

YEAR IN REVIEW

Head and Neck Cancer Center
Moores Cancer Center at UC San Diego Health



UC San Diego Health



A Heath Care Leader

UC San Diego Health had over 100 physicians in 48 specialties named "Top Docs" in the annual San Diego Magazine "Physicians of Exceptional Excellence" survey.

Top Cancer Innovator

Anchored by Moores Cancer Center, UC San Diego Health is home to the only National Cancer Institute-designated Comprehensive Cancer Center in the region. Moores Cancer Center is at the forefront in developing promising new therapies and bench-to-bedside innovation and offers the latest surgical technologies, plus more than 300 leading-edge precision and immune therapy trials.

One of Ten

UC San Diego Health-Jacobs Medical Center is nationally ranked in 6 adult specialties and rated high performing in 3 adult specialties and 5 procedures and conditions. (US News and World Report).

Thank you

It is a pleasure to share the 2017 – 2018 annual report for the Head and Neck Cancer Center within Moores Cancer Center at UC San Diego Health with you. In the pages ahead, you will see highlights on the innovative physician-scientists, incredible exploration and forward-thinking philanthropic partners contributing to our ability to improve care and redefine how we understand and treat head and neck cancer.

I am particularly proud to share how much our team has grown in the past year. Our focus is not just on hiring outstanding physicians, but on building a comprehensive, interdisciplinary team that facilitates the very best patient experience and outcomes. With an exemplary group of doctors, patient navigators, speech therapists, nutritionists, and basic and translational science researchers, we address every care aspect critical to supporting our patients and their loved ones.

The center has also had an outstanding year translating research ideas into novel and viable treatment options for our patients on the National stage. Dr. Silvio Gutkind and members of our team has been awarded over \$6.5 million in funding from the National Institute of Health (NIH), awarding 1 out of the 7 sought after Moonshot Awards given by former Vice President Joe Biden.

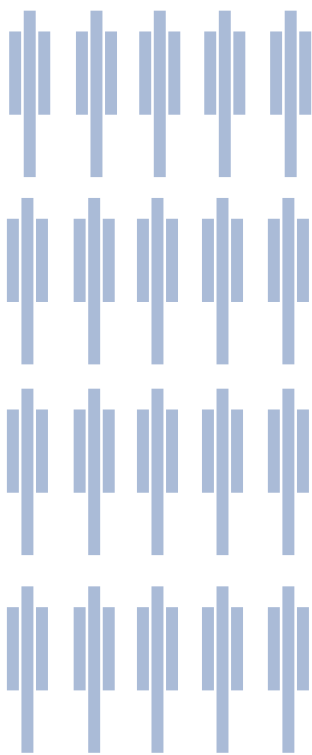
Our team has 20 active trials currently in operation that are listed in the pages to follow. Our team has been empowered to pursue collaborative, groundbreaking research that will help deepen our understanding of the potentially unpleasant side effects of head and neck cancer therapy, and improve quality of life for the many patients we are helping to fight this disease.

We — our faculty, our staff and friends like you — are truly a united front in the fight against cancer. In just three short years, we have experienced exponential growth, and are only continuing our upward trajectory. I am excited to share a year of wins and discoveries with you, and look forward to many more.

Thank you.

