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Food- and water-inspectors to the stars



Grace Bacharach works in a NASA lab in Houston testing samples of water that astronauts will drink on space missions. *Courtesy photo.*

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Every day, astronauts afloat somewhere beyond Earth's atmosphere perform important research missions. Not only must these space explorers be provided with safe suits and reliable equipment, but their success also hinges on staying healthy by eating nutritious food and drinking clean water.

That's where Northeastern students Danielle Singleton and Grace Bacharach come in.

Both **chemistry** majors, they worked on consecutive **co-ops** last year at NASA's Johnson Space Center in Houston, specifically in the Water and Food Analytical Laboratory. Their co-op employer,

Wyle Laboratories, is a private firm contracted by the government to perform such analyses.

Singleton focused mainly on analyzing food samples to obtain their caloric value and confirm they were safe to send to the International Space Station and on Space Shuttle flights. She tested food for appropriate levels of minerals, metals, iodine, nitrogen, protein, sodium, fat and cholesterol. She tested the fish for toxins and the tomato sauce for salt content.

Singleton also helped ensure that the astronauts boosted their calcium intake, because, she explained, "If you're just floating around, your bone density decreases. So it was important for them to have high levels of calcium."

Bacharach followed Singleton, but worked primarily on testing samples of the water the astronauts drink on the International Space Station. She operated an Inductively Coupled Plasma Mass Spectrometry instrument that measures the concentration levels of more than 20 different metals in water.

"If one of these metals was over the [healthy] limit, we retested it. If it was still over, we would tell them the sample was bad" and not safe to drink, Bacharach said.

Now juniors, Singleton and Bacharach said their first co-op experiences were incredibly valuable. Working in an area of high visibility with high stakes, they quickly understood the importance of making accurate readings and testing water for microorganisms, saying the added pressure helped them develop a strong professional work ethic.

"I felt like what I was doing was important," Singleton said. "Telling the astronauts whether it was safe to drink their water [and eat their food] was really crucial. I felt like I wasn't just a set of hands in a lab doing busy work."

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