



THE UNIVERSITY OF ARIZONA

Center for  
Integrative Medicine

ANNUAL REPORT  
**2016**



**The University of Arizona Center for Integrative Medicine is leading the transformation of healthcare by training a new generation of health professionals and by empowering individuals and communities to optimize health and wellbeing through evidence-based, sustainable, integrative approaches.**

# The Growth, Influence, and Impact of Integrative Medicine

This has been a truly notable year for the Center. We are delighted to report that the growth of our educational and research programs has exceeded expectations.

In its second year of development, the National Center for Integrative Primary Healthcare continued to establish best practices to implement integrative health nationwide. In collaboration with the Academic Consortium for Integrative Medicine & Health and the U.S. Health Resources & Services Administration, the Center has developed core competencies in integrative health and a 45-hour Foundations in Integrative Health course. A pilot study is evaluating the online course, which has already reached 2,200 practitioners. The ultimate goal is to create effective interprofessional teams that will use integrative medicine to help eliminate health disparities in primary care and promote healthy communities.

In late 2015, we began design of an exciting new integrative health program for the public. It includes developing a mobile integrative health self-care tool that applies motivational interviewing principles to support individuals on their personal journey towards optimal health. The tool will soon be piloted at five locations and, ultimately, will be available to the public.

The continuing growth of our Integrative Medicine in Residency (IMR) program to include new specialties and additional venues has been an extremely effective method to influence medical education. Currently, training almost 2,000 residents at 73 sites nationwide and four abroad, IMR is helping us achieve an essential goal of our Center: to train all primary care physicians in integrative medicine.



Executive director Victoria Maizes, MD, graduating Fellow Omo Akeju, MD, and founder and director Andrew Weil, MD.

Research projects from our Institute on Place and Wellbeing are being evaluated and have the potential to change design standards, leading to the creation of healthier environments in hospitals, office buildings, schools, and homes. In one educational research study this year, pre- and post-wellness assessments showed statistically significant improvement in the trainees' self-care. At the same time, our basic science research is developing innovative methods to measure and help manage stress using new wearable devices.

We are delighted with the progress integrative medicine is making as it becomes a more recognized and accepted model. Our alumni are now serving almost 5 million patients.

We are ever grateful for your support in influencing and transforming healthcare.

Best in health,

*Andy & 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



**Molly K. Burke, MFA**

Director of Online Education



**Ann Marie Chiasson, MD, MPH, CCFP**

Co-Director of the Fellowship, Clinical Assistant Professor of Medicine



**Robert L. Crocker, MD**

Director of Strategic Clinical Planning and Implementation, Clinical Assistant Professor of Medicine



**Randy Horwitz, MD, PhD**

Medical Director, Director of Integrative Medicine Distinction Track, Associate Professor of Clinical Medicine



**Patricia Lebensohn, MD**

Director of Integrative Medicine in Residency, Professor of Clinical Family and Community Medicine



**Hilary McClafferty, MD, FAAP**

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



**Kieran Richardson, MS**

Director of Operations



**Mari Ricker, MD**

Associate Director of Integrative Medicine in Residency, Associate Professor of Family and Community Medicine



**Esther M. Sternberg, MD**

Director of Research, Director, Institute on Place and Wellbeing, Professor of Medicine

# Faculty Honors & Awards

Center directors, **Drs. Victoria Maizes, Randy Horwitz,** and **Patricia Lebensohn** were ranked among the 2015-16 Best Doctors in America. This prestigious national list, compiled for more than 20 years by Best Doctors, Inc., is based on a biennial survey of tens of thousands of leading physicians who were asked whom they would go to for treatment in their own specialty.

**Randy Horwitz, MD, PhD** - Chair, American Board of Integrative Medicine 2014–present.

**Victoria Maizes, MD** - 2016 James E. Dalen, MD, MPH, Distinguished Visiting Professor in Health Care Policy Lecture Series, The University of Arizona Mel & Enid Zuckerman College of Public Health, Tucson, AZ, May 6, 2016.

**Hilary McClafferty, MD, FAAP** –Editorial Board, *Children MDPI Journal*, Basel, Switzerland; National Steering Committee, National Pediatric Resident Burnout-Resilience Study Consortium; National Advisory Board, The Ohio State University Center for Integrative Health and Wellness; and Secretary, Executive Committee, American Board of Integrative Medicine.

**Esther M. Sternberg, MD** - Team Award (Lead): *Rooms for Wellbeing* “Best in Show: Small Booth Category”; Exhibit at the American Institute of Architects National Convention; Philadelphia, PA; May 19-21, 2016.



# Integrative Health Self-Care

The Integrative Health Self-Care tool is the Center's first mobile app designed specifically for the public. *Optimal You* (working title) is a mobile integrative health self-care tool (accessible in both English and Spanish) that applies motivational interviewing principles and health coaching approaches to support individuals in making important behavior changes towards optimal health. This evidence-based, coordinated approach will guide participants through exploring core areas of their health, self-care practices, and working through self-designed health goals that can lead to disease prevention, improved control of chronic conditions, and enhanced wellness.

The Center assembled a multidisciplinary planning committee of experts to conceptualize the tool. It included specialists in integrative medicine, motivational interviewing, online education, psychology, public health, and health literacy.

Unlike other mobile healthcare apps currently available that primarily provide individuals with information or focus on just one area like exercising or calorie counting, *Optimal You* is an interactive, integrative health approach to acknowledge all the aspects that impact one's health and wellbeing, while empowering the individual to make change where they can. Individuals will uncover what is important to them, why they want their health, and

ultimately what motivates them to invest time and effort into optimizing their wellbeing.

Each participant begins by scoring their seven Core Areas of Health: *Movement, Nutrition, Sleep, Relationships, Environment, Spirituality, and Resilience.*

Phase 1 testing of *Optimal You* with underserved patients at five community health center pilot sites will begin in 2017. Once the pilot phases have been completed, it will be available to SCALE communities [a Robert Wood Johnson Foundation initiative], the Center's network of physicians, healthcare practitioners, partnering community healthcare centers nationwide, and individuals world-wide.



