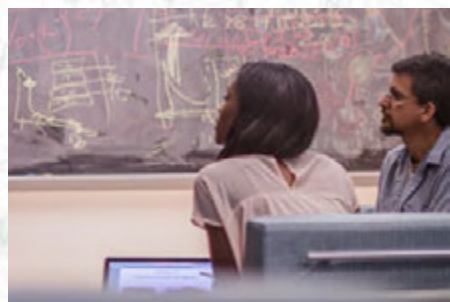


Center of Excellence for Evolutionary Therapy



THE COURAGE TO TAKE ON CANCER
IN AN ENTIRELY DIFFERENT WAY.





The future of
beating cancer
lies in
outsmarting it.

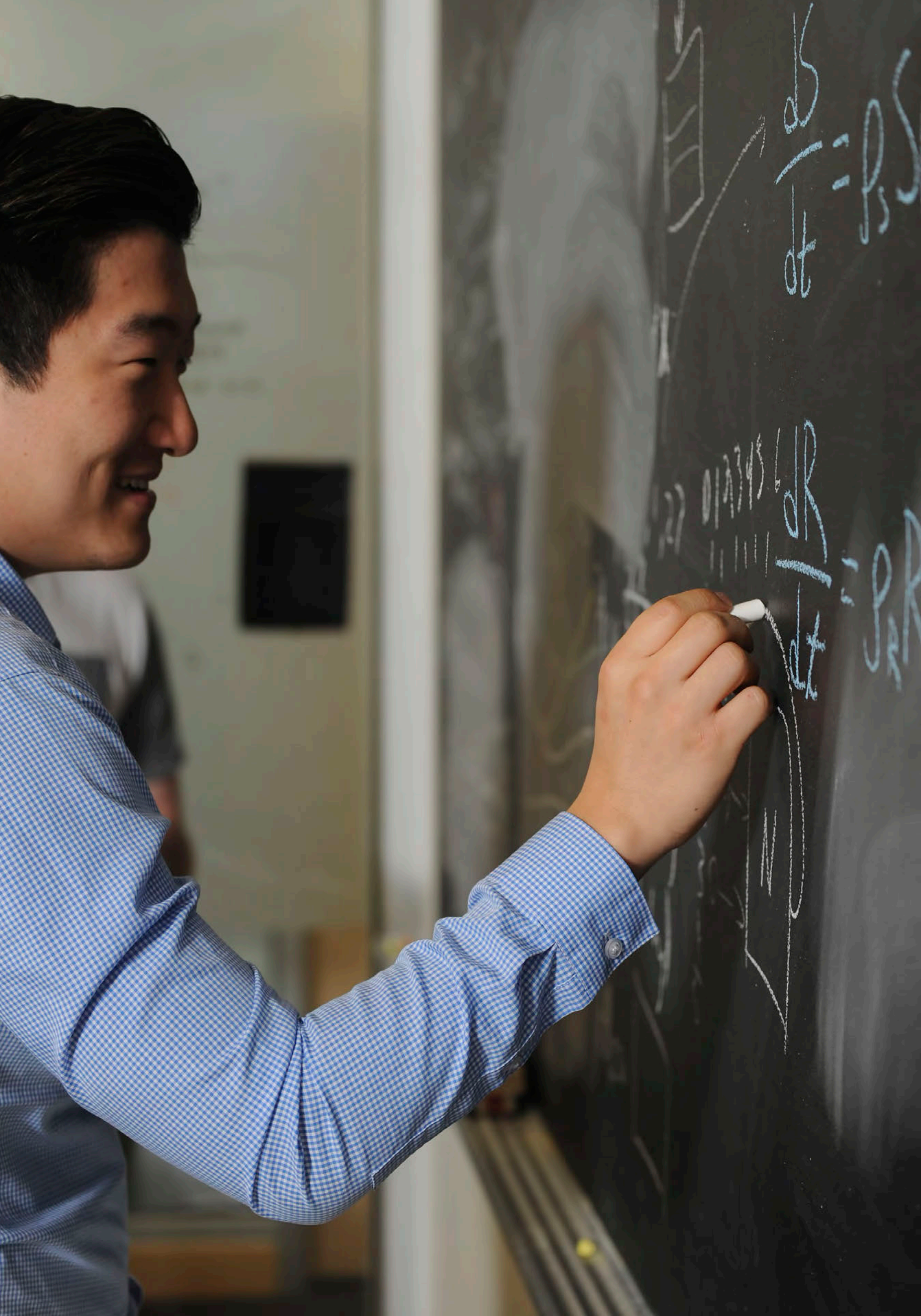


For decades researchers around the world have invested billions of dollars searching for the miracle drug that will “cure” cancer. A noble endeavor, but even if it were found today it could take another 15-20 years to bring it to market. **That’s why Moffitt Cancer Center is courageously leading a major shift designed to help cancer patients today.