GIVING IMPACT 2021
AN UPDATE ON THE PARKINSON AND OTHER MOVEMENT DISORDERS CENTER

DIRECTED BY IRENE LITVAN, MD, FAAN, FANA
Above: The Parkinson and Other Movement Disorders Center team includes clinicians and researchers as well as social workers and physical therapists to provide patients with comprehensive, well-rounded care.
MESSAGE FROM THE DIRECTOR

Dear Friends,

Thanks to your ongoing support, we have had an incredibly productive year. The Parkinson and Other Movement Disorders Center at UC San Diego Health continues to move the needle in the right direction toward better outcomes for those living with movement disorders. I am thrilled to share some of our successes with you.

Our supporters have been instrumental in expanding our capacity for outreach and support programming, filling a great unmet need in our community. Philanthropic contributions powered the launch of a comprehensive wellness initiative that allows us to extend care to our patients beyond the clinical setting. By offering a variety of programs, support groups and early intervention efforts, we can better engage, educate and care for our patients and their loved ones. Ultimately, we aim to give those living with movement disorders the lifestyle tools to dramatically improve their health and well-being.

Our supporters also allowed us to continue to lead the way in exploring new approaches to treatment. Some of our most exciting research projects leverage leading-edge engineering technology to build better health management solutions. Our work in developing wearable sensors is enabling the collection of objective data such as levodopa levels, blood pressure and causes of falls. We can then analyze that information on a patient-specific basis to better assess the state of disease and respond with targeted treatment. These new solutions give us greater insights and enable us to significantly improve health outcomes for patients with movement disorders across the globe.

All our efforts have been greatly strengthened by grants and the addition of new faculty members and fellows we are introducing in this report. Since the Center’s founding in 2014, we have grown from a handful of faculty members passionate about making a significant impact in the treatment of movement disorders to a thriving interdisciplinary team of more than 35 dedicated researchers, clinicians and fellows. I am proud of all we have accomplished, and I am deeply grateful for your partnership in pursuing this important work.

With thanks and best wishes for the year ahead,

Irene Litvan, MD, FAAN, FANA
Tasch Endowed Chair of Parkinson Disease Research
Professor of Neurosciences
Director, Parkinson and Other Movement Disorders Center at UC San Diego Health
Dr. Irene Litvan Recognized for Global Research Impact

Dr. Irene Litvan and 51 other researchers across UC San Diego were named among the world’s most influential in their fields in 2020 by the Web of Science Group, an information and technology provider for the global scientific research community.

The Highly Cited Researchers list includes more than 6,000 scientists from around the world whose studies were among the top one percent of the most-cited publications in their field over the past 11 years. This is the second year in a row Dr. Litvan was honored, reflecting her legacy of significant contributions to neuroscience — a legacy on which she continues to build.

Dr. Litvan also took on a leadership role in the global movement disorders community this year. She now serves as treasurer-elect of the International Parkinson and Movement Disorder Society (MDS). This professional society comprises clinicians, scientists and other health care professionals whose work involves neurodegenerative and neurodevelopmental disorders, hyperkinetic movement disorders, and abnormalities in muscle tone and motor control. MDS works to educate and inform others around the world about the latest news, research and advances in movement disorders.

Thanks to Dr. Litvan's dedication, our patients have unprecedented access to clinical trials and other emerging treatment options. Together, we are continuing to bring together our dual pursuits: innovation in movement disorder treatment and exceptional patient care.

Stephanie Lessig, MD, Named Vice Chair of Clinical Affairs

As an academic health system, UC San Diego Health is committed to providing the highest standards of care while offering the latest treatment options available. As vice chair of clinical affairs for the Department of Neurosciences, Dr. Stephanie Lessig oversees the critical process of ensuring our research and clinical pursuits are aligned to best serve our patients.

Her passion for creating positive patient experiences was established during her days as a resident in neurotherapeutics and movement disorders and neurology here at UC San Diego. She joined the UC San Diego Department of Neurosciences and the Parkinson and other Movement Disorders Center in 2007, and in 2019 she took on this new leadership role. Every day, our patients benefit from Dr. Lessig’s exemplary work in ensuring exceptional care for all neurological disorders.
The Center recently welcomed three new faculty members, each of whom offer unique perspectives and diverse areas of expertise that enhance our comprehensive approach to research and patient care. These new colleagues stood out in our highly competitive national searches because of both their strong medical expertise and their commitment to serving the movement disorders community.

