Center for Discovery & Innovation
Member of Hackensack Meridian *Health*

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Dr. Loudig, Ph.D.

Dr. Loudig joined CDI from the Albert Einstein College of Medicine, and his group focuses on developing safe, affordable, and non-invasive screening tests for cancer. Because the most effective management of cancer is early detection and watchful surveillance, they recognize the importance of having simple, molecular tests available for otherwise healthy individuals. Their work involves identifying biomarkers and developing screening tests for various types of cancers, including breast, prostate, and lung.

One of their projects is focused on identifying circulating tumor DNA in patients with breast cancer. The goal is to determine the effectiveness of a patient's chemotherapy regimen based on a blood test that would assess the quantity of circulating tumor DNA in the blood. If the treatment is effective and tumor cells are being broken down, the circulating tumor DNA should decrease over time. This would make a tremendous difference in the field because not only would a blood test be substantially less invasive and risky than the imaging used today, it would also provide this crucial information much more quickly—likely 2-3 months ahead of imaging. If the drug does not appear to be working, then the clinician can modify or adapt the treatment as soon as possible.

Another active project involves the detection of exosomes, or tiny vesicles secreted by cells, in the blood of patients with prostate cancer. In those patients, tumors re-shape prostate vascularization and cause prostate cell secreted exosomes, generally contained in the prostate and the seminal canals, to leak into the general circulation. Prostate exosomes could serve as biomarkers for prostate cancer because they carry unique information that would potentially enable clinicians to detect them in the blood. This prostate cancer screening would be accomplished via a simple blood test.

Exosomes are also relevant to Dr. Loudig's project focused on lung cancer. This involves collecting the vapor in patients' breaths and assessing the exosomes in the breath samples to determine whether certain DNA mutations indicative of lung cancer can be detected early. This would be simple, non-invasive, and pain free.