Dean's Newsletter
July 2006

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Getting the Facts on Conflicts of Interest

The July 9th and 10th issues of the *San Jose Mercury News* featured major stories on conflicts of interest focusing specifically on the Stanford University School of Medicine. I am confident that there were many reactions to these articles by members of our university community as well as by the public. Conflict of interest is an important topic that has many implications for both not-for-profit and for-profit organizations. While some of the issues surrounding conflict of interest are straightforward, others have many nuances that require more careful consideration and explication. To help make the facts as clear as possible, our Office of Communications and Public Affairs has posted an informative factual review of conflicts of interest as they relate to universities and academic medical centers. I would strongly encourage you to visit their website (see: http://mednews.stanford.edu/conflict/) and review the materials they have posted. Among the information provided is an informative Q&A section that addresses some key questions including:

1. *What are the highlights of the Stanford School of Medicine's conflict-of-interest disclosure policy?*
2. *Why is it important for a research institution like the School of Medicine to have policies that address conflict-of-interest issues?*
3. *Once a conflict of interest is disclosed, how is it handled? What determines whether a conflict is approved denied or managed?*
4. *When was the university's policy established?*
5. *Where do faculty members disclose this information? Is it available to the public?*
6. *Have you made any specific changes to the policy over the years?*
7. *What training on COI issues do faculty receive and how are revisions communicated?*
8. *Who sets and enforces the school's policy?*
9. *Is self-reporting effective?*
10. *How do you ensure faculty compliance?*

11. *What penalties are available should a member of the faculty not comply with the COI policy?*
12. *How many faculty members have been subject to these penalties?*
13. *How does the school handle a situation involving allegations of biased research due to COI?*
14. *Why not simply ban conflicts outright?*
15. *How does Stanford's policy compare to those of other academic medical centers?*

As you likely know, I have also written a number of commentaries on the topic of conflict of interest in previous **Dean's Newsletters**. I have listed a few of these articles below along with their URL in case you wish to refer to them.

1. ***Moving Toward a Final Resolution of Medical Center Policy on Stanford-Industry Interactions***, June 26, 2006

2. ***Shared Responsibility, Individual Integrity***, June 30, 2005

3. ***Conflict of Interest***, January 24, 2005

4. ***Evolving Issues Regarding Conflict of Interest***, February 22, 2005

5. ***NIH Blue Ribbon Panel on Conflict of Interest***, May 17, 2004

My own reactions to the Mercury News articles, which were written by reporter Paul Jacobs, is that he attempted to lay out a balanced analysis in the first of the two reports, although he seemed to convey a bias and sometimes did not understand the difference between consulting and conflict of interest. While he spent nearly 8 months interviewing various faculty and staff at Stanford, there were also some facts that he simply got confused about or never appreciated. Accordingly, I wrote an op-ed piece on his articles that appeared in the Friday June 14th issue of the *SJ Mercury News*, which I am taking the liberty of reprinting below:

Stanford manages its industry interactions with utmost integrity

By Philip A. Pizzo

San Jose Mercury News reporter Paul Jacobs' articles (July 9-10) explore the complex range of issues inherent in ties between academia and industry and make a notable contribution to the discussion of this important issue. Indeed, we have been quite engaged in continuously reviewing and modifying the relations of the Stanford School of Medicine with industry over the past several years, and I believe that this is a debate that the entire the academic medical community should welcome and fully engage in.

Among the significant questions to examine is: What would be the cost to the health of the American public if such ties between academia and industry were severed?

It should be noted that the federal government has explicitly promoted these ties since 1980, when Congress enacted the Bayh-Dole act, which authorized and encouraged universities to hold ownership of inventions made under federal funding. In fact this law mandates universities and private industry to work together to bring the fruits of university research to the public. This process has resulted in many medical innovations and advances that have improved the lives of millions of Americans.

There are now some 1,000 therapies and technologies that are based on university-licensed discoveries. Many of these advances are in the life-sciences products and processes for diagnosing disease, reducing pain and suffering and prolonging lives. They include the development of recombinant DNA technology (a joint Stanford-University of California-San Francisco discovery), as well as the nicotine patch, the PSA test for prostate cancer, and the cochlear implant, which provides a sense of sound to people who are deaf.

Of course, collaboration between university researchers and private companies carries with it the potential for conflicts of interest. The July 9 article describes one way Stanford addresses this: by requiring faculty members to disclose potential conflicts, regardless of the dollar amount of the financial interest.

But disclosure is far from the only strategy that the Stanford School of Medicine uses to protect the public's interest. When we identify a significant conflict, we take steps to eliminate, mitigate or manage it. These steps include modifying the research plan, disclosing the conflict to the public, disqualifying a faculty member from participating in all or a portion of a research project and in some cases requiring the faculty member to sever a relationship with industry.

As for the July 10 article, it is important to point out that Dr. Alan F. Schatzberg's research over the past 25 years has been consistently subject to rigorous peer review by scientific leaders at the National Institutes of Health and throughout the nation. His research findings have been published in highly respected peer-reviewed medical and scientific journals.

It is misleading to air criticism of his pilot studies for lack of statistical significance when, in fact, the studies were exploratory and not designed to show statistical significance in the first place. More important, and above all, through his research and care of patients, Dr. Schatzberg is a man devoted to alleviating the pain and suffering of those who face the challenge of the most severe and chronic forms of depression.

Finally, as the articles made clear, financial relationships between university medical researchers and industry require vigilant oversight. We will continue to do our utmost to manage Stanford School of Medicine's industry interactions with the highest integrity that is possible.

