

**2015 DAVIDSON FELLOWS**  
**Positive Contributions to Society**

Davidson Fellows are students 18 and under who have completed a significant piece of work in science, technology, engineering, mathematics, music, literature, philosophy or outside the box. The work of a Davidson Fellow must have the potential to make a positive contribution to society. Since 2001, the Davidson Institute has recognized more than 260 Davidson Fellows, each receiving a \$50,000, \$25,000 or \$10,000 scholarship.

**Positive contributions to society made by the 2015 Davidson Fellows include:**

- Fostering a closer examination of race, culture and ethnicity through storytelling.
- Development of a low-cost method of converting wastewater to potable water.
- Fabrication of the next generation of supercapacitors that can be used in hybrid electrical vehicles, electric trains, airplanes, smart phones and computers.
- Brain image analysis to better understand brain anatomy, disease progression, monitor treatment regimens and discover genetic influences on brain structure.
- Creation of a cancer therapy that specifically targets only the cancer cells, potentially eliminating the side effects of traditional cancer treatments and increasing drug potency.

**Contributions of Davidson Fellows recognized since 2001 include:**

- Creating a blood-testing device for the early diagnosis of cancers.
- Inventing a low-cost wearable sensor for real-time, reliable detection of Alzheimer's patients' wanderings out of bed.
- Creating a biological tool to visualize diseases at the molecular level.
- Combining computational modeling and simulation with biological and structural studies to speed the discovery of new flu medicine.
- Investigating interactions between quantum dots and photons in multijunction solar cells to identify fundamental limiting factors of solar cell efficiency.
- Developing a model of a beating heart by using fluid mechanics to derive equations that naturally handle the changing shape of the heart to study cardiac arrhythmias.
- Designed an efficient and inexpensive method for detecting landmines.
- Developing an affordable arsenic water filter and test that is exponentially cheaper than current methods.
- Developed algae as an effective oil source for biodiesel.
- Building a multi-mode 24/7 generator that is powered by any heat source – stove, flame, sun, etc.
- Created an algorithm that automates the diagnosis of bladder cancer.
- Developed a new drug delivery method to increase the efficiency of chemotherapy treatments, thereby controlling tumors in areas where surgery is not an option.

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