

'Boomerang' cancer therapy wins medical category in iGEM competition

September 30 2015

The student team from Ben-Gurion University of the Negev has just won the Best Health and Medicine Project category in the prestigious 12th annual iGEM 2015 Giant Jamboree (International Genetically Engineered Machine) competition with their cutting-edge biological cancer therapy called "Boomerang." [Click here for website and video.](#)

The winners were announced at the Awards Gala on Monday, September 28 at the Hynes Auditorium in Boston. iGEM is considered one of the most important ventures in the global sphere of science. Nearly 4,600 students competed in this year's event held from September 24-28. Their local experiences in a global community impart unique perspective in the field, especially as projects span a broad range across 15 different tracks—including health and medicine, energy, environment, food and nutrition, manufacturing, and others.

The BGU project Boomerang is based on advanced methods of genetic engineering and synthetic biology. It has many applications that rely on the special characteristics of cancer cells to identify and alter cells as well as treat the disease at the molecular level. As a cancer therapy, Boomerang works as a modular system, which recognizes cancer cells at a high level of specificity. It can cause disruption of genes essential for cancer survival or activate suicide genes so that the cancer or tumor kills itself. Boomerang can also produce color proteins for cancer cell detection so that the edges of a tumor are visible to ensure complete surgical removal. The name "Boomerang" mirrors the actions in which the synthetic system uses [cancer cells'](#) own genetic alterations against

them.

"Most treatments cannot distinguish precisely enough between cancer and healthy cells," according to the BGU iGEM team website. "Low specificity means higher toxicity and high rate of adverse effects. The BGU Boomerang system can be potentially designed according to unique characteristics of a patient's tumor, paving the way to personalized medicine. We believe our strategy demonstrated in the winning prototype/proof-of-concept studies can change the approach to [cancer](#) treatments."

In addition to winning the grand prize in the Best Health and Medicine Project in the "Overgraduate" category (graduate level), the BGU team was a first runner-up in the overall competition, the first Israeli team to reach this level in iGEM. Lastly, the BGU team also won the Best New Basic Part Award for developing and submitting the best new functional DNA sequence to this year's competition.

"The University is so proud to have succeeded in this prestigious competition, which includes the best and brightest students in the synthetic biology field," says Prof. Smadar Cohen, team leader and a member of the BGU Avram and Stella Goldstein-Goren Department of Biotechnology Engineering.

"Our success in the competition shows tremendous student dedication and excellent heterogeneous cross collaboration between students studying various subjects that include biotechnology, biology, economics, engineering, medicine, neuroscience and cognition, as well as political science."

The BGU Student Team members who are pursuing a diverse range of degrees include: Shai Duchin, Bar Gazit, Dafna Goldman, Shalev Goldfarb, Shoham Rigbi, Adi Stein, Vlad Shumeiko, and Ori Zelichov.

In addition to Prof. Cohen, the two team faculty advisors who accompanied the students were Dr. Emil Ruvinov and Dr. Efrat Forti, also from the BGU Department of Biotechnology Engineering.

"Much more than an annual student competition, the iGEM Giant Jamboree is also an international incubator for the [synthetic biology](#) industry that has spun out more than 20 competition projects into new startups," said Randy Rettberg, iGEM Foundation president. "With a spotlight on innovation, the iGEM Giant Jamboree also is about collaboration and giving back. iGEM competition teams submit biological parts from their projects to the Registry of Standard Biological Parts in a cycle that helps tomorrow's iGEM teams and research labs."

Provided by American Associates, Ben-Gurion University of the Negev

Citation: 'Boomerang' cancer therapy wins medical category in iGEM competition (2015, September 30) retrieved 25 April 2024 from <https://medicalxpress.com/news/2015-09-boomerang-cancer-therapy-medical-category.html>

<p>This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.</p>
--