

Cellular Programs

Prof. Dr. Volkhart Helms

Winter Semester 2017/18

Saarland University

Chair of Computational Biology

Assignment 4

Due: 8.1.2018 14:15

Submit your solutions

(a) on paper (printed text) at the beginning of the lecture or in building E21, room 3.14, or

(b) by e-mail with a single PDF attachment to kerstin.gronow-p@bioinformatik.uni-saarland.de

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.

Problem 1: Explain what an embryonic stem cell is, where it naturally occurs and how it can be defined in terms of cellular behavior and key markers. (0.5 page)

Problem 2: Paper [1] describes the process of cellular differentiation. Concisely summarize the key points and explain the potential practical relevance of the results. (0.5 page)

[1] Li, VC, Kirschner, MW (2014). Molecular ties between the cell cycle and differentiation in embryonic stem cells. Proc. Natl. Acad. Sci. U.S.A., 111, 26:9503-8.

Problem 3: Some crucial genes in the model assumptions of [1] are also related to cancer. Is that reasonable to you? What do cancer cells and stem cells have in common, how do they differ? (0.5 page)