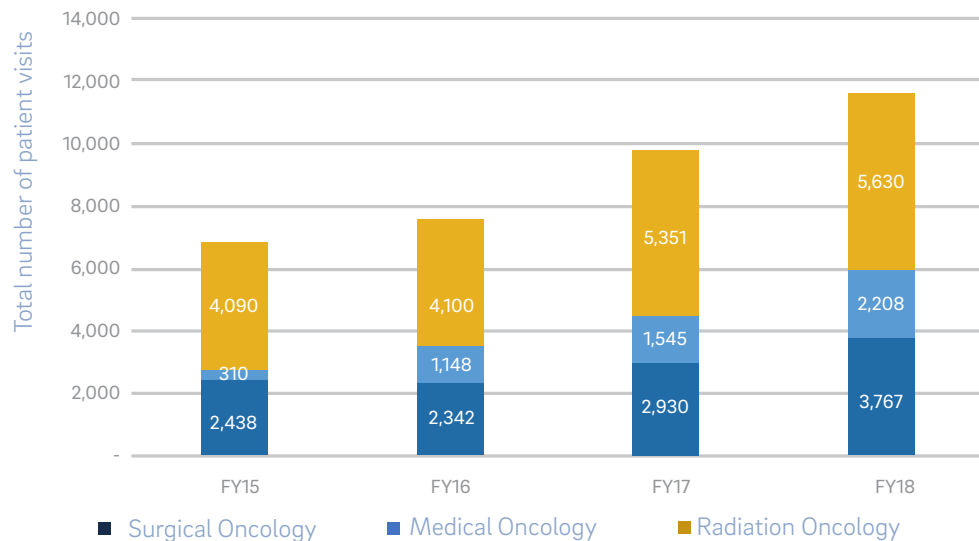
Joseph A. Califano III, MD

Director, Head and Neck Cancer Center
Professor and Vice Chief, Division of Otolaryngology-Head and Neck Surgery

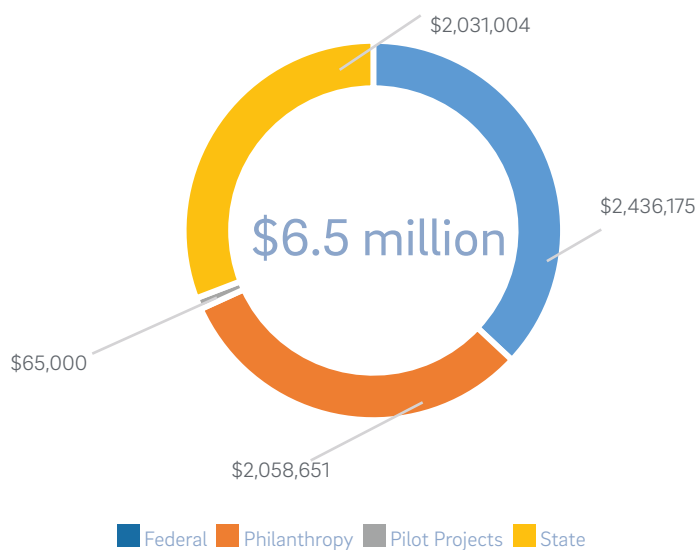


x20 Active clinical trials currently underway in Head and Neck Cancer

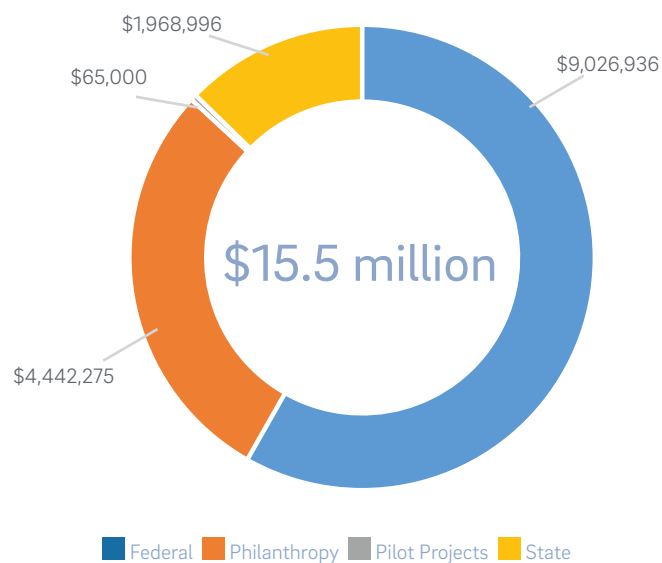
Head and Neck Cancer Center Visits by year and sub-specialty



TOTAL AWARDED FUNDS in Fiscal Year 2018



TOTAL FUTURE FUNDING 2019-Onward



Dr. Ezra Cohen Leads the Way with Cancer Therapy Personalized Vaccines

Tamara Strauss has been living with high-grade, stage IV pancreatic neuroendocrine cancer for more than three years. Current treatments, although effective for her, are highly toxic. Tamara enrolled in a first-of-its-kind pilot study at Moores Cancer Center at UC San Diego Health to test a personalized vaccine using her unique cancer mutations to boost an anti-tumor immune response.

Led by Stephen Schoenberger, PhD, professor of immunology at the La Jolla Institute for Allergy and Immunology (LJI), and Ezra Cohen, MD, professor of medicine at University of California San Diego School of Medicine, scientists and clinicians have developed a technology that reliably defines the neoantigens — foreign protein fragments recognized by the immune system — in a patient's cancer.