# Education

**Our educational programs have grown to offer IM curricula that span the continuum of professional medical education. Center-trained IM practitioners are serving at universities, community clinics, and hospitals nationwide and internationally, as well as becoming IM leaders in their communities.**

# National Center for Integrative Primary Healthcare

## Two years ago we began our ambitious three-year project to establish the National Center for Integrative Primary Healthcare (NCIPH).

In collaboration with the Academic Consortium for Integrative Medicine & Health and the U.S. Health Resources & Services Administration, we developed: a) core integrative health (IH) competencies, b) a 45-hour Foundations in Integrative Health online course, c) an online infrastructure to house curricula and educational resources, and d) patient education materials.

Determining interprofessional meta-competencies was our first step. They include:

1. Practice patient-centered and relationship-based care;
2. Obtain a comprehensive health history which includes mind-body-spirit, nutrition, and the use of conventional, complementary and integrative therapies and disciplines;
3. Collaborate with individuals and families to develop a personalized plan of care to promote health and wellbeing which incorporates integrative approaches, including lifestyle counseling and the use of mind-body strategies;
4. Demonstrate skills in utilizing the evidence as it pertains to IH;
5. Demonstrate knowledge about the major conventional, complementary and IH professions;
6. Facilitate behavior change in individuals, families and communities;
7. Work effectively as a member of an interprofessional team;
8. Engage in personal behaviors and self-care practices that promote optimal health and wellbeing;
9. Incorporate IH into community settings and into the healthcare system at large; and
10. Incorporate ethical standards of practice into all interactions with individuals, organizations and communities.

Building on the competencies, we created an introductory interprofessional IH course, Foundations in Integrative Health. The course has already served 604 alumni and 1,596 currently enrolled. Course material is presented with a focus on an interprofessional collaborative team approach and includes diverse case examples. The course modules include:

1. Introduction to integrative health in primary care;
2. Prevention and lifestyle behaviors change;
3. Healthcare professional wellbeing;
4. Addressing patients through an integrative lens in primary care;
5. Integrative interventions; and
6. Community settings and systems at large.

A pilot study evaluating the course was conducted; participants included residents (e.g., family medicine, internal medicine, pediatrics, preventive medicine) and graduate students enrolled in primary care educational training programs (e.g., nursing, behavioral health, pharmacy, public health, dentistry, oriental medicine, chiropractic, naturopathic) as well as faculty and clinical staff. A small pilot was also conducted with community health centers and a healthcare system. The Provider Wellbeing unit of the study asked trainees to adopt a daily 10-minute self-care practice for two weeks, selecting from either 1) a daily meditation, 2) a finding meaning exercise, or 3) a gratitude journal.

***Pre- and post-wellness assessments of trainees showed statistically significant improvements in resiliency, hardiness, and gratitude.***

***The ultimate goal of NCIPH is to create effective interprofessional teams that will use IM to help eliminate health disparities in primary care and promote healthy communities.***

Culturally and linguistically appropriate patient education materials in Integrative Health approaches to prevention and treatment of common chronic medical conditions have been developed. The materials are available in English and Spanish and are designed as 1-page handouts to be distributed by healthcare professionals, and as a webpage with links to additional resources on the NCIPH website.

**2016 Presentations:**

**Brooks AJ, Koithan M, Lebensohn P.** *Interprofessional Integrative Healthcare Education: What Do Primary Care Educational Programs Need?* Paper presented at International Congress on Integrative Medicine & Health. Las Vegas, NV. May 17-20, 2016.

Koithan M, Goldblatt E, **Cook P, Brooks AJ, Lebensohn P.** *Shifting Primary Care Education: An Integrative Interprofessional Curriculum Model.* Poster presented at All Together Better Health VIII. Oxford, United Kingdom. September 6-9, 2016.

**Lebensohn P, Brooks AJ,** Kligler B, Kreitzer M, Goldblatt E, **McClafferty H,** Klatt M, Koithan MS. National Center for Integrative Primary Healthcare - Enhancing Interprofessional Integrative Health Education. Pre-congress workshop at International Congress on Integrative Medicine & Health, Las Vegas, NV, May 17-20, 2016.

**Lebensohn P, Brooks AJ,** Kilgore D, Becerra I, Smith R, Angulo M, Billimek H. *Incorporating an Integrative Approach to Interprofessional Primary Healthcare Education to Meet the Needs of the Underserved.* Paper presented at Integrative Medicine for the Underserved (IM4US) Annual Conference. Irvine, CA. August 18-20, 2016.

**Lebensohn P, Brooks AJ,** Goldblatt E. *The National Center for Integrative Primary Healthcare - Enhancing Interprofessional Integrative Health Education.* Paper presented at Academy of Integrative Health & Medicine Annual Conference - People, Planet, Purpose. San Diego, CA. October 30-November 3, 2016.



National Center for Integrative Primary Healthcare leadership team meeting in Tucson in 2016.



Fellows of the class of 2016 Spring at their graduation ceremony in Tucson.

## Fellowship in Integrative Medicine

The Fellowship, the cornerstone of the Center's educational programs, began in 1997 as the inaugural IM training program. What started with 4 Fellows on site in Tucson now accommodates almost 300 Fellows in distance-learning training at any one time, and counts 1,250 alumni from around the world. This premier IM program teaches a new method of caring for patients, with emphases on the individual, prevention and wellness in addition to response to disease and treatment. Nationally recognized experts and faculty from a variety of disciplines, modalities, and philosophies created and teach in the two-year, 1,000-hour program.

The Fellowship curriculum also includes three residential weeks conducted in Tucson that develop a sense of community among the Fellows, provide experience with IM modalities, and offer new perspectives on practitioner self-care.

The program accepts practitioners of every specialty and is open to MDs, DOs, Nurse Practitioners, Physician Assistants, PharmDs, and Certified Nurse Midwives.

