



2023-2024

ANNUAL REPORT

**THE ROAD TO
MEDICINE 3.0**

WHOLE-PERSON HEALTH

Whole-person or integrative health involves consideration of the whole person – not just separate organs or body systems – and evaluating multiple factors that contribute to either health or disease. It means helping and empowering individuals, families, communities, and populations to improve their health in multiple interconnected biological, behavioral, social and environmental areas. Whole-person health focuses on restoring health and promoting resilience in those facing an illness as well as preventing diseases across a lifespan. (Modified from source: National Center for Complementary and Integrative Health)

CIRCLE OF WELLNESS

The Circle of Wellness underscores the importance of self-empowered health. It highlights the interconnectedness of key components of whole-person health, encompassing prevention and treatment, physical health, and mental and emotional well-being.



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A MESSAGE FROM OUR EXECUTIVE DIRECTOR



Dear Friends,

I am proud to reflect on a year of remarkable achievements and our continued efforts to transcend healthcare paradigms. Together, we are pioneering an advanced approach to whole-person healthcare that prioritizes prevention, longevity, highly personalized and empowering care, multidisciplinary collaboration, and the integration of advanced technologies. I'm excited to share how this progress has become evident throughout the past year.

We were thrilled to welcome renowned integrative health researcher Jeffrey Dusek, PhD, as the director of outcomes research at the UC Irvine Samueli Institute. Dr. Dusek chairs the BraveNet Practice-Based Research Network, facilitating large-scale studies that produce comprehensive evidence on the efficacy, safety, and cost-effectiveness of integrative health interventions. In this report, you will learn about some of the groundbreaking research he is spearheading and for which he is utilizing BraveNet. As the Network/Data Coordinating Center for BraveNet, we are looking forward to enhanced collaboration with other national and international integrative health institutes through Dr. Dusek's leadership.

This year, the Samueli Institute also co-hosted the inaugural Global Blue Skies conference with the UC Irvine Department of Urology and the Royal College of Physicians and Surgeons of Glasgow (RCPSG). We were deeply honored to provide a platform for the world's top minds to engage in powerful conversations on the technological advancements and healthcare practices that are shaping the future of medicine.

As part of our mission to train current and future healthcare professionals in the evidence-informed principles of personalized, whole-person care, this year, the Samueli Institute launched the Integrative & Functional Medicine Fellowship – the first program to merge the powerful disciplines of integrative and functional medicine. From nutrigenomics and environmental medicine to advanced diagnostic testing and personalized case-based treatment plans, we are so excited to be equipping fellows with the comprehensive, precision medicine knowledge they need to transform their practice and improve patient outcomes on both individual and population levels.

We are pleased to report continued year-over-year growth in our patient care. This fiscal year, we achieved a 25% increase in ambulatory visits and UCI Health nurses delivered an

A MESSAGE FROM OUR EXECUTIVE DIRECTOR

impressive 54,000 integrative nursing interventions. Providing comprehensive, whole-person care remains a cornerstone of our mission. You'll meet one of our patients in this report. Dr. Bradley Gilbert, a retired physician, was enjoying a vibrant and active life with his wife before undergoing open heart surgery. Worried he wouldn't be able to hike with his wife anymore – or be there for his grandkids – Bradley embraced our Cardiac Rehabilitation program. Through this empowering multidisciplinary program, Bradley not only recuperated from his surgery but also discovered renewed strength and confidence he hadn't known before.

The incorporation of integrative health into the global healthcare system is imperative. It enhances healthcare quality by improving patient experiences and outcomes, reducing healthcare costs, increasing the well-being of the care team, and promoting greater health equity. As we enter the new academic year, let us continue to transcend healthcare boundaries. By prioritizing whole-person, patient-centered care and leveraging cutting-edge research and technologies, we are setting new standards in the industry.

Your unwavering support is integral to our mission , and I extend my heartfelt gratitude for being part of this journey with us. I also want to extend my gratitude to our growing team of dedicated clinicians, educators, and researchers, whose steadfast commitment and expertise have been instrumental in advancing our mission. And thank you to our visionary leaders at UC Irvine and UCI Health who champion integrative health, fostering an environment where comprehensive, whole-person care thrives. Your collective efforts continue to drive us forward, enabling us to make a profound impact on the health and well-being of our community and beyond.

I look forward to a future healthcare system that fully embraces innovative, personalized, and holistic approaches to optimal well-being.

Be well,



Shaista Malik, MD, PhD, MPH, FACC
 Founding Executive Director,
 Susan Samueli Integrative Health Institute
 Founding Associate Vice Chancellor, Integrative Health
 Professor, Division of Cardiology, Department of Medicine
 Medical Director, Integrative Cardiology & Cardiac Rehabilitation
 Susan & Henry Samueli College of Health Sciences and UCI Health

INTRODUCTION

Who We Are

The UCI Susan Samueli Integrative Health Institute is leading healthcare transformation through integrative health by addressing root causes of disease, lifestyle modification and patient empowerment. By complementing conventional treatments with a whole-person approach to care that is informed by science and incorporated into the training of future health professionals to advance a model of team-based care, the Samueli Institute is trailblazing integrative care to help patients achieve their best health.

Mission

Transform healthcare through the practice of integrative health by conducting rigorous research, promoting evidence-informed treatment modalities, educating the public and future healthcare professionals, providing individualized, patient-centered care and providing services to the community that focus on obtaining optimal health.

Vision

To be the preeminent national and international academic institute for pioneering multidisciplinary research, education and healthcare practices for the care of the whole person.

STRATEGIC PLAN 2021-2026



Discover

Build a robust integrative research program that advances the discovery of the scientific basis of integrative health approaches to optimize health and wellbeing.



Teach

Develop an academic integrative health educational curriculum which promotes innovation, academic rigor, collaboration, cultural humility and the development of leaders in the field of integrative health and whole-person care.



Heal

Provide comprehensive, whole-person healthcare and disease prevention to our community. Expand the team-based model of care to consist of collaborative integration of all healthcare providers who share the goal of whole-person care.



Serve

Advance and improve access to integrative care that addresses the dynamic, growing needs within our communities and beyond.

YEAR AT-A-GLANCE

99,004

integrative health
visits in FY24*

8

NIH-funded
research projects
in FY24

\$10M

in research
funding in FY24

1,762

acupuncture
visits
at FQHC
in FY24

480+

total UC Irvine
students
trained in
culinary medicine

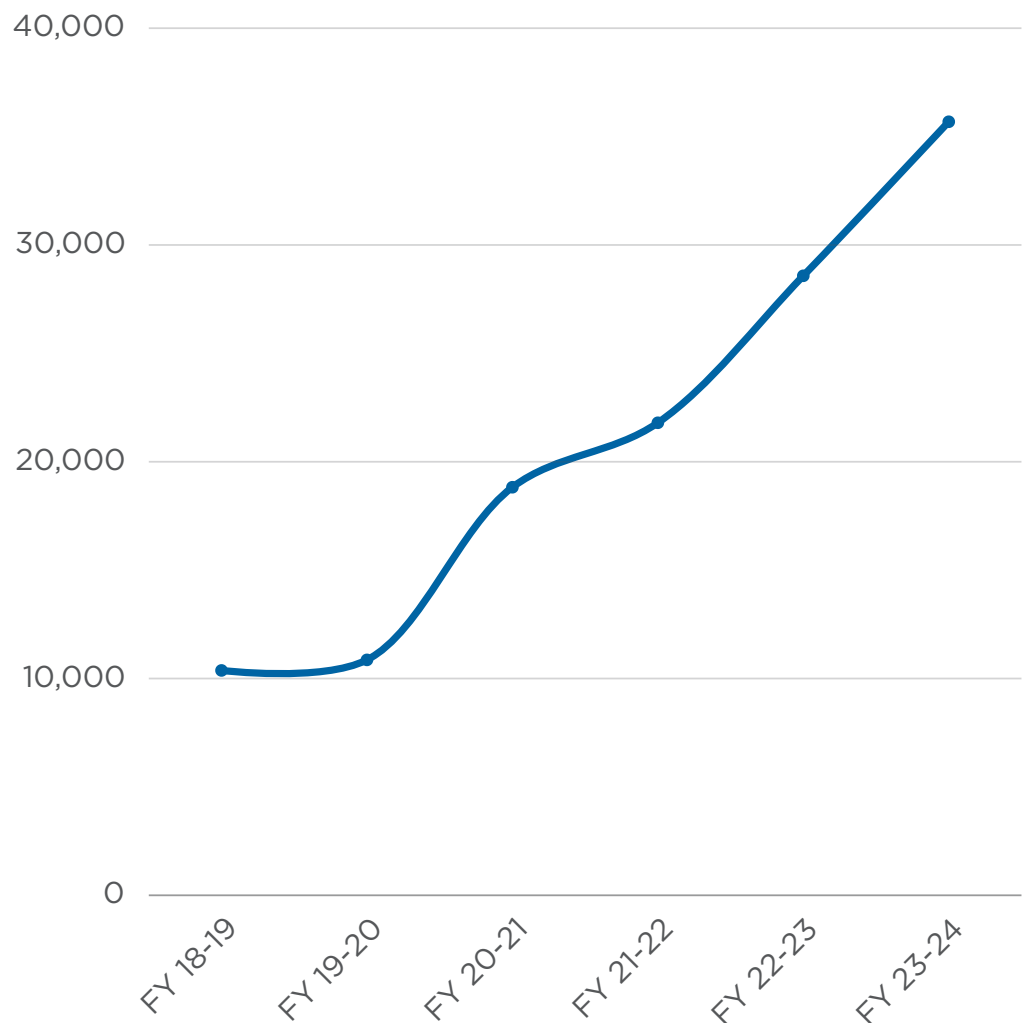
5,175

total employees
trained in
integrative
nursing

4,675

enrollees in
community
events in FY24

Growth in Ambulatory visits



*Visits include ambulatory visits, inpatient treatments, and nursing interventions

A photograph of two men in white lab coats, likely scientists or medical professionals, looking down at a document they are holding together. The image is overlaid with a semi-transparent blue filter. The man on the left is wearing glasses and a light blue shirt under his lab coat. The man on the right has a beard and glasses and is wearing a dark shirt under his lab coat. They are both focused on the document. The background is a plain, light-colored wall.

