



The Soybean Saga to Food and Climate Security Virtual Reality Experience

BACKGROUND

The Soybean Saga to Food and Climate Security is an immersive virtual reality activity for Oculus. This activity consists of visiting four virtual exhibits that cover different aspects of plant biology and agriculture, with the Soybean as the main character and host. The first exhibit highlights aspects of plant reproduction and human usage. The second exhibit presents the relationship between the soybean and nitrogen-fixing bacteria. The third exhibit introduces the problem of pollution due to synthetic nitrogen. The last exhibit presents research conducted on soybeans at the Danforth Plant Science Center. As the player moves through the exhibits, they have the option to collect soybean pods for points, watch videos, and respond to questions. Oculus Quest head-mounted virtual-reality goggles are available through a loan-rotation system. If a school has Oculus Quest, the Soybean Saga can be uploaded into the devices.

GOALS

- Learn about plant and agricultural science content on plant reproduction, the symbiotic relationship of roots with microbes, and the role of legumes in nitrogen fixation.
- Understand the importance of crops like soybeans for human use.
- Learn about real-world problems due to the use of agrochemicals (e.g., synthetic nitrogen) and how plants could contribute to more sustainable agricultural practices.
- Become familiar with what Danforth Center scientists do in relation to plant and agricultural research.

DURATION OF THE PROJECT

- There is no official time limit for this virtual experience, and students are encouraged to thoroughly explore all exhibits at their preferred pace.
- The activity could take 1-4 hours, depending on how the teacher wants to distribute the time with the students. The students can work individually on this experience or in teams. Team members may visit different exhibits and share their experiences.

MATERIALS

Provided by the Danforth Center	Provided by the school
Oculus Quest headsets with controllers available upon request through a loan rotation system (available for 1-2 weeks)	Motion sickness treatments
Protocols and Instructions	Oculus Quest headsets with controllers (if available)
Scientist support (school visits, Zoom meetings, etc.)	Safe playing area free of obstructions and tripping hazards
Soybean Saga game software	Sanitizing wipes or sterilization chamber
Sterilization chamber available upon request	

STEPS FOR PROJECT IMPLEMENTATION

1. Contact the project manager to coordinate the implementation of the activity (Dr. Sandra Arango-Caro, sarango-caro@danforthcenter.org) (e.g., request of Oculus).
2. Follow the detailed project steps provided in the instructions and protocols, available in the Education Technology Program Website <https://www.danforthcenter.org/our-work/education-outreach/education-technology-program/>.
3. If you are using your own Oculus, download the Soybean Saga VR experience and upload it into the Oculus Quest.
4. Complete the photo release form as applicable.
5. Collaborate with Danforth scientists.
6. Complete the education research surveys for both the teacher(s) and students.

CONTACT INFORMATION

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