With neoantigens identified, the team can identify peptides — strings of amino acids — that can be used to create a vaccine to stimulate a protective immune system response. Essentially, the information in a patient's cancer is used to boost the immune system to initiate a stronger response from both cytotoxic and “helper” T cells — white blood cells that collaborate to destroy cancer cells.

Tamara's parents, Iris and Matthew Strauss, donated \$1 million to help launch the clinical trial, hoping that a breakthrough treatment could help patients like their daughter beat their disease. The family has already lost one daughter to ovarian cancer.

Tamara's vaccine took eight weeks to produce. When it was ready, Cohen took the vaccine filled syringe and administered it in Tamara's upper arm, like a simple flu vaccine. After receiving the injection, Tamara said the liquid felt thick and warm, stinging just a bit more than a typical vaccine.

In addition to the philanthropic gift from the Strauss family, initial giving from the Immunotherapy Foundation created the infrastructure for the trial and funds raised by patient-advocates, Kristin and Wyatt Peabody helped launch the trial.



Ezra Cohen, MD, UC San Diego Health physician scientist, administered the first-of-its-kind personalized cancer vaccine to Tamara Strauss, while Aaron Miller, MD, PhD, UC San Diego Health physician scientist, Tamara's mother, Iris Strauss, and Stephen Schoenberger, PhD, La Jolla Institute for Allergy and Immunology professor of immunology, look on.

“Funding science that is this new and this innovative is challenging, but they recognize that this may be a paradigm shift for the way we treat cancer and the way we view cancer in the future,” said Cohen. “If we're going to take the next big step toward curing cancer, we realized we have to do it on an individualized and personalized approach because that's what cancer is. Every person's cancer is different. We need to stop taking patients and try to fit them to drugs. We need to start making drugs and fitting them to what we're seeing biologically in a patient's cancer. The ability to treat any type of tumor with this approach has a dramatic impact on patients with head and neck cancer since novel therapies are often not developed in this disease. Here we have the opportunity to develop truly individualized immunotherapy irrespective of pathologic diagnosis, rarity of disease, or number of somatic mutations.”

In Memoriam

On May 13, 2018, Survivorship Nurse Practitioner for the Head and Neck Cancer Team at Moores Cancer Center, Katrina Clynch passed away after a sudden illness. Katrina Clynch was a wife and a devoted mother of two young daughters. She was described by her co-workers and friends as a “bright ray of sunshine.” She brought kindness, love, compassion, and understanding to everyone that she encountered. Katrina was dedicated to her calling as a nurse and used her positive nature, humor, and wisdom to help support and heal her patients. Helping her patients cope with the myriad of challenges experienced during head and neck cancer treatment was her mission and passion. Her big smile was contagious and could brighten the most difficult day. She was never too busy to lend her support to any member of the team. We honor her through our continued care to our patients.



Highlighting Progress

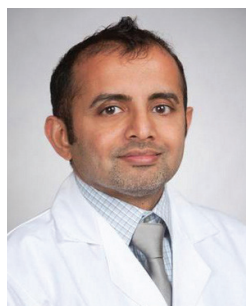
UC San Diego Team Seeks to Help Head and Neck Radiation Patients Stop Dry Mouth Before it Starts

Severe dry mouth (xerostomia) and related effects on swallowing, taste, diet, and dental health are significant detriments to quality of life for patients receiving radiation therapy for treatment of



Dr. Charley Coffey

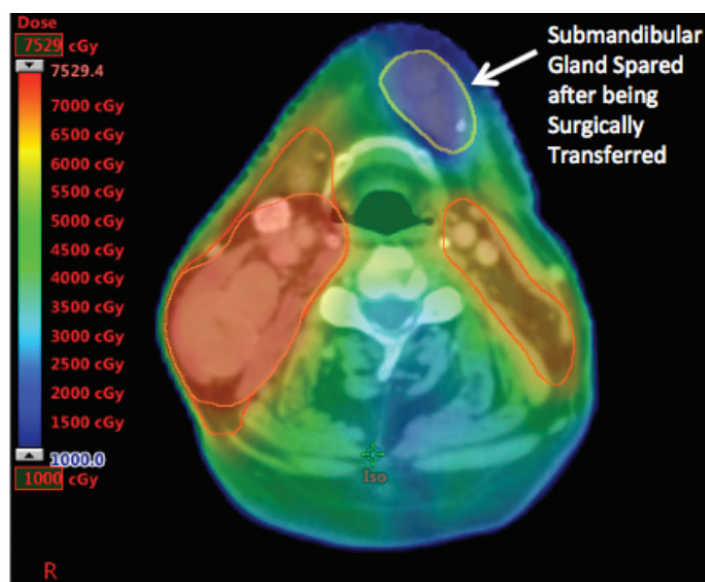
head and neck cancers. Surgical transfer of the submandibular gland (SMG) offers one means of preserving salivary function by minimizing radiation dose to a gland contralateral to the primary tumor site. The procedure is performed as an outpatient procedure to reduce the dry mouth associated with radiation and is now offered as standard therapy for appropriate patients at some centers, including UC San Diego.



