Department of Clinical Sciences

Faculty of Veterinary Medicine, Utrecht, The Netherlands

Canine adrenomedullary and pheochromocytoma organoids

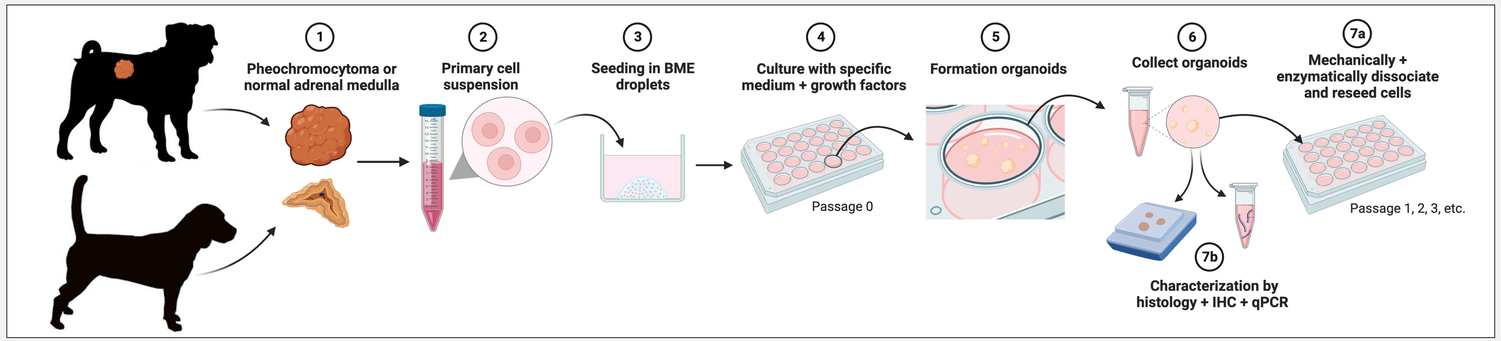
an *in vitro* animal model

Marit F. van den Berg, Elpetra P.M. Timmermans-Sprang, Fleur C. Viets, Monique E. van Wolferen, Hans S. Kooistra, Sara Galac

Background and aim

Given the need for an *in vitro* model to explore new treatment options for pheochromocytoma (PCC), canine patient can serve as an animal model. Organoids are self-organizing, self-renewing three-dimensional cellular structures that closely resemble the organ or tumour they originate from. As such, organoid cultures can constitute a valuable disease modelling and drug screening platform. We aimed to establish and characterize organoid cultures of canine normal adrenal medullas and PCCs.

Materials and methods



Results

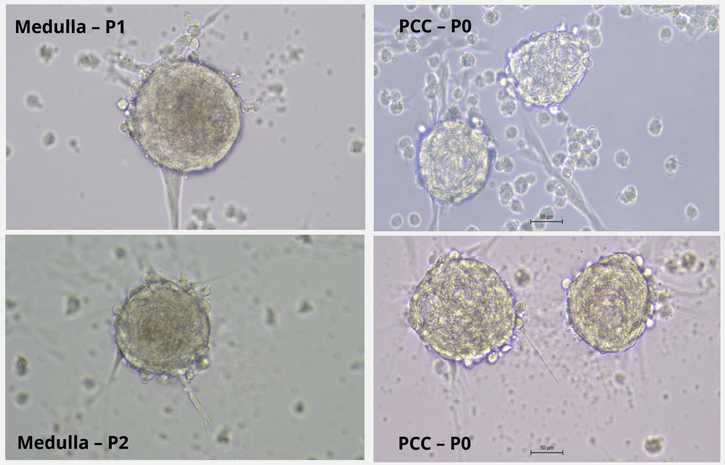


Figure 1
Bright-field microscopy images of adrenomedullary and PCC organoids at different passages.

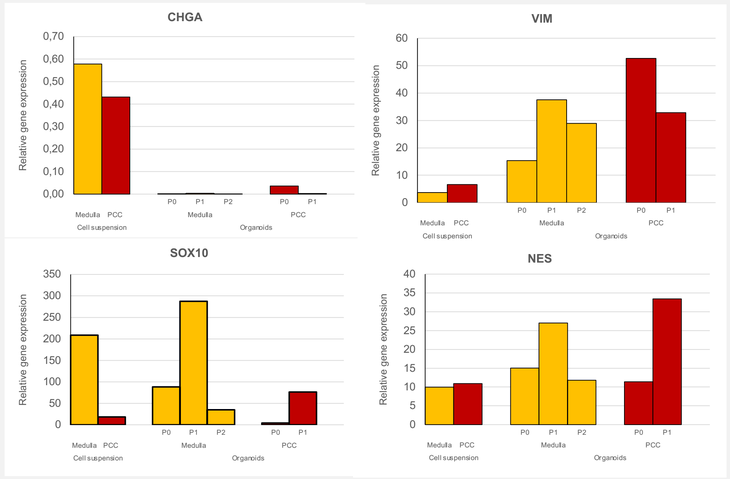
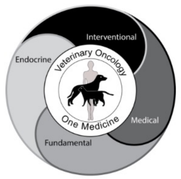


Figure 2
mRNA expression of adrenomedullary marker chromogranin A (CHGA) and adrenomedullary progenitor markers nestin (*NES*), *SOX10*, and vimentin (*VIM*) in primary adrenomedullary and PCC cell suspensions and organoids at different passages.

Conclusions

- This study has demonstrated the feasibility of establishing canine adrenomedullary and PCC organoid lines.
- Currently, the organoids are in a progenitor state, and research efforts towards differentiation and molecular characterization are ongoing.
- Canine adrenomedullary and PCC organoid lines have great potential as an *in vitro* research tool, paving the way towards the development of an experimental model that faithfully recapitulates the phenotype of human PCCs.

Veterinary patient can fill the niche in the research of various types of rare cancers in humans with comparable molecular backgrounds.



Interested to know more or to cooperate with us? Please visit our website https://vetoncology.sites.uu.nl or get in touch: S.Galac@uu.nl.