Gene regulation in embryonic development

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CURRICULUM VITAE

I was born on March 30 1990 at the *VU medical center* in Amsterdam. I went to *Laar & Berg* high school in Laren (NH) during which time which I took part in a bilingual study program called *Middle Years Programme* (MYP). I received my MYP diploma in 2006 and VWO diploma in 2008. I obtained a Bachelor of Science in Biomedical sciences in 2012 at the *University of Amsterdam* after an internship at the group of Prof. dr. Joost Teixera De Mattos. There I studied the adaptation of cyanobacteria (photosynthetically-capable bacteria) for use as a "fuel factory", with waste products and sunlight as input. Desiring a more analytical continuation of my studies I chose to pursue a Master of Science in Bioinformatics and Systems biology at *VU Amsterdam* as my next step. During this Master's I took part in an international exchange program called *CanSys* (a portmanteau of cancer and systems biology). As a result, I spent three months at the *Université du Luxembourg* (Luxembourg) for an internship in the activation of a receptor involved in gastrointestinal stromal tumors. I then spent 11 months in Buffalo (NY, USA) studying cancer at the *State University of New York at Buffalo*. This included oncology courses and an internship in the group of Dr. Moray Campbell at the *Roswell Park Cancer Institute*. During this internship I created an analytical pipeline for the integration of multiple sources of publicly available data in the context of a nuclear receptor that is involved in multiple types of cancer. I received the Master of Science degree in Natural sciences (interdisciplinary) from the SUNY at Buffalo in 2014 at the end of the CanSys program as well as a Master of Science in Bioinformatics and Systems Biology from the VU Amsterdam.

In 2015 I joined the group of Dr. Stefan Semrau at *Leiden University* as his very first PhD candidate. My position was funded by the research program *Frontiers of Nanoscience* (NanoFront), a consortium of researchers from the fields of quantum nanoscience, bionanoscience and nanotechnology. During my time as a PhD candidate, I worked on a variety of subjects including gene regulation at the levels of the epigenome, genome, transcriptome and proteome. I also worked on developing a new technique and I set up the processing pipelines for transcriptomics data. I attended the workshop *RNA-seq data analysis* by *BioSB*, and the *EMBO* practical course *Single cell omics* in Heidelberg. I presented at various conferences in the Netherlands, USA, Germany and France.

Presently, I am working as a data scientist at the *Rijksinstituut voor volksgezondheid en milieu* as a data scientist dealing with COVID-19 data.

LIST OF PUBLICATIONS

[1] Mark D Long, Patrick R van den Berg, James L Russell, Prashant K Singh, Sebastiano Battaglia, and Moray J Campbell. "Integrative genomic analysis in K562 chronic myelogenous leukemia cells reveals that proximal NCOR1 binding positively regulates genes that govern erythroid differentiation and Imatinib sensitivity." In: *Nucleic Acids Research* 43.15 (2015), pp. 7330–7348. DOI: 10.1093/nar/gkv642.

[2] Patrick R van den Berg, Bogdan Budnik, Nikolai Slavov, and Stefan Semrau. "Dynamic post-transcriptional regulation during embryonic stem cell differentiation". In: *bioRxiv* (2017), p. 123497. DOI: 10.1101/123497.

[3] Prashant K Singh, Patrick R van den Berg, Mark D Long, Angie Vreugdenhil, Laurie Grieshober, Heather M Ochs-Balcom, Jianmin Wang, Sylvie Delcambre, Sami Heikkinen, Carsten Carlberg, Moray J Campbell, and Lara E Sucheston-Campbell. "Integration of VDR genome wide binding and GWAS genetic variation data reveals co-occurrence of VDR and NF-κB binding that is linked to immune phenotypes". In: *BMC genomics* 18.1 (2017), p. 132. DOI: 10.1186/s12864-017-3481-4.

[4] Tobias C Messemaker, Selina M van Leeuwen, Patrick R van den Berg, Anke E J t Jong, Robert-Jan Palstra, Rob C Hoeben, Stefan Semrau, and Harald M M Mikkers. "Allele-specific repression of Sox2 through the long non-coding RNA Sox2ot". In: *Scientific Reports* 8.1 (2018), p. 386. DOI: 10.1038/s41598-017-18649-4.

[5] Mazène Hochane, Patrick R van den Berg, Xueying Fan, Noémie Bérenger-Currias, Esmée Adegeest, Monika Bialecka, Maaike Nieveen, Maarten Menschaart, Susana M Chuva de Sousa Lopes, and Stefan Semrau. "Single-cell transcriptomics reveals gene expression dynamics of human fetal kidney development". In: *PLOS Biology* 17.2 (Feb. 2019), e3000152. DOI: 10.1371/journal.pbio.3000152.

[6] Mark D Long, Prashant K Singh, James R Russell, Gerard Llimos, Spencer Rosario, Abbas Rizvi, Patrick R van den Berg, Jason Kirk, Lara E Sucheston-Campbell, Dominic J Smiraglia, and Moray J Campbell. "The miR-96 and RARγ signaling axis governs androgen signaling and prostate cancer progression". In: *Oncogene* 38.3 (2019), pp. 421–444. DOI: 10.1038/s41388-018-0450-6.

[7] Yuelin Song, Patrick R van den Berg, Styliani Markoulaki, Frank Soldner, Alessandra Dall'Agnese, Jonathan E Henninger, Jesse Drotar, Nicholas Rosenau, Malkiel A Cohen, Richard A Young, Stefan Semrau, Yonatan Stelzer, and Rudolf Jaenisch. "Dynamic Enhancer DNA Methylation as Basis for Transcriptional and Cellular Heterogeneity of ESCs". In: *Molecular cell* 0.0 (2019), 905–920.e6. DOI: 10.1016/j.molcel.2019.06.045.

[8] Esmée Adegeest, Noémie Bérenger-Currias, Patrick R van den Berg, Marleen Feliksik, Mazène Hochane, Maria Mircea, and Stefan Semrau. *Scrum for Science blogpost*. 2020.

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