



Humans have battled cancer for as long as we've existed. The earliest recorded use of term “cancer” dates to Hippocrates, the Greek father of medicine, in the 4th century BC. It's a history of triumph followed by tragedy, as promising breakthroughs failed to deliver cures.

One in two men and one in three women will get cancer. We have spent \$300 billion fighting this battle over the past forty years. The cost of this disease in human suffering is immeasurable.

As a result of these efforts, half of all cancers are now treatable with chemotherapy, radiation, or surgery—the rest will kill you.

Progress has been slow to materialize. Yet recent discoveries have shown that the cure we've been looking for may have been inside us all along.

It's called immunotherapy.

The immune system is already capable of distinguishing self versus non-self. It's capable of fighting viruses and recognizing highly mutated cells. So it should come as a surprise to no one that the immune system has been fighting cancer all along.

But radical new technologies called cancer immunotherapy can not only augment the immune system's ability to fight cancer, they can harness those capabilities to turn the immune system into a cancer-killing machine.

And unlike traditional treatments where the threat of recurrence looms large, immunotherapy is a durable treatment—meaning that when patients emerge from this battle, they've likely won it for life.

The Parker Institute unifies the world's leading scientists and research centers to accelerate breakthroughs in cancer immunotherapy. We know the challenges impeding progress and preventing scientific discoveries from becoming actual treatments in actual patients. We provide

the framework, technology, and resources needed, and are relentlessly focused on ensuring that cancer need not be a death sentence for anyone.

Like you, we can imagine in our dreams a world without cancer. Success doesn't mean that we'll never have to worry about cancer again. It means we won't have to fear it.

MISSION STATEMENT

To enable real collaboration,
accelerating the most
ambitious research to deliver
new immunotherapies
engineered to save lives.

GOALS

Discover the next generation of immunotherapies

We focus on asking and pursuing the most important questions that are holding us back. And seek their answers no matter how long-term, ambitious, or risky the pursuit.

Provide all the resources necessary for success

We provide researchers with the funding, resources, operating frameworks, data, and technology they need to accelerate breakthroughs in cancer immunotherapy.

Coordinate, cooperate, collaborate

We are a deep network of leading cancer scientists, research centers, and industry partners to remove barriers to major breakthroughs.

Make science more efficient

Our model can be replicated and adapted by others to accelerate advances across medical research.

Stand resolute in the face of challenges

We combine science, capital, public policy, philanthropy, and private sector partners in order to address the problem holistically.

Deliver cures for everyone

We are committed to reducing cancer to a manageable disease with readily affordable and available treatment around the world.



What is Cancer Immunotherapy?

Your body's immune system is hard at work, always. Protecting you from the countless threats that surround you: viruses, bacteria, parasites. Once your immune system identifies something as harmful and “not you,” it is relentless in eradicating it. Cancer cells are full of mutations, just like virally infected cells. So if the immune system is so good at recognizing mutations, what's stopping it from killing cancer?

Cancer is clever. It tricks your immune system into thinking it belongs—that it's you. So your immune system doesn't attack it, and the cancer cells are left to grow and multiply—that is, unless science lends a helping hand.

Immunotherapy does just that. It takes the always-on defense of your own immune system and trains it to recognize cancer cells as the harmful things they are, and to kill them. Not once, not for a little while, but always, forever, ongoing—it is a breathtaking new hope in the fight against cancer.

Science has given us a way of harnessing the power of the immune system to fight cancer. By delivering reinforcements, retraining the troops, or providing new weaponry.

The Parker Institute focuses on three major approaches: cell therapies are the reinforcements, checkpoint inhibitors are the military advisors, and immune enhancers are the advanced weaponry.

T cells are the immune system's killing machines. In cell therapies, the T cells are removed from a patient, genetically engineered to recognize and kill cancer, multiplied a billion-fold, then put back into the body.

These engineered T cells not only kill cancer, they're a standing cancer-killing army on guard in your body, constantly ready to attack again and again.

Immune checkpoints stop your body from attacking itself. Your body has natural “brakes” on the immune system to prevent it from overreacting. But cancer hides behind these blockades, convincing your immune system that the brakes should stay on and immune cells shouldn't be activated. Checkpoint inhibitors release these brakes so your immune system can attack and kill the cancer.

Immune enhancers guide the immune system toward cancer cells. Using markers, specialized viruses, and other signals, these elaborate enhancers improve the immune system's ability to recognize and reject cancer cells.

These cancer immunotherapies are the first treatments complex and flexible enough to adapt alongside cancer, and ultimately overcome it.

Currently, immunotherapy is a relatively new treatment platform, in line behind other “traditional” cancer therapies in the hierarchy. It's used as a last resort, once other therapies have reached the end of their effectiveness. Unfortunately, chemotherapy and radiation ravage the body's immune system. So it's a lot to ask, at the very end, for a weak and battered immune system to take up the fight all on its own. Even with this disadvantage, immunotherapy has shown staggering results. Which raises the question: What would happen if immunotherapy was the first approach, rather than the last resort?

Key Types of Immunotherapy



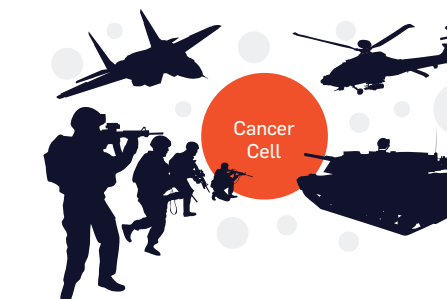
Cell-based Therapies

A patient's own immune cells are collected from the blood and engineered into a specialized army of cancer-fighting cells.



