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2011

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October 6, 2011

Working Group on the Future Biomedical Research Workforce Advisory Committee to the NIH Director

Re: Request for Information (RFI): Input into the Deliberations of the Advisory Committee to the NIH Director Working Group on the Future Biomedical Research Workforce (NOT-OD-11-106).

Submitted electronically to:

http://grants.nih.gov/grants/guide/rfi_files/bmw/add.cfm

To Whom It May Concern:

The American Society of Hematology (ASH) appreciates the opportunity to provide input into the deliberations of the Advisory Committee to the National Institutes of Health (NIH) Director Working Group on the Future Biomedical Research Workforce (RFI NOT-OD-11-106 issued on August 17, 2011).

ASH represents over 16,000 clinicians and scientists committed to the study and treatment of blood and blood-related diseases. These diseases encompass malignant hematologic disorders such as leukemia, lymphoma, and multiple myeloma and non-malignant conditions such as sickle cell anemia, thalassemia, venous thromboembolism, and hemophilia. In addition, hematologists have been pioneers in the fields of stem cell biology, regenerative medicine, bone marrow transplantation, transfusion medicine, gene therapy, and the development of many drugs for the prevention and treatment of heart attacks and strokes. ASH membership is comprised of basic scientists, physician scientists, and physicians working in diverse settings, including universities, hospitals and private practices.

The future of the biomedical research workforce is of paramount importance to ASH and its members. Hematologists with various training backgrounds are currently working on some of the most costly and devastating medical problems that affect health care in the United States. Our members are developing novel treatments for anemia associated with chronic diseases like cancer and chronic kidney disease. Hematologists are also devising alternatives to blood transfusions and enhancements of bone marrow transplantation through the use of umbilical cord blood, stem cells and other technologies. Recent impressive advances in treating chronic myeloid leukemia, multiple myeloma, sickle cell anemia, thrombosis, and other hematologic disorders have all depended on support from the NIH.

ASH applauds the NIH for establishing a working group on this important issue and soliciting comments from the broader community. The comments below address some of the issues identified during preliminary deliberations of the working group with respect to the biomedical research workforce in general, and the hematology research workforce in particular.

Development of a model for a sustainable, diverse, and productive U.S. biomedical research workforce is an enormous undertaking that requires participation of various stakeholders because of its complexity. ASH recommends that the process include biomedical research scientists from non-academic settings as well as doctoral graduates in non-research careers such as science policy and science writing.

ASH strongly believes that insufficient PhDs and postdoctoral fellows are being trained domestically to meet the demands of the U.S. research enterprise. ASH urges the NIH to consider an increase in the funding of training grants to provide more slots for the training of PhDs, MD-PhDs and MDs interested in biomedical research. This population can be particularly sensitive to fluctuations in funding because the availability of support for pre-doctoral and post-doctoral training can be a decisive factor for choosing whether to pursue a research career.

The early career development of young scientists is also extremely vulnerable to decreases in funding for investigator-initiated research. Making the transition from trainee to independent investigator is challenging under the best of circumstances but has become much more difficult. For example, newly trained investigators must compete for new research grant applications, but since 2003 the number of new R01 awards has declined 18 percent for the Institutes that support most hematology research (NHLBI, NCI, and NIDDK). As a consequence, we are in danger of losing a generation of biomedical investigators. Therefore, ASH hopes that a means can be devised to halt the decline in new research awards and sustain young scientists in their first years of independence.

ASH supports changes to the PhD curriculum to provide training for multiple career paths. The concept of a "branching career pipeline"¹ is a reality that could be acknowledged and explicitly promoted. ASH urges the working group to expand its definition of a diverse, productive, and well-rounded workforce to include one that possesses the additional skills necessary to be successful in careers that are referred to as "non-academic" (e.g., biotechnology/pharmaceuticals, research career in government, non-principal investigator) and to a limited degree "non-research" (e.g., science policy, business and administration of science, science education, science writing). Perhaps it is worth emphasizing that most non-academic positions do not depend on continued governmental funding but instead are private sector jobs of substantial value to society and the

¹ Fuhrmann CN, Halme DG, O'Sullivan PS, Lindstaedt B. Improving graduate education to support a branching career pipeline: recommendations based on a survey of doctoral students in the basic biomedical sciences. *CBE Life Sci Educ.* 2011 Fall;10(3):239-49.

economy. Training programs should provide additional opportunities for PhD students and postdocs who seek career-relevant knowledge outside of the required scientific curriculum. Programs that provide these opportunities should be supported and rewarded with greater flexibility in the evaluation of time-to-degree. In addition, measures of success for PhD and postdoctoral training programs should be re-evaluated to include contributions by program graduates who are part of the workforce in non-academic and non-research settings. A branching career pathway would allow society to enjoy the much needed technical and analytical benefits that the biomedical workforce can provide. But for such a pathway to flourish the NIH will need to recognize that such non-academic, non-research careers represent a sound, valuable return on their investment in training.

