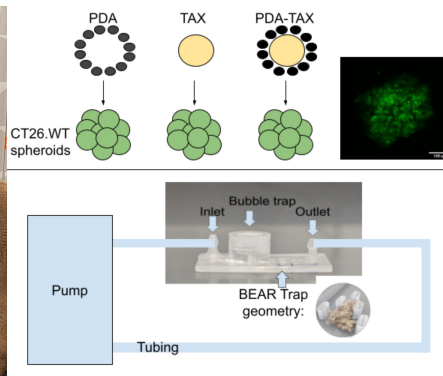




Boston University College of Engineering

BTEC PROJECT HIGHLIGHT

Nanoparticle-Chemotherapy Testing in Microfluidics Model of the Tumor Microenvironment



Ahona Dev, Dilek Aylın Manav, Sharani Nasankar, and Athena Wang (BME, '24)

Model systems of cancer are used to evaluate tumor growth, as well as the antitumor effects of various therapies. Current models do not accurately mimic human response, leading to a high rate of clinical trial failures. Working with their advisors at Draper, the student team developed a 3D-printed microfluidic device called the Biological Examination Array (BEAR) Trap to provide a more accurate tumor microenvironment for testing candidate chemotherapies. The device was used to test polydopamine paclitaxel nanoparticle efficacy under both static and flow conditions. Specifically, carcinoma cells were stained with CellTracker Green and formed into 300-micron diameter spheroids. The fluorescence of CellTracker Green is a measure of the density of live cells in the spheroids, and therefore cell viability. All of the work for this project was carried out using the state-of-the-art facilities in BTEC's molecular, cellular, and tissue engineering laboratory.

BTEC Advisory Board Members:

abbvie



AMGEN

DRAPER

NOVARTIS



C4 Therapeutics

EMD SERONO

upcoming events

BTEC x BMES
Design Competition U



Apr 27 at 12, LSE B03



39th ANNUAL
Biomedical Engineering
Friday May 3, 2024
BU Photonics Center

Senior Design Day

May 3 at 9:30,
Photonics Center, 2nd Floor

Engineering Materials in
3D Workshop

July 25 and 26, BTEC

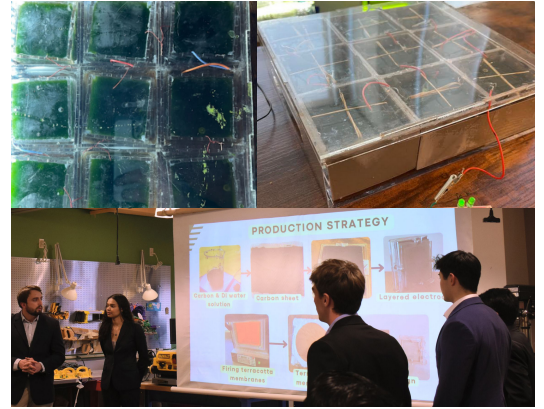
Engineering Fabrics
Workshop

Aug 9 at 2, SILab

SILAB PROJECT HIGHLIGHT

Green Machine by Abigail Hassan (PolySci '25), Rejwan Himel (MechE '25), Jonathan Miller (ECE MS), Mohammed Warde (Bio '25), and Gustav Yang (MechE '25)

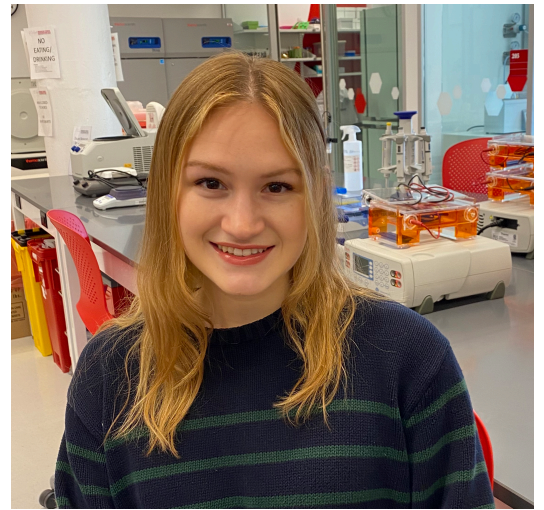
Using algae as the source of microbes, Green Machine is a microbial fuel cell that efficiently generates power by coupling photosynthesis in the algae to electrodes. It uses only cost effective and non-toxic materials. Each panel generates up to 5V! **This project was funded by the Engineering Student Innovation Fund.**