Dr. Parag Sanghvi

The UC San Diego Head & Neck team including surgeon Dr. Charley Coffey, radiation oncologist Dr. Parag Sanghvi, medical physicist Dr. Vitali Moiseenko, and speech pathologist Liza Blumenfeld have developed a research protocol which will evaluate the dosimetric and functional implications of gland transfer in oropharyngeal cancer patients treated with definitive IMRT. It is hoped that if the use of

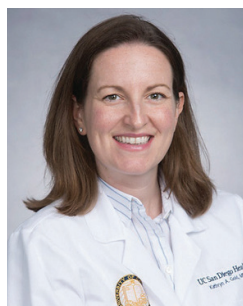
this surgical technique with modern radiation therapeutic technologies can be better understood, this treatment option may be made more widely available to patients undergoing treatment for head and neck cancer.



Radiotherapy plan for a patient with a surgically transferred left submandibular gland, shown as yellow contour. Red and pink contours are target volumes prescribed 56 and 70 Gy, respectively.

Finding New Uses for Old Drugs

Despite recent advances in the treatment of head and neck cancer, novel therapies are desperately needed for patients with recurrent and metastatic disease. Dr. Kathryn Gold, a medical oncologist and clinical investigator at the Moores Cancer Center, is leading several clinical trials repurposing medications used for other indications in head and neck cancer.



Dr. Kathryn Gold

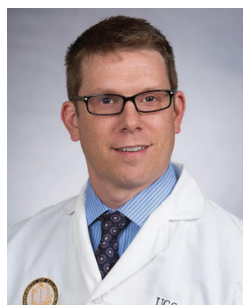
Checkpoint inhibitors pembrolizumab and nivolumab are approved for the treatment of recurrent or metastatic head and neck cancer; however, response rates are low and most patients will progress following treatment. Combination therapies have the potential to increase response rates and improve outcomes. Palbociclib is a CDK4/6 inhibitor already FDA approved for metastatic hormone receptor positive breast cancer in

combination with hormone therapy. Our research suggests that it may promote anti-tumor immunity, thereby increasing response rates to checkpoint inhibitors. In a phase I study (NCT03498378), Dr. Gold is combining EGFR inhibitor cetuximab and PD-L1 inhibitor avelumab with palbociclib. This is the first trial of this combination of therapies.

In another study, Dr. Gold is combining ibrutinib with either cetuximab or nivolumab (NCT03646461) for the treatment of head and neck cancer. Ibrutinib is a BTK inhibitor already approved for chronic lymphocytic leukemia and mantle cell lymphoma. It also inhibits ITK, which affects T cell activation. In pre-clinical models, this combination can increase activity of immunotherapy drugs. This trial also includes extensive biomarker analyses.

With these trials and others, we hope to improve outcomes for patients with advanced head and neck squamous cell carcinoma.

Biomarker Predicts for Better Outcome in Wide Range of Head and Neck Cancers



Dr. Loren Mell

P16 is an established prognostic biomarker for oropharyngeal head and neck cancers, but its role in non-oropharyngeal cancers such as the oral cavity, larynx, and hypopharynx is unclear. Our team of UC San Diego head and neck cancer investigators examined 1,448 patients from the U.S. Veterans Administration (VA) database to determine what role P16 plays in the prognosis for non-oropharyngeal

head and neck cancer. Despite the lower percentage of non-oropharyngeal patients with P16 positive tumors (20%) compared to oropharyngeal tumors (80%), the prognostic role of P16 appears to be similar, with P16 negativity indicating a worse

Highlighting Progress

prognosis in both disease sites. The study's findings argue for more frequent testing for P16 in non-opharyngeal cancer, as is done routinely for oropharyngeal cancers, to guide discussions with patients and potentially to impact treatment decisions.

