The University of Arizona Center for Integrative Medicine (Center) is leading the transformation of healthcare by creating, educating and actively supporting a community that embodies the philosophy and practice of healing-oriented medicine. The Center is internationally recognized for its innovative educational programs, evidence-based clinical practice, and research that substantiate the field of integrative medicine and influence public policy. Since its creation in 1994, the Center’s vision of making integrative care available to all is being realized worldwide: Center graduates are now guiding more than 8 million patients to take a greater role in their health and healing. You can learn more about the Center by visiting www.azcim.org.
As we look back on 2017, we are pleased by the increasing impact of our integrative medicine (IM) educational programs. Collectively, they have reached thousands of medical professionals across multiple disciplines.

The Integrative Medicine in Residency (IMR) program was created with the potential to train all primary care physicians in IM. Today IMR is delivered to residents at 80 sites nationwide and four abroad. Programs in family medicine, pediatrics, internal medicine, preventive medicine, physical and rehabilitation medicine, and psychiatry have licensed our curriculum.

Physician wellbeing is a core element of the IMR curriculum. In response to changes in program requirements by the Accreditation Council for Graduate Medical Education, the Center created an independent version of the IMR’s Physician Wellbeing course. This unique 4.5-hour course provides an effective tool for self-assessment and trains users to build resiliency, manage chronic stress, prevent burnout, and practice mindfulness. Since June, more than 1,600 students from seven new sites around the nation have enrolled.

Another topic of critical importance given the national opioid epidemic is Integrative Pain Management. In 2017, the Center developed a new course that trains residents in evidence-based therapies and clinical applications to address pain. In addition, we wrote and published Good Pain Science, Policy, and Integrative Medicine in The Hill, to potentially affect public policy. Finally, we contributed to the Aspen Institute call for “Big Ideas” to confront our nation’s opioid crisis and our Center’s approach was recognized in their position paper.

This was our final year of development of the National Center for Integrative Primary Healthcare. We revised our 33-hour online Foundations in Integrative Health (FIH) course so that it could be offered as five, independent shorter modules. To date, more than 2,000 trainees from 79 pilot sites have enrolled.

Recently, the Allina healthcare system committed to train all 25,000 of its employees in FIH. Additionally, FIH courses are now being used and studied at Community Health Centers in Minnesota and California.

The Center’s Integrative Health & Lifestyle program (IHeLp) and Integrative Health (IH) Coaching program train the full range of health professionals to address lifestyle change. In just three years, IHeLp alumni and students hail from 39 states, as well as Canada.

Continues on page 2
Scotland, Australia, Costa Rica, and Puerto Rico. A direct outcome of these two programs is an exciting new integrative health initiative for the public. Integrative Health Self-Care (IHSC) is a mobile self-care tool that applies motivational interviewing principles to support individuals on their personal journey towards optimal health. The IHSC pilot project went live at four sites in late August. By the end of 2017 almost 1,600 people had created IHSC accounts.

In our research division, the Institute on Place and Wellbeing has scaled up their work using wearable devices to measure the impact of office environments on human performance in real time. This innovative research will lead to the creation of healthier environments in hospitals, office buildings, schools, and homes. And, we established a “sweat collection lab” in collaboration with our UA Department of Psychology. We have developed methods to continuously monitor the stress and relaxation responses in participants using wearable devices as they experience exercise, heat and humidity exposure, and psychological stressors. This research opens a novel approach to using sweat rather than blood to assess a host of conditions.

These examples are just a few that are profiled in this year’s report. We are excited by the Center’s progress and the knowledge that our alumni serve more than 8 million patients globally. We are especially grateful for your support that helps make it possible.

