

## **POBJFKHS Research Students Succeed at Regional Symposium** *Six Students Named Long Island Junior Science and Humanities Symposium Finalists*

**PLAINVIEW, NEW YORK (March, 2022)**—Six research students at John F. Kennedy High School were named semifinalists at the regional Junior Science and Humanities Symposium (JSHS) this past February, with two going on to become regional finalists and one making it to the national finalist stage. The JSHS program is an Army-, Navy- and Air Force-sponsored STEM competition, which promotes original research and experimentation in science, technology, engineering and mathematics at the high school level, and publicly recognizes students for their outstanding achievements.

Seniors Michael Khalfin (engineering), Danielle Brenner (behavioral and social sciences), Jennifer Zhu (physics), Dara Neumann (behavioral and social sciences), Tarunika Sasikumar (environmental sciences), and Olivia Schmidt (behavioral and social sciences) were chosen to give 12-minute presentations before a panel of judges and an audience of their peers based on the excellence of their submitted research papers. Each paper was reviewed and evaluated by college faculty and practicing scientists and engineers in the various scientific domains.

After competing at the semifinalist round, both Dara and Jennifer won first place in their individual scientific categories and were chosen to present at the regional finalists' round. After an additional round of presentations, Dara was named national finalist and chosen to be part of the Long Island delegation of five student researchers to represent the region at the 60<sup>th</sup> Annual National JSHS on April 20-23, 2022, which will be held in Albuquerque, NM. There, she will present her work to members of the research arm of the Department of Defense and will have the opportunity to engage with DoD researchers, laboratories, and related STEM organizations and professionals.

Dara's project is titled, *A Novel Evaluation of Current Psychiatric Treatment Paradigms Involving Polypharmacy via Resting-State Functional Magnetic Resonance Imaging (fMRI) in a Sample of Patients with Bipolar I Disorder*. Her study looked at psychiatric pharmacology through a neuroscience lens and attempted to better understand the alarmingly high rates of inadequate treatment across all mental illnesses—specifically bipolar disorder.

Dara said her project was inspired by a close family member who suffers from a treatment-resistant form of the disorder. Through her research, she is hoping to find better treatments, and hopefully, be a part of the next generation of scientists studying it.

She used fMRI scans to examine whether a specific type of psychiatric treatment that employs the simultaneous use of multiple medications—or polypharmacy—is supported by neuroscientific evidence. Her results demonstrate how the lack of integration between clinical psychiatry and neuroscience has caused flaws in the current treatment paradigm. Her study proposes an explanation for the high rates of inadequate treatment, and most importantly, reveals methods for transforming the psychiatric field to be more evidence-based and individually-optimized. Dara conducted her novel research in-house, as a part of the AP Capstone and Social Science Research program under the supervision of Raymond Tesar, POBJFK's Lead Research Coordinator.

Dara said recognition by the JSHS judges of her research was encouraging, not just for herself but for those suffering from bipolar disorder, as well as other psychological ailments. "It's definitely very assuring for the future of this field, and it's definitely a field I'm going into when I enter college and beyond," she said. "It makes me confident in the future of this research and my role in it."

JSHS aims to prepare and support students to contribute as future scientists and engineers and giving them the chance to conduct STEM research on behalf of or directly for the Department of Defense, the Federal research laboratories, or for the greater good in advancing the nation's scientific and technological progress. The symposium is a collaborative effort with the research arm of the Department of Defense and administered in cooperation with nationwide colleges and universities.

For more information about the Plainview-Old Bethpage Central School District, please visit the District's website at [www.pobschools.org](http://www.pobschools.org). Exciting activities happening throughout the District and programs celebrating student achievement can also be found on the District's Facebook page at <https://www.facebook.com/pobschools/>.

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Photo 1: Michael Khalfin, from left, Danielle Brenner, Jennifer Zhu, Dara Neumann, Tarunika Sasikumar and Oliva Schmidt were named semifinalists in the Junior Science and Humanities Symposium. Jennifer and Dara would go on to become regional finalists.



Photo 2: Dara was named a national finalist for her research into treatment of people with bipolar disorder

