Auditory Neuroscience Laboratory

www.brainvolts.northwestern.edu

Discovering early markers of language development by studying brain activity, listening, and learning



BIOtots: growing bigger, in more ways than one

For over three years we have delighted in meeting the same kiddos each year. Getting to observe a child's growth is privilege enough, but this month we're delighted to share the scientific privileges with you as well.

Our families' commitment to the project, and the BIOtots' commitment to all the hard work they do when the visit the lab, are collectively granting unprecedented insight into child development. Longitudinal studies, where we track the same children for many years, are unmatched in their scientific power, but are exceptionally rare. Thanks to your dedication we are making big discoveries, which are sure to make impacts in medicine, education, and social policy.

But our BIOtots aren't the only part of the study that's growing! Thanks to the project's success, we have resumed enrolling 3 and 4 year olds. It has been a joy to welcome kids to the lab who are embarking on the study for the first time. So if you know anybody—siblings, friends, neighbors, cousins—please send them our way!

-The BlOtots research team







Kali Woodruff Carr Ph.D. candidate

Kali Woodruff Carr is a doctoral candidate in the Auditory Neuroscience Laboratory and has been a core member of the BIOtots team since the project's inception. She is involved in all aspects of the project; her favorite part is working with the same families year after year.

The goal of her work is to define the role that rhythm and timing sensitivity play in language development—in other words, she is the mastermind behind all of the drumming games the BIOtots play! She is also initiating her dissertation project, affectionately called BIObeats, to further explore these questions.

Kali earned a BS in psychology and BM in clarinet performance from the University of Florida. Although she's still adjusting to the winters, she enjoys living in and exploring Chicago. Oh, and ask her about her recent trip to Kenya!

We can't wait to see you again this year!

If you have any questions about the project or would like to share photos of your child with us, please call or email: (847) 491-2457 biototsresearch@gmail.com

BIOtots in the news!

Listening for language development



Students with reading challenges often don't receive a diagnosis until age eight or nine. It can take even longer to receive educational support. Thanks to your help, we have discovered a **predictor** for **reading** that facilitates identification of children as young as three. Our findings have just been published in the prestigious journal *PLOS Biology*.

We discovered that **preschoolers**' brains' ability to recognize consonants in background noise is strongly connected to emerging literacy.

This fast and objective measure of **sound processing** also signaled how the children would do one year later on more advanced literacy tests. When we then examined how well a group of older children did on this same brain measure, we could not only accurately **predict** how they scored on the **literacy** tests, but we could also tell which children had received a **diagnosis** of a reading problem. LA Johnson/NPR

Your family's commitment to BIOTots made these findings possible—their scientific and educational impact is thanks to your dedication year after year.

Thank you!

To learn more, listen to Dr. Kraus's 3-minute NPR interview: **goo.gl/IYgHhx**



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fresh faces & fond farewells

Jessica "Jess" MacLean



Silvia Bonacina



Sebastian Otto-Meyer



Jess recently graduated from Indiana University, where she studied violin and neuroscience; last summer she was an intern in the lab. She loves playing music, spending time outdoors, and eating yummy food. Her favorite foods are peanut butter, Indian curry, and ice cream. Jess is thrilled to be a part of BIOtots because she loves getting to know kids and seeing how they grow every year!

Silvia joined the BIOtots team in February 2015 from the University of Milan, where she received her masters degree in communicational and cognitive psychology. She is excited about meeting the children and studying relationships between rhythm and learning to read. An Italian native, she recently moved to Evanston with her husband, bringing her passion for cooking, especially her favorite cookies *brutti, ma buoni* ("ugly, but good!").

Sebastian hails from the green mountains of Vermont. He came to Northwestern to study neuroscience and joined the Kraus lab after graduating in June with a degree in biology and economics. He loves koalas, peanut butter cookies, and good movies. He is excited to join the BIOtots team and meet all of the families!

Manto leaves us after dedicating over a year as a research assistant. She was an enthusiastic member of the BIOtots team and already misses the families. Manto has returned to her home country of Greece, spending time with family in Athens and Corfu. She plans to pursue medical school and hopes to be a pediatrician. Her commitment, presence, and smile will be dearly missed.

Ahren has been a member of the team for the past two years during which time he studied how different parts of the hearing brain work together to make sense of sound, and how this coordination develops. His favorite part of working in the lab was spending time with the BIOtots and discovering how the brain develops. Ahren is moving back to his home state of Massachusetts to spend time with his family and to pursue a career in academia.

Manto Agouridou



Ahren Fitzroy, Ph.D.



Calling all BIOtots!

Can you help us with our new project, BIObeats?



How does rhythm relate to language?

We want to find out but we need *your* help! We hope you can come back to the lab for another quick visit this year so we can play a few more drumming games.

We'll be reaching out again soon with the hope you can help us figure out some very important things about kids' brains!

We want to keep in touch!



Moving? Have a new e-mail or phone number? Update your contact information by sending an email to <u>biototsresearch@gmail.com</u> or calling (847) 491-2457.

We're looking forward to seeing you this year!















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