



Universiteit  
Leiden  
The Netherlands

## Unravelling vascular tumors : combining molecular and computational biology

IJzendoorn, D.G.P. van

### Citation

IJzendoorn, D. G. P. van. (2020, January 16). *Unravelling vascular tumors : combining molecular and computational biology*. Retrieved from <https://hdl.handle.net/1887/82754>

Version: Publisher's Version

License: [Licence agreement concerning inclusion of doctoral thesis in the Institutional Repository of the University of Leiden](#)

Downloaded from: <https://hdl.handle.net/1887/82754>

**Note:** To cite this publication please use the final published version (if applicable).

Cover Page



Universiteit Leiden



The handle <http://hdl.handle.net/1887/82754> holds various files of this Leiden University dissertation.

**Author:** IJzendoorn, D.G.P. van

**Title:** Unravelling vascular tumors : combining molecular and computational biology

**Issue Date:** 2020-01-16

# Stellingen

Behorend bij het proefschrift

## Unravelling Vascular Tumors: Combining Molecular and Computational Biology

1. Truncation of the FOS-protein, resulting from different translocations, drives the tumorigenesis of epithelioid hemangioma. *This thesis*.
2. Epithelioid hemangioma occurring at multiple locations is a result of locoregional metastatic spread. *This thesis*.
3. CRISPR/Cas9 is an excellent genome editing tool to generate models for tumors driven by balanced translocations. *This thesis*.
4. Pseudomyogenic hemangioendothelioma displays predominant endothelial differentiation, therefore endothelial cells are the best basis for in vitro models of this tumor. *This thesis*.
5. Open-access and well annotated next-generation sequencing datasets enable the use of analysis techniques such as machine learning to draw clinically relevant conclusions. *This thesis*.
6. For many types of cancer, gene specific fusions remain to be discovered that could give insight into the tumorigenesis. *Mertens, F., Johansson, B., Fioretos, T., and Mitelman, F. (2015). The emerging complexity of gene fusions in cancer. Nat. Rev. Cancer 15, 371–381.*
7. Endothelial cells derived from Human Induced Pluripotent Stem Cells display the morphology and phenotype of human endothelial cells, and can therefore be used as a replacement for Human Umbilical Vein Endothelial Cells. *Orlova, V. V., Van Den Hil, F.E., Petrus-Reurer, S., Drabsch, Y., Ten Dijke, P., and Mummery, C.L. (2014). Generation, expansion and functional analysis of endothelial cells and pericytes derived from human pluripotent stem cells. Nat. Protoc. 9, 1514–1531.*
8. Computational biology -a core part of biomedical research- is essential for understanding biology. *Markowitz, F. (2017). All biology is computational biology. PLoS Biol. 15.*
9. Artificial intelligence in digital pathology will become a valuable tool to aid the pathologist in diagnostics. *Bera, K., Schalper, K.A., Rimm, D.L., Velcheti, V., and Madabhushi, A. (2019). Artificial intelligence in digital pathology — new tools for diagnosis and precision oncology. Nat. Rev. Clin. Oncol.*