CURA FOUNDATION

June 2018
#UNITETOCURE

LifeLines

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Join Us to Unite to Cure

During the Fourth International Vatican Conference: Unite to Cure - How Science, Technology and 21st Century Medicine Will Impact Culture and Society, which was held on April 26th – 28th, 2018, many people from around the world participated in and joined the Unite to Cure global health care movement. We built bridges to create a healthier global society focusing on enabling tools to Prevent, Repair and Cure disease. We implemented a media campaign that resulted in 3.4 billion combined social and traditional media impressions and 2,829 stories. We shared pivotal knowledge on breakthrough technologies that hold the promise to transform health care. We considered the cultural, religious, ethical and societal implications of emerging knowledge and anticipated the downstream effects of our actions to ensure the safety of humanity. The spirit of global collaboration and exchange of creative ideas that was cultivated during the conference continues to spread, and we invite others to join the mission.

Of course, none of this would be possible without the support of our benefactors and sponsors. I thank all of you for your generous investment of time, energy and dollars. May we all be driving forces for innovation and positive change in each of our communities around the globe. With your commitment, we will see greater access and awareness around emerging therapies, more cutting-edge research and scientific development and increased knowledge-sharing across sectors. We look forward to reconvening in Rome on May 7th – 9th, 2020, for the Fifth International Vatican Conference where we can update one another on the progress we have made.

Dr. Robin L. Smith
Founder and President of the Cura Foundation, and Vice President of STOQ Foundation

Unite to Cure

A Global Health Care Initiative

Fourth International Vatican Conference

How Science, Technology, and 21st Century Medicine Will Impact Culture and Society

Vatican City | April 26-28, 2018

"I was raised around the idea that our body is a temple. We have to take care of it – mind, body and soul. Meditation can take care of your mind. I notice when I meditate, my whole brain kind of opens up, and it feels like a halo is ignited around my head – it is like I am clearing out the cobwebs of my neuro-pathways and finding new ones to ignite. It is the most incredible stillness and has brought some of the best, most creative ideas to the surface."

Katy Perry

"My back was hurting me and a couple of my boys were hurting too, so in March of 2016 we decided to go to Munich and give stem cell therapy a try. Mind you, I could not hit a golf ball without hurting. I could not hit a tennis ball without hurting, and I could not stand up for any more than about 10 minutes. I can now stand for as long as I want. I do not hurt when I hit a golf ball and I do not hurt when I hit a tennis ball... That's a pretty good result!"

Jack Nicklaus

"When you are committed to make a difference for humanity, you get a different level of insight. You get the types of breakthroughs that we are now seeing that many of us thought would take another 30 years. So, it is just really important for all of us to remember that we have the incredible power to make a difference and how we live is most important – even more important than how long we live."

Tony Robbins

"We can provide real hope to patients and their families: hope for another day, another month another year, and maybe for decades with cures. It's no longer enough to have demonstration projects and pilot partnerships. We have to make these successes the new normal. So, Jill and I launched a nonprofit organization – the *Biden Cancer Initiative* – to help accelerate cancer research and build cancer care systems that foster innovation, creativity, and reward risk-taking, giving patients what they deserve: a system that puts saving lives above anything else. We hope you will join in our mission."

Joseph R. Biden, Jr.,
47th Vice President of the United States and Co-Chair, Biden Cancer Initiative

"When people go into stillness, when their mind is quiet through meditation or prayer – all of the genes that cause self-regulation or homeostasis increase some 17-fold over baseline. There is no drug in the world that does that! The levels of telomeres increase significantly and inflammatory markers go down. Our emotions affect our biology, and we need to recognize and better understand the power and impact of meditation, prayer, love, compassion, joy, empathy and equanimity as well as the importance of sleep, stress management, movement, exercise, mind-body coordination and connection with nature."

Deepak Chopra, MD

UNITE TO CURE CONFERENCE HIGHLIGHTS

We gathered thought leaders across all disciplines to engage in powerful conversations about the future of medicine.

Francis S. Collins, MD, PhD,
16th Director,
U.S. National Institutes of Health

Deborah DiSanzo,
IBM

George Church, PhD,
Harvard University

Tony Robbins, Robin Smith, MD, and
Peter Diamandis, MD

Francesco Branca, MD, PhD,
World Health Organization

Silviu Itescu, MBBH, Mesoblast

Marisa Papaluca, MD,
European Medicines Agency

Our conference was moderated by Emmy®-winning broadcast journalists.

