

## Unique cellular structures in the parotid gland of an Old World fruit bat, *Pteropus lylei* (Lyle's flying fox)

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*Key words:* Lyle's flying fox, Old World fruit bat, Parotid gland, *Pteropus lylei*, salivary gland

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### SUMMARY

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*Pteropus lylei* (Lyle's flying fox), an Old World fruit bat, consumes only ripe fruit, which contains low protein and sodium. The carpophagous diet of *P. lylei* presents an adaptive challenge for salivary glands to conserve sufficient nutrition for living. Therefore, the parotid glands in both sexes were investigated by using light microscopy and transmission electron microscopy. No structural difference was observed in the parotid glands between sexes. The acinar cell contained dense serous secretory granules, prominent luminal microvilli and intercellular canaliculi. The intercalated duct exhibited simple cuboidal epithelium with no secretory granule. Striated duct consisted of simple columnar epithelium with basal striation, numerous elongated mitochondria, and apical vesicles. In the interlobular duct, simple tall columnar epithelium and apocrine secretion were found. The interlobar and excretory ducts surprisingly contained continuous capillaries that intervened in stratified cuboidal epithelium. In addition, there were several blood vessels around the interlobular, interlobar and excretory ducts. The morphological adaptation of the parotid gland observed in *P. lylei* enables this species to obtain sufficient nutrients from the preferred consumption of ripe fruit. Serous secretory granule was suitable for digestion of ripe fruit. A well-developed striated duct, continuous capillaries among the epithelial cells of interlobar and excretory ducts, and numerous blood vessels around these ducts enhanced the reabsorption of amino acids and ions. Structural variations in the parotid gland can indicate not only a correlation to diet and survival but also a close relationship of the Old World fruit bat to other kinds of bats.

### INTRODUCTION

Bats are classified in the order Chiroptera, whose members consume different kinds of diet. According to the types of food consumed, this mammal can be divided into 7 groups: aerial insectivore, frugivore, foliage gleaner, nectarivore, piscivore,