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Seattle draws top minds, big money to study of infant brain

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A University of Washington laboratory is enhancing the world's understanding of how babies learn, in part because the scientists are using business strategies to further their work.

"We have a rock-solid 10-year business plan, and that's something that doesn't come naturally to academics," said Andrew Meltzoff, a UW professor of psychology. Meltzoff and Patricia Kuhl, a UW speech and hearing professor, are co-directors of the Institute for Learning and Brain Sciences (I-LABS).

Although they started I-LABS in 1999, the facility is in its first year of a business plan that Kuhl said "looks nothing like a university document." It includes doubling the current budget with \$23 million in new expenditures over 10 years, and looking to private foundations and philanthropists as federal funding for research shrinks.

Because of I-LABS and other UW research projects in areas such as brain disorders and early learning -- along with an ambitious expansion of research under way at Children's Hospital and Regional Medical Center -- Seattle has become one of the national centers in the red-hot area of child development. And I-LABS' success in generating private backing has been a key factor.

Meltzoff and Kuhl, who are married to each other, aren't thrilled by crunching numbers or charting financial projections. They are passionate about studying the way newborns to 5-year-olds learn.

Early in his career, Meltzoff discovered that newborns -- some only 40 minutes old -- mimic adults. He tested whether an infant would stick its tongue out to imitate an adult doing the same thing. Most of the babies did.

The findings were contrary to what developmental psychologists Sigmund Freud and B.F. Skinner believed, that newborns had no awareness of their surroundings until they were several months old.

Meltzoff was also part of the team that captured world press headlines in May with a study that found 40 percent of infants and 90 percent of toddlers are regular television viewers. Next month the team will release research on the effect of all that TV viewing on children under the age of 2.

Kuhl is an authority on language development. She has proven that an infant learns a foreign language if the baby is face-to-face with a person speaking. Learning does not occur if the baby watches a video.

"Babies stare at the television screen," she said. "They look engaged but they're not learning."

Why not? Researchers need a "hair dryer from hell" to answer that question.
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That's a nickname for the magnetoencephalography (MEG) machine -- a tool to investigate brain function by measuring neuromagnetic fields. The odd-looking, cone-shaped device fits around a human head without touching it. It is a noninvasive way for scientists to study a baby's 100 billion neurons and the connections between nerves, according to Kuhl. They are able to see the developmental mechanisms that trigger, or inhibit, cognitive and emotional growth.

Meltzoff and Kuhl had a vision for how a \$6.8 million MEG system for babies could advance their research, but they didn't have a plan for acquiring one until they met people from the business community who became I-LABS board members.

I-LABS is on track to become the first research facility in the U.S. to have baby MEG technology, according to Suzi Levine, a volunteer board member and former vice president of Expedia Inc. She hopes to have funding secured for the machine in the next six months.

Ten established local business and civic leaders are on the I-LABS advisory board, including Bill Henningsgaard, who serves as board chairman. He's retired from Microsoft Corp., where he was vice president of worldwide licensing and pricing. Among the others are Steve Bush and Kyril Faenov, who both have high-level Microsoft jobs. Lauren Selig is an executive in her father's firm, Martin Selig Real Estate.

"People in the business and philanthropic communities are interested in supporting research that leads to an understanding of what's happening in children's brains. Every dollar spent on early learning saves \$7 to \$17 in rehabilitation or incarceration costs later," said Levine. "It's a no-brainer, pardon the pun."

Private funding of research is timely for I-LABS because there are fewer federal dollars being spent on children's research overall.

The National Institutes of Health (NIH) budget, which hasn't had an increase since 2003, is approximately \$28 billion a year. Roughly 83 percent of that amount is granted to institutions and facilities outside the NIH.

Norka Ruiz Bravo is NIH's deputy director for extramural research. Her office receives between 70,000 and 80,000 grant applications per year. About 20 percent of the requests are funded.

"The success rate is steadily falling," Ruiz Bravo said. "There has been an average 40 percent increase in the grant amount requested. There are also more agencies and institutes applying for funds."

Researchers would rather not spend their time worrying about where the money is coming from, but that's part of the job for Dr. Sidney Gospe Jr. He is a UW professor of pediatric neurology and the head of the pediatric neurology division at Children's.

"It is very competitive to get research funding, and to attract the scientists who have a track record and often have private foundations that support them," Gospe said. Hiring a researcher is like recruiting a top CEO for business or a star athlete for a sports team.

Meltzoff and Kuhl have participated in White House conferences on education during the Clinton and Bush administrations, spoken about their research to a Nobel forum, and collaborated with scientists in Finland, Japan, and two dozen other countries.

They've also attracted renowned scientists to Seattle, including one of Japan's first researchers to study brain activity using MEG technology. Toshiaki Imada, a research professor in speech and hearing sciences, came to UW in 2002. He is also the head of neuroimaging at I-LABS.

Retaining star scientists can be a challenge for universities and research facilities, too.

One lure that keeps Meltzoff and Kuhl in Seattle is the UW's donation of a former fisheries

building -- 15,000 square feet of property on Portage Bay -- for I-LABS' use. Meltzoff said the region is also attractive because the governor and legislators support early education.

"When you talk about learning from zero to 5, eyebrows raise," Meltzoff said. It's becoming a significant area of interest for business people and government leaders, many with young families of their own. They are personally curious about what they can do to help children learn to their full potential.

Brain development research is a "growth business" in the Northwest, he said. And it's possible I-LABS could play a role in testing whether toys, games or other products for babies have learning benefits that can be scientifically proven before the items hit store shelves.

"Studying early learning and the brain has become a prestigious science," said Meltzoff. "For many years, studying physics was the high-powered, high-testosterone thing to do and research on babies was almost a backwater science."

Now, some of the biggest scientists in the world are in Seattle studying the littlest brains.

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