Max Gomez, PhD

Sanjay Gupta, MD

Mehmet Oz, MD

Meredith Vieira

Address of His Holiness Pope Francis

"The work of this Conference is summed up in four verbs: Prevent, Repair, Cure and Prepare for the Future. […]

We are increasingly aware that many evils can be avoided if greater attention is paid to the style of life we adopt and the culture we promote. *Prevention* involves taking a farsighted look at human beings and the environment in which we live. It means aiming for a culture of balance, whose essential factors - education, physical activity, diet, the protection of the environment, respect for the "health codes" practiced by the various religions, timely and precise diagnosis, and so many others - can help us to live better, with fewer health risks. […]

We must also acknowledge with deep satisfaction the great strides made by scientific research in discovering and making available new cures, especially those related to the delicate problem of rare, autoimmune and neurodegenerative diseases, as well as of many others. In recent years, advances in cellular research and in the field of regenerative medicine have opened new horizons in the areas of tissue repair and experimental therapies; this significant chapter in scientific and human progress is alluded to in the theme of your meeting by the terms: *repair and cure*. The more you are committed to research, the more relevant and effective these aspects will become, thus enabling an increasingly adequate, incisive and even personalized response to the needs of the sick. […]

If we wish to *prepare for the future* and to ensure the well-being of each human person, we must grow in sensitivity as the means at our disposal become all the more potent. This is our responsibility to one another and to all living creatures. For human health needs to be considered in a broader context, not only in relation to scientific research but also to our ability to preserve and protect the natural environment. There is also a need to take into consideration every member of our human family, especially those experiencing social and cultural hardships that endanger both their health and their access to adequate care."

"According to the Bible, the spirit is like a thread that links us to God. God can take this thread away. It is not possible, therefore, to treat all diseases, however, not all diseases are untreatable. So cure is the attention to be paid. Besides material treatments, human beings also need to be embraced and supported in their minds, hearts, and feelings in order to be truly considered as human beings."

Cardinal Gianfranco Ravasi, Pontifical Council for Culture

"Ultimately, disease does not discriminate on class, or race or gender. It makes no exception. It impacts all of our lives. Fighting for a healthier future is a cause that all of us can get behind because each and every one of us has battled illness or know someone very close to them who is fighting disease."

Robin Smith, MD, Cura Foundation, Stem for Life and STOQ Foundation

"Everything should be at the service of the human person – of its growth, dignity and maturity."

Cardinal Pietro Parolin,
Secretary of State, Vatican

"Do not be afraid to embrace a spiritual reality because science and religion really can coexist, and they can help each other to make our society more human."

Monsignor Tomasz Trafny,
Pontifical Council for Culture and STOQ Foundation

Prevent

"We are truly living during the most extraordinary time ever in human history. It is a time where the challenges we want to take on are within our grasp. What was once only possible by governments and the largest corporations on the planet can now be done by individuals and small teams powered by exponential technologies."
Peter H. Diamandis, MD, XPRIZE Foundation

"Ischemic heart disease, stroke, and lung cancer cause about 30 percent of deaths globally. By targeting inflammation, we may be able to make roads into the residual burden of risk, which persists despite what we have to offer our patients today."
Peter Libby, MD,
Harvard Medical School

"We estimate a third of deaths could be prevented by a healthy diet. A healthy diet is related to lower risk of almost everything that we look at, perhaps not too surprisingly, as throughout our bodies the same fundamental processes are utilized. This number will increase even higher if we increase physical activity and stop smoking."
Walter Willett, MD, DrPH,
Harvard T.H. Chan School of Public Health

"As we proceed along this health expedition, we will learn that the relationship that we have with food and the relationship our bodies have with food is based on very fundamental biological principles not so different than the way that we think about how medicines actually work today. So, if you go back to the principle of food as medicine, we may be returning back to ancient wisdom."
William W. Li, MD, The Angiogenesis Foundation

"Human destiny has reached the moment of its metamorphosis as it stands on its threshold of embracing dominion over all of creation, including humanity itself. Like the caterpillar morphing into the butterfly, humanity has no choice. The transformation was predestined by nature. But unlike the butterfly, the outcome for humanity is not predetermined. Our metamorphosis comes with power and dominion over life. The ability to cure and create. But it also comes with the responsibility to control that power and guard against all of the evils that can result from abusing it."
Andrew von Eschenbach, MD, Samaritan Health Initiatives

"Life is a gift from God, but health is a human responsibility. The seeds of cancer are planted during childhood, making it a childcare responsibility for all of us."
Ronald A. DePinho, MD,
The University of Texas MD Anderson Cancer Center