Best in health,

Andrew and Victoria

Leadership

Andrew Weil, MD
Founder and Director, Clinical Professor of Medicine and Public Health, Jones-Lovell Endowed Chair in Integrative Rheumatology

Victoria Maizes, MD
Executive Director, Professor of Clinical Medicine, Family and Community Medicine and Public Health

Hilary McClafferty, MD, FAAP
Director of Pediatric Integrative Medicine in Residency, Co-Director of the Fellowship, Associate Professor of Clinical Medicine and Pediatrics

Esther M. Sternberg, MD
Director of Research, Director, Institute on Place and Wellbeing, Professor of Medicine

Randy Horwitz, MD, PhD
Medical Director, Director of Integrative Medicine Distinction Track, Associate Professor of Clinical Medicine
Faculty Honors & Awards

Center directors Drs. Victoria Maizes, Randy Horwitz, Patricia Lebensohn, and Mari Ricker were ranked among the 2016-17 Best Doctors in America. This prestigious national list, compiled for almost 30 years by Best Doctors, Inc., is based on a biennial survey of tens of thousands of leading physicians.

Molly K. Burke, MFA – Director of Online Education, has been elected to the board of Integrative Medicine for the Underserved (IM4US), a collaborative group using outreach, education, research, and advocacy to promote health in underserved populations.

Ann Marie Chiasson, MD, MPH, CCFP – Elected board member, the American Board of Integrative Medicine.

Randy Horwitz, MD, PhD – Selected by the UA medical student body to receive the College of Medicine award for Dean’s List for Excellence in Teaching, Year 2.

Patricia Lebensohn, MD – Chosen by UA students to receive the Commitment to Underserved Population (CUP) Faculty Teaching Award for her work with undocumented immigrants who have been victims of psychological, sexual, and physical trauma in their countries of origin.

Dawn Lemanne, MD, MPH, Assistant Professor of Clinical Medicine – 2017 Stanley Wallach Award, American College of Nutrition. The award acknowledges someone who has made significant contributions to the advancement of human understanding of nutrition and its role in health.

Victoria Maizes, MD – Recipient of the annual Leadership Award at the Integrative Healthcare Symposium, New York, NY.

Mari Ricker, MD – Selected to serve as the Integrative Medicine Consultant to the American Academy of Family Physicians’ Commission on Continuing Professional Development.

Esther Sternberg, MD – Elected Chair, US National Library of Medicine (NLM) Board of Regents.
EDUCATION

Our educational programs have grown to offer IM curricula that span the continuum of professional medical education. Center-trained graduates are serving in hospitals and clinics nationwide and internationally, as well as becoming IM leaders in their communities.
National Center for Integrative Primary Healthcare

This year, in collaboration with the Academic Consortium for Integrative Medicine and Health and the U.S. Health Resources & Services Administration, we completed our ambitious three-year project to establish the National Center for Integrative Primary Healthcare (NCIPH).

Through NCIPH we developed: 1) integrative health (IH) core competencies for interprofessional primary care teams, 2) a 33-hour Foundations in Integrative Health (FIH) online IH course, and 3) culturally and linguistically appropriate patient education materials about IM approaches to common medical conditions.

The FIH curriculum was taught to more than 2,000 trainees from 79 pilot sites. The students represented the spectrum of healthcare specialties. A pilot study begun in 2016 included rigorous evaluation of: 1) the competency-based IH curriculum, 2) medical knowledge and self-assessment of IH knowledge and skills, 3) interprofessional attitudes, 4) IH attitudes, 5) resiliency, and 6) wellbeing and wellness behaviors. The FIH units are now available for purchase by institutions.

Scaling of Foundations in Integrative Health

- In 2018, the Allina health care system will train all 25,000 of its employees with the FIH course.
- Generous grants from the George Family Foundation and Samueli Institute were received to implement the individual FIH courses in Community Health Centers (CHC). The goal of the project is to train providers who work with medically underserved populations. CHC project sites include the Community Health Fund in Minnesota and the Orange County Coalition in Orange County, CA.
2017 Presentations:

Center faculty Patricia Lebensohn and Mari Ricker, and Center researcher Audrey J Brooks delivered the paper *National Center for Integrative Primary Healthcare: Enhancing Interprofessional Integrative Health Education* at multiple national society annual conferences and workshops in San Diego, CA, Portland, OR, and Washington, DC.

Center researcher Audrey J Brooks, and faculty Patricia Lebensohn, Hilary McClafferty, Mari Ricker, and Victoria Maizes delivered the paper *Enhancing Healthcare Professional Wellbeing* at multiple national society annual conferences and workshops in San Diego, CA, Portland, OR, and Atlanta, GA.

