



AFFILIATED WITH  
UC San Diego Health  
CANCER NETWORK™

MAXIMUM TREATMENT, MINIMUM SIDE EFFECTS

# PROTON THERAPY









# WELCOME TO THE CALIFORNIA PROTONS CANCER THERAPY CENTER

Patient Care is at the Center of Everything We Do

California Protons, located in San Diego, is one of only two proton centers in California, and the only one that offers pencil beam scanning technology. Our doctors have access to revolutionary cancer-fighting treatments and tools, and every patient is designated a cancer care team to provide the highest level of personalized care. This can result in strong cure rates, reduced side effects, improved outcomes and a chance for a better tomorrow.

As a regional center, California Protons works with patients from all healthcare systems throughout San Diego, the United States and the world. However, we are especially proud of the affiliation we have formed with UC San Diego Health Cancer Network. This affiliation allows us to provide even more access to life-saving proton therapy treatment and participate in much-needed clinical trials and research.

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OUR VISION IS A WORLD  
WITHOUT CANCER, AND  
EVERY DAY OUR TEAM  
IS COMMITTED TO  
YOUR FIGHT.



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# WHAT IS PROTON THERAPY?

Maximum treatment, minimum side effects

If you have been diagnosed for the first time, or are facing recurrent cancer, proton therapy may be your best option as one of the world's safest and most effective treatments. Proton therapy is a much less invasive alternative, recommended for numerous types of cancers that historically have been treated through traditional approaches such as surgery, chemotherapy and X-ray radiation. Protons are subatomic particles that can be manipulated and controlled to stop and deliver radiation directly at a tumor, traveling no further than the exterior tumor wall. The ability to concentrate the dose in the tumor and limit the radiation elsewhere is immensely beneficial to patients.

## 60% LESS HARMFUL RADIATION

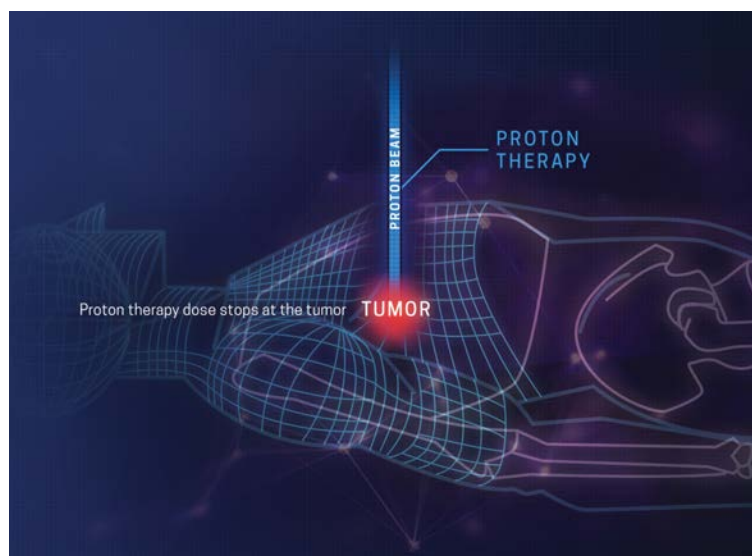
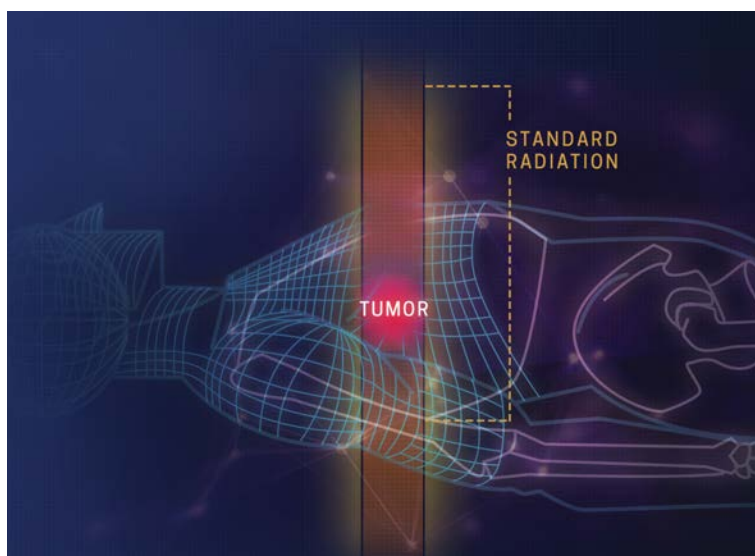
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Compared to standard X-ray radiation, proton therapy decreases the radiation delivered to surrounding healthy tissue and organs, resulting in fewer side effects and lowering the risk of secondary cancer due to radiation.