Repair and Cure

"The FDA, patient groups and industry are recognizing that patients are the experts in the kinds of decisions they have to make about their diagnoses: about the care they seek, about the outcomes that are important to them, about the elements of their condition and the things that matter most in their daily lives."
Kimberly McCleary, FasterCures, The Milken Institute

"You have to engage with all the stakeholders including public charities, industry, patients and the FDA. We have spent a lot of time with the FDA and they have been nothing but engaging from day one."
David Panzirer,
The Helmsley Charitable Trust

"What used to be considered a science experiment with gene therapy is becoming a reality. Just late last year, we had the first true gene therapy approved for a rare ocular disorder by Spark Therapeutics."
Sean P. Nolan, AveXis

"Our goal at Be The Match® is to democratize cell therapy. That means a cell therapy for everyone that needs it, irrespective of racial or socioeconomic backgrounds."
C. Randal Mills, PhD,
National Marrow Donor Program

"In the era of precision medicine it is clear that common forms of cancer thought to be the same are not. Add to this that all doctors do not treat patients with common cancers the same. Therefore, analytic tools at the point of care are needed to precisely define the type of cancer and the treatment needed to deliver the best outcome at the lowest total cost of care."
Andrew Pecora, MD, COTA

"Our trials to date have focused on testing the safety and efficacy of cord blood and cord tissue derived cellular therapies in very young children. We have not seen an age effect in these limited studies. We are planning to study the impact of these cell therapies in adolescents and young adults with autism as well as cerebral palsy in our next series of clinical trials."
Joanne Kurtzberg, MD, Marcus Center for Cellular Cures,
Carolinas Cord Blood Bank and Duke University Medical Center

"We started this preclinical gene therapy program in August of 2015, and knew we had to move fast if we were going to have an effective treatment in the lifetime of the patients we were working with. We were able to move the program to a clinical trial within 8 months. By using our history of working within a disease group and drawing on expertise within the field, we are able to progress faster and smarter without cutting any corners so that we may develop effective treatments within the patient's lifetime."
Jill M. Weimer, PhD, Sanford Research, Sanford Health

UNITE TO CURE CONFERENCE HIGHLIGHTS

"The WNT pathway is in charge of all stem cell proliferation and differentiation. As we age, the WNT signaling levels start drifting out of balance. Every time that happens, there is a disease associated with it. Our approach is that we go after natural targets in the body, and we use the body's own machinery – both hardware and software. We are able to bring the specific WNT levels back into a healthy range, at which point we are able to eliminate the various diseases and restore the health of specific tissues. By doing that, we are able to live younger while improving the quality of life and healthspan, eliminating one disease after another."

Osman Kibar, PhD, Samumed

"The science of cell-based ischemic tissue repair is now established. The possibility of clinical tissue repair and regeneration means this will unburden patients of their disease allowing them to lead more healthy and productive lives and restoring health will be more cost-effective than managing disease and good for society as a whole."

Douglas Losordo, MD,
Caladrius Biosciences

"No one should be getting stem cell therapy without asking: 'Who is going to collect my data?' and 'Is my data going to be meaningful?' Because without that we're not going to move this field forward and ultimately medicine is driven by data and that's what we need."

Marc Penn, MD, PhD,
Black Beret Life Sciences

"If you can extend your life by 25 years and the goal of all this, of course, is extend your life 25 years and more, but extend your healthspan to equal your lifespan, so we call it the Seagull Project. The seagull is an animal whose lifespan equals his healthspan. So the last dive of that seagull to get a fish, he dies on that dive. So he was functional until the day he dies. Human beings are not that way."

W. E. "Ed" Bosarge, PhD,
Bosarge Family Foundation

"We're at the leading edge of treating MS with stem cell therapy, but we don't have a roadmap. With time we will learn from our patients if this this a remission or a cure. We don't have history to give us that answer today. I've showed you data up to five years, which looks really positive, and we have patients that were treated over 10 years ago who have stayed in complete remission with no new lesions in their MRIs or clinical symptoms. They improved neurologically and continue to do well. So, time will tell."

Richard K. Burt, MD,
Northwestern University Feinberg School of Medicine

"Without patients and people in underserved communities being in the conversation, it still remains a very first-world, 1% and mostly US and European-focused conversation. We need to make sure that emergent players with disruptive and innovative ideas are in the conversation right from the beginning. Diversity is critical to creating a future health landscape that works for the many, not just the few. We need to see this as a global conversation and a global collaboration. We do need to find more creative, modern ways of engaging right from the beginning and throughout the evolution of health in these extraordinary times."