MEET OUR NEW FACULTY MEMBERS

DAVID COUGHLIN, MD
Assistant Professor of Neurosciences

“I love working in the field of movement disorders neurology. I have the privilege of establishing lasting relationships with patients while helping to guide them through their illnesses. While we still lack cures for most of the conditions we treat, we have therapies that can dramatically improve symptoms and quality of life. We are all still working to improve the ways in which we diagnose these diseases to help pave the way for disease-modulating therapies.”

Dr. Coughlin joined UC San Diego after completing a fellowship in movement disorders at the University of Pennsylvania. His research focuses on the neuropathology of movement disorders, dementia with Lewy bodies, and other neurodegenerative diseases. He studies brain tissue samples to inform the development of better blood and spinal fluid tests in an effort to detect the onset of movement disorders more accurately and earlier — ultimately setting the stage for the creation of new disease-modulating treatments targeted to those who will need them most.

KATHERINE LONGARDNER, MD
Assistant Professor of Neurosciences

“I’m excited to join a collaborative multidisciplinary team that is passionate about patient care and advancing the scientific field. We are combining neuroscience and engineering to create solutions that have the potential to relieve patients of the work of managing their symptoms so they can focus more on living their lives.”

Dr. Longardner officially joined the center as a faculty member in August 2020 after completing a research fellowship at UC San Diego under Dr. Litvan. Her primary research interest is the relationship between low blood pressure and cognition, specifically in people with Parkinson’s disease. She is also working to establish an electrophysiology lab for movement disorders at UC San Diego. Additionally, Dr. Longardner is involved in two collaborative projects with UC San Diego bioengineers: the development of the wearable, minimally invasive levodopa sensor highlighted in this report, and the validation of a noninvasive ultrasonic blood pressure monitor for people with blood pressure fluctuations.

CAITLIN MULLIGAN, MD
Assistant Professor of Neurosciences

“I was studying neuroscience as an undergraduate when my grandfather was diagnosed with Parkinson’s disease, which got me interested in the human side of the disease. This experience inspired me to pursue a career in medicine and has allowed me to provide empathetic and compassionate care to my patients.”

Dr. Mulligan specializes in movement disorders and deep brain stimulation and is also a passionate educator. She teaches a neurosciences session for second-year medical students, is the associate program director for the neurology clerkship for third-year medical students, and is helping to establish a clinical educator track for residents wishing to pursue that path. A California native, she received her medical degree at UC San Diego and completed her residency in neurology and a fellowship in movement disorders at UCLA.
Through generous support from our donors, the Parkinson and Other Movement Disorders Center launched a new initiative aimed at bolstering support for the movement disorders community across San Diego. This initiative provides much-needed education and services to those facing a new diagnosis as well as those well into their journeys of navigating life with a movement disorder. It offers empowering knowledge and resources to our patients, their loved ones and caregivers, and the community as a whole. Thank you for bringing this important initiative to life.

VIRTUAL PD EXERCISE CLASSES
Promoting exercise as a physiological tool in each individual’s fight against Parkinson’s disease

Thanks to generous support from our donors, the Center’s team of physical therapists received expert training in the PWR! (Parkinson Wellness Recovery) program. PWR! is a research-based, community-driven exercise program for people with Parkinson’s disease, offering fitness classes that are both physically and cognitively challenging while being emotionally rewarding. The techniques taught through this program have been shown to help slow disease progression, improve symptoms and restore function.

Our physical therapists — who are now also certified PWR! instructors — kicked off UC San Diego’s own series of PWR! sessions with a virtual class attended by 70 participants this summer. Given the popularity of this program, we are now holding online classes on the first and third Tuesday of each month, and we look forward to eventually offering in-person sessions in the future. These free sessions are available to anyone in the community, regardless of whether they receive care at UC San Diego Health.

LEARNING THE ROPES
An introduction to living your best life while managing a movement disorder

Navigating a new health system while managing an illness can be tough. We hear you. This online introduction to our Center gives new patients tips on preparing for their first visit and following their care plans. In the coming year we hope to turn this into a live, virtual event, giving our team members an opportunity to guide attendees through our programs and services, and allowing our patients to share their own personal perspectives.
SUPPORT GROUP NETWORK

A thriving community of people with Parkinson's disease (PWP) and care partners (CP)

A dozen people came together to launch a Parkinson's disease support group in 2012. In 2017, the group joined forces with the Parkinson and Other Movement Disorder Center, and today it is part of a network of seven groups across the county with a membership of more than 500 people.

These support groups offer places for people with Parkinson’s, their care partners, loved ones and relatives to feel safe, meet others, exchange ideas and make new friends. Participants come together to share experiences and connect with community resources, and they walk away from a single meeting with tangible information on maintaining their quality of life.

