

**ELSI ASSESSMENT PANEL (EAP) Report**

May 2008

Committee Members

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### **EAP Committee: Composition and Process**

The Committee was composed of both selected members of the NHGRI Council and a panel of external experts and was very ably assisted by members of the NHGRI staff. The Committee was provided with extensive information on ELSI's current and past activities. We held a number of meetings, both in person and by telephone, held a day-long public hearing in Washington (agenda attached in Appendix 1), and requested written testimony from a large and diverse group of scholars and policy makers interested in research and training in this area. In addition, we had the benefit of extensive interactions with the senior leadership of NHGRI, and had the benefit of a series of phone interviews (see Appendix 2) with selected ELSI grantees, genetics experts, and other scholars doing ELSI related work including a number of scholars abroad.

### **Charge to EAP**

The basic charge to the Committee and a set of summary findings are as follows:

- a) **Charge:** To what extent is the ELSI portfolio/mission tied to or responsive to the principal components of NHGRI's intramural and extramural programs?

**Summary Finding:** To begin with it can be important to distinguish the different aspects of the ELSI program which may be parsed as follows: NHGRI's intramural ELSI program; ELSI activities within NHGRI's OD; and the extramural ELSI program. Where necessary we will make an effort to be clear just which of these components of the ELSI program we are referring to. ELSI's mission/portfolio as articulated and carried out over a number of years is only partially related to the current and future anticipated needs of other NHGRI supported initiatives, whether intramural or extramural. In short the extramural ELSI's program's understanding of its mission as well as its actual portfolio has

always reflected an interest in a broader set of issues that are not unique to human genetics and genomics and in fact many of which are and should continue to be somewhat independent of the needs of either other NHGRI supported projects or policy matters of special interest to NHGRI. The Committee strongly supports this broader approach both because there are important issues that may not be of direct concern to contemporary NHGRI scientific research initiatives and because one of ELSI's objectives should be to raise new and unanticipated issues. Indeed the tension between a focus on the needs of NHGRI researchers and other critical issues can be a healthy one. Nevertheless going forward it is essential not only that ELSI's role be well defined, but that some of its efforts become much better integrated with the overlapping interests and efforts of NHGRI's OD, with other parts of NIH, and even with HHS. This is especially important in the policy arena, but it is also significant in relation to work on ethical, legal, social and policy issues being supported by other institutes. Many observers believe that ELSI is too "siloed" both within NHGRI and within NIH. While commitments to "ELSI-type" projects outside of NHGRI is very modest there is some work supported by NIMH, NIAID, the Office of AIDS Research, and the Nursing and Cancer Institutes as a very small part of their broader efforts. Moreover the Department of Bioethics in the intramural program is also involved in the traditional ELSI area. There are a number of studies underway and members of this unit are active publishers in the arena of bioethics. Within NHGRI itself we would simply observe that there is too little effective cooperation (as opposed to conversation) between intramural and extramural programs and with the Institute's OD office. This latter matter needs to be remedied quickly, perhaps by a more direct connection to NHGRI's OD. The Committee also believes that it is time to once again explore possible relationships between the ELSI activities sponsored by NHGRI and work going on elsewhere in NIH (e.g. the Office of Behavioral and Social Science Research, or efforts focusing on community based research), both in the extramural and intramural programs, as well as look for potential new opportunities for collaboration within NHGRI's own intramural program such as with the Social and

Behavioral Research Branch (SBRB) within NHGRI. Although it falls beyond our charge the committee would encourage NIH leadership to promote greater commitment to ethical, legal, social and policy issues throughout NIH even though we are in a challenging budget environment.

**b) Charge:** Is the research program too broad or too focused?

**Summary Finding:** Both! On one hand the program does not benefit from the high level intellectual and entrepreneurial leadership that would generate a compelling set of priorities and execute against these (i.e. not quite focused enough). By intellectual and entrepreneurial leadership we have in mind a continuous and creative search for the best way to mobilize resources towards the priorities set by the Director of NHGRI, the Council and their advisors. This requires, among other talents, a full appreciation not only of the best and most interesting work being done in the areas of ELSI's interest, but of the most creative and promising scholars in the area of interest. On the other hand the program has not reached out to incorporate, perhaps in concert with other NIH Institutes, a wide enough set of scholarly methodologies common in some of the social and behavioral sciences not often enough deployed in bioethics. We would also note that efforts to reach out to other institutes have not yet been fully successful and more sustained efforts to promote both collaboration with other institutes and the consideration of additional methodologies are needed.

**c) Charge:** To what extent should NHGRI set ELSI's research and training priorities and to what extent should it be responsive to issues raised by those submitting grants?