Patricia Lebensohn and Audrey J Brooks, along with NCIPH interprofessional leadership team collaborators, participated in the *The National Center for Integrative Primary Healthcare Workshop* at the Academic Consortium for Integrative Medicine & Health Annual Meeting, Cincinnati, OH; April 23-25, 2017.

Audrey J Brooks and Patricia Lebensohn, along with NCIPH interprofessional leadership team collaborators presented *Incorporating an Integrative Approach to Interprofessional Primary Healthcare Education* at the American Public Health Association 2017 Annual Meeting, Atlanta, GA; November 4-8, 2017.

Fellowship in Integrative Medicine

The Fellowship in Integrative Medicine now has 300 Fellows in training and counts more than 1,400 alumni from around the world. For 18 years we’ve been teaching healthcare professionals a transformative method of caring for patients, with emphases on the individual, prevention, and wellness in addition to response to disease and treatment. The program is open to MDs, DOs, Nurse Practitioners, Physician Assistants, PharmDs, and Certified Nurse Midwives.
New Faculty

Vivian Kominos, MD, Assistant Professor of Clinical Medicine, is a board-certified cardiologist with more than 27-years of experience in both private and academic clinical practice. A graduate of St. Louis University School of Medicine, she completed her internal medicine residency and cardiovascular fellowship at Robert Wood Johnson University Hospital. A 2005 Fellowship alum, she is a founding member of the American Board of Integrative Medicine.

Dawn Lemanne, MD, MPH, a board-certified oncologist, has joined the Center and has been appointed Assistant Professor of Clinical Medicine. A 2011 Fellowship graduate, she works to develop oncology curriculum for Center programs.

What the Fellows are saying about Residential Weeks:

In general, every class offered something to learn and be able to apply with the patients and on ourselves. I love it. I came back home full of energy and with ideas to try to apply at the clinic.
– Fellowship graduate, Class of 2017 Spring.

I have already noticed a change in how I approach my consultations with fantastic positive feedback. One of my first patients told me that she has never heard her husband compliment a doctor before and that I was the first – I believe this is a direct result of utilizing several of the techniques learned in the course - style of interviewing, breathing techniques, acknowledging the sacredness of the doctor-patient relationship. Thank you!
– Fellow, Class of 2019 Fall.

I liked the opportunity to mingle with like-minded people!! And it gives you confidence that you are not alone in your quest to provide better healthcare.
– Fellowship graduate, Class of 2017 Spring.

Fellowship Alumni Activities

The Fellowship Alumni Association has grown rapidly to establish seven chapters in 2017:

- Los Angeles, CA
- San Diego, CA
- Phoenix, AZ
- Milwaukee, WI
- Madison, WI
- Kansas City, MO
- Nashville, TN

We also launched the Alumni Newsletter and each month we feature an Alumni Spotlight on our public webpage @ https://integrativemedicine.arizona.edu/alumni_and_associates.html

Charles Cairns, MD, Dean, College of Medicine – Tucson, James and Priscilla Dalen, join Drs. Weil and Maizes at Fellowship graduation.
## Active Fellows and Fellowship Alumni

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### INTERNATIONAL

Australia, Bermuda, Brazil, Canada, China, Colombia, Denmark, Germany, India, Ireland, Israel, Japan, Martinique, Mexico, New Zealand, Nigeria, Norway, Pakistan, Palau, Philippines, Poland, Qatar, Saudi Arabia, Scotland, South Korea, Switzerland, Taiwan, Thailand, The Netherlands, Turkey, United Arab Emirates, United Kingdom

**1,701** Active Fellows and Fellowship Alumni
Integrative Medicine in Residency

In 2008 we initiated the Integrative Medicine in Residency (IMR) program to significantly scale integrative medicine training.

From its inception, the IMR program has expanded substantially from the eight original family medicine pilot sites to now include:

- Family medicine, pediatrics, internal medicine, preventive medicine, and psychiatry;
- 80 sites nationwide and 4 abroad;
- 885 alumni;
- 1,273 residents currently enrolled; and
- 515 participating site faculty.