### What the Fellows are saying about the Residential Weeks:

*“So much valuable information gained. . . All of the presenters provided inspiring and interesting talks and discussion. I especially enjoyed the deepening of the class camaraderie, the shared experiences, struggles and contagious enthusiasm for this new path we are all transitioning along!”*

# Fellowship Alumni

## 1-5 Alumni

Alaska  
 Arkansas  
 District of Columbia  
 Hawaii  
 Idaho  
 Kansas  
 Mississippi  
 Nebraska  
 Rhode Island  
 South Dakota  
 West Virginia  
 Wyoming

## 6-10 Alumni

Alabama  
 Delaware  
 Indiana  
 Kentucky  
 Louisiana  
 Montana  
 North Dakota  
 New Hampshire  
 Nevada  
 Oklahoma  
 Vermont

## 11-20 Alumni

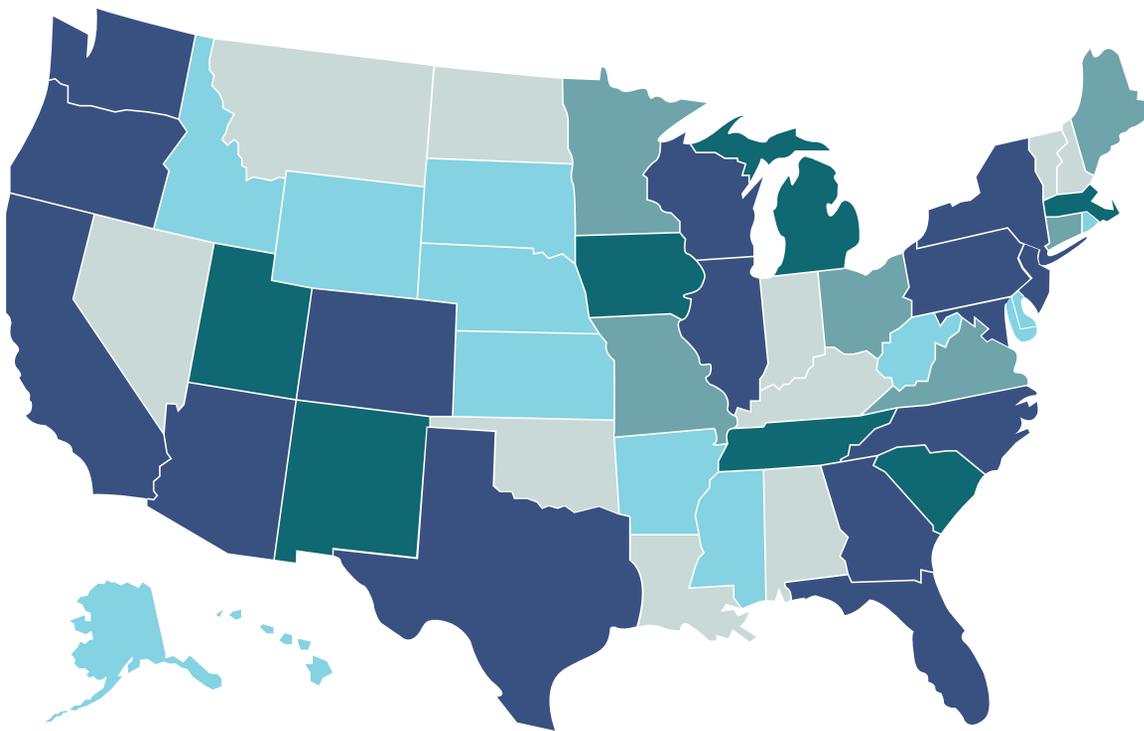
Iowa  
 New Mexico  
 Massachusetts  
 Utah  
 South Carolina  
 Tennessee  
 Michigan

## 21-30 Alumni

Connecticut  
 Maryland  
 Maine  
 Minnesota  
 Missouri  
 Ohio

## 31+ Alumni

Arizona  
 California  
 Colorado  
 Florida  
 Georgia  
 Illinois  
 North Carolina  
 New Jersey  
 New York  
 Oregon  
 Pennsylvania  
 Texas  
 Virginia  
 Washington  
 Wisconsin



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

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INTERNATIONAL  
 FELLOWSHIP  
 ALUMNI

**1,250** Total Alumni



Drs. Weil, Maizes, and Lebensohn host a cooking demo at the Stillwell House in Tucson during the annual IMR faculty development meeting.

# Integrative Medicine in Residency

**In 2008 we initiated the Integrative Medicine in Residency (IMR) program to address important topics lacking in conventional graduate medical education.**

Expansion of IMR training into new specialties has proven to be an effective method to spread IM within medical education. Over the last eight years, the Center has broadened our IMR program to include:

- Specialties in family medicine, pediatrics, internal medicine, preventive medicine, physical and rehabilitation medicine, and pilot projects in psychiatry and OB/GYN
- 77 sites nationwide and 4 abroad
- 696 alumni
- 1,273 residents currently enrolled
- 188 faculty mentors
- 235 additional faculty participants

## LONG-TERM IMPACT

By expanding the scope of IMR now, the Center will continue to produce innovative curriculum development and delivery. Using this successful model, we will be able to reach larger percentages of physicians in training. We have launched a targeted marketing strategy to identify new IMR sites.

Program opportunities include:

- Licenses for additional specialties are available to existing IMR sites
- Programs that participated in the National Center for Integrative Primary Healthcare pilot program
- Institutions and programs that have Fellowship graduates
- Institutions in geographic areas competing for residents against current IMR licensees

***Today 1,273 residents are enrolled in, and 696 have graduated from 77 primary care residency sites in the U.S., Canada, Germany, and Taiwan.***

*The University of Arizona IMR has been instrumental in my development as a Family Medicine resident. It has helped renew my inspiration for medicine by providing evidence-based, non-pharmacological treatment options. . . a new realm of healing.*

The ongoing development and expansion of IMR to new specialties will have a significant impact on public health and entire healthcare systems. It will provide increased opportunities to residents in training, making it possible for them to learn an integrative model of care, with a philosophy of prevention, from the beginning of their careers.

With its potential international reach, expanding IMR will broaden the IM community and, in turn, will expand the spectrum of IM care available to patients globally, offering integrative approaches to health and wellbeing.

#### 2016 Publication:

**McClafferty H.** *Environmental Health: Children's Health, a Clinician's Dilemma.* *Curr Probl Pediatr Adolesc Health Care.* 2016 Jun;46(6):184-9. doi: 10.1016/j.cppeds.2015.12.003 PMID 26846483.