**Summary Finding:** Although senior NHGRI leadership and the Council are ultimately responsible both for setting ELSI's priorities and ensuring appropriate execution against these objectives, ELSI leadership should have a significant role in this discussion. NHGRI leadership, in conjunction with ELSI leadership are responsible for articulating clear and rather precise goals for different aspects of ELSI's program, and then identifying and executing creative means for achieving

these goals for all aspects of the ELSI program. Periodically the leadership of the ELSI program should report to the Director and to Council in a manner that fully reveals the nature of the program. The EAP suggests that NHGRI leadership continue to follow a mixed strategy that recognizes the needs of NHGRI's scientific researchers, but also pursues a diversified portfolio that includes other independent objectives and is responsive to compelling requests that arise from the scholarly community. For ELSI to be responsive the EAP believes that it is the obligation of the ELSI leadership and program staff to find ways to ensure that ELSI receives a sufficient number of compelling grant proposals, for example, RO1s, RO3s, and R21s. From fiscal 2003 to fiscal 2007 these particular grant categories dropped from almost 90% of the funds awarded to just under 60% in order to "finance" the development of the CEERs. While the EAP recognizes that this was a very conscious policy decision it needs to be reviewed in the light of NHGRI's ongoing experience and changing research portfolio. The EAP understands that formalized budget categories [RO1s, P30s, UO5s, etc.] do not necessarily provide the most revealing picture of the underlying program. For example, some of the CEERs budget line may have shown up in more RO1s if the CEERs had not been established etc. Given our review of these and related matters the EAP believes that the current and projected (2008) allocation for investigator initiated research is too small. A further recommendation in this regard is offered below.

- d) **Charge:** What should be the relative roles of the CEERs within ELSI's portfolio of activities?

**Summary Finding:** It is our view that the current portion of the DER budget consumed by the CEER's should certainly not, over time, be higher than the current almost 36% reached in 2007 and should remain at this level only if the reviews are outstanding and the additional arguments for their priority are compelling. The EAP recommends that even if the five year reviews of the initial group of CEERs are strong to outstanding, the program should continue only with the understanding that each CEER would be eligible for only one competitive

renewal. Thus NHGRI support of the CEER would be for a maximum of ten years. Indeed all CEERs should be encouraged to gradually begin to locate other sources of funding. In this context if the model proves successful a series of new CEERs could be established by re-circulating this component of ELSI's budget. In addition ELSI could consider commissioning one active CEER to sustain a yearly conference for CEERs and other interested parties, especially those investigators from former CEERs. Finally EAP believes that the practice of awarding planning grants to those wishing to compete for a center is a good one for two reasons. First, those that are successful in competing for a Center can ramp up quickly. Second, those who are not successful have been able to invest in a set of activities some of which might be fulfilled in other ways.

- e) **Charge:** How should ELSI relate to other relevant initiatives within NIH?

**Summary Finding:** The ELSI extramural program is somewhat isolated from analogous efforts [potential and actual] at other Institutes as well as from certain policy related interests in the Office of the Director (OD) and other entities. Better ongoing communication with the OD with respect to the concerns of NIH's Office of Science Policy (OSP), and the Secretary's Advisory Committee on Genetics, Health and Society (SACGHS) might enable the ELSI extramural and intramural program to play a more satisfactory role in this arena. The EAP recommends that ELSI's "policy portfolio" (including appropriate research and more immediate needs) be clarified and more thoroughly integrated with policy issues of concern in NHGRI's OD. With respect to "ELSI-like" work at other NIH units firm data is hard to come by and relates in part to just what falls into the "ELSI-like" bucket, but we sense that there is more activity and chances for some synergy [as opposed to mutual sterilization] by more actively pursuing this matter. In the Committee's view this happens only when prospective partners are investigating very closely related phenomena. The exact role of ELSI within any intra NIH program could, as NHGRI's previous experience indicates, vary from simple consultation to joint funding of particular initiatives or projects. Finally it is worth noting that NIH's Office of Science Policy (OSP), which serves as a focal point

for trans-NIH science policy matters, as well as the Secretary's Advisory Committee on Genetics, Health and Society (SACGHS) is increasingly focused on issues that are central to ELSI's agenda. Making such efforts mutually reinforcing is desirable, but may require action at the level of the Director of NIH and/or the Directors of other Institutes within NIH. NHGRI leaders could advocate for such synergies.

- f) **Charge:** Are the ELSI staff and management functioning well?