I recognize that we have continued work to do in this broad topic of conflict of interest and interactions with industry. In my last Newsletter, I detailed some of the forward-looking policy changes we are planning to implement in the area of industry interactions. We also need to continue our wide-ranging discussions with the dual goals of assuring that the highest quality research is performed at Stanford and that findings which can

impact human health are translated as rapidly at possible in tandem with doing all that we can to protect and enhance the public trust.

On Academic Medical Centers

On June 29th I participated in two events that permitted me to offer some reflections on academic medicine and medical centers. The first was the Campaign College, which included the University-wide development staff, where I participated in a panel with Martha Marsh, President and CEO of Stanford Hospital & Clinics, and Doug Stewart, Associate Vice President for Medical Development. The second event was a panel discussion on "Stanford in the Next Decade" for University senior managers, where I again participated in a panel, this time with Martin Shell, Vice President for Development, and Dr. Artie Bienenstock, Vice Provost and Dean of Research and Graduate Policy, Professor at SSRL and of Materials Science and Engineering and of Applied Physics. It struck me that many in our community do not understand what an academic medical center is or how it works to achieve its missions. That is not a surprise given the highly variegated organization and governance that defines academic medical centers – including Stanford University Medical Center. Accordingly, it seems reasonable to offer some comments and reflections on the comparative composition of academic medical centers and how Stanford is distinguished among them.

Academic medical centers are a product of the 20th century and have grown up in quite different manners and configurations in various cities and states. Since their inception, they have been characterized by different organization and governance structures (which not infrequently change at the same center) and with different areas of emphasis and expertise, albeit with some common denominators. At least at one level, all academic medical centers share a commitment to education, research and patient care. However, the adage that "if you have seen one academic medical center, you have seen one academic medical center" still rings true. This makes direct comparisons challenging and clearly impacts the experience of students, faculty and staff at various institutions.

From their beginnings, academic medical centers have included schools of medicine, one or more teaching hospitals, and physician (or faculty) practice plans. Among the 125 academic medical centers in the USA, the relationship among these three entities varies considerably. For example, most schools of medicine are affiliated with a parent university (as is the case with Stanford) but some medical schools (e.g., University of California at San Francisco, Baylor College of Medicine, University of Texas-Southwestern, Oregon University of the Health Sciences) are "free-standing," with their sole mission being health sciences. Further, a number of medical schools are part of a larger health science complex that may include schools of public health, dentistry, nursing, or pharmacy, among others. In addition, some academic medical centers are physically connected to their parent university (as is the case for Stanford) whereas others are separated by miles (e.g., Harvard, Columbia, Johns Hopkins) or are even located across an entire state (e.g., Cornell-Weil College of Medicine).

Further, some medical schools appear to dominate the university in their size and, in some cases, prestige (e.g., Johns Hopkins, Washington University, University of Rochester) whereas others remain more balanced within the university, even to the point of established limits on faculty size to assure that the medical school doesn't become too dominant (e.g., Yale, Chicago – and of course Stanford). The character of medical schools and universities is further influenced by whether they are private or state funded and whether there are formal or informal mandates guiding their direction. For example, some medical schools are clearly organized and supported to train practicing physicians, with a special focus on assuring that graduates serve regional and state-wide interests (e.g., University of Washington, University of North Dakota) whereas others are more research focused and attempt to admit and train students who will pursue careers in research or academic medicine. Stanford falls into this latter category.

In addition to their organization, medical schools share a common goal in undergraduate medical education, although the number of students they admit and the types of students educated and trained vary widely. Most medical schools have a four-year curriculum generally comprised of two years of preclinical study and two years of clinical rotations. Indeed this has been the general configuration of medical education since Abraham Flexner's 1910 Report entitled *"Medical Education in the United States and Canada."* More recently a number of variations on this traditional theme have emerged, primarily in order to better organize the basic science curriculum into a more integrated systems-based approach (e.g., cardiovascular system, renal) and to introduce early into the curriculum problem-based learning and small-group discussions.

Stanford has always been unique, first by having a "five-year plan" when the School moved from San Francisco to the Stanford campus in 1959, which created flexibility and the opportunity for students to engage in research. This has been significantly refined and enhanced by the introduction of the New Stanford Curriculum in the Fall of 2003 that requires each student to choose a "Scholarly Concentration" designed to focus her or his energy in a specific analytic area that promotes scholarship and research (see: http://med.stanford.edu/md/). Furthermore, medical schools vary in whether they train only medical students or also offer advanced degrees in the biomedical sciences. Again, there is a broad range but Stanford is clearly at the far end, since we educate an equal number of PhD candidates and MD students. In addition, we are increasingly pursuing opportunities for students to pursue joint degree programs. Indeed, Stanford offers multiple opportunities for its MD students to become proficient in an area of basic science or some other important discipline (public policy, public health, economics, business, etc.) and for its PhD students to become more knowledgeable about clinical medicine (e.g., the recently introduced "Masters in Medicine" degree).

Similarly, medical schools vary widely in their focus on research as well as in the sources of their research support. The delineation used by *US News & World Reports (USNWR)* – about which I won't comment further in this discussion - divides schools into "research-intensive" or "primary care." Stanford clearly falls into the research-intensive category because of the focus of our faculty, the amount of total NIH funding and the amount of competitive funding per faculty member (for which we rank at the top). A

strong research focus is not inconsistent with excellence in patient care – which I believe our faculty does in an outstanding manner – but is related to the fact that most of our faculty have some (or all) of their time dedicated to research. Clearly this has an impact on the students we educate and on our goal of training leaders and individuals who will pursue careers as physician-scientists and clinician-scholars.

