

# Education Technology Program Danforth Plant Science Center

The *Education Research and Outreach Lab* at the *Danforth Plant Science Center* invites you to implement innovative learning experiences in plant and agriculture sciences for *high school students*. Students benefit from using technology tools including virtual and augmented reality, 3D modeling, and video gaming, gaining interest in and skills for future STEM+Ag careers and relating to plant research fostering real-world connections. We offer professional development, instructional material, equipment, school visits, and scientists' support without any cost.

For more information visit the Education Technology Program website [here](#) or contact Sandra Arango-Caro at: [sarango-caro@danforthcenter.org](mailto:sarango-caro@danforthcenter.org).



## Virtual Reality (VR) with *The Soybean Saga to Food and Climate Security*.

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 exhibits include content about plant reproduction, human usage, nitrogen-fixing bacteria, synthetic nitrogen pollution, and research conducted at the Danforth Plant Science Center on soybeans. Watch video [here](#).

**Time to conduct the activity:** 1 – 3 hours

**Resources:** Oculus and instructions to use them, protocol with content and questions, school visits

**Professional development:** Optional

## Augmented Reality (AR)

with zSpace offers a diverse array of STEM+Ag activity plans “learning by doing” in an environment where is possible to undo mistakes, make changes, and not worry about material costs or clean-up. Watch video [here](#).



**Time to conduct the activity:** 2 – 4 hours/activity

**Resources:** zSpaces, protocols

**Professional development:** Required

## 3D Plant Modeling

addressing the disconnect between science, design, and technology. Through this activity, students working in collaborative teams create 3D plant models of species of research importance at the Danforth Center. Using AR and VR equipment, students learn about the applicability of 3D plant models in STEM+Ag fields.



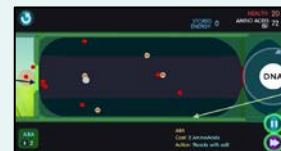
**Time to conduct the activity:** 3 weeks – semester

**Resources:** Protocols and training videos, school visits, zSpace and Oculus, scientist's support

**Professional development:** Optional

## Video gaming with a plant cell fighting drought.

This activity integrates concepts in plant and mathematical biology where the game allows players to help a plant cell fight drought by controlling the ratio of proteins and hormones that send signals to the DNA to defend the cell and capture energy using photosynthesis.



**Time to conduct the activity:** 1 – 2 hours

**Resources:** Protocols, school visits, scientists' support

**Professional development:** Optional

