



Understanding the teenage brain — and making scientific history

Inside an OHSU lab, under the scientific direction of Bonnie Nagel, Ph.D., professor of psychiatry in the OHSU School of Medicine, an extraordinary research study is underway with groundbreaking implications for the health and well-being of adolescents. Funded by the National Institutes of Health, the research is part of a 21-university consortium called the Adolescent Brain Cognitive Development study, the largest study of brain development and child health ever undertaken. Nagel has teamed up with scientists around the country to follow the growth and cognitive development of 11,878 children from age nine through young adulthood. About 600 kids from Oregon are participating through Nagel's lab. Each year, study participants provide specimens for genetic and other testing, play games and do puzzles and, with their parents, fill out questionnaires about their lives. Every other year, the participants undergo brain scans.

From this, scientists will establish standards for normal brain development and will use this to predict — and possibly prevent — health issues in young children linked to anomalous neurological development. Scientists will also mine the data trove to answer questions about adolescent development, ranging from how screen time affects social and brain development to whether there are specific extracurricular activities that help children be happier in life. “The study will provide families, schools, health professionals and policymakers with practical information to promote the well-being of adolescents for generations to come,” Nagel said. Nagel's lab is specifically focused on unraveling the link between adolescent brain structure and vulnerability to addiction, depression and suicidal tendencies. “Knowing their risk, we can help establish early resilience to prevent these issues from becoming lifelong problems,” she said. The lab operates on an annual budget of about \$2 million, mostly from the NIH. With about 30 people working in the lab, Nagel said the work is akin to running a small business. At OHSU, there are 788 such “small businesses” run by principal investigators like Nagel with funding from NIH and other agencies. Taken together, these labs contribute to creating full- or part-time jobs for more than 4,000 individuals. “While our focus is on science, the underpinning is the same. We hire staff, buy supplies, contract with Oregon vendors and more,” Nagel said. “We're purposefully use our hiring and purchasing power to support the local economy.”

However, grants don't fully support faculty or staff salaries or cover overhead lab costs, and Nagel points out the pivotal role of institutional funding in her success at winning large research grants, such as the ABCD study. “While the quality of our science allows me and other OHSU scientists to compete successfully for this federal funding, I wouldn't be able to sustain work on these grants without OHSU's support for the non-funded portions,” Nagel said. “It wouldn't pencil out financially and the research would suffer.”

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