

## PhD Journal Club “Method and Logic in Biology” 2023

### *Syllabus*

#### Time & Venue

**Kick-off Journal Club:** Wednesday, 09.10., 9:00 am - 1:00 pm, CECAD seminar room 1, 1st floor

**Regular Journal Clubs:** Thursdays, 12:30 - 2:30 pm, 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) 19.10.2023 (10 am): Dr. Joris Deelen (General Introduction to Ageing)
- 2) 09.11.2023: Dr. Jane Reznick (Model Systems of Ageing)
- 3) 07.12.2023: Dr. Zak Frentz (Advanced Microscopy and Biophysics of regulated Cell Death)
- 4) 18.01.2024: Dr. Dusanka Milenkovic (Mitochondrial Stress Responses in Disease and Ageing)
- 5) 15.02.2024: Dr. Ina Huppertz (Neuronal Control of Metabolism and Ageing)
- 6) 21.03.2024: Dr. Ron Jachimowicz (Genome Stability in Ageing and Disease)
- 7) 12.04.2024 (Friday): Dr. Gilles Storelli (Stress Signaling in Development, Homeostasis and Disease)
- 8) 19.04.2024 (Friday): Dr. Mauro Corrado (The Role of Inflammation and Cell Death in Ageing-related Diseases)
- 09) 25.04.2024: Dr. Henning Fenselau (Dysregulated Metabolism to Ageing-associated Disorders)
- 10) 23.05.2024: Dr. Christina Ising (The potential Success of Translational Projects: developing novel Solutions for Ageing-associated Diseases)

September 6, 2023

## Papers

- 1) 19.10.2023: *Personal aging markers and ageotypes revealed by deep longitudinal profiling*, Ahadi et al., Nature medicine, **2020**.  
(<https://www.nature.com/articles/s41591-019-0719-5>)
- 2) 09.11.2023: *Resistance to chemical carcinogenesis induction via a dampened inflammatory response in naked mole-rats*, Oka et al., Communications Biology, **2022**.  
(<https://www.nature.com/articles/s42003-022-03241-y>)
- 3) 07.12.2023: *Kinetic coupling of the respiratory chain with ATP synthase, but not proton gradients, drives ATP production in cristae membranes*, Toth et al., PNAS, **2020**.
- 4) 18.01.2024: *OMA1-mediated integrated stress response protects against ferroptosis in mitochondrial cardiomyopathy*, Ahola et. al., Cell Metabolism, **2022**.  
(<https://www.sciencedirect.com/science/article/pii/S1550413122003606>)
- 5) 15.02.2024: *Hyperexcitable arousal circuits drive sleep instability during aging*, Li et al., Science, **2022**.  
(<https://www.science.org/doi/10.1126/science.abh3021>)
- 6) 21.03.2024: *tba*
- 7) 12.04.2024: *Bacterial-Derived Uracil as a Modulator of Mucosal Immunity and Gut-Microbe Homeostasis in Drosophila*, Lee et al., Cell, **2013**.  
([https://www.cell.com/fulltext/S0092-8674\(13\)00450-9](https://www.cell.com/fulltext/S0092-8674(13)00450-9))
- 8) 19.04.2024: *T cells with dysfunctional mitochondria induce multimorbidity and premature senescence*, Desdín-Micó et al., Science, **2020**.  
(<https://www.science.org/doi/10.1126/science.aax0860>)
- 09) 25.04.2024: *High-fat food biases hypothalamic and mesolimbic expression of consummatory drives*, Mazzone et. al., Nature Neuroscience, **2020**.  
(<https://www.nature.com/articles/s41593-020-0684-9>)
- 10) 23.05.2024: *Clearance of senescent glial cells prevents tau-dependent pathology and cognitive decline*, Bussian et al., Nature, **2018**.  
(<https://www.nature.com/articles/s41586-018-0543-y>)

## 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?