** You see, it used to be that cancer called the shots. Which meant all too often, those of us dedicated to fighting cancer found ourselves reacting to it instead of anticipating what it might do next. **Not anymore. Introducing the Center of Excellence for Evolutionary Therapy.**

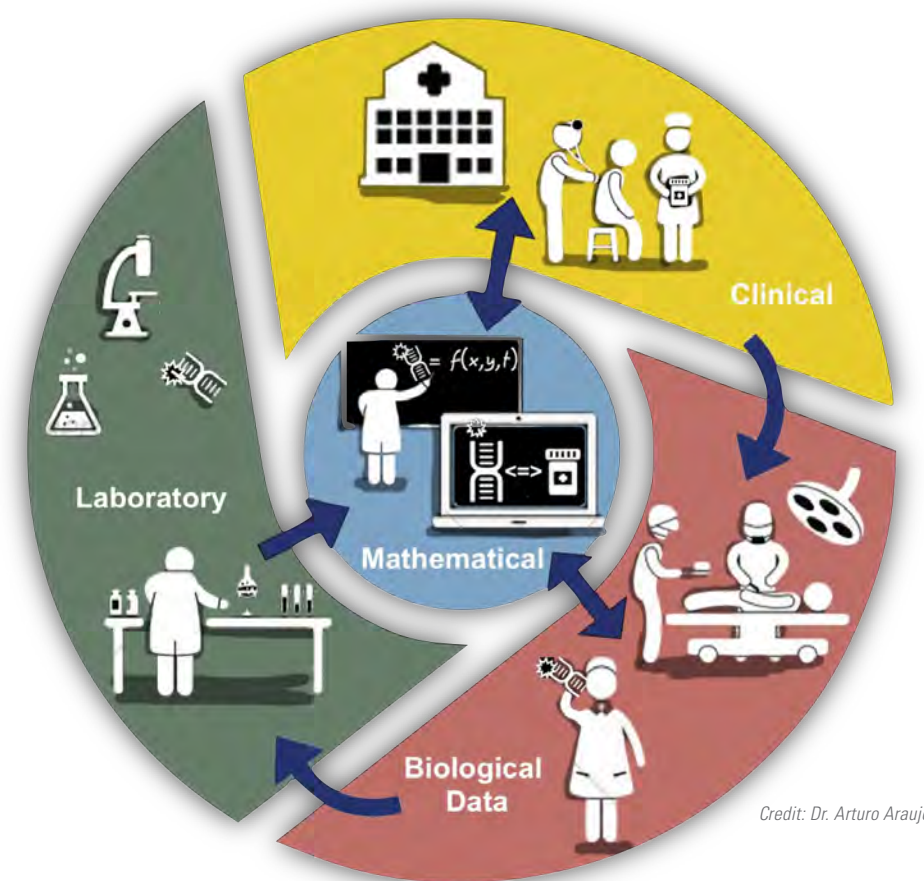
“To develop and deploy the next generation of truly personalized cancer therapy, through the integration of predictive mathematical models, patient data and evolutionary principles.”

