



2013 American Society for Clinical Investigation Presidential Address

The perfect storm: challenges and opportunities for translational medicine

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It truly has been an honor and a privilege to have served as the President of the ASCI for the last year, and as has been the tradition since the founding of the Society in 1909, I stand here with more than a little trepidation to deliver an address where the expectation is that I will have something profound, witty, and maybe even important to say. Indeed, although my tenure as the President of the ASCI has been entirely enjoyable, I have lived under the terrible knowledge that I would be standing here today giving this address.

In thinking about this task, I did what all of my predecessors have done. I sat down and read the history of the ASCI and the prior orations from Presidents past. And, as most of my predecessors, I realized with horror that anything that I had thought that I might say or have any credible value had already been said in a much more eloquent way than I could ever imagine doing myself. After reflecting upon what I had read, I first realized that I am not a historian and therefore will not recite the history of the ASCI (1), since I know I would be corrected by those of you who know the history far better than I do. However, it was clear to me that reading the history of the ASCI since 1909 amounts to following the history of academic medicine in the United States. Moreover, the presidential addresses represent an oral history of academic medicine, as each President focused on either something very personal to them or a pressing issue of the day. If you have the time, I would urge you to read these lectures, as one will get a good sense of the history and the broad outlines of what has happened in our field over the past 100 years.

One thing that becomes clear is that there are certain themes that recur in these orations, and the theme that I want to address today is really probably one of the

more common recurring themes. In fact, this theme emerged immediately after the founding of this Society — the existential threat to the existence of a physician-scientist. I have chosen to dwell on this theme because in any gathering of scientists or physicians of more than one person over the last several years, the conversation quickly focuses around this question. Indeed, we daily hear chilling pronouncements, including statements such as “The health care system is going to put all of us out of business. The NIH budget is terrible. Research is doomed. The physician-scientist, scientist, or academic hospital is dead, dying, threatened.” All of this is quite depressing, except that I borrowed this slide from my boss, Dr. Edward Benz, from his ASCI presidential address in 1992 (2). Thus, it is quite clear that this is not a new problem. Indeed one might believe that we have cried wolf too many times when facing perceived threats. However, there are some new challenges to our existence that require careful consideration. Specifically, we face increasing skepticism from health care payers, Congress, and the public about the values and motivations of those of us who are engaged as physicians and scientists at a time when our government has seemingly lost the will to find the consensus to govern. Thus, it is not an exaggeration to say that these considerations when put together create what some have called the “perfect storm,” an alignment of issues that individually could be surmounted but when combined is disastrous.

The irony of this situation, as Dr. Francis Collins described yesterday in his lecture, is that this comes at a time when the opportunities to make a difference in medicine and the health of people have never been more promising. Our knowledge of disease mechanisms eloquently recounted by many speakers at this meeting is expanding at an exponential rate. We know more about human diseases than we could ever have imagined even five years ago. I can personally attest to this amazing progress, as I took the re-certification examination for the medical oncology board certification earlier

this week. Even though we still cannot cure many cancer patients, compared to the last time I took this exam, only three cancers of the hundreds that I was required to know are treated in the same manner as the last time I took this test. This progress is good for our patients but perhaps not so good for me. Moreover, the opportunity to use this knowledge — although significant challenges remain — to impact human health has never been closer. Indeed, during this meeting we have heard of some spectacular successes. Dr. Warner Greene just reviewed the worldwide impact of HIV retroviral therapy, which is a remarkable accomplishment in a very short period of time. I think everyone in this room feels every day that this is the kind of progress that we all hope to make in each of our fields.

At the same time, there is abundant evidence that investments in biomedical research not only advance the public health but also have a significant financial impact, as they are the underpinnings of key industries in which the U.S. has led for decades. Investments in research and development pay off in ways over time that are far greater than any money that was invested. Beyond these arguments, all of us believe that failure in each of our fields is really not an option, as we are invested in this path because we believe that we can make a difference in the health of people. Thus, we have at the same time threats to every aspect of what we do and yet the opportunity to make a difference in ways that one could never have imagined. We truly live in Dickensian state, where it is simultaneously the best and worst of times. Because of this, it is clear we do have to take the threats to what we do and the changes that may be coming quite seriously. However, I worry more than a little, in talking to many of my colleagues and hearing much of the discussion over the last several years, that we could fall into a trap of going down the wrong path. As described by various authors of self-help books, the path is laid out according to the bad habits of unsuccessful people. Specifically, unsuccessful people com-

