

## Curriculum Vitae

### 1. Andrea Megela Simmons

Professor  
Departments of Psychology & Neuroscience  
Brown University  
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### 2. Education

B.A., University of Pennsylvania  
Ph.D., Harvard University  
Postdoctoral, Cornell University

### 3. Completed publications

#### a. Books

Simmons, A.M., Popper, A.N. and Fay, R.R., editors. (2002) Acoustic Communication. Springer Handbook of Auditory Research, vol. 16. Springer-Verlag, New York.

#### b. Chapters in books

Simmons, A. M. and Moss, C. F. (1995). Reflex modification: A tool for assessing basic auditory function in anuran amphibians. In Methods in Comparative Psychoacoustics, R. Dooling, R. Fay, G. Klump, and W. Stebbins (Eds.). Birkhauser, pp. 197-208.

Simmons, A. M. and Buxbaum, R. C. (1996). Neural codes for 'pitch' processing in a unique vertebrate auditory system. In Neuroethological Studies of Cognitive and Perceptual Processes, C. F. Moss and S. Shettleworth (Eds). Westview Press, pp. 185-228.

Kumaresan, R., Rao, A., Sanderson, M.I. and Simmons, A.M. (1997). Signal processing models for the auditory periphery. In Diversity in Auditory Mechanics, E. R. Lewis, G. R. Long, P.M., R. F. Lyon, P.M. Narins, C. R. Steele, and E. Hecht Poinar (Eds). World Scientific, New Jersey, pp. 190-196.

Fay, R. R. and Simmons, A.M. (1999). The sense of hearing in fishes and amphibians. In Comparative Hearing: Fish and Amphibians, A.N. Popper and R.R. Fay (Eds.). Springer Handbook of Auditory Research, Springer-Verlag, pp. 269-318.

Simmons, A.M. (2002) Perspectives and progress in animal acoustic communication. In Acoustic Communication, A.M. Simmons, A.N. Popper and R.R. Fay (Eds). Springer Handbook of Auditory Research. Springer-Verlag, New York, pp. 1-14.

Simmons, A.M. and Horowitz, S.S. (2006) Plasticity in the auditory system across metamorphosis. In Hearing and Sound Communication in Amphibians, P. Narins, A. Feng, A.N. Popper and R.R. Fay (Eds). Springer Handbook of Auditory Research. Springer-Verlag, New York, in press.

#### c. Refereed journal articles (since 1980)

Megela, A. L., and Capranica, R. R. (1981). Response patterns to tone bursts in peripheral auditory system of anurans. *Journal of Neurophysiology*, 46, 465-478.

Megela, A. L., and Capranica, R. R. (1982). Differential patterns of physiological masking in the anuran auditory nerve. *Journal of the Acoustical Society of America*, 71, 641-645.

- Megela, A. L., and Capranica, R. R. (1983). A neural and behavioral study of auditory habituation in the bullfrog, *Rana catesbeiana*. *Journal of Comparative Physiology*, 151, 423-434.
- Megela, A. L., Borchers, H. -W., and Ewert, J. -P. (1983). Relation between activity of tectal neurons and prey-catching behavior in toads (*Bufo bufo*). *Naturwissenschaften*, 70, 100-101.
- Megela, A. L. (1984). Diversity of adaptation patterns in responses of eighth nerve fibers in the bullfrog (*Rana catesbeiana*). *Journal of the Acoustical Society of America*, 75, 1155-1162.
- Megela-Simmons, A. (1984). Behavioral vocal response thresholds to mating calls in the bullfrog, *Rana catesbeiana*. *Journal of the Acoustical Society of America*, 76, 676-681.
- Megela-Simmons, A., Moss, C. F., and Daniel, K. M. (1985). Behavioral audiograms of the bullfrog (*Rana catesbeiana*) and the green treefrog (*Hyla cinerea*). *Journal of the Acoustical Society of America*, 78, 1236-1244.
- Moss, C. F., and Simmons, A. M. (1986). Frequency selectivity of hearing in the green treefrog, *Hyla cinerea*. *Journal of Comparative Physiology A*, 159, 257-266.
- Simmons, A. M. (1988). Selectivity for harmonic structure in complex sounds by the green treefrog (*Hyla cinerea*). *Journal of Comparative Physiology A*, 162, 397-403.
- Simmons, A. M. (1988). Masking patterns in the bullfrog (*Rana catesbeiana*), I: Behavioral effects. *Journal of the Acoustical Society of America*, 83, 1087-1092.
- Freedman, E. G., Ferragamo, M., and Simmons, A. M. (1988). Masking patterns in the bullfrog (*Rana catesbeiana*), II: Physiological effects. *Journal of the Acoustical Society of America*, 84, 2081-2091.
- Schwartz, J. J., and Simmons, A. M. (1990). Encoding of a spectrally-complex communication sounds in the bullfrog's auditory nerve. *Journal of Comparative Physiology A*, 166, 489-500.
- Simmons, A. M., Schwartz, J. J., and Ferragamo, M. (1992). Auditory-nerve representation of a complex communication sound in background noise. *Journal of the Acoustical Society of America*, 91, 2831-2844.
- Simmons, A. M., and Ferragamo, M. (1993). Periodicity extraction in the anuran auditory periphery, I: 'Pitch-shift' effects. *Journal of Comparative Physiology A*, 172, 57-69.
- Simmons, A. M., Reese, G., and Ferragamo, M. (1993). Periodicity extraction in the anuran auditory periphery, II: Phase and temporal fine-structure. *Journal of the Acoustical Society of America*, 93, 3374-3389.
- Simmons, A. M., Buxbaum, R. C. and Mirin, M. P. (1993). Perception of complex sounds by the green treefrog, *Hyla cinerea*: Envelope and fine-structure cues. *Journal of Comparative Physiology A*, 173, 321-327.
- Allan, S. E. and Simmons, A. M. (1994). Temporal features mediating call recognition in the green treefrog, *Hyla cinerea*: Amplitude modulation. *Animal Behaviour*, 47, 1073-1086.
- Boatright-Horowitz, S. S. and Simmons, A. M. (1995). Postmetamorphic changes in auditory sensitivity of the bullfrog midbrain. *Journal of Comparative Physiology A*, 177, 577-590.
- Simmons, A. M., Shen, Y., and Sanderson, M. I. (1996). Neural and computational basis for periodicity extraction in frog peripheral auditory system. *Auditory Neuroscience*, 2, 109-133.
- Hainfeld, C., Boatright-Horowitz, S. L., Boatright-Horowitz, S. S., and Simmons, A. M. (1996). Discrimination of phase spectra in complex sounds by the bullfrog, *Rana catesbeiana*. *Journal of Comparative Physiology A*, 178, 75-87.
- Boatright-Horowitz, S.S. and Simmons, A.M. (1997). Transient "deafness" accompanies auditory development during metamorphosis from tadpole to frog. *Proceedings of the National Academy of Sciences USA*, 94, 14877-14882.