BTEC ASSISTANT HIGHLIGHT

Noa Margolin (EE '25)

Noa has been working at BTEC since 2022. Her first project at BTEC involved developing a workshop for the EVOS M7000 Fluorescence Microscopy Imaging System. She helped create the demo for that machine, as well as the SpectraMax Microplate Reader. Noa has led a number of other BTEC workshops as well including on Machine Learning. In addition, Noa is an undergraduate researcher at BU's Biomedical Optical Technologies Lab, where she is developing an algorithm to diagnose certain skin diseases. Noa is also a Product Development Intern at an Audio A.I. start-up, where she is helping take their new products to the market. Working at BTEC has provided Noa with the skills needed to innovate in a variety of bioengineering and technology settings.



SILAB ADVISOR HIGHLIGHT

Alec Rocca (MechE '25)

Alec joined the SILab team as a freshman in 2022. Originally from Stow, just outside of Boston, his initial exposure to engineering came from his FIRST robotics team, where he gained CAD, CAM, and machining skills. While working in SILab, he broadened his skillset to include woodworking, circuit design, and 3D printing. As a SILab Advisor, Alec further refined his ability to tackle challenging problems, methodically and creatively. He has employed this knowledge in the classroom, for undergraduate research projects, and during internship experiences. Being an advisor has allowed him to grow as both an engineer and a mentor by learning how to effectively guide others through an engineering problem towards a solution. Two of his SILab projects that he is particularly proud of include designing a custom Bluetooth speaker and a portable hand-crank generator.



ENGINEERING STUDENT INNOVATION FUND

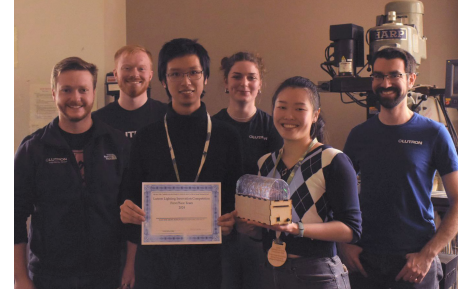
For information on how to apply for funding scan the QR code to the right.



PAST EVENT HIGHLIGHTS

Lutron Lighting Innovation Competition

The Lutron Lighting Innovation Competition took place at SILab in February. Sixteen teams entered and were judged on creativity and build quality. The winning project, **Color of Music** by **Tian Wang (BME MS)** and **Yueming Li (MechE MS)** was an assembly of plexiglass images that responded to music.



BTEC Tech Workshops

BTEC Tech Workshops are open to all undergraduate and graduate students who are interested in gaining practical skills and knowledge related to bioengineering technologies. In the **EVOS Fluorescence Microscope** and **High Throughput Spectroscopic Assay workshops**, students learned how to collect and analyze imaging and spectroscopy data on biological specimens.

Fireside Chat with “Women Who Code”

BTEC together with GWISE sponsored a Fireside Chat with Alaina Percival, Co-founder of Women Who Code. PhD students learned about the importance of finding community and building the confidence to succeed in the Tech Industry and beyond.



10th Annual Dean’s Imagineering Competition

This year-long design competition gives students the opportunity to express their creativity and entrepreneurial ideas that impact people and society. Nine teams brought their designs to the final stage of the competition. The first place winner was **Green Machine**, highlighted above. **BreatheRight**, an inhaler attachment designed to help people better manage their asthma, by **Yash Patel, Luca Pungan, and Nikita Vinay Kishan (BME '25)** took second place.



Mars Rover Club Switch-Adapting Toys

The BU Mars Rover Club hosted a drop-in event in SILab where students adapted several toys to accept different power buttons to make them more accessible for children with motor-function disabilities.

Diane Joseph-McCarthy, Executive Director BTEC
Kavon Karrobi, BTEC Manager
Katie Kelso, SILab Manager
For more information, email: btec@bu.edu