Checkpoint Inhibitors

Checkpoint inhibitors release the brakes that cancer cells use to stop the immune system from attacking them.



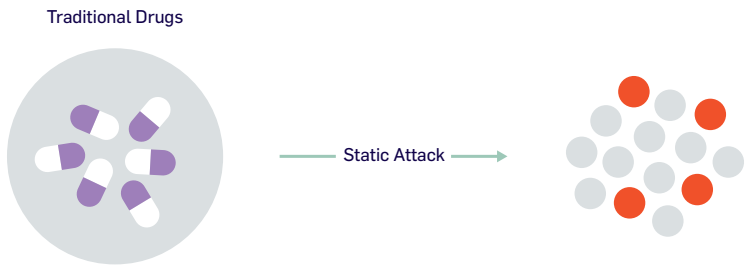
Immune Enhancers

Immune enhancers provide a series of signals and stimulants that foster a stronger, more robust immune attack on cancer.

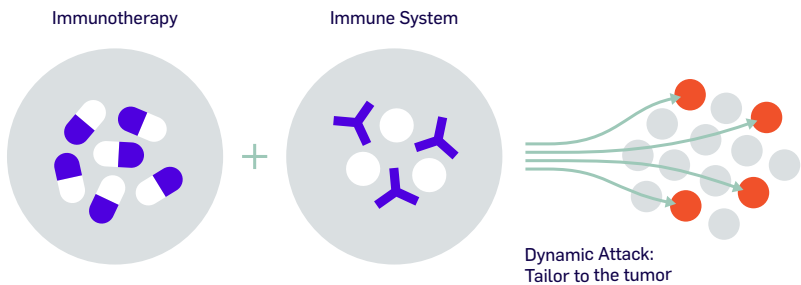
The Difference Is Durability
We've attacked cancer cells with brute force: cut them out with knives, burned them with radiation, poisoned them with chemotherapy, and targeted them with drugs. The results have been significant, but one major problem remains: the cancer often comes back, and it's learned how to evade the next attack. Traditional cancer therapies destroy the cancer only while they're administered, and they often harm the body along the way.

Cancer immunotherapy leverages your body's own defenses to treat cancer. A modern take on the old parable: Give a body a treatment and it's cancer-free for a moment. Teach a body to cure and it's cancer-free for a lifetime.