DISCOVER

SCIENCE THAT LEADS THE WAY TO
BETTER HEALTH

Integrative
Health Institute
Health

Integrative
Health
UCI Health

NAT
AT

ACTIVE FUNDING FOR RESEARCH

The Samuelli Institute continues to receive strong public and private funding for innovative research. National Institutes of Health (NIH) is the largest public funder of biomedical research in the world.

\$10M

in research funding in FY24

Neural substrates of electroacupuncture in cardiovascular control, PI: Shaista Malik, MD, PhD, MPH, FACC, Adolf Coors Foundation.

A Pharmacology Study of Botulinum Toxin Type A compared to Local Anesthetics Injected into the Stellate Ganglion by Single Treatment of in Sprague-Dawley Rats, PI: Zhi-Ling Guo, MD, PhD, AEON Biopharma.

Prenatal diet-stress interaction and the maternal metabolic response in human pregnancy, PI: Karen Lindsay, PhD, RDN, Eunice Kennedy Shriver National Institute of Child Health and Human Development.

Integrative Cardiometabolic Care Approach comparative Effectiveness (ICARE) Study: Evaluating subclinical and clinical markers of disease in cardiometabolic syndrome through integrative cardiovascular care approaches, PI: Shaista Malik, MD, PhD, MPH, FACC, Mussallem Gift.

Neuroimmune mechanisms underlying electroacupuncture effect on vascular function, PI: Shaista Malik, MD, PhD, MPH, FACC, National Center for Complementary and Integrative Health.

Trial to Assess Chelation Therapy 2 (TACT2), PI: Shaista Malik, MD, PhD, MPH, FACC, National Center for Complementary and Integrative Health.

Topological Atlas and Repository for Acupoint research (TARA), PI: Richard Harris, PhD, National Center for Complementary and Integrative Health (Spaulding Rehabilitation Hospital Subaward).

Cannabinoid Interactions with central and peripheral pain mechanisms in osteoarthritis of the knee, PI: Richard Harris, PhD, National Center for Complementary and Integrative Health (University of Michigan Subaward).

Explosive Synchronization of Brain Network Activity in Chronic Pain, PI: Richard Harris, PhD, National Center for Complementary and Integrative Health (University of Michigan Subaward).

Mindfulness and cardiometabolic health for low-income Latina pregnant women: A mixed-method and community-informed pilot study, PI: Karen Lindsay, PhD, RDN, National Institute on Minority Health and Health Disparities, Southern California Center for Latino Health.

University of Michigan BACPAC Mechanistic Research Center, PI: Richard Harris, PhD, National Institute of Neurological Disorders and Stroke (University of Michigan Subaward).

An Observational Study Characterizing the Pain Response, Safety and Tolerability of CCTA320 (Cannabis) in Patients with Chronic Pain, PI: Marcela Dominguez, MD, NiaMedic.

Teaching Kitchen Multisite Study, PI: Shaista Malik, MD, PhD, MPH, FACC, Teaching Kitchen Collaborative.

Exploring pathways for fetal programming of offspring cancer risk through prenatal diet, PI: Karen Lindsay, PhD, RDN, UC Cancer Research Coordinating Committee.

Investigating the effects of a mindfulness intervention to optimize glycemic control in pregnancies with type 2 diabetes, PI: Karen Lindsay, PhD, RDN, UC Irvine School of Medicine.

UNVEILING THE SCIENCE BEHIND MUSIC'S HEALING POWER:

Jeffery Dusek Leads NIH-Funded ENSEMBLE Network



It is increasingly recognized that music therapy can help improve your health – whether it is reducing anxiety, blood pressure or pain. However, the biological mechanisms by which that happens is growing to be understood. An NIH-funded project led by two Samuelli Institute researchers aims to establish a collaborative network of experts to help expand the scientific evidence for how music-based interventions (MBIs) help relieve pain.

Jeffery Dusek, PhD, director of outcomes research at the Samuelli Institute, is the principal investigator on the project, called “Effective Network to advance Scientific Evidence related to Mechanisms of music-Based interventions for pain and support coLLaborative Efforts” (ENSEMBLE). It is funded by a five-year U24 grant from the National Institutes of Health’s (NIH) National Center for Complementary and Integrative Health (NCCIH).

ENSEMBLE has three main goals:

1. Promote interdisciplinary collaboration between music therapists, scientists studying biological mechanisms, and researchers across the country who are exploring pain and integrative health therapies

2. Develop a comprehensive framework for conducting research on the mechanisms of MBIs for pain management
3. Advance pilot projects that explore novel biological mechanisms behind the effects of MBIs on diverse types of pain

“It’s really building the foundation of getting people to talk that may not have talked previously and to be able to explore possible mechanisms of action,” said Dusek.

One way ENSEMBLE plans to advance pilot projects is through a pilot grant program starting in 2025.

Other lead investigators include Shaista Malik, MD, PhD, MPH, founding executive director of the Samuelli Institute; Joanne Loewy, DA, LCAT, MT-BC, professor at Mount Sinai Icahn School of Medicine and founding director of the Louis Armstrong Center for Music and Medicine at Mount Sinai Health System; Manoj Bhasin, PhD, director of genomics, proteomics, bioinformatics and systems biology at Children’s Healthcare of Atlanta.

Until now, there have been several barriers to fully understanding the mechanisms of MBIs for pain management. These include a lack of effective collaboration between music therapists and scientists studying the biological mechanisms of pain, inconsistent ways of defining and applying MBIs, measuring patient outcomes, and collecting biological data, as well as insufficient funding and infrastructure to support collaborative research projects.

This gap has helped keep MBIs separate from other evidence-informed integrative health pain therapies, such as acupuncture or

meditation. But Dusek wants to help bring MBIs under the same umbrella as these other therapies.

And that would be a significant development for pain patients. Chronic pain is a serious public health challenge, one that can lead to a decreased quality of life and the worsening of other health conditions for people who experience it. While these patients can find meaningful relief with opioids and other medications, it is critical to provide more options for them and help reduce their pharmacologic burden – an important goal for Dusek.

“What I’ve been doing for my whole career is studying the use of non-pharmacologic approaches for mental health relief or pain relief,” said Dusek.

If ENSEMBLE can help build the scientific evidence for the mechanisms of MBIs for pain management, it would help open the door for combining MBI with medication to effectively manage pain and improve quality of life.

“We make music therapy more accessible to clinicians, other researchers, and other individuals because they say, ‘There really is something there.’ It is not just that listening to music makes you feel happy. There is an underlying physiology changing in a positive way,” said Dusek.

The ENSEMBLE team is looking at sickle cell pain as an early model, highlighting the goal to create a truly collaborative network environment. Dusek said this focus aligns with other projects across the UC Irvine campus, as well as the work of Kalpna Gupta, PhD, who is a co-investigator on ENSEMBLE and a Samueli Scholar. Gupta, a professor of medicine at UC Irvine, has done foundational research on the mechanisms of pain associated with sickle cell disease, which can lead to decreased blood flow. Her expertise

will be critical in understanding the biological process of sickle cell pain and how MBIs affect it.

Dr. Gupta has said she views her role as a Samueli Scholar as a catalyst for advancing integrative health research and care. She aims to investigate biomarkers of treatment response to complementary interventions and use bioinformatics to analyze the effects of environmental and social factors. Additionally, her research will explore global and indigenous therapeutic agents as novel treatments.

ENSEMBLE also has plans to offer opportunities for students to gain research experience by completing a summer intensive in an investigator’s lab.

Dusek comes to the Samueli Institute with 25 years of experience leading innovative integrative health and medicine research at prominent research and healthcare institutions, with significant funding from NIH and the Centers for Disease Control and Prevention. He was previously associate professor at Case Western Reserve University, director of research at Connor Whole Health University Hospitals, director of behavioral sciences research at Massachusetts General Hospital, and instructor in medicine at Harvard Medical School.

“As a proud integrative health researcher, I find that being able to share the magnificent work being done at the Samueli Institute is a great privilege. When I started my career back in 1998, the work that we were doing was marginalized by other researchers at the institution. However, by doing solid work, getting manuscripts published in peer-reviewed medical journals and obtaining funding by the NIH, the reception that integrative health researchers garner has dramatically improved. Indeed, one of my

greatest pleasures is collaborating with emergency medical physicians, heart surgeons, orthopedic surgeons, hypertension specialists, nurses, acupuncturists, and music therapists to name a few,” said Dusek.

For more information on ENSEMBLE and its pilot grant program, scan the QR code or visit the website at ssih.uci.edu/ensemble.



BRAVENET

Since July 2022, the Samueli Institute has been leading BraveNet as the Network/Data Coordinating Center. BraveNet is the first practice-based research network in the U.S. and is composed of integrative medicine clinical sites around the world that have joined together to help advance integrative medicine by combining their clinical outcomes data that have previously not been available to the medical and scientific communities. This allows for large-scale studies that produce comprehensive evidence on the efficacy, safety, and cost-effectiveness of integrative health interventions. Increased collaboration and shared resources lead to standardized methodologies, stronger evidence bases, and more informed healthcare policies, ultimately improving patient outcomes and advancing the legitimacy of integrative health practices.

This year, BraveNet grew to 29 member sites, bringing on the University of California Los Angeles, the University of North Carolina Chapel Hill, Columbia University, and the Brazilian Academic Consortium for Integrative Health (CABSIN) in Sao Paulo, Brazil. These 29 institutions offer whole-health services to more than 150,000 patients a year.

“As a member of BraveNet for many years, I personally find it very rewarding to be able to collaborate with like-minded individuals on important research in integrative medicine,” said Gene Kallenberg, MD, executive director of UC San Diego Centers for Integrative Health. “On an institutional level, I feel that the ability to combine the data from our UCSD site with other BraveNet members leverages our ability to demonstrate the impact of integrative therapies.”

He added, “Being able to participate in the NIH funded acupuncture in the emergency department study called ACUITY has been very instructive and rewarding, and participating in federally funded (NCCIH) team research has enhanced the reputation of our IM research efforts within UCSD. I look forward to participating in future BraveNet multi-site studies.”

Samantha Simmons, MPH, chief executive officer of the Academic Consortium for Integrative Health and Medicine, said she looks to BraveNet as “the key player in the conduct of large scale multi-institutional research.”



29

BraveNet sites
worldwide in FY24

“Whether it is observational research in outpatient clinics or a multi-site randomized trial in the emergency department, BraveNet is uniquely positioned to conduct impactful research for integrative health and medicine. As BraveNet continues to attract NIH funding and grow its membership, I can envision a strong partnership between the ACIMH and BraveNet,” Simmons said.