- Kumaresan, V., Kang, C. and Simmons, A. M. (1998). Development and differentiation of the anuran auditory brainstem across metamorphosis: An acetylcholinesterase histochemical study. *Brain, Behavior and Evolution*, 52, 111-125.
- Boatright-Horowitz, S.S., Garabedian, C.E., Odabashian, K. H., and Simmons, A.M. (1999) Coding of amplitude modulation in the auditory midbrain of the bullfrog (*Rana catesbeiana*) across metamorphosis. *Journal of Comparative Physiology A*, 184, 219-231.
- Boatright-Horowitz, S.S., Cheney, C.A., and Simmons, A.M. (1999) Atmospheric and underwater propagation of bullfrog vocalizations. *Bioacoustics* 9, 257-280.
- Kaya, U., and Simmons, A. M. (1999). Advertisement calls of the tree frogs, *Hyla arborea* and *Hyla savignyi*, in Turkey. *Bioacoustics* 10, 175-190.
- Simmons, A. M. and Bean, M.E. (2000). Perception of mistuned harmonics in complex sounds by the bullfrog, *Rana catesbeiana*. *Journal of Comparative Psychology*, 114, 167-73.
- Boatright-Horowitz, S.L., Horowitz, S.S. and Simmons, A.M. (2000). Patterns of vocal interactions in a bullfrog (*Rana catesbeiana*) chorus: Preferential responding to far neighbors. *Ethology*, 106, 701-712.
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- Horowitz, S.S., Chapman, J., Kaya, U. and Simmons, A.M. (2001). Metamorphic development of the bronchial columella of the larval bullfrog (*Rana catesbeiana*). *Hearing Research*, 154, 12-25.
- Simmons, A.M. and Chapman, J.A. (2002). Metamorphic changes in GABA immunoreactivity in the brainstem of the bullfrog, *Rana catesbeiana*. *Brain, Behavior and Evolution*, 60, 189-206.
- Simmons, A.M. (2004). Call recognition in the bullfrog, *Rana catesbeiana*: Generalization along the duration continuum. *Journal of the Acoustical Society of America*, 115, 1345-1355.
- Simmons, A. M., Costa, L.M. and Gerstein, H. (2004). Lateral line-mediated rheotactic behavior in tadpoles of the African clawed frog, *Xenopus laevis*. *Journal of Comparative Physiology A*, 190, 747-758.
- Suggs, D.N. and Simmons, A.M. (2005). Information theory analysis of patterns of modulation in the advertisement call of the male bullfrog, *Rana catesbeiana*. *Journal of the Acoustical Society of America*, 117, 2330-2337.
- Horowitz, S.S., Simmons, A.M. and Ketten, D.R. (2005). An unusual amphibian auditory malformation: A model for congenital aural atresia in the American bullfrog (*Rana catesbeiana*). *Journal of the Acoustical Society of America* 118, 1166-1171.
- Templin, T., and Simmons, A.M. (2005). Cellular and spatial changes in the anuran superior olive across metamorphosis. *Hearing Research*, 207, 87-98.
- Chapman, J.A., Weinstein, J.L., and Simmons, A.M. (2006) Cell proliferation in the *Rana catesbeiana* auditory medulla over metamorphic development. *Journal of Neurobiology*, 66, 115-133.
- Horowitz, S.S., Chapman, J.A., and Simmons, A.M. Plasticity of auditory medullary-midbrain connectivity across metamorphic development in the bullfrog, *Rana catesbeiana*. *Brain Behavior and Evolution*, in press.
- Simmons, A.M., Chapman, J.A., and Brown, R.C. Changes in cell proliferation in the auditory midbrain of the bullfrog, *Rana catesbeiana*, across metamorphosis. *Journal of Neurobiology*, in press.

#### 4. Honors

B.A. Magna cum laude

Graduate Fellowship, Harvard University

Individual Predoctoral Fellowship, National Institute of Mental Health

Individual Postdoctoral Fellowship, National Science Foundation

Individual Predoctoral Fellowship, National Institute of Mental Health

Visiting Scholar, Parmlly Hearing Institute, Loyola University of Chicago

Elected Fellow, Acoustical Society of America