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Medical innovation in WNY continues, with wide implications

By Scott Scanlon
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Dr. Nick Hopkins is founder and chief scientific officer of the Jacobs Institute on the Medical Campus. (Sharon Cantillon/Buffalo News)

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Forget chicken wings for a moment when it comes to Buffalo inventions.

Dr. Frank Hastings Hamilton tried **the first successful skin graft** here in 1854 at Sisters Hospital.

Wilson Greatbatch created the **first implantable pacemaker** in 1958, while tinkering in his barn.

Groundbreaking research in the 1970s by researcher **T. Ming Chu** at Roswell Park Comprehensive Cancer Center led to the creation of the standard screening test for prostate cancer.

Researchers in the region today predict more groundbreaking innovations to come.

“Collectively, we have transformed Western New York from a place with individual pockets of research excellence, each doing their own thing, into a rich and stimulating community, powered by researchers and innovators building on each other’s expertise and taking their work in new directions,” said Dr. Michael E. Cain, dean of the Jacobs School of Medicine and Biomedical Sciences at the University at Buffalo.

The Buffalo Niagara Medical Campus – in spaces that include the Jacobs Institute, UB Clinical and Translational Science Institute, and Roswell Park – help make it so.

The Jacobs Institute is named for Dr. Lawrence D. Jacobs, a world-renowned neurologist who advanced multiple sclerosis care. A drug his work in Buffalo helped develop is made in Boston because this region didn’t have the medical infrastructure to carry out full development and manufacturing.

“We're bringing some of the best innovative startup ideas in the world to Buffalo, cultivating them here, and trying to get these technology companies to advance to the prototype stage with the hope that they’ll someday commercialize their technologies here,” said William J. Maggio, the institute's CEO.

In 2016, the institute was designated a 3D Printing Center of Excellence in Health Care by Israeli-based Stratasys Ltd., a leading 3D printing manufacturer. In early 2018, the institute created an Idea to Reality Center, known as i2R, to foster collaboration between entrepreneurs, doctors, engineers and researchers.

UB and Kaleida Health established what is now known as the **Clinical and Translational Science Institute** in 2012, on the floors above the Jacobs and Gates Vascular institutes and alongside Buffalo General Medical Center, to bring researchers from several university departments closer to doctors and patients.

One successful outcome: University departments of biomedical informatics and microbiology are investigating using low-level electrical stimulation to thwart infection at prosthetic device sites (think knee and hip joint replacements), an effort bolstered by a $500,000 Department of Defense grant to work with Garwood Medical Devices, a Buffalo company, to fast track an FDA-approved device to market.

Roswell Park continues innovation it started in 1898, when it became **the first hospital in the nation completely focused on cancer**.

Last June, the U.S. Food and Drug Administration, based on the work of researcher **Ben Seon**, approved Polivy, a chemotherapy/immunotherapy course for patients with an aggressive form of non-Hodgkin lymphoma.

A team led by **Dr. Kunle Odunsi**, executive director of the Center for Immunotherapy, continues work on a process to remove patient cancer cells, re-engineer them and inject them into the same patients to bolster an immune defense against cancer.

Lung, brain, ovarian, breast, melanoma and sarcoma tumors are among those that could one day succumb to these "cellular immunotherapies" being developed at Roswell and by Odunsi and others in spinoff company **Tactiva Therapeutics**, also on the medical campus.

Meanwhile, Dr. Carl Morrison, Roswell Park senior vice president of scientific development and integrative medicine, directs the lab at a Buffalo subsidiary he helped found, OmniSeq, which tests the genetic makeup of cancer tumor biopsies to give oncologists a better sense of what treatments will be least and most effective.

Precision medicine was born out of lung cancer and melanoma, two major cancer killers which, when found in late stages, usually limited survival to six months.

“Today in melanoma, in 35% to 40% of people we’re starting to think about the word ‘cure,’ ” Morrison said. "And at least now, a significant percentage of lung cancer [patients], probably up to 30% to 40%, are pushing along into a chronic disease where your survival is in the range of at least five years.”