



Massachusetts Science  
+ Engineering Fair

Massachusetts Winners at the  
International Science & Engineering Fair

Columbus, Ohio – May 2025

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**Benjamin Davis, 16, of Wrentham, Massachusetts**

received the **\$75,000 Regeneron Young Scientist Award** for creating a desktop plastic recycling system. The user-friendly system can recycle 3D printer waste and other plastics. It turns them into filaments for 3D printing. Up to 67% of the filament used in a typical 3D printing project may end up as waste. Using electrical, mechanical and chemical engineering methods, Benjamin combined pultrusion (push-through) and extrusion (pull-through) processes. Together, this made the process about 45% more efficient. His device is faster than other home recyclers and creates a higher quality product. Its easy operation means nontechnical users can recycle and 3D print more efficiently. His design is an effective recycling machine that costs 90% less than commercial options.

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**ENGINEERING TECHNOLOGY: STATICS & DYNAMICS**

sponsored by Howmet Aerospace Foundation

**First Award of \$6,000**

Benjamin Davis, Bishop Feehan High School, MA, United States of America

*From Crude to Extrude: A Novel Approach to Combining Pultrusion and Extrusion Technologies Into a Single Filament Production System to Recycle PET Bottle Waste and 3D Printing Purge Materials Into Additive Manufacturing Filament*

**Second Award of \$2,400**

Jingxuan Zhou, Northfield Mount Hermon School, MA, United States of America

*SkyProbe: A Thrust Vectoring UAV for Enhanced Contact-Based Inspection Performance in Windy Conditions*

Also won an award from **Serving Society Through Science**

Serving Society Through Science (SSTS) is dedicated to recognizing talented individuals who seek to serve humanity. SSTS awards creative, outstanding projects that have the potential to improve the lives of people or represent a dramatic scientific advancement.

### **Fourth Award of \$600**

Alex Hu, Tabor Academy, MA, United States of America

*A Modular Ionic Wind Cooling System Based on High-voltage Pulse Generator and Sensors*

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### **SYSTEMS SOFTWARE**

**Sponsored by Microsoft**

### **First Award of \$6,000**

Ram Sivaraman, Acton Boxborough Regional High School, MA, United States of America

*HM-Detect: Murmur Detection and Classification Methodology Using A Novel C<sup>2</sup>-LSTM Architecture for Multi-Modal Signals*

Also received an award from the Association for Computing Machinery and from TUBITAK, The Scientific and Technological Research Institution of Türkiye.

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### **BIOMEDICAL AND HEALTH SCIENCES**

**sponsored by Regeneron**

### **Third Award of \$1,200**

Agastya Sarmah, Sharon High School, MA, United States of America

*Demographic and Genetic Insights Into ARID1A Mutations in Hepatocellular Carcinoma: Implications for Prognosis and Treatment*

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### **BIOMEDICAL ENGINEERING**

**sponsored by Regeneron**

### **First Award of \$6,000**

*Empowering Low-Resource Settings With RetinAI: An AI System With a Wearable Headset and Retinal Imaging for Eye Tumor Home-Screening*

Ethan Yan, Groton School, MA, United States of America

[Ethan Yan](#), 15, also received the [EU Contest for Young Scientists Award](#). His project will represent Regeneron ISEF at the EU Contest for Young Scientists to be held this September in Riga, Latvia.