With BraveNet, the Samuelli Institute is focused on creating an international collaborative environment that didn’t exist

before, in order to expand and share the clinical evidence supporting integrative health practices.

“My desire is to continue to grow the membership of BraveNet to allow for future multi-center research of inpatient and ambulatory integrative health therapies,” Dusek said. “The recent success of the PRIMIER study in which we recruited over 2,500 patients in 17 BraveNet member clinics as just the start. With that knowledge and our increased membership, I can now envision that BraveNet is ready to conduct a much larger study to provide the evidence that integrative medicine can significantly improve the health of patients of various health conditions.”



INSIGHTS ON NUTRITION & MINDFULNESS FROM KAREN LINDSAY'S RESEARCH



Research from Karen Lindsay, PhD, RDN, early career Samueli endowed chair and registered dietitian nutritionist at the Samueli Institute, is providing essential insights that support the development of comprehensive,

whole-person nutrition and mindfulness interventions that reduce disease risk and promote well-being for both mothers and developing children.

In March 2024, Lindsay's paper "Mindfulness and Cardiometabolic Health During Pregnancy: An Integrative Review" was published in the journal *Mindfulness*.

"With the increasing popularity of studies that involve mindfulness interventions in pregnancy, it is important to understand if potential benefits may extend beyond psychological aspects of maternal health and support cardiometabolic health outcomes, especially given rising rates of maternal obesity, gestational diabetes, and hypertensive disorders of pregnancy," said Lindsay, who is also an assistant professor of pediatrics.

While growing evidence supports beneficial effects of mindfulness on weight management, glycemic, and blood pressure outcomes in non-pregnant populations, Lindsay's review identified only a small number of mindfulness studies conducted in pregnant populations that evaluated such outcomes.

What's more, though, is that Lindsay's review also identified evidence from qualitative

studies that revealed enthusiasm and interest among pregnant participants about mindfulness practice and its potential to support healthy weight gain through their pregnancies.

This shows, Lindsay said, that "rigorous studies are required to understand whether mindfulness is an efficacious approach, either alone or in combination with other lifestyle modalities, to improve gestational cardiometabolic health outcomes, as well as potential downstream physiologic health benefits for the offspring and for the mothers postpartum."

Lindsay is dedicated to understanding the profound role of maternal nutrition and mental health during pregnancy and its health impacts on the mother and her child. This year she was awarded National Institutes of Health pilot grant funding through the Southern California Center for Latino Health to collaborate with a local community-based organization for low-income pregnant women and develop a culturally sensitive mindfulness program for Spanish-speaking clients. This study will also pilot test the feasibility of collecting dried blood spots from participants for measurement of cardiometabolic health markers and inflammatory gene expression, with the goal of building a larger study to test the efficacy of the intervention on these important outcomes that impact maternal and infant health. She ultimately hopes to integrate nutrition and mindfulness in whole-person interventions during preconception and pregnancy that have the potential for intergenerational impact on mental and physical wellbeing.

Reference: Lindsay KL, Guo Y, Gyllenhammer LE. Mindfulness and Cardiometabolic Health During Pregnancy: An Integrative Review. Mindfulness. Published online March 28, 2024. doi:<https://doi.org/10.1007/s12671-024-02337-2>

DISCOVERING THE IMPACT OF HIGH-FIBER DIETS ON GUT MICROBIOME HEALTH FOR BREAST CANCER SURVIVORS



When an individual is diagnosed with breast cancer, there is typically a delay before treatment begins. Katrine Whiteson, PhD, Samueli Scholar and associate professor of molecular biology and biochemistry, wants to know whether a high-fiber diet intervention within this crucial timeframe can help improve patients' gut microbiomes – and therefore improve their treatment outcomes.

This year, Whiteson has been conducting the “Priming Breast Cancer Survivors for Success with High Fiber Diets to Promote Microbiome and Immune Health” study. Collaborators include fellow Samueli Scholar Angela Fleischman, MD, PhD, associate professor of hematology oncology in the UCI School of Medicine; Laura Esserman, MD, director of the Carol Franc Buck Breast Care Center at UCSF; Karen Lindsay, PhD, Early-Career Samueli Endowed Chair and registered dietitian nutritionist at the Samueli Institute; Karen Lane, MD, surgeon at UCI Health Pacific Breast Care Center; and technology company BiomeSense.

Study participants engage in a three-week regimen in which they record their daily food intake and submit 12 fecal samples and four fingerprick blood samples. Participants maintain their normal diet for the first week. For the next two weeks, they increase their fiber intake by consuming one daily serving of chia seeds or chia powder. Participants also

complete pre-intervention, post-intervention, and one-year follow-up surveys.

Whiteson chose to work with people who have been off active therapy for a year or more, with the exception of hormone therapy. Before working with newly diagnosed patients, who are already facing a particularly stressful situation, she wanted to first gain insights from the successes and challenges of diet changes faced by people further in their cancer journey. Then, later down the line, she can leverage those learnings to optimize the diet intervention for patients in between diagnosis and treatment – a critical period that offers a unique opportunity for dietary changes to potentially influence treatment outcomes.

The study also offers optional virtual nutrition education classes, in which participants learn about more ways to increase their fiber intake and cook high-fiber recipes with Samueli Institute Executive Chef Jessica VanRoo. Recipes include Thai-spiced cashew quinoa salad, chocolate black bean cookies, and broccomole. Though these classes are not required, Whiteson said the turnout has been a success. Participants enjoyed sharing creative ways to use the chia seeds and appreciated having the opportunity to ask questions regarding bio sample collection and microbiome health. People even went deeper and asked about Dr. Whiteson's insights on prediabetes and carbohydrates, she said.

“They’ve just been thrilled to have a chance to learn more,” Whiteson said.

Fiber is an essential component of a healthy diet. However, about 95% of people do not eat the recommended 25-30 grams per day. Bridging this dietary gap and understanding its impact on the microbiome is important,

especially for cancer survivors, for whom treatment success and recurrence remain significant concerns.

Whiteson said she anticipates that the study will produce “one of the best longitudinal datasets in response to change for the microbiome.” As far as what she and her collaborators expect to see in the data, Whiteson pointed to one key area: “Usually when people eat more fiber, the bifidobacteria content of their gut microbiome increases.” She said she looks

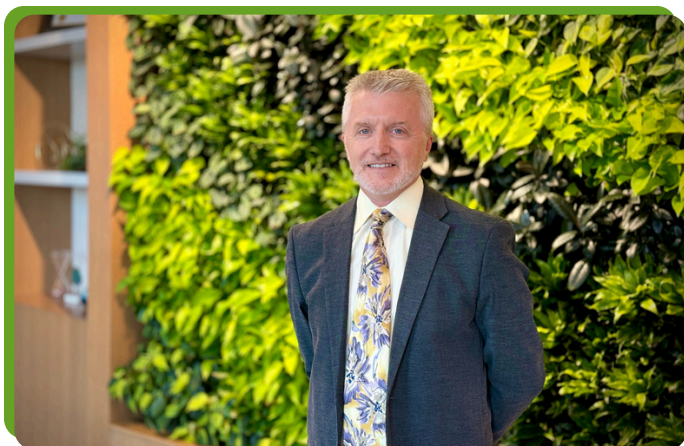
forward to seeing what else can be gleaned from the dataset.

Whiteson is hoping to set the stage for larger studies, and not just with breast cancer. She also wants to look at how a high-fiber diet intervention can affect cardiovascular disease, and more.

“What’s next is learning more about how the microbiome relates to treatment outcomes in breast cancer and learning more about how to help with dietary interventions to improve treatment outcomes,” Whiteson said.

BRIDGING THE GAP BETWEEN ACUPUNCTURE AND CONVENTIONAL MEDICINE:

Harris Leads the TARA Project



Richard Harris, PhD, Samueli Endowed Chair in Integrative Health and School of Medicine professor, has been working this year as co-principal investigator on the Topological Atlas and Repository for Acupoint Research (TARA) project, which has the potential to enhance the biological understanding of acupoints and support their integration into clinical practice.

TARA is funded by a five-year U24 grant

totaling \$5.8 million from the National Center for Complementary and Integrative Health (NCCIH). This open-access repository will feature a searchable database of human and rodent acupoints used in acupuncture research, offering visual displays of these points within the body. The database will include detailed characteristics of acupoints along with data supporting the physiological responses to their stimulation.

“Hopefully it will allow the integration of acupuncture into the global, more conventional mainstream,” Harris said.

Harris and the TARA team have been working on the four cores of the project, preparing to have a beta version of the database ready within the next year. The Ontology Core, led by Maryann Martone, PhD, of UC San Diego, is creating a detailed ontology for acupoints, using both Western biomedical and Traditional East Asian Medicine (TEAM)

terms. This comprehensive naming system ensures that all data is precisely categorized and easily accessible.

The Atlas Core, led by Peter Hunter, FRS, of the University of Auckland, and Vitaly Napadow, PhD, LAc, of Mass General Brigham, is developing a 3D visual atlas of the body. This atlas will allow users to click on each acupoint location, displaying the surrounding structures using MRI images. The aim is to provide a detailed, visual representation of where needles are inserted during acupuncture and the specific tissues in and around the active points.

The Data Core, led by Karl Helmer, PhD, of Massachusetts General Hospital, is developing the computing infrastructure (database and web portal, with storage) for the open-access repository of anatomical and physiological data.

Harris leads the TEAM Core, ensuring that all project outputs remain relevant to TEAM practices. This focuses on integrating the different aspects of the project and maintaining the authenticity and applicability of the research to acupuncture practices.

The visual atlas is a critical aspect for TARA. Harris is particularly excited about the potential to show the fascia, the thin connective tissue that surrounds, essentially, everything inside the body. Researchers have suggested that common acupuncture points may lie in the fascia layer. However, typical MRI techniques do not capture fascia well due to its unique properties.

The TARA Atlas Core has been working diligently to develop imaging techniques to visualize fascia accurately, enabling researchers to study its role in acupuncture more effectively. By providing detailed images and data on fascia, TARA could reveal whether certain acupoints have distinct

fascial structures, enhancing knowledge of how acupuncture affects the body. This deeper understanding could help integrate acupuncture into mainstream medical research and practice.

Throughout the past year, Harris and his team have also engaged with the acupuncture community, gathering feedback from nearly 200 practitioners to align TARA's functionality with user needs. Dr. Harris has also presented TARA at two international conferences in 2024: the Society for Acupuncture Research in Hong Kong and the International Congress on Integrative Health and Medicine in Cleveland Ohio. At these meetings, there was an enthusiastic response and valuable input pertaining to the TARA project.

