

# Ophthalmology

with Dr David Antonetti

## Talking points

### KNOWLEDGE

1. What are the symptoms of diabetic retinopathy?
2. What is phosphorylation?

### COMPREHENSION

3. How can diabetes lead to vision loss?
4. How do the cytokines vascular endothelial growth factor (VEGF) and norrin impact retinal blood vessels?

### APPLICATION

5. How might David's research lead to improved vision outcomes for people with diabetes?
6. How might David's research lead to improved health outcomes for people who have had a stroke?
7. If you had the chance to meet him, what questions would you ask David about his research and career?

### ANALYSIS

8. How did David use cultured cells and mouse models to investigate the role of occludin in diabetic retinopathy?
9. What did the team discover about the role of occludin in diabetic retinopathy?

### EVALUATION

10. To test one of his hypotheses, David induced strokes in mice. To what extent do you agree that animal experimentation is necessary for scientific breakthroughs in human health?
11. Would you prefer a career as a clinical ophthalmologist or vision research scientist? Why?

## Activities

1. David doesn't know if it is true that you cannot sneeze with your eyes open. "But, as a scientist, I love that people will test the hypothesis and try to prove it wrong."

Think of five more commonly quoted scientific 'facts' that may or may not be true. For each one, how could a scientist conduct an experiment to test whether it is true? Research online to discover whether each fact has been scientifically proven, is a myth, or is still up for debate. Tell your chosen facts to your friends. Do they believe them?

2. While most people know about diabetes, many do not associate it with vision loss. Research online to find another medical condition that can cause a complication you did not know about. How is this complication caused? Why do you think you were not aware of it?

## More resources

- Learn more about David's research lab:  
[www.sites.google.com/umich.edu/antonetti-lab](http://www.sites.google.com/umich.edu/antonetti-lab)
- The University of Michigan's 'Health Lab' publishes interesting healthcare-related news stories, such as how the TikTok trend of putting lip balm on your eyelids is a bad idea: [www.michiganmedicine.org/health-lab/beeinthe-dangerous-tiktok-trend-involving-burts-bees](http://www.michiganmedicine.org/health-lab/beeinthe-dangerous-tiktok-trend-involving-burts-bees)
- Medical News Today suggests these seven exercises to keep your eyes healthy: <https://www.medicalnewstoday.com/articles/327524>
- Learn how the eye works from the National Eye Institute:  
[www.nei.nih.gov/learn-about-eye-health/nei-for-kids](http://www.nei.nih.gov/learn-about-eye-health/nei-for-kids)