Teaching hospitals are the second key component of an academic medical center. These include ambulatory services (which are increasingly the focus of clinical care) as well as hospital-based facilities. In many cases the teaching hospital includes all services (including pediatrics) whereas in some institutions there are separate, sometimes freestanding children's hospitals (e.g., Children's Hospital of Philadelphia, Cincinnati Children's Hospital) or "women and children's hospitals." Specialty hospitals (e.g. for heart disease, orthopedics, neuroscience) have also emerged in recent years but are not part of the mainstream at this point. For a number of academic medical centers the major teaching hospital affiliates are owned by the university, even when the operate somewhat autonomously. In other settings, the hospital is independently owned and an affiliation agreement defines the relationship between the school and the hospital (e.g., Yale-New Haven Hospital is such as example). Further, while some academic medical centers are "closed facilities" (i.e., only faculty have admitting privileges), in many institutions the university hospital also functions as a community hospital.

At a different end of the spectrum, the Harvard teaching hospitals are unique as a model since the major affiliates (e.g., the MGH, Brigham, Children's Hospital, Beth Israel-Deaconess, Dana Farber Cancer Center) operate autonomously, employ their faculty, manage all grants, and have an affiliation with Harvard Medical School – even though the vast majority of the 8000 full-time faculty with Harvard Medical School appointments are in one of the affiliated hospitals. This is not a model that is likely to be replicated elsewhere but it does speak to the fact that academic medical centers have evolved in very different ways depending on whether teaching hospitals preceded the creation of the medical school or vice versa.

The model at Stanford shares similarities and difference with national peers. Stanford Hospital & Clinics and the Lucile Packard Children's Hospital are owned by the University, but they operate independently under the leadership of a President and CEO, who reports to a Board of Directors. At Stanford, the hospital boards include a mixture of Stanford University trustees and non-university trustee members. However all directors require approval by the University Board of Trustees. Like a number of its peers, SHC serves as a teaching hospital (80% or more of the patients who are admitted are under the care of faculty) as well as a community hospital, serving physicians who meet hospital credentialing. We value the involvement of community physicians to our medical center community. Although LPCH admits a smaller percentage and number of cases (given the nature of pediatric practice), it also serves the needs of community pediatricians as well as Stanford faculty. Again this is a valued partnership. The School of Medicine has an affiliation agreement with SHC and LPCH that is approved by the University Trustees.

The third element of an academic medical center, and of course in my opinion the most important, is the faculty. While a medical school includes basic and clinical science faculty, the major interactions in an academic medical center are between the school, teaching hospital(s) and the clinical faculty. These interactions are usually organized through a faculty or physician "practice plan." The practice plan may be separately incorporated as a "foundation" (as is the case with many of the Harvard teaching hospitals) or integrated into the teaching hospital, or it may come under the jurisdiction of the Office of the Dean. Again, there are many different models and iterations.

At Stanford, all faculty are School of Medicine and University employees. That is, their official employment is with the university, they are accountable to the school leadership, all grants flow through the school, research and academic space is provided by the school, and compensation is recommended to the dean by the department chairs contingent on the approval of the Provost. However, the "clinics" where faculty practice are under the hospital's aegis, and important activities such as physician billing, collections and professional payments flow through the hospital. Professional revenues and support for other faculty activities (e.g., medical direction, program support) are transferred from the hospital to the school through a process called "funds flow" – a topic I have addressed in previous Dean's Newsletters.

Depending on the center, interrelations between the school, hospital and physician practice group can be a productive and effective or contentious and challenging. To a great extent this depends on two dominant factors: whether the missions between these three important entities are aligned and whether the leadership is able to work collaboratively and effectively. There is no question that teaching hospitals, medical schools and clinical faculty should share common goals – but the degrees of emphasis and focus will vary from center to center and will delineate the overall effectiveness of the functional affiliation. At the same time, it is important to acknowledge that there are cultural and monetary differences in the way universities and businesses (including hospitals) behave and these will not uncommonly lead to differences of opinion as well as tensions – which can be constructive and sometimes destructive. To address this complexity, a number of academic medical centers have appointed a single leader to coordinate the major elements (school, hospital and practice plan) and to also arbitrate disputes that may arise. The most common such position is that of a Vice President (or Vice Chancellor or Provost) for Medical Affairs.

Stanford has had such a model in the past but during the past 5 years (the length of time I have been Dean) a different model has been used. Specifically, we have recognized that to optimize each of the entities (both hospitals and the school), the respective leaders (Dean and CEOs) would need to function collaboratively. We have in fact done so (for the most part) by sharing a common vision, strategic plan and a willingness to address difficult issues as they arise in a manner that puts Stanford Medical Center first. While many governance structures are designed to address functional leadership, at the end of the day it is the ability of institutional leaders to work cooperatively that will define institutional success. I am pleased that the SHC CEO

Martha Marsh and the LPCH CEO Chris Dawes share those values and that, accordingly, our academic medical center has functioned in a collaborative and integrated manner.

