

# BIOPHYSICS WITH PROFESSOR JAMES BOEDICKER

## TALKING POINTS

### COMPREHENSION:

1. Why is James working to understand more about microbial communities? What could findings within the field lead to in the future?

### APPLICATION:

2. Biophysics is heavily linked to biomedicine, biotechnology and bioagriculture. In what ways do James' investigations provide ways to develop solutions and applications within each of these fields?

### ANALYSIS:

3. What is the advantage of cells having the ability to send chemical messages to each other? In what ways do microbes function as communities?

### SYNTHESIS:

4. What do you think would happen if scientists found a way of influencing decisions and behaviours on a cellular level? It sounds like something in the realm of science fiction, but it could one day be possible!

### EVALUATION:

5. Consider the world of the future, when cellular behaviour and microbial communities are fully understood. How has the wider world changed? In what ways has it improved? Are there any ways it might be worse?

## ACTIVITIES YOU CAN DO AT HOME OR IN THE CLASSROOM

- How would you explain James' research to a younger audience? Create a poster or PowerPoint aimed at a Year 7 student in your school. Think carefully about how you would use images and simpler language to explain complex ideas.
- Create a leaflet explaining career opportunities in this field. You do not have to purely focus on biophysics and James' area of research – consider all the new fields with the bio- prefix. What could researchers of the future help make happen?
- Biophysics is one of the youngest branches of science. Do some independent research and find out more about the history of biophysics and the significant discoveries made in the field.
- One thing you might consider reading more about is the microbiome. It is a fascinating topic and something that scientists are still getting to grips with (particularly the relationship between the gut and the brain). It may well be one of the most important aspects of wellbeing in humans – try and find out more.

## MORE RESOURCES

### RANDOM WALK GAME

The Biophysical Society has created a Random Walk Game that helps students understand more about random versus directed motion. Motion inside cells is generally random, but sometimes things can be moved in particular directions. This video helps explain more:

<https://www.biophysics.org/education-careers/education-resources/Lesson-Plans-Experiments/random-walk-game>

### MR. WIZARD'S WORLD

In his Q&A, James mentioned Mr. Wizard who might be unfamiliar to some of you. His videos discuss an incredible number of scientific questions. Take a look:

[https://www.youtube.com/channel/UCx\\_J\\_aSKyWaNcEjK-eS4Jxg](https://www.youtube.com/channel/UCx_J_aSKyWaNcEjK-eS4Jxg)