Today, Moffitt Cancer Center is using predictive modeling, sophisticated diagnostics and evolutionary principles to proactively create a personalized treatment plan. Now we are treating a tumor to actually direct the way it will evolve—and ultimately shrink. **Call it a revolution – or a sea of change.** The truth is, we are getting in front of the curve and dictating what happens next. All to extend our patients’ lives, ensure a better quality of life with fewer side effects, and lower drug costs.

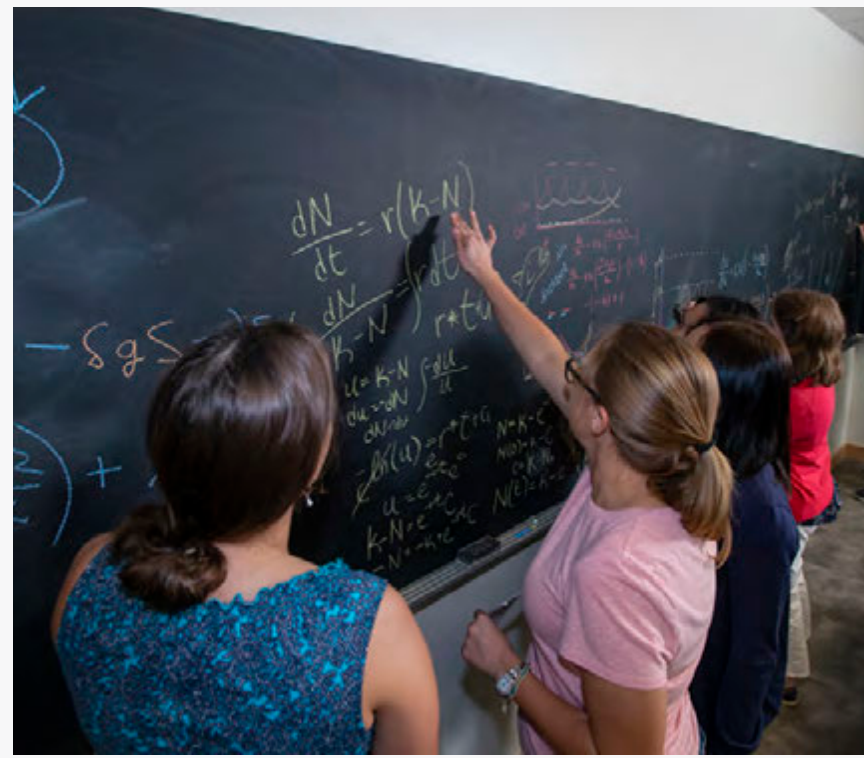
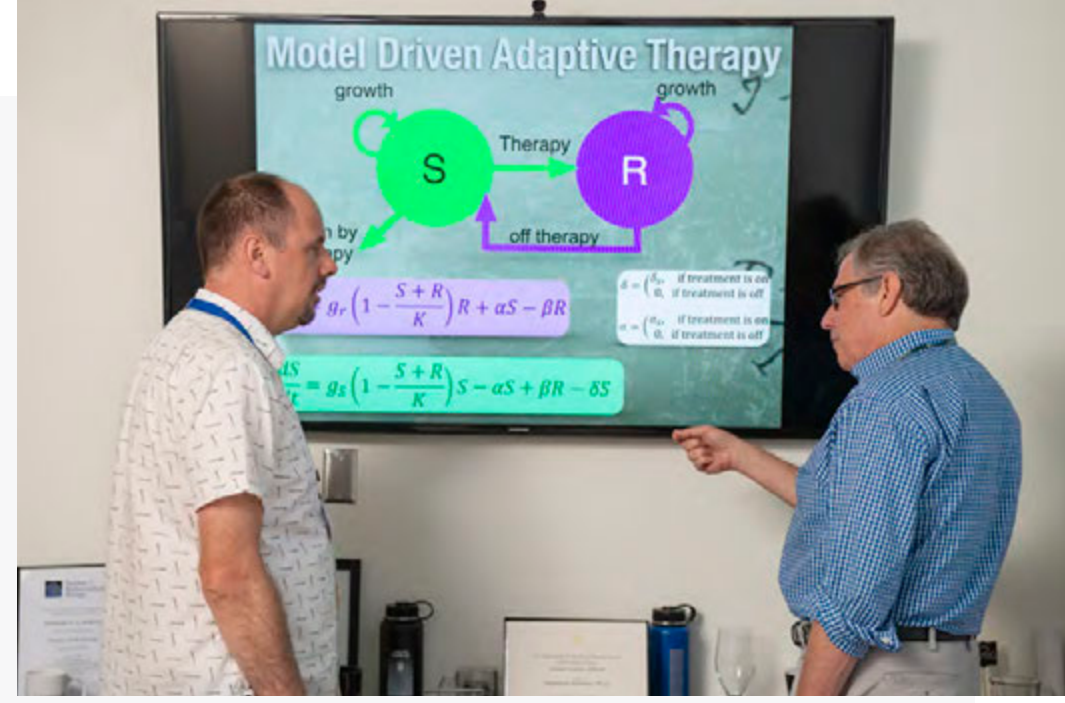
Directing
a tumor's path.
This is the
game-changer.