As a Society that represents physician scientists, ASH is quite concerned about the decreasing opportunities for the training and mentoring of physicians in basic, clinical, translational, and health services research. Given the increasing cost of medical school, the increased demands of clinical training, and the clinical service requirements once a physician completes training, there are fewer and fewer physicians selecting careers in biomedical research. The length and cost of training as well as the face of uncertain future research funding are strong disincentives for promising physicians to enter biomedical research. It is estimated that an additional 500 to 1,000 new MD researchers would need to be generated each year to maintain a steady proportion of physician scientists in the physician workforce². Without this specific workforce, there will be less translation between the clinic and the laboratory. Most of the revolutionary advances in the treatment of hematologic diseases came from NIH-supported physicians who were able to take a laboratory observation to a clinical trial. However, with ever-increasing clinical obligations, there is simply not enough time for MDs and MD-PhDs to obtain the research skills necessary to become the productive and sustainable workforce that the U.S. biomedical research enterprise needs. MD-PhD programs and Clinical and Translational Science Awards sites provide opportunities for only some researchers. ASH urges the working group to include a provision in its model that not only protects research time for clinician scientists but also provides incentives to universities and hospitals to provide training as well as infrastructure support for this workforce. The model should also take into consideration the other constraints on the expansion of the physician workforce as a whole, and the Society encourages the working group to coordinate with other government panels and programs that influence the pipeline of physicians.

ASH deems the availability of research funding as the most critical aspect for recruiting and retaining the most promising members of the biomedical research workforce. Increased funding for training programs and investigator-initiated grants such as R01s will be crucial for making careers in biomedical research attractive to PhDs, MD-PhDs and MDs who are in pre- or postdoctoral training now or who are considering entering a research-related field. Investigator-

² Ley T. Demographics of the physician-scientist workforce. Cornell University Press 2009. *The Vanishing-Physician Scientist?* (Schafer A., Editor), p.39.

initiated research is unparalleled for the return on investment, both with respect to the importance of the research produced and the number of people trained in the biomedical sciences.

ASH is encouraged that the working group is seriously considering the time it takes for both PhDs and MDs to transition to an R01. For a select group, the Pathway to Independence Award (K99/R00) has been instrumental in assisting with this important transition. ASH strongly urges the working group to consider expanding this award or proposing additional mechanisms that would provide opportunities for a wider group of postdoctoral trainees to obtain the necessary skills, mentoring, and research experience to transition to the R01.

As an example of the need for such mechanisms, the transition to R01 support is much more difficult for physician scientists with MDs, who are limited to six years of a K award that requires 75% commitment to research. Because the K award does not provide adequate reimbursement for the required research time, an enormous financial burden is placed on the institutional departments to train and retain these physician scientists. Moreover, this institutional commitment is often insufficient for the majority of these K awardees to transition to independent R awards. As mentors of physician K awardees, many of us believe these young scientists are having increasing difficulty in obtaining R awards. If the data across the Institutes confirm this impression, then the considerable NIH investment in these careers may not be yielding the desired return. The institutions with large number of K awardees that cannot transition to an R award are left with untenable choices: either forcing a physician scientist to leave the laboratory for the clinic, or expending enormous funds to maintain them in the laboratory. ASH urges the working group to develop one or more new mechanisms to support such research and to subsidize its costs appropriately, so as to allow a broader group of physician scientists to make a successful transition to independent research.

ASH believes that for all biomedical science, and for hematology in particular, the most creative ideas and major advances come from MDs and PhDs working side by side. This important interaction needs to be protected. Hematology is a unique field – blood is easily isolated and cell populations are easily purified, which makes the blood system more amenable to basic cellular, molecular and biochemical research than other systems. Because it involves such a superb experimental system, basic research in hematology is on the front line, producing discoveries that can be readily translated to the clinic and providing models that have led to a better understanding of other physiological systems. ASH is concerned that current economic pressures will shift the balance in academic medical centers away from basic and clinical research and toward a faculty that is more exclusively engaged in delivery of clinical care. Such a shift could be detrimental to the basic and translational discovery engines that have been of such enormous benefit to society. ASH recommends that the working group consider mechanisms to protect these important interactions when discussing the model of the U.S. biomedical research workforce.

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ASH looks forward to being a part of this important discussion. These issues are critical to the Society as it considers that a dwindling workforce in biomedical research ultimately translates into diminished quality of and access to patient care. With the aging of the U.S. population and increased incidence of environmental diseases such as type II diabetes and hypertension, an increasing number of patients will need to be treated by hematologists in the coming years. ASH is very concerned that the lack of opportunities and support for training and research in hematology will adversely affect the field.

The American Society of Hematology will be happy to provide further information and be a resource for the Working Group, the Advisory Committee and the NIH. ASH urges the NIH to continue involving all stakeholders in this discussion. Please contact ASH Senior Manager for Scientific Affairs, Ulyana V. Desiderio, Ph.D., at (202) 776-0544 or udesiderio@hematology.org for any additional information.

Sincerely yours,

A handwritten signature in black ink, appearing to read "J. Evan Sadler". The signature is fluid and cursive, with a large initial "J" and a long, sweeping underline.

J. Evan Sadler, MD, Ph.D.
President