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plain about their circumstances, ignore data, cling to old ways of doing things, and refuse to accept change. If we are honest with ourselves, all of us sometimes feel this way. To put it bluntly, we have to get over it. We cannot feel sorry for ourselves and our current situation, but instead we need to address these challenges directly as we would any scientific problem and move forward using the best of what we have at our disposal. My suggestion is that there are four ways we can do this. First, we have to embrace change. My laboratory is situated next to Dr. Max Loda's laboratory, and he is fond of saying, "If our ancestors didn't change, we'd still be living in caves." This simple statement is a healthy attitude for thinking about change. It is clear that no one likes change. However, change is inevitable, and we need to lead this debate in the areas of importance to our work. How do we deliver the best care? How do we select and fund research? How do we train the next generation? Instead of passively allowing outside forces to dictate to us how we will do our work, we as a group have to take charge of this process, be engaged with the people who are imposing some of the boundary conditions upon us, and change the debate in a way that we believe will be the most constructive way forward based on what is good for progress rather than personal or institutional gain.

At the same time, we have to do what we do in our research. We have to innovate. We have to rethink all of our assumptions. Is it true that we have to do things the way that we have done them for the last 10, 20, or 50 years? Perhaps it is time to change some of how we organize or perform our work if we want to make progress. At the same time, although we always need more resources, are we certain that we are making the best use of the resources we have? Have we structured our individual laboratories, our departments, our hospitals, and our national institutions in the best possible way to use the resources? While never fully adequate, these resources are considerable and certainly could be used better to make progress.

The second thing we must do is to insist on excellence. We have to resist the temptation to lower our standards to survive in a changing environment. There are plenty of reasons why academic medical centers struggle in the current environment. At the same time, there is no reason to believe that they cannot be the place where excellent, efficient care is delivered. We just have to

insist that this will be the case and organize ourselves to accomplish this goal. At the same time, we should not compromise on pursuing and funding the best research. We cannot operate in a crisis mode where we try to patch over this rough time and spread money around to maintain the status quo until this crisis passes. The only defensible path forward is for us to continue to fund the best research, wherever this is being pursued, and in whatever field it is, in order to advance medical science.

In the same vein, we have to maintain high standards for our trainees. Many forces have now created a debate about whether or not it makes sense for trainees to be involved in the care of patients. Are they the most cost-effective way of delivering care in the hospital? Although these considerations are real, our trainees represent the next generation of physician-scientists, and we have to train them using the highest standards if we expect to make progress in the future. We need to ensure that the next generation embraces and embodies excellence. We cannot do this if we relegate them to observers in how we care for patients.

The third thing we must do is related to the first two points. We have to argue our case. This is a particularly hard task for all of us because we believe that everything that we feel that we have to justify these days is truly a no-brainer. It is a no-brainer that if you fund medical research, we will make progress in human health. It is a no-brainer that this is a noble profession. Unfortunately, we cannot just assume that everyone believes as we do that these statements are true. We need to justify what we are doing and make the case that it is important. We have to justify this to those who pay for health care, to those who pay for the research, and to Congress. In this time of financial austerity and political gridlock, no one wants to hear that another group wants money and resources. We cannot assume that they understand how these are essential investments and instead have to deliver a clear message about our value proposition. Complaining about not being able to conduct business as usual is not a compelling argument to make. The stronger argument is that we cannot afford not to make the investments in medical research. This work not only is critical to the health of our population, but is critical to the economy of this country. Based on our demographics, we cannot afford

to care for our own people without fundamental changes in the understanding and treatment of diseases associated with aging: cancer, dementia, diabetes, etc. Moreover, if we do not make these investments, other countries will, and they will succeed because they will take the model that we have built over the last 50 years and improve upon it.

At the same time, we have to embrace something that none of us like to do. We actually have to measure whether what we do makes a difference. If we do not do this, we cannot be efficient and make correct decisions. If we do this, it will also make it much easier for us to make the case that the investments that are placed in our hands really, truly do pay off.

