other locations might even lower the system's resilience. Size of the sub-catchments of the CSO outfalls also affected resilience. Although this effect was statistically significant, the extent was not remarkable compared to other factors. We further studied the structural features of the cost-effective systems. The highest achievable resilience level increased as the number of CSO outfalls decreased, and so did system's cost. We found that this resulted from the difference in CSO quantity, therefore this dilemma could be cut off by end-of-pipe storage or treatment which specifically tackled CSO. The conclusion of this study provides an insight into the structural factors of combined sewer systems' resilience and can provide guidance for system's planning.

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Yifan **Fan**
Nanjing University
School of the Environment

Ecological restoration of wetland in a lakeshore city: case study in the eastern China

Taihu basin is the core area of the Yangtze River Delta in eastern China. The rapid socio-economic development and high population density in the basin have led to ecological issues such as heavy pollution loads entering the lake, complex changes in aquatic environments of the river network, and ecological degradation. Since 2013, we have been continuously carrying out wetland ecological restoration work in Wuxi City within the Taihu Lake basin. We have conducted research on pollution interception and water quality purification, construction of ecological embankments and habitat improvement, large-scale aquatic vegetation reconstruction and ecological regulation in the lakeside area of Taihu Lake. A comprehensive demonstration zone for ecological restoration covering an area of 2.32 km2 was built, with water transparency > 100 cm, TN < 1.5 mg/L, TP < 0.1 mg/L, and aquatic plant coverage > 50%. This work has formed a complete technical system of lakeshore wetland ecosystem restoration called „multi-gradient source control, multi-method basement reconstruction, and multi-level ecosystem construction". Moreover, we carried out research focusing on fast planting and large-scale restoration for aquatic vegetation under dramatically changing hydrological conditions in the river network area within the basin. Ecological restoration of wetlands has been carried out on more than 11 km of river channels, in which the near-shore aquatic vegetation coverage was increased from < 10% to > 40%, and the biodiversity index increased by more than 30%. This work also formed a complete technical system called „habitat improvement, vegetation restoration, and long-term operation". The series of work achieved the goal of purifying floodwaters during the rainy season and controlling the water qualiy of Taihu Lake, providing practical cases and systematic solutions for large-scale ecological restoration of wetlands in China.

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Ru **Guo**
Tongji University
Faculty of Geosciences, College of Environmental Science and Engineering

Climate risk and resilience improvement in the urban water infrastructure system

The urban water infrastructure system will be directly affected by climate change, causing negative effects on economic and social development and human health. It is extremely important to scientifically evaluate the impact of climate change on urban water infrastructure systems and identify its potential risks. Based on the existing studies on urban water infrastructure systems, a climate risk assessment method for water and wastewater facilities is proposed by integrating top-down and bottom-up models. Based on this, different resilience enhancement techniques are developed to reduce the risks of climate change in water and wastewater facilities, which could provide scientific support for the healthy and sustainable development of urban water infrastructure systems in the context of climate change.

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Haifeng **Jia**
Tsinghua University
School of Environment

Performance assessment and optimization of coupled green-grey-blue system for Sponge City construction

Keywords: Low impact development; Sponge City, green-grey-blue system; performance assessment

In recent years, Sponge City has gained significant interests as a way of urban water management. The kernel of Sponge City is to develop a coupled green-grey-blue system which consists of source green infrastructures, grey infrastructures (i.e. drainage system) and receiving water bodies as the blue part. However, currently the performance assessment for Sponge City construction is only confined to green-grey system, especially the estimation of Volume Capture Ratio of Annual Rainfall (VCRa) which is the most important index of sponge city performance. Actually, the green infrastructure effect on receiving water bodies should be taken into consideration in the Sponge City construction. we proposed an integrated assessment framework and optimization of coupled green-grey-blue system on compliance of water quantity and quality control targets in Sponge City construction. It integrates indicators consist of land-based and river area. Rainfall runoff model and river system model were coupled to support quantitative simulation. The effectiveness of this framework was demonstrated in a typical plain river network area of Suzhou, China.

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Yibo **Kang**
Sun Yat-Sen University
Department of History

Reconstruction of Annual Resolution Harvest Sequences in 19 Major Agricultural Regions of Late Imperial China and Its Response to Climate Change in the Little Ice Age: 1368-1911

The links between climate change, agriculture harvest and food supply, and social-economical system responses in historical times has been discussed worldwide. The consensus, however, has not yet been fully reached as the conclusion would change in different spatiotemporal contexts. Thanks to a large amount of successive literature records for long time, relevant research work on China should be paid special attention. Hereby, based on more than 6000 ancient Chinese local chronicles, we analyzed the agricultural behavior and recording habits of the ancients, designed corresponding mathematical processing models, and successfully reconstructed the annual resolution harvest sequence of 19 regions in the late imperial China spanning 544 years. The reconstruction area covers 15 latitudes from south to north, including the main wheat and rice producing areas. This is the first time a high-resolution agricultural harvest database has been reconstructed in such a large spatiotemporal range. By comparing the harvest sequence reconstructed in this article with previous climate reconstruction results based on literature and natural evidence, it can be found that the relationship between agriculture harvest and climate factor varies as the region changes. Due to different climate patterns in different regions, there are certain differences in the cycle of changes in harvest results. However, in some cases, severe harvests in different regions may converge in a same year or adjacent years, leading to overall failures and serious social consequences. Conversely, in the 18th century, there was a nationwide „relative abundant period“, which may be related to the population explosion and prosperous rule from Kangxi to Qianlong Reign. In addition, the reconstruction results of this article can also serve as intermediary variables for comparative analysis between climate sequences and social activity sequences such as regional grain prices, social charity, social conflicts in Ming and Qing China, which could help deeply and quantitatively reveal the possible relationship between climate change and socio-economic systems.

Key Words (oder Keywords?): Historical Climatology, Climate Change, Social Resilience, Agriculture Harvest, LIA

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Wei **Liu**
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Climate Change, Human Activities and Environmental Changes in the Middle Reaches of the Yangtze River in the Mid-19th Century

The breach of the Yangtze River in the 1860s resulted in the washing out of the Songzi Branch and Ouchi Branch, causing flood water to divert into Dongting Lake. This influx of water and sand caused the lake's surface to rapidly expand before eventually shrinking. The increase in water volume of Dongting Lake has resulted in an increase in the outflow from Chenglingji, the outlet of Dongting Lake, and intensified the development of the Jingjiang River meander. This significant change had a profound impact on the environment and socio-economic conditions in the middle reaches of the Yangtze River. This study established a sequence of Wet-dry index in the upper and middle reaches of the Yangtze River from 1500 to 2020, using historical documents and modern precipitation data. The percentage threshold method is employed to identify regional extreme flooding events. The findings reveal that the wettest period in the past 500 years for the upper and middle reaches of the Yangtze River is 1830-1872. Additionally, this period also witnessed the highest frequency of extreme flood events. Therefore, the channel change in the middle reaches of the Yangtze River during the mid-19th century occurred against a backdrop of abundant rainfall and flooding. Historical human activities have altered and restricted the flow of the middle reaches of the Yangtze River, resulting in the accumulation of sediment in the riverbed. This sediment deposition has caused the riverbed to rise, leading to the formation of „hanging rivers" and rendering the current channel pattern unsustainable. Moreover, climate change has played a significant role in the sudden transformation of the Yangtze River channel during the mid-19th century. This change brought about a substantial increase in the volume of water and sand originating from the upper reaches of the river, thereby accelerating the process of siltation and riverbed uplift. Consequently, multiple flood events overwhelmed both the river channel and levees, ultimately contributing to this abrupt alteration in the river's course. The impacts of climate change on the environment and society, driven by human activities, involve intricate processes and mechanisms. Thus, it is imperative to conduct thorough and meticulous research to identify and comprehensively discuss these impacts.

Keywords: Climate Change, Human Activity, Environmental Change, upper and middle reaches of the Yangtze River, Dongting Lake

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Ralf **Ludwig**
Ludwig-Maximilians-Universität München
Department of Geography

Applying a Systems Innovation Approach to build a climate resilient region in Europe – the Main River basin

Climate change poses major challenges globally and is likely to exacerbate competition for water, land, and energy resources. In the Main River Basin (Germany), this will have considerable consequences for agriculture, forestry, water, and energy management. At present, most adaptation measures are sector-focused, but the challenges are interconnected. The region is at risk for being pushed beyond its resilience threshold and therefore, a holistic and multi-sectoral strategy is urgently needed to achieve a new level of responsiveness to cope with climate change impacts.

The co-design and co-production of science-driven technical, social, and cross-sectoral innovations and governance is required to build new and climate resilient transformation pathways. A systemic transformation of the region requires time and broad societal support, which must be considered when formulating development paths. To address these challenges, Systems Innovation Approach (SIA) is implemented. This method aims at going beyond the immediate problems to better understand the underlying patterns, and how we can learn and adapt as the system continues to change. The Main River basin is one of the nine pilot areas of the EU funded ARSINOE project (Climate-resilient regions through systemic solutions and innovation) that are implementing innovative technological approaches. Stakeholders' engagement is ensured through the so-called Living Labs. In the ARSINOE project, Living Labs are a participatory research tool often used in planning, product design and innovation which brings together a collective of key stakeholders to explore a focal issue. Living Labs act as open innovation spaces which foster co-creation with users and the focus is to better solve stakeholder needs.

Through a series of workshops supported by SIA tools (mental mapping of interconnected challenges, future common vision using Sustainable Development Goals (SDGs) as guiding principles, backcasting) we have created an open atmosphere with committed participants that are willing to collaborate to tackle future climate challenges in the Main River region. This contribution presents our successful experience turning research into practice, lessons learnt and challenges we faced to ensure the participants' engagement.

The presented study is supported by the project ARSINOE (GA: 101037424), funded under EU's Horizon 2020 research and innovation programme.

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Prof. Huapeng **Qin**
Peking University
School of Environment and Energy

Effects of low impact development on water quality resilience in an urbanized estuary area

In urbanized estuary areas, water quality is usually shocked by urban runoff during heavy rainfall. Low impact development (LID) can mitigate this shock and improve water quality resilience. In this study, water quality resilience is expressed as the capacity of water systems to recover from deterioration during a storm, and a coupled Storm Water Management Model (SWMM) and Environmental Fluid Dynamic Code (EFDC) model is used to examine the effects of LID on runoff pollution and water quality resilience in the Shenzhen River estuary (including Shenzhen River and Deep Bay) in China. The results indicate that: (1) the average values of water quality resilience of NH3-N, TN, TP, and COD of the whole estuary area are 0.50, 0.89, 0.70 and 0.70 respectively; and the order of water quality resilience of Shenzhen River Estuary is: Shenzhen River<Inner Bay<Outer Bay; (2) if the runoff from 80% of impervious area is treated by LID facilities, the average values of water quality resilience of NH3-N, TN, TP, and COD of the whole estuary area increase by 0.09, 0.05, 0.09, and 0.1, respectively; the maximum increase in water quality resilience in the inner bay is 0.16-0.35. Therefore, LID can significantly improve water quality resilience in the river and inner bay.