A hallmark of the support group network is listening and responding to the needs of its members. At the start of the pandemic, the network quickly transitioned to online meetings that helped maintain safe social connections. These virtual meetings have attracted new members who are unable to attend in person, and the network is committed to offering this option in the future so they can continue participating even after in-person meetings resume.

Each month, the group offers meetings for people with Parkinson’s disease (Parkinson’s Thursdays), meetings for care partners (Care Partner Tuesdays), a meeting for both (Together Wednesday) as well as a young onset group meeting for people diagnosed with Parkinson’s disease before the age of 50. Advance registration is required, and all are welcome. To learn more, visit movementdisorders.ucsd.edu/go/pdsupportgroups.

In January 2020, the network hosted a Saturday Seminar focused on deep-brain stimulation (DBS) with the intention to create an ongoing series that would be supported by group leaders across San Diego County, but the pandemic has put this on hold. In 2021, the network will focus on establishing groups in areas that are currently medically underserved, such as the South Bay region.

“We have gained a reputation for being an open, friendly and welcoming group of smart, funny, supportive, passionate and dedicated people. These are the qualities that sustain us and that we want to share with the San Diego Parkinson’s community.”

– UC San Diego Parkinson’s Support Group Network
CALLING ALL ARTISTS
Enrichment and support for artists and art enthusiasts

Slated to launch in 2021, this program will connect artists with Parkinson’s disease and related disorders through meetings and — eventually — outings to local cultural hot spots, helping to build a sense of community while providing education and support. Participants who are passionate about artistic or creative endeavors at all levels are encouraged to participate.

EDUCATIONAL EVENTS
Our Center is planning a variety of events in the coming year for patients, care partners and family members.

- The Parkinson and Other Movement Disorders Center’s Annual Symposium will go virtual this spring. This event brings together experts from a variety of fields to share the latest information on diagnosis, treatment and maintaining overall well-being. It provides a comprehensive overview of Parkinson’s disease, its pathology, and the latest research and emerging treatment options. To learn more, please visit movementdisorders.ucsd.edu/go/symposium.

- A virtual program on Lewy body dementia will offer an introduction to the disease and tips on navigating treatment. Two options will be offered, one for patients and care partners and another for health care professionals.

- The Renew! Retreat, presented in collaboration with the Parkinson & Movement Disorder Alliance, is an inspiring, expert-led program covering the latest in symptom-specific exercise, therapies and research.

FUTURE PROGRAMS AND EVENTS
For details on upcoming outreach and education offerings, visit movementdisorders.ucsd.edu/go/outreach.
MEET OUR
SOCIAL WORKERS

ADRIANA GONZALEZ, MSW
Licensed Clinical Social Worker
“A key component to the wellness of an individual is their connection to community. Our efforts in maintaining support groups and creating more to include underserved communities is what can really make the difference in an individual’s life. The connection, the shared experience, and the support of others not only enhance the quality of life of the person living with Parkinson’s disease, but also that of the family system of caregivers.”

Adriana Gonzalez spearheads our Spanish-language initiatives and was instrumental in obtaining funding for the ¡Juntos Unidos! support group. She holds a master’s degree in social work from San Diego State University and is a licensed clinical social worker who has spent the last ten years dedicated to providing clinical social work services in a medical setting — eight of them at UC San Diego. She is committed to working closely with the clinical team to support patients in meeting their treatment goals.

LISA DAMRON, MSG, CMC
Clinical Program Coordinator
“I wholeheartedly believe that we have the capacity to bring more joy into our lives, no matter the circumstances. We are putting beliefs into action with the expansion of our outreach programming to better the lives of our patients through tactical education and well-rounded community events, sparking joy along the way.”

Lisa Damron joined the center in October 2017 supporting clinical coordination and research efforts. She earned a master’s degree in gerontology from San Diego State University and is a certified care manager. She has worked in geriatric medicine for the past eight years, fulfilling her passion for supporting individuals as they age. She has been instrumental in launching the Center’s new wellness initiatives.

PARTNER WITH US TO PROVIDE LIFE-CHANGING SUPPORT PROGRAMS

Holistic self-care and support programs can make a world of difference for patients with movement disorders and their caregivers. Philanthropic support is essential to our ability to offer these programs.