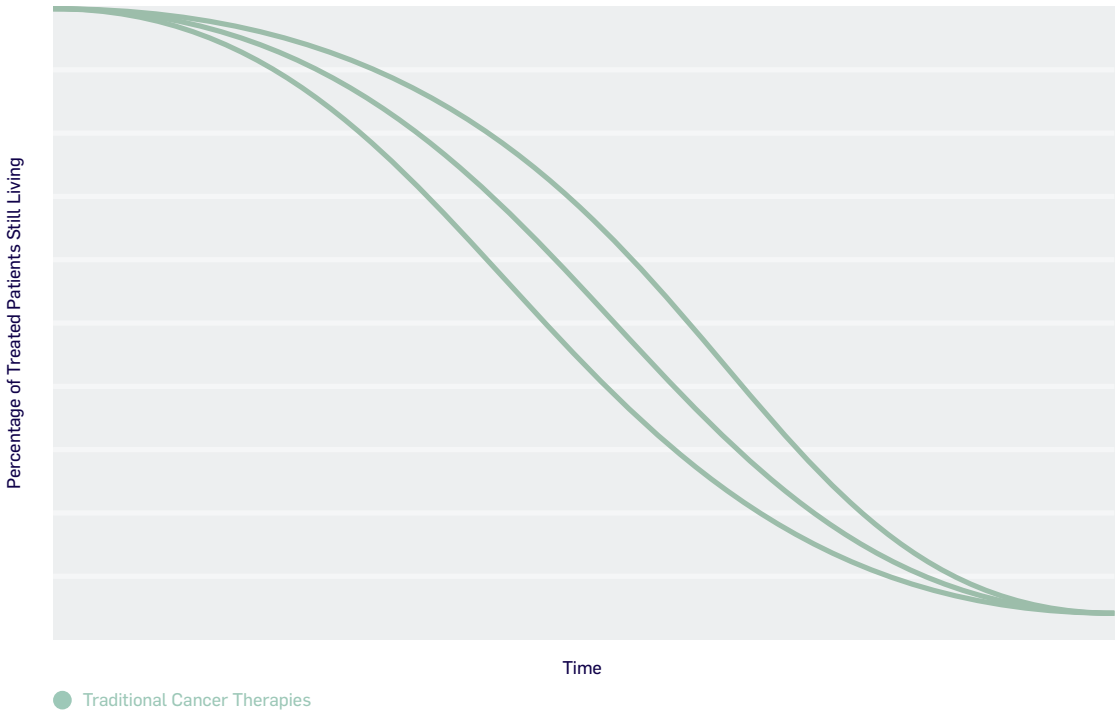
Traditional Drugs Target The Tumor



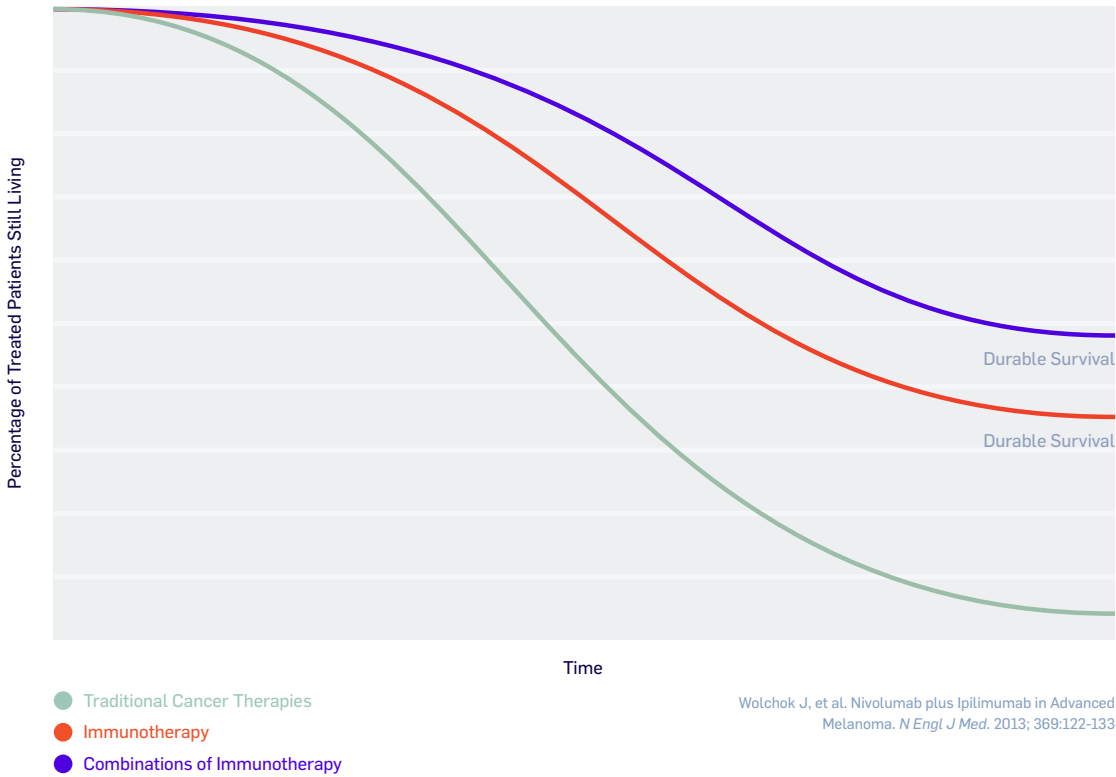
Immunotherapy Helps The Immune System Target The Tumor




Traditional Therapies



Immunotherapy





Above the water line
Fewer than 1% of cancer
patients are currently treated
with immunotherapy

The View from Below

The problem we face is immense, but so is the promise of immunotherapy. Only a tiny fraction—under 1 percent of cancer patients—are treated with this groundbreaking treatment. The Parker Institute will expand immunotherapy to far more patients, advancing our scientific knowledge, and saving many more lives.

There is still so much more to be done. We're just getting started.

Below the water line
13,500,000 cancer
patients are left out

Decades of Failing Cancer Research

Over the past forty years, billions of dollars and countless efforts have been spent on cancer research. Yet we still haven't found a cure, and survival rates have increased incrementally, at best. Why is this? Certainly, the science of cancer is complicated. But scientific complexity isn't the only explanation. The system itself is partly to blame. It has evolved to reward smaller discoveries and research done in isolation.

Even for researchers at the top of their field—bright scientific minds working at the most acclaimed cancer centers in the country—the process of applying for grants is an exhausting one. Anyone with an idea for a potentially groundbreaking cancer treatment who would like to begin work immediately will need to jump through some hoops.

First, they'll need funding, so they'll have to apply for a grant. But where research science is founded on having the freedom to explore ideas, even if they don't ultimately work, research grants tend to go to projects that are more likely to succeed, on shorter timelines, so funders see results. And institutions prefer researchers who bring in grant money and fund their own research. So researchers tend to avoid pursuing the most ambitious ideas. Instead, they focus on research that can more easily get funded.

And when they get the grant, additional obstacles slow their advance. Because researchers work on specific grants, within a specific institution, there's no easy way for them to collaborate with other researchers in the same field. No access to technologies, drugs, and data housed at other institutions that could accelerate their research. No opportunity to share their own

assets with others. And if their research has already been tried and failed, the results most likely went unpublished. So there's no way to know if they are wasting their time.

