EDITORIAL

Getting to the Root of It All: The Anatomical Record Explores Advances in Gene and Stem Cell Therapy in the Treatment of Hearing, Balance and Other Head and Neck Disorders

Of our six senses—that is right we have six; they lied to us in grammar school!—those of hearing and of balance (the latter's the one Mrs. Smith forgot to tell us about in sixth grade) have become particularly important for the writers of this editorial. They are key for K.A. as he scales Utah's snowy peaks (needs balance!) and must have his ears sharp to capture calls of “Moose! Moose!” lest he miss one coming up from behind and thus become the focus of a special issue of our journal sooner than he would like. Similarly, his comrade-in-arms, J.L., must have his hearing mechanism just as finely tuned as he could miss calls of “Mouse! Mouse!” when trying a new, eclectic New York City restaurant, and similarly needs precise balance to quickly get up and out of said vermin nest and pirouette to signal an escape taxi (life in the Big Apple can be hard!).

Unfortunately, the acuity and functionality of these two primal senses, as well as others such as smell, are not always optimal. Our abilities are frequently compromised due to a host of developmental, disease-oriented, traumatic, and natural aging, insults. Indeed, the degeneration within the path of normal aging (an area that we have become more and more interested in for some reason) has itself come under intense focus and study as our population ages. Humans are just not “designed” to last forever (as actuaries well-know; K.A. was recently congratulated by an actuary for becoming actuarially relevant), and the gradual diminution of these senses can literally shake our world.

This current very special, Special Issue, entitled, “Novel Stem Cell and Gene Therapies for Hearing, Balance, and Olfaction” focuses on advancing the latest research in these areas. The Special Issue is Guest Edited by our favorite hearing anatomist (and one that can still hear!), Thomas R. Van De Water (Van De Water, 2020a, 2020b, this issue), Emeritus Professor of Otolaryngology, and Emeritus Director of the Cochlear Implant Research Program of the University of Miami Ear Institute, University of Miami Miller School of Medicine. It is, in essence, a “Part 2” to Van De Water’s now classic 2012 Special Issue in The Anatomical Record, “The Anatomy and Biology of Hearing and Balance: Cochlear and Vestibular Implants” (Laitman and Albertine, 2012; Laitman, 2012; Van De Water, 2012). The 2012 Special Issue was our first ever to focus on “implant” biology and included seminal research in the area. This Special Issue is our first to focus upon the anatomy underlying the dynamic fields of stem cell biology and gene therapies, and continues the extraordinary story of the progress in understanding our special senses, particularly, of hearing and balance.

While Van De Water has brought to our journal the cutting edge blending of anatomical knowledge and treatment of hearing and balance (and even some olfaction) issues, The Anatomical Record has a long and proud history of publishing studies in these areas. Indeed, going back to our journal’s birth year in 1909, and just 3rd Volume, George Streeter, the noted embryologist/anatomist and future President of the American Association of Anatomists, published his innovative experiments on transplanting the ear vesicles of tadpoles (see Streeter, 1909; also Streeter, 1921). Throughout the early to mid-20th century our fellow anatomists—including some of the greats of these eras such as T. H. Bast, B. J. Anson, J. C. Sandison, and E. R. Clark—called upon The Anatomical Record to advance their science (see review in Laitman, 2006a).

Some of our Special Issues have also been home to assessment of the anatomy and biology of the senses, notably: the Special Issue on “The Special Senses of Primates,” guest-edited by Nathaniel J. Dominy Callum Ross, and Timothy Smith (Dominy et al., 2004; Laitman, 2004); and the Special Issue guest-edited by renowned otolaryngologist/neurobiologist (and former J.L. MD/PhD student who almost never listened to his poor Advisor!), David R. Friedland, entitled “Structure and Function in the Auditory System: From Cochlea to Cortex” (Friedland, 2006; Laitman, 2006a, 2006b).

We need to also say a few words about this current issue’s Guest Editor, Thomas Van De Water. Tom—we know him too well to continue with scholarly formality—is a remarkable fellow. He is a true native New Yorker, living his entire life within the six boroughs of New York City. (Yes, like the senses, there are six, not five: Brooklyn, Bronx, Manhattan, Queens, Staten Island, and Miami; as New Yorkers age they all migrate to Miami or one of its ‘burbs. J.L.’s eldest sister is there with her picture of “Baruch”—he visited her Temple and wore a yarmulke so she is convinced...
he is Baruch—Obama on her wall. Do not even think of mentioning the current inhabitant of the White House as she might hit you with her cane!) By the way, when we say “native” New Yorker we really mean it as Tom’s family goes back to the pre-Revolutionary War Dutch period. Historical maps of the city show “Van De Water’s farm” and a new fancy Luxury Residence in upper Manhattan is “The Vandewater Building.” He is New York royalty (a fact he often likes to remind some of us recent arrivals.).

Tom is one of the leading hearing biology researchers in the world and has been so for over half a century (he was born at an early age). He has fathered an entire generation of auditory system anatomists/physiologists/biochemists/pharmacologists/geneticists, and hundreds of otolaryngologists whose abilities to help others are advanced by his science and mentoring. Indeed, Tom is one of the few whose own scientific prowess overlaps disciplines ranging from anatomy, histology, embryology, molecular biology, genetics, pharmacology, and even evolutionary biology; he is as close to a modern version of a Renaissance polymath as its gets. In January 2016, a Special event was held in Miami to celebrate Tom’s career, science, and students, and scores from around the globe flew in to raise a glass (or ten; went on a bit!) to the maestro. Those of us who know him know that he is an avid drinker and raising a glass (or ten; went on a bit!) to the maestro. Those of us who know him know that he is an avid drinker and students, and scores from around the globe.

This Special Issue allows us to explore the best cutting edge science that sits at front lines in challenging the failings of our senses, particularly the still enigmatic ones of balance and hearing. New data arising from the flowering disciples of stem cell biology and gene therapy are putting new and powerful arrows in the quivers of those dedicated to maintaining our health and acuity of our senses. We at The Anatomical Record are proud to be the vehicle that empowers these new approaches to advance.

Jeffrey T. Laitman, Senior Associate Editor and Kurt H. Albertine, Editor-in-Chief

LITERATURE CITED


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