

# HARNESSING LAB INNOVATION TO ADDRESS GLOBAL DISEASE

Passionate researchers at Brandeis University are improving accessibility to necessary disease diagnostics and treatments for vulnerable populations around the world. Rooted in our identity as a world-class research university and liberal arts college, we seek to solve real life global problems.



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## REMOVING COST BARRIERS TO CANCER DIAGNOSTICS

Limited access to cost effective, reliable and rapid diagnostics is costing lives within impoverished regions. Bing Xu, PhD, Professor of Chemistry, is developing an inexpensive magnetic cell sorting method, which exploits the inherent overexpression of surface enzymes on cancer cells to selectively sort and inhibit cancer cells from a mixed population. The World Health Organization forecasts cancer deaths in developing nations to grow to 8.9 million in 2030. On average, 70% of cancer patients in developing countries are diagnosed at a very late stage of illness. This technology will bring the fight against cancer to field hospitals, clinics and aid workers around the world; detecting cancer early and saving millions of lives.



## HIV PREVENTION: VACCINE ON THE HORIZON

According to the World Health Organization, an estimated 34 million people have died from AIDS-related causes and an additional 36.9 million people live with HIV globally. Brandeis researchers are reverse engineering the solution to the world's HIV crisis. Isaac Krauss, PhD, Associate Professor of Chemistry, is using a directed evolution-based approach to design and synthesize mimics of the sugar coating of HIV protein gp120, which bind to a broadly neutralizing and protective HIV antibody. These mimics of the virus are at the forefront of carbohydrate vaccines designed to stimulate a broadly neutralizing immune response, and could protect against future HIV infections around the world.



## REDESIGNING TRADITIONAL TB DIAGNOSTICS

With the global surge in drug resistant tuberculosis (TB) cases and the overwhelming lack of control of TB in developing countries comes the critical need for advanced TB diagnostic technologies. The world's number one infectious disease is being combatted at Brandeis through the cutting-edge research of Lawrence Wangh, PhD, Professor of Biology. Dr. Wangh has developed rapid, inexpensive, and highly informative LATE-PCR-based diagnostic tests that can be used to accurately detect drug resistant TB.

*Email [otl@brandeis.edu](mailto:otl@brandeis.edu) to learn more about the innovative research happening at Brandeis University.*



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