



Mini-lesson

NFL and genetic tests at the stadium

In September of 2017, genetic testing and biobanking company Orig3n partnered with the National Football League's Baltimore Ravens to offer free genetic testing to 55,000 fans at a stadium. Ahead of the game, health officials intervened with a number of concerns, and the promotion was cancelled.

[Buzzfeed's article](#) describing Orig3n's plans and the resulting controversy is a great teaching tool. pgEd can see using this article to examine two big ideas – informed consent and genetic complexity.

Student reading:

Start with assigning the BuzzFeed article and this paragraph from the National Institute of Health: "[What is informed consent](#)", *NIH Genetics Home reference*.

"Before a person has a genetic test, it is important that he or she fully understands the testing procedure, the benefits and limitations of the test, and the possible consequences of the test results. The process of educating a person about the test and obtaining permission to carry out testing is called informed consent. 'Informed' means that the person has enough information to make an educated decision about testing; 'consent' refers to a person's voluntary agreement to have the test done."

Discussion questions:

- Have students discuss whether they think giving consent to genetic testing in a setting like a football game is likely to fit with the guidelines outlined by the NIH. Ask students to imagine they are at a sporting event at their school – complete with socializing, music, friends, snack bar, loudspeakers – and an exciting game being played, too! Would they be able to focus? How closely might they read the

guidelines? What do they think about company's plans to ask people to consent online after the game?

- The company was looking at several genetic variants related to complex traits, including one related to learning and memory. Ask students to consider the likely role of a single gene in relation to learning and memory – and what other factors, besides genes, might influence learning?
- Why do you think they offered this service for free to 55,000 people (The company's tests cost between \$29 and \$149)?
- Do you think this giveaway was a good idea? A bad idea? Or both? Why?
- If you were at the game and a friend asked if you thought she should do the test, what would you say to her? Why? What are two questions you could ask her to help her make her decision?
- Many experts are quoted in the BuzzFeed article. Which quote stands out to you the most, and why?

Additional resources:

For more about ACTN3, check out pgEd's "[Athletics and genetics](#)" lesson plan and science supplement. ACTN3 is a variant described by Orig3n as a "superhero" gene. Alas, it is not a superhero gene, but a common variant seen in large parts of the population that may have a small effect on muscle performance.

For more about genetic complexity and the role of environmental factors on genetic expression, check out pgEd's "[Genes, environment and genetic complexity](#)" lesson plan.