

**1997, 717, Session X, Podium****Maturation of newly generated hair cells and pathologies beyond the hair-cell level in the basilar papilla of BWS**

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The Belgian Waterslager canary (BWS) exhibits a hereditary, high frequency hearing loss. Investigations of the inner ear have shown abnormalities to hair cells, even though the potential for their regeneration apparently continues to exist. The purpose of our study was to refine our knowledge of on-going cell proliferation and differentiation within the basilar papilla and to determine any additional structural abnormalities which might be associated with the hereditary hearing loss. In order to obtain excellent tissue preservation in combination with a marker for proliferation we used autoradiography on semithin sections of the basilar papilla (BP) after [3H]thymidine injection. Four BWS's each received three injections of [3H] thymidine (5 microcurie/gm, IM) at 12 hour intervals. Approximately 12 or 240 hours after the last injection birds were sacrificed and the BP, along with the auditory nerve bundle, were fixed, embedded in resin and serially sectioned in 2um thick sections from the basal through the lagenar tip. Sections were developed for autoradiography in the usual manner. Three BWS's and two non-BWC's received no [3H] thymidine injections; their basilar papillae were embedded, sectioned at 100 micron intervals and used for LM analysis of neural fiber density, tectorial membrane and tegmentum vasculosum morphology.

In the 2 birds that survived for 10 days after the thymidine injections we found well differentiated [3H] thymidine labeled hair cells on both the neural (n=5) and abneural edge (n=9) in three of the four papillae . In addition, we found fourteen [3H] thymidine labeled supporting cells in one papilla; interestingly there was no strong local association between labeled hair cells and supporting cells. Preliminary results revealed less neural density within the habenular area in the BWS's. Consistent with previous observations of reduced BP width in BWS, the tectorial membrane appears abnormally rounded and narrow compared to normal canaries. These results extend those previously reported using the mitogenic marker BrDU and demonstrate on-going proliferation, differentiation and maturation of hair cells in the adult BWS papilla. We also demonstrate additional pathologies beyond the hair-cell defects that are relevant for our understanding of the physiologic basis of hearing loss in this strain.

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