The final thing we cannot forget is that we have a responsibility to develop the next generation of scientists and physician-scientists. If we do not pay attention to this, we will lose an entire generation. How do we do this? First, we have to be positive. We complain too much amongst ourselves about the state of affairs. Although this is understandable, our trainees hear this. If the people that they have chosen to train with are unhappy with their lot in life, how do we expect this group of bright and motivated people to want to pursue this field? All of us can remember in our training someone who was a mentor to us, and I suspect that one of the aspects that drove us to do what we did was that they were very positive about the future and what one could accomplish. So be positive.

At the same time, we need to protect their time. Although this sounds obvious to all of us who talk about young investigators, we have not always designed our training programs in ways that make this possible. Indeed, Dr. Joseph Goldstein's description of the syndrome of PAIDS, Paralyzed Academic Investigator's Disease Syndrome, in which someone does not receive training and the skills to move beyond a first observation to create a career, is just as relevant today as it was when he gave this lecture (3).

With the increased complexity of science and medicine these days, trainees need protected time to develop skills that will permit them to have a career in investigation where they are able to move into new areas with a strong foundation of how to conduct science. Acquiring these skills requires time and cannot be done in a prescribed time period or while running around doing activities that pay the bills.



Table 1
2013 ASCI Council Young Physician-Scientist Awardees.

Edward M. Behrens, M.D. The Children's Hospital of Philadelphia	Brian Barkley Graham, M.D. University of Colorado Denver	Lauren Hachmann Sansing, M.D. University of Connecticut Health Center
Kathrin Maria Bernt, M.D. Children's Hospital Colorado	J. Anthony Graves, Ph.D., M.D. Children's Hospital of Pittsburgh of UPMC	Carla Rose Scanzello, M.D., Ph.D. Rush University Medical Center
Maneesh Bhargava, M.D. University of Minnesota	Steven K. Huang, M.D. University of Michigan	Jennifer Lynn Sherr, M.D., Ph.D. Yale University School of Medicine
John M. Brehm, M.D. Children's Hospital of Pittsburgh	Ania Magdalena Jastreboff, M.D., Ph.D. Yale University School of Medicine	Neal J. Sondheimer M.D., Ph.D. The Children's Hospital of Philadelphia
Carolyn S. Calfee, M.D., M.A.S. University of California, San Francisco	Qing Li, M.D., Ph.D. University of Michigan	Jason Zachariah Stoller, M.D. The Children's Hospital of Philadelphia
Philip A. Chan, M.D., M.S. Brown University	Jill Lamanna Maron, M.D., M.P.H. Floating Hospital for Children at Tufts Medical Center	Andrew W. Tai, M.D., Ph.D. University of Michigan
Scott P. Commins, M.D., Ph.D. University of Virginia Health System	Tobias A. Neff, M.D. Children's Hospital Colorado	Dawn Marie Wetzel, M.D., Ph.D. Yale University School of Medicine
Edward Vincent Faustino, M.D. Yale University School of Medicine	Shetal H. Padia, M.D. University of Virginia Health System	Bryan Williams, M.D., Ph.D. University of Minnesota
Alexander G. Fiks, M.D., M.S.C.E. The Children's Hospital of Philadelphia	Matthew T. Rondina, M.D. University of Utah	

In addition, although we all mentor others, we have to reinvest in mentoring. We have to go beyond thinking about the old ways of doing it, because the future will always be more complicated than how it was for us. When I was a medical oncology fellow, it was very clear that you had three choices: you could focus on clinical work, you could become a clinical trialist, or you went to the lab to train to run a research laboratory. Today, the options are much more varied. The lines between laboratory and clinical investigation are much less clear, and real investigation can be performed on clinical material because the distance between the bench and the bedside has disappeared. Thus, we have to rethink how we mentor our trainees going forward, because their career options are not necessarily exactly the same as ours were. We need to think creatively about how to support these exciting new careers.

It is clear that none of these four prescriptions are easy. As my presidency ends, I have reflected over the past year about how we as a Society have made progress in each of these areas. Although this is still a work in progress, we have made several significant changes. For example, in terms of membership, many of you know we put on the ballot this year a question as to

whether to raise the age of eligibility for membership in the ASCI to 50. More than 75% of the membership agreed to this proposal, allowing us to change the bylaws. There are some who ask, "Well, can you still be the Young Turks if the entrance age to the society is 50?" First, many say 50 is the new 30, so perhaps we are still young. However, more importantly, this change reflects the reality and complexity in training that our junior faculty must complete. If we try to pretend that it does not take longer to train and hold the eligibility age to 45, at some point we will have no one left in this Society.