Desirée Cox, MD, PhD, The HEALinc Future Health Incubator and
the National Stem Cell Ethics Committee of The Bahamas

Prepare for the Future

"This conference is an incredible opportunity to see what is possible in the future. We will need to anticipate the changes that will be needed to deploy it. How do we execute begins by what do we need to accomplish in the next decade and how do we expand globally? That's how we structured ourselves at Sanford Health. It started with physicians that would set the standard of our quality and the very essence of the care we provided quickly spread to the rest of the organization. Anticipating that someday we would have to bear risk and manage the financial burden of health care, we focused the organization to deliver care with a value proposition."

Kelby Krabbenhoft, Sanford Health

"I like to think that innovation is in our DNA. We have made it the centerpiece of our culture at Hackensack Meridian Health. We are reorganizing into what we are calling care transformation taking each major disease and looking at the care pathway to optimize patient care."

Robert C. Garrett, MHA,
Hackensack Meridian Health

"We all came here as individuals, but we're leaving connected as a global army: a global army that's united to cure, a global army that's going to come back two years from now and share the progress we made have made. What's working and what's not working so we can learn from one another to advance human health globally."

Howard Krein, MD, PhD,
StartUp Health and
Thomas Jefferson University Hospital

"The school of medicine is partnering with these communities to understand what the communities need: not what we need from them, but what the communities need from us. Because without a real partnership, it is not going to have the kind of effect that we need."

Bonita F. Stanton, MD,
Hackensack Meridian School
of Medicine at Seton Hall University

"Money does not change the world; people do. It is time to get educated and give back through philanthropy and social impact. Once you identify what you are passionate about and it drives you to do something, you will find happiness."

Kate Roberts,
Maverick Collective and PSI

"All of you sitting here today have collectively devoted your professional lives in the pursuit of helping and healing others. Now we ask that you add another duty to your cause and that is to reasonably and ethically help decelerate the staggering medical cost increases that are straining all of our budgets."

Glenn Pomerantz, MD, JD,
Blue Cross and Blue Shield of
Minnesota

"Our mission is to guide the most important care moments. We believe very strongly that a patient is on a journey through life – a health care journey. There are moments in time during that journey where, in fact, the right information is as powerful as the right drug and as the right device."

Richard Malloch,
Hearst Corporation

"Health care is a team event. If we really want to care for people, we have to take all of the pieces of information and put it into a single format and universal language that everyone can understand and react to in a timely manner."

David A. Pearce, PhD,
Sanford Health

STORIES OF HOPE

At the Cura Foundation, we keep the patient perspective at the center of everything we do. At this year's conference, we were honored to have many incredible stories shared. The following speakers are points of light, providing hope to the world.

Jory Murray, Quentin Murray and Mary Webb

Quentin and Jory Murray

An emotional moment of the 2018 conference was surprising Dr. Bob Hariri with a former patient, Quentin Murray, his younger sister, Jory Murray and their mother Mary Webb, whose lives were forever changed by Dr. Bob's treatment. Quentin is living proof of the power of medical innovation and was the first recipient of the world's first combined cord blood and placental blood transplant, using his sister Jory's cells. Today, Quentin is living cancer free as a healthy teenager. Quentin, Jory and Mary sat down with Meredith Vieira to share their experience and provide insights to other patients who may be struggling with similar issues.

"Being faced with cancer, being faced with death, really gave us an awesome perspective on living. And if I had to do it all over again with the same outcome, I would. Cancer has helped me to understand that blessings are not just meant for ourselves when they are given to us. They are meant for us to be blessings beyond ourselves."
Mary Webb

Bethany Pappalardo

It is been 13 years since Bethany Pappalardo was struck with a life-changing diagnosis of multiple sclerosis at the age of 18. Bethany did not let her future be limited and fought for expanded access to treatment. Bethany underwent an experimental stem cell treatment with Dr. Richard Burt. Since her procedure, her MS has been in remission, and she has become an inspiring patient advocate for emerging therapies.

"I could not have asked for a better chance at life."
Bethany Pappalardo

Bethany Pappalardo

Owen and Ron Suskind

Owen Suskind

We were honored to have Owen Suskind and his father Ron join us to share a powerful glimpse into their lives. Owen shows the world that difference is a gift, and connection is the baseline of meaning. With the affinities afforded to him through his autism, Owen created a new way of communicating, which surprised and ultimately delighted his family, and the rest of the world. Owen has come into his own as an advocate and leader of the autism community.

