ERRATA

Erratum: "A phenomenological model for the responses of auditory-nerve fibers: II. Nonlinear tuning with a frequency glide" [J. Acoust. Soc. Am. 114, 2007–2020 (2003)]

Qing Tan
Boston University Hearing Research Center, Department of Biomedical Engineering, Boston University, 44 Cummington Street, Boston, Massachusetts 02215

Laurel H. Carney[a]
Boston University Hearing Research Center, Department of Biomedical Engineering, Boston University, 44 Cummington Street, Boston, Massachusetts 02215; and Department of Bioengineering and Neuroscience, Institute for Sensory Research, 621 Skytop Road, Syracuse University, Syracuse, New York 13244[b]

The schematic diagram and text erroneously omitted a component of the auditory-nerve model. A first-order low-pass filter with a cutoff frequency of 500 Hz was included in the feedback path within the model's control-path, as shown here (LP2, Fig. 1); a scalar K with a value of 10 followed the low-pass filter in the feedback path. This low-pass filter was included in some but not all of the simulations shown in the original paper, as clarified below. The inclusion of LP2 did not significantly affect responses to pure tone stimuli (Tan and Carney, 2003, Figs. 7–9,11,12) or to broadband noise (Tan and Carney, 2003, Figs. 4,10). The low-pass filter (LP2) mainly affected responses to two-tone stimuli, and in particular was responsible for introducing the differences in growth of suppression for tones below or above CF. Figure 13 in Tan and Carney (2003) did *not* include LP2; Fig. 2 here illustrates the effect of its inclusion. Figure 14 in Tan and Carney (2003) *did* include LP2; the effects of its inclusion are illustrated here in Fig. 3.
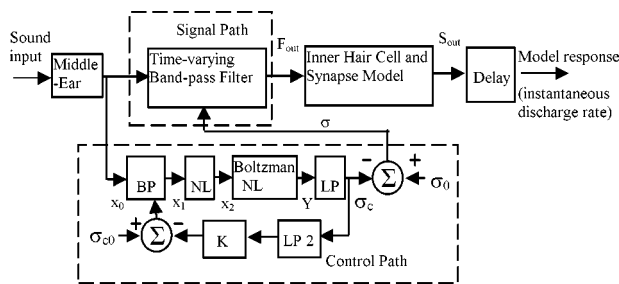

FIG. 1. Corrected schematic diagram of the AN model. The block labeled LP2 is a first-order low-pass filter with cutoff frequency of 500 Hz. The associated scalar, K, had a value of 10. This low-pass filter was omitted from the figure and text in Tan and Carney (2003), but was included in some of the simulations.

The parameter values for Z_0 and Z_1 in Eq. (13) (Table I) were used in all results shown in Tan and Carney (2003), but these values are not consistent with the fit shown in Fig. 5(d). The values used were varied to adjust the amount of glide in the impulse responses. Values of $Z_0 = 1.572$ and $Z_1 = 0.564$ provide a better fit to Fig. 5(d) and result in better filter shapes at high CFs.

Finally, Eq. 18 should read $G_{control} = (10^{(0.5732 \log 10 \,(CF) + 1.522)} - 10^{(0.4 \log 10 \,(CF) + 1.9)})/0.3357$.

[a]Author to whom correspondence should be addressed. Electronic mail: Lacarney@syr.edu
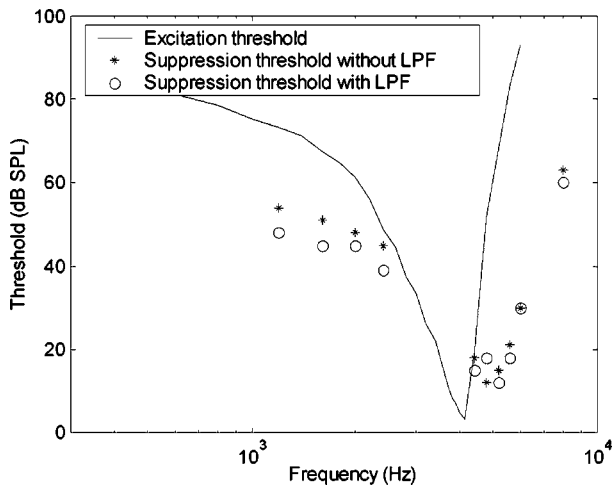[b]Address for correspondence.

FIG. 2. The solid line illustrates the model's tuning curve with CF at 4000 Hz. The stars indicate the suppression threshold illustrated in Tan and Carney (2003), *without* LP2 in the control path. Circles indicate suppression thresholds *with* LP2 in the control path. Suppression threshold was defined as the suppressor tone SPL that decreases the response to CF tone by 10 spike/sec.

Tan, Q., and Carney, L. (**2003**). "A phenomenological model for the responses of auditory-nerve fibers: II. Nonlinear tuning with a frequency glide," J. Acoust. Soc. Am. **114**, 2007–2020.
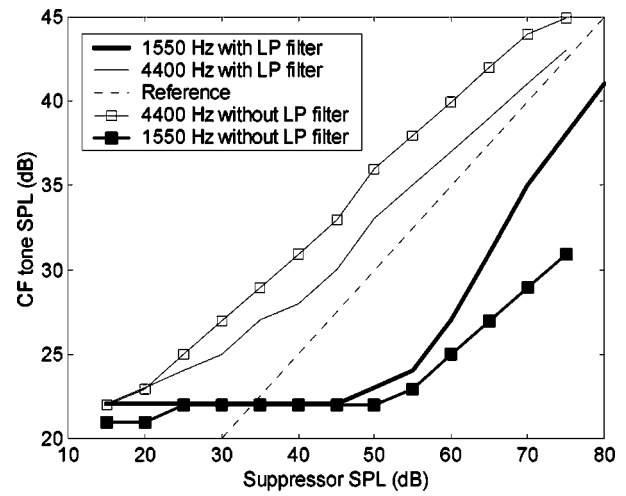

FIG. 3. Suppression growth functions measured for a CF of 3500 Hz, with suppressors at 1550 Hz (below CF) or 4400 Hz (above CF). The CF tone SPL was adjusted to maintain a response rate that was two-thirds of the maximum response rate at each suppressor SPL. The dotted line indicates a growth with slope of 1 (dB/dB). The thin and thick solid lines without symbols are responses of the model *with* LP2 in the control path (same as in Fig. 14 of Tan and Carney, 2003). The lines with symbols show the effects of *removal* of LP2. *Without* LP2, the suppression growth functions for suppressors above and below CF have the same slope.