Harris envisions TARA becoming an indispensable tool for both researchers and clinicians, bridging the gap between acupuncture and mainstream medical research.

"For clinicians, we're hoping that we'll have an active trials database where people can just type in, for example, 'low back pain.' And TARA would bring up all the studies of acupuncture for low back pain, and also the points that were used in these studies in addition to efficacy data," Harris said.

By integrating advanced imaging techniques and detailed anatomical descriptions, TARA can enhance our understanding of acupoints and their physiological significance – ultimately facilitating the integration of acupuncture into global healthcare practices.

A beta version of TARA is expected to be ready within the next year.

"My hope is that 10 years from now, TARA will be self-sustainable and will bridge acupuncture research with the larger medical community," Harris said.

A photograph of a woman in a white blazer shouting with her mouth wide open in a joyful expression. She is holding a white envelope that says 'THE MATCH' on it. A man in a brown jacket and blue shirt is smiling next to her. The background shows a crowd of people outdoors. The entire image has a blue tint.

TEACH

INTEGRATIVE EDUCATION
THAT EMPOWERS

HEAL-IM STUDENTS REFLECT ON CLINIC ROTATION AT SAMUELI INSTITUTE

Part of the Samueli Institute's mission is to provide future physicians with a sound foundation in the principles, philosophy and evidence-informed practices of integrative medicine. Therefore, fourth-year students in the UCI School of Medicine have the opportunity to take the Integrative Medicine Elective. This outpatient rotation is designed primarily for students in the institute's Health Education to Advance Leaders in Integrative Medicine (HEAL-IM) Track, but it is also open to other medical students. The course includes a two- or four-week rotation with the Samueli Institute, during which students gain first-hand knowledge and experience in providing whole-person care. Students participate in discussions of the integrative assessments and treatment plans for patients. With the supervising faculty approval and patient consent, students may also participate in obtaining patient histories, perform appropriate physical examinations, and provide integrative patient education guidance. Here, two HEAL-IM students reflect on their experience at the Samueli Institute.

"This rotation was eye-opening. It was inspiring to see how much patients value and seek out integrative services. Understanding the role of integrative medicine within the broader health system and patient preferences for the sequence of treatments—from lifestyle changes to natural supplements to medication—was crucial. My rotation in integrative medicine has expanded my repertoire of modalities for patient care, and I plan to incorporate many of these insights into my future practice, advocating for a more evidence-based and patient-centered approach. Further health systems integration of integrative techniques holds great promise for improving patient outcomes and enhancing the overall healthcare experience."



*Isaac Hung, MS4
HEAL-IM Student*

"I appreciated the opportunity to have hands-on experiences with the innovative multidisciplinary approach to integrative health. I was consistently impressed by the team-based approaches taken throughout the clinic, and the collaborative nature of the care delivered. After working with multiple providers, it became clear that they each had a deep understanding of their own domains, as well as principles and philosophies of their colleagues working alongside them. This collaboration allowed for patients to receive the detailed, individualized and care that is integral to integrative medicine modalities. I feel that this rotation has truly benefited my medical experience and am certain it will continue to be impactful on my career as I move forward as a future physician."



*Clara Riggle, MS4
HEAL-IM Student*

83

total medical student
participants in
HEAL-IM program
since inception

PIONEERING A NEW ERA OF HEALTH EDUCATION

Creating the Integrative & Functional Medicine Fellowship



The Samueli Institute created a first-of-its-kind fellowship in 2024, one that brings together the cutting-edge knowledge and latest evidenced-informed approaches of both integrative and functional medicine into one curriculum.

The Integrative & Functional Medicine Fellowship (IFMF) will foster a new generation of physicians dedicated to whole-person care. Fellows will learn in a flexible online environment that utilizes a state-of-the-art online education platform. During this two-year program, fellows will also participate in immersive, practical, in-person retreats at the Samueli Institute.

The Samueli Institute began accepting applications for the first cohort in the 2024 fiscal year, and classes began in September 2024. The fellowship is recognized by the Academic Consortium for Integrative Medicine & Health, the official recognizing body for integrative medicine fellowships in the U.S., and eligible candidates will be able to sit for the board certification exam offered by the American Board of Integrative Medicine at the completion of the program.

The fellowship's comprehensive curriculum covers a wide range of topics, including nutrition, mind-body medicine, lifestyle

modification, advanced diagnostic techniques, and personalized case-based treatment plans. Fellows will engage in rigorous academic coursework, hands-on clinical training, and immersive experiences that emphasize the power and importance of a whole-person approach to care. Learners will walk away with training in how to consider the physical, emotional, mental, social, and environmental influences that affect health and well-being.

Tieraona Low Dog, MD, is at the helm of the program, bringing unparalleled experience and passion for whole-person care. Dr. Low Dog is the former fellowship director at the University of Arizona Center for Integrative Medicine, one of the premier integrative health education programs. She is also a founding member of the American Board of Integrative Medicine, a highly published scholar and researcher, a presidential appointee under President Bill Clinton, and the recipient of five lifetime achievement awards.

"The launch of the new Integrative and Functional Medicine Fellowship at the UC Irvine Susan Samueli Integrative Health Institute marks a ground-breaking step in healthcare," said Low Dog.

"This program embodies a future where

Put the Future

Into Practice

“This marks a ground-breaking step in healthcare. This program embodies a future where healing addresses the entirety of human health, elevating both treatment and understanding.”

Tieraona Low Dog, MD

Founding Director, IFMF

healing addresses the entirety of human health, elevating both treatment and understanding. Practical, cutting-edge, and holistic, the curriculum is designed for physicians to take what they learn on Friday into the clinic on Monday.”

Co-director of the IFMF is Robert McCarron, DO, DFAPA, FAIHM, director of education at the Samuelli Institute.

“We are proud and fortunate to have the Susan Samuelli Integrative Health Institute as the center point of this Fellowship,” said McCarron. “Our faculty focuses on how to bring the core clinical components of integrative medicine to the busy daily practice of primary care and other physicians. I see the targeted and gradual inclusion of integrative medicine into primary care medicine as a natural occurrence.”

The fellowship will emphasize interdisciplinary collaboration. Fellows will learn from – and work alongside – leading professionals from specialties across integrative and functional medicine. This multidisciplinary approach will be essential for fellows to develop a comprehensive understanding of patient care that transcends traditional boundaries.

Aly Cohen, MD, is a triple-board-certified physician in rheumatology, internal medicine,

and integrative medicine. She serves as a course director for Environmental Medicine and the Integrative Approaches to Allergy, Immunology, and Rheumatology.

“I’m thrilled to be part of such an amazing new fellowship program. Clearly this is filling a critical gap and need within current medical training and western medical care. I’m honored and humbled to work with such fabulous faculty and administration and look forward to what’s ahead,” said Cohen. “The curricula that I will be creating and managing are so relevant for our time. The enormous amount of toxic environmental exposures contributes to health conditions that are largely preventable. I’m thrilled to be a part of the movement to address health and disease prevention instead of just disease treatment.”

In addition to clinical training, fellows will be encouraged to engage in cutting-edge research projects. The program will provide access to state-of-the-art research facilities and resources, allowing fellows to contribute to the growing body of evidence supporting integrative and functional medicine.

The Samuelli Institute continues to accept applications for the fellowship. The second cohort is scheduled to begin in March 2025.



HEALTH & WELLNESS COACHING PROGRAM INCREASES ACCESS TO TRAINING

The Academic Integrative Medicine (AIM) Health & Wellness Coaching (HWC) Certification Program graduated its third and fourth cohorts with students from across healthcare disciplines, showcasing The Samueli Institute mission to incorporate integrative health throughout the healthcare system and other disciplines. The program has graduated health and wellness coaches from areas such as nursing, pharmacy, athletics, obstetrics and gynecology, nutrition, and more.

AIM HWC is a six-month program that combines traditional and whole-person care training to prepare health coaches to work with people in various healthcare settings. Students are trained to provide integrative health coaching to clients with a variety of clinical conditions and prevention goals, and the program offers a focus of supporting those with mental health challenges that impact their wellness.

62

total students/graduates of Health
& Wellness Coaching program

"This Health & Wellness Coaching program showed up at a perfect time of my personal growth and the stage of my professional development," said Hui Hwang, LAc, DAOM, Dipl. OM, acupuncturist at the Samueli Institute.

"I can only imagine how tremendously beneficial it will be to my patients once I start to integrate deep listening with empathy, appreciative inquiry with curiosity and many more applications to my daily practice. I can't wait to apply these skills in my interactions

with my patients and see how it manifests and transforms my patients' lives and to sustain a change for good."

Additionally, organizations continued to partner with the Samueli Institute in order to increase access to coaching education and services. In 2023, the AIM-HWC program was supported by a grant from Cedars-Sinai Medical Center in Los Angeles, facilitated by Robert McCarron, DO, director of education at the Samueli Institute. And in 2024, the Samueli Institute gave scholarships to five students – four from Be Well Orange County and one from Mental Health Association of Orange County – to help train people working with mental health in Orange County.



"The skills that I have learned throughout this program that I have found most helpful in my current work at [MHAOC] have been the four pillars of coaching: self-awareness, authentic communication, mindful presence and providing a safe & sacred space. Keeping these things in mind as I do my job as a peer support specialist in a mental health setting has made me a better listener and better able to provide support to those living with mental illness," said graduate Claudia Lavini, who received a scholarship and planned to sit for National Board for Health & Wellness Coaching board certification.

"Thank you again for the opportunity to learn these very valuable skills in health coaching that have certainly enhanced how I view healthcare and have motivated me to seek new ways to support clients that I currently work... and also to make healthier changes in my own life."

The AIM HWC program also partnered with the John Henry Foundation, a non-profit that provides long-term residential care for adults living with schizophrenia in Orange County, to provide free coaching to family members of those living in the community. And through a partnership with the Illumination Foundation, a non-profit that provides services to adults

and children experiencing homelessness, the program provides health education and coaching to clients in both English and Spanish.



INTEGRATIVE CARDIOLOGY FELLOW: ZHENGRAN WANG, DO

Zhengran Wang, DO, completed the Integrative Cardiology Fellowship at the Samueli Institute in June 2024. He spent time co-leading group medical visits for both cardiology and weight management, while also helping cover sessions of the Cardiac Rehabilitation program throughout the year.

