

# UTokyo GLP-BGU Study Abroad Program for UTokyo Undergraduate Students at Ben-Gurion University in Israel

## 1. Program Objectives

This program is aimed for undergraduate students from all faculties of UTokyo. The program will incorporate several strands, in the fields of biotechnology, biomedicine and environmental engineering. Areas of focus will include biotechnology for disease diagnosis (biosensors, 'Lab on Chip' devices), sustainable agriculture, environmental preservation and wastewater management and treatment. It will also incorporate a business-related module, involving assessment of biotech-related startup and writing of an executive summary of a business plan. In this program, students will have a unique, first-hand exposure to cutting-edge technologies and research at the BGU labs, coupled with their application on-the-ground, through excursions to various locations in the Israeli Negev semi-desert region, including the Dead Sea, the Ramon crater, a local Kibbutz-style village, and others.

### Program Supervisors:

UTokyo: Yaron Silberberg (Assoc. Prof., Center for the Development of Global Leadership Education, UTokyo)

BGU: Robert Marks (Professor, Department of Biotechnology Engineering, BGU)

## 2. Program Period

March 11 (Sun) – 24 (Sat), 2018

## 3. Number of UTokyo Students Accepted

**A total of up to 10 UTokyo undergraduate students (and a minimum number of 4 students), who will be hosted by Israeli students at BGU**

**We regret that 4<sup>th</sup> year UTokyo students will not be able to apply for this program, as it overlaps with their UTokyo graduation ceremony.**

## 4. Program Schedule (tentative)

18 December	Deadline for submission of application forms
22 December	Notification of selection results
Feb. (TBD)	Preliminary information session
Mar. 10 (Sat)	Arrival in Tel-Aviv Airport. Transport to BGU campus by bus (Accommodation: U-Tel Guest Apartments @BGU) <a href="http://in.bgu.ac.il/logistics/u-tel/Pages/Our-Rooms-and-Services.aspx">http://in.bgu.ac.il/logistics/u-tel/Pages/Our-Rooms-and-Services.aspx</a>
Mar. 11 (Sun) – 22 (Thu)	Various lectures (15-20 hours), Lab demonstrations, individual research/sample collection, fieldtrips to nearby locations and optional inter-departmental seminars. For further details see (5)

Mar. 23 (Fri)

Final presentations by participants, followed by farewell reception

## 5. Program Structure

The program is composed of several components:

- 1) **Core lectures:** ~20 hours in total, covering various topics in biotechnology, water management/purification, toxicity, pollution and environmental issues, agriculture:

**Prof. Marks** – Program coordinator:

- Biosensors – diagnosis of diseases and environmental toxicity
- Bioethics
- Business/commercialization in biotechnology – including preparing an Executive pitch deck to raise donations or investments for an important project

**Prof. Kushmaro** – Program co-coordinator:

- Rock carving in the Negev Desert, deterioration and preservation
- Coral reef preservation and rehabilitation:
  - Coral Reefs
  - Omics in coral disease research
  - Hydrocarbon bioremediation and its application in the marine environment
  - Artificial reefs
- Wastewater analysis and treatment:
  - Toxicants in aquatic environments
  - Diving in to the black box of waste water treatment using genomics and transcriptomics
  - Challenge for water technology
  - Biofouling, microbes and anti-biofilm nanosurfaces

- 1) **Experimental:** Students will collect water samples during field trips and take back to BGU labs for toxicology analysis.
- 2) **Lab demos:** Various techniques in toxicology analyses will be demonstrated to the students at biotechnology labs and environmental studies labs in BGU (by local PhD students and Postdocs).

**Excursions:** Trips to famous landmarks and locations will be incorporated in to the program, including trip to the Dead Sea, Old City of Jerusalem, Tel-Aviv, and Sde-Boker, Ramon crater (visiting rock-carving locations, etc.). Local students will accompany the trips.

Suggested study visits:

- Rock carving nature reserve and relevant agrological sites in the Negev.
- Red Sea (Eilat), snorkeling, visit at the marine lab and the marine aquarium.

- Tel Aviv waste water treatment visitor center or Neot Hovav visitor center.
- 3) **Interdepartmental Seminars:** Students will be able to join optional seminars (in English) at other departments, on a variety of topics.

## 6. Learning objectives:

By the end of the course, students will be able to:

- Understand basic concepts in the use of Biotechnology for disease diagnosis and analysis using Biosensors and 'Lab on Chip' devices
- Understand basic concepts in water purification and in toxicity analysis
- Evaluate deep ethical and moral issues related to advances in cutting-edge biotechnology applications
- Critically read and write an executive summary of a business plan
- Have hands-on experience in some basic analysis techniques
- Appreciate the importance of environmental preservation, in relation to pollution effects on archeological artifacts and coral reef rehabilitation
- Be familiar with famous historical and geographical landmarks in Israel

## 7. Program Eligibility and Requirements

In addition to the requirements listed in the guidelines, participants must meet the following requirements:

- a) As all lectures are conducted in English, participants are required to possess sufficient proficiency in English, and be highly motivated to communicate with fellow foreign students, in English.
- b) There are no Visa requirements for Japanese students (Japanese nationals are eligible for 90 days visa-on-arrival). For other nationalities – it is the responsibility of the participant to confirm his or her eligibility and obtain a visa if required.

## 8. Program Costs

- a) Program fee: 2,000 USD – will cover lecturers' fees, administration work and field trips.
- b) Airfare: Flight tickets should be purchased individually by each participant. Price of tickets is in the range of JPY 120,000 - 180,000 (depending on time of purchase and stopover options).
- c) Accommodation costs: approx. JPY 5,000 per night at the U-Tel Guest Apartments at BGU campus). Details can be found on the following website: <http://in.bgu.ac.il/logistics/u-tel/Pages/Our-Rooms-and-Services.aspx>

**We regret that the GLP-GEfIL Program will not be able to offer scholarships for this program to non-GEfIL students.**

## 9. Application Guidelines and Selection Process

- The application form can be downloaded from our website <http://www.glp.u-tokyo.ac.jp/>

- The completed and signed form can be send as a PDF file to the GLP Office at [glp-gefil.adm@gs.mail.u-tokyo.ac.jp](mailto:glp-gefil.adm@gs.mail.u-tokyo.ac.jp) or submitted in person to the GLP Office, UTokyo, Hongo Campus, Dai-2 Honbu-to, Room 119.
- The selection will be conducted by the GLP Office, and will be based on the application form, motivational statement and English proficiency score.

#### **10. Contacts for Inquiries Regarding this Program**

Assoc. Prof. Yaron Silberberg, GLP-GEfIL Program, Center for the Development of Global Leadership Education, The University of Tokyo ([silberberg@mail.u-tokyo.ac.jp](mailto:silberberg@mail.u-tokyo.ac.jp))  
For general inquiries, please contact the GLP-GEfIL office:  
[glp-gefil.adm@gs.mail.u-tokyo.ac.jp](mailto:glp-gefil.adm@gs.mail.u-tokyo.ac.jp)