**Antibiotic Resistance in Modern Health Care**

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 Antibiotic resistance is becoming more and more prevalent in today’s health care. While many people are aware of antibiotic resistance or at least know what it is and consists of, some people take the time to dive further into the topic and expand their knowledge. While he has not done specific experiments to gain results on the topic of antibiotic resistance, Dr. Matthew Cabeen has explored multiple topics about it which has come to many different recent discoveries. Upon having the motivation for multiple reasons to explore this information, he also has started an antibiotic resistance course at Oklahoma State University. “Antibiotic resistance is constantly changing, especially with new things like COVID coming around. I do extra research at the beginning of every semester to stay up to date.” -Dr. Cabeen

 Dr. Matthew Cabeen said that he grew up in a family that anytime anything happened, he was always taken to the doctor immediately to get checked out and almost always put on antibiotics to fix whatever the problem was. Growing up in this lifestyle is what first began to spark his interest in the topic of antibiotic resistance. To follow, he realized that there was no course for it at Oklahoma State. When he realized that, he began to study and research the topic further and further and started the course he is now holding as the professor. When asked about what research and topics have most helped him study and prepare for teaching this course at Oklahoma State, he said that books about the history of antibiotics are some of the most educational and helpful books.

 After gaining information about how he prepares for classes and about what first made him interested in the topic, I moved on to the topic of recent findings and information that he has come across and researched in the process of preparing for upcoming semesters. Dr. Matthew Cabeen said he does keep up with a lot of the recent updates and even keeps up with the failures in the world of antibiotic resistance. A couple of the different topics that he has come across are:

* A new antibiotic class
	+ This new antibiotic class decreases the chance of antibiotic resistance. The difference of this antibiotic class is a new target.
* Combining of antibiotics
	+ The combining of antibiotics creates a hybrid antibiotic that may have a lower chance of resistance because it is a new drug.
* COVID
	+ With this being the big piece of news in the health care world in the last year, there is endless topics on COVID and the treatment of it.

Along with all of these new and upcoming topics that can be researched when it comes to antibiotic resistance, another topic that we covered was efflux pumps. A few of the topics of efflux pumps and their effect on antibiotic resistance were:

* Non-specific to specific
	+ Some efflux pumps are non-specific and pump out anything foreign, increasing antibiotic resistance.
* Mutations
	+ These mutations can be passed on through horizontal gene transfer.
* General Efflux
	+ General efflux can be conditioned by environmental factors.
		- Example: depression medicine that was so common that it began to be in ground water; when co-treated with antibiotics, they’re so utilized that resistance is common.