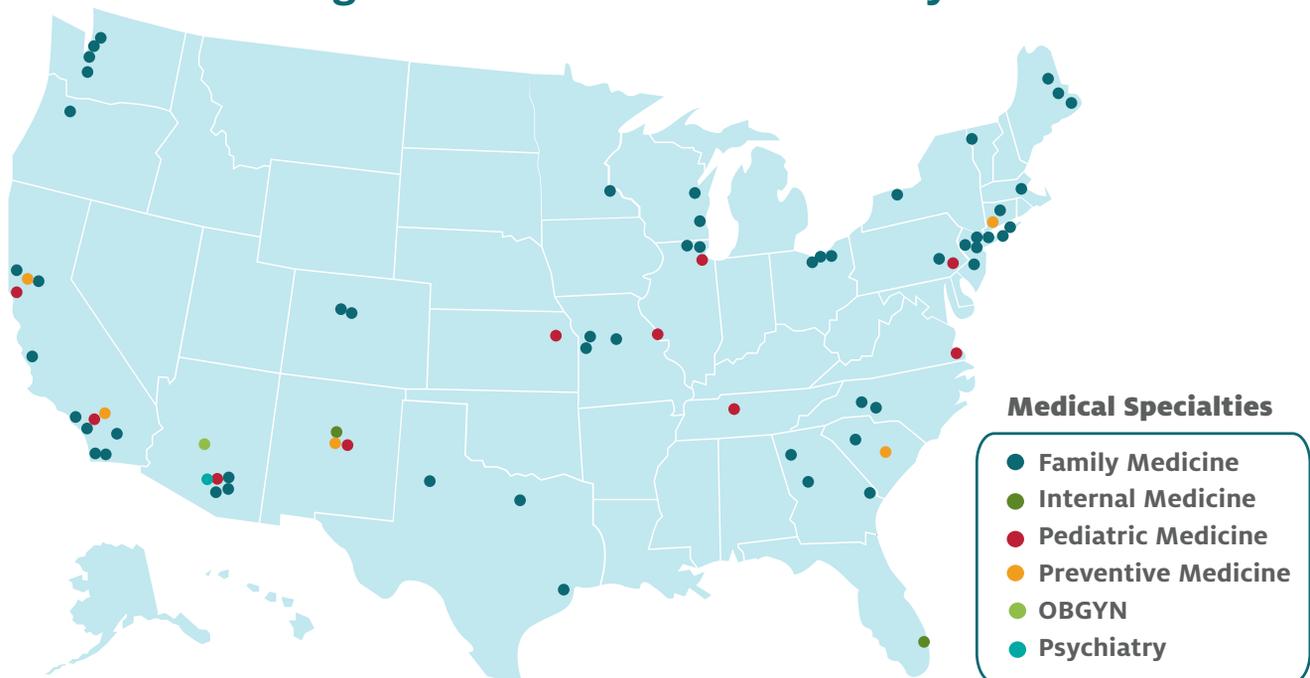
#### 2016 Presentations:

**McClafferty H.** Invited Presenter: *Homeopathic Medicines in the Pediatric Setting: A Growing Trend.* National Pediatric Society Congress. San Juan, Puerto Rico. February 2016.

**Ricker MA, Lebensohn P,** Micek-Galinat L, Meehan E. *Resident Well-Being: Meeting the ACGME Professionalism Sub-Competency Requirements Through Resiliency.* Society of Teachers of Family Medicine. San Diego, CA. May 2016.

**Ricker MA, McClafferty H, Lebensohn P,** Micek-Galinat L. *Leading Change in Resident Wellness: An Integrative Approach to Self-Care.* Society of Teachers of Family Medicine. San Diego, CA. May 2016.

## Integrative Medicine in Residency Sites



**International IMR** | Dalin Tzu Chi General Hospital, TAIWAN  
 University of Manitoba, Winnipeg, Manitoba, CANADA  
 The University of British Columbia, Victoria, CANADA  
 Kinderkrankenhaus Sankt Marien, Landshut, GERMANY



Spring 2016 Integrative Medicine Elective Rotation class photo.

## Integrative Medicine Elective Rotation



IMER features active participation like this yoga class.

Our month-long Integrative Medicine Elective Rotation in Tucson is an experiential introduction to IM for 4th-year medical students and residents that fills an unmet need. This course is offered free twice a year to students globally. A generous gift from the **Louis & Rachel Rudin Foundation** allowed students to participate in 2016 rotations.

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**A resident who recently completed the rotation wrote:**  
*“My mindset has shifted tremendously. I aim to ‘serve,’ rather than simply ‘help’ my patients.”*

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# Integrative Medicine Distinction Track

**The Integrative Medicine Distinction Track (IMDT) continues to attract students who are seeking to broaden their definition and practice of medicine.**

Students use interactive online modules and lectures to explore IM philosophy and clinical applications. The Center regularly receives correspondence from prospective medical students who are considering attending the University of Arizona College of Medicine based upon the prominence of the IM training here.

Annually, the IMDT partners with the University of Arizona Integrative Medicine Club to sponsor guest lectures and extracurricular activities. Having graduated three IMDT classes, we can now follow their career progress. IMDT graduates are pursuing residencies in diverse specialties, including Family Medicine, Internal Medicine, Emergency Medicine, and Pediatrics.

***“The IMDT was a great opportunity to start learning about integrative medicine. The modules were high quality and provided opportunities to reflect as well as to learn. It was an honor to be included in patient conference discussions alongside experts in various fields, and the elective was tremendous. I can’t imagine not doing the distinction track.”***

***—Tom Lotina, 4th-year UA medical student***

## Building Leadership

The Center’s newest initiative is the creation of an institute to build leadership in integrative medicine. It will work to develop IM faculty in multiple disciplines, including medicine, nursing, public health, and other health professions. This project is a natural extension of our experience and strengths, building on our broad range of educational programs—16 years of faculty development in the Fellowship and 8 years of Integrative Medicine in Residency (IMR) faculty development meetings.

Based on a needs assessment survey, the project is being designed to include:

- An annual faculty development meeting;
- Mentoring – in person, online, and via calls;
- Leadership training pertinent to IM program development – such as negotiating politics at academic health centers, grant writing, and opinion and white paper composition; and
- The teaching of exemplary experiential learning practices.

Development of the initiative will continue throughout 2017, with implementation expected in early 2018.

