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Cellular Agriculture: An activity guide to support an engineering ethics and impacts discussion in high school settings (Resource Exchange)

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CELLULAR AGRICULTURE: AN ACTIVITY GUIDE TO SUPPORT AN ENGINEERING ETHICS IMPACTS DISCUSSION IN HIGH SCHOOL SETTINGS

Overview

Cellular agriculture is the emerging field of producing animal products from cell culture, rather than directly from animals. A multidisciplinary field, cellular agriculture integrates biomedical engineering, nutrition,animal science and more. Our projec's outreach goals are to educate students about the process and possibilities of cellular agriculture. One of our first products is a discussion guide that has developed a set of resources and prompts that support educators in having high school students discuss the potential cascading consequences of advances in cellular agriculture to understand the positive and negative impacts of a new engineered technology

Target Grade Level

- Students in grade 7-12

Time

- 80-100 minutes

Learning Goals

- Engineering and technology ethical considerations
- Sociotechnical impacts of cellular agriculture innovations
- Create claims and context from various media sources
- Consider multiple solutions (NGSS K-2-ETS 1-2)
- Frame the problem (NGSS K-2-ETS 1-1)
- Weigh and choose criteria and constraints for their design (NGSS K-2-ETS1-2)
- Understand their client to meet their needs (NGSS K-2-ETS1-2)
- Communicate ideas and thinking to partners, groups, outside audiences (SL 1.1D, 2.1D, 1.4, 2.4, 1.6, 2.6; NGSS K-2-ETS1-2)

Required Resources

- Computers with Internet Access
- Google Jamboard or other representation tool
- CellAg Discussion Guide I: Consequences is a 20 page PDF with links and guiding questions available at https://go.tufts.edu/cellagdiscussionguide1

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USDA National Institute for Cellular Agriculture at Tufts University

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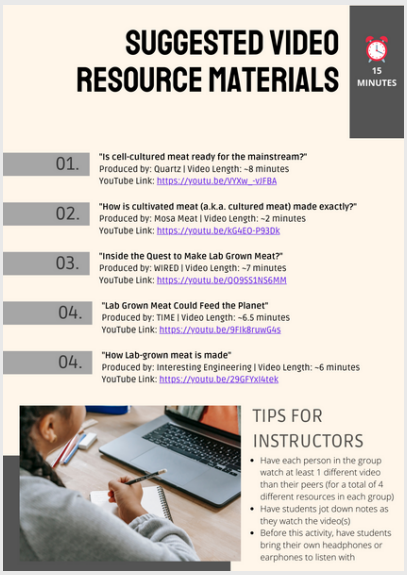
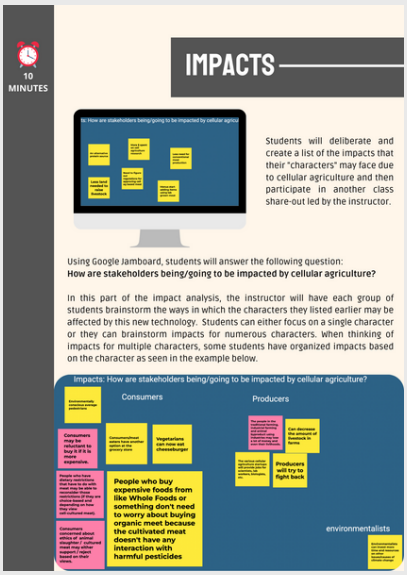
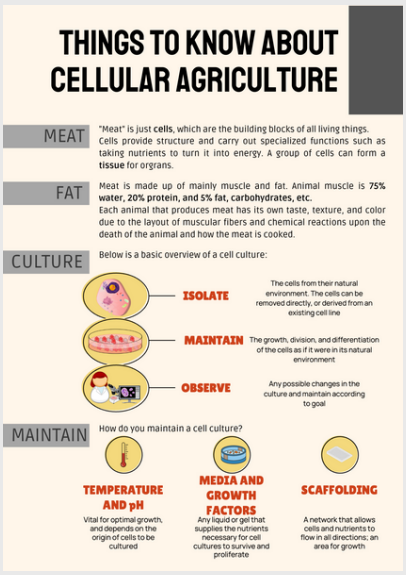
Sample Pages

- The guide provides links to materials, structures for students to document impacts and background information. After viewing publicly available information on cellular agriculture and biomedical engineering, students are tasked with creating Google Jamboards of their ideas about impacts. The guide provides structures for educators to have conversations about who is helped and who is harmed by newly engineered products in this space.







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