COLOGNE GRADUATE SCHOOL OF AGEING RESEARCH

PhD Journal Club "Method and Logic in Biology" 2024/2025

Syllabus

Time & Venue

Kick-off Journal Club:
Wednesday, 8 October 2024, 09:00 – 13:00, MPI AGE, seminar room 1 (ground floor)
Regular Journal Clubs:
Thursdays *or tba*, 12:30 – 14:30, MPI AGE, seminar room 1 or *tba*

Dates and Chaperones

Kick-off Meeting on "Hallmarks of aging: An expanding universe":

09.10.2023: Dr. Sebastian Grönke

Regular Journal Clubs (corresponding lecture):

1)	31 Oct. 2024	Dr. Joris Deelen *(General Introduction to Ageing)*
2)	14 Nov. 2024	Dr. Jane Reznick *(Model Systems of Ageing)*
3)	28 Nov. 2024	Prof. Matteo Bergami *(Metabolic Mechanisms interfacing with the Brain in Ageing* - exact title tbd)
4)	12 Dec. 2024	-
5)	16 Jan. 2025	Dr. Hans-Georg Sprenger *(Mitochondrial Dysfunction in Disease and Ageing)*
6)	23 Jan. 2025	Dr. Hannah Scheiblich *(Differential Vulnerability in Neurodegeneration)*
7)	13 Feb. 2025	Dr. Stephanie Panier *(ADP-Ribosylation in the DNA-Damage Response and Ageing)*
8)	06 Mar. 2025	Dr. Milica Popovic / Trifunovic Lab *(Stress Signaling in Development, Homeostasis and Disease)*
9)	20 Mar. 2025	Dr. Thanh Vuong-Brender / Schumacher Lab *(Telomeres and Ageing)*

10)	03 Apr. 2025	Dr. Seda Koyuncu / Vilchez Lab *(Protein Homeostasis)*
11)	11 Apr. 2025 (Friday)	Dr. Santiago Serrano-Saénz / Walczak Lab *(Cell Death and Cancer Evolution)*
12)	08 May 2025	Dr. Corinna Bauder / Brüning Lab *(Dysregulated Metabolism and Ageing-Associated Disorders)*
13)	22 May 2025	Dr. Sarah Kreuz / Antebi Lab *(Metabolic and Nutrient Signaling in Ageing and Disease)*

Papers

1)	31 Oct. 2024	*Organ aging signatures in the plasma proteome track health and disease*, Oh et al. **2023**, Nature https://www.nature.com/articles/s41586-023-06802-1
2)	14 Nov. 2024	*The extracellular matrix integrates mitochondrial homeostasis*, Zhang et al. **2024**, Cell https://doi.org/10.1016/j.cell.2024.05.057
3)	28 Nov. 2024	*Mitochondria metabolism sets the species-specific tempo of neuronal development,* Iwata et al. **2023**, Science https://www.science.org/doi/10.1126/science.abn4705
4)	12 Dec. 2024	-
5)	16 Jan. 2025	*Resveratrol Improves Mitochondrial Function and Protects against Metabolic Disease by Activating SIRT1 and PGC-1α*, Lagouge et al. **2006**, Cell https://doi.org/10.1016/j.cell.2006.11.013
6)	23 Jan. 2025	*Trem2 expression in microglia is required to maintain normal neuronal bioenergetics during development*, Tagliatti et al. **2024**, Immunity https://doi.org/10.1016/j.immuni.2023.12.002
7)	13 Feb. 2025	*Telomeric DNA damage is irreparable and causespersistent DNA-damage-response activation*, Fumagalli et al. **2012**, Nature Cell Biology https://www.nature.com/articles/ncb2466

8) 06 Mar. 2025 *Fibroblast Growth Factor 21 Drives Dynamics of Local and Systemic Stress Responses in Mitochondrial Myopathy with mtDNA Deletions*, Forsström et al. **2019**, Cell Metabolism
https://www.sciencedirect.com/science/article/pii/S1550413119304486

9) 20 Mar. 2025 *Restricted diet delays accelerated ageing and genomic stress in DNA-repair-deficient mice*, Vermeij et al. **2016**, Nature
https://www.nature.com/articles/nature19329

10) 03 Apr. 2025 *Stress response silencing by an E3 ligase mutated in neurodegeneration,* Haakonson et al. **2024**, Nature
https://www.nature.com/articles/s41586-023-06985-7

11) 11 Apr. 2025 (Friday) *Integration of innate immune signalling by caspase-8 cleavage of N4BP1*, Gitlin et al. **2020**, Nature
https://www.nature.com/articles/s41586-020-2796-5

12) 08 May 2025 *DMH^{Ppp1r17} neurons regulate aging and lifespan in mice through hypothalamic-adipose inter-tissue communication*, Tokizane et al. **2024**, Cell Metabolism
https://doi.org/10.1016/j.cmet.2023.12.011

13) 22 May 2025 *Hexosamine Pathway Activation Improves Protein Homeostasis through the Integrated Stress Response*, Horn et al. **2020**, iScience
https://doi.org/10.1016/j.isci.2020.100887

Course Description

Each journal club session will be taught by a faculty member. One current or classic paper with strong relevance in the field of ageing research will be discussed per session. You will receive all publications in advance in order to have sufficient time for preparation. For each paper, one student will be in charge of outlining the major hypothesis and summarizing the results, concluding statements and posing future directions (15 min). All other students will be responsible for describing, but most importantly for critically analyzing 1 - 2 figures per paper (~5 min). After the presentations, the respective paper will be extensively discussed (~20 min) by the group and the chaperone will give feedback to the whole group on their performance. Individual performance will be evaluated by the chaperones and the feedback will be handed out to the students at a later stage.

Course Objective

The journal club aims to teach you critical thinking skills. Moreover, it provides an overview of current literature and classical publications. You are strongly encouraged to actively participate. PIs should strongly emphasize the use of questions as a rhetorical and narrative device that drives the science. Therefore, you should present the depicted hypotheses being tested as questions,

the content of each figure should first be posed as a question. PIs are expected to play an active role in challenge the students and raising critical points that they might have been missed.

Guidelines for presenting a paper

- What is the overall hypothesis being tested in the paper?
- What approach did the authors use to address the hypothesis?
- What is the result and why is it important?
- Are new research questions raised by the work in the paper?
- Are there alternatives? Limitations of each approach?
- What are the major findings?
- Did you see patterns or trends in the data that the author did not mention?
- Are the conclusions drawn from the results justified?
- Are there appropriate controls?
- Are there other factors that could have influenced the results?
- Were the hypotheses adequately tested?
- If you were to continue this research, what would you do next and how?