Prostate Cancer Foundation
Curing Together.

# FOUNDATION BACKGROUNDER

**The Prostate Cancer Foundation (PCF) is the world's leading philanthropic organization funding and accelerating prostate cancer research.** Every 3 minutes a man is diagnosed with prostate cancer, and millions of men and their families are fighting the disease globally. Prostate cancer affects 1 in 9 U.S. men, making it the most common non-skin cancer in America. This means that a non-smoking man is more likely to develop prostate cancer than he is to develop colon, bladder, melanoma, lymphoma, and kidney cancers combined. In 2020 alone, it is estimated that nearly 192,000 men will be diagnosed with prostate cancer, and nearly 33,000 will die from the disease. An African American man is 76% more likely to develop prostate cancer than a Caucasian man, and more than twice as likely (2.2 times) to die from the disease.

**For more than two decades, PCF has demonstrated a firm commitment to saving lives and finding a cure for prostate cancer.** We have raised nearly $800 million and provided funding to more than 2,200 research projects at more than 220 cancer centers and universities in 22 countries around the world. As of year-end 2018, 84 cents of every dollar spent goes directly towards prostate cancer research. These funds resulted in 23 chemically-distinct, "first-in-field" anti-prostate cancer medicines in the pipeline, 17 team science awards funded, supporting 132 individual investigators. This research is pivotal to the development of new, life-extending therapies that will improve survivorship and quality of life for all men with prostate cancer.

**PCF is unique in its innovative approach to medical research funding.** PCF identifies the most promising research ideas and attracts brilliant individuals and teams of scientists, early in their careers, to PCF' s Research Enterprise. By channeling resources directly to the world's top scientific minds, PCF is able to cut through red tape, speed scientific breakthroughs and deliver new treatments to patients. PCF funds a variety of different kinds of projects that vary in focus, scope and duration. PCF Challenge Awards fund teams of scientists working on critical unmet needs for advanced prostate cancer. PCF Young Investigator Awards jumpstart research programs for early-career scientists and researchers. PCF researchers connect globally to exchange information and share scientific data in real time.

**Since inception, PCF has been a pioneer in new drug development, providing key funding for FDA-approved treatments that improve survivorship.** Having recruited more than 5,000 of the best physician-scientists worldwide, many of the most important discoveries in the fight against prostate cancer since 1993 have resulted from PCF funding or coordination. Over its 26-year history, PCF-funded research has helped bring 10 precision anti-prostate cancer medicines to market as well as funded countless studies to help identify which patients might benefit from which treatments. Thanks in large part to the work of PCF researchers, between 2011 and 2018, the number of drugs approved to treat prostate cancer doubled—from just 6 drugs approved in nearly 30 years to another 10 drugs approved in just 7 years. There are now over 20 drugs approved by the FDA for

treatment of prostate cancer, with even more in the pipeline.

**By funding leading-edge research with innovative treatments now reaching patients, PCF has helped reduce the U.S. death rate from prostate cancer by more than 50%.** Without a doubt, the prognosis for men diagnosed with prostate cancer has never been more encouraging. Recent advances enable men with prostate cancer to live longer, more productive lives, and when detected early through routine physical exams and minimally invasive blood tests, prostate cancer is 100% treatable. Nearly 100% of men diagnosed with prostate cancer in the local or regional stages will be disease free after 5 years. Equally important is the fact that 4 genetic discoveries in prostate cancer now extend to saving lives in at least 18 other forms of cancer, including breast, myeloma, colon, lung, ovarian, melanoma, pediatric neuroblastoma, bladder, and thyroid cancers. Because precision medicine targets genes and not organs, these same therapies that help men with metastatic prostate cancer have been shown to be effective in 67 other forms of human cancer.

