

Monthly forum serves up sips and science

BY JASON EVANS
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PENDLETON — If you were expecting a staid, se-date scientific discussion at “Science on Tap” at the Viva Wine Bar Thursday evening, you were in the wrong place.

During Clemson University chemist Bill Pennington’s talk, phrases such as “This molecule acts like a musk ox” and “I don’t think we want any explosions” and “naked, featherless chickens” were tossed around.

“Science on Tap” is a monthly forum started by Clemson University Life Sciences outreach director Vicki Corbin. She said she started “Science on Tap” for a couple of reasons.

“The main one is that too many people think that science is boring, or that it doesn’t apply to them or that they don’t have the brains to understand it,” Corbin said. “But if science is presented right, it can be understandable and fascinating to most people.

“The other reason is that taxpayers pay for a huge proportion of the research done in this country, and they have the right to understand it,” she continued. “The results and ramifications of the results should not be restricted to scientists



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Bill Pennington
Clemson University chemist

or people who speak scientific lingo. Scientists, in my opinion, have the responsibility to make their research results understandable to the public.”

Attendees enjoy wine, beer and food while listening to a different guest speaker each month.

“You sit down and you listen to some cool science, ask questions and hopefully learn and have a good time,” Corbin said.

Thursday’s meeting was the first of 2018 and the first at the forum’s new home at the Viva Wine Bar in Pendleton.

“Hopefully, this will go OK,” Pennington said. “If it doesn’t, just drink up.”

His talk was titled “I Knew I Should Have Picked the Blue Pill.”

“I’m not really sure what that title means,” Pennington confessed.

He spoke about the clean aspects of his research — working with crystals — and the dirty.

“What I really am is a crystallographer,” he said. “I love crystals. I love looking at crystals. I love the flat faces and the sharp edges of a crystal and the properties of a crystal.

“You sit and you look at these beautiful, clean crystals through microscopes,” he continued. “It’s pristine, it’s pure. Everything’s clean. It’s wonderful. That’s what I used to do.”

That brings us to the naked chickens.

He and a team that includes professors from Clemson, Furman and Ben-Gurion University, as well as Clemson graduate and undergraduate students, have been developing biosensors that are useful in food safety.

“We started working with chickens,” Pennington said. “Chickens are not clean. They are not wonderful. They’re dirty, messy and smell.”

They were tasked to monitor the health of a poultry

processing plant.

Bacteria can burrow down into chicken skin and re-emerge even after chicken carcasses go through a scalding process, Pennington said. That can lead to outbreaks of *E. coli* and other problems.

“Cross-contamination is the big thing,” he said. “We wanted to help and identify whether these things are clean or not.”

Before the team came in, the plant had developed featherless chickens. That has some advantages — featherless chickens produce less heat, reducing cooling costs at the plant.

But chickens use their wings as part of mating rituals.

Featherless chickens “don’t know how to date,” Pennington said.

Another problem is chickens use their wings to get up after falling down. Featherless chickens can’t do that, which was leading to deaths in the plant.

His team developed biosensors that have “really interesting properties,” Pennington said.

The polymer chain making up the sensor is “blue jean blue” and reactive to heat, he said.

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Biosensors that react to extreme heat are used in labeling military rations or MREs.

“If it goes too high, the food goes bad,” Pennington said. “If you have a label that turns red, you don’t eat that food.”

Other biosensors can detect liquid and bacteria and turn red when they do.

“It’s the interaction of the bacteria that’s going to trigger the color change,” Pennington said. “That’s a way to determine the bacteria is there.”

Pennington brought examples of the biosensors and demonstrated the heat reactions for the audience.

The sensors can be sprayed on food prep surfaces, such as those in processing plants.

“If it’s nice and blue, send the chicken carcass off to the grocery store and somebody can buy it and probably they

won’t get sick,” Pennington said.

The biosensor could also be used in packaging. The color change would alert consumers immediately that the chicken has become contaminated, either at the store or in the home fridge.

More sensitive sensors could allow for bacteria to be detected and identified much more quickly, aiding in recall efforts.

A lively Q-and-A session was held after the talk.

“Science on Tap” meets the second Thursday of each month in Pendleton and Greenville. Coffee Underground hosts the Greenville meetings. Both meetings begin at 6:30 p.m.

For more information, visit clemson.edu/culsoc or [facebook.com/ScienceonTapUpstate](https://www.facebook.com/ScienceonTapUpstate).