While there are many examples of why it is important for the components of an academic medical center to work in a collaborative and coordinated manner, a meeting of the Association of Academic Health Centers on June 27-28 provides an excellent one. At that meeting, leaders from the university, school and hospital presented a work-in-progress effort designed to re-engineer the infrastructure needed to support clinical research and, in this case, clinical trial billing. Many academic medical centers across the country are grappling with the difficulties of creating a seamless interface between medical school, hospital and clinical faculty – a process that is confounded by a lack of unity regarding mission as well as a lack of integration between school, faculty and hospital. I am very pleased to say that our Stanford team presented how this can be done – and were clearly the envy of the attendees at this national meeting. Put simply, this was because a committee of senior faculty, representatives from the Dean's Office, senior hospital vice presidents, and legal counsel has met for some two years to develop the SPCTRM (Stanford Packard Center for Translational Research in Medicine) program. This is a terrific example of how cooperation can solve a problem that would be simply insurmountable for any single component of an academic medical center. I want to thank in particular Dr. Steve Alexander, Professor of Pediatrics and Director of SPCTRM; Nick Gaich, Chief Operating Officer of SPCTRM; Dr. Harry Greenberg, Senior Associate Dean for Research; David Harray, Vice President, SHC; and Ann James, Office of the General Counsel.

Academic medical centers will surely continue to evolve during the years and decades ahead. Likely there will be continued internal reorganizations, driven by program developments or requirements. External factors, particularly the status of the health care system, will also have a major impact on the size, complexity and functions of academic medical centers. Given predictable change, it is important that academic medical centers continuously re-examine their mission and resources. At Stanford, our unifying mission remains "***Translating Discoveries,***" while fully realizing our success will require focus, communication, commitment and collaboration. Future success is our only option.

Health and Healthcare

My professional career has been dedicated to treating serious disease – both as an investigator and as a physician. As Dean I have also been very concerned about the healthcare system in this country – or the lack thereof. At the same time, in my personal life I have focused a lot of personal energy on health and the prevention of disease. As some of you know I have been a strong proponent of exercise, weight control and diet as key components to controlling personal risk – whether acquired or inherited. And while we all recognize that serious disease can strike regardless of one's commitment to health, it is also a safe assumption that personal lifestyle and choice can have a big impact on reducing the likelihood of a host of human disorders.

Ironically, as one surveys the major diseases impacting human health, nearly all are the interaction of single or complex genetic traits with the environment and personal lifestyle choices. While there are some disorders we can simply not attenuate or prevent, many others will respond to lifestyle change. This is graphically illustrated by the epidemic of obesity that is sweeping the USA and many parts of the world and that carries enormous co-morbidity that can impact the health and longevity of generations to come. It is estimated that obesity has doubled in children 6-11 years of age and tripled in 12-19 year olds since the late 1970s. Much of this increase results from dietary choices largely associated with the marketing and availability of high carbohydrate, fat and calorie drinks and foods. In fact nearly 30 % of the calories consumed by children are from sweets and soft drinks and overweight children may consume as many as 1200-2000 calories per day from soft drinks alone. Fast foods and high volume sodas are particularly noteworthy. And this is big business, as evidenced by the many hundreds of millions of dollars spent on advertisements to children for various high caloric foods! This has prompted some physicians and public health officials to question whether legal action focusing on schools, the community and medical insurance is necessary to control this obesity.

A Health Policy Report in the June 15th issue of the ***New England Journal of Medicine*** (Volume 354:2601-2608) entitled *"Obesity – The Frontier of Public Health Law"* by Mello, MM, Studdert, DM and Brennan, TA address this important issue. In many ways this situation is analogous to the debate that took place over smoking during the past several decades. While there are many understandable concerns about regulating lifestyle, there can be no question that individual choices have tremendous societal and economic impacts as well as significant personal consequences.. The factors governing obesity in children, adolescents and adults are but one example.

The purpose of this brief commentary is simply to underscore the importance of pursuing personal health. It is all too easy to let simple interventions like exercise and diet, for example, be compromised or ignored. All that said, I do feel compelled to confess to those who may have seen me with my arm in a sling and a notably bruised face that I did have an injury during an early morning run on July 11th when I missed a curb and went crashing to the ground. So, I also acknowledge that exercise can be associated with injury as well (as I have learned many times in my own athletic career), but I would still maintain that the benefits far outweigh the risks. Indeed attention to simple health interventions can go a long way to promoting one's well being and to reducing the need for healthcare (injuries aside). Certainly this is an issue that deserves everyone's consideration and hopefully personal implementation.

USNWR Ranks Hospitals

On July 7th US News & World Reports (USNWR) published their annual ranking of "Best Hospitals" in the USA. Too much attention is given to these rankings but I do confess that I have been personally somewhat obsessed by the methodological deficiencies in some of these rankings, particularly schools of medicine, that favor size over quality. While Stanford School of Medicine was ranked # 7 in the nation in the April reporting on graduate schools, this scoring is impacted significantly by the total amount

of NIH support – in which Stanford can never truly lead given its small size compared to peer schools. But that is an issue for another day.

Hospital rankings are also impacted by size, available services and reputation among other factors. In the new ranking Stanford Hospital & Clinics as well as the Lucile Packard Children's Hospital were separately ranked as #13. Of course we think they should both be higher, but given the small size of SHC and the relative youth of LPCH compared to peers, these rankings are quite admirable. Congratulations to both SHC and LPCH.

Dr. Ben Barres Offers an Important Perspective on Behalf of Women in Science

As a number of you likely know by now, Dr. Ben Barres, Professor of Neurobiology and of Developmental Biology and of Neurology and Neurological Sciences, wrote an informative and compelling commentary in the latest issue of *Nature* 442, 133-136(13 July 2006). I want to complement Dr. Barres for his personal courage in writing this important article and for his steadfast advocacy on important issues. Change only occurs when individuals speak up and lend their voice and reputation to important issues. Dr. Barres has done just that and I am proud of his efforts and of his work as a faculty member at Stanford. Because I also believe that Dr. Barres' perspective is so important I have his permission to print his commentary in this Newsletter in case you missed the original publication. Here it is:

Does gender matter?

