



Universiteit
Leiden
The Netherlands

Desease models in vertebrates : from hypoxia to cancer

Santos Marques, I.J. dos

Citation

Santos Marques, I. J. dos. (2011, June 29). *Desease models in vertebrates : from hypoxia to cancer*. Retrieved from <https://hdl.handle.net/1887/17742>

Version: Corrected 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/1887/17742>

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

Stellingen

Behorend bij het proefschrift

“Disease models in vertebrates: from hypoxia to cancer”

1. Animal models are a useful tool in scientific research. Disease wise, the closer, morphologically and genetically, these models are to humans, the higher the impact of any discoveries made will be. (This thesis)
2. Long term exposure to hypoxia can significantly alter gene expression patterns. The genes involved in the response to chronic constant hypoxia (CCH) may have future clinical implications in many diseases, including cancer. (Chapter 2 in this thesis)
3. The zebrafish is a highly valuable animal model for scientific research, including cancer studies since using this animal model we are able to perform rapid analysis of invasion and metastatic behaviour of primary human tumour specimens. (Chapter 3 in this thesis)
4. Using high throughput imaging and a transparent animal model is a major advantage in understanding the morphological changes cancer undergoes: from its advent, to metastasis formation (Chapter 3 in this thesis).
5. Infiltrating ductal adenocarcinoma of the pancreas is one of the most lethal solid tumours. Identifying new markers and novel anti-metastatic therapies is an important step in the detection and treatment of this highly lethal cancer. (Chapter 4 in this thesis)
6. The better we understand the role that a gene plays in a certain type of cancer, the better can we detect and treat it. (Chapter 4 this thesis)
7. Tumour development proceeds via a process formally analogous to Darwinian evolution, in which a succession of genetic changes leads to the progressive conversion of normal human cells into cancer cells. (Hanahan and Weinberg. 2000. The hallmarks of cancer)

8. The vast catalogue of cancer cell genotypes is a manifestation of six essential alterations in cell physiology that correctively dictate malignant growth. (Hanahan and Weinberg. 2000. The hallmarks of cancer)

9. Tumour transplantation in the zebrafish will be increasingly important in our understanding of tumour biology (Taylor and Zon. 2009. Zebrafish tumour assays: the state of transplantation)

10. The zebrafish could never replace the mouse as an animal model in cancer studies, but, together, these two models can improve and accelerate the advances made in cancer research.

11. Making science can be very complicated, tiresome and, at times, frustrating, but in the end it is always worth it.