Wang is involved in several research projects aimed at improving cardiovascular health outcomes, such as a study investigating how echocardiograms can detect right ventricular heart failure. He is also engaged in projects looking into how well different models predict cardiovascular risk, particularly in diverse populations, and examining the impact of strict risk factor control on patients with diabetes and heart disease.

Wang will remain with the Samueli Institute for another year to continue his research and clinical work.

"Being an integrative cardiology fellow is an eye-opening and transformative experience that has brought me to the forefront of the nascent field of integrative cardiology. This invaluable experience has enabled me to develop advanced clinical skills in cardiovascular healthcare, particularly in preventive care, by combining conventional and complementary methods. The opportunity to collaborate closely with other integrative healthcare professionals has cultivated a dynamic learning environment, deepening my understanding of holistic and patient-centered care. Thanks to the program's innovative and versatile design, I was able to further enhance my research, teamwork, and communication abilities."



Zhengran Wang, DO
Integrative Cardiology
Fellow, Susan Samueli
Integrative Health
Institute

SAMUELI INSTITUTE INTRODUCES UNDERGRADUATES TO CULINARY MEDICINE

The Culinary Medicine team at the Samuelli Institute began a new initiative to introduce undergraduate students to the Mussallem Nutritional Education Kitchen (MNEC). Twenty students joined the Culinary Medicine Undergraduate Program to learn about evidence-informed whole food nutritional concepts, healthy cooking skills, and how to work in an educational kitchen.

Prospective participants completed a written application and interview to be accepted into the program. Once accepted, students were required to complete an orientation training to learn how to work in the kitchen, attend regular educational meetings, and serve one volunteer shift per week as a chef assistant in the MNEC. Shifts ranged from three to four hours long.

The group spent a collective 300 hours learning and volunteering in the MNEC.

Topics covered in the educational meetings included the Mediterranean diet, healthy fats, digestive syndromes, gut microbiome, and fermentation. The program also included student presentations and a Q&A session with medical students. Participants also enjoyed social gatherings, such as a dinner night hosted at a student's home.

Undergraduates Marco Esteban and Robert Plyer created and led the program in coordination with the Culinary Medicine team.

"Introducing undergraduates to the power of culinary medicine as volunteers offers students a unique opportunity to combine nutrition education with practical cooking skills," said Jessica VanRoo, CCMP, NBC-HWC, executive chef at the Samuelli Institute.



"These skills foster healthier eating habits for themselves and the other students, community members, and patients they interact with. This hands-on experience enriches their academic journey and empowers them to make a tangible impact on public health by promoting culinary skills and accessible, nutritious food choices. Through this initiative, undergraduates develop a deeper understanding of the relationship between diet and wellness, enhancing their future healthcare and community service careers."

Students offered positive feedback about the new program. Some said they enjoyed having the opportunity to work in the kitchen and learning how to nourish their body in creative but nutritious ways. Another said they shared what they learned with their own friends and family.



CLOSING THE NUTRITION EDUCATION GAP WITH THE CULINARY MEDICINE ELECTIVE

For medical students, there is a critical education gap in learning how diet can help promote wellbeing and prevent disease. In partnership with the UC Irvine School of Medicine, the Samueli Institute is filling that gap through the Culinary Medicine Elective.

The institute has seen great success with the program. As of this fiscal year, the Samueli Institute has educated over 300 medical students in the principles of evidence-informed, whole food nutrition through this course.

Students study the fundamentals of diet and nutrition, learning about food biochemistry, Mediterranean and anti-inflammatory diets, and more. Additionally, participants receive practical cooking lessons inside the Mussallem Nutrition Education Center, with state-of-the-art cooking stations and the latest in culinary tools. These sessions emphasize creating healthy, culturally appropriate dishes that utilize efficient food preparation methods.

Students also explore the foundations of mindful eating, to help patients make practical, sustainable changes to their diet.

Faculty include Nimisha Parekh, MD, MPH, director of culinary medicine at the Samueli Institute and clinical professor of medicine; Jessica VanRoo, CCMP, executive chef at the Samueli Institute; Karen Lindsay, PhD, RDN, registered dietitian nutritionist at the Samueli Institute; and Sherry Schulman, RDN, MBA, registered dietitian nutritionist at the Samueli Institute.

“The culinary medicine elective is an innovative opportunity for our students to learn about nutrition from a multidisciplinary team early on in their educational journey,” said Parekh. “This benefits not only the patients but also allows the students to create healthy eating and culinary habits for themselves – providing to their patients their own practices, is so impactful.”

300+

total UC Irvine
medical students
trained in
culinary medicine



A photograph of a female doctor with long dark hair, wearing a white lab coat, smiling warmly at a patient. The patient is lying down, looking up at the doctor. The image has a blue tint. The doctor's lab coat has "UCHealth" and "Jinlim Jeon, Ph.D, D.D.C." on it. There is a "Pureit" water filter on the left.

HEAL

POWERFULLY PERSONALIZED
INTEGRATIVE CARE

PATIENT CARE AT-A-GLANCE

63,320

*total inpatient
volume in FY24

35,684

ambulatory visits
in FY 24

54,865

integrative nursing
interventions
in FY24

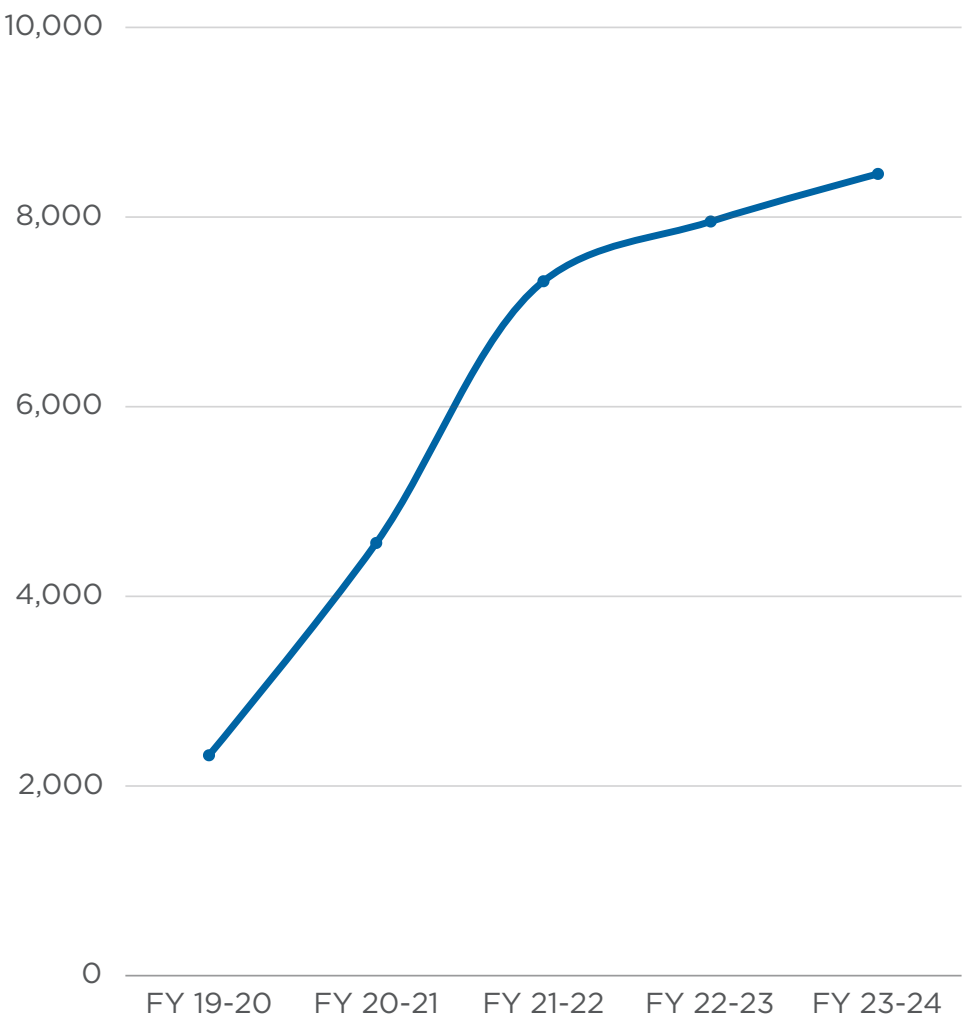
8,455

inpatient
acupuncture
treatments
in FY24

600+

Group
Medical Visit
participants
in FY 24

Growth in Inpatient Acupuncture Treatments



**Integrative nursing interventions and inpatient acupuncture treatments*

CLINICAL SERVICES

Clinical Programs

- Integrative Concierge Care
- Executive Health

Integrative Specialties

- Cardiology
- Cancer
- Children's Health
- Dermatology
- Gastroenterology
- Gynecology
- Pain Management
- Primary Care
- Women's Health

Integrative Services

- Acupuncture
- Behavioral Health
- Biofeedback/Neurofeedback
- Cardiac Rehabilitation
- Health and Wellness Coaching
- Inpatient Acupuncture
- Inpatient Integrative Nursing
- Massage Therapy
- Mindfulness
- Naturopathic Care
- Nutrition
- Pharmacy
- Physical Therapy
- Weight Management

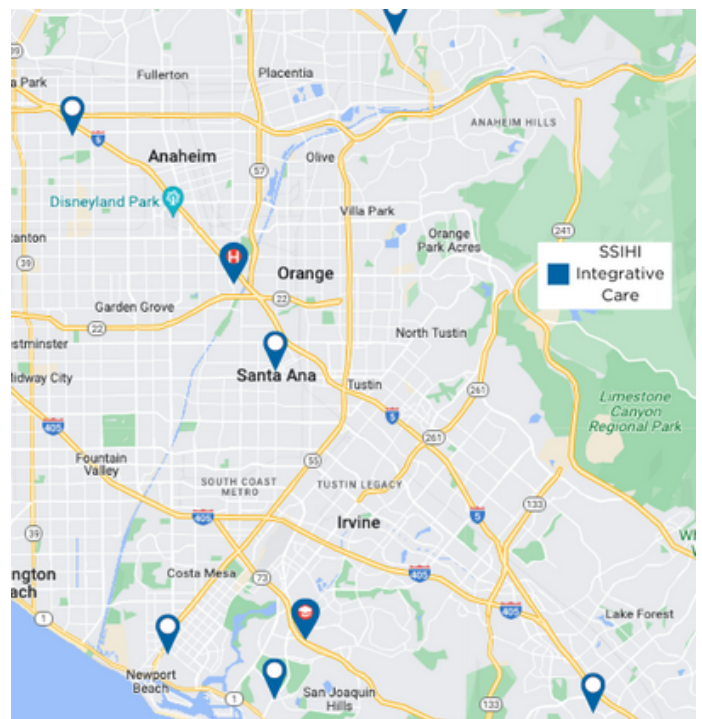
See a list of clinicians by scanning the QR code or visiting: ssihi.uci.edu/meet-the-team/



