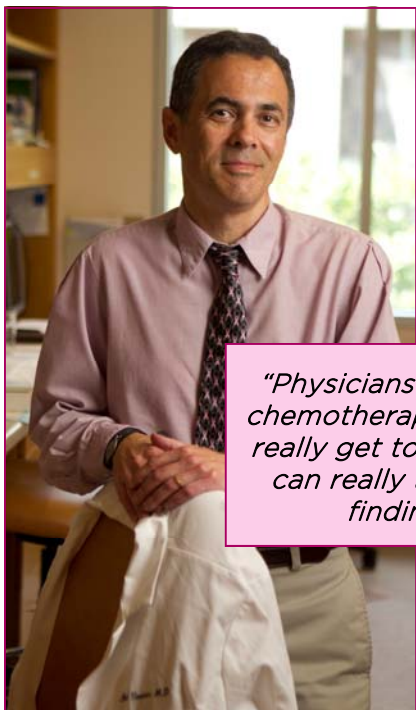




Behind the Science Dr. Neil Spector, MD

Komen Scholar Dr. Neil L. Spector, MD is the Sandra Coates Associate Professor Breast Cancer Research, Department of Medicine as well as the Associate Director of Clinical Breast Cancer Research at the Duke Cancer Institute. This is his story.



"Physicians are not there just to prescribe chemotherapy and order fancy tests, but to really get to know people. I don't think you can really take care of someone without finding out who he or she is."

We often talk about the "fight against cancer" and of "winning battles against cancer." In these terms, Neil Spector is a gladiator. In his career as a researcher and clinician, he has strived to bring treatments to breast cancer patients on every front: he broke through conventional thinking to bring new treatment options to the arsenal of breast cancer drugs, fought naysayers to include rare subtypes in clinical trials, and worked to develop collaborations that helped transform laboratory successes into real therapies for patients. And he did all of this while fighting for his own life.

Dr. Spector spent his childhood at the National Institutes of Health (NIH) where his father (his hero) was a prolific scientist. He remembers, "As a family we used to go to the NIH clinical center where they had movies on the top floor. My sister and I would

be playing with kids who were sent to the NIH with the rarest of diseases." Family friends worried about the effect that exposure to sick and dying children would have on the Spector children, but Dr. Spector says, "Growing up around science, medicine, illness – it just became part of our blood." The experience motivated Dr. Spector to pursue an

early career in neurology, but he became discouraged by the lack of options for his patients.

Around the same time, the HER2 protein had been identified in breast cancer research and gave researchers a viable target for the development of new therapies. Dr. Spector realized that oncology was a natural fit between the science he loved and the clinically meaningful work he craved.

In 1993, Dr. Spector began experiencing his own health problems. Doctors failed to identify the cause for four years, suggesting that the mysterious symptoms were all in Dr. Spector's head. He was not diagnosed with Lyme Disease until 1997 at which time he was found to have only 10% heart function. A year later, Dr. Spector had a newborn baby and had recently accepted a position with a pharmaceutical company to lead their division of translational research.

Contrary to doctors' warnings, Dr. Spector immersed himself in the new position and despite the stress and weakened heart function, persevered for 8 years with severely impaired heart function to shepherd lapatinib from the lab to the clinic, into a viable treatment for patients. The company had originally focused on lapatinib to treat prostate, lung and colorectal cancers, but Dr. Spector soon recognized that it was not going to have an impact in those cancers. Instead, he demonstrated that lapatinib could have clinical value when used on its own, or in combination with Herceptin for [HER2+](#) breast cancer. "I knew it was the right thing to do," said Spector, "I knew that developing this drug outside of breast cancer would be wrong."

"I had the sword of Damocles hanging over my head the whole time. At any moment, the bottom could drop out for me. Thankfully it didn't, and thankfully I had the energy to fight the fight."