Keywords: Interception system overflow, Low impact development, Water quality resilience, SWMM, EFDC

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Chi **Xu**
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School of Life Sciences

Future of Human Climate Niche

All species have an environmental niche and despite technological advance humans are unlikely to be an exception. Here, we demonstrate that for millennia human populations have resided in the same narrow part of the climatic envelope available on the globe, characterized by mean annual temperatures (MAT) of ~11-15 °C. Current production of crops and livestock is largely limited to the same conditions. We subsequently show that in a business-as-usual climate-change scenario the geographical position of this human climate niche is projected to shift more over the coming 50 years than it has moved since 6000 BP. Populations will not simply track the shifting climate, as many factors other than climate affect decisions to migrate, and adaptation in situ may address some of the challenges of climate change. However, if humans were to be distributed over climate conditions as they have been for the past millennia, our analysis shows that by 2070 roughly 30% of the projected global population would have to be moved, given a business-as-usual scenario of climate change and population growth. In the absence of migration, 3.5 billion people will experience a MAT >29 °C currently found in only 0.8% of the global land surface, mostly concentrated in the Sahara. Substantial climate change mitigation could greatly reduce these estimates.

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Liang Emlyn **Yang**
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Department of Geography

Spatial-temporal dynamics of social resilience to flood hazard impacts

Concerns are rising that the earth system may reach some critical tipping points in the coming decades. Though, growing evidence also supports the potential of positive social tipping points that could propel transformative changes towards global sustainability. This study proposed a systematic model on unique cases of flood resilience, which demonstrates a positive perspective over various spatial and temporal scales.

The study focuses on the historical Tea Horse Road area (THR), a mountainous region of the Southeast Tibetan Plateau with well-documented history going back over 600 years. The study first sets up a theoretical framework on the multi-spatial-temporal features of flood resilience at the THR region, which covers the spatial differences (household, community, city and region) over the past 600 years regarding the governance, technology, society, and culture perspectives of flood resilience. A set of quantitative proxy data, historical archives, literature re-analysis, statistical data, observation data and field survey data are integrated into both the empirical study in the case areas and the agent-based modelling across the cases. The study aims to further establish an understanding of the spatial-temporal scales of flood resilience, and model the spatial-temporal dynamics of flood resilience using agent-based models. Preliminary results indicated that, various strong and smart social regulations (governance, institutions, plans, management, motivations, orders, donations, dedication, etc.) enabled a wise development of many water conservancy projects that consequently enhanced the resilience of local communities to hydrological hazards.

Keywords: flood resilience, social resilience, positive tipping points, coping measures, spatial-temporal dynamics, Tea Horse Road area

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Dr. Guofang **Zhai**
Nanjing University
School of Architecture and Urban Planning

Improving flood resilience through regional planning

Along with economic and environmental globalization, various disasters such as floods, earthquakes and so on have occurred frequently in recent years and caused a large scale of human and economic damages. It has become common knowledge to solve the problem by resilience governance, however how to put it into practice still remains a lot of issues. This report takes the ongoing research on regional flood resilience improvement in Hubei Province, China as a case study to give some implications on improving flood resilience through regional planning based on the five-dimension framework of resilience governance including area size, stage, risk type, resources and stakeholders and so on. After systematically analyzing the characteristics and existing problems of disaster risk response measures in Hubei Province, we propose a comprehensive strategy system to comprehensively enhance the regional resilience of Hubei Province from aspects such as natural based solutions (NBS), engineering protection measures for hazardous areas, drought prevention and control strategies, and institutional mechanisms. This provides a scientific basis for the making-up of regional planning and comprehensive disaster prevention and reduction strategies in Hubei Province.

Keywords: flood resilience, five-dimension framework, resilience governance, regional planning

Climate Risks and resilience in socio-ecosystems

Dr. Xiaoyue **Zhang**
Tsinghua University
School of Environment

Can flood resilience of green-grey-blue system cope with future uncertainty?

Urban flooding is becoming a great global concern due to growing cities, while climate change and urbanization may pose daunting challenges to both environment and humans. The integrated green-grey-blue (IGGB) system has gained interests worldwide to mitigate flood issues, however, how IGGB system acts in urban flood resilience and whether it can address future uncertainties have not been fully understood. Therefore, a new framework, which combined an evaluation index system and coupling model (MIKE SHE-MIKE 21-MIKE 11-SWMM), was constructed to quantify urban flood resilience (FR) and its responses to future uncertainties. This study quantified the effects and response to future uncertainty of IGGB system on urban flood resilience. Besides, how does flood resilience respond to climate change and urbanization has also been explored. The results of this study aim to guide IGGB design and urban flooding management.

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Tuesday, 7 + Wednesday, 8 November

International Workshop / 3

Goethe, die Weimarer Klassik und die deutsch-chinesischen Literaturbeziehungen

Chair: Friedrich Vollhardt, Wei Hu

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Goethe,
die Weimarer
Klassik und die
deutsch-chinesi-
schen Literatur-
beziehungen

Dr. Anna **Axtner-Borsutzky**
Ludwig-Maximilians-Universität München
Faculty of Languages and Literatures, Department I –
Germanistik, Komparatistik, Nordistik, Deutsch als Fremdsprache

Literary and historical Chinese Gardens in the »Weimarer Klassik«

Abstract fehlt / Dieser Text steht anstelle des tatsächlichen Dokumentes und soll lediglich einen Eindruck vermitteln, wie Schriftart, Schriftgröße und Satzbreite im Layout im Zusammenspiel wirken. Der Inhalt dieses Textes steht mit dem richtigen Manuskript zu diesem Dokument in keinem Zusammenhang. Dieser Text steht anstelle des tatsächlichen Dokumentes und soll lediglich einen Eindruck vermitteln, wie Schriftart, Schriftgröße und Satzbreite im Layout im Zusammenspiel wirken.

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Goethe, die Weimarer Klassik und die deutsch-chinesischen Literaturbeziehungen

Prof. Dr. Thomas **Borgard**
Ludwig-Maximilians-Universität München
Faculty of Languages and Literatures, Department I –
Germanistik, Komparatistik, Nordistik, Deutsch als Fremdsprache

Die Rezeption traditioneller chinesischer Kulturzeuenisse im Rahmen der europäischen ‚Wertkrise' zu Beginn des 20. Jahrhunderts

‚Einen ausweg aus der krisis der europäischen kultur auf irgend einem begangnen wege gibt es nicht mehr' schreibt der (später mit Hermann Hesse befreundete) Schriftsteller Rudolf Pannwitz in seiner noch während des Ersten Weltkriegs erschienenen Schrift *Die Krisis der europaischen Kultur* (1917). Da es den „europäischen halbkulturen" vor allem an „Sittlichkeit" fehle, so Pannwitz, sei die kulturelle Erneuerung anhand von „gotamo buddho und Kungfutse" zu empfehlen. Inzwischen lag die mehrbändige Übersetzung *der Reden Gotamo Budhos* ins Deutsche durch den Orientalisten Karl Eugen Neumann (1911) vor: Ganz selbstverständlich wird die sonst Goethe oder Schiller zugedachte Eigenschaft des ‚Klassischen' jetzt „laotse" zugeschrieben und dem zeitgenössischen Kulturvermittler „ku hung-ming"（辜鴻銘). Denn: „die babylonier sind die römer des alten orients die chinesen dessen griechen und orientalen". Erst im Traditionsbestand vermag Pannwitz Unverfälschtes zu erkennen, sei doch der gegenwärtige Orient anders als der „grosze orient der klassischen kulturen" durch europäische Einflüsse „verdorben". Genannt werden „kolonialwaren-minister und -händler", „globe-trotter mystagogen abenteurer forschungsreisende". Die Krise war also in Zuge des durch gesellschaftliche Umschichtungen, Industrie, Krieg sowie allerlei „Rationalisierungen" (Max Weber) beförderten Funktionsverlusts ‚christlicher Werte' nicht mehr ‚endogen' zu bewältigen. Gleichzeitig wuchs das metaphysisch-religiöse Orientierungsbedürfnis, das sich „lebensphilosophisch" oder kulturanthropologisch begründen ließ und Verleger wie Hans Carl (Feldafing) und besonders Eugen Diederichs (Jena) zu großangelegten Schriftreihen motivierte, die noch nicht ausreichend systematisch untersuchte Dokumente einer chinesisch-europäischen ‚Kultursynthese' darstellen.

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Goethe, die Weimarer Klassik und die deutsch-chinesischen Literaturbeziehungen

Prof. Dr. Wei **Hu**
Peking University
German Philology

„Heilig Öffentlich Geheimnis" – The Concept of Nature and Its Poetic Presentation in Goethe's Late Group Poems „Gott und Welt"

From the nature worship in his childhood, the nature ode in the rapture period, to the study of Spinoza in the Weimar period, to the empirical observation of nature that lasted for half of his life. It can be said that Goethe's observation, contemplation and writing about nature are the fundamental propositions of his life, and the group poem „Gott und Welt", completed in 1827, which is a collection of natural philosophical poems written by Goethe in his later years, has received little attention in Goethe's studies. Through examining this group of „great nature poems", which is comparable to the Theory of the Nature of Things, and taking into account Goethe's philosophical resources and political situation in his later years, this paper explores Goethe's concluding reflections on natura naturans in his later years, and attempts to argue that Goethe's view of nature in his "Epoche der Vollendung" did not stop at „Pantheismus", but developed into a kind of "natura naturans" that is compatible with Eastern and Western philosophies, which is embodied in his epistemology, as „Heilig Öffentlich Geheimnis", and in poetics a paradigm shift from allegory to symbolism in modern literature.

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Yongqiang **Liu**
Zhejiang University
Institute of German Studies

Über Friedrich Kittlers Literaturgeschichtsschreibung und ihre Anregungen für chinesische Germanistik

Der Beitrag nimmt den ersten Teil von Friedrich Kittlers Habilitationsschrift *Aufschreibesysteme 1800/1900* als Untersuchungsgegenstand und versucht zu skizzieren, wie er dort die Literaturgeschichte um 1800 als „Teil der Geschichte von Kulturtechniken und Datenverarbeitungsmaschinen" darlegt. Auf Basis dieser Erkenntnis wird in einem weiteren Schritt nach dem Sinn und der Versprechung von einer solchen Literaturgeschichtsschreibung für chinesische Germanistik gefragt. Hier werden Gedanken darüber gemacht, ob sie sich auf den chinesischen Kontext übertragen lässt oder es vielmehr gilt, ausgehend von den lokalen Bedingungen Chinas theoretisch sowie empirisch zu forschen.

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Dr. Han **Liu**
Shanghai International Studies University
Germanistische Fakultät

Der Einfluss der deutschen Philosophie auf den Neuen Konfuzianismus

Der New Confucianism ist eine philosophische Bewegung, die in Japan nach der Meiji-Reform entstand. Sie wurde von dem japanischen Philosophen und Sinologen Hattori Unokichis (1860–1939) begründet. Hattori war stark von der deutschen Sinologie und deutschen Philosophie, insbesondere von Immanuel Kant, beeinflusst. Er versuchte, die konfuzianischen Lehren mit den Ideen der Aufklärung zu vereinen. Der New Confucianism hatte einen großen Einfluss auf die Beziehung zwischen Japan und China. Er wurde von dem japanischen Kaiserhaus als Begründung für die Expansionspolitik Japans in Ostasien verwendet. Der Begriff „Schicksal des Himmels" wurde zu einer der theoretischen Grundlagen der japanischen Propaganda für den Krieg. Diese Studie untersucht den Einfluss der deutschen Philosophie auf den New Confucianism mit der deutschsprachigen Abhandlung Konfuzius von Hattori Unokichi, die 1902 in Frankfurt veröffentlicht wurde. Darüber hinaus wird in der Studie gezeigt, wie sich diese Gedanken in der damaligen Kulturpolitik Japans gegenüber China durchsetzen.

