Decibel Therapeutics Research on The Role of Molecular Diversity in Neurons Critical for Hearing Published in *Cell*

Boston, Mass., August 2, 2018 –Decibel Therapeutics researchers and Johns Hopkins University professors Ulrich Mueller, Ph.D. (a Decibel co-founder) and Dwight Bergles, Ph.D., today published the results of groundbreaking research which may hold the key to discovering new mechanisms behind hearing disorders and tinnitus. Corroborative findings were published in the same issue of *Cell* by another research team led by Lisa Goodrich, Ph.D. of Harvard University, and included Decibel co-founder Charlie Liberman, Ph.D.

Researchers in the field of hearing, led by Dr. Liberman, have long hypothesized that a diversity of neuronal cell types exists within the cochlea and that disorders such as tinnitus and the inability to discriminate speech in the face of background noise are associated with selective damage of these cell types. Until now, knowledge of how cochlear neurons differ at the molecular level has proved elusive, hampering the exploration of novel drug targets for these disorders.

Decibel researchers together with Drs. Mueller and Bergles utilized massively parallel single-cell RNA-sequencing to profile the transcriptomes of thousands of individual cochlear neurons. In addition, the team identified groups of genes (ion channels, adhesion molecules, transcription factors) that are enriched within each subtype of neuron and which may regulate their unique functional properties. “For the first time, we have elucidated the differences in gene expression that underlie the neuronal diversity that has long been hypothesized,” said Joe Burns, Head of Biology at Decibel Therapeutics and co-author of the publication. “We were especially excited to discover that functional activity of hair cells, the sound-sensing cells to which neurons connect, is essential in determining the unique identity of neuronal subtypes during development. This raises critical questions as to whether preservation of neuronal identity following hair cell damage could play a role in addressing tinnitus, sensorineural hearing loss, and even the optimization of cochlear implant performance,” Burns added.

“Through our own work, as well as through collaborations with leading academic researchers around the world, Decibel is interrogating the diverse mechanisms involved in hearing function with a level of depth that has only recently become possible,” said Dr. Michael Su, Chief Scientific Officer at Decibel Therapeutics. “This is an incredibly exciting time for the field, and we look forward to working with the broader scientific community to translate breakthrough research, such as this, into medicines which will one day impact the lives of millions of people around the world.”

About Decibel Therapeutics, Inc.
Decibel Therapeutics has established the world’s first comprehensive drug discovery, development, and translational research platform to discover and develop therapeutics to protect, repair, and restore hearing. To serve the over half a billion people globally living with hearing

loss and related disorders, Decibel is committed to creating a world in which the benefits and joys of hearing are available to all. Decibel is headquartered in Boston, Mass.

For more information about Decibel Therapeutics, please visit www.decibeltx.com or follow @DecibelTx on Twitter.

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