Integrative Medicine in Residency Sites

**Medical Specialties**

- Family Medicine
- Internal Medicine
- Pediatric Medicine
- Preventive Medicine
- OBGYN
- Psychiatry
The Long-term Impact of Scaling

By expanding IMR, the Center has had a significant impact on the entire healthcare system. IMR trains residents in prevention, optimal health, and chronic disease management with integrative approaches so that they learn and practice this philosophy from the beginning of their careers.

To further build educational leadership, and as part of our Educational Leadership Initiative, we created the Integrative Medicine in Residency Advisory Board. The Board focus is on faculty development of residency educators. One goal is to increase the size and scope of our annual faculty development meeting by incorporating residents into the meetings. Another goal is to implement a framework for regional mentoring and collaboration for IMR sites.

Expanding IMR grows the availability of IM care to patients globally. Through a generous grant provided by the Greer Foundation we were able to expand the number of institutions adopting the IMR curriculum into their residency training.

IMR alumni, residents, and faculty serve almost 5 million patients annually.

When asked what they liked most about the IMR programs, residents responded:

The evidence. It was great to see citations for different botanicals or other treatment recommendations. It helps me when I speak with patients to assure myself and them.

Nutrition and supplement section – Always get questions from patients regarding these type(s) of products and now I feel better able to discuss them and know more resources to find additional info.
A Physician Wellbeing Course

In June 2017, the Center launched our Physician Wellbeing course in response to a major change in requirements by the Accreditation Council for Graduate Medical Education. This unique 4.5-hour course provides an effective tool for self-assessment, training users to build healthy resilience, manage chronic stress, prevent burnout, and practice mindfulness. It is used by more than 2,000 residents within IMR programs, and more than 1,600 students from the University of Southern California, Medical Center of Central Georgia, the University of Texas Rio Grande Valley, Scripps Health, Eisenhower Medical Center, the University of Florida Veterinary Medicine Residency, United Hospital, and the University of Arizona are enrolled.

Integrative Pain Management

In response to the opioid crisis, we created the new Integrative Pain Management (IPM) course, which provides an in-depth look at the current state of pain management. This 11-hour, online course addresses evidence-based integrative therapies, challenges, and clinical applications. We are evaluating its impact on knowledge about and attitudes towards patients with pain, self-efficacy in providing non-pharmacological therapies, and provider compassion.

Also this year, our Opinion Contribution Good Pain Science, Policy, and Integrative Medicine was published in The Hill. It called for the implementation of better policies on pain science and integrative medicine. To see this article, please go to: http://thehill.com/blogs/pundits-blog/healthcare/344810-good-pain-science-policy-and-integrative-medicine

2017 Publications:


2017 Presentations:


Integrative Medicine Elective Rotation

Our month-long Integrative Medicine Elective Rotation (IMER) in Tucson is an experiential introduction to IM for residents and 4th-year medical students. Participants gain an appreciation of the tenets and philosophies of the field, as well as learn practical applications that will directly impact patient care.

Enrollment for the 2016-17 academic year was at 60. The course is offered free twice a year to students globally. A generous gift from the Louis & Rachel Rudin Foundation made it possible for students to participate in 2017 rotations.

One student’s view:

Fantastic! This course has been a lifesaver. I feel so much better about moving forward in medicine. The last couple of years have been difficult but this course has brought new life back into my desire to be a healer. Thank you.

Integrative Medicine Distinction Track

The Integrative Medicine Distinction Track (IMDT) for medical students at the University of Arizona continues to attract students who are seeking to broaden their definition and practice of medicine. This year’s 13 students (10% of the medical school class) studied IM philosophy and clinical applications. IMDT partners with the University of Arizona Integrative Medicine Club to sponsor guest lectures and extracurricular activities.

The Center now tracks the career progress of our four IMDT alumni classes. Graduates are pursuing residencies in diverse specialties, including Family Medicine, Internal Medicine, Emergency Medicine, and Pediatrics.

