Partial Analysis of Olfactory Receptor Subgenome in the Arabian Camel

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Many animals have evolved mechanisms to withstand the harsh desert environment, characterized by extreme high temperatures and scarce water supplies. The Arabian Camel, and the Arabian Oryx are valued economically and culturally. These animals can survive for several days without food or water. As the Arabian peninsula undergoes rapid and vast industrial changes, it is increasingly important to understand the biological aspects of these animals.

From the unicellular microbes to the sophisticated multi-cellular animals, sensing the chemical composition of the surrounding environment is essential for survival. The vertebrate chemosensory receptors genes, which are members of the seven transmembrane-helical G-protein coupled receptors (GPCRs), are encoded by six different multigene families. Four of these genes encode receptor proteins for sensing odors. The olfactory (odorant) receptors (ORs) are predominately expressed in the sensory neurons of the main olfactory epithelium, and can sense either water-soluble (class I) or volatile (class II) molecules. Furthermore, certain OR genes are expressed in non-olfactory tissues, such as brain, kidney, testis, and placenta.

Being adapted to very harsh conditions with elevated temperature, scarce water supply and limited vegetation, we hypothesize that desert animals have evolved the ability to detect water either from volatiles liberated by water in the environment or through the blooming of short-lived vegetation, via their olfactory systems.

To explore this possibility we have undertaken the study of the Camel OR genes. We identified approximately one hundred candidate OR genes, all of which are orthologous to OR genes in other mammals and most closely related to those of the Equus caballus. Preliminary analysis revealed an enrichment in OR gene family 2/13, found in the highest proportion in aquatic animals, as compared to other mammals. This finding provides the intriguing suggestion that desert animals have evolved specific OR genes to adapt to the desert ecosystem.

We are currently working to identify the complete OR gene repertoire in the Camel, and to identify and characterize the OR subgenome in other desert animals such as the Arabian Oryx.

Does Number of Ports affect Outcomes in Patients Undergoing Laparoscopic Pyloromyotomy? Retrospective Chart-Review Study

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Background: Although open Ramsted’s pyloromyotomy is the gold standard for the surgical management of infantile hypertrophic pyloric stenosis, laparoscopic pyloromyotomy has been found highly successful. Various factors, however, can affect the outcomes of surgical interventions in these patients. We observed a relationship between the number of ports used and outcome in patients undergoing laparoscopic pyloromyotomies.

Method: We retrospectively assessed the medical records of selected group of patients who underwent laparoscopic pyloromyotomy in our institution. Factors analyzed included operation time, length of hospital stay, postoperative complications, and time to postoperative full feeding.

Results: We observed failure of myotomy in both two patients who underwent laparoscopic pyloromyotomy using only two working ports compared to successful myotomies in the remaining patients.

Conclusion: Laparoscopy provides good results in terms of intraoperative exposure and cosmesis. However, standardized surgical technique with two working ports is advisable and this can trigger further research to be ascertained.