We invite you to join us in making a positive impact in the lives of our patients and broader community through a contribution to our wellness initiative. To make a gift, visit ucsd.edu/go/supportMDwellness.
**RESEARCH HIGHLIGHTS**

*Breakthroughs in Parkinson’s disease research at UC San Diego*

**GETTING THE RIGHT DOSE, WHEN YOU NEED IT**

*Combining wearable sensors and medication pumps to relieve Parkinson’s disease symptoms without the guesswork*

Those with Parkinson’s disease know how difficult it can be to assess the need for medication and match it with the correct dosage on a daily basis. In a recent project that combined neuroscience and engineering, our researchers pioneered the development of a wearable sensor that offers a continuous, minimally-invasive method for monitoring levodopa (L-Dopa) levels. When fully developed and approved by the FDA, the sensor will revolutionize the delivery of levodopa medication, no longer requiring patients to rely on reported symptoms to determine dosage and eliminating the side effects of “on” and “off” periods patients currently face.

Based on the initial success of this project, Dr. Litvan and Joseph Wang, DSc, were recently awarded $500,000 in funding from the National Institutes of Health to continue this work and translate it to the clinic, signifying the promise it holds for the future of Parkinson’s disease treatment.

Once further developed, these investigators will seek additional funding to take this work one step further by creating an automated dose delivery mechanism. In collaboration with Wang, who is a prominent nanoengineer, the team will develop a pump device — much like an insulin pump used by those with diabetes — to sense and deliver levodopa as needed throughout the day. This unique closed-loop system in which the pump interfaces with the sensor to determine current medication needs will be the next key step in this project. This work is at the forefront of a broad effort in the scientific community to apply the powerful new capabilities of wearable sensors to revolutionize movement disorder treatment.

**CREATING NEW, HEALTHY NEURONS TO REPLACE THOSE LOST TO DISEASE**

*A landmark discovery has major implications for the future of Parkinson’s disease treatment*

A UC San Diego research team led by molecular biologist Xiang-Dong Fu, PhD, revealed a capability that scientists considered impossible: We are now able to create new neurons. They found that by inhibiting or deleting one gene, astrocytes — a cell type prevalent in the brain — transformed into new, healthy neurons, replacing damaged neurons. The implications are revolutionary, particularly for those living with Parkinson’s disease.

In June 2020, the prestigious scientific journal Nature featured this news on its cover. It is being hailed as the biggest breakthrough in Parkinson’s disease research since the discovery of the disease itself. Instead of working to slow or mask the effects of Parkinson’s disease, the UC San Diego team has established a strong proof-of-concept for counteracting the genetic processes that cause it. Beyond the promise this holds for reversing Parkinson’s disease, this approach has the potential to reverse other neurodegenerative diseases like Alzheimer’s disease.

The next stage of this research is to turn this discovery into a new therapy to treat Parkinson’s disease. A team of UC San Diego’s top experts in translational medicine — including Center director Dr. Litvan — are poised to lead this important project. Philanthropy will play a powerful role in accelerating the preclinical work necessary to validate the approach, refine for optimal effectiveness, and gather safety data, charting the path to human trials.
REVEALED: A MORE PRECISE TARGET FOR PARKINSON’S DISEASE TREATMENT

*Leading-edge technology unmasks a protein strongly linked to the disease*

New therapies being developed to treat Parkinson’s disease rely on our knowledge that mutations in the protein leucine-rich repeat kinase 2, or LRRK2, are present in those who develop the disease. But without a clear understanding of this protein’s structure, it’s difficult to know how LRRK2 disrupts normal functioning.

Using a groundbreaking technology called cryo-electron microscopy (cryo-EM) to view LRRK2 in its natural environment, UC San Diego scientists were able to determine its structure at a level previously unseen. They leveraged these depictions to describe how LRRK2 binds to cellular tracks called microtubules and acts as a roadblock for motors that move along these tracks. The findings are described in two research papers published in the journals *Cell* and *Nature*.

“It’s not yet clear what role LRRK2-microtubule binding plays in Parkinson’s disease,” said Samara Reck-Peterson, PhD, who co-authored the *Nature* study along with Andres Leschziner, PhD, both of whom are professors in UC San Diego School of Medicine’s Department of Cellular and Molecular Medicine. “But what we have now are cellular and molecular blueprints, and that’s what is needed to figure out what LRRK2 does and to fine-tune therapeutic drugs that target it.”

In the immediate future, these findings may aid in improving therapeutics currently in clinical trials by providing a more accurate target for the LRRK2 dysfunction that results in Parkinson’s disease symptoms. Beyond that, this discovery could inform the creation of new small molecule drugs designed to regulate the dysfunction with minimal side effects, which could enable better symptom management for those with Parkinson’s disease and improve their quality of life.