Maximizing Diagnostic Yield of Thyroid Needle Biopsies

Performed worldwide millions of times annually, fine-needle aspiration biopsy (FNAB) of thyroid nodules is a safe, effective, and accurate means of obtaining a tissue diagnosis. Although



Dr. Kevin Brumund

various FNAB techniques have been described and are utilized, the ultimate goal is obtaining an adequate tissue sample for diagnosis and minimizing the rate of non-diagnostic samples.

Looking to determine which technique is superior, Dr. Brumund and colleagues performed a systematic review and meta-analysis of the current literature. Analyzing twenty-four articles that

examined over 4000 nodules, the authors compared capillary action to aspiration and the effect of various needle gauges.

They concluded that when compared to aspiration, the capillary action technique was associated with a statistically significant reduction in the risk of a non-diagnostic result. There was also a nonsignificant trend in favor of smaller needle gauges. The use of the aspiration technique, as well as using a larger gauge needle, likely results in increased blood contamination, which makes cytopathology interpretation more difficult; thereby increasing the non-diagnostic rate. The use of a larger gauge needle does not harvest more tissue, but may increase pain and complications.

The study, "Needle Biopsy of Routine Thyroid Nodules Should be Performed Using a Capillary Action Technique with 24- to 27-Gauge Needles: A Systematic Review and Meta-Analysis" was published in the July 2018 issue of *Thyroid*.

Moss WJ, Finegersh A, Pang J, Califano JA, Coffey CS, Orosco RK, Brumund KT. Needle Biopsy of Routine Thyroid Nodules Should Be Performed Using a Capillary Action Technique with 24- to 27-Gauge Needles: A Systematic Review and Meta-Analysis. *Thyroid* 28(7):857-863, 2018.

The 2nd Annual Multi-Disciplinary Head & Neck Cancer Conference is scheduled for February 7-8, 2019 at the Hilton Torrey Pines in La Jolla, CA. The course will offer a blend of didactic, interactive, and hands-on experiences highlighting state-of-the-art head and neck cancer management.

From 2018 to 2019: The Head & Neck Cancer Center Displays its Strengths on National Stage

This past March 2018, UC San Diego Health Head and Neck Center at Moores Cancer Center hosted its inaugural symposium on Multidisciplinary Head & Neck Cancer Care in the Era of Innovation at the UC San Diego. The conference was comprised of otolaryngologists, speech-language pathologists, radiation oncologists, medical oncologists, and registered nurses from top institutions around the United States. Otolaryngologists and speech-language pathologists had the opportunity to take part in hands-on training that included trans-oral robotic surgery and video-endoscopic voice and swallowing evaluation. This non-traditional and collaborative conference was the beginning of such innovative thought for the care and cure of head and neck cancer.

The 2nd Annual Multi-Disciplinary Head & Neck Cancer Conference is scheduled for February 7-8, 2019 at the Hilton Torrey Pines in La Jolla, CA. The course will offer a blend of didactic, interactive, and hands-on experiences highlighting state-of-the-art head and neck cancer management.

Renowned faculty members will demonstrate the most up-to-date information regarding radiographic, surgical, and systemic treatments including paired radiation and immunotherapy protocols, proton beam therapy and contouring for optimal functional outcomes.

More information can be found at: <https://cme-dev.ucsd.edu/headneckcancer/>



Our Team

Medical Oncology

Anjali Bharne, MD
Ezra Cohen, MD*
Gregory Daniels, MD, PhD
Kate Gold, MD
Scott Lippman, MD
Assuntina Sacco, MD
Fareeha Siddiqui, MD

Radiation Oncology

Loren Mell, MD*
Doug Rahn, MD
Parag Sanghvi, MD, MSPH
Andrew Sharabi, MD, PhD
James Urbanic, MD

Surgical Oncology

Kevin Brumund, MD
Joseph A. Califano III, MD
Charles Coffey, MD
Ryan Orosco, MD

Research Director

J. Silvio Gutkind, PhD*

Clinical Informatics Specialist

Celia Ramsey

Pathology

Grace Lin, MD
Alfredo Molinolo, MD, PhD

The Lynn and Richard Gordon Family Patient Navigator

John Fouania

Program Manager

Jayna Athas, MA

Social Worker

Betty McCullough, LCSW, OSW-C

Speech Language Pathology

Liza Blumenfeld, CCC-SLP, BCS-S*
Kristen Linnemeyer, CCC-SLP

Dietary/Nutrition

Patricia Rubio, RD, CNSC

Survivorship Nurse

Carie Montesa, NP

*denotes center co-directors



Vice President Joe Biden

UC San Diego Head and Neck Researchers Receive \$6.5 million in Funding and National Institute of Health (NIH) Moonshot Award from former United States Vice President Joe Biden