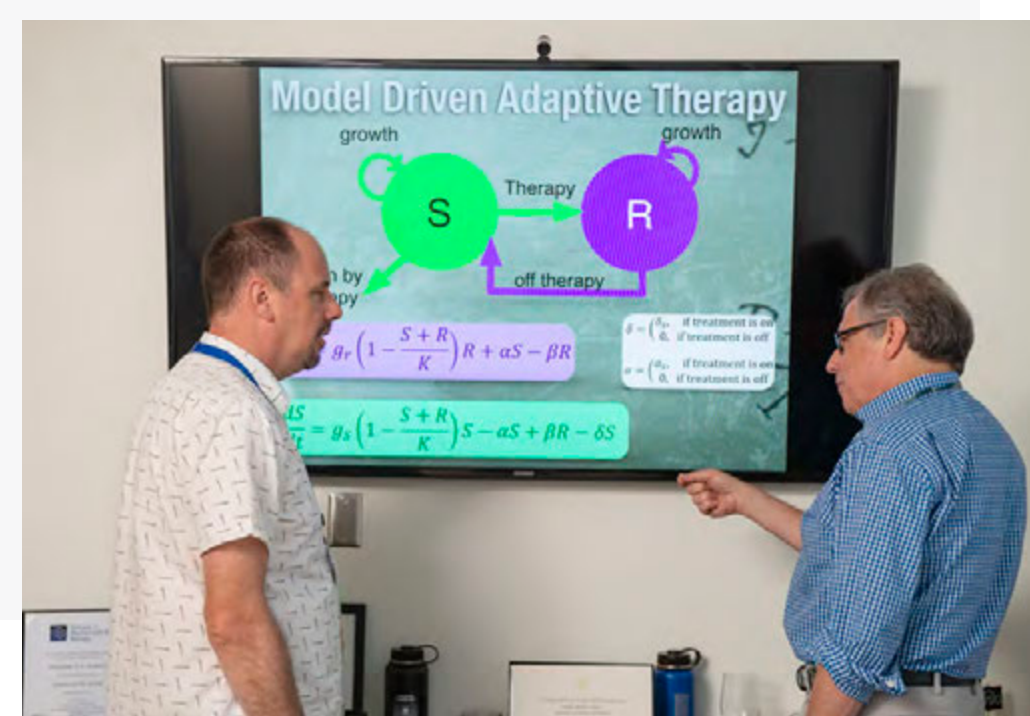
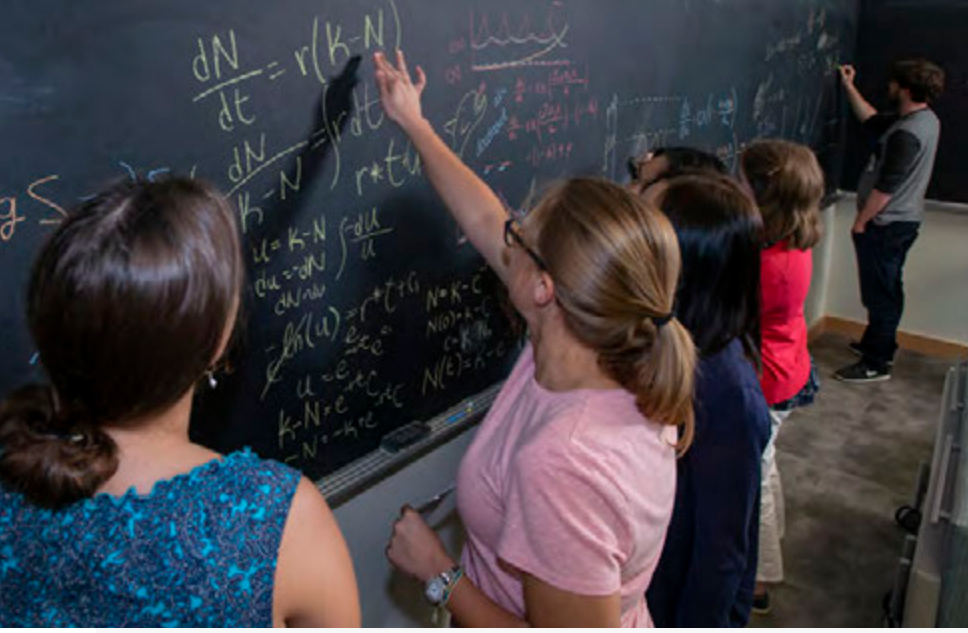


