Abstract **#942**, Date **Wednesday, Jan 30 2002 1:00PM - 12:00PM**
Session **W8 Developmental Biology 8**

Development of Hair Cell Stereovilli Bundle Abnormalities in Belgian Waterslager Canary

Brenda M. Ryals, Robert J. Dooling

Adult Belgian Waterslager canaries (BWS) show an average 30% reduction in hair cell number despite continuous hair cell regeneration. Many of the hair cells that are present have severe stereovilli bundle (SVB) abnormalities. Preliminary evidence indicated that hair cells and stereovilli bundles had developed adult-like abnormalities by 3 months of age. The purpose of the present study was: 1) to quantify the development of hair cell loss and SVB abnormalities and 2) to describe the development of SVB abnormalities as a function of hair cell position and type. Canaries (n=36) were sacrificed at 2,12,31,66,90 or > 180 days following hatching. Their basilar papillae were fixed and prepared for analysis by SEM. There was no significant difference in hair cell number in BWS and non-BWS canaries between 2 and 31 days of age. By 66 days of age total hair cell number had decreased 16%. Most hair cell loss was observed in the apical half of the papilla. SVB abnormalities were first seen as multiple bundles on tall hair cells located on the neural edge in the mid-basal region of the papilla. SVB abnormalities progressed from neural to abneural cells and toward the apex. Multiple SVB were first seen at 2 days of age and progressed to abbreviated bundles eccentrically located on the edges of the cuticular plate in both tall and short hair cells by 31 days of age. Quantitative analysis of the development of stereovilli bundle abnormalities revealed a progression in the number of cells with abnormalities from 4% at 2 days of age to 44% by 66 days of age. These results provide the first evidence of developmental abnormalities in stereovilli bundle formation in a bird and are reminiscent of developmental abnormalities in stereovilli bundle formation described in several mouse models of deafness. Supported by NIDCD R01DC001372