CLINICAL LOCATIONS

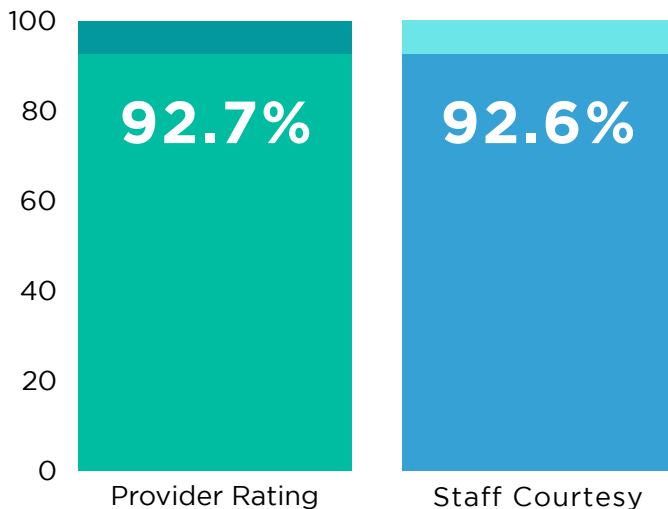
The Susan Samueli Integrative Health Institute's flagship location is in Irvine, within the UC Irvine Susan & Henry Samueli College of Health Sciences. The Samueli Institute also serves patients at the following locations:

- Anaheim
- Costa Mesa
- Laguna Hills
- Newport Beach
- Orange
- Santa Ana
- Yorba Linda



NRC PATIENT SATISFACTION SCORES

The Samueli Institute has received strong NRC patient satisfaction scores year after year. The Samueli Institute received a 90.9% net promoter score for the 2024 fiscal year, an increase from the previous year. Net Promoter Score is a metric used when asking patients for the likelihood they would recommend the clinic to a friend or family member. The Samueli Institute's score is significantly higher than the national average net promoter score of 84.3 for ambulatory clinics.



Additionally, as part of this score, the institute received a 92.7% provider rating and 92.6% rating for staff friendliness and helpfulness, both increases from the previous year.

PERSONALIZING HEALTHCARE:

How the Samueli Institute Is Meeting Changing Patient Needs

Patient needs are evolving rapidly. Recent data indicates widespread dissatisfaction with the current healthcare system, with some patients feeling it is overly focused on treating illness rather than prioritizing prevention and overall wellness.

What they want, instead, is more personalized healthcare. Most have expressed that they want clinicians to invest more time in understanding their unique needs and fostering stronger relationships.

It is evident that patients are expecting more from their healthcare practitioners than ever before. The Samueli Institute is

working to meet that demand through a highly personalized, collaborative approach



that emphasizes prevention and integrative whole-person care.

Arvin Jenab, ND,
medical director of
naturopathic medicine

at Samueli Institute, notes that highly advanced diagnostics and tests are enabling clinicians at the Samueli Institute to “better determine underlying causes or functional imbalances that are driving disease.”

One such diagnostic tool is the EndoPAT test, the only FDA-cleared test for the non-invasive assessment of endothelial dysfunction, which increases the risk of cardiovascular disease. The device attaches to the finger and records arterial pulsatile volume changes.

Jenab also highlights that the Samueli Institute utilizes specialty lab testing from Boston Heart Diagnostics. These advanced blood tests assess cardiometabolic health by looking at an expanded panel that helps identify genetic, inflammatory, and metabolic factors that may be at play, allowing clinicians to target treatment and mitigate risk of disease through individualized treatment plans. Similarly, the DUTCH panel, an advanced urinary test, offers a comprehensive view of hormonal health and helps to identify imbalances.

“These tools all allow Samueli Institute clinicians to assess patients at a more functional level”, Jenab says, adding that this is what sets the Samueli Institute apart.

“What we do differently is we delve deeper into evaluating upstream functions or systems that may be leading to downstream symptoms,” he says. “For example, patients can have joint pains, but the joint pain is not contained or limited to just joint pain. Joint pain can be an expression of upstream functions that need support... immune system or digestive system, for example. So by evaluating those upstream systems, we can determine whether they play a role in the patient’s symptomology, so that we can address and optimize those systems.”

As a result, the patient receives care that is personalized to their unique circumstances, helping them avoid cookie-cutter treatment plans that may not truly address their health concerns. “This helps us be more targeted in addressing patient needs very specifically on

a one-on-one basis,” Jenab says.

From here, the patient has access to a wide range of healthcare professionals under one roof who specialize in each facet of their whole-person care. At the Samueli Institute, practitioners range from medical and osteopathic doctors to naturopathic doctors, integrative pharmacists, acupuncturists, registered dietitian nutritionists, health and wellness coaches, nurse practitioners, psychologists, and more. Jenab notes this is a distinctive feature of the Samueli Institute. He says it is “fairly unique” for naturopathic doctors, for example, to work so closely with other medical practitioners in the same institute.

“Sharing this space together”, Jenab says, “is what allows multidisciplinary providers to easily collaborate on a patient’s care and work together to understand the complexities of their health -- bringing a whole-person view of the patient into focus.”

By utilizing advanced diagnostics and testing, along with enhanced collaboration across disciplines, clinicians at the Samueli Institute are enabled to deliver the personalized, team-based care that patients are looking for.



RENEWED STRENGTH AFTER SURGERY:

How Cardiac Rehab Transformed Patient Bradley Gilbert's Health



Bradley Gilbert, MD, was enjoying his active lifestyle in Orange County. The 67-year-old retired physician lifted weights in his garage to stay in shape, and he loved going on regular hikes with his wife – sometimes even 8 miles with elevation. However, when he was faced with the news that he needed open heart surgery, suddenly he was wondering if he would ever be able to do those things again. Thankfully, he says, the Cardiac Rehabilitation program at the Samueli Institute helped him not only regain his strength after heart surgery but also achieve even better health than before.

In September of 2023, at UCI Health, Gilbert underwent a sternotomy so doctors could perform a mitral valve repair as well as a Cox-Maze procedure, which helps prevent atrial fibrillation.

“Major surgery,” Gilbert called it, adding that the procedure and its aftermath really took a toll on his physical health. It all left Gilbert “really worried” that he would lose his ability to continue the active lifestyle he loved.

Five weeks after the surgery, Gilbert’s doctor referred him for 36 sessions in the Cardiac Rehabilitation program at the Samueli Institute in Irvine. Cardiac Rehab is a personalized and comprehensive program designed to help patients recover from cardiovascular events. It involves supervised exercise and education to help patients continue their recovery and improve their physical fitness. Patients also have opportunities to receive nutrition counseling or acupuncture and participate in Tai Chi, mindfulness meditation, and nutritional education cooking classes.

Gilbert appreciated this multidisciplinary approach to cardiac health. “Making it a comprehensive program – where you get the focused, physical exercise, but you also get all of those other pieces to keep you healthy – was really cool,” he said.

Efrain Cerrato, MBA, ACSM-EP, lead exercise physiologist at the Samueli Institute, says this integrative approach is what truly sets the program apart.



"Our multidisciplinary approach to cardiac rehab is designed to empower the whole person. This holistic strategy empowers patients to take control of their recovery, promoting long-term heart health and overall wellness," Cerrato said.

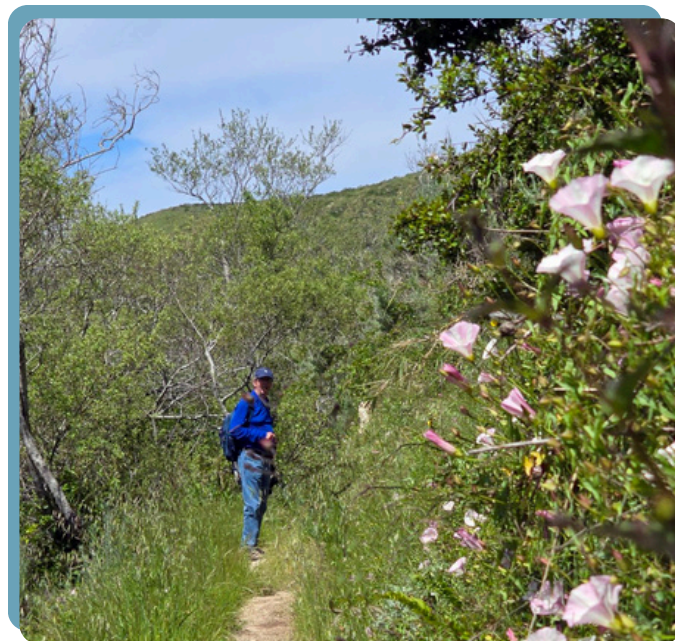
Gilbert enjoyed his group exercise classes with Cerrato and other patients. He liked rebuilding his endurance on the treadmill while also learning how to properly and effectively do other exercises like push-ups, squats, weightlifting, and more. Meanwhile, Gilbert said, Cerrato would always provide extra reading and educational materials for the group – to really reinforce what they learned during the sessions.

In addition to the supervised exercise, Gilbert took advantage of the other services offered to Cardiac Rehab patients. He participated in Tai Chi sessions and cooking classes in the Mussallem Nutritional Education Center. He also met with registered dietitian Michelle Luhan, MS, RDN, CDN, for nutrition counseling and health and wellness coach Theresa Nutt, MA, BSN, HNB-BC, NBC-HWC.

"As I like to share with my patients, energy starts at the cellular level – impacting not just heart cells, but all the cells in your body. This 'good' energy isn't solely derived from the nutrients you consume; it's also influenced by the quality of your sleep, how you talk to yourself, and the strength of your mind and body," Luhan said.

Tracking the patient's progress is a key feature of the Cardiac Rehab program. This proved to be essential for Gilbert. Slowly but surely Gilbert saw his various numbers improve. His weight and body fat percentage decreased, and he was particularly proud of his push-up numbers.