These students have made a commitment to enhance their working knowledge of integrative medicine while in the midst of a rigorous medical school curriculum, notes Randy Horwitz, MD, PhD, director of the Integrative Medicine Distinction Track. They have the intellect, drive and passion to become the next generation of caring, compassionate and skilled physicians. We are thrilled at their accomplishments; they are assets to the field of integrative medicine.
**Lifestyle Transformation**

Our Lifestyle Transformation initiative is scaling up IM education by providing groundbreaking curriculum to an expanded group of healthcare professionals.

The Integrative Health & Lifestyle program (IHeLp) is a six-month, interprofessional program that consists of 250 hours of engaging online curriculum and a four-day educational retreat in Tucson. Open to licensed, registered, or certified health professionals, IHeLp provides a foundational knowledge of integrative healthcare. Students apply their learning in nutrition, sleep, mindfulness, physical activity, and more, using self-care activities and team sharing.

By the end of 2017, 197 health professionals had graduated from IHeLp, with 43 active students enrolled in classes scheduled to graduate in 2018. Alumni and students represent 39 states, as well as Canada, Scotland, Australia, Costa Rica, and Puerto Rico. Health professions represented include: nursing [43%], mental and behavioral health [24%], and registered dietitians and nutritionists [10%]. The remaining 23% include: physical and speech therapists, physician assistants, licensed acupuncturists, dentists, chiropractors, public health, and registered pharmacists.

Significantly, IHeLp core curriculum became the foundation of our first IM program for the general public, Integrative Health Self-Care [see page 14].

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**Impact Study of IHeLp**

Program participants showed significant improvements on personal health and professional practice:

- Eating healthier;
- Engaging in mind-body/spirituality practices;
- Socializing as well as improved sleep;
- Decrease in emotional exhaustion and depersonalization;
- Increase in personal accomplishment and perspective taking; and
- General burnout risk decreased.

Evaluation data provided by IHeLp participants on completion of their program has shown that:

- 100% agreed or strongly agreed that the overall experience with IHeLp has been personally enriching;
- 97.7% agreed or strongly agreed that the overall experience with IHeLp has been professionally enriching;
- 97.3% agreed or strongly agreed that they were able to apply key learning to real-world situations;
- 95.5% agreed or strongly agreed that they were able to improve their own health; and
- 95.5% agreed or strongly agreed that they would recommend this program to other healthcare professionals.
Integrative Health Coaching

**Integrative Health (IH) Coaching trains health professionals in techniques to motivate patients to make sustainable lifestyle changes.**

This advanced certification program is open to IHeLp and Fellowship graduates. Participants learn principles, processes, and key communication skills inherent to coaching. They actively build their IH Coaching skills in small online groups and 1:1 mentor-supervised training sessions, as well as at two training events in Tucson.

IH Coaching students are a diverse group of health professionals: nurses, physicians, therapists and counselors, registered dietitians, physician assistants, speech pathologists, dentists, chiropractors, health educators, and occupational therapists. Our students come from 22 states across the country, and from Canada and Costa Rica.

IH Coaching recently became one of the first coaching programs to be accredited by the International Consortium for Credentialing Health & Wellness Coaches, indicating the strength of our curriculum to meet the highest standards and competencies. We are delighted that all of our graduates who sat for the first certifying examination passed.

Scaling Integrative Health to Patient Self-Care

In 2015, the Center began development of the **Integrative Health Self-Care (IHSC) program**, our first interactive integrative health online learning tool designed specifically for the public. IHSC is a mobile self-care tool that applies motivational interviewing principles to support individuals on their personal journey towards optimal health. This evidence-based approach teaches self-care, and promotes personal healing that can lead to increased disease prevention, improved control of chronic conditions, and enhanced wellness.

Unlike other currently available mobile health-care “apps” that primarily provide individuals with information, IHSC uses engagement techniques to enhance their motivation to support personal and lifestyle transformation. Users can explore seven Core Areas of Health: movement, nutrition, sleep, relationships, environment, spirituality, and resiliency. In its research pilot phase, IHSC is being introduced to patients by health practitioners with monitoring and data gathering ability to track patient progress.

