W@nt-STEM - Marie Curie Conferences and Training Courses

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Regenerative medicine is the new frontier in medicine unlocking the secrets of how the body generates itself. Stem cells are the principle tools that the body uses for self-assembly. They multiply as undifferentiated cells in culture, can be stored in bio-banks and thereby become a potential source of more specialised cells, which, upon proper delivery, might replace diseased or damaged cells in conditions such as Parkinson's disease, Chorea Huntington, stroke, spinal cord injuries, heart infarction, diabetes, cancer and AIDS. A prerequisite of successful regenerative medicine is the understanding of the processes of stem cell development and renewal as well as the control and coordination of cell differentiation by signalling molecules and pathways. Wnt molecules play a key role in the regulatory networks controlling self-renewal, migration and differentiation of stem cells. For this reason, a collaborative project called W@nt-STEM has been proposed under the theme of "Health" within the 7th framework programme of the EU.

The proposal combines a systems biological approach to Wnt signalling in spatiotemporal stem cell differentiation with *in vitro* screening and in vivo testing of new small molecule drugs for treatment of a variety of disorders with the main focus on neurodegenerative diseases.

The applying consortium is coordinated by Arndt Rolfs from Rostock and joins academic and industrial partners from Germany, Sweden, Norway, Denmark, United Kingdom, Ireland, Croatia, Italy, Spain and the Czech Republic. Several partners used the 4th Spring School in Regenerative Medicine, which was organised by Stefan Krauss of the Norwegian Centre for Stem Cell Research from 18.-22.5.2007 in Oslo, as a platform for discussing topics such as embryonic and adult stem cell systems, signalling in stem cells, molecular imaging of stem cells, cell-based products and how industry meets the stem cell challenge. At the conference, lectures were complemented by panel discussions on basics of stem cells as well as the threats, hopes and ethics involved in stem cell research and by a poster session, which particularly brought together young research students and senior scientists.

This means that participants learnt about the latest news on how to stimulate endogenous stem cells, how to modulate signalling in stem cells, how to modify these signals for standardized differentiation and how to translate this information together with biotech industry as a translational process. Finally, more than 20 students and postdocs attended practical courses covering a broad spectrum of experimental procedures including cell culture, transfection of eGFP constructs, luciferase-based reporter gene assays, real-time RT-PCR, immunostaining, flow cytometry, microarray analysis, high content screening of Wnt and Shh antagonists, transplantation of neural stem cells into chicken embryos and rat brains, in vivo luciferase imaging and Ca^{++}-imaging on *ex vivo* organ preparations.

This year's Spring School and Conference was held in Oslo, Norway (see the follwoing article); next year, Prof. Arenas from the Karolinska Institutet will host the meeting in Stockholm (http://regenerative-medicine-rostock.med.uni-rostock.de/).

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