Ben A. Barres

When I was 14 years old, I had an unusually talented math teacher. One day after school, I excitedly pointed him out to my mother. To my amazement, she looked at him with shock and said with disgust: "You never told me that he was blac.k" I looked over at my teacher and, for the first time, realized that he was an African-American. I had somehow never noticed his skin colour before, only his spectacular teaching ability. I would like to think that my parents' sincere efforts to teach me prejudice were unsuccessful. I don't know why this lesson takes for some and not for others. But now that I am 51, as a female-to-male transgendered person, I still wonder about it, particularly when I hear male gym teachers telling young boys "not to be like girls" in that same derogatory tone.

Hypothesis testing

Last year, Harvard University president Larry Summers suggested that differences in innate aptitude rather than discrimination were more likely to be to blame for the failure of women to advance in scientific careers[1]. Harvard professor Steven Pinker then put forth a similar argument in an online debate[2], and an almost identical view was elaborated in a 2006 essay by Peter Lawrence entitled 'Men, Women and Ghosts in Science'[3]. Whereas Summers prefaced his statements by saying he was trying to be provocative, Lawrence did not. Whereas Summers

talked about "different availability of aptitude at the high end," Lawrence talked about average aptitudes differing. Lawrence argued that, even in a utopian world free of bias, women would still be under-represented in science because they are innately different from men.

Lawrence draws from the work of Simon Baron-Cohen[4] in arguing that males are 'on average' biologically predisposed to systematize, to analyze and to be more forgetful of others, whereas females are 'on average' innately designed to empathize, to communicate and to care for others. He further argues that men are innately better equipped to aggressively compete in the 'vicious struggle to survive' in science. Similarly, Harvard professor Harvey Mansfield states in his new book, *Manliness*[5], that women don't like to compete, are risk adverse, less abstract and too emotional.

I will refer to this view - that women are not advancing because of innate inability rather than because of bias or other factors - as the Larry Summers Hypothesis. It is a view that seems to have resonated widely with male, but not female, scientists. Here, I will argue that available scientific data do not provide credible support for the hypothesis but instead support an alternative one: that women are not advancing because of discrimination. You might call this the 'Stephen Jay Gould Hypothesis.' I have no desire to make men into villains (as Henry Kissinger once said, "Nobody will ever win the battle of the sexes; there's just too much fraternizing with the enemy"). As to who the practitioners of this bias are, I will be pointing my finger at women as much as men. I am certain that all the proponents of the Larry Summers Hypothesis are well-meaning and fair-minded people, who agree that treatment of individuals should be based on merit rather than on race, gender or religion stereotypes.

The sums don't add up

Like many women and minorities, however, I am suspicious when those who are at an advantage proclaim that a disadvantaged group of people is innately less able. Historically, claims that disadvantaged groups are innately inferior have been based on junk science and intolerance[6]. Despite powerful social factors that discourage women from studying math and science from a very young age[7], there is little evidence that gender differences in math abilities exist, are innate or are even relevant to the lack of advancement of women in science[8]. A study of nearly 20,000 math scores of children aged 4 to 18, for instance, found little difference between the genders (Fig. 1)[9], and, despite all the social forces that hold women back from an early age, one-third of the winners of the elite Putnam Math Competition last year were women. Moreover, differences in test-test results are not correlated with the gender divide between those who choose to leave science[10]. I will explain why I believe that the Larry Summers Hypothesis amounts to nothing more than blaming the victim, why it is so harmful to women, and what can and should be done to help women advance in science.

If innate intellectual abilities are not to blame for women's slow advance in science careers, then what is? The foremost factor, I believe, is the societal assumption that women are innately less able than men. Many studies, summarized in Virginia Valian's excellent book *Why So Slow?*[11], have demonstrated a substantial degree of bias against women - more than is sufficient to block women's advancement in many professions. Here are a few examples of bias from my own life as a young woman. As an undergrad at the Massachusetts Institute of Technology (MIT), I was the only person in a large class of nearly all men to solve a hard math problem, only to be told by the professor that my boyfriend must have solved it for me. I was not given any credit. I am still disappointed about the prestigious fellowship competition I later lost to a male contemporary when I was a PhD student, even though the Harvard dean who had read both applications assured me that my application was much stronger (I had published six high-impact papers whereas my male competitor had published only one). Shortly after I changed sex, a faculty member was heard to say "Ben Barres gave a great seminar today, but then his work is much better than his sister's."

Anecdotes, however, are not data, which is why gender-blinding studies are so important[11]. These studies reveal that in many selection processes, the bar is unconsciously raised so high for women and minority candidates that few emerge as winners. For instance, one study found that women applying for a research grant needed to be 2.5 times more productive than men in order to be considered equally competent (Fig. 2)[12]. Even for women lucky enough to obtain an academic job, gender biases can influence the relative resources allocated to faculty, as Nancy Hopkins discovered when she and a senior faculty committee studied this problem at MIT. The data were so convincing that MIT president Charles Vest publicly admitted that discrimination was responsible. For talented women, academia is all too often not a meritocracy.

In denial

Despite these studies, very few men or women are willing to admit that discrimination is a serious problem in science. How is that possible? Valian suggests that we all have a strong desire to believe that the world is fair[11]. Remarkably, women are as likely as men to deny the existence of gender-based bias[13]. Accomplished women who manage to make it to the top may 'pull up the ladder behind them', perversely believing that if other women are less successful, then one's own success seems even greater. Another explanation is a phenomenon known as 'denial of personal disadvantage', in which women compare their advancement with other women rather than with men[11].