"I couldn't do push-ups, and my push-ups doubled – how many I can do without falling



over," Gilbert said.

In addition to his physical improvement, Gilbert saw his mood improve too. He noticed that he was feeling better about himself and reporting better self-efficacy.

"Objective results which demonstrate the efficacy of the program overall," Gilbert said. "I can actually see what difference is made, provides motivation to keep going."

Gilbert ended up loving the program so much that his doctor referred him for another 36 sessions, completing a total of 72 sessions.

Today, Gilbert feels he has the knowledge and tools to continue this journey on his own. He continues a fitness regimen in his garage and even writes down his exercise plan on a whiteboard on the wall – just as Cerrato does in the program. Gilbert also stays active and continues building his stamina with his wife.

"[Surgery] just kind of wipes you out, and then this really brought me back to at or above where I was," Gilbert said.

"When a patient like Mr. Gilbert, who had an active lifestyle before heart surgery, walks into cardiac rehab, there are many

unknowns,” Cerrato said. “We provide a structured program to not only restore their physical capabilities but also strengthen their mental resilience and emotional well-being. Our goal is to ensure patients regain confidence in their abilities and maintain an active, empowered lifestyle.”

Even more, Gilbert recalled uncovering the true reason why he wanted to restore his health after heart surgery.

When asked by Theresa Nutt to say why we

wanted to be healthy, my three reasons were to be there with my wife, travel and see my grandkids grow up,” Gilbert said.

And now, he feels confident that all remains in his future.

“I was very worried and it was such a supportive environment and gives you that reassurance that you’re going to get better,” he said. “I really think the program that [the institute] put together is very impressive.”



MINDFULNESS MEDITATION AVAILABLE ON INPATIENT MONITORS

Incorporating integrative health practices into the wider health system is a key mission for the Samueli Institute. That means making sure patients at large have access to integrative services, no matter where they are seeking care within the system. As part of this mission, the Samueli Institute partnered with UCI Health to provide patients with

mindfulness videos during their stay in the UCI Medical Center in Orange.

The Samueli Institute created original mindfulness meditation videos for display on patient televisions. Mindfulness meditation has been shown to help people cope with stress, anxiety, and pain. This technique can

help cultivate attention to the present moment, leading to better emotional regulation and enhancing a sense of wellbeing.

Jake Gooing, DO, is a chief resident in the Department of Physical Medicine & Rehabilitation. He spoke about the mindfulness meditation videos on patient TVs in the Acute Rehabilitation Unit (ARU), an inpatient rehabilitation facility program that helps people recovering from injury or illness regain their abilities and adapt to their new lifestyle. When a patient turns on the TV in

their room, the videos are available to select and watch. Gooing said patients who watched the videos, including those who stated they had been experiencing anxiety or having trouble sleeping, expressed positive feedback.

"It's beneficial. We're trying to find a nonpharmacologic way to help patients sleep," Gooing said. He added that the videos can also help those "adjusting to what their life is going to be like in the future outside of the rehab unit" and offer them ways to stay present in the current moment.

ENHANCING THE INPATIENT EXPERIENCE THROUGH INTEGRATIVE NURSING

The Samueli Institute's integrative nursing program is integral to not only the nursing practice but the way that care is delivered to those at the UC Irvine Medical Center. In the 2024 fiscal year, there were 54,865 total integrative nursing interventions, a 71% increase from the previous year.

These interventions, delivered at the bedside by integrative health-trained nurses, include acupuncture therapy, aromatherapy offerings, clinical massage, and mindfulness. Top departments where they were delivered include the Maternity and Psychiatry departments.

To help with the continued expansion of integrative interventions, UCI Health nurses can now use the Samueli Institute's online Learning Library of mindful meditations and relaxation techniques. This tool can help scale the training of nurse-delivered integrative therapies and help patients utilize the tools to enhance their healthcare experience and improve overall wellness.

71%

increase in integrative
nursing interventions

The Samueli Institute launched the integrative nursing program in 2020, becoming the first in the U.S. to train over 93% of inpatient nurses in a health system on the principles and practices of integrative nursing care. Since then, the program has trained over 5,175 nurses and other health workers at UCI Health. This initiative showcased to UCI Health nurses and patients the value and importance of collaborative integration of team-based care and utilization of integrative health modalities to improve symptom management, increase utilization of non-pharmaceutical approaches for pain control, and enhance the patient experience.

COST SAVINGS THROUGH INPATIENT ACUPUNCTURE AT UC IRVINE MEDICAL CENTER

The Samueli Institute's inpatient integrative health program consists of an active acupuncture program, which continues to grow year over year. During the 2024 fiscal year, the inpatient acupuncture team provided 8,455 treatments to patients who were admitted at UC Irvine Medical Center in Orange, CA.

Other integrative health therapies at the Medical Center include acupressure, mindfulness, massage and aromatherapy deployed by nurses trained in integrative nursing. The acupuncture service has worked in collaboration with the UCI Pain Management team and has grown to cover other units and departments including the Burn, Oncology, Acute Rehabilitation, Cardiology, General Medicine, Orthopedics, Neurosurgery and Psychiatry units.

Based on a recent Quality Improvement chart review of over 5,000 admissions receiving acupuncture, an average of 2.7 acupuncture treatments were provided per patient admission. Patients were asked to rate their

pain on a numeric scale of 0 to 10. It was observed that patients who reported a pain rating of 4 or greater prior to receiving acupuncture had an average reduction in pain of 1.9 after one acupuncture treatment. Additionally, 43% of these patients reported that their pain rating decreased by at least 2 units after the first treatment. For reference, a reduction of 2 units in the 0 to 10 pain intensity scale is equivalent to the decrease attributed to medications, such as opioids.

Additionally, a cost savings analysis was conducted on the top 15 discharge diagnosis for those who received acupuncture treatments. The team assessed cost savings by examining the observed versus expected length of stay for the respective discharge diagnosis related group (DRG). Preliminarily, for those patients without an ICU stay, an average cost savings of almost \$10K per admission was observed for patients who received acupuncture treatment compared to those who did not receive acupuncture treatment within the same DRG.



A group of people, mostly older adults, are practicing Tai Chi in a courtyard in front of a modern building with large glass windows. They are all in a similar pose, with arms extended forward and slightly to the sides, and legs in a wide, stable stance. The image has a blue tint. The word "SERVE" is overlaid in white, and the tagline "WHOLE-PERSON HEALTH FOR THE WHOLE COMMUNITY" is overlaid in yellow.

SERVE

WHOLE-PERSON HEALTH FOR
THE WHOLE COMMUNITY

PROVIDING INTEGRATIVE CARE TO UNDERSERVED COMMUNITIES

Continued Growth at FQHC



49%

Increase in acupuncture visits at Federally Qualified Health Centers (FQHC) in FY24

3,191

total visits for integrative care, including acupuncture and dietitian services, in FY24



In partnership with the UCI Health Federally Qualified Health Center (FQHC), the Samueli Institute has seen year-over-year growth in the number of patients seeking integrative care at the UCI Health FQHC Family Health Center in Santa Ana, which provides health services to underserved communities in Orange County.

Through the years, the Samueli Institute has partnered with the UCI Health Family Health Center to provide integrative care such as acupuncture, nutritional education, group medical visits, mindfulness and more. The initiative is part of the Samueli Institute's commitment to increasing access to integrative care and providing treatment to underserved communities.

There was a total of 1,762 acupuncture visits in the 2024 fiscal year, a 49% increase from the previous fiscal year. When including dietitian services, there were over 3,000

visits for integrative services at the FQHCs.

Most patients who sought care at the FQHC this year had Medicaid (known as Medi-Cal in California), with many other adult patients being uninsured. Additionally, patients predominantly identified as being of Hispanic, Latino or Spanish ethnicity.

Jose Mayorga, MD, executive director and chief medical officer of the UCI Health Family Health Centers in both Santa Ana and Anaheim, says there are a few reasons for the continued increase in acupuncture visits. Mayorga says patients who seek care at the FQHC tend to look for a variety of treatments, such as integrative therapies, to complement traditional medicine. Additionally, many acupuncturists in the area don't accept Medicaid, unlike the UCI Health Family Health Center. At the FQHC, patients can find the whole-person care they seek at an affordable cost.

THE POWER OF GLOBAL COLLABORATION

Inaugural Global Blue Skies Conference



The power of global collaboration was exemplified when the Samueli Institute hosted the inaugural Global Blue Skies (GBS) conference in partnership with the UC Irvine Department of Urology and the Royal College of Physicians and Surgeons of Glasgow (RCPSG). The RCPSG is an esteemed body of over 15,000 professionals dedicated to improving patient care, who have been upholding the highest standards of healthcare for more than 400 years.

On February 3, over 150 individuals of the foremost minds in medicine and beyond convened at UCI for meaningful discussions on the technological advancements and healthcare practices that are shaping the future of medicine. The conference focused on two critical topics: salutogenesis, or lifestyle strategies for optimizing health, and advanced healthcare technologies, including AI, virtual reality, and laser technologies.

“The Blue Skies concept is a collaborative effort between the Royal College, the UCI Samueli Integrative Health Institute and the UCI School of Medicine and represents our

shared belief that the bright future of healthcare includes a combination of wellness and prevention along with the most advanced technologies and clinical strategies,” said Jamie Landman, MD, chair of the UCI Department of Urology.

Presentations on salutogenesis featured distinguished speakers such as Gary Deng, MD, PhD; Lindsay Jaacks, PhD; Patrick Kearns, MBChB, MPH; Jason Leitch, DDS, PhD, MPH; Robert Lustig, MD; Shaista Malik, MD, PhD, MPH; Mike McKirdy, MD, President of the RCPSG; and the keynote speaker, Nobel laureate Sir David MacMillan, PhD.



GLOBAL BLUE SKIES CONFERENCE



“To be inducted to join this historic college and community that represents excellence, innovation and care for humanity, is very meaningful to me. The values that RCPSG stand for and have brought to the world since 1599 were evident in this remarkable meeting that focused on the future of medicine and science. I am proud to have become a member of the RCPSG and look to uphold their traditions and values as the college continues to provide benefit to humanity in the 21st century,” MacMillan said.

Discussions on advanced healthcare technology included contributions from Ralph V. Clayman, MD; Derek Herrera; Duke Herrell, MD; Fred Moll, MD; Teodor Grantcharov, MD, PhD; Inderbir Gill, MD; and Francesco Porpiglia, MD.

