

Erasmus University Rotterdam, the Netherlands
CSC PhD 2015 Project Description

School/Department:	Department of Cell Biology PhD program in Biomedical Sciences Erasmus MC, Rotterdam, The Netherlands
Project Title:	Gene expression and signal transduction in development and disease.
Abstract:	<p>The challenge for the Department of Cell Biology is to remain at the forefront of continuous world-wide efforts to understand the molecular and cellular basis of normal development and disease and through basic research built on strong technology platforms bridge the gap between basic biology, health care and applied science. We use the most modern biological approaches. State-of-the-art technology supported by experts and including advanced genomics (RNA-Seq, ChIP-Seq, chromatin conformation analysis), proteomics (e.g. of transcription factors or other intracellular proteins), bio-informatics and imaging, and work in mouse models (mainly knockout mice or cells thereof) underpin our research. We focus our efforts on stem cell biology (including embryonic stem cells and neural stem cells), and neuronal and hematopoietic cell differentiation. Links to disease-oriented research and collaboration with more clinical departments are envisaged, in particular in the fields of tissue regeneration, cancer and human genetics and congenital disease. Research is therefore organized around a number of themes, each of which has place for one or two CSC-funded PhD students:</p> <ol style="list-style-type: none"> 1) Transcription, epigenetics and chromatin remodeling; 2) Role of the cytoskeleton in signal transduction and cell shape changes; 3) Signal transduction cascades and transcriptional responses exerted by ligands of the Transforming Growth Factor family. <p>Becoming a skilled, critical and ultimately independent researcher is the most important criterion for receiving a PhD degree in our department. The research project should culminate in (first author) paper(s) and a well written thesis. The in-house Biomedical Sciences PhD program helps to achieve this goal by improving education and training of PhD students.</p>
Requirements of candidate:	<p>Master degree: Yes</p> <p>Background: skills in and knowledge of e.g. biology, biochemistry, biophysics, microscopy, developmental biology, molecular biology, gene transcription, animal models, and related.</p>

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	<p>IELTS Grade: 7.0 (<i>minimal 6.0 per component</i>) or TOEFL: 100 (<i>minimal 20 per component</i>)</p>
Supervisor information:	<p>Prof. Dr. D. Huylebroeck (head of the Department of Cell Biology, e-mail: d.huylebroeck@erasmusmc.nl), Dr. N. Galjart (scientific director of PhD program in Biomedical Sciences, e-mail: n.galjart@erasmusmc.nl). Website for research projects: http://www.erasmusmc.nl/cellbiology/research/research-groups/</p> <p>Five recent key publications (names of the PIs participating in this program are underlined, but more PIs from the department do participate):</p> <p>Borg, J., Papadopoulos, P., Georgitsi, M., Gutierrez, L., Grech, G., Fanis, P., Phylactides, M., Verkerk, A.J., van der Spek, P.J., Scerri, C.A., Cassar, W., Galdies, R., van Ijcken, W., Ozgur, Z., Gillemans, N., Hou, J., Bugeja, M., Grosveld, F.G., von Lindern, M., Felice, A.E., Patrinos, G.P., and <u>Philipsen, S.</u> (2010). Haploinsufficiency for the erythroid transcription factor KLF1 causes hereditary persistence of fetal hemoglobin. Nature Genetics 42, 801-805.</p> <p>Engelen, E., Akinci, U., Bryne, J.C., Hou, J., Gontan, C., Moen, M., Szumska, D., Kockx, C., van Ijcken, W., Dekkers, D.H., Demmers, J., Rijkers, E.J., Bhattacharya, S., Philipsen, S., Pevny, L.H., <u>Grosveld, F.G.</u>, Rottier, R.J., Lenhard, B., and <u>Poot, R.A.</u> (2011). Sox2 cooperates with Chd7 to regulate genes that are mutated in human syndromes. Nature Genetics 43, 607-611.</p> <p><u>ten Berge, D.</u>, Kurek, D., Blauwkamp, T., Koole, W., Maas, A., Eroglu, E., Siu, R.K., and Nusse, R. (2011). Embryonic stem cells require Wnt proteins to prevent differentiation to epiblast stem cells. Nature Cell Biology 13, 1070-1075.</p> <p>van Haren, J., Boudeau, J., Schmidt, S., Basu, S., Liu, Z., Lammers, D., Demmers, J., Benhari, J., Grosveld, F., Debant, A., and <u>Galjart, N.</u> (2014). Dynamic Microtubules Catalyze Formation of Navigator-TRIO Complexes to Regulate Neurite Extension. Current Biology 24, 1778-1785.</p> <p>van den Berghe V, Stappers E, Vandesande B, Dimidschstein J, Kroes R, Francis A, Conidi A, Lesage F, Dries R, Cazzola S, Berx G,</p>



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	Kessaris N, Vanderhaeghen P, van Ijcken W, <u>Grosveld FG</u> , Goossens S, Haigh JJ, Fishell G, Goffinet A, Aerts S, <u>Huylebroeck D</u> , Seuntjens E. (2013). Directed migration of cortical interneurons depends on the cell-autonomous action of Sip1. Neuron 77, 70-82.
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