Schlüsselwörter: New Confucianism, Hattori Unokichis, Immanuel Kant

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Dr. Mingchao **Mao**
Peking University
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Friedrich Schillers Konzept des Staates

The central concept of political philosophy, the State, is also the focus of Friedrich Schiller, the representative person of the Weimar Classics. Unlike Fichte or Hegel, who hold in esteem the concept of state, Schiller emphasizes in his historical lecture "The Legislation of Lycurgus and Solon" that the state is never the end, and underlines in his play "Don Carlos" and other relevant texts that the individuals are never merely the means. He rather considers the promotion of comprehensive development of individuals as the fundamental purpose of a political community, just like Kant and Humboldt. By drawing on the idea of isomorphism of state and person, Schiller outlines in his "Letters on the Aesthetic Education of Man" a path of political reform by shaping an aesthetic state through perfectioning of human nature. Despite its utopian overtones, Schiller's concept of state became nevertheless an extremely rare alarm in the darkest years of German history.

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Goethe, die Weimarer Klassik und die deutsch-chinesischen Literaturbeziehungen

Jonathan **Schmidt-Dominé**
Ludwig-Maximilians-Universität München
Faculty of Languages and Literatures, Department of Comparative Literature

Sprachursprungstheorien und die Allgemeinheit der Erkenntnis bei Salomon Maimon

Salomon Maimon ist in die Geschichtsschreibung des deutschen Idealismus vor allem als der skeptizistische Kritiker der Kant'schen Erkenntnistheorie eingegangen. Dieser Skeptizismus erweist sich als fundiert in der in Maimons Analyse der Angewiesenheit endlicher Vernunftwesen auf die bloß symbolische, statt intuitive Erkenntnis und damit auf die Repräsentation von Vorstellungen durch Zeichen. Möchte man nachvollziehen, inwiefern für Maimon Gewissheit über für alle Menschen oder Vernunftwesen gleichermaßen verbindliche und für jeden intendierten Gegenstand gültige Aussagen, kurz: strenge Allgemeingültigkeit im Bereich der Erfahrung durch die sprachliche Verfasstheit der Erkenntnis unmöglich gemacht wird, so ist eine genauere Bestimmung der Position Maimons zu zentralen sprachphilosophischen Kontroversen im Zeitalter der Aufklärung nötig.

Wie viele seiner Vorgänger innerhalb der Aufklärung diskutiert Maimon sprachphilosophische Fragen im Rahmen von Theorien über den Ursprung der Sprache unter Einbeziehung empirischen Sprachvergleichs bzw. empirischer Sprachgeschichte. Maimon knüpft an theoretische Erwägungen über das Verhältnis von Sprache und Erkenntnis etwa bei Leibniz, Wolff oder Mendelssohn (als Kommentator des Maimonides) ebenso an wie an die von einem reichen empirischen Material ausgehende Arbeit Burnetts oder auch die Berichte von Moritz über die Sprache von Taubstummen im „Magazin für Erfahrungsseelenkunde", an dem Maimon mitwirkte. Maimon präsentiert dabei zwei, teilweise miteinander konfligierende Modelle des Ursprungs und der Entwicklung der Sprache, wobei das eine Modell ausgehend von einer Tropentheorie den Allgemeinheitsanspruch der Sprache durch eine Ursprungshypothese zu rechtfertigen sucht, während das andere Modell ausgehend von Burnett die unterschiedlich starke Ausprägung allgemeinbegrifflicher Verhältnisse in den Sprachen in den Blick nimmt.

Die Analyse von Maimons Modellen zeigt, dass um die mögliche Abhängigkeit der Erkenntnis von den Partikularitäten einer Sprachgemeinschaft zu verstehen, hiervon zwei andere Fragen, die auf die Allgemeinheit sprachlich verfasster Erkenntnis abzielen, zunächst zu trennen sind: Sind sprachliche Bedeutungen privat oder öffentlich/geteilt? Ist die grundlegende Operation sprachlichen Bedeutens die Bildung allgemeiner Begriffe oder die Benennung individueller Objekte? Maimons Leistung besteht dabei darin, die Frage linguistischer Relativität der Erkenntnis, die etwa von Locke oder Berkeley mit der Privatheit und raumzeitlichen Gebun-

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denheit und Partikularität von Bedeutung begründet wird, von diesen Annahmen zu trennen. Gerade die – mit einer Traditionslinie von Leibniz bis Hegel geteilte – Annahme, dass Sprache wesentlich Allgemeinheit ausdrückt und deshalb konstitutiv für die Bildung allgemeiner Begriffe ist, ermöglicht so erst Maimons Skeptizismus, der trotz der Möglichkeit einer Klärung der natürlichen Verhältnisse der Begriffe gemäß einer universellen Grammatik, eine unauflösliche Inkommensurabilität empirischer Begriffssysteme und damit eine Unerkennbarkeit der Konstitution der Erfahrungsgegenstände für möglich hält.

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Goethe, die Weimarer Klassik und die deutsch-chinesischen Literaturbeziehungen

PD Dr. phil. habil. Christoph **Schmitt-Maaß**
Ludwig-Maximilians-Universität München
Faculty of Languages and Literatures, Department I –
Germanistik, Komparatistik, Nordistik, Deutsch als Fremdsprache

Der ‚chinesische Geist' als ‚Gemeingut der Menschen'. Der Sinologe Richard Wilhelm (1873–1930) als Goethe-Interpret

Der deutsche Missionar Richard Wilhelm verbrachte 25 Jahre in Qingdao. Er erlernte die chinesische Sprache und übersetzte u.a. das Tao Te King ins Deutsche. Daneben beschäftigte er sich mit der deutschen Kultur, v.a. mit Goethe. Ich möchte zeigen, wie Wilhelms Auffassung eines chinesischen Universalismus sich auf seine Goethe-Interpretation (und speziell mit Goethes Auseinandersetzung mit China) auswirkte.

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Dr. Michael **Schwingenschögl**
Tsinghua University
Department of Philosophy

From mantle convection to seismic observations: A forward-modelling approach to better constrain mantle evolution and core-mantle-boundary heat flow

The 18th century saw several heated debates about a new understanding of natural history. Theories not only differed in terms of content, but in their physical and theological justifications, and they were oftentimes accompanied by conflicts around the dichotomy of empirical and speculative research. The discussion of the nature of comets or the questions concerning the Earth's formation (vulcanism vs neptunism) are just two examples for this process. Furthermore, scientific notions concerned poetry and poetics alike, since the fictional re-creation of cosmic order was supposed to take into account the paradigm changes in man's grasp of nature. Such issues are addressed by Goethe's poem Weltseele. Combining discourses on astronomy, geology and biology, the text imagines a ‚Weltschöpfung' (original title) that results in an equally central and peripheral role for humanity. Discussing these contexts, the talk will also seek to filter out the ironic qualities of *Weltseele*.

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Goethe, die Weimarer Klassik und die deutsch-chinesischen Literaturbeziehungen

Yanrui **Zhao**
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Faculty of Languages and Literatures, Institut für Deutsche Philologie

Die Entwicklung des China-Bilds im Werk von Max Frisch

Max Frisch ist ein weltberühmter Schweizer Schriftsteller. In seinen Werken finden sich viele Bezüge zu China, besonders in seinen frühen Werken <Bin oder Die Reise nach Peking> und <Die Chinesische Mauer> u.a. gibt es viele chinesische Themen und China-Motive z.B Peking, die Große Chinesische Mauer, die Stadt Nanking, der Philosoph Kung Fu Tse, Kaiser Tsin Sche Hwang Ti, Gong usw., die mitunter schon aus den Titeln seiner Werke ersichtlich sind. Im Jahre 1945 erschien seine Roman <Bin oder Die Reise nach Peking>. Das Drama <Die Chinesische Mauer> erschien im Jahre 1946. Beide Werke waren und sind erfolgreich. Frisch erreichte mit ihnen ein breites Publikum.

Im Jahre 1975 unternahm Max Frisch eine Chinareise. Er war Teilnehmer der Delegation des damaligen deutschen Bundeskanzlers Helmut Schmidt. Dies ergab sich als eine Folge seines literarischen Frühwerks. Schmidt berichtet, er habe Frisch damals mit seiner Einladung die Möglichkeit geben wollen, einmal die Chinesische Mauer in der Realität zu sehen. Am 9. Februar 1976 hat Max Frisch auch einen Artikel im Spiegel über die Schmidt-Reise in China geschrieben. Darin gibt es so viele ausführliche Informationen und Ideen von Frischs selbst Chinareise.[1]

Es gibt viele Artikel und Monographien über Max Frischs Romane und Theaterstücke, insbesondere über die Identitätsproblematik und die Erzählkunst in seinen Romanen und Theaterstücken. Bei Frisch wird Identität als Einheit von persönlicher und sozialer Identität verstanden. Studien über die China-Rezeption bei Max Frisch sind jedoch wenige erschienen. In dieser Artikel soll eine ausführliche Studie der China-Rezeption bei Max Frisch unternommen werden. Frisch verwendete viele typisch chinesische Bilder und China-Motive in seinen Frühwerken, wofür es viele Gründe gibt, die von mir im Einzelnen untersucht werden. Ich werde die verschiedenen Gründe analysieren; so steht bei Frisch z.B. „das Motiv Peking nicht für die reale chinesische Hauptstadt, sondern Peking ist ein Ort in der Phantasie und auch ein Gedankenzustand."[2] Es ist ein Ort der östlichen Philosophie und Spiritualität. <Die Chinesische Mauer> ist eine Parabel. Da in Parabeln eine Verweisungsstruktur auf die wirkliche Welt enthalten ist, sind sie meist durch eine bildhafte Sprache gekennzeichnet. Aus diesem Grund sind rhetorische Figuren wie Metaphern, Ironie, Vergleiche, Personifikationen und konnotierte Begriffe sehr häufige Elemente dieser Textsorte. „Während diese Stilmittel bei Brecht zur Distanzierung des Zuschauers in seinen politischen Parabeln dienen, benutze Frisch China als Metapher für die Diskrepanz zwischen technischem Fortschritt und Humanität."[3]

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Ich werde die unterschiedlichen Funktionen seiner China-Motive analysieren. Frisch übertrug Prinzipien des epischen Theaters Bertolt Brechts sowohl in sein dramatisches als auch sein erzählendes Werk. Allerdings gibt es unterschiedliche Funktionen des China-Motivs bei den beiden Dramatikern.

1 Frisch, Max: „Nein, Mao habe ich nicht gesehen" Max Frisch mit Kanzler Helmut Schmidt in China. 09. 02.1976. der Spiegel
2 Bin oder Die Reise nach Peking – Wikipedia https://de.wikipedia.org/wiki/Bin_oder_Die_Reise_nach_Peking
3 Manfred Durzak: Dürrenmatt, Frisch, Weiss. Deutsches Drama der Gegenwart zwischen Kritik und Utopie. Reclam, Stuttgart, 1972, S. 175–176.