UC San Diego is leading an international team that was recently awarded a $7.2 million grant by the Aligning Science Across Parkinson’s (ASAP) initiative to further investigate the biology of LRRK2. With this new funding, the team will work to unravel the full structure of LRRK2 in both healthy and mutated states.
MEET OUR
FELLOWSHIP TEAM

Clinical Fellows

BRENTON WRIGHT, MD
Clinical Fellowship Director

Dr. Wright leads our highly sought-after Movement Disorders Fellowship program, serving as a mentor and guide to two outstanding clinical fellows each year. Fellows work closely alongside our interdisciplinary team of faculty and rotate through a diverse range of clinical settings, including the main La Jolla campus, our Hillcrest location, the San Diego VA Medical Center, and Rady Children’s Hospital-San Diego, gaining valuable experience with a wide range of patient populations. This well-rounded, expert-led training program helps us fulfill our mission to produce a strong pipeline of movement disorders specialists and future leaders in the field. Graduates from our program have gone on to hold leadership positions around the country at institutions like UCSF, Stanford University, Desert Regional Medical Center, and Kaiser.

AMY FERNG, MD
Neurosciences Fellow

“I fell in love with this patient population early in medical school due to some patient experiences that will always remain near and dear to my heart. It really struck me that these disorders can affect many other systems of the body outside of the nervous system, making them a challenge to manage for both patients and their families and caregivers. I wanted to be a part of a team that could help provide both therapeutic and emotional support.”

Dr. Ferng completed her undergraduate studies with a major in neuroscience at the University of Michigan, earned her master’s and medical degrees from the University of Toledo, and completed her residency at the University of Florida. Following her fellowship, she plans to pursue a career as a clinician educator in movement disorders with a focus on integrating neuropsychiatric care into her clinical practice.

ERIC GUTFLAIS, MD
Neurosciences Fellow

“I made a huge shift when I left a career in finance to pursue medicine. As a physician, I feel I am making a tangible positive impact on people’s lives. It is incredibly rewarding to help patients navigate the complex journey from initial diagnosis to managing everyday life with a movement disorder. The Center is an excellent source of clinical expertise in this field, and offers one of the best training environments available.”

Dr. Gutflais completed his undergraduate studies with a major in finance at Binghamton University in New York. After college, he spent four years working on Wall Street before entering medicine. He earned his medical degree at the Sidney Kimmel Medical College in Philadelphia and completed his neurology residency at Mount Sinai Beth Israel in New York.
Research Fellows

With advanced degrees in a variety of disciplines, our postdoctoral research fellows bring new perspectives to our work and help to drive progress on our many promising projects. They work closely with the expert faculty who serve as principal investigators on our collaborative research projects, while gaining valuable insights that inform their own research ideas and efforts.

**ECE BAYRAM, MD, PHD**

“I was most excited to join this Center to learn from experts like Dr. Litvan and gain experience in teaching and mentorship. The vast opportunities available at UC San Diego have inspired me to start conceptualizing my independent research career.”

Ece Bayram holds a medical degree and PhD in neurosciences from Ankara University in Turkey and completed a research fellowship at Lou Ruvo Center for Brain Health in Las Vegas. She joined the Center in 2019 to pursue her research on sex differences for cognitive deficits in Parkinsonian disorders, particularly Lewy body dementias, which will help guide more individualized treatments. She is transitioning into a new role at the Center as a project scientist, which will offer more opportunities to lead her own projects.

**SABA REZVANIAN, PHD**

“Being in direct contact with physicians is the best way to develop more practical and useful medical devices to address patients’ needs and help them to alleviate their pain. Our Parkinson’s and Other Movement Disorders Center at UC San Diego Health leads the way in both patient care and movement disorders research and is a great place to pursue this work.”

Saba Rezvanian joined the Center in 2019 after completing her PhD in biomedical engineering at Arizona State University. She is developing a wearable multisensory device, the Fall-Meter, to determine the causes of near-falls and falls in patients with Parkinson’s disease and related disorders. It simultaneously records gait, motor, blood pressure, EEG and cardiac signals via a mobile device, which also allows patients to report symptoms, medications, comfort and dietary intake. She is seeking NIH funding to further develop this technology and looks forward to training multidisciplinary engineers in this field.
We are proud to be recognized as leaders in translating innovative research into state-of-the-art, comprehensive, personalized treatment for movement disorders. When it matters. Right now.

Your philanthropic support is critical to our progress. It gives us the freedom and flexibility to fuel the most promising research ideas and deliver exceptional care.

Thank you for helping us redefine the way the world understands and cares for movement disorders.
For more information about supporting the Parkinson and Other Movement Disorder Center at UC San Diego Health or making other contributions to advance our vital work, please contact:

Marcail MacEwan Murillo  
Director of Development  
UC San Diego Health Sciences Advancement  
University of California San Diego  
9500 Gilman Drive #0937  
La Jolla, CA 92037-0937  
(858) 246-2137  
mmacewan@ucsd.edu