Feb. 13, 2021 — Flavonoids are the substances that give many fruits and vegetables their color. They provide people with antioxidants and a wealth of other health benefits. And until very recently, scientists thought these chemicals could only be found in plants. We now know that microorganisms also produce them, and a USU professor is determined to find out how.

Jixun Zhan is determined to be the first person to explain how microorganisms produce flavonoids.

Jixun Zhan, professor of biological engineering, has received a three-year grant of $390,000 from the National Science Foundation to study how microorganisms, particularly fungi, produce these chemicals. “If we get everything done, I think we will, for the first time, unveil how microorganisms assemble flavonoids,” said Zhan.

Understanding this process will set the foundation for the second part of his research: to manipulate fungi’s flavonoid-producing pathways to create new molecules never before found in nature.

“We can engineer hybrid molecules that contain structural features from plants and also from microorganisms,” said Zhan.

Plant flavonoids are commonly used in dietary supplements, and Zhan imagines a similar application for the compounds he engineers. He hopes to create a “large library” of these new structures to be used in drug development, as some of them may have anti-cancer or antimicrobial characteristics.

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