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Tuesday, 7 November

International Workshop / 4

Geophysical highlights and transformations from the core to the magnetosphere

Chair: Stuart Gilder, Xiaodong Song

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Geophysical highlights and transformations from the core to the magneto-sphere

Hans-Peter **Bunge**
Ludwig-Maximilians-Universität München
Faculty of Geosciences, Department für Geo- und Umweltwissenschaften, Geophysik

Geodynamic Earth Models and links to continent-scale stratigraphy

Geodynamic Earth Models, also called Mantle Circulation Models (MCMs), have become a standard tool in Geodynamics over the past 20 years, linking into many branches of the Earth Sciences. The arrival of Exa-Scale Computing makes the models even more useful, because they can represent the full convective vigour of the Earth mantle with no need for scaling. Here I connect MCMs to continent scale stratigraphy, as an exciting new application of Geodynamic Earth Models. I will also report on Poiseuille/Couette flow as a powerful way to analyse upper mantle flow. Finally I will introduce state-of-the-art adjoint simulations that allow us to reconstruct the Cenozoic mantle flow history back in time.

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Liao **Chang**
Peking University
School of Earth and Space Sciences

Ocean oxygenation evolution through Cenozoic warming

Oxygen levels in the ocean are fundamentally important to life, and mediate a wide range of biological and geochemical processes, including cycling of carbon and nutrients. Understanding ocean redox perturbations across Cenozoic global warming periods using marine sedimentary records can provide important insights into our current and future warming world. During global climate change, patterns of oceanic oxygen distributions changed heterogeneously, and there are discrepancies between sediment reconstructions and Earth System model predictions. Reconstructions of ocean oxygenation in many ocean areas have been hampered by the lack of suitable proxies. Magnetofossils are fossilized magnetic nanoparticles of magnetite or greigite biomineralized by magnetotactic bacteria. They are sensitive to ocean redox conditions that are linked to bottom water oxygenation and organic carbon supply. Magnetofossils are widespread in marine sediment environments and have been used to reconstruct paleoredox conditions over a range of geological settings and time periods. I will present the rationale of magnetofossil paleoredox proxy and recent methodological advances in quantitative magnetofossil characterizations, then magnetofossil records from sediment cores in the southeast Atlantic, north Atlantic, southwest Pacific, and eastern Indian Ocean across Cenozoic global warming periods, and Pleistocene glacial-interglacial cycles. Large variations in magnetic, chemical, and morphological properties of magnetofossils produced at different time and water depths are documented. Together with redox-sensitive carbon isotope and geochemical proxies, the magnetofossil records are used to indicate redox changes linked to short-term and long-term ocean processes associated with temperature rise, ocean circulation, and others during ancient warming. These results provide new constraints on understanding processes of ocean deoxygenation during the current global warming, the role of oceans in regulating the carbon pool during climate change, and thus on the persistent habitability of planet Earth. We demonstrate the value and promise of using magnetofossil records for reconstructing ocean paleoredox conditions and carbon dynamics over time and space.

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Geophysical highlights and transformations from the core to the magneto-sphere

Prof. Stuart **Gilder**
Ludwig-Maximilians-Universität München
Faculty of Geosciences, Department of Earth and Environmental Sciences

The magnetic state of iron in Earth's inner core

The Earth's solid inner core contains relatively pure iron under pressures of 330-360 GPa and temperatures around 5600 K, likely in a hexagonal closed packed (hcp) structure. It is commonly assumed that hcp iron is in a paramagnetic state, as the temperature in the core surpasses the Curie temperature of iron at ambient conditions (1043 K). Studies that use high-energy synchrotron techniques to probe the magnetic state of iron-- either via Mößbauer or X-ray magnetic circular dichroism (XMCD)-- mostly show the loss of magnetic ordering during the transformation of iron at 13-15 GPa from the ferromagnetic body centered cubic (bcc) structure to the hcp structure. The LMU Munich lab has the capability to measure the magnetic remanence of bulk samples under pressure in diamond and moissanite anvil cells that are inserted into a superconducting magnetometer. These experiments repeatedly show the persistence of magnetic remanence in iron well into the hcp stability field. Comparison between magnetic remanence experiments with Mößbauer or XMCD demonstrates the latter techniques lose signal whereas remanence remains finite; e.g., they are insensitive relative to remanence. This leaves open the possibility that hcp is weakly ferromagnetic or, more likely, that the interface between the bcc and hcp phases during the martensitic transition stabilizes magnetization in the highly strained material. The question remains whether ferromagnetism can persist at core temperatures? Recalling that the Curie temperature of magnetite increases 20 K/GPa, and if this were also the case for iron, iron's Curie temperature could be 7000 K at core conditions--higher than core temperatures. If paramagnetic, the susceptibility of iron follows the Curie-Weiss law with a 1/T relationship above the Curie temperature. Although the susceptibility would be ca. 5000 times smaller at the core, the susceptibility might still be non-negligible. Given that the iron core lies immersed within the geodynamo generated in the liquid outer core, coupling between the magnetic field and a (para)magnetic ball of iron 1220 km in radius (1023 kg) could dampen high-frequency magnetic field variations, preferentially align iron crystals, etc.

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Baochun **Huang**
Peking University
School of Earth and Space Sciences

Ancient geomagnetic field intensity study on Archaeological Pottery from Xinjiang, China

Reliable data on the ancient geomagnetic field intensity (paleointensity) during human history in western China is extremely scarce, and relevant research is urgently needed. Rock magnetic and paleointensity study by an improved double heating method was conducted on archaeological pottery samples from Changji, Kashgar, Tashkurgan, and other places in Xinjiang (China). The results show that some samples carry stable primary magnetization, from which ancient geomagnetic field intensity data between ~1000 BC and ~1200 AD were obtained. After series data selections and corrections, the virtual axial dipole moment (VADM) results of ~5-11×1022 Am2 were obtained. It is roughly in the same range as the data published in other regions of China during the same period, but the amplitude of variation is significant, which is inconsistent with the global magnetic field model SHAWQ2k. Comparing our new data with the ancient intensity peak in the Middle East region at ~800 AD and the ancient geomagnetic field intensity peak in East Asia region at ~200 AD, the fitting results indicate that there may be an ancient geomagnetic field intensity peak in Xinjiang region at ~540 AD, with the peak reaching between East Asia and the Middle East region. This result is consistent with the westward drift characteristics of non-dipole fields, further indicating that this ancient geomagnetic field intensity peak may be related to the dynamics of the Earths outer core.
Keywords: Earth's magnetic field ; ancient geomagnetic field intensity; Xinjiang region; archaeological pottery

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Geophysical highlights and transformations from the core to the magneto-sphere

Prof. Dr. Heiner **Igel**
Ludwig-Maximilians-Universität München
Faculty of Geosciences, Department of Earth and Environment

Ring laser technology for geodesy and seismology

Ring lasers measure rotational motions with very high accuracy. Originally, they were designed to observe Earth's rotation. The unwanted noise of ring lasers (whenever seismic wave fields perturb their measurements of Earth's rotation rate) has led to a new field: rotational seismology. The additional ground motion components (i.e. rotation around three orthogonal axes) had been widely ignored, as they are very difficult to measure. Yet, when combined with collocated standard seismometers (three components of displacement) a wealth of information can be recovered from the wavefield. We will report on the state of the art of ring lasers for measuring Earth's rotation and new developments with applications in seismic tomography, earthquake physics, planetary seismology, engineering, and other fields.

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PD. Dr. Elena **Kronberg**
Ludwig-Maximilians-Universität München
Faculty of Geosciences, Department of Geophysics

Terrestrial magnetosphere: Kelvin-Helmholtz Instability associated with reconnection and Ultra Low Frequency Waves at the ground

The Kelvin-Helmholtz instability (KHI) and its effects relating to the transfer of energy and mass from the solar wind into the magnetic environment of the Earth remain an important focus of magnetospheric physics. One such effect is the generation of Pc4-Pc5 ultra low frequency (ULF) waves (periods of 45–600 s) at the ground. On July 3, 2007 at ~ 0500 magnetic local time the Cluster space mission encountered Pc4 frequency Kelvin-Helmholtz waves (KHWs) at the high latitude magnetopause. Typically, KHI is thought to occur during the northward polarity f the interplanetary magnetic field, however, the event occurred during a period of the southward polarity according to the OMNI data and THEMIS observations at the subsolar point. Several of the KHI vortices were associated with magnetic field reconnection. Global magnetohydrodynamic simulation of the event confirmed the generation of KHWs at the magnetopause. The observed KHWs associated with reconnection coincided with recorded ULF waves at the ground whose properties suggest that they were driven by those waves. This indicates that the solar wind energy via KHI generates the ULF waves at the ground.

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PD Dr. Florian **Lhuillier**
Ludwig-Maximilians-Universität München
Faculty of Geosciences, Department of Earth and Environmental Sciences

Is the Cretaceous Normal Superchron characterised by a distinct geodynamo regime?

Over geological timescales, the geomagnetic field-generated by a self-sustained dynamo in the Earth's fluid outer core-significantly varied its rate of polarity reversals, from prolonged periods (>20 Myr) with stable polarity termed superchrons to episodes of hyperactivity with a reversal rate greater than 10 Myr-1. Additionally, the geomagnetic field may also have changed its dipolarity, its average dipole strength, as well as its temporal variability during stable periods termed palaeosecular variation (PSV). In this contribution, we discuss the arguments for and against the existence of a distinct regime of the geodynamo during the Cretaceous Normal Superchron (CNS, 84–121 Ma), the latest of the three superchrons documented during the Phanerozoic. On the one hand, we showed that well-chosen PSV proxies-based on the dispersion of the virtual geomagnetic poles and/or of the relative palaeointensity for sequences of lava flows-tend to support lower activity of the geodynamo during the CNS. On the other hand, recent analyses of the absolute palaeointensity (API) database showed that the value of the average dipole moment during the CNS may not significantly differ from its value during the whole Cretaceous. Using a more robust statistical analysis of the dependency between geomagnetic field strength and inclination (angle made by the horizontal with the field lines), we also could not identify a distinct signature of the geodynamo during the CNS. Whether this apparent decoupling between PSV and dipole moment is a genuine feature of the geodynamo or an experimental bias-due for instance to sparse and/or contaminated measurements in the API database-hitherto remains a controversial issue.

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Dr. Bernhard **Schuberth**
Ludwig-Maximilians-Universität München
Faculty of Geosciences, Department of Earth and Environmental Sciences

From mantle convection to seismic observations: A forward-modelling approach to better constrain mantle evolution and core-mantle-boundary heat flow

Mantle evolution and its structure and processes at the core-mantle boundary influence the core dynamics and the long-term behaviour of the geomagnetic field. One major challenge in better understanding these deep Earth processes is to bridge the gap between theoretical models and surface observations. One promising route is to exploit the wealth of information contained in seismic data (i.e. the millions of digital seismic recordings acquired over the past decades). However, seismic data only provide us with a single snap-shot in time of Earth's history, and it is still an unsolved problem how to interpret them in terms of the present-day thermodynamic state of the mantle. In particular, it is difficult to accurately constrain both length-scales and magnitudes of mantle heterogeneity, as seismology inherently acts as a low-pass filter and can thus only provide us with a blurred and low-fidelity version of the true Earth structure. In addition, there is a trade-off between thermal and chemical effects, which both influence seismic velocities in similar ways. One possibility to overcome these limitations is to use numerical fluid-dynamics simulations to theoretically predict mantle evolution forward in time based on some geophysical hypotheses, and much progress has been made over the past decades in modelling mantle convection. Secondary surface observables then need to be computed for such models in order to test them against Earth observations. Here, we review recent developments targeted towards linking theoretical mantle models to seismic observations in a quantitative way. By converting the temperature field of mantle circulation models to seismic velocities using thermodynamic mineralogical models and subsequently simulating 3-D wave propagation in the hypothetical mantle structures, it is possible to compute synthetic seismic data that bear a physically consistent relation to the underlying lateral temperature variations. Furthermore, we demonstrate the importance of taking the limited seismic resolution and uncertainties in the various input parameters into account when comparing to real data. Analysing 3-D wavefield effects in synthetic models of mantle flow opens up a new way for constraining the magnitude of buoyancy forces and the spectrum of seismic structures in the deep mantle. By virtue of the underlying geodynamic model, this approach will moreover allow for better estimates of the evolution of heat flow at the CMB that has a controlling influence on the reversal rate of the geodynamo.