My own denial of the situation persisted until last year, when, at the age of 50, several events opened my eyes to the barriers that women and minorities still face in academia. In addition to the Summers speech, the National Institutes of Health (NIH) began the most prestigious competition they have ever run, the Pioneer Award, but with a nomination process that favoured male applicants[14]. To their credit, in response to concerns that 60 of 64 judges and all 9 winners were men,

the NIH has revamped their Pioneer Award selection process to make it fairer. I hope that the Howard Hughes Medical Institute (HHMI) will address similar problems with their investigator competitions. When it comes to bias, it seems that the desire to believe in a meritocracy is so powerful that until a person has experienced sufficient career-harming bias themselves they simply do not believe it exists.

My main purpose in writing this commentary is that I would like female students to feel that they will have equal opportunity in their scientific careers. Until intolerance is addressed, women will continue to advance only slowly. Of course, this feeling is also deeply personal to me (see 'Personal experiences'). The comments of Summers, Mansfield, Pinker and Lawrence about women's lesser innate abilities are all wrongful and personal attacks on my character and capabilities, as well as on my colleagues' and students' abilities and self esteem. I will certainly not sit around silently and endure them.

Mansfield and others claim that women are more emotional than men. There is absolutely no science to support this contention. On the contrary, it is men that commit the most violent crimes in anger - for example, 25 times more murders than women. The only hysteria that exceeded MIT professor Nancy Hopkins' (well-founded) outrage after Larry Summers' comments was the shockingly vicious news coverage by male reporters and commentators. Hopkins also received hundreds of hateful and even pornographic messages, nearly all from men, that were all highly emotional.

Taboo or untrue?

There is no scientific support, either, for the contention that women are innately less competitive (although I believe powerful curiosity and the drive to create sustain most scientists far more than the love of competition). However, many girls are discouraged from sports for fear of being labeled tomboys. A 2002 study did find a gender gap in competitiveness in financial tournaments, but the authors suggested that this was due to differences in self-confidence rather than ability[15]. Indeed, again and again, self-confidence has been pointed to as a factor influencing why women 'choose' to leave science and engineering programmes. When women are repeatedly told they are less good, their self-confidence falls and their ambitions dim[16]. This is why Valian has concluded that simply raising expectations for women in science may be the single most important factor in helping them make it to the top[11].

Steven Pinker has responded to critics of the Larry Summers Hypothesis by suggesting that they are angry because they feel the idea that women are innately inferior is so dangerous that it is sinful even to think about it[17]. Harvard Law School professor Alan Dershowitz sympathizes so strongly with this view that he plans to teach a course next year called 'Taboo'. At Harvard we must have veritas; all ideas are fair game. I completely agree. I welcome any future studies that will

provide a better understanding of why women and minorities are not advancing at the expected rate in science and so many other professions.

But it is not the idea alone that has sparked anger. Disadvantaged people are wondering why privileged people are brushing the truth under the carpet. If a famous scientist or a president of a prestigious university is going to pronounce in public that women are likely to be innately inferior, would it be too much to ask that they be aware of the relevant data? It would seem that just as the bar goes way up for women applicants in academic selection processes, it goes way down when men are evaluating the evidence for why women are not advancing in science. That is why women are angry. It is incumbent upon those proclaiming gender differences in abilities to rigorously address whether suspected differences are real before suggesting that a whole group of people is innately wired to fail.

What happens at Harvard and other universities serves as a model for many other institutions, so it would be good to get it right. To anyone who is upset at the thought that free speech is not fully protected on university campuses, I would like to ask, as did third-year Harvard Law student Tammy Pettinato: what is the difference between a faculty member calling their African-American students lazy and one pronouncing that women are innately inferior? Some have suggested that those who are angry at Larry Summers' comments should simply fight words with more words (hence this essay). In my view, when faculty tell their students that they are innately inferior based on race, religion, gender or sexual orientation, they are crossing a line that should not be crossed - the line that divides free speech from verbal violence - and it should not be tolerated at Harvard or anywhere else. In a culture where women's abilities are not respected, women cannot effectively learn, advance, lead or participate in society in a fulfilling way.

Take action

Although I have argued that the Larry Summers Hypothesis is incorrect and harmful, the academic community is one of the most tolerant around. But, as tolerant as academics are, we are still human beings influenced by our culture. Comments by Summers and others have made it clear that discrimination remains an under-recognized problem that is far from solved. The progress of science increasingly depends on the global community, but only 10% of the world's population is male and caucasian. To paraphrase Martin Luther King, a first-class scientific enterprise cannot be built upon a foundation of second-class citizens. If women and minorities are to achieve their full potential, all of us need to be far more proactive. So what can be done?

First, enhance leadership diversity in academic and scientific institutions. Diversity provides a substantially broader point of view, with more sensitivity and respect for different perspectives, which is invaluable to any organization. More female leadership is vital in lessening the hostile working environment that young women scientists often encounter. In addition to women and under-represented minority groups, we must not forget Asians and lesbian, gay, bisexual and

transgendered folks. There are enough outstanding scientific leaders in these racial and gender groups that anyone with a will to achieve a diverse leadership in their organization could easily attain it.

Second, the importance of diverse faculty role models cannot be overstated. There is much talk about equal opportunity, but, in practice, serious attention still needs to be directed at how to run fair job searches. Open searches often seem to be bypassed entirely for top leadership positions, just when it matters most - search committees should not always be chaired by men and the committee itself should be highly diverse[14,18]. Implementation of special hiring strategies and strong deans willing to push department chairs to recruit top women scientists are especially effective. It is crucial in the promotion process that merit be decided by the quality, not quantity, of papers published.

