Abstract **1546**, Date **1:00 pm Sunday, February 23, 2003 (24 hours)**
Session **D10: Auditory Brainstem: Evoked Potentials**

Far-Field Neural Population Responses in Belgian Waterslager (BWS) Canaries

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The Belgian Waterslager (BWS) canary has a behavioral high-frequency hearing loss, even though hair cell loss is distributed throughout the basilar papilla. Auditory brainstem response (ABR) recordings from sedated BWS canaries show elevated ABR audiograms compared to non-BWS canaries. Here we examine other aspects of ABR measurements in BWS canaries that may differ from other birds.

Preliminary results show that the shape of the ABR audiogram in BWS canaries is similar to what might be expected based on ABR thresholds in humans with high frequency sensorineural hearing loss (Stapells and Oates 1997). Increasing the presentation rate of high intensity clicks showed that latency measures for wave I were similar but slightly longer than non-BWS canaries at high presentation rates. Wave I and II peak amplitudes in BWS canaries were 2-3 times smaller than amplitudes of non-BWS canaries regardless of presentation rate.

Pathology at the level of the hair cell and auditory nerve may help explain some of these differences. The ratio of hair cells to afferent nerve fibers is about 0.5 in non-BWS canary (Gleich et al 1998). Since BWS canaries have an approximate 30% reduction in hair cell number and of these remaining hair cells an average of 30% have abnormal stereovilli bundles (Ryals et al 2002) the total number of hair cells likely to respond normally is reduced by as much as 60%. Further, the total number of auditory nerve fibers is reduced by approximately 12% in BWS. Systematic investigation of hair cell innervation patterns in BWS should be useful in interpreting differences in neural population responses both in adulthood and during the progression of hearing loss in this strain during early development.

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