

Dermatologists detect the world's smallest skin cancer

May 1 2023, by Amanda Gibbs



Sancy Leachman, M.D., Ph.D., performs a skin check on an OHSU patient in 2015. Credit: OHSU/Fritz Liedtke

A tiny spot on Christy Staats's cheek measured just 0.65 millimeters—or 0.025 inches—and was almost invisible to the human eye. But with help from state-of-the-art non-invasive technology, an OHSU dermatologist and a multi-disciplinary team confirmed the spot was indeed a melanoma, the most dangerous type of skin cancer.

To identify this micro-[skin cancer](#), Alexander Witkowski, M.D., Ph.D., an assistant professor of dermatology at the OHSU School of Medicine, used a combination of dermoscopy—an examination of skin lesions with a dermatoscope—and Reflectance Confocal Microscopy, which is an imaging tool that helps clinicians monitor and diagnose [skin lesions](#) without needing to cut into the skin. His colleagues Joanna Ludzik M.D., Ph.D., Jina Chung M.D., Sancy Leachman M.D., Ph.D., and Claudia Lee helped confirm the diagnosis by implementing additional staining and molecular testing techniques.

Catching this skin cancer early earned the OHSU team the [Guinness World Record](#) for the "Smallest Detected Skin Cancer." On May 1, a judge from the Guinness World Records came to OHSU to award each team member a certificate for their newly-earned record. The related research is published in the journal *Dermatology Practical & Conceptual*.

This scientifically-validated skin cancer is a micro-melanoma in-situ, a type of cancer that is found exclusively on the top layer of the skin. Witkowski says this is important because "it was found before it had the opportunity to spread to other parts of the body."

During the diagnostic process, the case was also reviewed by Giovanni Pellacani, M.D., president of the World Congress of Dermatology and chair of dermatology at La Sapienza University in Rome, Italy. Pellacani is a leading expert in Reflectance Confocal Microscopy and mentored both Witkowski and Ludzik—a husband and wife team—before they moved to the United States from Europe in 2019.

Right place, right time, right technology

Christy Staats had been watching a [red spot](#) on her face for several years. She saw several dermatologists, concerned about the spot underneath her eye, but was always told it was fine. After a few years, she stopped going to the dermatologist.

"During COVID, I started to think about my health a little more," she says. "I have a magnifying mirror in my bathroom and noticed the spot I was worried about was way bigger and had a 'leg' on it. I set up an appointment to get it looked at."

At that appointment, her dermatologist, Witkowski, examined the spot of concern. Witkowski's examination revealed that the lesion she was worried about was actually a cherry angioma, a fairly common, benign, skin growth. However, during that evaluation, he noticed a tiny spot nearby on her right cheek—a spot that might not have otherwise been noticed—and he believed it warranted further evaluation.

"I took a picture of the spot with the Sklip smartphone attachment, then performed additional imaging with reflectance confocal microscopy (virtual biopsy) which showed atypical cells concerning for melanoma," he says. "I told Christy right there at the bedside, 'I think this could be the smallest skin cancer ever detected.'"

The confocal microscope is used in-office and is placed on top of the

skin to visualize cells underneath. It gives the physician the ability to see cells without having to cut into a patient's skin. Witkowski says OHSU is one of the few centers in the country that have an in vivo confocal device—and the first one on the West Coast.

Witkowski then took a physical biopsy of the mole of concern, and the OHSU team evaluated it with pathology and molecular testing. Those results confirmed the diagnosis of an incredibly small melanoma in situ.

"What our team accomplished together embodies my personal mission statement: 'Catch the inevitable, early,'" says Witkowski.

Staats is grateful her melanoma was caught before it could grow or spread. She says she believes she was in the "right place at the right time...with the right technology."

"I believe it is possible for everyone to be as lucky as me with the right technology," she says. "If they can find mine when it's so early, it is a no-brainer that this technology can help other people."

She is also grateful she followed her instinct about her original spot of concern that led her to come in the office in the first place. "It's an important reminder that you can't get lazy with your skin. You have to stay on top of it and get new things checked out."

The power of early cancer detection

The American Cancer Society estimates that in 2023, about 97,610 new melanomas will be diagnosed in the United States. Melanoma accounts for only about 1% of skin cancers overall, but causes a large majority of skin cancer deaths.

Sancy Leachman, M.D., Ph.D., director of the OHSU Knight Cancer

Institute's Melanoma Program and chair of the Department of Dermatology in the OHSU School of Medicine says this case "truly demonstrates the power of new technology to identify potentially dangerous spots early."

"With melanoma, your eyes really can be your best tool. A mole or spot on your skin that is changing in appearance—size, shape, coloration—is a key indicator for melanoma," Leachman says.

"This was a team effort—we used skin imaging and technology to improve the early diagnosis of [melanoma](#)," she says. "It took everyone on the team—dermatologists, dermatopathologists, and dermatologic surgeons. It's an incredible thing when you have an entire team able to work together to help patients."

More information: Alexander Witkowski et al, Combined Use of Dermoscopy, Reflectance Confocal Microscopy, and Ex-Vivo Gene Expression Profiling to Detect a Micromelanoma Less Than 1 mm in Diameter, *Dermatology Practical & Conceptual* (2023). [DOI: 10.5826/dpc.1301a55](#)

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