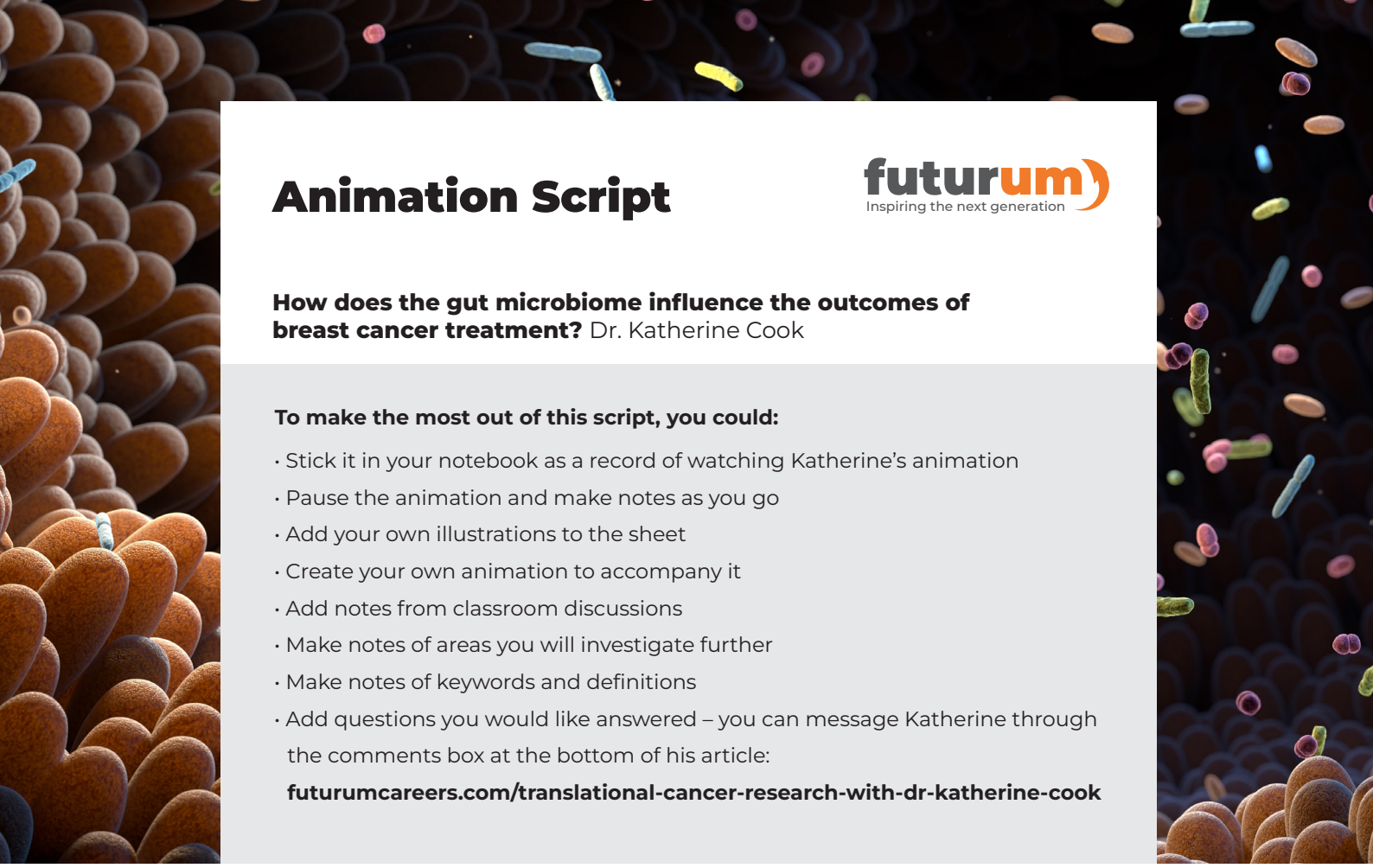

Animation Script

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How does the gut microbiome influence the outcomes of breast cancer treatment? Dr. Katherine Cook

To make the most out of this script, you could:

- Stick it in your notebook as a record of watching Katherine's animation
- Pause the animation and make notes as you go
- Add your own illustrations to the sheet
- Create your own animation to accompany it
- Add notes from classroom discussions
- Make notes of areas you will investigate further
- Make notes of keywords and definitions
- Add questions you would like answered – you can message Katherine through the comments box at the bottom of his article: **futurumcareers.com/translational-cancer-research-with-dr-katherine-cook**

SCRIPT:

When Katherine was eight, her grandmother passed away from breast cancer. A few months later, her aunt was also diagnosed with the disease. And since then, both Katherine and her mother have had surgery after discovering lumps in their breasts.

Katherine and her family are not alone. In most countries, breast cancer is the most common form of cancer in women. And in the US, one in eight women will be diagnosed with breast cancer during their lifetime.

Katherine's experiences motivated her to become a biomedical scientist and study breast cancer. Today, she works as a translational cancer researcher at Wake Forest University School of Medicine.

Translational research bridges the gap between basic science and clinical practice. As a translational researcher, Katherine conducts lab-based research and leads clinical trials to study how the gut microbiome interacts with breast cancer treatments.

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Your gut microbiome consists of the trillions of microorganisms living in your gut. In addition to helping you digest food, your gut microbiome helps your immune system function and can impact how well you respond to medical treatments.

For example, if someone with breast cancer is given oral medication, the drugs will interact with the microorganisms in their gut, which could impact their effectiveness. And if they are given immunotherapy – drugs that stimulate the immune system to kill cancer cells – the gut microbiome will impact the efficacy of the treatment.

To explore how the gut microbiome impacts the outcome of cancer treatment, Katherine is analyzing the bacterial DNA in fecal samples from breast cancer patients. In one trial, Katherine is researching triple-negative breast cancer, a type of cancer that is more common in young and minority women.

She collects fecal samples, blood samples, and diet information from patients before and after they complete their immunotherapy treatment to see whether certain diets or gut microbiome species are associated with better outcomes.

She also uses mouse models to test how different diets and gut bacteria impact cancer treatments. Through her lab-based research, Katherine has discovered that mice with triple-negative breast cancer tumors respond better to immunotherapy if they are fed a healthy Mediterranean diet rather than an unhealthy Western diet.

Now, she is testing this in her clinical trial to investigate whether women who eat more healthy fats – such as olive oil and fish oil – respond better to immunotherapy. She hopes her research findings will improve outcomes for future breast cancer patients.

Now that you've heard Katherine's story, what could you achieve as a translational cancer researcher?

Let us know what you think of this educational and career resource. To provide input, simply scan the QR code or use this link: redcap.school.wakehealth.edu/surveys/?s=NPK347RYHCR3FNDC