

Learning objectives

- Technologies and society are interconnected.
- People's values determine which technologies are developed and used.
- Synthetic biology benefits from many voices.

Conversation questions

- Does everyone value the same technologies?
- How might new technologies change the way we live?
- Do technological changes benefit everyone equally, all around the world?

Materials

- Activity and facilitator guides
- Activity sign and holder
- Technology and character cards
- 50 tokens (5 sets of 10, in different colors)
- Reference sheet: Synthetic Biology

You can find inexpensive plastic chips or tokens from online sources such as [amazon.com](https://www.amazon.com). The custom tokens in this activity were made by [b-token.com](https://www.b-token.com). All written activity materials and graphics can be downloaded from [buildingwithbiology.org](https://www.buildingwithbiology.org).

Notes to the presenter

Preparation: When playing with more than one person, give each player a different color of tokens. These tokens represent each person's investment in new biotechnologies. By comparing where everyone in the group placed their tokens, players can reflect on their decisions and discuss the varied opinions about these potential uses of synthetic biology. If just one person is playing, they can start with one color token, then use another color to represent a character from the character cards.

The character cards are meant to help you and visitors think more globally about these issues. It can also be thought-provoking to redistribute the chips based on the relative influence of the people represented on the cards. For example, in a game between two participants where one had the US president card and the other had the Canadian student card, the president would have almost all the chips and the student would have only one or two.

Audiences: You can adjust this game to work for different audiences. For families with young children, you might pick just a few technology cards to start. Some visitors may prefer to read the cards themselves, but you may want to read them (or paraphrase them) for younger visitors. Tailor the amount of information you initially share depending on the age and interest of the visitors. Remember that you can always share more information if visitors ask questions!

Conversation: This activity is designed to promote back-and-forth conversation about ways that technology is interconnected with society. You can help encourage visitors to develop and share their own ideas by referring to the **Tips for Conversations** guide.

You can use the “**Talk about it...**” questions in the activity guide to get visitors started. (These are also summarized in the list of “Conversation questions” above.) Be sure to listen to visitors’ thoughts and opinions, and feel free to share your own opinions as well. As your group talks, help everyone to remember that there is no right or wrong answer to the questions this activity raises. We all make our own decisions about the technologies we use! Science provides information that can help us form opinions and make choices—but we also consider other perspectives such as cultural traditions and personal values.

If visitors seem uneasy or have questions regarding the safety and security of synthetic biology systems, you might respond that these are serious factors that scientists—and we as a society—need to consider. As with many new technologies, there are important ethical and social questions surrounding research in synthetic biology. Government regulations, biosafety committees, scientific transparency, and informed citizens help to make sure that these technologies maximize benefits and minimize risks. Together, we all have a role in shaping how technologies are developed and used.

Passports: In your activity box, you’ll find a marker stamp. This stamp is for the Building with Biology event passports. Each facilitator will need to be prepared to stamp visitors’ passports if guests ask them a question and/ or share what they think about synthetic biology. Facilitators who are scientists should wear “I’m a scientist” stickers at the event and should be ready to stamp passports if guests talk to them. Your event may choose not to use the passports, and that’s fine, too.

Related educational resources

The NISE Network website (www.nisenet.org) contains additional training resources to help scientists and educators have conversations with museum visitors about technology and society: http://www.nisenet.org/catalog/tools_guides/nano_society_training_materials

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This activity is a modified version of the “BioBucks” activity developed by the Science Museum of Minnesota for the Building with Biology pilot project.

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