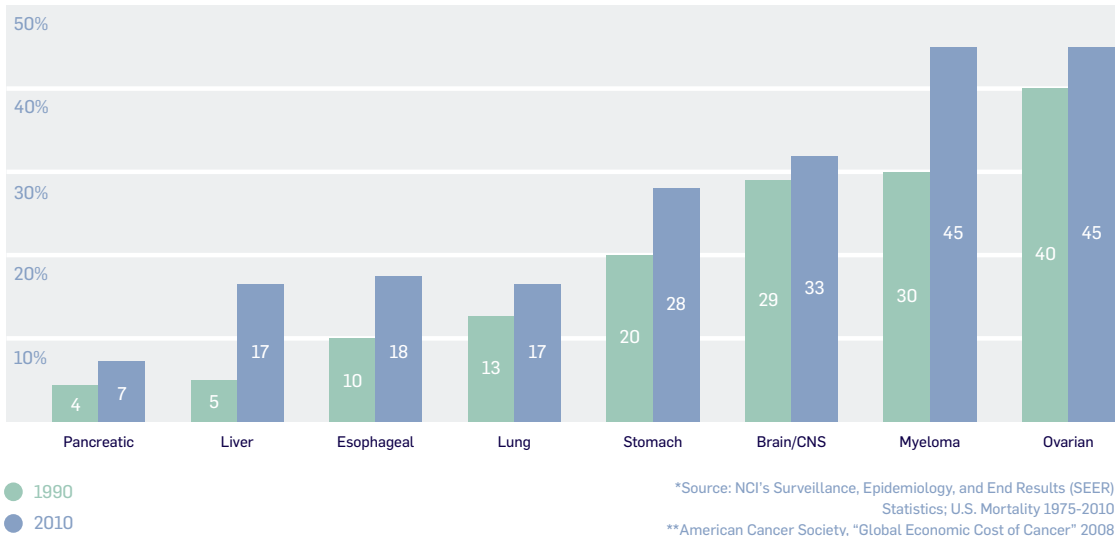
Should their research succeed and become relevant to patients, they'll pursue a clinical trial. But because cancer research focuses on extremely specific types of cancer, finding a sizeable pool of the right kinds of patients can be difficult, particularly within one institution.

All of this leaves scientists trying to do their very best work in circumstances that prevent them from getting the very best results.

The Parker Institute was designed—in collaboration with the world's leading researchers, doctors, and cancer centers—to remove barriers like these. To turn cancer research into real-world results, from the bench to the bedside.

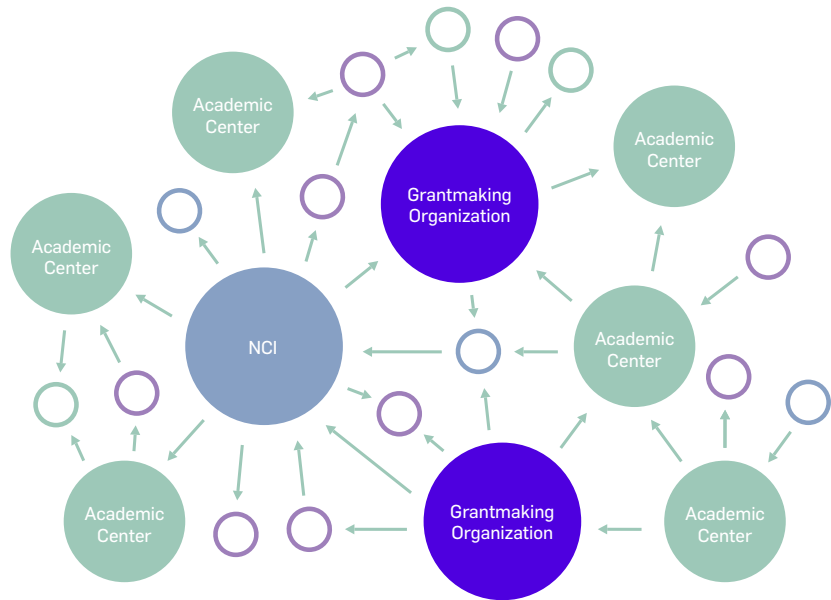
Too Little Progress

Percentage of Cancer Patients Surviving 5 Years*



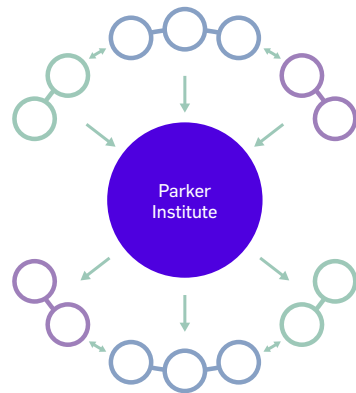
Traditional Grantmaking Model

Individual research proposals with no coordinated strategy
Small grants drive only incremental advances
No organized cooperation between research groups



Parker Institute Grantmaking Model

Scientific strategy designed by members
Funding to collaborative, cross-institutional teams
Greater flexibility on funding, risk-taking, and timeframes supports major breakthroughs



The Parker Institute Model

A New Model for Breakthrough Medical Research
The Parker Institute for Cancer Immunotherapy operates differently. We facilitate and accelerate cutting-edge cancer research and turn that research into real-life treatments for actual patients.

Empowering Scientists for Better Patient Outcomes
We’re here to build a system that serves scientists for the good of patients. That all begins with people. We recruit and empower extraordinary scientists in the fight against cancer, and we’re committed to training the next generation of those scientists.

Our leadership team is composed of the leading experts in the field, who together shape a common scientific agenda. The leadership team identifies the most urgent and important scientific problems in the field of cancer immunotherapy, and then works in teams to solve those problems.

Coordinate, Cooperate, Collaborate
Key to the Parker Institute model is sharing resources, research, and technology, and forging partnerships across the field. By combining forces with six of the nation’s top cancer research centers—MD Anderson, Memorial Sloan Kettering, Penn Medicine, Stanford, UCLA, and UCSF—the Parker Institute is able to

assemble a coordinated all-star team of the best scientists in the field of cancer immunotherapy. Then we empower them with the funding, technology, drug access, and administrative support they need.