Outsmarting cancer means being a step ahead of it—and responding quickly no matter what happens next. Moffitt is pioneering a new way of fighting cancer through evolutionary therapies. **This is the brave new world of continuously personalized medicine, and thanks to the courage to look at things differently, we're currently the only center in the nation that can do this type of work.** In fact, Moffitt is the only cancer hospital in the world with specialists in evolutionary biology and mathematical oncology, cancer biologists, computer scientists and data experts, all working in concert to anticipate a tumor's path. **We thrive on Team Science.**



Now we can analyze a tumor in real-time. Think of it as a movie of the life of a tumor, not just a snapshot. Allowing us to treat it in advance, forcing the tumor's adaptive capability to evolve in the direction we want. We can then check our results and change our therapy if necessary to attack it more strategically. **We now have the confidence to give patients the minimum therapy needed for maximum results** – versus the traditional approach of giving them the most they can tolerate. This is the human side of cancer care, improving our precision to reduce their discomfort and give them the best chance to live life on their terms. This is continuously personalized medicine, and Moffitt is leading the way.

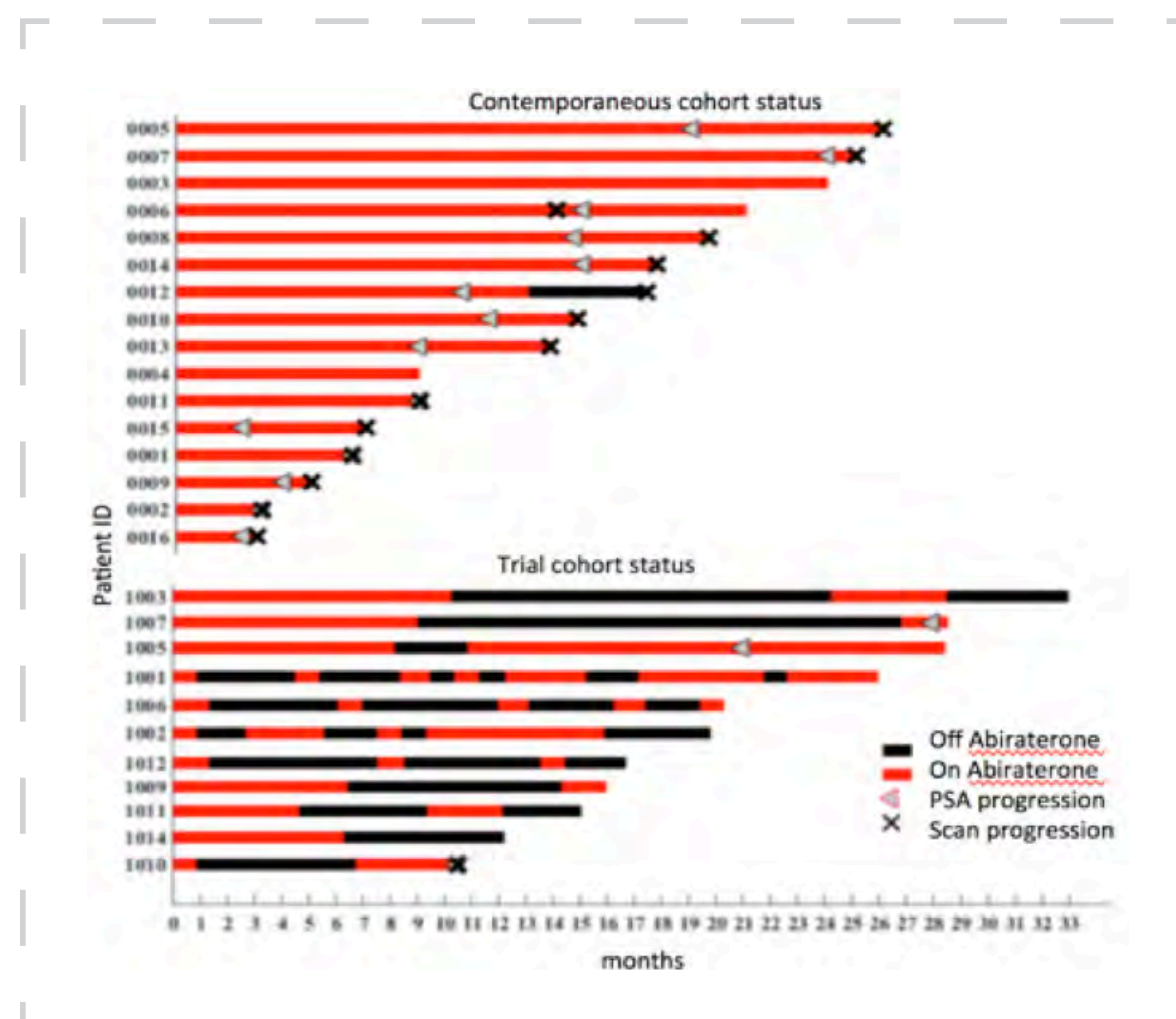




Standard Therapy vs. Adaptive Therapy

Moffitt's evolving approach to attacking tumors is proving itself with promising results. Consider metastatic prostate cancer, in which patients receiving abiraterone therapy are given the drug continuously. After a rapid initial response, the tumors invariably become resistant and begin to grow again despite continued therapy. In the figure below, the top cohort of 16 lines shows the outcomes of 16 patients receiving this standard therapy. All but two had PSA increases (triangles) and evidence of tumor regrowth on scans (x's) within 26 months. **As a result, we developed a mathematical model of resistance to develop an adaptive therapy algorithm that's being applied in a Moffitt clinical trial.**

This highly personalized approach administers or withdraws the drug based on the patient's changing PSA levels. The delivery varies highly since each person's tumor has unique dynamics. Standard therapy ignores this variation—but we use it to our advantage. **Adaptive therapy is already extending lives.** As can be seen in the lower cohort in the figure, the ongoing trial has already produced a significant improvement in outcomes for 11 patients. Only one of 11 has shown radiographic progression (x) to date, and the average progression-free survival surpasses that of the standard cohort. In addition, the cumulative drug dose was reduced by over 50%, which correlates with increased quality of life and decreased drug costs. Call it a win-win-win situation.