"You see dreams that by our hearts are not dreams of power or wealth but dreams of love and kindness, helping and healing. Those are the dreams that save the world."
Owen Suskind

The Wilkey Family

The Cura Foundation launched an international social media campaign in 2018 asking individuals and families to share their stories of hope in the face of adversity and illness. Cura received submissions from around the globe and chose one family to join the Fourth International Vatican Conference. The 2018 Stories of Hope contest winner is the Wilkey family. We are honored to recognize Liz Wilkey and her family, Michael, Kaitlyn, Megan and Leah, who bravely entered the Cura Foundation's 2018 Stories of Hope Contest. The Wilkeys face a myriad of autoimmune diseases but continue to have compassion for themselves and for others.

"You need to be informed when you are going to these doctors and you have to take your health into your own hands."
Leah Wilkey

Liz, Megan, Leah, Kaitlyn and Michael Wilkey

BUILDING BRIDGES BETWEEN FAITH AND SCIENCE

Many of life's fundamental questions revolve around how we quantify what we cannot see: the mysterious, the spiritual, the faith-based. Scientists work with concrete evidence, so answering these questions can be challenging. Is there a link between spirituality and health? Does practicing a religion make you live longer?

The Unite To Cure movement provides a rare opportunity for leading medical experts to discuss these questions with leaders of faith. Moderated by Dr. Mehmet Oz, the Culture of Life and Religious Influence on Health panel grappled with the link between spirituality and health, discussing prayer and purpose. The Longevity and Morality of Extreme Life Extension session, moderated by Dr. Sanjay Gupta, extended the conversation to lifespan, mortality, and even the afterlife.

Does Practicing Religion Make You Healthier?

Experts explored the culture of life and detailed scientific evidence supporting the connection between religion and improved health outcomes. Rabbi Edward Reichman, MD, referenced a landmark study derived from data from the Women's Health Initiative, which surveyed over 90,000 women. The conclusion of the study was that women ages 50 and up were 20 percent less likely to die in any given year if they attended religious services weekly compared to those who never attend religious services, Reichman said. This analysis was controlled for age, ethnicity, income level and current health status. But what was it about religion specifically that encouraged health-promoting behavior? According to Elder Dale G. Renlund, MD, societal norms taught by religions such as strong sociality, especially in families, a spirit of volunteerism and doing good to one another, lead to improved survival and prolonged life. This line of thinking leads to a provocative question: Should physicians be involved in their patient's spiritual life? Is there even time to discuss such topics within a clinical setting? Or, should spirituality be kept out of the medical exam rooms and kept within the walls of religious buildings?

Elder Dale Renlund, MD, Rabbi Edward Reichman, MD, and Father Kevin FitzGerald, PhD, PhD, with Mehmet Oz, MD (left to right)

Elder Dale Renlund, MD, Father Nicanor Austriaco, PhD, Sanjay Gupta, MD, Francis S. Collins, MD, PhD, Peter Diamandis, MD, and Rabbi Edward Reichman, MD (left to right)

A Deeper Healing

In the scientific world, healing relates to fixing or removing harmful damage from disease. In the spiritual world, healing is not restricted to our physiological bodies, Father Kevin FitzGerald said. "Healing is not curing," he said. "Someone can be cured and never healed. The greatest times of healing that I have experienced have been during people's dying process. There is no cure going on, there is no physiological improvement but, there was tremendous healing, healing of ruptures in relationships that they had been suffering with for years." Religion considers this deeper sense of healing, FitzGerald said. How can physicians and medical providers guide patients through these critical moments and lead them towards healing of the mind and body?

Looking Beyond

While many might think science and faith are distinctly opposed, our speakers prove such an assumption is false. Scientific innovation may even be a moral and religious ethic. "It is our responsibility, folks, to accelerate pathways and not to be in any way complacent. Otherwise, we are guilty of falling into a trap of being blind to principles of justice and equity and that we cannot do," Dr. Francis Collins said. A healthier future depends on bringing scientific breakthroughs to all people.

"It is not about the haves and the have-nots," Dr. Peter Diamandis said. "It is about creating a world of haves and yes, there will be a few super-haves, but a world in which every man, woman, and child has access to all of this health, water, and energy – all of these things – is a great world we should strive towards." Religious or not, this is a worthy goal we can all get behind.

Editing the Code of Life

When taking the Hippocratic Oath, physicians pledge to do no harm. But what if there are unintended consequences to their actions that are near impossible to predict? What if by altering DNA you diminish the effects of one disease but impact some other protective pathway, or even cause complications like cancer? These are the questions being raised by researchers in the swell of excitement around the potential of CRISPR/Cas9. Gene editing, and specifically CRISPR/Cas9, rewrites DNA, the biological code that makes up the instruction manuals of living organisms. With gene editing, researchers can correct harmful mutations and change the activity of specific genes in plants, animals and humans, impact the spread of diseases such as malaria, by altering the carriers, mosquitos. The tool could affect food by genetically modifying certain traits of plants, making them thrive in more environments and use energy in different ways. This technology could transform the way we treat and prevent disease, especially genetic disorders. “It is the biggest thing to happen in biology in a generation,” Katrine Bosley said during the Fourth International Vatican Conference.