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Xiaodong **Song**
Peking University
Institute of Theoretical and Applied Geophysics, School of Earth and Space Sciences

Differential rotation of the Earth's inner core: Implications for the dynamic earth system

Evidence for the differential rotation of the solid inner core (IC) relative to the mantle was reported from seismological observations in 1996. In the subsequent nearly three decades, the idea has gone through twists and turns. In this presentation, I will briefly review the initial ideas and the development since. I will touch on the following main questions. How the idea was proposed? Are IC temporal changes real or artifact? Where do the temporal changes come from? What is the rotation rate? Does the rotation vary with time? What causes the (variable) rotation? And finally, what are the implications for the dynamic earth system?

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Dr. Michael **Wack**
Ludwig-Maximilians-Universität München
Faculty of Geosciences, Department of Earth and Environmental Sciences

SushiBar 2.0: Improved automated paleo- and rock magnetic measurement system in Munich

Paleo- and rock magnetic studies require precise measurements on large sample sets. For over ten years, the Munich paleomagnetic laboratory has operated a unique, homemade system called the SushiBar, which can automatically treat 99 inch-core rock samples in a series of programmable steps. The SushiBar has now undergone an extensive renovation that brings a variety of new measurement capabilities. One major improvement is a new sample handling mechanism that is based on 3D-printed sample holders with very weak magnetizations (< 1e-11 Am^2). It enables the manipulation of samples in any orientation relative to the instruments through the ability to rotate the samples about two independent axes. This allows, for example, users to impart magnetic fields in an unlimited number of directions and measure the acquired remanences to better estimate the magnetic anisotropy tensor. In addition to the existing superconducting rock magnetometer (SRM) and alternating field (AF) demagnetizer with direct current bias field coil to impart anhysteretic magnetizations, we installed three new homemade instruments in two new workstations. One is a susceptibility meter that measures both in-phase and out-of-phase magnetic susceptibility at operating frequencies from 200 to 5000 Hz and at field strengths from 100 to 500 µT. Combined with the new sample handling mechanism, this instrument can be used to measure the anisotropy of magnetic susceptibility. Second, a fluxgate magnetometer array can measure the magnetic moment of samples that are too strong for the SRM (>1e-4 Am^2). This increases the measurement range of the SushiBar for magnetic moments by 4 orders of magnitude, thereby permitting automated stepwise AF demagnetization of strong volcanic rocks. Third, a Metglas-core AF demagnetizer was installed that can reach 0.4 T, approximately 4 times higher than the existing one. This instrument can also create static magnetic fields, thereby enabling users to impart isothermal remanent magnetizations with subsequent measurements on the fluxgate system. Altogether, the SushiBar offers automatic, highly precise measurements at any sample orientation with a variety of different instruments, making it a unique tool for paleo- and rock magnetism.

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Tuesday, 7 November

International Workshop / 5

The brain tumor microenvironment as a therapeutic target

Chair: Rainer Glass, Nu Zhang

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Jiying **Cheng**
Sun Yat-Sen University
Department of Neurosurgery

Paracrine Humanin Signaling Promotes Glioma Chemoresistance

Transcriptomic analysis of human tumor-associated macrophages (TAMs) in glioblastoma (GBM) revealed the upregulation of the mitochondrial ribosomal subunit MT-RNR2, which contains an open reading frame for the signaling peptide Humanin (HN). Immunohistochemistry confirmed the high expression of HN in TAMs. In vitro assays with multiple human stem-like GBM cell lines disclosed that nanomolar range of HN can prompt tumor cell expansion and chemoresistance to temozolomide (TMZ). A series of experiments showed that HN binds to extracellular receptor GP130 (IL6ST) and stimulates MAPK (ERK)-related signaling pathway to enhance human glioma stem cell (GSCs) viability. Mechanistically, HN promoted the ATR-dependent DNA-repair machinery in GSCs via induction of the DNA-clamp component HUS1. Exogenous delivery or overexpression of HN in orthotopic GBM mouse models also confirmed HN effect in inducing chemoresistance to TMZ in GBM. Blockade of the GP130 with exogenous delivery of GP130 inhibitor SC144 or the brain permeant, FDA-approved drug bazedoxifene acetate blocked HN-mediated chemoresistance both in vitro and in vivo, and exhibited survival benefit. Overall, we identified a peptide that can induce the expansion of GBM and the chemoresistance to TMZ, which can be a potential predictive marker of chemoresistance to GBM.

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Yixin **Gao**
Sun Yat-Sen University
The First Affiliated Hospital of Sun Yat-Sen University

TREM2 Defines the Protective Landscape of Myeloid Cells in Glioblastoma

Glioblastoma (GBM) is the most common primary malignant brain cancer, characterized with remarkable infiltration of immunosuppressive myeloid cells. Although numerous myeloid cell targets have been identified in peripheral cancers, their application in GBM is unknown, due to the complex and distinct features of the brain microenvironment. Here, we identify a critical target, triggering receptor expressed on myeloid cells 2 (TREM2), previously identified as an immunosuppressive target in peripheral cancers, plays an immune-protective role in GBM. Genetic elimination or pharmacological blockage of TREM2 promote tumor progression in GBM mouse models. By single-cell sequencing, we uncover that TREM2 is decreased in GBM infiltrated myeloid cells and it negatively correlates with the immunosuppressive myeloid cells and exhausted CD8+T cells signature. Restoring TREM2 expression in myeloid cells improves GBM mouse survival, Moreover, restoration combined with immune checkpoint blockade exhibits a further synergistic effect. Collectively, our results reveal a distinct role of TREM2 in GBM TME and support the discovery of organ-specific molecular targets in cancer immunotherapy.

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Rainer **Glass**
Ludwig-Maximilians-Universität München
Faculty of Medicine, Department of Neurosurgery, Neurosurgical Research

Paracrine tumor suppression by neural precursors indicates a new class of therapeutics

Previously we discovered that neural precursors (NPCs) can kill brain tumor cells (glioma cells) via endovanilloid release and that activation of the vanilloid receptor (TRPV1) in gliomas has therapeutic potential. We have investigated the underlying biological role of NPC-mediated tumor suppression and demonstrated the benefits of vanilloids and cannabinoids as glioma therapeutics. In particular, the clinically applied drug Cannabidiol (CBD; Epidiolex) has excellent tropism towards the brain, therapeutically modulates a central oncogenic pathway and thereby has efficient anti-tumor effects against a large range of GBM. Predictive biomarkers for CBD-sensitive GBM were obtained providing a basis for translational studies. Overall, this section of our symposium will indicate how an endogenous, paracrine tumor suppressor mechanism can be translated into a clinical strategy for brain tumor treatment.

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PD. Dr. sc. nat. Roland **Kälin**
Ludwig-Maximilians-Universität München
Faculty of Medicine, Department of Neurosurgery, Neurosurgical Research

TAMEP, a newly identified myeloid subpopulation to target tumour-angiogenesis in the brain

Objective
Glioblastoma (GBM) depend on support by their local environment. Vascular cells as well as tumour-associated myeloid cells (TAM) constitute the major components of the GBM-parenchyma. TAM, which consist of microglia and peripheral macrophages, accelerate GBM cell-invasion and the rich vascular network of GBM has important tumour-trophic functions. In this study, we identified a previously unacknowledged population of a local myeloid progenitor cell that transiently appeared during glioblastoma growth.
Methods
Using a glioma mouse model for lineage-tracing of tumor-parenchymal cells (nestin-creER2, R26-tdTomato; abbreviated as nestin-reporter mice), we observed (by single cell transcriptomics and immunofluorescence analysis) a subset of tumor-associated avascular cells over a time-course. In different transgenic mouse strains and in bone-marrow chimeric models we investigated the point-of-origin as well as the lineage-identity of these traced cells. These cells were further characterized by immunofluorescence in mouse models and patient samples of GBM. In a functional experiment, we induced a knockout of the transcription factor SOX2 in the traced tumor-associated cells and effects on tumor-progression were compared to SOX wild-type controls.
Results
The population of tumor-associated lineage-traced cells in the nestin-reporter model had remarkable similarity with microglia. However, they were distinct from TAM as they have no microglial origin and do not derive from the bone marrow. Strikingly, these traced cells derived from a local progenitor cell that is dormant in brain homeostasis. Induction of orthotopic glioma in nestin-reporter activated this SOX2-dependent progenitor cell population. Abrogation of this progenitor cell-population by conditional Sox2-knockout ablated the entire subset of these traced cells with a myeloid expression profile (TAMEP). Histopathological inspection showed that the small subset of TAMEP has large impact on disease-progression by controlling glioblastoma-vascularization and -size.
Conclusion
Our data suggest that dormant progenitors generate TAMEP (which are cells expressing myeloid markers but lacking a myeloid origin) that have profound neurooncological impact and point towards a new and promising therapeutic target in order to support anti-angiogenic regimen in GBM.

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Gen **Li**
Ludwig-Maximilians-Universität München
Faculty of Medicine, Department of Neurosurgery, Neurosurgical Research

Humanin controls glioblastoma neoangiogenesis

Glioblastomas (GBMs) are characterized by an abnormal vascular network comprising leaky and disorganized vessels. The induction of angiogenesis plays a crucial role in supplying oxygen and nutrients, thereby prompting tumor cell survival and tumor progression. Humanin (HN), a peptide transcribed by GAMs overexpressed the mitochondrial ribosomal subunit MT-RNR2, exhibits potential effects on tumor angiogenesis. We found overexpressing humanin GBM tumors are more predisposed to hemorrhage, irrespective of concurrent temozolomide (TMZ) treatment. Immunohistology conducted in murine in vivo models revealed a notable prevalence of abnormally shaped and densely packed vessels in HN-overexpressing tumors when compared to HN-wt human glioblastoma (hGBM) tumors. Interestingly, our investigation unveiled significantly elevated levels of pericyte coverage and vessel density in HN-overexpressing tumors. However, the underlying mechanisms driving the heightened propensity for bleeding, remain elusive and warrant further investigation. This study elucidates the intricate relationship between HN expression, tumor angiogenesis in GBMs, offering new avenues for research into the underlying molecular mechanisms and potential therapeutic interventions targeting this phenomenon.