Women faculty, in particular, need help from their institutions in balancing career and family responsibilities. In an increasingly competitive environment, women with children must be able to compete for funding and thrive. Why can't young faculty have the option of using their tuition benefits, in which some universities pay part of the college tuition fees for the children of faculty, for day care instead? Tuition benefits will be of no help if female scientists don't make tenure. And institutions that have the financial capability, such as HHMI, could help by making more career-transition fellowships available for talented women scientists.

Speak out

Third, there should be less silence in the face of discrimination. Academic leadership has a particular responsibility to speak out, but we all share this responsibility. It takes minimal effort to send a brief message to the relevant authority when you note a lack of diversity in an organization or an act of discrimination. I don't know why more women don't speak out about sexism at their institutions, but I do know that they are often reluctant, even when they have the security of a tenured faculty position. Nancy Hopkins is an admirable role model, and it is time that others share the burden. It doesn't only have to be women that support women. I was deeply touched by the eloquent words of Greg Petsko[19] following Summers' comments. And it has been 30 years since I was a medical student, but I still recall with gratitude the young male student who immediately complained to a professor who had shown a slide of a nude pin-up in his anatomy lecture.

Fourth, enhance fairness in competitive selection processes. Because of evaluation bias, women and minorities are at a profound disadvantage in such competitive selection unless the processes are properly designed[11,12,14,18]. As the revamped NIH Pioneer Award demonstrates, a few small changes can make a significant difference in outcome. By simply changing the procedure so that anyone can self-nominate and by ensuring a highly diverse selection committee,

the number of women and minority winners went up to more than 50% from zero. This lesson can and should now be applied to other similar processes for scientific awards, grants and faculty positions. Alas, too many selection committees still show a striking lack of diversity - with typically greater than 90% white males. When selection processes are run fairly, reverse discrimination is not needed to attain a fair outcome.

Confidence booster

Finally, we can teach young scientists how to survive in a prejudiced world. Self-confidence is crucial in advancing and enjoying a research career. From an early age, girls receive messages that they are not good enough to do science subjects or will be less liked if they are good at them. The messages come from many sources, including parents, friends, fellow students and, alas, teachers. When teachers have lower expectations of them, students do less well. But we are all at fault for sending these messages and for remaining silent when we encounter them. Teachers need to provide much more encouragement to young people, regardless of sex, at all stages of training. Occasional words of encouragement can have enormous effects.

All students, male and female, would benefit from training in how to be more skillful presenters, to exert a presence at meetings by asking questions, to make connections with faculty members who may help them to obtain grants and a job, and to have the leadership skills necessary to survive and advance in academia. Because women and minorities tend to be less confident in these areas, their mentors in particular need to encourage them to be more proactive. I vividly recall my PhD supervisor coming with me to the talks of famous scientists and forcing me to introduce myself and to ask them questions. There is a great deal of hallway mentoring that goes on for young men that I am not sure many women and minorities receive (I wish that someone had mentioned to me when I was younger that life, even in science, is a popularity contest - a message that Larry Summers might have found helpful as well). It is incumbent on all of us who are senior faculty to keep a look out for highly talented young people, including women and minority students, and help them in whatever way possible with their careers.

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Preparations for the CTSA

On Friday morning, July 14th, Dr. Harry Greenberg, Senior Associate Dean for Research, convened a planning retreat of the program leaders for Stanford's Clinical and Translational Award application that will be submitted in January 2007. As noted on the NIH website, "the **Clinical and Translational Science Awards (CTSAs)** program…will create a definable academic home for the discipline of clinical and translational science. Specifically, this program will encourage the development of novel methods and approaches to clinical and translational research, enhance informatics and technology resources, and improve training and mentoring to ensure that new investigators can navigate the increasingly complex research system. To create this "home," the program allows for local flexibility so that each institution can determine whether to establish a center, department, or institute in clinical and translational science."

Dr. Greenberg underscored that the goals of the CTSA are to educate, innovate and implement. This includes: 1) developing a cadre of well-trained multi- and inter-disciplinary investigators and research teams; 2) creating an incubator for innovative research tools and information technologies; and 3) synergizing multi-disciplinary and interdisciplinary clinical and translational research and researchers to catalyze the application of new knowledge and techniques to clinical practice at the front lines of patient care.

While the timeline for producing the final grant is short, we have actually been working on the fundamental components for this type of effort during the past 5 years as we have implemented our Strategic Plan, ***Translating Discoveries***. Indeed, the transformational changes we have made in education and training through the *New Stanford Curriculum*, which focuses on educating future physician scholars and investigators and which offers Scholarly Concentrations in clinical and translational research, offer a firm underpinning for our CTSA application. Coupled with this are our related education programs for graduate students in clinical and translational research and

medicine (i.e., the Masters in Medicine Program) and evolving programs that will enable clinical fellows to pursue graduate training en route to becoming physician-scientists (i.e., the Advanced Residency Training at Stanford [ARTS] program). Moreover, the fundamental underpinning provided by BioX to foster innovative interdisciplinary research together with the broad interdisciplinary efforts of our five Stanford Institutes of Medicine and the Strategic Centers has already created unique opportunities for clinical and translational research.