# Integrative Health & Lifestyle

**In its third year, our Lifestyle Transformation (LT) initiative has provided groundbreaking IM 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 health care that addresses the whole person and emphasizes the importance of lifestyle on health and wellbeing. Students apply their learning in nutrition, sleep, mindfulness, physical activity, and more, using self-care activities and team sharing.

165 health professionals have graduated from IHeLp, with 33 active students enrolled in classes scheduled to graduate in 2017. 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 [18%], and registered dietitians and nutritionists [11%]. The remaining 28% include: physical and speech therapists, physician assistants, licensed acupuncturists, dentists, chiropractors, public health officials, and registered pharmacists.

The use of self-care and development of the *7 Core Areas of Health* in IHeLp deeply influenced the design of the Integrative Health Self-Care tool [see page 8].

“The IHeLp program allowed me to be a part of a community of like-minded, driven influencers that are changing the world in meaningful ways. What I learned has had lasting effects on my personal and professional life, and I feel that my skills in integrative health now highly set me apart from others in the health profession.”

—Leslie Kleiman, RN, IHeLp 2017 Spring

Generous contributions from the **John F. Long Foundation** and the **Sampson Foundation** provided IHeLp scholarships.

## Impact Study of IHeLp

Participants in IHeLp showed significant improvements in their personal health and professional practice in the following ways:

- Eating healthier
- Engaging in mind-body/spirituality practices
- Socializing as well as improved sleep
- Decreasing emotional exhaustion and depersonalization
- Increasing personal accomplishment
- Decreasing general burnout risk



IHeLp Class of 2017 Spring at the educational retreat in Tucson in December, 2016.



Integrative Health Coaching at one of two in-person retreats for each class. December 2016.

# Integrative Health Coaching

**Our second Lifestyle Transformation program, Integrative Health (IH) Coaching, trains health professionals in techniques to motivate patients to make real, sustainable lifestyle changes.**

This advanced certification program began in 2015 and is open to IHeLP and Fellowship graduates.

Participants learn principles, strategies, processes, and key communication skills inherent to coaching via online coursework. They actively build their IH Coaching skills in small online groups and 1:1 mentor-supervised training sessions, as well as at two live training events in Tucson.

This year, the 44 active students and alumni are composed of 39% nurse practitioners and registered nurses, 25% physicians, 11% therapists and counselors, and 9% registered dietitians. The remaining 16% came from a variety of other fields [i.e., physician assistant, speech pathologists, dentist, chiropractor, health educator, and occupational therapist].

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*Integrative Health Coaching recently became one of the first coaching programs to be accredited by the National Consortium for Credentialing Health & Wellness Coaches (HWC), indicating the strength of our curriculum to meet the highest standards and competencies. Our graduates are eligible to sit for the First exam for National Board Certification for Health & Wellness Coaches in September 2017.*

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# 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 13 years.**

The 2016 conference was held March 21 – 23 in Denver, Colorado. It brought together clinicians, researchers, educators, authors, and chefs to provide health practitioners with an understanding of the central role of nutrition in health and wellbeing.

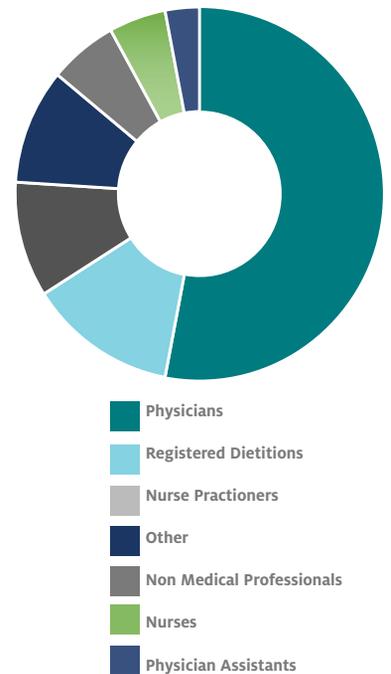
Featuring emerging research in the field, sessions addressed topics including the impact of the gut microbiome on brain health and controversies around dairy, fat, and protein. Embracing the integrative team approach to healthcare, the conference included a growing variety of professions.

More than 98% of the attendees responding to a conference survey noted that the conference content was relevant and useful to their practice. A majority of the conference attendees also indicated they would be creating new policies and procedures and/or altering their treatment of patients as a direct result of what they learned at the Nutrition & Health Conference.

The Center also co-hosted Pioneers in Health, a one-day pre-conference event open to the public and featuring an interview of Dr. Andrew Weil with television journalist and former White House press secretary Dana Perino.

For more information about the conference, visit the web site at [www.nhconference.org](http://www.nhconference.org) or connect with us at [www.facebook.com/nutritionandhealth](https://www.facebook.com/nutritionandhealth) or @NHConference.

**NHC 2016  
Credentialed Attendee Breakdown**



Dana Perino interviewing Dr. Weil at the Pioneers in Health event leading up to the Nutrition & Health Conference.

## JOIN US AT UPCOMING CONFERENCES

2017 Nutrition & Health Conference  
May 1-3, 2017  
Arizona Biltmore Resort & Spa  
Phoenix, Arizona

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

# Educational Outreach

## Selected Citations and Presentations

The following citations represent a portion of the educational publications and presentations by Center faculty in 2016:

### 2016 Publications:

**Maizes V.** Integrative Medicine: The Treatment of Choice for Pain Management. In *Integrative Pain Management*. Robert Bonakdar and Andrew Sukiennik (Ed.). Oxford University Press, New York, NY; 2016.

**McClafferty H**, Kemper K. Integrative Medicine for Children and Adults with Intellectual and Developmental Disabilities. *Health Care for People with Intellectual and Developmental Disabilities Across the Lifespan*. 3rd Edition. Editors, IL Rubin, J Merrick, DE Greydanus, DR Patel. Springer, 2016.

Vohra S, **McClafferty H**. Mind-Body Medicine in Pediatric Practice. American Academy of Pediatrics Policy Statement. Section on Integrative Medicine. *Pediatrics*. 2016 Sep;138(3). pii: e20161896. doi: 10.1542/peds.2016-1896. PMID: 27550982.

### 2016 Presentations:

**Maizes V.** Lecture: *The Art and Science of Vitality & Inter-professional Education in Integrative Medicine*. USC Integrative Health Conference. Los Angeles, CA. April 16, 2016.