The Biden Cancer Initiative launched in June 2017 by former Vice President, Joe Biden and his wife, Jill Biden, Ph.D., to promote collaboration and investment in the national research community. The initiative is now known as Cancer Moonshot and is a deeply personal initiative triggered by the loss of the Biden's son to glioblastoma, a very aggressive form of brain cancer. The venture is intended to further progress in cancer prevention, detection, treatment and care, while reducing disparities in patient outcomes. This grant is part of the 21st Century Cures Act, passed in December 2016 by US Congress, authorizing funding to support highly innovative and transformational projects as part of a Cancer Moonshot initiative.

The highly competitive review process resulted in the UC San Diego Health Head & Neck Cancer Center and La Jolla Institute of Immunology team receiving 1 of the 7 Moonshots awarded, and over \$6.5 million dollars in total funding, to study the tumor-immune cell ecosystem in head and neck cancer. Furthermore, the research will exploit the emerging information to develop novel approaches to enhance the anti-tumor immune response of novel cancer immunotherapies.

Dr. Silvio Gutkind, Ph.D. and Dr. Stephen Schoenberger, Ph.D. will work to improve existing immunotherapeutic options, and lead the discovery of novel precision approaches including personalized vaccines and cellular therapies that will ultimately achieve durable responses in head and neck cancer remission. Dr. Ezra Cohen, Dr. Andrew Sharabi, Dr. Joseph Califano, and Dr. Sonia Sharma are active collaborators in the moonshot grant.



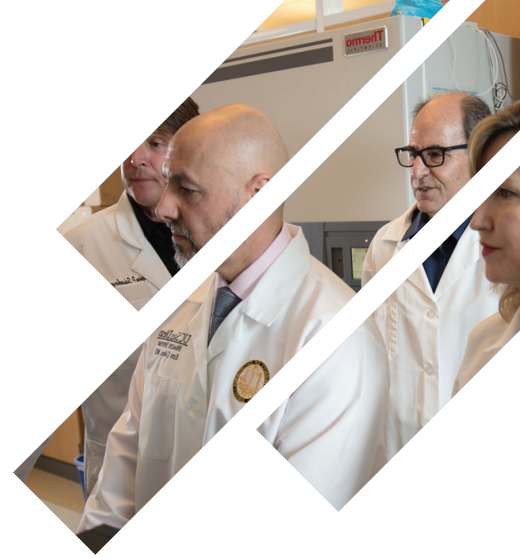
Dr. Silvio Gutkind

Moving Forward

What the Future Holds for the Head and Neck Cancer Center

The past year has been exciting and exceptionally productive, and we look to our next steps with optimism and an entrepreneurial spirit. It is because of your support that we have been able to make great strides in a short time frame.

As we continue to evolve, we look forward to continuing to provide up-and-coming cancer care leaders with the opportunity to work side-by-side with our experts; contribute to novel discoveries, treatments and technologies; and hone their skills in an innovative, science-driven clinical setting. We also aim to create startup funds and pilot funds for research faculty and younger faculty members. These will fuel investigative endeavors not typically supported through grant and government funding and create a powerful foundation for the game-changers of tomorrow to begin forward-thinking work today.



Learn More

Jayna Athas | Program Manager

Pilar Gose | Director of Development

UC San Diego Health Advancement

T: 858-246-1328 | E: pgose@ucsd.edu

9500 Gilman Drive #0937

La Jolla, CA 92093-0937

health.ucsd.edu

At the University of California San Diego, challenging convention is our most cherished tradition. The Campaign for UC San Diego is a university-wide comprehensive fundraising effort to empower the next generation of innovators to blaze a new path toward revolutionary ideas, unexpected answers, lifesaving discoveries, and planet-changing impact. All gifts since July 1, 2012, have already contributed to the momentum and success of the Campaign. UC San Diego respects your privacy. If you would like to be removed from future UC San Diego Health fundraising communications, please contact us at optout-hsdev@ucsd.edu or 800-588-2734.

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9500 Gilman Drive, MC0937
La Jolla, CA 92093-0947

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