Duanqing Pei, PhD, John Leonard, MD,
Sanjay Gupta, MD, and Samarth Kulkarni, PhD, PhD
(left to right)

Ethical Dimensions

During this year’s conference, scientists and industry leaders emphasized the promise this technology posed and shared their own perspectives on the potential drawbacks. The technology raises important ethical questions, especially around regulation: What if CRISPR unintentionally alters healthy genes? What would that mean for the patient and future generations?

Different regulatory environments, some stricter than others, have hindered or jumpstarted research on a global scale. Katrine Bosley, CEO of Editas Medicine, is confident that regulators such as the FDA, EMA and CFDA are proceeding cautiously and analyzing potential risk vs. benefit carefully. CRISPR/Cas9 clinical trials are underway or planned around the world with Chinese researchers leading the way, and research groups are eager to bring the tool to patients. Dr. Duanqing Pei shared his own sense of urgency, as large numbers of Chinese individuals suffer from genetic diseases that could possibly be corrected by CRISPR, such as Beta Thalassemia, an inherited blood disorder.

Recently, CRISPR Therapeutics led by Dr. Samarth Kulkarni asked permission from European regulators to begin a trial using the gene-editing technology to fix a genetic defect in patients with Beta Thalassemia. Researchers at Stanford University School of Medicine are also pursuing a CRISPR treatment for sickle-cell to clinical trials. The group will seek authorization from the FDA in 2018 to begin a trial the following year. In 2017, Editas Medicine postponed its highly anticipated human trial using CRISPR to treat a rare eye disorder, Leber congenital amaurosis type 10, to mid-2018. Intellia Therapeutics initiated final testing of safety and efficacy in non-human primates for their lead program intended to treat patients with transthyretin amyloidosis. Going forward, distinguishing the exact precision of CRISPR/Cas9 will be the key to getting approval and moving the tool from the lab to the patient. While there are potential off-target effects for any drug or therapy, Intellia’s CEO Dr. John Leonard predicts that based on animal work thus far, the technique is well tolerated. But since CRISPR/Cas9 is still being developed, it is critical to think deeply about delivery as we move forward.

George Church, PhD, and
Katrine Bosley

The Promise and Concerns With Respect to CRISPR/Cas9

Dr. George Church, a leading geneticist from Harvard University, stressed that while CRISPR does show promise in increased efficiency and cost-effectiveness, the biggest misconception about the technology is that it is “easy and efficient.” Dr. Samarth Kulkarni, the CEO of CRISPR Therapeutics, diverged from this perspective, emphasizing that CRISPR is unique in its simplicity. “Because it is so elegant – it is essentially a pair of molecular scissors with different barcodes. That gives it such versatility to attack so many different diseases in a very speedy manner. It has completely democratized the technology and has gone into the hands of many.” The future of gene editing may not be clear, but what is clear is that researchers, leaders of industry, physicians and investors are moving at a rapid clip to harness this powerful technology. As Katrine Bosley reminded panelists, “The technology itself is neither good nor bad, it is what we do with it.”

The Catalytic Power of Disruptive Technologies

Disruption may sound scary, but it does not have to be. It can catalyze the creation of new paradigms and better systems for widespread benefit. Disruptive technologies like artificial intelligence, virtual reality, telemedicine and precision analytics are already transforming health care delivery and administration. Traditional models of health care are performing sub-optimally and health systems and medical providers must adapt quickly to keep up with the rapid pace of change.

Mike Muller, David Rhew, MD, and Mehmet Oz, MD (left to right)

At this year's conference, various medical experts and leaders in tech shared new ways that technology can be utilized outside of entertainment; it can be therapeutic. According to Dr. David Rhew, Samsung is using virtual reality to help patients with chronic pain, low vision issues and even spinal cord injuries. Mike Muller from ARM discussed various projects ARM is using to bring the mobile revolution to all demographics, even the most disadvantaged or most remote, through projects like wearable soap to improve sanitation and the spread of disease, and mobile technology to detect lung cancer early.

