

## Tackling the Opioid Crisis

**Medical inventor Robert A. Levine, MD '66, believes he's found a solution to one of medicine's biggest problems. He's looking to Big Pharma for support.**

At 83, Robert A. Levine, MD '66, embodies the spirit of innovation that has defined his remarkable five-decade career in medicine and diagnostics. His journey—from an overwhelmed 19-year-old who nearly quit medical school to a distinguished physician-scientist whose inventions have been used over 100-million times worldwide—reflects compassion, scientific brilliance, and resilience.

For four decades, Levine has focused on developing point-of-care diagnostic technology, most notably the QBC (Quantitative Buffy Coat) test for Complete Blood Counts and malaria diagnosis, that has found applications far beyond traditional medical settings—from cruise ships, Navy submarines, and military field stations to remote African villages and even a potential Mars missions.

The technology was sparked by his own Connecticut internal medicine practice near Yale, where he served as a professor of laboratory medicine.



Robert A. Levine, MD '66

Levine recognized that rapid, accurate diagnostics could be transformative in resource-limited settings where traditional laboratory infrastructure was unavailable as well as in traditional settings, where receiving immediate results at the point of care could expedite diagnosis and treatment.

Other inventions include tests for colon cancer, for the diagnosis of malaria and other hematoparasitic diseases, detection of circulating cancer cells, and expert systems for the interpretation of hematologic, thyroid, and allergy testing. With nearly 250 patents for medical diagnostic devices that have generated more than \$1 billion in sales, it's not surprising that Levine and his partner, Stephen C. Wardlaw, MD, were once referred to as the "Thomas Edisons of Medicine" by *Medical Economics* magazine. Levine was honored as Distinguished Alumnus by the Upstate Medical Alumni Foundation in 2016 for his contributions to the field.

But his career has not been without setbacks. Nine years ago, after years of development, his pharmaceutical partner canceled a major hematology analyzer project just before FDA approval, despite the technology's successful completion of European market studies. He later learned the termination was the result of corporate politics rather than the project itself.

Undeterred, Levine turned his attention to tackling one of medicine's most pressing challenges: the opioid epidemic. Working with his son Joshua, an herbalist, he developed a patented approach that combines traditional opioids with sensory cues and gradually decreasing doses to harness the placebo effect while reducing addiction potential.

The method involves adding safe, sensory-active compounds like capsaicin or mint to pills, creating physical sensations that trigger the body's natural endorphin release. Over a 20-day course, the opioid content decreases while the placebo effect is reinforced, potentially offering a path away from addiction.

Despite enthusiasm for the methodology, pharmaceutical companies have been reluctant to partner. "We're in the business of selling drugs," one executive bluntly told him.

"I am still seeking a pharmaceutical company willing to fund a clinical trial," he says.

Levine's professional achievements are matched by personal resilience. After losing his wife Elana to lung cancer in 2019, he found love again at age 78, meeting his current partner, Liping, on a train to New York. Their relationship has taken him to China to meet her family, where her father learned a few English phrases specifically to thank Levine for caring for his daughter, who was also widowed.

Now living with Liping in Portsmouth, New Hampshire, Levine is retired from active practice but continues his work on medical innovations. He's recently filed new patents on his diagnostic technology, and once complete, expects to finalize a renewed corporate partnership.

Levine says he's not driven by personal gain, but a fundamental commitment to improving medical care. "I strongly believe that both innovations are important for the world and have potential for tremendous impact," he says.

—Renée Gearhart Levy