The IHSC pilot project went live in August 2017. Pilot sites had to meet the following criteria: 1) access to underserved English or Spanish speaking populations;
2) smart phone access; 3) availability of a site leader/champion to promote the app and serve as a liaison with the Center’s research team; 4) availability of various patient groups; and 5) patient availability during the research study timeframes.

Participating pilot site health centers include: El Rio Community Health Center (Tucson, AZ); Mariposa Community Health Center (Nogales, AZ); Marana Health Center (Marana, AZ); and Serve the People Community Health Center (Orange County, CA). Facilitator trainings occurred at all four sites, and the Center collaborated with sites to support patients to install the app and participate in the research project.

By the end of 2017 there were almost 1,600 IHSC accounts, and more than 600 of the account holders had consented to be part of our research project. Results of the pilot project are being analyzed and will contribute to design of the next phase of IHSC.

After the pilot, IHSC will be available to the Center’s network of physicians, healthcare practitioners, and partnering community healthcare centers nationwide. This is an important moment in the transformation of healthcare; a self-care tool for prevention and wellbeing is literally in the hands of patients.

2017 Presentations:


Educational Outreach –

Selected Citations & Presentations

The following citations represent a portion of the educational publications and presentations by Center faculty in 2017:

2017 Publications:


Horwitz R, Maizes V. Environmental Sensitivity as a Trigger of Erythema Nodosum and Perimenopausal Symptoms. BMJ. Case Reports. Published online August 1, 2017; doi:10.1136/bcr-2017-220433.

Nutrition & Health Conference

The University of Arizona Center for Integrative Medicine has hosted *Nutrition & Health: State of the Science and Clinical Applications* each of the last 14 years. The 2017 conference was held May 1-3 in Phoenix, Arizona. The conference provided attendees with an understanding of the central role of nutrition in health and wellbeing.

Featuring delicious meals and emerging research in the field, sessions addressed topics including the impact of the gut microbiome on brain health and controversies around dairy, fat, and protein. Embracing the integrative team approach to healthcare, the conference included a growing variety of professions.

**Upcoming Conferences**

**2018 Nutrition & Health Conference**
April 30-May 2, 2018
Westin Boston Waterfront, Boston, Massachusetts

**2019 Integrative Mental Health Conference**
April 15-17, 2019
Hilton San Francisco Union Square, San Francisco, California

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**2017 Chapters in scholarly books and monographs:**


**2017 Presentations:**


Global Outreach

**2017 Presentations:**

Maizes V. Lecture: *Reducing Environmental Chemical Exposures: Rancho La Puerta Wisdom Keeper Week Workshop*. Rancho La Puerta, Tecate, Baja California, Mexico, March 4-8, 2017.

RESEARCH

Led by Esther M. Sternberg, MD, the Center’s research program strives to convert basic science findings to IM practice, and to continually validate the effectiveness of our educational programs.
Leading-edge Medical Research Projects

**UA Institute on Place and Wellbeing**

The University of Arizona Institute on Place and Wellbeing (UAIPW) is a partnership of the Arizona Center for Integrative Medicine, the College of Medicine, and the College of Architecture, Planning, and Landscape Architecture. The purpose of UAIPW is to study the impact of the built and natural environment on health and wellness.

Mobile and noninvasive health devices currently in development will be used to determine people’s response to environmental features to which they are exposed. The impact of complex IM interventions on health, wellbeing, and disease prevention can also be measured by these methods.

Mobile and noninvasive health devices currently in development will be used to determine people’s response to environmental features to which they are exposed. The impact of complex IM interventions on health, wellbeing, and disease prevention can also be measured by these methods.

This research is changing standards for green and sustainable design, leading to the creation of healthy environments of all types and scales – hospitals, office buildings, schools, and homes, as well as urban design.

On this new frontier of integrative health, attention to the environment plays an important role in prevention and facilitating behaviors that enhance health (e.g., exercise and meditation).

The following are some of the research projects currently underway at the Center:

**Stress Management and Wearable Devices**

UAIPW is working with the Air Force Research Labs and industry partners to develop wearable devices that can be used to measure stress and immune molecules in human sweat, non-invasively in real time. To do this requires knowledge of sweat-based biomarker fate within skin, the appropriate metabolic form to measure, biochemical measurement techniques and technologies, engineering factors, and the generation of strategies that will yield actionable data.