Robert C. Califf, MD

The Explosion of Big Data

Like virtual reality and technological innovation, big data is changing the way providers treat, and even perceive, patients. "We really need to be able to look at the entire human being. And even better, the entire human being in the context of other people that they are interacting with because it is the interaction that often drives the outcomes that are important," Dr. Robert Califf, from Duke Health and Verily, said. Over the course of the next few decades, the sheer numbers of knowledge points and opportunities to gather data will explode. Some experts are predicting that we may have chips and sensors in our phones, computers and wearable devices, which detect signs of disease. Where to store such astronomical amounts of data and who to share it with, will be key questions going forward.

Vincent Li, MD, Peter Gabriel and Mehmet Oz, MD (left to right)

One initiative to increase sharing of information is "The Tap," a mobile platform that connects health care providers to each other and to patients, created by Dr. Vincent Li and Peter Gabriel. Over the past decade, streaming has disrupted and transformed the way performers create, produce and distribute music. No one knows this better than Gabriel, who wants to apply the same democratizing technology to health care. Gabriel and Li envision a platform for patients can obtain their medical information faster, get real-time diagnostics and communicate with medical providers. The platform would also enable knowledge-sharing to optimize patient care and maximize productivity across the continuum of care.

From Fragmentation to 'Collabivation'

Donato Tramuto

These emerging technologies demonstrate the shift of medical care from a fragmented process to a more continuous experience that patients can access on demand. "In this new world, the more you share and the more you give, the more earning potential you seem to have," Gabriel said. In addition to financial benefits, collaboration and communication will foster greater creativity to solve problems. Integrating innovative new solutions into practice will be the next challenge, stressed Donato Tramuto, who leads Tivity Health. Tramuto coined the term 'collabivation.' "It is no longer about innovation alone. It is about integration and collaboration," said Tramuto. While novel ideas are key ingredients to change, without integration, many world-changing solutions lose value. We must work together to take ideas from the abstract to reality.

2018 Pontifical Key Scientific Award

Francis S. Collins, MD, PhD

Francis S. Collins, MD, PhD (middle) with
Cardinal Gianfranco Ravasi (right)
and Archbishop Vincenzo Paglia (left)

The 2018 Pontifical Key Scientific Award recipient is Dr. Francis S. Collins, an individual with exceptional persistence, commitment to excellence and significant contributions to the field of medicine. A man of strong faith, Dr. Collins teaches us all that fully embracing science does not require casting off religion; one can enrich and inform the other. Dr. Collins' discoveries have provided staggering insight into our own genetic basis, which informs much of our physiological function. Dr. Collins currently serves as the director of the U.S. National Institutes of Health (NIH), leading the NIH and its 27 Institutes and Centers. With its $37 billion annual budget, NIH is the largest single supporter of biomedical research in the world, funding thousands of scientists and research projects throughout the U.S. and around the globe.

Dr. Collins is known for his landmark discoveries of disease genes and his leadership of the international Human Genome Project, which culminated in April 2003 with the completion of a finished sequence of the human DNA instruction book. He served as director of the National Human Genome Research Institute at NIH from 1993 to 2008. Prior to leading the Human Genome Project and the National Human Genome Research Institute, Dr. Collins was a Howard Hughes Medical Institute investigator at the University of Michigan. There, Dr. Collins helped identify the genes for cystic fibrosis, Huntington's Disease and other conditions. He has played a pivotal role in biomedical research, in the United States and around the world. Among other contributions, Dr. Collins has opened up new avenues for research in many developing nations through the Human Heredity and Health in Africa initiative, which advances African research capacity and expertise in genomic science. He is an elected member of the Institute of Medicine and the National Academy of Sciences. Dr. Collins has received numerous national and international awards for his achievements, including the Presidential Medal of Freedom in November 2007 and the National Medal of Science in 2009.

2018 Pontifical Key Innovation Award

Robert Hariri, MD, PhD

Robert Hariri, MD, PhD, with Mary Webb, Quentin and Jory Murray,
Cardinal Gianfranco Ravasi, Robin Smith, MD,
and Bishop Paul Tighe (left to right)

The 2018 Pontifical Key Innovation Award recipient, Dr. Bob Hariri, is a modern-day "Renaissance man." He is a jet-rated commercial pilot with thousands of hours of flight time in over 60 different military and civilian aircrafts. He has produced several feature films as well as documentaries on global societal issues. But it is his research in medicine that will cement his legacy.

He has led the regenerative medicine revolution raising awareness, capital and interest in the flourishing field. Through his roles as chairman, founder, chief scientific officer, and former chief executive officer of Celgene Cellular Therapeutics, Dr. Hariri has pioneered the use of stem cells to treat a range of life-threatening diseases and made transformative contributions in the field of tissue engineering. Bob Hariri is a man of depth and ability across a range of industries. He is a surgeon, biomedical scientist and highly successful serial entrepreneur in two technology sectors: biomedicine and aerospace. Dr. Hariri has over 150 issued and pending patents, has authored over 100 published chapters, articles and abstracts and is most recognized for his discovery of pluripotent stem cells from the placenta and as a member of the team that discovered the physiological activities of tumor necrosis factor.