To further enhance these efforts, programs like SPCTRM and STRIDE (Stanford Translational Research Integrated Data Environment) are being designed to provide the fundamental supports to foster clinical research along with data management, analysis, etc. Thus, in a number of ways, the new CTSA opportunity comes at a time when Stanford has already made a number of important transformational changes to enhance clinical and translational education and research. It provides an opportunity to further consolidate and refine the many new programs we have already put into place. That said, we also recognize that such large and overarching grant applications necessitate a tremendous amount of work and effort from many faculty and staff, many of whom are already extremely busy. In addition, given the current funding climate at the NIH, these applications are high risk. Despite our many accomplishments, we must perform at the very highest level if we hope to be approved and funded. It is imperative that those participating in the CTSA do the very best job they can and, because of its broad implications, that as many faculty and staff throughout the school as possible be engaged – and that there be opportunities for specifically interested faculty to participate.

Like all such grants, there are specific components that must be addressed. The goal of the July 14th retreat was to have each of the specific program leaders give an update of their planning efforts. Each area is in some way specified by the RFA (Request for Application), and each working group already has multiple faculty who are becoming engaged in the planning process. The 10 major programs areas and working groups for the CTSA grant are as follows:

Program Area	Working Group Leaders
Research, Education, Training and Career Development	***Charles Prober****, Sam Gambhir, Mike Longaker
Clinical Informatics	***Henry Lowe***, Phil Lavori
Trial Design and Biostatistics	***Phil Lavori***
Regulatory Knowledge and Support	***Steve Alexander***, Corry Dekker, Ann Arvin
Participant and Clinical Interaction Resources	***Brandy Sikic***, David Stevenson
Development of Novel Clinical and Translational Methodologies and Pilot and Collaborative Translational and Clinical Studies	***Alan Krensky***, Daria Mochly-Rosen
Clinical and Translational Technologies and Resources (Cores)	***Daria Mochly-Rosen***, Alan Krensky
Clinical Research Ethics	***David Magnus***, Mildred Cho

Community Engagement	***Steve Fortmann***, Doug Owens
Evaluation: Getting to Quality	***Peter Rudd***, Kevin Tabb, Joe Hopkins

* Denotes the Working Group Chair

Dr. Greenberg will be serving as the Principal Investigator for the CTSA, and he will be joined by three Co-PIs: Drs. Charles Prober, Phil Lavori and Brandy Sikic. If you have any questions, concerns or interests, please feel free to contact any of these individuals or any of the working group leaders noted above. While there is a tremendous amount to do in the next several months, we are building from an excellent and already transformational base and I feel confident that a great proposal will result. But everyone's help and support will be needed to make this a reality.

Summer Schedule

As has been my practice in past years, the Dean's Newsletter will be not be published on the usual bi-weekly schedule in July and August. However, should important events arise between issues I will make sure you are aware of them. In addition, at the end of July through the third week of August I will be on a "mini-sabbatical" that will include some vacation time but also some time to work on a new book. Rest assured - I promise not to report on either of these topics in my subsequent Dean's Newsletters! The bi-weekly publication schedule will resume in September.

Awards and Honors

- ***Dr. Marlene Rabinovitch***, Dwight and Vera Dunlevie Professor in Pediatric Cardiology and, by courtesy, of Developmental Biology, has recently learned that she has been selected to be a 2006 Distinguished Scientist by the American Heart Association. Congratulations to Dr. Rabinovitch.

Appointments and Promotions

- *Vinod Bhutani* has been appointed to Professor of Pediatrics (Neonatology) at the Lucile Packard Children's Hospital, effective 7/01/06.

- ***Lee-may Chen*** has been promoted to Adjunct Clinical Assistant Professor of Obstetrics and Gynecology effective 9/1/06.

- *Stephen Fischer* has been reappointed to Associate Professor of Anesthesia, effective 7/01/06.

- *Hayley Gans* has been appointed to Assistant Professor of Pediatrics (Infectious Diseases) at the Lucile Packard Children's Hospital, effective 7/01/06.

- ***Joseph Helms*** has been promoted to Adjunct Clinical Professor of Anesthesia effective 9/1/06.

- ***Paula Jacobsen***, has been promoted to Adjunct Clinical Professor of Psychiatry and Behavioral Sciences effective 9/1/06.

- *Joel Killen* has been reappointed to Associate Professor of Professor (Research) of Medicine, effective 7/01/06.

- *Jason Lee* has been appointed to Assistant Professor of Surgery at the Veterans Affairs Palo Alto Health Care System, effective 7/01/06.

- *Peter Lee* has been promoted to Associate Professor of Medicine (Hematology), effective 7/01/06.

- ***Alan Maloney*** has been promoted to Adjunct Clinical Associate Professor of Psychiatry and Behavioral Sciences effective 9/1/06.

- ***Mali Mann*** has been promoted to Adjunct Clinical Associate Professor of Psychiatry and Behavioral Sciences effective 9/1/06.

- ***Kerry Mitchell*** has been promoted to Adjunct Clinical Assistant Professor of Psychiatry and Behavioral Sciences effective 9/1/06.

- ***Beverley Newman*** has been promoted to Associate Professor of Radiology, effective 7/01/06.

- ***James Newman*** has been promoted to Adjunct Clinical Assistant Professor of Otolaryngology-Head and Neck Surgery effective 9/1/06.

- ***Scott Oesterling*** has been promoted to Adjunct Clinical Assistant Professor of Obstetrics and Gynecology effective 9/1/06.

- ***Chandra Ramamoorthy*** has been promoted to Professor of Anesthesia, effective 7/01/06.

- ***John Ruark*** has been promoted to Adjunct Clinical Associate Professor of Psychiatry and Behavioral Sciences effective 9/1/06.