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Prof. Nu **Zhang**
Sun Yat-Sen University
Department of Neurosurgery

Circular EZH2-encoded EZH2-92aa mediates immune evasion in glioblastoma via inhibition of surface NKG2D ligands

Glioblastoma (GBM) is a highly aggressive primary brain tumour and is resistant to nearly all available treatments, including natural killer (NK) cell immunotherapy. However, the factors mediating NK cell evasion in GBM remain largely unclear. Here, we report that EZH2-92aa, a protein encoded by circular EZH2, is overexpressed in GBM and induces the immune evasion of GBM stem cells (GSCs) from NK cells. Positively regulated by DEAD-box helicase 3 (DDX3), EZH2-92aa directly binds the major histocompatibility complex class I polypeptide-related sequence A/B (MICA/B) promoters and represses their transcription; it also indirectly represses UL16-binding protein (ULBP) transcription by stabilizing EZH2. The downregulation of NK group 2D ligands (NKG2DLs, including MICA/B and ULBPs) in GSCs mediates NK cell resistance. Moreover, stable EZH2-92aa knockdown enhances NK cell-mediated GSC eradication in vitro and in vivo and synergizes with anti-PD1 therapy. Our results highlight the immunosuppressive function of EZH2-92aa in inhibiting the NK cell response in GBM and the clinical potential of targeting EZH2-92aa for NK-cell-directed immune therapy.

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Ding **Zhou**
Ludwig-Maximilians-Universität München
Faculty of Medicine, Department of neurosurgery, Neurosurgical Research

Transgenic mouse models differentiate TAMEP progenitor from differentiateD TAMEP

To detect tumor-associated cells with a myeloid-like expression profile (TAMEP), we combined two different model to conduct nestin creert2 tdTomato, cx3cr1GFP model which is the model that can show TAMEP progenitor and differentiated TAMEP. But this nestin model can not only show the TAMEP cells but also show the pericyte with tdTomato signal which is not expected. Therefore, we set up another model: sox2 IRES creert2 tdTomato, cx3cr1GFP model to mark TAMEP specifically. Both of our model can trace TAMEP in GBM mouse model if we use the antibody of PDGFRB to exclude pericytes in nestin model.

Tuesday, 7 + Wednesday, 8 November

International Workshop / 6

China and Europe: Philosophies in comparison and civilizations in dialogue

Chair: Hans van Ess, Fengyu Zang
Secretary: Moritz Kuhlmann

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Prof. Dr. **Peter Adamson**
Ludwig-Maximilians-Universität München
Faculty of Philosophy, Philosophy of Science and Religious Studies

Skepticism Across Borders: Arguments from Animal Difference in Chinese, Greek, and Arabic Philosophy

This paper focuses on a skeptical argument that may be most familiar from its appearance in Sextus Empiricus, where it is treated as one of the skeptical "modes": animals have a different perspective on the world from humans; there is no reason to prefer the human perspective on the world to animal perspectives; therefore one should suspend judgment about the veracity of the human perspective. Obviously this argument needs a lot of filling out before it can be evaluated. To undertake this task, the paper begins from a resonant passage in the Taoist classic, the Zhuangzi, before examining in more detail the skeptical mode from animals in Sextus and similar material in Montaigne. The paper then turns to an epistle from the Islamic "Brethren of Purity," who imagined animals bringing a court case against humans. It is argued that this epistle adopts a view of animal difference that would make the skeptical mode especially powerful, by insisting on both the fundamental difference of animal perspectives and their equal validity. Finally, a response to the strengthened skeptical argument is suggested, one that brings us back to the Zhuangzi.

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Prof. Dr. Sebastian **Gäb**
Ludwig-Maximilians-Universität München
Faculty of Philosophy, Philosophy of Science and Religious Studies,
Department of Philosophy of Religion

Rationality East, West, and Everywhere

Quite a few Western interpreters of Chinese philosophy have argued that Chinese philosophy is essentially different from Western philosophy. Most importantly, they argue, Chinese philosophy has different concepts of rationality, truth, or reality, and is therefore incommensurable with 'Western thought' (whatever that might be). Against this position, I will argue that we have good reason to assume that there is a common ground in Western and Chinese concepts of rationality, and that the essential features of rationality are to be taken as universal and culturally invariant. I will do so by explaining the central role of rationality in hermeneutics – or in simply understanding another person in the most mundane contexts. Moreover, I will discuss some passages from a few Chinese philosophical classics to show that they, too, employ a universal concept of rationality. The consequences of this, or so I will argue, are not to be neglected: only if we accept that there is a universal concept of rationality will we be able to truly understand each other. If philosophy is to become a global project in which all cultures and traditions can equally take part, then a universal concept of rationality is indispensable.

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China and Europe: Philosophies in comparison and civilizations in dialogue

Zhijun **Huang**
Renmin University of China
The School of Philosophy

Marx's criticism of Hegel's speculative philosophy and its limits

By examining the Critique of Hegel's Philosophy of Right, the Paris Manuscript, The Holy Family and Capital and their manuscripts, we think that we should distinguish Marx's criticism of Hegel's speculative philosophy from Marx's affirmation and application of Hegel's speculative method. Marx emphasized the dialectical, that is, the negative side, while Hegel emphasized the speculative, positive understanding, that is, the reconciliation of contradictions. What Marx criticizes is not speculative thinking per se, but its external application. Such as Hegel's understanding of the family, civil society, the state and their relations. In the later criticism of political economy, Marx was positive about Hegel's speculative method, and made a new materialist transformation of it in application. In this sense, Marx's criticism of Hegel's speculative philosophy is also limited.

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Moritz **Kuhlmann**
Renmin University, School of Philosophy
Ludwig-Maximilians-Universität München, Department of Sinology

Dialectics in Early Marx and in the Chinese Tradition

This paper attempts to determine the precise motive that allows for a comparison between Marxian and Chinese dialectics. To this end, the first part specifies Marx's understanding of dialectics by analyzing the historical context (mainly philosophy of Enlightenment) and his early writings (before the Paris Manuscripts): Marxian dialectics concern the realization of the general through the particular. If the particular stands in non-dialectical opposition to the particular, domination occurs between the particular instead of realization of the general (alienation); if, on the other hand, the particular stands in dialectical contradiction to the general, it realizes the general (emancipation). If Marx's dialectic is determined in this way, new perspectives open up for comparison with classical Chinese philosophy, since previously dominant approaches (Tian Chenshan) examine Chinese dialectics from the perspective of symmetric opposition between particulars. The second part of this essay therefore attempts to show the potential of evaluating Chinese philosophy on the question of the realization of the general in particular. Two sources are shown as exemplification: Zhuxi's commentary on Yijing and a dialogue in Zhuangzi.

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China and Europe: Philosophies in comparison and civilizations in dialogue

Jifen **Li**
Renmin University of China
School of Philosophy

The Benevolent love for others in the East and West Philosophy

In recent years, in connection to environmental ethics, the Confucian idea that human beings form a triad with Heaven and Earth on nature has received a lot of attention from scholars working on Confucianism. In transforming and nourishing other creatures in Heaven and Earth, human beings show their special places in relation to the Fatherly Heaven and Motherly Earth. In this connection, Tu Weiming argues that in Confucian philosophy, "a unique feature of being human is the ability to commiserate with all modalities of being in the universe through loving care" (Tu 2004: 491).
In this paper, I follow Tu's idea of humans' loving care toward nature to further illustrate the guardian role of human beings in nature for Xunzi. Xunzi states that human beings can form a triad with Heaven and Earth, and P.J. Ivanhoe argues that for Xunzi this triad can only be formed if a happy symmetry between human beings and nature is possible (Xunzi Chap.9; Ivanhoe 1991: 309-322). For Ivanhoe, Xunzi's teaching that the morally refined person can form a triad with Heaven and Earth means that, "Xunzi believed that the form of life described by the ancient sages shows human beings the way to regulate and develop their own needs and desires and to harmonize these with the patterns and processes of nature" (Ivanhoe 1998: 69). According to Ivanhoe, Xunzi argues that human beings have a responsibility to preserve and enhance nature from the perspective of the sustenance of human beings. By performing this responsibility, human beings can finally be able to form a triad with Heaven and Earth. Considering Ivanhoe's thought of this symmetry between human beings and nature, Chenyang Li further argues that this symmetry is a harmony between human beings and nature. Although Xunzi argues that nature is primarily the materials for human beings to make use of, both Ivanhoe and Li argue that Xunzi accepts that a human's development depends on the development of nature. That is, Xunzi accepts the inherent value of nature. With this focus, Ivanhoe and Li highlight one of the most instructive markers available to one who aspires to learn from Xunzi on how to deal with nature in a harmonious way. My hope in this chapter is to add to Ivanhoe and Li's account by giving more explicit treatment to this guardian role of human beings in nature in the Xunzi. I will present the guardian role from the perspective of the loving care between human beings and nature. For Xunzi, I propose that the loving care that humans show to other creatures is a transcoding of motherly love from Heaven and Earth, and from this loving care I argue that an idea of being friendly with nature can be developed from Xunzi.

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Prof. Wei **Liu**
Renmin University of China
Philosophy

Aristotle and Xunzi on Moral Motivation

Xunzi and Aristotle were both synthetic and comprehensive thinkers, covering virtually everything in philosophy at their time, and enormously influencing the following development of philosophy in their respective tradition. There are a lot of issues bearing comparison between them. This paper will examine their theories of moral motivation. In Aristotle, desire (orexis), emotion (pathos), and reason (logos) are related to moral motivation; whereas in Xunzi, human nature (性, xing), emotion (情, qing), desire (欲, yu), and mind/heart (心, xin) are related to moral motivation. Among Aristotle interpreters, the intellectualists and anti-intellectualists debate about whether moral motivation comes from nonrational desire/emotion or from reason. And among Xunzi interpreters a similar debate arises around the question whether human nature, emotion, or desire can form moral motivation, if Xunzi indeed holds the notorious thesis "human nature is bad," and whether moral motivation can only come from mind/heart, i.e., the rational element of human being. This paper will show that a detailed comparison between Aristotle and Xunzi will shed light on both philosophers, for it turns out that moral motivation itself is a complex issue which does not allow a simple or one-sided answer.

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China and Europe: Philosophies in comparison and civilizations in dialogue

Prof. Dr. Georg **Sans**
Hochschule für Philosophie

About the impossibility of reason to will otherwise

The age of reason is also considered an age of freedom. The use of one's own reason frees people from the paternalism of religion and the state. Autonomy takes the place of heteronomy. But freedom in the sense of autonomy – at least for Immanuel Kant – means submission to the law of reason. According to some critics, Kant went so far in his ethics as to declare actions against the moral law of reason to be unfree. In his Religion within the boundaries of mere reason, Kant claims that it is impossible to will evil as evil. His argument is that human reason cannot help but give its assent to the moral law. This is true even if the person acts otherwise. Consequently, the recognition of the generalizability of its principles as formal criteria of rightness is in the nature of reason. To explain the deviation from the moral law, Kant develops his infamous doctrine of radical evil, according to which man subordinates the law of reason to his own sensual inclinations.

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Dennis **Schilling**
Renmin University of China – School of Philosophy
Ludwig-Maximilians-Universität München

The Idea of Equality and Modern Chinese Thought

Equality is one of the ideas that guides and drives modern thought in both Europe and China. The paper attempts to show how in the 16th and 17th centuries Chinese political thought gave greater importance to the idea of equality, while at the same time criticizing firmly established Confucian social and political doctrines and practices. These „germs" of an „early Chinese Enlightenment" (according to Prof. Hóu Wàilú, Xiāo Jiéfù, and other scholars) later became an important resource for modern Chinese political philosophy at the turn of the 20th century and the end of imperial China, when at the same time Chinese thinkers were taking a keen interest in European political philosophy. Since the idea of equality is obviously at odds with the basic tenets of Confucian social, political, and metaphysical theories, the revival of Confucian thought in recent decades in China has often been forced to reinterpret its own intellectual heritage to fit modern values and social goals. In the paper, I will first give an overview of the development of the idea of equality in Chinese political thought from the 16th to the 20th century, and then discuss the difficulties Confucianism faces when contrasted with modern thought.