For example, bioinformatics uses powerful new computing resources to let scientists gather, store, and analyze biological and genetic information. Solving “big data” problems and providing focused computational resources is critical in driving breakthroughs. And we are focused on attracting the best computer scientists to bring their expertise to bear on these problems.

Translating from the Bench to the Bedside
Our objective is to translate breakthrough research into actual treatments. Our work in the lab should inform our treatments in the clinic, and our experiences with patients should define our research priorities. We leverage research discoveries, apply those discoveries to real patients, and translate those results into marketable treatments that further support the research.

Partners



A Common Framework

Researchers have long talked about sharing, working together, breaking down barriers. What keeps it from becoming a reality is that each institution operates differently, based on its own internal rules, policies, and procedures. To address this, the Parker Institute and its partners create a common framework across the entire network, covering:

- *Standardization of data and procedures:* Common laboratory processes and standardized sample collection and tissue banking facilitate efficiency and interoperability across the entire network.
- *Intellectual property:* Our network centrally manages the administration of intellectual property. So a discovery by one research team can be shared, applied, and monetized across the entire network.
- *Clinical trials:* The unprecedented number of leading research centers and large number of patients means clinical trials can be coordinated with greater ease and lower costs.

An Evergreen Model

For scientists to concentrate on the hard work of discovery, a research lab needs a steady stream of funding. Few options exist: an endowment, relentless fundraising for finite grants, or partnerships with industry in exchange for the licensing of intellectual property. All these options are time-consuming and difficult, and none are evergreen. Our model is.

We will have a fundamentally different funding model: all revenue from licensed intellectual property flows directly back to the research priorities of the Parker Institute and its member sites. The fruits of innovative research are fully committed to pushing research further.

Experts at the Helm

Key to the collaborative success of the Parker Institute model is our structure of governance and coordination. The Parker Institute Scientific Advisory Board acts as a network of advisers available to leadership to review and refine research strategies. Our Scientific Steering Committee develops the scope of our research strategy and full portfolio of projects, and reviews all technological investment. The Technology Transfer Committee has representatives from the tech transfer offices at each center to oversee

the development and commercialization of the Parker Institute IP portfolio. The Strategic Advisory Group has deep expertise in crucial related industries.

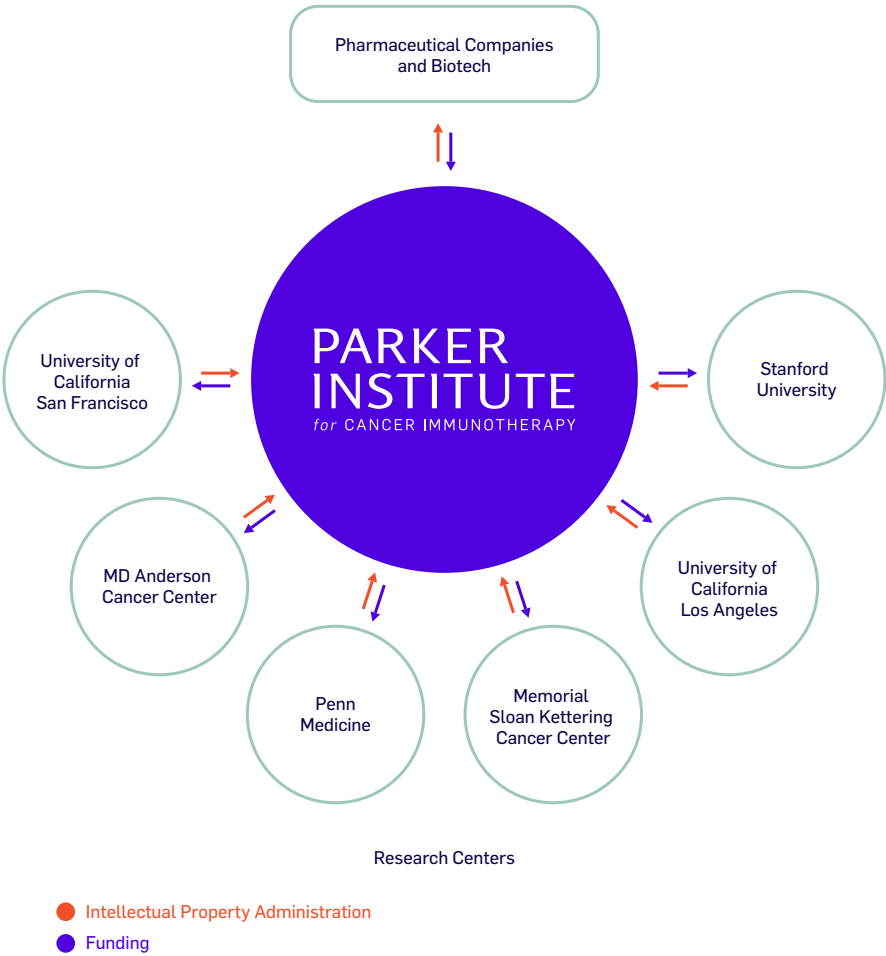
Broad Partnerships for Maximum Impact

The Parker Institute has forged partnerships with more than thirty key companies and nonprofits to share knowledge, systems, and data; harness the latest technologies and platforms; and connect more clinicians and patients.