The second thing that the ASCI has done this past year is to investigate how we spend our resources. This process led to me being engaged in something I never imagined would be part of my duties. Specifically, we asked the question whether we should purchase a building to house the Society. We realized that we were paying a substantial amount of money to rent property to house the Society and the JCI staff. Anyone who has thought about renting versus buying property realizes that if you are going to stay in the same location, the value proposition is highly skewed to purchasing property. I am thus happy to share that we have purchased a building in Ann Arbor as the

new home of the ASCI. This building formerly housed a private school founded by Thomas Knoll, who created Photoshop.

Later in this meeting, you will hear from Dr. Howard Rockman and his editorial team. The world of publishing is changing dramatically, and the JCI is looking at every aspect of the publication process, from submission of manuscripts, to the formats that are published, to how people access the journal. Although I will let Howard tell you the details, you will see that the JCI is highly engaged in evaluating and changing to remain at the forefront of publishing while maintaining the high standards that make the journal successful.

We continue to insist on excellence. This year we were happy to have a large increase in the number of membership nominations, yet we have not increased the number of members that we admit, in order to maintain the high standards of this society.

In terms of making sure we are arguing our case, the ASCI has long been involved in both FASEB, the coalition for the Life Sciences, and Research!America to help keep medical science on the national agenda. This April we supported the Rally for Medical Research in Washington, D.C. The ASCI will continue to be a voice of advocacy together with partner organi-



zations, but I also wanted to emphasize a point made by Dr. Elizabeth McNally last year in her presidential address (4), that each of us needs to act as individuals. The statement that all politics is local is true, and we need everyone to contact your local politicians, your senators, your representatives to make the case that funding research is a priority. Indeed, as individuals, we have more power than organizations to influence those who make decisions that affect all of what we do.

The ASCI continues to help promote and develop the next generation of physician-scientists. For the past two years, we have included two organizations in this meeting, the American Physician Scientists Association (APSA) and the Doris Duke Clinical Foundation. These organizations represent a spectrum of trainees from medical and graduate school to junior faculty, and having them at this meeting provides a wonderful opportunity for all of us to interact and network. In addition, this year we started an initiative to encourage more fellows to attend the meeting by creating the ASCI Council Young Physician-Scientist Awards. These awardees were selected from submitted abstracts from K-awardees from around the country (Table 1). We hope to build on this tradition going forward.

I want to acknowledge that doing the things that we need to do to advance the field will not be easy. However, it is critical

that we take them to heart and move forward to embrace the challenges in front of us. Instead of letting these challenges demoralize ourselves, we should instead use this as a rallying call to shape medical research in the future. Indeed, perhaps this quote from Mahatma Gandhi will serve as an important reminder of what one can achieve: "Man often becomes what he believes himself to be. If I keep saying to myself that I cannot do a certain thing, it is possible that I may end by really becoming incapable of doing it. On the contrary, if I have the belief that I can do it, then I shall surely acquire the capability to do it even if I may not have had it at the beginning."

In finishing I need to thank a few people, as I have certainly not been alone in guiding the Society this year. I learned a tremendous amount from interning for President under the tutelage of my immediate predecessors, Drs. Elizabeth McNally and Paul Mischel. The councilors and officers of the ASCI are a remarkable group of people who are great scientists as well as energetic and enthusiastic leaders committed to physician-scientists and their well-being. I know that Drs. Peter Tontonoz and Mukesh Jain will ably lead the Society in the future. I also note that Drs. Theodora Ross and Mark Gladwin are completing their service on the ASCI Council and wanted to thank them for their hard work over the last three years.

I also am pleased to announce that Dr. Levi Garraway, one of my close colleagues, is the president-elect of the ASCI. He now has this lecture hanging over his head. In addition, I wanted to welcome our new Council members, Drs. Deborah Novack and Anna Huttenlocher, who will join the Council in the fall. Finally and most importantly, I wanted to thank the staff of the ASCI and two individuals in particular. John Hawley is the Executive Director of the ASCI and Karen Guth is the Managing Director of the ASCI. They do all the work so that those of us who serve as ASCI Councilors can take all the credit. However I really want to thank them and put credit where credit is really due. Thank you very much.

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