

PhD Journal Club “Method and Logic in Biology” 2021

Syllabus

Venue of the regular Journal Clubs

If possible: MPI for Biology of Ageing, Auditorium

Alternatively: <https://zoom.us/j/97435362231>

Venue will be communicated each Monday before the respective Journal Club

Time

Kick-off Journal Club: Wednesday, 06.10., 09:00 am - 12:30 pm

Regular Journal Clubs: Thursdays, 12:30 - 2:30 pm

Dates and Chaperones

Kick-off Meeting on Ageing Review Publications:

06.10.2021: Dr. Sebastian Grönke

Regular Journal Clubs and corresponding lecture:

- 1) 28.10 2021: Dr. Constantinos Demetriades
- 2) 03.12.2021 (Friday): Dr. Lena Pernas
- 3) 20.01.2022: Dr. Sophie Steculorum
- 4) 03.02.2022: Dr. Stephanie Panier
- 5) 17.02.2022: Prof. David Vilchez
- 6) 04.03.2022 (Friday): Dr. Jane Reznick
- 7) 10.03.2022: Prof. Marc Tittgemeyer
- 8) 31.03.2022: Prof. Achim Tresch
- 9) 12.05.2022: Dr. Gilles Storelli
- 10) 09.06.2022: Prof. Silvia von Karstedt

(November 24, 2021)

Papers

- 1) 28.10.2021: *Feeding induces cholesterol biosynthesis via the mTORC1–USP20–HMGCR axis*, Lu et al., Nature, **2020**.
(<https://www.nature.com/articles/s41586-020-2928-y>)
- 2) 03.12.2021: *Niche stiffening compromises hair follicle stem cell potential during ageing by reducing bivalent promoter accessibility*, Koester et al., Nature Cell Biology, **2021**.
(<https://www.nature.com/articles/s41556-021-00705-x>)
- 3) 20.01.2022: *Transcriptional Basis for Rhythmic Control of Hunger and Metabolism within the AgRP Neuron*, Cedernaes et al., Cell Metabolism, **2019**.
(<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6506361/>)
- 4) 03.02.2022: *An aged immune system drives senescence and ageing of solid organs*, Yousefzadeh et al., Nature, **2021**.
(<https://www.nature.com/articles/s41586-021-03547-7>)
- 5) 17.02.2022: *The memory of neuronal mitochondrial stress is inherited transgenerationally via elevated mitochondrial DNA levels*, Zhang et al., Nature Cell Biology, **2021**.
(<https://www.nature.com/articles/s41556-021-00724-8>)
- 6) 04.03.2022: *Single-cell analysis uncovers that metabolic reprogramming by ErbB2 signaling is essential for cardiomyocyte proliferation in the regenerating heart*, Honkoop et al., eLife, **2019**.
(<https://elifesciences.org/articles/50163>)
- 7) 10.03.2022: *Microbiota modulate sympathetic neurons via a gut-brain circuit*, Muller et al., Nature, **2020**.
(<https://www.nature.com/articles/s41586-020-2474-7>)
- 8) 31.03.2022: *BiT age: A transcriptome-based aging clock near the theoretical limit of accuracy*, Meyer et al., Aging Cell, **2021**.
(<https://onlinelibrary.wiley.com/doi/full/10.1111/accel.13320>)
- 9) 12.05.2022: *Innate Immune Homeostasis by the Homeobox Gene Caudal and Commensal-Gut Mutualism in Drosophila*, Ryu et al., Science, **2008**.
(<https://science.sciencemag.org/content/319/5864/777.long>)
- 10) 09.06.2022: *to be announced in 2022*

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?
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