Shared Resources of the Parker Institute

- Drugs, Technologies, and Partnerships
- Data Sharing and Collaboration Platform
- Bioinformatics Team
- Science and Technology Research
- Shared Research Tools and Infrastructure
- Clinical Trials Management
- IP Development and Licensing

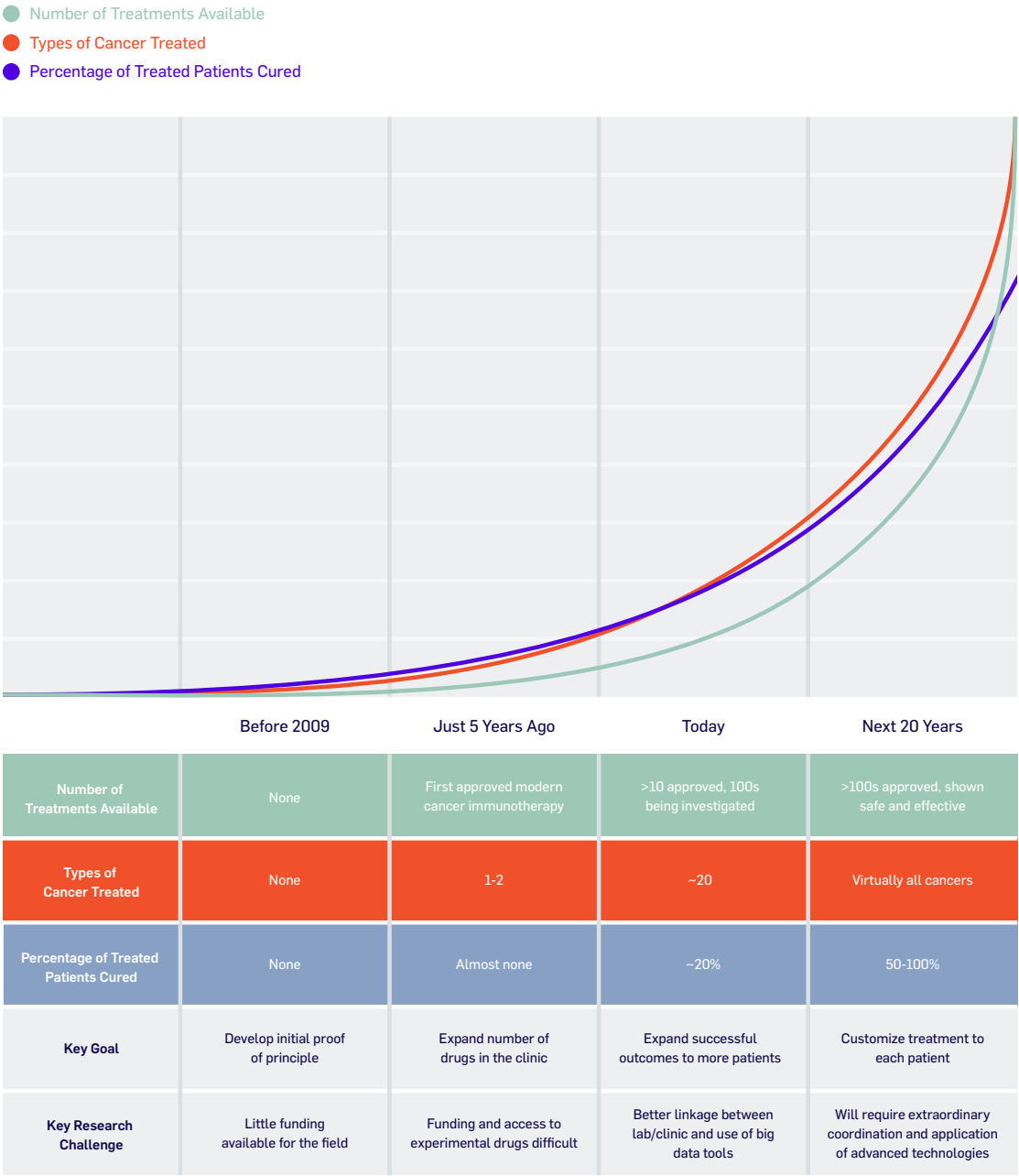
Removing the IP Barrier

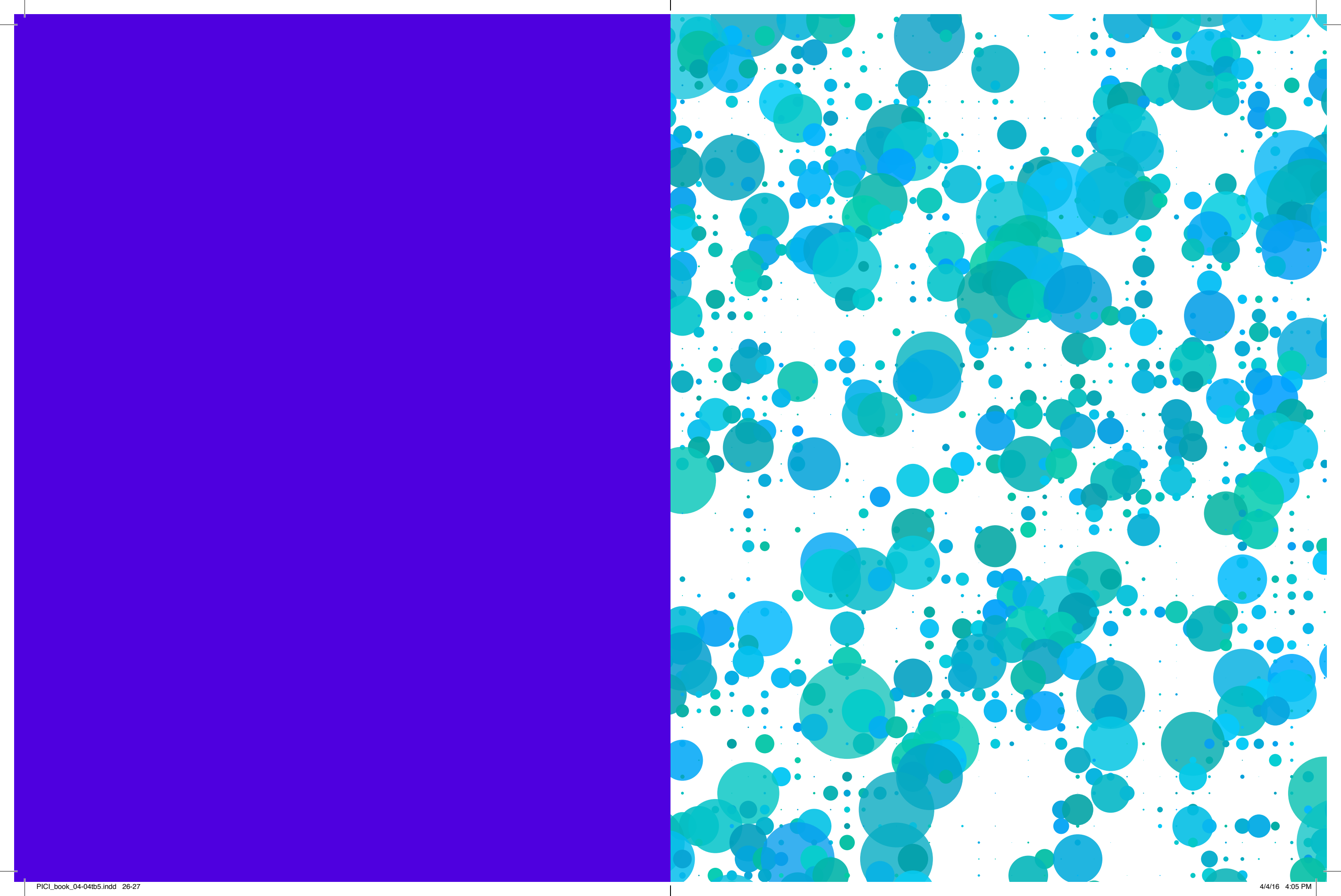


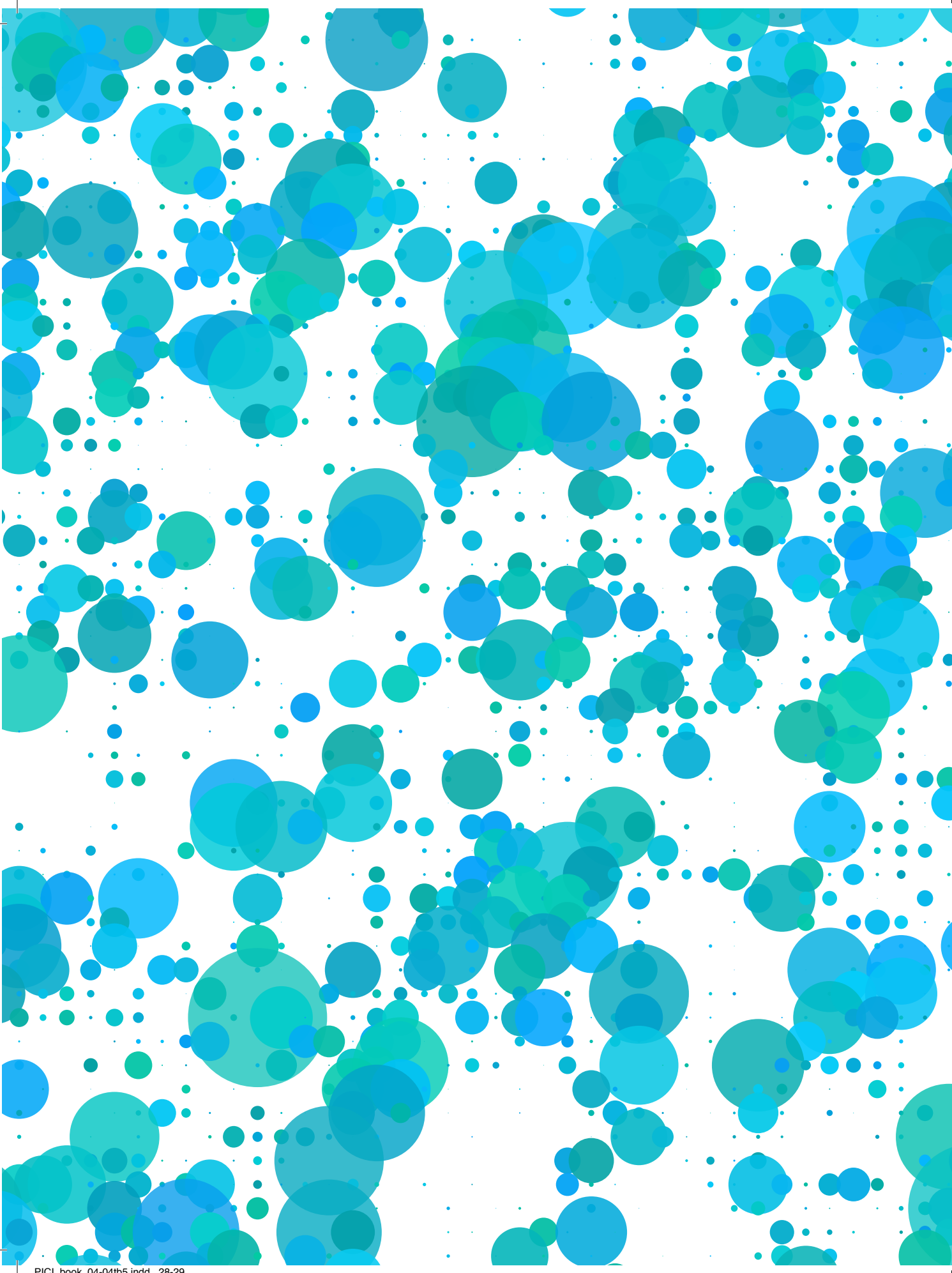
Unlocking This Promise is Complex



Availability and Effectiveness of Immune System-driven Treatments for Cancer







ACADEMIC PARTNERS

MD Anderson Cancer Center
Memorial Sloan Kettering
Penn Medicine
Stanford
UCLA
UCSF

INDUSTRY PARTNERS

Abbvie	GRAIL
Affymetrix	Gritstone
Agenus	Hudson Alpha
Amgen	Juno Therapeutics
Appexigen	Kite Pharma
Becton Dickinson Biosciences	Merck
Berkeley Lights	MedImmune
BioLegend	Moderna
Bristol-Myers Squibb	Neon Therapeutics
Caperna	Pfizer
Celgene	PsiOxus
Cell Design Labs	Roche-Genentech
Emulate	Sage Bionetworks
Fluidigm	StemCentrx
GlaxoSmithKline	

PHILANTHROPY PARTNERS

Broad Institute
Caltech
Cancer Research Institute
FasterCures
Friends of Cancer Research
Stand Up 2 Cancer

A person with a backpack stands on a rocky mountain peak, looking out over a vast, hazy valley. The scene is captured in a monochromatic purple hue. The person is positioned on the left side of the frame, looking towards the right. The valley below is filled with rolling hills and a winding river, with a small town visible in the distance. The sky is a uniform light purple.

The View from Above

The Parker Institute sits at the center of the cancer immunotherapy field—in constant dialogue with researchers in the lab and in clinical trials, and with biotechnology and pharmaceutical companies. This means we can nimbly direct funds, share data and research findings, and build or license necessary technology. From this vantage point we can spot opportunities for collaboration and make them happen quickly.