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China and Europe: Philosophies in comparison and civilizations in dialogue

Pawel **Trzciakowski**
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Faculty of Philosophy, Philosophy of Science and Religious Studies,
Munich School of Ancient Philosophy

Reason as a the Source of Moral Norms in Augustine's De Libero Arbitrio

In the *Confessions* VII Augustine reports how the encounter with Platonist philosophy inspired him to reflect on his rational capacities and, as a result, to form a conception of God as the source and paradigm of human reason. The personal and rhetorical passages from the *Confessions* have their philosophically refined parallels in *De Libero Arbitrio*. God, Augustine argues, provides the standards of understanding and judgment for the human reason, including the understanding of moral norms (the "rules of virtues" – *regulae virtutum, De Lib.* II.29). In the first part of this paper I will outline Augustine's theory of rationality and the corresponding idea of God. In the second part I will discuss how, on the basis of this theory, moral norms discovered by reason motivate people to act. I will conclude by general remarks on Augustine's political thought. Although *De Libero Arbitrio* is ostensibly not devoted to this topic, it contains notable discussions of the nature of law and justice. I will argue that these passages are not dialectical examples, but that the theory of rationality and motivation underpins the way Augustine thought about political authority.

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Prof. Benoît **Vermander**
Fudan University
School of Philosophy

Logic and/or Rationality; Logical Arguments in Early China Philosophy

In *Anticipating China*, D. Hall and R. Ames write: "Correlative thinking is effectively a nonlogical procedure in the sense that it is not based upon [...] causal implications or entailments or anything like the sort one finds in Aristotelian or modern Western logics. [...] The indifference of correlative thinking to logical analysis means that the ambiguity, vagueness and incoherence associable with images and metaphors are carried over into the more formal elements of thought." (Hall and Ames 1995, 124)

This presentation first demonstrates that Early China philosophy had developed rigorous procedures of causality. More generally, the fact of privileging "ordinary language" in philosophical debates, as Chinese thinkers were doing, the reliance on experience, or yet the role given to notions such as *xuan* (dark, obscure) are in no way akin to "vagueness" in thinking. The ultimate objective of Ancient Chinese thinkers remains to reach "illumination", "enlightenment" (*ming*), and this requires to develop philosophical procedure, even if such procedures may seem disconcerting when considered from the standpoint of another tradition. Even after having conducted this demonstration, a question remains: is rigor in philosophical thinking akin to a focus on "rationality"? Ultimately, it is the very understanding of what "rationality" refers to that this incursion in Early China may lead us to question and renew.

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China and Europe: Philosophies in comparison and civilizations in dialogue

PhD Bo **Wei**
Renmin University of China
School of Philosophy

Civil Society and the Modern Individual

China, as a representative of the Asian community and an ancient Oriental country with the historical experience of socialist construction, had never experienced civil society before 1978, but after 1978, it suddenly entered the historical process of civil society in a unique way, completing in just thirty years the course that Western Europe had taken hundreds of years to complete. In recent years, with the rapid development of Chinese society and the strong revival of Hegelian and Marxian socio-political philosophies, the study of „civil society" has once again become the focus of attention in Chinese academia. The prototype of civil society is the modern Western society, but does China, as an Eastern society, fit into this framework due to its unique historical and cultural traditions? Civil society is a stage of development that both Marx and Hegel envisioned as necessary for human history; is this conception of the path universal? Questions such as these are now linked to China's destiny in an unprecedented way.

The foundation of the modern state is the development of individual subjective freedom, and developed subjective freedom depends on civil society for its cultivation and education. This is the important revelation given to us by Hegel's concept of civil society, and herein lies the relevance of the concept of civil society to contemporary China. It is true that the West has a tradition of Christianity and the French Revolution, under which modern subjective freedom can develop and take shape through religious reform and civil revolution. Unlike the West, China not only lacks the traditions of Christianity and civil revolution, but also has a typical social form of the Asian community, with the tradition of „rural China" or „ethical society", in which it is very difficult for individual subjective freedom to develop. It is precisely because of this that some scholars deny the possibility of the emergence of a civil society in China.

However, in order to build a modern state in the true sense of the word, it is not possible to do so without a highly developed subjective freedom. Fortunately, as Hegel's concept of civil society suggests, the division of labor and economic activities such as exchange and contract in civil society are also channels for nurturing and cultivating subjective freedom. In other words, our subjective freedom can also be developed through the „system of needs," i.e., civil society as an economic society. Civil society can change the character of the Chinese people into a modern individual with highly developed subjective freedom, which is the fundamental guarantee of China's modernization.

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Prof. Dr. Robert **Yelle**
Ludwig-Maximilians-Universität München
Faculty of Philosophy, Philosophy of Science and Religious Studies,
Interfaculty Program for Religious Studies

Radical Enlightenment and Secularization: A Brief Revisionist History with Reference to Seventeenth-Century England

According to colloquial understandings of secularization, this entailed the separation of church and state and the exclusion or downgrading of religious norms in the public sphere. There is an ongoing debate regarding the extent to which secularization, so understood, was influenced by older Christian theological doctrines, such as the notion of the "Two Kingdoms" and the institutional division of labor between the papacy and Holy Roman Empire or other kingdoms during the Middle Ages. Although the separationist doctrine continues to represent the starting point for most analyses of secularism and secularization, this doctrine has proved deficient, not only because the line between civil and religious functions is unclear, but also because the doctrine ignores the central trajectory that distinguishes modern secularism from what came before it: the monopolization of the legitimate use of force by the nation state, at the expense of the church and other civil associations. These problems can be illustrated through a comparison between the contrasting positions of Thomas Hobbes and John Locke in seventeenth-century England regarding the propriety of a civil religion or state church. Hobbes argued in the name of security for a unified church under state control, while Locke responded by insisting on the separation of the state from independent churches, laying the foundation for freedom of conscience and contemporary Euro-American religious pluralism. As I will argue, Hobbes's proposal for a civil religion represented an implicit return to the status quo ante under paganism, and depended upon his more radical view that religion cannot be distinguished substantively from politics. Conversely, Locke's argument for the separation of church and state depended on, while transforming, a Christian dualism between earthly polities and the Kingdom of God. This debate remains relevant for a number of reasons. The separationist doctrine failed to resolve the tension between religion and politics; it has neither secured the state nor reliably grounded individual liberties. Meanwhile, it is questionable to what extent the Euro-American model of secularism can be applied beyond its context of historical origin.

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China and Europe: Philosophies in comparison and civilizations in dialogue

Prof. Fengyu **Zang**
Renmin University of China
School of Philosophy

Wang Yangming' Theory of Heart-Mind and the Early Spread of Marxist Philosophy in China

Wang Yangming's theory of Heart-Mind is not only a theory about the innate morality of a person (in the sense of "cultivating the roots and consolidating the foundation"), but also a theory about true knowledge of life itself (in the sense of "clear understanding and realization"). Starting from "the innate knowledge of the good", Wang Yangming examined the ability of "apprehension of outer things through inner observation" and developed the epistemological method of "unity of knowledge and action". He thereby achieved the integration of theory and practice by reconciling rational experience and virtuous action. As Wang Yangming is one of the great figures of Chinese traditional culture, his school of heart-mind has demonstrated the creative vitality of its ideas throughout history. Early Marxist philosophers in China used Yangming's theory of heart-mind to understand practical ways of thinking and to explore the role of revolutionary ideals and the power of will. This essay attempts to examine how early propagators of Marxist philosophy in China perceived and understood Yangming's theory of heart-mind and thereby discuss the significance of the heart-mind school of thought for the spread of Marxism in China. This might help to better understand the Sinicization of Marxist philosophy and inspire creative theoretical developments.

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Institute of Photomedicine – LMU-LIFE-Center

Tuesday, 7 November

International Workshop / 7

PDT – a concept for One World One Health

Chairs: Ronald Sroka, Xiuli Wang
Secretary: Adrian Rühm, Linglin Zhang

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Dr. Maximilian **Aumiller**
Ludwig-Maximilians-Universität München
Faculty of Medicine, Laser-Forschungslabor, LIFE-Center, Department of Urology, LMU Hospital

PDT-dosimetry concepts incl. daylight

As PDT needs specific light illumination of the target, the physical principles light dosimetry concepts will be presented. With regard to specific applications the use and dosimetry investigation using single wavelength based laser light applications or broadband white-light applications and daylight as light source will be discussed.

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Dr. Kiran Sankar **Maiti**
Max-Planck-Institut für Quantenoptik
Experimental Physics

Identification of bacteria-specific biomarkers through FTIR spectroscopy

Reliable cancer diagnosis still mostly depends on tissue biopsy, an invasive process. This prevents early diagnosis since there are potential surgical risks and psychological stress in biopsy. There are many evidential reports that some of the cancers are initiated by bacterial infection. Identifying bacterial metabolites in human biofluids can offer an efficient pathway for non-invasive cancer diagnosis in the early stages of the disease. We are working on urological bacteria to determine the relationship between infection and urogenital cancers, especially prostate cancer.

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Dr. Adrian **Rühm**
Ludwig-Maximilians-Universität
Faculty of Medicine, LFL at LIFE at Department of Urology

Interstitial and intraluminal photodynamic therapy: PDT experiences at LMU-KUM in urology and gastroenterology

Adrian **Rühm**[1,2], Max Aumiller[1,2], Max Eisel[1,2], Thomas Pongratz[1,2], Ronald Sroka[1,2]
[1] Laser-Forschungslabor, LIFE Center, University Hospital, LMU Munich, Munich, Germany
[2] Department of Urology, University Hospital, LMU Munich, Munich, Germany

PDT is still a technically and clinically challenging therapeutic method, especially if the body regions to be treated are only reachable endoscopically. Different aspects of PDT, such as photosensitizers, illumination devices and treatment protocols, will be presented with regard to specific applications like interstitial PDT for prostate cancer in urology and intraluminal PDT for cholangiocarcinoma in gastroenterology.

Interstitial photodynamic therapy: PDT experiences at LMU-KUM in neurosurgery

Adrian **Rühm**[1,2,] Herbert Stepp[1], Max Aumiller[1,2], Marco Foglar[1], Mohamed El Fahim[1], Ronald Sroka[1,2]
[1] Laser-Forschungslabor, LIFE Center, University Hospital, LMU Munich, Munich, Germany
[2] Department of Urology, University Hospital, LMU Munich, Munich, Germany

PDT is widely used in dermatology, but it has also shown great potential in other medical disciplines requiring a more complicated surgical access. Different aspects of sterotactic interstitial PDT for the treatment of brain cancer in neurosurgery will be summarized, including challenges, methodological aspects and treatment success achieved so far.

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Ronald **Sroka**
Ludwig-Maximilians-Universität München
Faculty of Medicine, Department LFL at LIFE at Department of Urology

PDT – a concept for One World One Health

Ronald **Sroka**[1,2]
[1] Laser-Forschungslabor, LIFE Center, University Hospital, LMU Munich, Munich, Germany
[2] Department of Urology, University Hospital, LMU Munich, Munich, Germany

PDT needs a photoactive compound and light to produce either 1O2 or ROS, which then results in deactivation of cells and bacteria. A selective deactivation depends either on the selective or transient selective accumulation of the photosensitizer or on selective illumination or on the sensitivity of the cell/bacteria to 1O2/ROS-production. Worldwide scientists are investigating and developing such PDT-compounds either for human health care (e.g. cancer therapy), for food-production (e.g. plants and animals) or for disinfection procedures (e.g. water, implants). Due to the low side effects, it seems that PDT could become a concept for the One World One Health-challenge.