**By connecting patients, loved ones, care providers, and scientists to critical updates, new developments, best practices, and the latest news from the treatment pipeline, PCF provides hope for men diagnosed with prostate cancer.** PCF is dedicated to keeping the pace of scientific progress moving rapidly to ensure new discoveries for years to come. Eliminating prostate cancer in our lifetime is a possibility within reach, and the day when the disease becomes a manageable condition is closer than ever. PCF has become the model for other disease-research organizations and with your support, we will find a cure. **Curing together, we can change the future.**

For more information, please go to **pcf.org**.

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## ABOUT PROSTATE CANCER

Cancer of the prostate, a walnut-sized gland in the male reproductive system, is the second most common type of cancer in men, affecting four million men in the U.S. and an estimated 14 million men worldwide.

Prostate cancer occurs when cells in the prostate split, making new abnormal cells, which form a mass of tissue called a growth tumor. The disease usually grows slowly, often causing no symptoms while the cancer is in an early stage. However, if the cancer takes a more aggressive form, it can spread quickly and can be potentially life-threatening.

Men are twice as likely to develop the disease if they have a relative with a history of prostate cancer, and are four times as likely if they have two or more relatives with prostate cancer.

## PREVALENCE

- Worldwide, one in nine men will be diagnosed with prostate cancer in their lifetime[1]
- The National Cancer Institute estimates there will be nearly 192,000 new cases of prostate cancer and nearly 33,000 deaths from prostate cancer in 2020 in the U.S. alone
- In the U.S., a man is diagnosed with prostate cancer every 3 minutes
- Despite significant advances in diagnosis and treatment, a man dies of the disease every 16 minutes in the U.S.

## SYMPTOMS

Prostate cancer sometimes does not cause any symptoms at all until it is in an advanced stage, but some men may experience symptoms such as the following even at an earlier stage:

- Not being able to pass urine, weak flow of urine, urine flow starts and stops, pain or burning during urination, the need to urinate frequently (especially at night)
- Blood in urine or semen
- Difficulty having an erection
- Frequent pain in the lower back, hips or upper thighs

## SCREENING FOR PROSTATE CANCER

The question of screening is a personal and complex one. When to start screening is generally based on individual risk, with age 40 being a reasonable time to start for those at highest risk (genetic predispositions or strong family histories of prostate cancer at a young age). For otherwise healthy men at high risk (positive family history or African American men), starting at age 40-45 is

[1]http://www.cancerresearchuk.org/health-professional/cancer-statistics/statistics-by-cancer-type/prostate-cancer#heading-Zero

reasonable. In general, all men should create a proactive prostate health plan that is right for them based on their lifestyle and family history.

There are several testing options available. It is always best to discuss the best option with your physician.

### Prostate-Specific Antigen Blood Test (PSA)

Measures the level of PSA, a protein produced by the prostate, in the blood. An elevated PSA does not always mean cancer – the amount of PSA in the blood can rise naturally as men age or if problems with the prostate are present.

### Digital Rectal Exam (DRE)

During a DRE, a doctor inserts a gloved finger into the rectum and feels the prostate through the rectal wall to check for hard lumpy areas.

The PSA and DRE tests are not sufficient to diagnose prostate cancer, but they can catch the disease in its early stages even when no symptoms are present and can signal the need for a biopsy or additional testing.

## TREATMENT OPTIONS

There is no “one size fits all” treatment for prostate cancer. Your decision-making process will likely include a combination of clinical and psychological factors, including:

- The need for therapy
- Your level of risk
- Your personal circumstances
- Your desire for a certain therapy based on risks, benefits, and your intuition

For most men with newly diagnosed prostate cancer they should always be seen in consultation with a radiation oncologist and urologist. For men with more aggressive disease, or metastatic disease, patients should also have a consultation with a medical oncologist. It’s best to learn as much as possible about the many treatment options available and consult a physician about the best option.

### Active Surveillance

Active surveillance involves patients receive regular check-ups, periodic PSA blood tests, clinical exams and biopsies (if needed) to closely monitor for signs of progression without removing the prostate.