# PROTON THERAPY VS. STANDARD X-RAY RADIATION

Standard X-ray and proton radiation are both types of “external beam” radiotherapy used to treat various types of cancers. However, the properties of each are very different and result in varying levels of radiation exposure.



## X-RAY RADIATION

- Contains no mass or electric charge
- Highly penetrating X-rays can deliver radiation throughout any volume of tissue
- X-rays deposit most of the initial dose of radiation (entry dose) close to the patient's skin, while interacting with the healthy cells closer to the surface, and then drop the remaining dose of ionizing radiation on the deeper diseased cells
- X-rays continue to emit radiation as they naturally pass through the body (exit dose) similar to X-ray imaging

## PENCIL BEAM PROTON THERAPY RADIATION

- Beam made up of heavy, charged particles
- Protons enter the body and deposit only a small dose along the way to the target and virtually none beyond it
- The absorbed dose increases very gradually with greater dose and lower speed until the beam reaches the Bragg peak—the point at which the maximum energy is deposited—which is directed exactly within the tumor site
- Immediately after this burst of energy, the proton beam comes to a complete stop, and any additional radiation ceases

## OUR ADVANTAGE

Cutting-edge technology at the forefront of proton therapy

# 1st

## IN THE NATION

California Protons was the first proton therapy facility in the U.S. to offer pencil beam scanning technology in all five of our treatment rooms.

### UNMATCHED PENCIL-BEAM PRECISION

Our center's pencil beam scanning technology further enhances the precision of earlier proton scattering techniques. Our doctors can fine-tune the range and intensity of the proton beam to release a high dose of cancer-killing radiation and deliver it to the tumor within 2 millimeters and with the utmost care. Even in hard-to-scan places, our doctors can manipulate the beam of protons to conform to the unique shape and size of the tumor, attack it layer by layer, and stop precisely at its edge to spare healthy tissues and surrounding organs.



# 100x

## LESS CT RADIATION

Compared to a regular CT scanner, the radiation dose emitted by our Cone-Beam CT Imaging is significantly lower and its delivery typically takes under one minute.

### ADVANCED CONE-BEAM CT IMAGING

Our center is the only facility in all of California, and a select few throughout the U.S., to consistently utilize Cone Beam CT (CBCT). Used in conjunction with our pencil beam scanning technology, Cone Beam CT enables a more compact, faster and safer version of regular CT imaging. Through the use of a cone-shaped X-ray beam, the radiation dose, size of the scanner and time needed for scanning are all dramatically reduced, while the image accuracy is improved.

# 7 MAIN BENEFITS OF OUR PROTON BEAM TECHNOLOGY

## UNMATCHED PRECISION

Protons can be manipulated to stop and deliver radiation directly at a tumor and no further.

## RADIATION DOSE VARIATION

We can vary the intensity of the radiation dose at any point within the tumor, which was not possible with other technologies.

## TREATMENT FOR MANY TUMOR TYPES

Our technology allows us to treat larger and more irregularly shaped tumors.

## LOWER INCIDENCE OF SECONDARY TUMORS

Reduced radiation toxicity results in a lower incidence of secondary tumors compared to standard X-ray radiation.

## MINIMAL SIDE EFFECTS

Proton therapy spares surrounding healthy tissues, which reduces the risk of side effects such as diarrhea, nausea, headache and loss of appetite.

## FAST TREATMENT TIME

Unlike the older passive-scattering proton technology, our treatment plan can be uploaded and completed within a matter of minutes.

## PERSONALIZED CARE

Our world-renowned medical team, alongside UC San Diego Health physicians, is committed to providing the most personalized, comprehensive cancer care for our patients, and offers the latest in medical advancements and technology.







# CONDITIONS TREATED

Fight cancer with laser-like precision

This highly advanced form of cancer treatment is particularly effective for those with tumors near critical organs or structures—such as the heart, brain and spinal cord—and for those who cannot tolerate more X-ray radiation. It is also effective for pediatric and young adult patients, who are still growing and face greater risks of long-term side effects from radiation exposure.