Better prediction demands better patient data.

At Moffitt, staying ahead of cancer means having every resource possible to predict what it will do next. Collecting data is crucial for successful implementation of evolutionary-based therapies. Our Center of Excellence for Evolutionary Therapy combines computational informatics and mathematical modeling, allowing us to deliver the right therapy at the right time. Every new tool that allows our oncologists to analyze tumors with greater precision means we can bring lifesaving therapies to our patients sooner.



The Pesticide Analogy

The “highest dose possible” approach doesn’t work for all tumors. This can be explained through the principle of competitive release. Consider chemical pesticides. When the highest dose is used, those insects that are sensitive to the insecticide are killed. But some are able to survive because of already existing resistance, and with the disappearance of competitors, they’re able to multiply and generate a population that no longer responds to the pesticide. At Moffitt, it’s becoming clear that existing resistant tumor cells can respond similarly following treatment. Which points to using adaptive therapy based on the tumor’s response to the previous drug administration, to avoid the complete outgrowth of resistant cells.

A lifesaving mission we can all get behind.

Our goals are ambitious. Through the work of the Center of Excellence for Evolutionary Therapy, Moffitt's efforts will lead to the development of immunological therapeutics, novel prevention strategies and targeted therapies.

But brilliant doctors, researchers and scientists won't be enough. It takes the philanthropic support of those who possess the resources to help us change the odds. With that support, we'll be able to expand our focus on translational research into non-melanoma skin cancers that are, to this point, so little understood. Moffitt scientists face a shortage of medically helpful treatments identified by genomic analysis. This is a major roadblock to developing more effective therapies for non-melanoma skin cancers. The goal is to identify and attack these cancers where they are most vulnerable to treatment.

Testing novel combination therapies is another research thrust. Our researchers are performing rigorous testing of potential drug combinations along with immunotherapy and radiation therapy, to ultimately advance the most promising therapy combinations to an early phase clinical trial. Prevention strategies are also being studied. Moffitt is bringing the power of genomics and proteomics to advance chemoprevention into the molecular age, in much the same way cancer therapy has been revolutionized. And understanding the origins of all skin cancers will dramatically change how we conceptualize the earliest steps in the development of cancer. The goal is to be able to map out novel paths leading to effective therapies and chemoprevention. **Critical research into melanoma and other skin cancers is where it all starts. Without it, we will come no closer to understanding this deadly disease. Without it, we will not find a cure.**





Be a partner in groundbreaking cancer research.

The Moffitt Foundation secures funding from a variety of philanthropic sources including individuals, foundations, community groups, corporations, estate gifts and through special events.

Funding is critical to fulfilling the mission. **New methods must be developed to redesign the way clinical trials are conducted in order to expedite the pace of a cure.** It's imperative that we also identify further environmental, ethnic and genetic risk factors that raise the odds of developing cancer—so more precise strategies of prevention can be designed.

Why invest?

You want to see your donation make a direct, tangible impact at Moffitt. We believe our Center of Excellence for Evolutionary Therapy creates an incredible opportunity to effect lifesaving results. Here's the value of your support:

- Drives innovation in new technology, enabling our specialists to further innovate promising new therapeutic approaches for cancer diagnosis and treatment.
- Mobilizes an established team of renowned researchers and physicians in radiology and pathology as they advance the infrastructure support needed to optimize the Center's efforts.
- Facilitates the collaboration among Moffitt specialists in evolutionary biology and mathematical oncology, computer science and data analysis.
- Revolutionizes personalized cancer care through mathematical model-driven clinical trials, precision pathology and radiology and molecular imaging trials, extending the lives of cancer patients in Tampa, nationwide and across the world.
- Accelerates the development of cost-effective evolutionary therapies for cancer treatment and diagnosis, early detection and cancer risk assessment.