Dr. Hariri serves on numerous boards of directors including Cryoport and Provista Diagnostics. Dr. Hariri is an adjunct associate professor of pathology at the Mount Sinai School of Medicine and has served as a member of the board of visitors of the Columbia University School of Engineering and Applied Sciences and the Science & Technology Council of the College of Physicians and Surgeons. He is a member of the scientific advisory board for the Archon X PRIZE for Genomics. Dr. Hariri is also a vice-chairman of the board of trustees of the Liberty Science Center, a member of the board of trustees of the J. Craig Venter Institute and has been appointed Commissioner of Cancer Research by New Jersey Governor Chris Christie.

UNITE TO CURE AWARDEES

2018 Pontifical Key Advocacy Award

Victoria Jackson

The picture of a strong and savvy business woman, Victoria Jackson built an empire as the CEO and founder of one of the world's leading beauty brands, Victoria Jackson Cosmetics. For the past few decades, her husband, Bill Guthy, the infomercial entrepreneur behind Guthy-Renker, and Victoria have been busy raising their three beautiful children—Evan, Ali and Jackson—in Los Angeles. In 2008, their world shifted. Their 14-year-old daughter, Ali, was diagnosed with a devastating and extremely rare autoimmune disease of the central nervous system, neuromyelitis optica (NMO). NMO is a potentially fatal disease wherein the cells and antibodies of the immune system attack the optic nerves, spinal cord, and potentially, the brain.

Victoria Jackson (middle right) with Cardinal Gianfranco Ravasi (middle left), Bishop Paul Tighe (left) and Robin Smith, MD (right)

Inspired by their daughter's perseverance in the face of this terrifying diagnosis, Victoria and Bill founded the Guthy-Jackson Charitable Foundation to fund the life-saving research needed to better understand, treat and ultimately cure NMO. Where there was previously little sense of connection or awareness, Jackson has built a community of over 175 problem solvers from 28 countries, creating an unprecedented model of collaboration. This network of patients, advocates and health care stakeholders, led by Victoria, has made a significant positive impact on the treatment of NMO and other autoimmune and related diseases. Jackson has led the work of the foundation to achieve quantum progress—and at record speed. Today, with the start of industry-sponsored clinical trials and with funding for new NMO research from the U.S. National Institutes of Health, there is real hope for a cure.

This year, we honored Victoria Jackson with the 2018 Pontifical Key Advocacy Award, for her visionary approach and transformative impact in advancing human understanding and funding for NMO and related diseases.

2018 Pontifical Heroes

The 2018 Pontifical Heroes show tremendous courage in the face of adversity and inspire others to make positive change. Each hero has battled and overcome their own challenges, providing hope to patients, families and individuals around the world. We feel honored that they joined us in Rome.

2018 Pontifical Heroes with Robin L. Smith, MD, Tony Robbins, Cardinal Gianfranco Ravasi and Ali Pattillo (right to left)

Richard M. Cohen
(received by Meredith Vieira)
Kaitlyn Wilkey, Megan Wilkey,
Leah Wilkey and Liz Wilkey

W. E. "Ed" Bosarge, PhD
Alex Hariri
Owen Suskind
Riley Schwamb

Bethany Pappalardo
Jory Murray
Quentin Murray
Kelly Close

THANK YOU

We thank our supporters and benefactors as well as those who have asked to remain anonymous.

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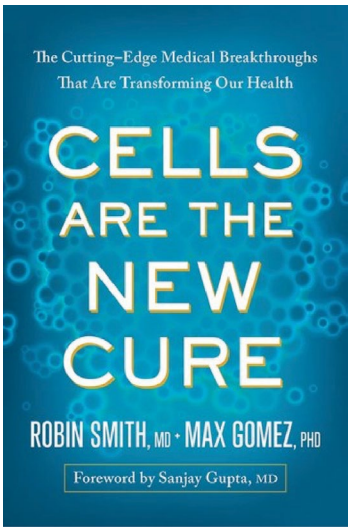
Cells Are the New Cure



Cells Are the New Cure **takes you on a tour of the most exciting and cutting-edge developments in medicine. You'll meet the doctors performing lifesaving research and the patients who have survived illnesses that, before today, were considered a death sentence. The content inside these pages could save your life or the life of someone you love.**

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