

Immunology

with Professor Leslie Berg and
Assistant Professor Aimee
Pugh Bernard

Talking points

KNOWLEDGE

1. What roles do neutrophils and monocytes play in the immune system?
2. What is the difference between a B cell and a T cell?

COMPREHENSION

3. Why are children vulnerable if they cannot produce ITK?
4. What processes occur after a T cell receptor (TCR) recognises a pathogen? How do ITK and phospholipase-C contribute to the immune response?
5. How did Leslie and Aimee's experiments with ITK-deficient mice help them study ITK's role in the immune system?

APPLICATION

6. How could a therapy that regulates ITK production help people with immunodeficiency or autoimmune diseases?

ANALYSIS

7. Why is it so important to communicate how vaccines work to the public?
8. What are the motivations behind Leslie and Aimee's research?

EVALUATION

9. How important do you believe science communication was in the COVID-19 vaccine rollout?
10. To what extent do you agree that experimenting on animals is justified in studies that have the potential to discover new treatments for human diseases?

CREATIVITY

11. Several analogies to explain concepts of immunology are mentioned in the article, including emergency service departments, seat belts and ninjas. What other analogies can you think of to explain how the immune system and vaccinations work?

Activity

Teach children about vaccines and immunology

Alongside her immunology research, Aimee is also passionate about science communication and outreach. She runs Think Like A Scientist (tlasprogram.wordpress.com), an after-school club that introduces local children to science, and is part of Immunize Colorado (www.immunizecolorado.org), an organisation that promotes vaccination.

Imagine you work for Immunize Colorado and have been asked to deliver a lesson for Think Like A Scientist. Design a lesson for a class of 8-11-year-olds to teach them about immunology and vaccines.

Think Like A Scientist makes use of interactive presentations and hands-on experiments to help younger children engage with science. Therefore, your lesson should include exciting activities that introduce concepts of immunology and vaccination in fun and interesting ways.

If you need inspiration, visit the Think Like A Scientist YouTube channel (www.youtube.com/@tlasthinklikeascientist2621) to find fun experiments you can do with household equipment, read Aimee's blog about how vaccines protect us (www.immunizecolorado.org/understanding-the-immune-system-how-vaccines-protect-us) and consider how you could use analogies to explain how the immune system and vaccines work.

If possible, deliver your lesson to a class of younger children. You could also deliver it to your classmates, or write a lesson plan and send it to Aimee (at tlasprogram.wordpress.com/contact) so she can use it for Think Like A Scientist!

More resources

- Listen to Aimee's podcast, 'Help! Make it Make Sense' (www.buzzsprout.com/1912655) and follow her on TikTok (www.tiktok.com/@immuninja) to learn more fun facts about the immune system.
- The British Society for Immunology has a wide range of immunology-related activities and teaching resources: www.immunology.org/public-information/activities-and-resources
- Let's Talk Science has a collection of engaging resources about immunology and career profiles of immunologists: letstalkscience.ca/educational-resources/stem-in-context/resources-on-immunology