Working in 2017 in collaboration with our UA College of Science, Department of Psychology colleagues, we established a “stress challenge/sweat collection lab/stress correlation” (SC3) lab, where we continuously monitor the stress and relaxation responses in participants undergoing exercise, heat and humidity exposure, psychological and other stressors. This allows us to collect and measure minute amounts of sweat under highly controlled conditions to determine the level of stress an individual is experiencing.

This research will open a novel area for development of wearable devices for a host of conditions, without the need to draw blood. It will allow us to detect toxic levels of stress and warn individuals when integrative approaches for reducing stress are indicated. Additionally, it has the potential to identify novel drug targets for a host of diseases, including steroid resistant asthma, septic shock, autoimmune diseases, and stress-related conditions.

Together with our College of Engineering and industry collaborators, and our U.S. Air Force funding partners, we are also making inroads into developing optimal structures for wearable devices, including printed circuits on flexible materials.

Drs. Esther Sternberg, Altaf Engineer, and Casey Lindberg during site visit to Lockheed Martin’s Advanced Technology Lab in Arlington, VA for RAAMP2 project.
Measuring the Office Environment with Wearable Devices

In this project with the U.S. General Services Administration, we are using existing wearable devices to measure the impact of the office environment to stress response in real time. In 2017 through our industry partner Lockheed Martin, we were awarded a large contract from the Intelligence Advanced Research Projects Activity – an organization within the office of the Director of National Intelligence, to measure the impact of office environments on human performance.

Our findings will help to create healthy workplaces and will inform organizations of ways to improve office environments towards optimizing health, wellbeing, and performance.

2017 Presentation:


Long-Term Impact

In the future, wearable biosensors measuring stress and relaxation responses in real time will connect to the “internet of things” allowing living, schooling, and working environments to seamlessly adapt to individual human needs on a moment-to-moment basis. Such sensors will also allow detection of toxic levels of stress so that individuals can implement stress reduction strategies to optimize health, wellbeing, comfort, and performance. This is the future of integrative health and personalized, precision medicine!

Selected Research Citations

2017 Publications


From the Director of Research

In 2017, the UA Institute on Place and Wellbeing and the Center’s research team continued our successes in our major areas of focus: the impact of the built environment on health and wellbeing, and our sweat biomarker research program. In our flagship project with the U.S. General Services Administration, we completed the measurement phase of the impact of office spaces on health and wellbeing, and are on the home-stretch analyzing the data, preparing manuscripts for publication, and working with high level federal officials towards moving our findings into policy. We continue to receive enthusiastic support from our Air Force Research Laboratory and industry partners for our sweat biomarker device program, and are expanding this program to work with other branches of the military, including the Army Research Labs. Moving forward the SC3 lab is incorporating additional experts in data analysis, materials science, medicine, and engineering to continue to advance this multidisciplinary project. Taken together, we are well on our way to developing and applying wearable devices of all sorts to measure health, wellbeing, and performance.

–Esther M. Sternberg, MD
DEVELOPMENT

The support of our donors, sponsors, and partners continues to be the lifeblood of our progress and our programs as we’ve grown and expanded for more than 23 years. Integrative healthcare is being woven into the entire fabric of medical practice and scaled worldwide, and we are grateful for the generosity and partnership that is making this happen.
Philanthropy and Partnership

Throughout our history, multiple individuals, foundations, and organizations have supported the Center and our work to establish integrative health practices. These partnerships are integral to all of our activities: establishing integrative primary care models, conducting outcomes research, and continuing our educational leadership in integrative curricula for healthcare professionals and the public. This tradition continued in 2017 with partners dedicated to scaling our programs nationally and globally.

Iris Cantor

Thanks to a $1 million commitment from Iris Cantor, a lifelong philanthropist, the University of Arizona Center for Integrative Medicine will develop new curricula, train a new generation of integrative health professionals and empower individuals and communities to optimize health and well-being through the establishment of the Iris Cantor Research and Innovation Fund.