A highlight of the conference was the induction ceremony welcoming new fellows into the RCPSG. Malik, founding executive director of the Samueli Institute, was inducted as a fellow along with Deng,

Gill, and Herrell, all of whom have made significant contributions to the medical field. MacMillan and Susan Samueli were inducted as honorary fellows. The moving ceremony featured a traditional bagpipe procession, with inductees donning RCPSG robes and signing the members’ book.

“The future of technology – and importantly, the future of lifestyle and disease prevention – are vital areas of discussion as we strive to support people to live longer, healthier, and happier lives. As a College, we are delighted to be working with our colleagues at UCI on this landmark conference, which brings together a stellar list of speakers from Scotland and America,” said McKirdy.



22ND ANNUAL WOMENS WELLNESS DAY

400 people gather for presentations under the theme
“Healthcare Transformed”



The 22nd annual Women’s Wellness Day was held on May 3, 2024, providing women the space to come together and discuss the unique health issues they face – through the lense of integrative health. This year’s theme was “Healthcare Transformed.”

Over 400 people were in attendance at the Balboa Bay Resort Club in Newport Beach to hear from world-class experts. The keynote speaker was Tieraona Low Dog, MD, a celebrated physician, educator, thought leader, researcher, and pioneer in the field of integrative medicine. She spoke to the audience about how to make an empowering transformation through healing from within.



Other speakers included Robert Bonakdar, MD, on aging gracefully; Ashley Koff, RD, on the power of personalized nutrition; Michael Kurisu, DO, on wearables and data science; Aly Cohen, MD, on environmental chemicals and human health; Michel Leon, PhD, on the connection between smell and memory; and Shaista Malik, MD, PhD, MPH, founding executive director of the Samueli Institute, on the connection between heart and brain health.

Throughout the day, guests enjoyed healthy and delicious food, including plated breakfast and lunch with nutritious snacks. Experiential activities included a mindfulness walk, herbal tea making, yoga and sound bath.

The marketplace was filled with local vendors and included jewelry, florals, clothes, wellness products, and more.

Women's Wellness Day has become a community staple for many. Individuals from Orange County and beyond consistently gather at the spring event to enjoy their shared passion for integrative health.



A YEAR OF CULINARY HEALTH WEBINARS



1,627

total registrants for
Culinary Health webinars

The Samueli Institute completed its first year of the Culinary Health Webinar Series, a series offered as part of the UCI Human Resources Wellness Program for all UCI employees and special guests.

Ten workshops were conducted via Zoom throughout the year by experts from the Samueli Institute. Each class included an educational lecture by either Katrine Whiteson, PhD, Samueli scholar and associate professor of molecular biology and biochemistry, or Sanaz Demehry, PA-C, MS, physician assistant and herbalist at the Samueli Institute. After the lecture, Jessica VanRoo, CCMP, executive chef at the Samueli Institute, demonstrated original recipes related to the topic presented.

Topics included fiber and immune health, carbs and blood glucose, herbs for digestion, health microbiome, and more. Recipes included instant pot kitchari, romesco spinach mushroom egg bake, light chamomile pound cake, lentil tabbouleh salad, ginger burdock root stir fry, artichoke leaf soup, and more.

A recording of each workshop, along with the recipes from VanRoo, can be found on the Samueli Institute's website at ssihi.uci.edu.

LEARNING LIBRARY

138

original recipes in the Learning Library

The Samueli Institute continues to expand its Learning Library of downloadable mindful meditations, relaxation techniques, and healthy recipes.

In collaboration with Samueli Institute clinicians, Jessica VanRoo, CCMP, executive chef at the Samueli Institute, consistently develops new recipes that feature nutritious, seasonal ingredients and easy-to-understand steps. In the 2024 fiscal year, the Learning Library reached a total of 138 original recipes.

All of the educational tools on the Learning Library are available at no cost to the public.

Access the Learning Library by scanning the QR code or visiting ssihi.uci.edu/learning-library



A group of women are hiking on a dirt path through a wooded area. They are wearing hats and some are using walking sticks. The image has a blue tint and the text is overlaid in the center.

PHILANTHROPY

OPENING NEW DOORS TO
HEALTHFUL LIVING

MNEC RECOGNIZED WITH DESIGNATION CEREMONY

Gift from Linda and Mike Mussallem honored with vibrant celebration



The Samueli Institute hosted a vibrant celebration on November 9, 2023, to designate the Mussallem Nutritional Education Center (MNEC). The event included a healthy assortment of original recipes from the Samueli Institute and a keynote presentation from renowned endocrinologist and nutrition expert Robert Lustig, MD.

Guests had the opportunity to tour the MNEC, exploring its state-of-the-art kitchen equipment and learning about the various ways the Samueli Institute uses the space to promote culinary medicine education, which integrates the art of cooking with evidence-informed medical practices.

The culinary delights, developed by Samueli Institute Executive Chef Jessica VanRoo, CCMP, included butternut squash soup shooters, lentil meatballs with roasted red pepper sauce, pear gorgonzola endive boats, pumpkin bread pudding, and vegan spring rolls.



A highlight of the evening was the healthy gut shots, which were developed in collaboration with Katrine Whiteson, PhD, Samueli Scholar and associate professor of molecular biology and biochemistry. Whiteson's research focuses on how microbes living in the body affect health and disease. One of the shots featured a refreshing blend of pomegranate, cranberry, and orange, while the other offered a spicy mix of ginger, turmeric, and pineapple.

Attendees then gathered in the Palmer Family Research and Conference Room. Shaista Malik, MD, PhD, MPH, Samueli Institute founding executive director, and Steve Goldstein, MD, PhD, vice chancellor of health affairs, spoke about the significance of integrative health and the MNEC's role in promoting nutritional education at UCI and within the Orange County community. Linda Mussallem, a community leader and Samueli Institute Advisory Board member, also addressed the guests. She and her husband, Mike Mussallem, retired CEO of Edwards Lifesciences, generously donated to advance nutrition education for healthcare professionals, trainees, patients, and community members. The MNEC was named in their honor, recognizing their pivotal support of nutritional education.

Lustig's keynote presentation focused on the detrimental effects of processed foods and dietary changes that can improve health. A professor of pediatric endocrinology at the University of California, San Francisco, and a best-selling author, Dr. Lustig recently published "Metabolical: The Lure and the Lies of Processed Food, Nutrition, and Modern Medicine," advocating for the power of food in combating chronic disease.



GIFT FROM BEAUCHAMP FAMILY SUPPORTS HEALTHY PREGNANCIES AND FUTURE GENERATIONS

The Pre-Pregnancy Whole-Person Care Program



Improving a woman's health before she conceives can support a healthier pregnancy with fewer complications, such as gestational diabetes and pregnancy-related hypertension. However, maternal health can have a profound impact on the baby as well. Healthy nutrition and reduced stress play a crucial role in fetal development. Poor management of these factors can increase the risk of chronic diseases later in life, including obesity, diabetes, and heart disease. To maximize the chances of healthy pregnancies and future well-being for children, adopting healthy lifestyle habits and creating supportive environments before conception is essential.

Thanks to a generous gift by the Theresa and Richard Beauchamp family, the Samueli Institute launched the Pre-Pregnancy-Whole-Person Care Program. The four-month program aims to support conception success and health outcomes that may span across generations. The program is led by Lilian Au, ND, MPH, naturopathic doctor at the Samueli Institute, and Karen Lindsay, PhD, RDN, registered dietitian nutritionist and Early-Career Samueli Endowed Chair for Integrative Health at the Samueli Institute.

Ten women who were planning a pregnancy in the next year joined the program. They received three individual appointments with Au to discuss fundamental aspects of health, centered around physical, mental and emotional well-being. This includes comprehensive, diagnostic lab tests to monitor hormones and stress levels, as well as assess any nutritional deficiencies. Participants also receive four nutritional education classes with Lindsay and a culinary educator to learn how to optimize their diet for a healthy pregnancy. Topics include healthy carbs and proteins to balance blood sugar, whole foods to optimize micronutrient status, fiber to feed the gut microbiome, and healthy fats to fuel fertility. Participants even learn to cook healthy and delicious recipes. Additionally, the program includes an eight-week mindful self-compassion program that emphasizes self-kindness to promote emotional resilience.

The program received unprecedented interest, with nearly 100 interest forms being submitted within just five days of its announcement.

The goal of the program is to assess the feasibility, acceptability, and early health benefits of this whole-person, pre-pregnancy intervention. Based on participants' feedback, the program will identify the most desired and potentially effective integrative health services to address pre-conception care needs. The Samueli Institute hopes to expand the program in 2025 to serve a broader and more diverse population.

"We are thrilled to support the new Pre-

Pregnancy Whole Person Care Program at the Susan Samueli Integrative Health Institute. The overwhelming interest in this program demonstrates a clear demand and desire for comprehensive pre-conception care in our community," said Theresa and Richard Beauchamp.

"We deeply admire Dr. Lindsay and Dr. Au's dedication to improving maternal and children's health through their innovative research and integrative approaches. Our family hopes that this program will not only

provide essential care to families but also contribute to the growing evidence base for integrative health approaches. By offering naturopathic care, nutrition counseling, mindfulness, and other supportive services, we believe this program can help families achieve successful conceptions and foster health outcomes that span generations. We are excited to see the impact this pilot program will have and look forward to its expansion to serve even more families in the future with further philanthropic support."

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WELLBEING CIRCLE



The Susan Samueli Integrative Health Institute Wellbeing Circle is a community of philanthropists that shares the institute's passion for whole-person health. Wellbeing Circle members support the institute with an annual philanthropic contribution. Through these gifts, they help to advance whole-person health in research labs, classrooms and clinics.

Throughout the year, Wellbeing Circle members and their invited guests enjoy events and activities that deepen their understanding of the institute's role in helping people achieve optimal health.

Members learn from Samueli Institute experts and enjoy special activities like healthy cooking at the Mussallem Nutritional Education Center. They deepen their understanding of topics like healing qualities of herbs from the garden and mindfulness practices, which contribute to their and the community's whole-person health and wellbeing.



Wellbeing Circle

For more information, scan the QR code
or visit sihi.uci.edu/giving/wellbeing-circle/



APPENDIX

PUBLISHED RESEARCH

Investigators shared whole-person health insights through articles published during the year. These materials reflect the studies of Samueli Institute researchers, Pilot Award recipients and Samueli Scholars published in the 2023-2024 fiscal year.

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