

## 3Qs with Erika Reece

| Audio  | Video   |
|--|---|
| <p><b>[Music]</b></p>  | <p>Purple background with beakers and flasks with gold and white L.S.U. Health Shreveport logo in top corner<br/>Text:<br/>3 Q's with PostDocs<br/>Doctor Erika Knott Reece<br/>Postdoctoral Fellow<br/>Department of Pharmacology, Toxicology, and Neuroscience<br/>Current President of L.S.U.H.S. Postdoctoral Association</p> |
| <p><b>[Music continues]</b></p>  | <p>Same background<br/>Text:<br/>Question 1:<br/>What is your area of research?</p>   |
| <p><b>[Erika]</b><br/>So my research looks at space radiation and cancer, because there's a concern that once you get outside of the Earth's magnetic sphere, that exposure to deep space radiation could lead to a lot of adverse events.</p>   | <p>Woman with shoulder length curly hair wearing a colorful blouse seated on a set.<br/>Text:<br/>Erika Knott Reece, P.H.D.<br/>Postdoctoral Fellow, Pharmacology, Toxicology, and Neuroscience</p>   |
| <p>So, space radiation, or specifically what we look at as galactic cosmic radiation, is a consistent, permeating radiation of both waves and particles that kind of fills the interstellar interplanetary vacuum. And it's made up of a lot of heavy ions that come from supernova elsewhere in the galaxy, as well as a lot of waves and particles that are smaller. And as these waves interact with other materials, they can, essentially rip electrons off of the other whatever material they come in contact with. And if that material happens to be DNA, then that's a very big problem. So we're trying to figure out what the consequences of that would be for deep space astronauts.</p> | <p>Same woman talking about her research on camera</p>  |

| <b>Audio</b>  | <b>Video</b>  |
|---|---|
| [Music]   | Purple background with beakers and flasks with gold and white L.S.U. Health Shreveport logo in top corner<br>Text:<br>Question 2:<br>How might space radiation influence prostate cancer development? |
| <b>[Erika]</b><br>Prostate cancer is already one of the only two cancers that astronauts get at a higher rate than the earthbound population. And while a lot of prostate cancer isn't very severe, in that most people will die with prostate cancer instead of from it, one of the subtypes of prostate cancer that is much more aggressive is actually radiation driven. So there's a subtype called neuroendocrine prostate cancer that often arises after exposure to ionizing radiation as a treatment. And the one of my concerns is that if you were to try and travel to Mars, you could take this population that's already at risk of developing prostate cancer in a low Earth orbit, more shielded environment, put them in this high radiation environment for, you know, three years, that's well within the time frame for this N.E.P.C. to develop and become aggressive and potentially fatal, within that time frame. And so we're just trying to make sure that if that is a risk that deep space astronauts have to worry about, that they're well informed and that treatments can be enacted in advance. | Erika on same set talking about research  |
| [Music]   | Purple background with beakers and flasks with gold and white L.S.U. Health Shreveport logo in top corner<br>Text:<br>Question 3:<br>What is PRISM and how do you use it in your research?            |

| <b>Audio</b>  | <b>Video</b>   |
|---|--|
| <p><b>[Erika]</b><br/> PRISM is a tool that we're using. It's been developed by my mentor Doctor Xiaohong Lu. And it essentially lets you visualize specifically cells that have undergone DNA damage and have a resulting genomic instability. So it was developed to trace neurons that have undergone damage. And so we're concluding a project that looks at space radiation caused DNA damage effects in neurons.</p> <p>But I've been modifying it to look at, to trace cancer cells that have this genomic instability, this activated DNA damage response. And in a rapidly dividing cells like, prostate cells or cancer cells, then this DNA damage can lead to an accumulation of mutations that can drive cancer. And so the PRISM not only lets us restrict the expression of, say, fluorophores to visualize the damaged cells, but we can also put, say, an enzyme encoded in behind the prism actuator construct.</p> <p>So in that way we can, we can enact a change in the cells, specifically in the cells that have that damage. And it offers a precision targeted genomic editing approach.</p> | <p>Erika seated on set discussing her research</p>   |
| <p><b>[Music]</b></p>   | <p>Purple background with beakers and flasks with gold and white L.S.U. Health Shreveport logo below the text<br/> 3 Q's with PostDocs</p> |