Our programs are initiated through a combination of private and public funding. Center funding comes from: 1) our economic model that builds sustainability through tuition and licensing; 2) research grants; and 3) philanthropic support. These combined revenue sources provide the opportunity for Center growth and expansion.

We appreciate the trust of our longtime associates and look forward to new partnerships as we work to transform healthcare.

Charitable

Foundations

- Firefly Trust – Carter and Joan B. Norris Family
- George Family Foundation
- Grace US Foundation
- Greer Foundation
- Margaret Mellon Hitchcock Foundation
- George Holloway, Jr., Memorial Charitable Gift Fund
- Colburn and Alana Jones Foundation
- The Kellcie Fund
- Kessler Timan Family Fund
- Toby D. Lewis Philanthropic Fund
- David and Lura Lovell Foundation
- Malkin Family Philanthropic Fund
- Mark S. Nemschoff Family Foundation
- The Onota Foundation
- Roland-Goldberg Philanthropic Fund
- Louis and Rachel Rudin Foundation
- The Myles D. and J. Faye Sampson Family Foundation
- The Samueli Foundation
- Penny and Robert Sarver Charitable Foundation
- Dr. Andrew T. Weil Fund
- The Bert Whitehead Charitable Gift Fund
- Weil Foundation

The UA Center for Integrative Medicine is making an indelible, positive impact on health around the world. It is the very reason I have offered my support for their mission to improve health and empower people in their own health care, Cantor said.
Contributions & Grants

Endowment

Iris Cantor Research and Innovation Fund – Iris Cantor
The JKL Fund for the Arizona Center for Integrative Medicine – Jolita Leonas-Arzbaecher

Grants

U.S. Health Resources and Services Administration Bureau of Health Professions, Division of Public Health and Interdisciplinary Education – To Establish a National Center for Integrative Primary Healthcare
U.S. Air Force Research Labs – Processing Methodologies for Biomarkers in Human Sweat and Biomarker/ Metric Identification and Sensor Development
U.S. Air Force Research Labs (subcontract with UES)
Human Performance Sensing - Biomarker Metric Identification and Sensor Development – Momentary Stress Patch
U.S. Air Force Research Labs (subcontract with UES)
Human Performance Sensing - Biomarker-Metric Identification and Sensor Development

U.S. General Services Administration – Indoor Environmental Quality and Stress: Study at GSA Headquarters
University of Arizona, Tech Launch Arizona – Non-invasive Stress Monitoring Using Sweat Cortisol, Cortisone, and Newly Identified Sweat Cortisol Isomers
University of Arizona Office for Research and Discovery, National Security Systems Initiative – Non-invasive Stress Monitoring Using Sweat Cortisol, Cortisone, and Newly Identified Sweat Cortisol Isomers
Nano-Bio Manufacturing Consortium (NBMC) – Microfluidics System Packaging
GE Global Research to UA (subcontract with NBMC) – Wearable Device for Dynamic Assessment of Hydration Status

Nutrition & Health Conference Underwriters

A2 Milk Company
Ahiflower
Allergy Research Group
American Board of Integrative Medicine
Boiron
Enzyme Science
Haelan Nutrition
Host Defense
Integrative Therapeutics
Kashi Laboratories
Lauricidin
Natural Partners
Nordic Naturals
Nutrition Institute at University of Bridgeport
Orgain
Vionic
Vital Choice Wild Seafood and Organics
Fiscal Year 2016-2017

SOURCES OF REVENUE

- IMR: $343,500
- NHC: $442,463
- IH Coaching and IHeLp: $455,684
- Online Courses: $289,774
- State Support: $323,898
- Alumni: $187,689
- Fellowship: $4,458,966
- Grants: $2,402,225
- Philanthropic Support: $1,963,801

REVENUE GROWTH

- 2012-2013: $6,053,067 (7.4% growth)
- 2013-2014: $7,335,965 (21.2% growth)
- 2014-2015: $8,936,079 (21.8% growth)
- 2015-2016: $9,504,943 (6.4% growth)
- 2016-2017: $10,868,000 (14.0% growth)
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University Health Connection
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www.azcim.org/clinic

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