The Grant

We start by asking our researchers the question: What if you had every resource you needed to pursue your boldest ideas? To fulfill that promise, we launched the Parker Institute with a \$250 million grant, the largest single grant in the history of cancer immunology. We invest big, we move fast, and we stay focused. This allows us to remove the impediments to scientific breakthroughs that prevent game-changing improvements in patient outcomes.

This requires an unprecedented level of collaboration and commitment among the field’s best. Over three hundred of the nation’s top scientists, forty research labs, and six of the country’s leading cancer centers—MD Anderson, Memorial Sloan Kettering, Penn Medicine, Stanford, UCLA, and UCSF—have joined the Parker Institute to help accelerate and exploit breakthrough advances in immunotherapy.

At a Glance

\$250 million grant
6 centers
40+ labs
300+ research scientists

Initial Research Focus

Cell-based Therapies

In the cell-based therapies known as CAR T (for chimeric antigen receptor T cell) therapy or TCR (T cell receptor) therapy, the immune system’s main anti-cancer warriors, T cells, are harvested from a patient’s blood and genetically engineered to target proteins or peptides abundant in a tumor. Billions of these modified cells are reintroduced to the patient’s bloodstream, where they seek out and attack tumors. The Parker Institute will develop laboratory and clinical studies to identify the pathways and factors that modulate T cell activity and survival, and develop a new generation of more effective T cell therapies.