### **Maizes V.**

Keynote Speaker: *Integrative Medicine and Public Health*  
Concurrent Speaker: Healthy Bones for Healthy Lives,  
Expert Panel Discussion: *Escape Fire*, Documentary.  
8th Biennial Symposium of Integrative Medicine Professionals in the Land of Enchantment (SIMPLE) 2016. Taos, NM. July 11-14, 2016.

**Maizes V.** Stanford Medicine X 2016, Oral Ignite! Talk: *How Long Does It Take to Heal – a Doctor?* Stanford University. Palo Alto, CA. September 16-18, 2016.

**Maizes V.** Keynote Speaker: *Good Food is Good Medicine*, Environmental Toxins in Food: Impact on Health. Osher Center for Integrative Medicine. Chicago, IL. November 5, 2016.

**Weil A.** Lecture: *Integrative Medicine, the Mind-Body Connection, and the Future of Healthcare*. General Dynamics Employee Health and Wellness Event. Falls Church, VA. September 27, 2016.

**Horwitz R.** Invited Speaker: *Physical Activity and Immunity*. American College of Allergy, Asthma, and Immunology Annual Meeting. San Francisco, CA, November 10-14, 2016.

**Horwitz R.** Invited Speaker: *Integrative Rheumatology*. American College of Rheumatology Annual Meeting. Washington, DC. November 11-16, 2016.

# Global Outreach

These citations represent some of the many 2016 presentations by Center faculty on IM topics to a global community:

**McClafferty H.** Invited Speaker: *Environmental Health, Children's Health*, Sixth International Symposium on Energy Challenges and Mechanics. Inverness, Scotland, UK. August 18, 2016.

**Sternberg EM.** Public Lecture: *The Impact of Place on Health and Well Being*, McGill University Complementary & Integrative Health Symposium. Montreal, Canada. June 3, 2016.

**Weil A.** Public Lecture: *Integrative Medicine: Whole Person Medicine for the 21st Century*. University of Bristol. Bristol, England. June 7, 2016.

**Weil A.** Lecture: *What Should We Be Eating?* Panel Q&A, and Dame Sally Davies in Conversation with Dr. Andrew Weil and Dr. Phil Hammond, at Food; The Forgotten Medicine Conference. Royal Society of Medicine. London, England. June 9, 2016.

# Research

**The Center's research program, led by Esther M. Sternberg, MD, continues at the forefront of IM scientific inquiry. In 2016 we broadened our partnerships with other university departments, as well as national and corporate research programs, to further develop and extend our scope of clinical outcomes research. Our goals are to convert basic science findings to IM practice and to continually validate the effectiveness of our educational programs.**



# Leading-edge Medical Research Projects

## University of Arizona 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. This collaboration, unique in the nation, is studying the impact of the built environment on health and wellness.

Mobile and non-invasive health devices currently in development at the Institute and other UA laboratories will be used to determine people's health and wellbeing responses linked to environmental features to which they are exposed. The impact of complex IM interventions on health, wellbeing, and disease prevention will 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).



Perry Skeath, PhD, Omar Youssef, PhD, Esther Sternberg, MD, Casey M. Lindberg, PhD, M.Arch, at the Institute on Place and Wellbeing.

### *From the Director of Research*

*"In 2016, 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, briefing high level federal officials, and preparing manuscripts for publication. In 2016, we also filed a patent for the discovery and implications of new stress molecules in sweat. We continue to receive enthusiastic support from our Air Force Research Laboratory and industry partners, including a \$600,000 contract for testing a new concept for sweat biomarker device platforms. Taken together, we are well on our way to developing and applying wearable devices of all sorts to measure health and wellbeing."*

—Esther Sternberg, MD

## Rooms for Wellbeing

The UAIPW team was instrumental in development of the **Rooms for Wellbeing** exhibit, a demonstration of the health impacts of our surroundings. It won one of the best-in-show awards at the American Institute of Architects annual convention in Philadelphia.



## Nano-Biology: From Basic Research to Technology

### Stress Management and Wearable Devices

UAIPW is developing wearable devices that can be used to measure stress and immune molecules in sweat, non-invasively in real time. Our recent research has newly identified breakdown products of two major stress molecules in sweat. With this discovery, we have filed a patent application regarding the clinical implications of these findings.

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



Researcher Min Jia, PhD, working on measuring biomarkers in sweat.

### Measuring the Office Environment with Wearable Devices

We are also using existing wearable devices in our major research study with the U.S. General Services Administration to measure the relation and impact of many aspects of the office environment to stress response in real time.

Our findings will help to create healthy workplaces and will inform organizations of ways to improve office environments.

#### 2016 Publication:

**Jia M, Chew W, Feinstein Y, Skeath P, Sternberg EM.** Quantification of Cortisol in Human Eccrine Sweat by Liquid Chromatography - Tandem Mass Spectrometry. *Analyst*. 2016. 141. 2053-2060.

### Long-Term Impact

In our vision of 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, thus optimizing health, wellbeing, comfort, and performance, without the need to draw blood. Such sensors will also allow early detection of diseases such as skin cancer without the need for a biopsy, and will provide the opportunity to continuously monitor the effectiveness of treatments.

# Additional Selected Research Citations

## 2016 Publications:

Knowles LM, **Skeath P, Jia M**, Najafi B, Thayer J, **Sternberg EM**. New and Future Directions in Integrative Medicine Research Methods with a Focus on Aging Populations: A Review. *Gerontology*, 2016; 62(4): 467-76. DOI:10.1159/000441494.

Lei H, Toosizadeh N, Schwenk M, Sherman S, Karp S, **Sternberg EM**, Najafi B. (2016) A Pilot Clinical Trial to Objectively Assess the Efficacy of Electroacupuncture on Gait in Patients with Parkinson's Disease Using Body Worn Sensors. *PLoS ONE* 11(5): e0155613. doi:10.1371/journal.pone.0155613.

**Crocker RL**, Grizzle AJ, Rehfeld RA, Abraham I, **Horwitz R, Maizes V**. Integrative Medicine Primary Care: Assessing Patient-Reported Outcomes at Baseline and 12-Month Follow-Up. Abstract: *The Journal of Alternative and Complementary Medicine*. 2016: 22.

