

Cellular Programs

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Saarland University

Chair of Computational Biology

Assignment 1

Handed out: 10.11.20

Due: 17.11.2020 10:15

Submit your solutions by e-mail with a single PDF attachment to

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Every student should submit his/her own solution. Plagiarism of solutions will be penalized. Don't forget to label your assignment sheet with your name and Matrikelnummer.

Don't exceed specified page lengths by more than 0.25 pages. All problems refer to paper #1 listed below.

Problem 1:

Specify the similar and species-distinct components in the circadian neuronal circuits between the yellow fever mosquito *Ae. aegypti* and the African malaria mosquito *An. coluzzii*. (0.5 page).

Problem 2:

Describe PER oscillation in *Ae. aegypti* and *An. coluzzii* in the entrainment under 12h:12h Light:Dark conditions (LD). (0.25 page)

Problem 3:

What impact does a constant light condition (LL) make on light attraction/avoidance behaviors of *Ae. aegypti* and *An. coluzzii*? How do PER protein levels compare to these findings? (0.25 page)

Problem 4:

In an attempt to reproduce the results from this study, a group of students suggests measuring the PER/PDF expressions at gene and transcript levels, instead of using immunocytochemistry to monitor protein levels (as is done here). Will this experiment be equivalent? Provide reasons for your answer. (0.25 page)

Paper #1 Baik et al. (2020) Current Biology 30, 3252-3259.e3, Circadian Regulation of Light-Evoked Attraction and Avoidance Behaviors in Daytime- versus Nighttime-Biting Mosquitoes.