## PROTON THERAPY CAN TREAT MANY DIFFERENT TYPES OF CANCER INCLUDING:

- Breast
- Prostate
- Pediatric
- Lung
- Brain & Spine
- Bladder
- Testicular
- Gastrointestinal
- Esophageal
- Pancreatic & Bile duct
- Liver
- Kidney
- Leptomeningeal
- Gynecologic
- Rectal
- Anal
- Colon
- Head & Neck
- Mouth
- Throat
- Tongue
- Nasal
- Lymphoma
- Sarcoma
- Recurrent & Secondary



# WHAT TO EXPECT

## Patient support every step of the way

A cancer diagnosis is life changing and affects every patient differently. From our medical team to the treatment process to complimentary concierge services, we offer the highest level of personalized patient care so patients and families feel well-informed and confident in their treatment.

### DEDICATED CARE TEAM

In order to help you feel as comfortable as possible, we match you with a patient care team that is there with you throughout the entire process, including daily treatments, follow-up meetings, progress evaluations and after treatment. We also collaborate closely with you and your other doctors to tailor the treatment to your unique needs.

### PERSONALIZED TREATMENT PLAN

Our team meticulously maps out the shape and intensity of the proton beam to ensure the equipment is positioned with pinpoint accuracy and each treatment is delivered at the exact radiation dose and with the highest precision possible.

### FASTER TREATMENT TIMES

Treatment length varies based on the specific form of cancer being targeted, but most types are treated over a 5 to 8 week course of radiation. Each treatment session takes around 30 minutes, but the treatment time only takes 1 to 3 minutes. Full two-way video and audio allow you and your care team to communicate the entire time.

### LIFE DURING TREATMENT

While proton therapy is a noninvasive and often painless treatment known to reduce the side effects of radiation, individual responses vary. However, most patients are able to continue their usual activities throughout their treatment, including working, exercising and socializing.

### PATIENT SUPPORT & CONCIERGE SERVICES

Our entire team is dedicated to helping our patients navigate the proton therapy journey and feel at home during their treatment. Whether you need lodging, transportation, support programs or ways to enjoy the San Diego region, we are here to help.

### QUALITY ASSURANCE

All treatment and imaging machines are routinely calibrated every morning to ensure quality and accuracy of the equipment.

### INSURANCE COVERAGE

California Protons works with all insurance plans and is contracted with many private insurances, as well as Medicare, Medi-cal and Tricare. Our Insurance Team works closely with each patient to help them navigate through the insurance process prior to treatment.





## YOUR PERSONAL CARE TEAM

World-class care delivered with kindness and compassion

Home to one of the world's most experienced radiation oncology teams in the proton space, our doctors are internationally recognized and sought out by patients from around the world. Through our partnership with Proton Doctors Professional Corporation (PDPC) and affiliation with UC San Diego Health Cancer Network, we have developed a team of radiation oncologists dedicated to delivering an unparalleled level of clinical care and expertise to our patients. With decades of combined experience in the proton space, our physicians have treated more than 15,000 patients with proton therapy.

# OUR WORLD-RENOWNED ONCOLOGISTS



**CARL ROSSI, MD**  
Medical Director



**IAIN MacEWAN, MD**  
Associate Medical Director



**ANDREW L. CHANG, MD**  
Radiation Oncologist



**JAMES URBANIC, MD**  
Radiation Oncologist



**STEVEN DAVIS, MD**  
Radiation Oncologist



**BRIAN CHOU, MD**  
Radiation Oncologist



**ARI KATERELOS, MD**  
Radiation Oncologist



**LOREN MELL, MD**  
Radiation Oncologist



**A.J. MUNDT, MD**  
Chair, UCSD Radiation  
Oncology



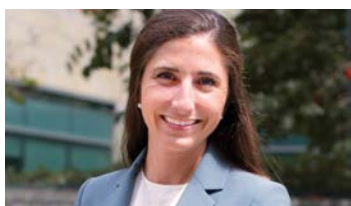
**BRENT ROSE, MD**  
Radiation Oncologist



**JONA HATTANGADI-  
GLUTH, MD**  
Radiation Oncologist



**PARAG SANGHVI, MD**  
Radiation Oncologist



**KATHRYN TRINGALE, MD**  
Radiation Oncologist

## AFFILIATIONS

As a regional center, California Protons works with patients from all healthcare systems throughout San Diego and the United States. However, we are especially proud of the affiliations we have formed with some prestigious healthcare systems.

- UC San Diego Health Cancer Network
- Rady Children's Health

# FAQ

## HERE TO ANSWER YOUR QUESTIONS

We understand that when you receive a diagnosis of cancer, you need to make many important decisions and may have a number of questions. Find your answers below or call us at **858-549-7400** to speak directly to one of our team members.