Antimicrobial PDT activities

Ronald **Sroka**[1,2], Herbert Stepp[1], Max Aumiller[1,2], Marco Foglar[1], Adrian Rühm[1,2]
[1] Laser-Forschungslabor, LIFE Center, University Hospital, LMU Munich, Munich, Germany
[2] Department of Urology, University Hospital, LMU Munich, Munich, Germany

Based on the antimicrobial effects of PDT several applications will be addressed such as intelligent implants, dentistry application, nostril disinfection, disinfection of working channels of endoscopes, deep tissue abcess treatment as well as aPDT application in food industry.

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Xiuli **Wang**
Tongji University
Shanghai Skin Disease Hospital

Introduction of IoP

This report introduces the Shanghai Skin Disease Hospital affiliated to Tongji University.
Introduce the team and research progress of institution of photomedicine.
Introduce the development of photodynamic therapy in China.

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Haiyan **Zhang**
Tongji University
School of Medicine, Shanghai Skin Disease Hospital, Institute of Photomedicine

Conventional versus daylight photodynamic therapy for actinic keratosis: A randomized and prospective study in China

Background: Photodynamic therapy (PDT) is an effective and safe treatment modality for acne vulgaris and actinic keratosis, and a variety of light sources have been investigated. Daylight photodynamic therapy (DL-PDT) is a more simple and tolerable treatment that has the same efficacy as C-PDT in Europe. However, few studies have been conducted with Asian patients. Objective: To evaluate the efficacy and safety of DL-PDT vs. C-PDT for treating AK patients in China.

Methods: This randomized and prospective study was conducted in Shanghai, China. Sixty patients with AKs (grades I–III) were randomized into two groups (DL-PDT and C-PDT). PDT was performed once every two weeks for a total of three times. Patients were evaluated before each treatment (baseline and two weeks after the first and second treatment) and at one month after the third treatment. Endpoints included efficacy (lesion response) and safety (pain scale and adverse events).

Results: A total of 55 patients completed the study. At the first month after 3 sessions of PDT, the overall lesion clearance rate of DL-PDT (95.5%) was similar to that of C-PDT (96.8%). However, in some parts (eyebrow and sideburns), C-PDT resulted in higher rates of cured lesions than DL-PDT. Additionally, patients undergoing DL-PDT had nearly no pain, showing significantly lower pain scores than those undergoing C-PDT (1.7 ± 0.9 for DL-PDT vs. 5.2 ± 1.7 for C-PDT). Moreover, fewer subjects undergoing DL-PDT had related adverse events than those undergoing C-PDT (36.7% vs. 63.3%).

Conclusion: DL-PDT was effective, better tolerated and nearly painless compared with C-PDT in AK patients in China.

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Linglin **Zhang**
Tongji University
School of Medicine, Shanghai Skin Disease Hospital, Institute of Photomedicine

Updates of photodynamic therapy for acne PDT in HPV-related skin diseases

Acne vulgaris is a chronic inflammatory skin disease of the pilosebaceous unit, which tends to occur in young men and women. The etiology and pathogenesis are complex. Abnormal keratinization of pilosebaceous ducts, inflammation and immune response are the main pathological features of acne, and inflammatory response is throughout the whole process of the disease. Due to the different lesions, acne lesions are pleomorphic, and the treatment plan is different. Clinically, acne is divided into 3 degrees and 4 grades according to the nature of skin lesions, namely: mild (grade I) : only comedones; Moderate (grade II) : inflammatory papules; Moderate (grade III) : pustules; Severe (grade IV) : nodules and cysts, and it is most difficult to treat nodular and cystic acne. The drug treatment is mainly oral isotretinoin and tetracycline drugs, which course of treatment last several months, may resulting liver and kidney damage and gastrointestinal reactions. Isotretinoin may also affect bone development, teratogenicity, and induce or aggravate depression, which limits its clinical application.

In recent years, 5-aminolevulinic acid photodynamic therapy (ALA-PDT) has been widely used in the treatment of moderate to severe acne, and the clinical parameters have been continuously optimized. There are many updates in mode of illumination including other light sources, such as intense pulse light(IPL) and daylight, except red led light. Our studies found that PDT with IPL(IPL-PDT) and PDT with daylight(DL-PDT) had the similar efficacy and less pain respectively compared with conventional PDT with red light (C-PDT). But IPL-PDT is more expensive and DL-PDT carries a risk of causing severe hyperpigmentation compared with C-PDT. Surprisingly, we found that Modified PDT(M-PDT) had the similar efficacy and less pain in treatment on acne and didn't bring more risks of hyperpigmentation. M-PDT use short incubation time(30min) and prolonged irradiation time(60min, energy around 150J/cm2) compared with C-PDT (incubation time is 1-2h, irradiation time 20min, energy 50J/cm2). We think that the primary reason for less pain in M-PDT is that the PpIX per unit time produced after a short time of incubation is low, thus the production of ROS per unit time after irradiation is also low. Low dose ROS mainly induces mild apoptosis , which caused less damage to the nerve cell membrane and avoided severe inflammation and thus alleviated pain. M-PDT is worth of recommending strategy of PDT on acne.

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RCC Landhaus

Wednesday, 8 November

International Workshop / 8

Re: Transformations in Environment and Society

Chair: Christof Mauch and Katherine Arnold

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Prof. Dr. Sheng **Fei**
Sun Yat-sen University
Faculty of History and Arts, Department of History

LMU and The Lectures of Global Environmental History at Sun Yat-sen University

With the suddenly attack of the Covid-19 epidemic, online teaching became a popular way to promote the university teaching and learning. Utilized the rich resources of Rachel Carson Center at LMU, I organized a series of lectures for the course titled "Global Environmental History" since April, 2020. With the international network of RCC alumni, I hold three seasons and 29 times of lectures in total. It strongly shows the value of LMU and RCC network with Chinese Academe and can be an ideal way to share the university resources.

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Zhaoqing **Han**
Fudan University
Institute of Chinese Historical Geography

Recent advances in Digitalization of Huang yu quan lan tu of Kangxi-reign

Huang yu quan lan tu of Kangxi's reign(1662-1722AD)康熙皇舆全览图(the Overview Maps of Imperial Territories of Kangxi's Regin) was also known as the Jesuits Atlas. The creation of this atlas was mostly overseen by French Jesuits 300 years ago under the request of Emperor Kangxi. It took nine years to complete this project, which started in the 47th year of Kangxi's Reign (1709). At the time, it was the largest surveyed map in both China and the rest of the world. Therefore, it has a significant role in China's history of mapping. There are now at least six different versions of this atlas in China. This report will outline the digitization process and the team's achievements since 2014, under the direction of Prof. Han Zhaoqing.

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Shen **Hou**
Peking University
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Boston, and That Other Boston

Ah, venerable Boston, with its antique red brick buildings clustered along a river that meanders to the sea, a city surrounded by low hills and a richly wooded interior. But which Boston are we talking about?
There is not one city of that name but two. They are alike in many ways, but at the same time they are different, like a child and parent who turn out alike but also unlike one another. One of the Bostons is relatively young, the American one, dating back to 1630 CE, when it first became an English settlement in what is now the United States, while the other Boston, located in Great Britain, is much older (some would say it began way back in Roman times, though the city was not royally chartered until 1546). The name Boston was carried across the Atlantic Ocean by a brave set of migrants. Once across the ocean, they were joined by migrants from other parts of England, Ireland, Canada, eastern and southern Europe, the Caribbean, Africa, and Asia. To understand the younger Boston, we need to understand the older one, and to probe the many contrasts as well as similarities between the two. We cannot assume a fixed, ancient cultural "tradition" that connects them; instead, we must allow that a process of evolution has occurred, of creation, re-creation, and constant change. The two Bostons may often look like similar, but there are great differences that come from very dissimilar histories and environments.

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Ass. Prof. Xiaohui **Liu**
Shanghai Normal University
Foreign Languages School

The Protection of Urban Biodiversity in the United States in the Second Half of the 20th Century-Taking Chicago Metropolitan Area as a Case Study

After the Second World War, with the further expansion of American urban boundaries and the sharp increase of urban population, the ecological environment of cities and their neighboring areas was seriously damaged, and the urban biodiversity was dramatically reduced. The development of ecology and the improvement of American environmental awareness have aroused the public's concern about the urban biodiversity. In the second half of the 20th century, the metropolitan area of Chicago made some new efforts and attempts in green space construction and urban biodiversity conservation. During this period, the construction of some green spaces in Chicago began to be guided by biodiversity conservation; At the same time, ecologists and volunteers engaged in nature conservation also began to restore the local ecosystem and protect biodiversity through the management of ecosystem. Scientists and amateur conservationists have their respective contributions to ecological practices and ecological knowledge production. The complexity of urban ecosystems and the limitations of scientific understanding of urban ecosystems led to the diversification of ecological knowledge production models.

Keyword: Urban environment, biodiversity, green space, Chicago Metropolitan Area

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Ecological Explanation of Xinglin Culture – A New Exploration of Apricots and Health Issues in Ancient Chinese Medical History literatures

Apricots have developed into Xinglin culture with a long history of inheritance and development. Apricot trees are sunny, cold and drought resistant, with deep roots. There are many varieties and a wide distribution range in China, and their planting history is long. Originating from The Xinglin allusion by the medical expert Ge Hong's „Biography of Immortals" of the Eastern Jin Dynasty, Xinglin has now become a synonym for traditional Chinese medicine. There are numerous records of apricots in ancient Chinese medical history literature. Apricots have been guarding the health of the Chinese nation for thousands of years. Apricots not only have edible value, but also have unique medicinal value. In the historical development, the connotation of Xinglin culture has been constantly enriched, guiding the continuous inheritance and innovation of traditional Chinese medicine, and keeping up with time. The emergence and development of Xinglin culture is full of recognition for the inheritance and development of traditional Chinese medicine, highlighting the virtues of the Chinese nation, demonstrating a harmonious doctor-patient relationship, and demonstrating the wisdom of ecological civilization construction based on harmonious coexistence between humans and nature, as well as harmonious coexistence between humans and society. The above interpretation of Xinglin culture reflects the meaning of the „ecological interpretation of history", and is a new exploration of the relationship between apricots and health in ancient Chinese medical history literature, which has contemporary significance.

Dr. Linjun **Xie**
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Department of Architecture and Built Environment

The governance of nature in changing urban China

In an era marked by unprecedented changes in climate, biodiversity and technology, major cities in China are approaching a crucial turning point. This is evident by the shift in urban policies from incremental to stock-based approaches and the growing emphasis on planning and design that prioritizes quality over mere growth. Given the intrinsic connection between cities and nature, urban nature plays a pivotal role in shaping and maintaining the urban environments, as well as in ensuring the health, safety, and welfare of city residents. Therefore, it is essential to comprehend how urban nature has been perceived and governed in the past and present, in order to uncover the challenges and opportunities it presents. Such understanding will contribute to optimizing city planning, design, and management, thereby benefiting both human and natural systems. This study investigates diverse urban nature projects in Chinese cities, encompassing various sizes and types. It aims to illustrate the range of perspectives on urban nature and the pluralistic approaches employed by different actors to govern them in this transformative age. By shedding light on these aspects, this research contributes to informing effective strategies and actions for urban nature governance.

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