



# Innovating Alternatives

a podcast about AMR in food-animal production and the researchers around the globe who are working to reduce it.

## Episode: Introducing Innovative Alternatives

Featuring: Prof. Dame Sally Davies, Prof Paul Ebner

**Justin Kemp (JK):** A lot has been built on our use of antimicrobials, and particularly antibiotics. Large swathes of modern medicine are founded on the assumption that we can treat or prevent common bacterial infections with antibiotics.

**Evelyn Baraké (EB):** Right - just think of how we can routinely and safely undertake surgery or treat diseases like tuberculosis and pneumonia. But it doesn't end with human medicine. Antibiotics play a crucial role in veterinary medicine and they are used extensively in food-animal production systems and even plant crops.

**JK:** In fact, we use more antibiotics to prevent infections and promote growth in food animals that we do in human medicine. And with the shift towards intensified food production systems in many low and middle-income countries, antibiotic use is predicted to increase even further.

**EB:** But there are consequences to this large-scale antibiotic use... over time, bacteria that are resistant to antibiotics can emerge.

**JK:** Exactly, the extensive use of antibiotics, and particularly the way they are used to promote growth and prevent infection - I'm talking about repeated exposure to low doses - provides ideal conditions for the antimicrobial resistant bacteria to emerge. These resistant bacteria, are a major problem for farmers and as they difficult to treat, and in some cases essentially untreatable.

**EB:** And they don't just stay on the farms where they emerge either. They can be transmitted to humans through the environment, food products and directly in the case of farm workers, posing a significant public health risk. And since bacteria can even share their genes, resistance can potentially spread from relatively benign species to a major human pathogen.

JK: It's a serious concern - we are potentially moving towards a world where the drugs just don't work anymore. If nothing is done to address antimicrobial resistance, the costs could be staggering. A recent UK government review estimated that, if left unaddressed, the cumulative economic cost could reach 100 trillion dollars by 2050, by which time we may be losing 10 million people a year to resistant infections.

EB: To put that in perspective, every year 8 million people die a year from cancer. Doing nothing is a huge risk.

JK: That's right, but people are doing something.

EB: Yes, yes, they are. I'm Evelyn Baraké.

JK: And I'm Justin Kemp and this is Innovating Alternatives – a podcast about AMR and the researchers around the globe who are working to reduce it. How? By developing innovative alternatives to reduce and replace antimicrobial use in food animal production.

EB: In this four-part series, we explore the basics of antimicrobial resistance and why we need governments, researchers, funders and the private sector to be working closely together in partnership to address this global challenge.

Prof. Dame Sally Davies

*[So we need to all come together. And this is difficult, but we have to make a start and learn from how we do it.]*

JK: We dig into the wonderful world of bacteriophages, the tiny viruses that are the natural enemy of bacteria and the most abundant organisms on earth and talk to researchers who are developing phage therapies to replace antibiotics in poultry farming.

Prof Paul Ebner

*[It's a very glamorous process that starts at a waste-water treatment facility.]*

EB: We get up close with *Streptococcus suis* – one of the most important causes of bacterial mortality in piglets and we talk to researchers looking to design a vaccine that could reduce mortality and antibiotic use at the same time.

JK: And we get our feet wet, looking at some of the innovative approaches researchers are using to develop alternatives to antibiotics in aquaculture. Yes, you can vaccinate a fish and you might even be able to do it using a robot.

*[Robot sound]*

EB: All this and more.

*[end]*

## SHOW NOTES

A four-part podcast that will delve into the issue of antimicrobial resistance, a slow-moving pandemic that risks erasing the last 80 years of modern medicine's progress. We will take you right to the cutting edge of science, where researchers are developing new and surprising alternatives to antibiotics and innovative solutions to reduce the use of antimicrobials in livestock and aquaculture production.

**Music Credits** (in order of appearance): [Medina Market by Jeff Timesten](#) | [A Beautiful Life by Broke for Free](#) | [Chasing Shadows by Scott Holmes](#) | [XXV by Broke for Free](#)

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