### WHAT IS A PROTON?

A proton is a subatomic particle with a positive charge. Protons can be manipulated to stop and deliver radiation directly at a tumor — and travel no further.

### WHAT IS PROTON THERAPY?

Proton therapy is a form of external beam radiation treatment using powerful technology to generate a beam that penetrates the body from the outside. This is different from conventional radiation, which uses X-rays.

### HOW ACCURATE IS THE DELIVERY OF PROTON BEAMS, COMPARED TO STANDARD X-RAY RADIATION THERAPY?

Standard X-ray treatment beams penetrate well beyond the tumor, but protons can be controlled to conform precisely to the shape of the tumor and to release most of their energy within the tumor. Protons can be made to stop where the tumor stops, whereas X-rays penetrate entirely through the body. Protons have a lower entrance dose than X-rays, and have no exit dose beyond the tumor.

### ARE THERE SIDE EFFECTS?

In many cases, side effects associated with external beam radiation therapy such as diarrhea, headache and loss of appetite are fewer with protons than with X-rays. This is because proton therapy spares significantly more healthy tissue than standard X-ray radiation.

### IS PROTON THERAPY EXPERIMENTAL?

No, proton therapy is not experimental. Proton therapy has been approved by the U.S. Food and Drug Administration since 1990 and has been used in the United States for more than 50 years.

### WHAT SCIENTIFIC EVIDENCE SHOWS THE EFFECTIVENESS OF PROTON THERAPY?

There are hundreds of peer-reviewed journal articles that have been published in medical literature showing that proton beam therapy is highly effective in treating many tumor sites compared to alternative therapies. In the United States, there are currently more than 100 active studies involving proton therapy.

### HOW MANY PEOPLE HAVE RECEIVED PROTON THERAPY?

Between 1954 – 2015, nearly 65,000 patients have been treated with proton therapy in the United States and nearly 131,000 worldwide.

### WHAT IS THE DURATION OF A TREATMENT?

Delivery of the proton beam lasts about one minute. Plan to be in the treatment room an additional 10 to 25 minutes to make sure you are positioned accurately. In most cases, you can expect to spend several weeks receiving treatment. Many people can be completely treated in four to six weeks.

### IS TREATMENT PAINFUL?

Treatment delivery itself is painless. Most people feel no physical sensation from the proton beam, hear very little noise and experience minimal discomfort.

### DO I HAVE TO STAY OVERNIGHT?

Proton therapy is an outpatient treatment performed in the California Protons Cancer Therapy Center. You do not stay overnight.

### IS PROTON THERAPY COVERED BY INSURANCE?

Proton therapy is approved by the FDA and has an established history of reimbursement by Medicare and many private health care payers. Specific coverage guidelines vary among commercial insurers.

### CAN I STILL WORK WHILE GETTING TREATMENT?

After your treatment, you may resume your daily routine.

### WHAT IF I DON'T LIVE NEARBY?

If you are not a San Diego County resident and decide to receive treatment at our facility, we will help you find hotel accommodations or other living arrangements.

### HOW CAN I FIND OUT IF PROTON THERAPY IS FOR ME?

You or your physician can contact California Protons Cancer Therapy Center at **858-549-7400** or visit **californiaproteons.com** for more information.



# FAST FACTS

## California Protons Facts

- Our center has treated more than 5,000 patients since opening in 2014
- Our Proton Doctors Professional Corporation (PDPC) physicians have decades of combined experience in the proton space
- Our Medical Director, Dr. Carl Rossi, has treated more than 13,000 prostate cancer patients with proton therapy, more than anyone in the world
- California Protons was the first in the nation to offer pencil beam scanning technology in all five of our treatment rooms, helping spare healthy tissue and organs and reducing side effects
- California Protons is the only facility in all of California, and only one of a handful throughout the U.S., to consistently utilize Cone Beam CT, enabling a more compact, faster and safer version of regular CT imaging
- California Protons is one of only two proton centers in California, with 20% of patients coming from outside of California



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858-549-7400  
[californiaprotons.com](http://californiaprotons.com)



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CANCER NETWORK™

#### REQUEST A CONSULTATION

Taking the next step is easy. Call our California Protons Cancer Therapy Center at 858-549-7400 to start the process today.

#### CONTACT US

California Protons Cancer Therapy Center  
9730 Summers Ridge Road  
San Diego, CA 92121

#### HOURS OF OPERATION

M-F 8am-5pm Pacific Time

Scan for a  
Virtual Tour