### Radical Prostatectomy

Radical Prostatectomy is a surgical procedure that involves the removal of the entire prostate gland plus some surrounding tissue.

### Radiation

Radiation involves the killing of cancer cells and surrounding tissues with directed radioactive exposure utilizing external beam radiation or brachytherapy. Xofigo, a radiopharmaceutical drug, is used to shrink metastatic bone tumors in men suffering from advanced forms of the disease.

### Hormone Therapy

Hormone therapy is also referred to as androgen deprivation therapy (ADT). It works to reduce androgen levels (male hormones) in the body as they stimulate prostate cancer cells to grow. Xtandi is an ADT drug that can be administered in oral capsules. It is often used to treat men

with prostate cancer that no longer responds to testosterone-lowering medical or surgical treatment and has spread to other parts of the body.

## Chemotherapy

Chemotherapy uses anti-cancer drugs that are either administered by injection or given by mouth to destroy cancer cells and prevent them from growing and dividing to make more cancer cells.

- Taxotere – the first chemo drug that is administered in most cases; in prostate cancer, chemo drugs are typically used one at a time
- Jevtana – the next-line chemo drug that is most often prescribed if Taxotere does not work, or stops working
- Zytiga **–** a hormone-based chemo that is used to treat metastatic castration-resistant prostate cancer

## Immunotherapy

Immunotherapy is a biologic therapy designed to boost the body's immune system to fight the cancer. Provenge is a cell-based immunotherapy generated from one's own immune cells and can be used to treat patients with advanced prostate cancer.

## Monoclonal Antibodies

Monoclonal Antibodies are made to target and destroy only certain cells in the body, and many protect healthy cells from damage. Xgeva is used to prevent bone fractures and other skeletal conditions in prostate cancer patients with tumors that have spread to the bone.

## Bisphosphonates

Bisphosphonates are typically used along with other cancer treatments and can help prevent the breakdown of bone by inhibiting the release of calcium from the bone into the blood stream. Zometa is a treatment used to strengthen the bone and reduce the risk of fractures caused by cancer metastases.

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# TOP 10 THINGS YOU SHOULD KNOW ABOUT PROSTATE CANCER

1. Prostate cancer is the most common non-skin cancer in men in the U.S., and the 4th most common tumor diagnosed worldwide.
2. In the United States, 1 in 9 men will be diagnosed with prostate cancer in his lifetime. For men of African descent, 1 in 7 will develop the disease.
3. African American men are 76% more likely to develop prostate cancer than Caucasian men, and are more than twice as likely to die from the disease.
4. In 2020, nearly 192,000 U.S. men will be diagnosed with prostate cancer, and more than 33,000 will die from the disease. That's one new case diagnosed every 3 minutes and another death from prostate cancer every 16 minutes.
5. A man is more likely to develop prostate cancer than he is to develop colon, kidney, melanoma, and stomach cancers combined.
6. It is estimated that more than 3 million U.S. men are living with prostate cancer.
7. As men increase in age, their risk of developing prostate cancer increases exponentially. About 6 in 10 cases are found in men over the age of 65.
8. Men with relatives – father, brother, son – with a history of prostate cancer may be twice as likely to develop the disease.
9. Prostate cancer can be silent – it's important to get checked, even if you have no symptoms.
10. 99% of patients with local or regional disease live 5 years or longer after diagnosis.

