VRG14-006 - Stem Cell Biology

Zusammenfassung

Mammalian development can be envisaged as a series of hierarchical and tightly regulated cell identity decisions. This ensures the generation of all specified cell types from a single totipotent cell. In the developing embryo these cell identity decisions are very precise. In contrast, cell culture model systems for differentiation are chaotic and not robust. A better understanding of the guiding principles of cell differentiation will enable the development of more efficient protocols to generate cell types of clinical relevance like neural cells for the treatment of Parkinson's or Alzheimer's' disease, or pancreatic cells for the treatment of diabetes. My group focuses on the first steps of cellular differentiation in the developing embryo, spanning from pluripotent cells to cells that have just acquired a definitive germ layer identity. We are using state of the art high throughput genetics and genome engineering approaches to identify genes required for cell identity transitions. We will further use our expertise in epigenetics and defined cell culture systems in order to investigate in high molecular detail the molecular mechanisms by which genes identified in screens drive differentiation and the resolution of self-renewal.

Wissenschaftliche Disziplinen:
Stem cell research (70%) | Genetics (15%) | Developmental biology (15%)

Schlagworte:
Embryonic Stem Cells, Cell Identity, pluripotency, haploid ES cells, differentiation

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Weiterführende Links zu den beteiligten Personen und zum Projekt finden Sie unter
https://wwtf.at/funding/programmes/vrg/VRG14-006/