technologies to identify proteins as novel antigens for tumor targeting, and then develop vaccines and CAR T/TCR therapies against these targets. This could improve the effectiveness and broaden the applicability of vaccines and cellular therapies to many additional types of cancer.

Checkpoint Blockade Non-responder

Biomarkers & Therapeutics

Checkpoint inhibitor drugs “release the brakes” that the immune system has in place to prevent overreactions so that the immune system can attack cancers. First-generation drugs that target CTLA-4 and another checkpoint molecule called PD-1 have achieved unprecedented responses in melanoma, lung, and kidney cancers, and are being developed for virtually every other type of tumor. The Parker Institute team will research novel pathways and synergistic combination treatments to improve patient response rates and expand the treatment to more types of cancer.

Tumor Antigen Discovery

Immune-boosting drugs include vaccines, therapeutic viruses, and substances designed to stimulate the immune system to recognize and more potently attack a patient’s tumors. The Parker Institute team will use advanced DNA sequencing, antigenic peptide discovery efforts, and immune monitoring

An Evergreen Business Model

Imagine a self-sustaining organization where all revenue from licensed intellectual property flows directly back to the research priorities. Imagine research entities and grantmakers all on the same team. Imagine a funding model that fully facilitates breakthrough research and high-impact ideas.





















Parker Institute Leadership

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Colophon

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Cancer Immunotherapy

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Printers: Oscar Printing

Typefaces: Chronicle, Flama