

# Camera system aids cancer clinical trial (w/ Video)

April 18 2014, by Anne Ju

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With a new, commercially available camera system using Cornell-developed nanoparticles that make cancer cells glow, the way is lit for surgeons diagnosing and removing tumors.

With researchers from Memorial Sloan Kettering Cancer Center (MSKCC), Uli Wiesner, the Spencer T. Olin Professor of Materials Science and Engineering and inventor of the fluorescent "C dots" (Cornell Dots), has integrated his lab's nanoparticle technology with an optical camera made by Quest Medical Imaging. In real time, the camera gives surgeons a clear view of cancer in the body.

Called the Artemis Fluorescence Camera System, it is now being used in a second C dots clinical trial at MSKCC recently approved by the U.S. Food and Drug Administration (FDA). The trial involves melanoma patients with lesions in the head and neck region, Wiesner said.

The first trial was essentially a safety trial, in which radiologists injected C dots into melanoma patients to see whether the dots are safe and where they would go. But now, for the first time, they will use the C dots in conjunction with the Artemis system to image nodal disease in melanoma patients. MSKCC is the first U.S. hospital to bring the optical Artemis camera system into the operating room.

"This is extremely exciting, because in general it is the first time an optical inorganic nanoparticle probe will be used in a surgery room in conjunction with an optical camera to help surgeons identify nodal

disease during surgery," Wiesner said. "This is what we have worked toward all these years, and it will finally happen."

For the trial, they will first inject the C dots around the primary lesion in the head and neck; using the Artemis camera, they will observe how the C dots are taken up by the lymphatic system and end up in the lymph nodes adjacent to the tumor. If those nodes contain [cancer cells](#), the C dots should stick to them and glow. If the nodes are cancer-free, the C dots will not stick, and the fluorescence will be transient.

For several years, Wiesner has worked with collaborators at MSKCC to optimize the Artemis system toward the optical characteristics of the C dots, which Wiesner's group first published about a decade ago. Specifically he worked with radiologist Dr. Michelle Bradbury, who played a central role in getting the C dots into patients and the camera optimized for surgical use, and Dr. Snehal Patel, a surgeon who works on head and neck lesions.

Wiesner connected with Quest Medical Imaging during a trip to Hungary years ago when he was giving a talk on bioimaging. At the conference, he discovered that Quest researchers had a [camera system](#) and were looking for a probe, and Wiesner had the opposite problem – a probe, but no camera.

"The match was perfect," he said.

Provided by Cornell University

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