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Learn more at
pcf.org

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# PCF RESEARCH IMPACT IN 73 CANCERS

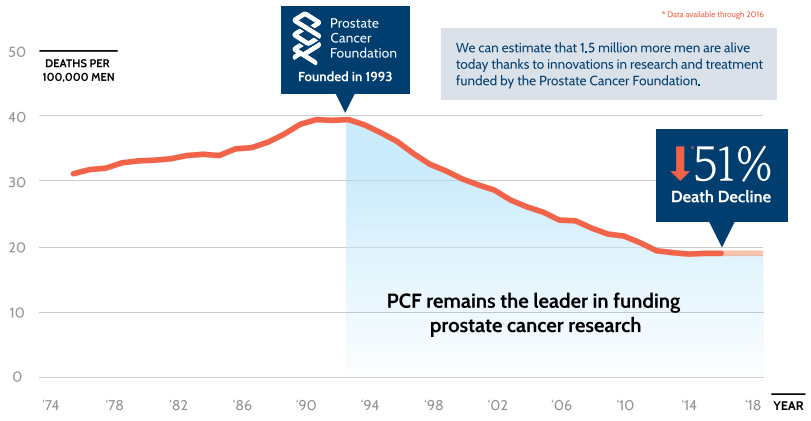
- Total raised since 1993: Nearly $800 million
- 2,200 research projects, 220 centers, 22 countries

PCF funded the early-stage research for **9 FDA-approved, life-extending prostate cancer drugs** between 2000 and 2019, with many more currently under investigation.

1. Docetaxel
2. Abiraterone
3. Enzalutamide
4. Apalutamide
5. Sipuleucel T
6. Zoledronic acid
7. Radium-223
8. Denosumab
9. Darolutamide

## Areas Affected

- Brain
- Eye
- Lip
- Neck
- Thyroid
- Esophagus
- Thymus
- Lung
- Liver
- Stomach
- Gallbladder
- Pancreas
- Kidney
- Colon
- Bladder
- Rectum
- Skin
- Nerve
- Blood
- Sarcoma
- Prostate
- Testicle
- Breast
- Cervix
- Ovary
- Uterus
- Childhood Brain Cancer
- Childhood Blood Cancer
- Childhood Kidney Cancer

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**PCF has funded almost every practice-changing development in prostate cancer in the last 25 years.**

## TOP 5 AREAS OF ONGOING RESEARCH

1. **Treat prostate cancer cells directly with radiation that targets prostate cancer cells.**

   PCF-funded scientists are developing a promising new class of cancer treatments – radioactive drugs that target radiation directly to prostate cancer cells. PSMA-PET imaging is used to identify tumor sites in patients prior to treatment with PSMA-targeted radioligand therapy, demonstrating that if the tumor can be seen, it can be killed with agents against the same target.

2. **Optimize successful immunotherapy treatments for prostate cancer patients.**

   CAR T cell therapy and checkpoint immunotherapy are treatments that harness a patient's own immune system to attack and kill tumor cells, and are effective in treating and even curing other cancers. PCF is actively funding the development and optimization of immunotherapy for prostate cancer.

3. **Identify patients with gene mutations to provide precision treatment and family awareness when the mutation can be inherited.**

   25-30% of men with metastatic prostate cancer have mutations in "DNA damage repair" genes such as BRCA1 and BRCA2. These mutations can either be inherited or develop in tumor cells. PCF is investing in research to define precision medicine treatments, such as PARP-inhibitors, for patients with these mutations and identify those who inherited them, as family members who are also carriers may be at higher risk for prostate, breast, ovarian, and other cancers.

4. **Detect and treat new tumors earlier and with more accuracy.**

   PCF-funded researchers have developed a new prostate cancer imaging technology, PSMA-PET, that can detect sites of prostate cancer with better sensitivity than existing imaging methods. This new imaging method can help find metastatic tumor sites earlier which will help doctors make better, more timely treatment decisions.

5. **Recommend effective, precision treatments for all patients through a simple, new blood test.**

   A PCF Challenge Award team is developing a "liquid biopsy" blood test to assess tumor mutations, replacing the need for invasive, painful, and expensive biopsies of tumors. These results can tell doctors which treatments may or may not be effective for an individual patient, increasing the number of healthcare providers that can deliver precision medical care to their patients. Results from this test will also improve predictions for tumor recurrence and patient prognosis.

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