**Crocker RL**, Hurwitz JT, Grizzle AJ, Rehfeld RA, Abraham I, **Horwitz R, Maizes V**. Integrative Medicine Primary Care: Assessing the Practice Model through Patients' Experiences. Abstract: *The Journal of Alternative and Complementary Medicine*. 2016: 22.

## 2016 Presentations:

**Crocker RL**. Invited Speaker: *Integrative Medicine and Mind-Body Techniques for the Underserved*. Federally Qualified Health Center CEO Retreat. Santa Fe, NM. April 24, 2016.

## National Initiatives

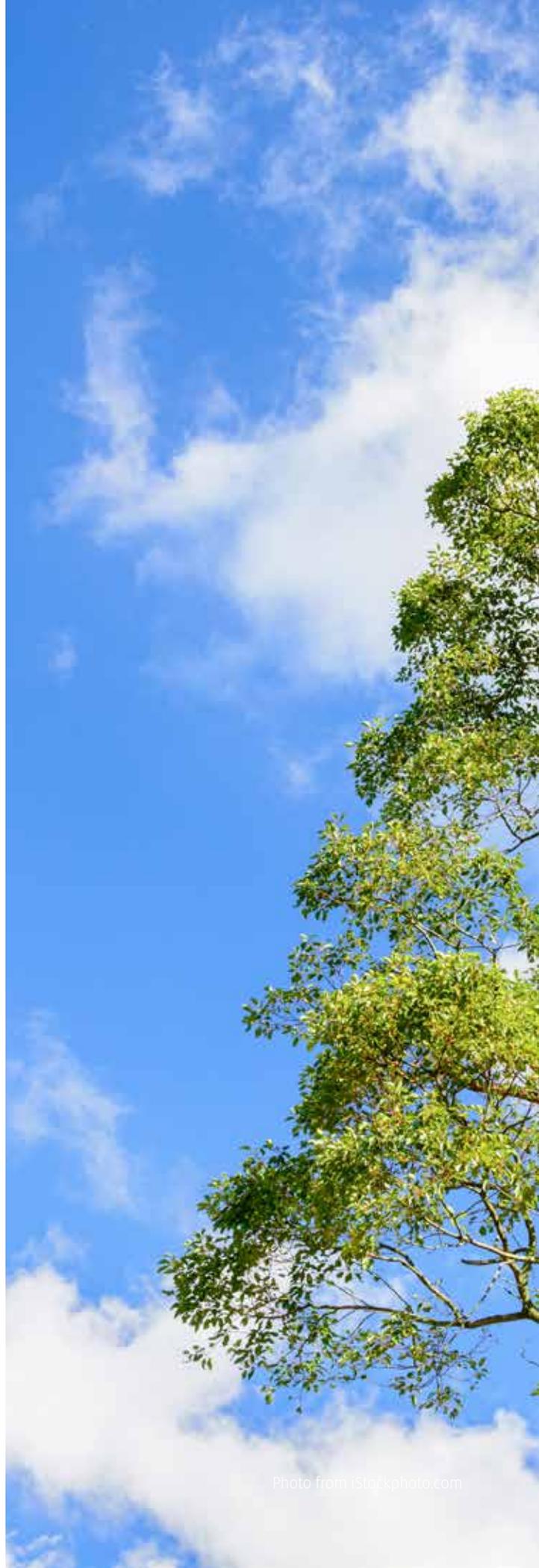
UACIM director of research, Esther Sternberg, MD, joined the US Surgeon General, Vivek Murthy, at the National Library of Medicine (NLM) Board of Regents meeting. The board, of which Dr. Sternberg is a member, meets three times a year.

The world's largest biomedical library, NLM maintains and makes available a vast print collection and produces electronic information resources on a wide range of topics that are searched billions of times each year by millions of people around the globe.



# 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 22 years. Integrative healthcare is being woven into the entire fabric of medical practice, and we are grateful for the generosity and partnership that is making this happen.**



# Philanthropy and Partnership

For more than 22 years, generous individuals, foundations, and organizations have supported the vision, work, and growth of the Center. This tradition continued in 2016 with national and global alliances dedicated to establishing a new standard for medical education and the practice of healthcare.

These partnerships and generous contributions are integral to all of our activities: establishing integrative primary care models and practices, conducting leading-edge outcomes research, and continuing our educational leadership and innovation in integrative curricula for healthcare professionals and the public.

All of our programs are initiated through a combination of private and public funding. Center funding is generated by: 1) our economic model that builds sustainability through program subscription and licensing; 2) research grants and contracts; 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.

***Philanthropist Jolita Leonas-Arzbaecher has made a \$1 million gift, creating the JKL Endowment Fund for the Arizona Center for Integrative Medicine that will be used to grow our faculty development efforts, support innovation, and significantly advance the education of medical professionals.***

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## THE FORCE OF PHILANTHROPY

We are ever grateful for the generosity of our supporters. In 2016, several foundations and individuals recognized the importance of expanding IM education, and supported our programs in the following ways:

**Integrative Medicine in Residency (IMR):** We have established a major initiative to expand the scope of IMR both in specialties offered, and to additional licensing sites. Donors are funding this 5-year coordinated effort to make IMR available to every primary care residency program nationwide.