Dr. Spector told his employers that he knew lapatinib was going to work in breast cancer and that if it did not, they could fire him. The only way to prove its utility in breast cancer was to conduct an unorthodox phase I [clinical trial](#) and invite oncologists across the nation who were treating women with HER2+ breast cancer to enroll their patients in the trial.

Dr. Spector's research findings were confirmed when well-respected oncologists started calling and sharing success stories saying, "This is phenomenal! I had this woman on a morphine drip last week and now she is out playing golf." Dr. Spector describes the experience as "incredible."



During the trial, he also introduced the radical new idea of sequential biopsies. He asked patients to have a surgical biopsy before treatment and another surgical biopsy after three weeks of therapy. Dr. Spector wanted to know if the drug was working and if not, he wanted to better understand why not. Colleagues told him he was crazy, that no one was going to sign up to give sequential biopsies. He argued that patients would understand the significance of their participation. He was right; they had over 90% compliance.

The next battle Dr. Spector fought was over an international clinical trial in Inflammatory Breast Cancer (IBC) which, while rare, is also the most deadly form of the disease. Experts in the field advised his department that it would be foolish to invest the resources because it would take many years to accrue the trial. Dr. Spector persisted and eventually, his team of three travelled the world, bringing together oncologists and their patients for one of the largest clinical trials ever conducted for women with IBC, and they did it in just 10 months. Women whose IBC was HER2+ had response rates of up to 40% with lapatinib. Dr. Spector was touched by the women who thanked him for the trial because it was the first time their voices had been heard in the drug development world.

A decade after being diagnosed with Lyme disease, Dr. Spector's heart was so severely damaged that he needed an emergency heart transplant. He received a new heart in July of 2009 after being advised that he only had 72 hours to live. Dr. Spector's experience with Lyme disease, coupled with his training at Parkland Hospital, leads him to advise patients, "Don't give up the power you have within. If your gut instinct tells you that something isn't right, you need to follow up on it."

One year after his heart transplant, Dr. Spector joined the [Komen Scholars](#). Dr. Spector describes his acceptance as "a great honor and validation of the work that I have done." He believes that the relationships built within this advisory group allow for new channels of research that otherwise would not have been possible. He is also very excited about Komen's global programs and research asking, "Who else is doing this? I can't think of any other organization that has the capability of doing that. It is tremendous."

Today, Dr. Spector is still fighting some of the toughest battles in breast cancer treatment. He is passionate about metastatic breast cancer ([MBC](#)). "I'd love to be able to say, we have figured it out, we can prevent every woman from developing breast cancer, but right now, I think we have an obligation to those women who may not see that day come if we don't make better therapies now," says Spector.

Through a Komen Scholar Grant focused on preventing drug resistance in HER+ breast cancers, Dr. Spector hopes to accomplish just that. He reflects, "I have a hard time going to clinic and seeing someone who has advanced disease. We haven't converted that disease into something like hypertension where we can say, 'Mission Accomplished.' What do I tell her or her family?" Dr. Spector believes that instead of abandoning drugs we know work, we should find ways to make them better. He also advocates for advances that will allow those living with MBC to see it as a chronic illness, and not a death sentence. He says, "I'd love to see the day when we stop jumping up and down about a six month improvement in survival. We accept these endpoints as advances - and they are advances, but we need to do a lot better."

"If we can prevent women from getting advanced stage breast cancer, that is great, but for those women who we can't - we can't just abandon them. I'm proud to say that [Komen](#) doesn't abandon anyone with breast cancer."

Dr. Spector's vision for the future of breast cancer research is all about collaboration: "Marrying disciplines that normally wouldn't get together to solve problems is the way that is going to happen." To this end, Dr. Spector is also working with a number of people in biomedical engineering group at Duke exploring ways to develop what he calls a "true theranostic"-a hybrid diagnostic and therapeutic tool. Dr. Spector has discovered that experts in other fields approach the questions of breast cancer in new ways, and that, he says, "is liberating."

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