Be a partner
in the
transformation
we're pioneering.



We know your desire to support important cancer breakthroughs hinges on seeing results. **You can ensure that impact by supporting our Center of Excellence for Evolutionary Therapy. As a donor, your courage to invest in Moffitt is rewarded by helping us continue to develop technologies and treatments that improve diagnosis and extend even more patients' lives.** With your generous gift, we'll have more of the resources needed to relentlessly take the fight to cancer. Outsmarting it at every turn. **This is transformational work. Be part of the story.**

YOUR COURAGE INSPIRES OURS.

Anything is
possible when
we put our
minds to it.

And Moffitt has two of the best minds working every day to stay ahead of cancer.

Dr. Alexander Anderson and Dr. Robert Gatenby are co-founders of the Center of Excellence for Evolutionary Therapy. Together they are putting mathematicians alongside biologists—a game-changing strategy to better understand and ultimately control the progression of tumors.



Dr. Alexander Anderson, PhD

At a very young age, Dr. Anderson became interested in the use of mathematics to understand the world around him. Today he believes it can give Moffitt researchers the tools needed to understand cancer. He leads a team of scientists who are working to devise better treatment options for patients. Precision comes from using mathematical models to predict the path of the cancer's growth, then recalibrating and retesting the models after the first round of treatment. Making adjustments until the best therapy is determined.



Dr. Robert Gatenby, MD

Certain personality traits are critical in keeping cancer on the run. Persistence and stubbornness are two of them, part of the basic makeup of Dr. Gatenby. Understanding the unpredictability of cancer, he pushed to create the Center of Excellence for Evolutionary Therapy, using mathematical models and computer simulations to better understand drug resistance to cancer. Dr. Gatenby believes Moffitt has the size and nimbleness to be a worldwide leader in tomorrow's most precise and effective treatments. We couldn't agree more.

You're Part of Our Team

As your partners in philanthropy, our team of gift officers is here to keep you informed, connected, and to help you reach your philanthropic goals. There are many ways you can give to Moffitt and help save lives today.



From left to right:

Keiran Smalley, PhD Director, Melanoma and Skin Cancer Research Center of Excellence

Eric Haura, MD Director, Lung Cancer Center of Excellence

Anna Giuliano, PhD Director, Center for Immunization and Infection Research in Cancer

Alexander "Sandy" Anderson, PhD Director, Center of Excellence for Evolutionary Therapy

If you have questions about donating, or would like to learn more about your options for making an impact, please contact our team of gift officers at The Moffitt Foundation:

1-800-456-3434 ext.1403 | FoundationInfo@Moffitt.org | Moffitt.org/Give

FLORIDA IS THE OFFICIAL PLACE OF BUSINESS FOR THE MOFFITT CANCER CENTER FOUNDATION. A COPY OF THE OFFICIAL REGISTRATION AND FINANCIAL INFORMATION MAY BE OBTAINED FROM THE DIVISION OF CONSUMER SERVICES BY CALLING 1-800-435-7352 TOLL-FREE WITHIN THE STATE, OR ONLINE AT WWW.800HELPFLA.COM. REGISTRATION DOES NOT IMPLY ENDORSEMENT, APPROVAL OR RECOMMENDATION BY THE STATE. FLORIDA DEPARTMENT OF AGRICULTURE & CONSUMER SERVICES REGISTRATION NUMBER CH-4675. NO PERCENTAGE OF CONTRIBUTIONS IS RETAINED BY A PROFESSIONAL SOLICITOR; MOFFITT CANCER CENTER FOUNDATION RECEIVES 100% OF ALL DONATIONS. YOUR GIFT IS TAX-DEDUCTIBLE TO THE EXTENT ALLOWED BY LAW.