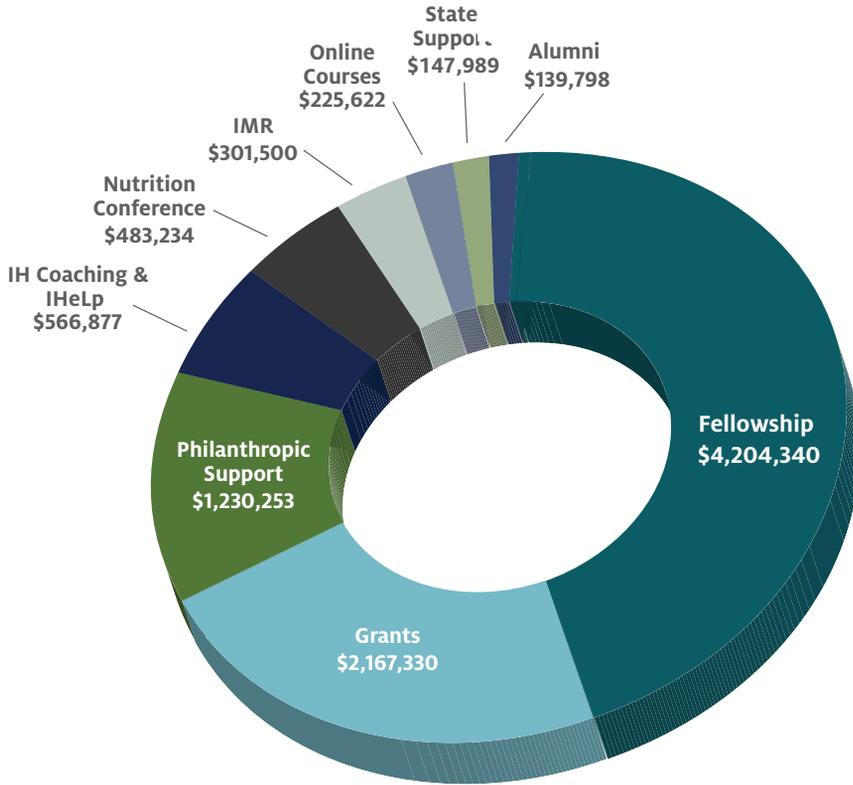
**Fellowship in Integrative Medicine:** In support of expanding IM care to patients in need, one foundation is providing scholarships for the 2-year Fellowship program to physicians whose primary emphasis is working with the underserved.

**Integrative Health Self-Care (IHSC):** IHSC is a unique project with the potential to bring self-care, prevention, and wellness training to underserved patients nationwide. This year, our donors have supported content development, design, and Spanish translation for delivery of the IHSC tool *Optimal You*, as well as the future nationwide scaling of the finalized mobile app.

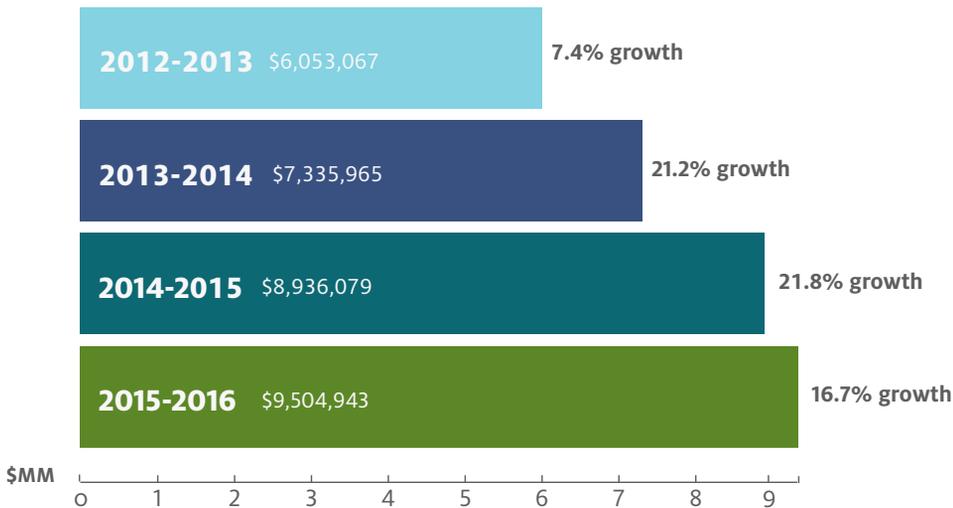
All of these gifts, as well as those noted on our Charitable Contributions page, reflect the commitment to further expand IM and embed it into mainstream medical practice. We hope these examples will inspire you to be creative in your giving as we work together to broaden the scope of IM education, research, and clinical care.

# Fiscal Year 2015–2016

## SOURCES OF REVENUE



## REVENUE GROWTH



# Charitable Contributions and Grants

## FOUNDATIONS

Black Family Foundation  
 Community Foundation for Southern Arizona - Bonnie  
 Kay Charitable Fund  
 David and Ann Glew Family Charitable Trust  
 Firefly Trust - Carter and Joan B. Norris Family  
 Grace US Foundation  
 Greer Foundation  
 Hackberry Endowment Partners - Stephen and Karen  
 Malkin  
 Margaret Mellon Hitchcock Foundation  
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 Louis & Rachel Rudin Foundation  
 Sampson Foundation  
 Penny and Robert Sarver Charitable Foundation  
 Weil Foundation

## ENDOWMENT

The JKL Fund for the Arizona Center for Integrative  
 Medicine – Jolita Leonas-Arzbaecher

## GRANTS

U.S. Health Resources & Services Administration Bureau  
 of Health Professions, Division of Public Health and  
 Interdisciplinary Education – To Establish a National  
 Center for Integrative Primary Healthcare  
 Defense Advanced Research Projects Agency, U.S.  
 Department of Defense – Comparative Studies of  
 Temporal Patterns among Biomarker Groups during  
 Conditions Relevant to Military Duties: Part I Physical  
 Exercise, Sweat vs. Blood Plasma  
 U.S. Air Force Research Labs – Processing Methodolo-  
 gies for Biomarkers in Human Sweat and Biomarker/  
 Metric Identification and Sensor Development  
 U.S. General Services Administration – Indoor Environ-  
 mental Quality and Stress: Study at GSA Headquar-  
 ters  
 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

## NUTRITION & HEALTH CONFERENCE UNDERWRITERS

California Walnut Commission  
 Vital Choice Organic Seafood  
 California Dried Plum Board  
 Healthy Lifestyle Brands  
 AHC Media  
 Bio-K+  
 Cleveland Heart Lab  
 Enzyme Science  
 Functional Formularies  
 Host Defense Organic Mushrooms  
 Integrative Therapeutics  
 Lauricidin  
 Natural Partners  
 Platejoy  
 American Board of Integrative Medicine

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### **Integrative Health & Lifestyle or Integrative Health Coaching:**

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### **Integrative Medicine in Residency or Pediatric Integrative Medicine in Residency:**

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### **Integrative Medicine Elective Rotation**

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### **Integrative Medicine Distinction Track**

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### **Health Care:**

Tucson Consultative Clinic  
University Health Connection  
(520) 694-8888 x 500 or (800) 524-5928 x 500  
www.azcim.org/clinic

### **Support the University of Arizona Center for Integrative Medicine:**

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