



# VIROLOGY AND ONCOLOGY

with Dr Fred Bunz

## Talking points

### COMPREHENSION

1. What have scientists learnt from studying adenoviruses?
2. How are adenoviruses used by the biotechnology industry?
3. What processes occur during oncolytic viral therapy?

### APPLICATION

4. How do you think a virologist would use AdenoBuilder to produce a vaccine against a newly discovered viral illness?
5. How do you think an oncologist would use AdenoBuilder to develop a vaccine that prevents a specific cancer?
6. How could these two scientists (a virologist developing an anti-viral vaccine and an oncologist developing an anti-cancer vaccine) collaborate? What similarities do you think would exist in their research, and how could each field inform and support the other?

### ANALYSIS

7. What are the advantages of AdenoBuilder compared to previous methods used for adenovirus engineering?
8. How is the role of the immune system similar for fighting both viruses and cancer?
9. What advantages do you think oncolytic viral therapy has over other cancer treatments, such as surgery or chemotherapy? How do you think these treatments could be combined?

### CREATIVITY

10. Imagine you are a doctor trying to convince a worried patient to undergo oncolytic viral therapy. What concerns do you think they might have about the process? How would you explain the process to them and convince them this is a safe treatment option?

## Activities

Viruses come in many different shapes and sizes. Scientific communicators and illustrators create scientifically accurate imagery to describe these viruses to the public, helping non-specialists understand what they are and their impact on our bodies.

Read this article about 'How to draw the Coronavirus' to see how different artists portray the virus that causes COVID-19: [www.theparisreview.org/blog/2020/05/18/how-to-draw-the-coronavirus](http://www.theparisreview.org/blog/2020/05/18/how-to-draw-the-coronavirus)

Reflect on your reaction to the different virus images. For example, are there any images you found threatening or comforting, and if so, why? How do the different images help you understand how a virus affects the body? How can scientific imagery influence people's opinion about a virus?

Imagine you are a science communicator. Create a poster to introduce different viruses to your classmates. Visit ViralZone ([viralzone.expasy.org/678](http://viralzone.expasy.org/678)) to find a list of viruses that infect humans, along with images of the viruses. Your poster should be eye-catching, engaging and contain information about what the viruses are and how they impact us. How can you use scientific imagery to educate others about the viruses you have chosen?

## More resources

- The National Human Genome Research Institute provides interesting information about genomes, genes and DNA: [www.genome.gov/About-Genomics/Introduction-to-Genomics](http://www.genome.gov/About-Genomics/Introduction-to-Genomics)

- Learn more about adenoviruses from the US Centers for Disease Control and Prevention: [www.cdc.gov/adenovirus/index.html](http://www.cdc.gov/adenovirus/index.html)
- If you have old t-shirts or spare fabric, you can make your own cloth facemask to protect yourself from airborne viruses: [www.sciencebuddies.org/cdn/DIY-cloth-face-covering-instructions.pdf](http://www.sciencebuddies.org/cdn/DIY-cloth-face-covering-instructions.pdf)