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Friday, May 17, 2013

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**Study of “screen time” on mood, memory, and cognition wins top  
NIH Addiction Science Award**

*Projects on “bath salts” and the link between fetal alcohol exposure and diabetes take other honors*

An exploration of electronic “screen time” and sleep on mood, memory and learning was given the top Addiction Science Award at the 2013 Intel International Science and Engineering Fair (ISEF)—the world’s largest science competition for high school students. The awards are coordinated by the National Institute on Drug Abuse (NIDA), part of the National Institutes of Health, and Friends of NIDA, a coalition that supports NIDA’s mission. The Intel ISEF Addiction Science Awards were presented at a ceremony Thursday night at the Phoenix Convention Center.

First place distinction was awarded to Zarin Ibnat Rahman, a high school junior at Brookings High School in Brookings, S.D., for her project, The At-Risk Maturing Brain: Effects of Stress

Paradigms on Mood, Memory and Cognition in Adolescents and the Role of the Prefrontal Cortex. The 16 year-old hypothesized that excessive screen time with computers, phones and other electronic devices serves as a stressor ultimately affecting mood, academic performance and poor decision making. She asked 67 teens -- divided into two groups -- to take a series of tests measuring factors such as use of electronic devices, sleep patterns, anxiety, mood, and attention. She concluded that excessive screen time shapes adolescents’ sleep patterns, compromising academic success and emotional health. Rahman noted that electronic devices are tools, and like tools, they can be used to build or destroy. She hopes teens will re-think the amount of time they spend on these devices after reading about her project.

“This young scientist identified important risk factors that can cause a teen to stumble on his or her way to adulthood,” said NIDA Director Dr. Nora D. Volkow. “By taking a comprehensive look at how the developing teenage brain responds to various stressors of modern teenage life,



**First place winner of 2013 Addiction Science Award**  
(l-r): Judges and NIDA grantees Dr. Janet Neisewander and Dr. M. Foster Olive, Arizona State University; winner Zarin Ibnat Rahman; and NIDA’s Carol Krause

she was able to make the link between excessive use of electronic devices to sleep deprivation and its consequences.”

The second place distinction went to two 17-year olds, Emory Morris Payne and Zohaib Majaz Moonis of the Bancroft School in Worcester, Mass. Their project, The Effect of Ethanol on Beta Cell Development in Zebrafish, made a unique link between alcohol exposure during fetal development and type 1 diabetes. After exposing Zebrafish embryos to increasing concentrations of ethanol (a pure form of alcohol), the team observed the health and function of pancreatic beta cells, which are needed to produce insulin. As the alcohol concentrations increased, more beta cells became degraded. Poor beta cell functioning in the pancreas is directly linked to diabetes, leading the team to conclude there might be a link between alcohol use during pregnancy and type 1 diabetes. Moonis has just graduated from high school and plans to attend New York University; Payne will be a high school senior this fall.

Winning third place distinction was Alaina Nicole Sonksen from Camdenton High School in Camdenton, Mo., also an upcoming senior. Her project, Determining the Behavioral and Physiological Effects of Pentedrone-Based Bath Salts on *Drosophila melanogaster*, looked at the effects of two versions of the drugs called “bath salts” on the common fruit fly. Bath salts refers to an emerging family of drugs containing one or more synthetic chemicals related to cathinone, an amphetamine-like stimulant found naturally in the Khat plant. She looked at three possible effects: mortality, feeding patterns and activity levels. Many of the flies died from exposure to bath salts, and many others decreased their feeding activity. However, Sonksen assumed the flies would “go a little crazy” from the drugs, since they are commonly considered to be stimulants. Instead, her research showed that substances acted more like a hallucinogen, with the flies appearing to be in a daze. While she did test the substances for their general contents, she pointed out that since these products are not regulated, it is difficult to know everything that is actually in them. The 17 year-old high school student ordered the substances directly from the Internet and turned them into law enforcement officials when her project was completed, underscoring how easy it is for a teen to get access to these drugs. More information on bath salts can be found at [www.drugabuse.gov/drugs-abuse/bath-salts-synthetic-cathinones](http://www.drugabuse.gov/drugs-abuse/bath-salts-synthetic-cathinones).

An honorable mention award went to 16 year-old sophomore Gili Rusak from Shaker High School in Latham, N.Y., for her project, Properties of Twitter Network Communications among Teenagers. Rusak demonstrated how Twitter could be used an effective social media platform for many health related messages, including drug abuse prevention.

The Friends of NIDA provides funding for the awards as part of its ongoing support of research into the causes, consequences, prevention and treatment of drug abuse and addiction.

“This year’s projects broke new ground in several ways,” said Dr. William Dewey, president and chair of the Executive Committee, Friends of NIDA, as well as the Louis S. and Ruth S. Harris Professor and Chair, Department of Pharmacology and Toxicology, Virginia Commonwealth University, in Richmond. “We saw our first look at bath salts by an Intel finalist; a possible new health consequence of alcohol use; and our top winner put a new spin on electronic devices and their link to decision making. We are incredibly proud of them all, and we know they will be contributing to addiction science for many years to come.”

This year, about 1,500 students from 70 countries, regions and territories participated in the Intel ISEF competition, coordinated by the Society for Science and the Public. The nonprofit organization Society for Science and the Public partners with Intel—along with dozens of other corporate, academic, government and science-focused sponsors—to provide support and awards each year. Addiction Science Winners receive cash awards provided by Friends of NIDA, with a \$2,500 scholarship for the first-place honoree. NIDA has developed a special section on its website, which includes other resources on addiction science, to highlight the winning projects and to help science fair entrants understand the criteria for the awards: [The NIDA Science Fair Award for Addiction Science](#).

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The National Institute on Drug Abuse is a component of the National Institutes of Health, U.S. Department of Health and Human Services. NIDA supports most of the world's research on the health aspects of drug abuse and addiction. The Institute carries out a large variety of programs to inform policy and improve practice. Fact sheets on the health effects of drugs of abuse and information on NIDA research and other activities can be found on the NIDA home page at [www.drugabuse.gov](http://www.drugabuse.gov), which is now compatible with your smartphone, iPad or tablet. To order publications in English or Spanish, call NIDA's DrugPubs research dissemination center at 1-877-NIDA-NIH or 240-645-0228 (TDD) or fax or email requests to 240-645-0227 or [drugpubs@nida.nih.gov](mailto:drugpubs@nida.nih.gov). Online ordering is available at <http://drugpubs.drugabuse.gov>. NIDA's media guide can be found at <http://drugabuse.gov/mediaguide/>, and its new easy-to-read website can be found at [www.easyread.drugabuse.gov](http://www.easyread.drugabuse.gov).

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