**Summary Finding:** Our interviews suggest a breakdown in communication between ELSI extramural program staff and senior NHGRI leadership as well a failure both of the staff to listen carefully and follow through on suggestions from senior management and the failure of senior management to define and guide the direction of the program. The EAP believes that the staff and management of ELSI must be restructured and revitalized in order to enhance ELSI's ability to respond to or anticipate ethical, legal, social and policy issues emerging from developments, current and anticipated, in genomics science. In particular we believe ELSI's flat organizational structure mitigates against strong, effective, responsible and accountable leadership and would recommend that this be replaced by a structure with a clearly designated leader, perhaps a Chief of the ELSI extramural program. It is our belief that this would enable NHGRI to attract the kind of talent necessary to give renewed vitality and leadership to the program.

- g) **Charge:** What kind of advisory process would best serve the program?

**Summary Finding:** Currently ELSI has no effective external or internal advisory process. EAP recommends the formation of a largely external advisory committee composed of at least one Council member, one representative [in an observer status] from the NHGRI's OD together with no fewer than four external experts one of which should be chosen from the ranks of "non-ELSI" NHGRI sponsored researchers. A senior member of NHGRI's leadership would provide, ex officio, input and make provision for appropriate staff support. It may be

necessary to expand the number of external experts since ELSI activities cut across a number of disciplines and professions as well as policy-related matters.

*EAP believes that our most important recommendation deals with the management, leadership and execution of the program, particularly the extramural program. There is a critical need to establish and articulate the boundaries of the ELSI program, to revitalize the leadership at all levels, to set priorities and execute against them, and to re-think the relationship of the ELSI program to like initiatives elsewhere at NIH whether in the policy or research arena. In EAP's judgment the ELSI program would benefit from an infusion of intellectual and entrepreneurial leadership as well as significant domain expertise that could provide the necessary leadership in both the external and internal communities. The testimony we received indicates over and over again that although new ideas arise, they are too seldom translated into exciting new initiatives. We note that NHGRI's upcoming strategic planning process provides a good opportunity to address this issue.*

### **Some Background**

In many ways the establishment of the ELSI program was a very innovative and even radical step in that it signaled a desire to build a permanent capacity to assess and even anticipate the ethical, legal, and social challenges raised by developments on the biomedical frontier. Moreover the program benefited from the encouragement of the OD and the creative efforts of the staff. In any case the creation of the ELSI program caused a great deal of excitement among scholars interested in ethical, legal, and social issues arising from the rapid movement of the biomedical frontier, but few of these scholars understood these issues as particularly related to the specific agenda of NHGRI. As a result even from the beginning expectations were certainly considerably wider than the NHGRI portfolio of interests. Nevertheless, since its establishment ELSI has been, through the quality efforts of the staff, successful in promoting a great deal of thoughtful and interesting scholarship by ELSI grantees and others. Moreover some of this work has directly informed policy. The ELSI program has also played a significant

role, along with other pioneering efforts at places like *The Kennedy Institute of Ethics* at Georgetown, or *The Hastings Center* in New York and various public advisory groups, in encouraging other institutions to very substantially increase their investments in the support of “ELSI type” activities.

Thus during the last two decades, a very large commitment of new resources by a variety of institutions, (principally universities and foundations), to teaching and scholarship dealing with “ELSI” type” issues has occurred. Indeed, a success of the NHGRI ELSI program is that the ELSI acronym is often used as a noun describing other programs that have interests and commitments that are thought to substantially overlap, but are not coincident with NHGRI’s ELSI program. Nevertheless to our knowledge the ELSI budget represents the largest single annual source of research and training dollars available in a fully public and competitive basis and broadly devoted to ELSI objectives.

As a result of this substantially increased interest a large and ever growing number of disciplines using an ever wider array of methodologies have begun to address the impact of events on the biomedical frontier on an array of ethical, legal, and social issues. For good or ill an ever broader array of disciplines and scholars consider their work to be within the ELSI orbit. Indeed in our review of ELSI we heard that ELSI’s portfolio was both too broad [reflecting a lack of consistent priority setting and strategic planning] and too narrow [reflecting a limited responsiveness to a wider variety of scholarly topics and approaches]. In this case both observations could be true!<sup>1</sup>

In retrospect, however, despite the many successes it seems quite clear to us that ELSI was established without any crisp, operational and compelling definition of its task. At the time everyone recognized that the extraordinary developments in biology, particularly in genetics, raised important and potentially controversial ethical, legal and social issues and it seemed like a good idea to invest some resources in addressing these issues. Everyone agreed that it would be important both to identify, address and

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<sup>1</sup> Given the rapid evolution of the context within which ELSI operates it seems to be a good moment to reconsider ELSI’s relationship with other efforts, particularly those within NIH

indeed to anticipate the ethical, legal and social issues being raised by genomic research and to help develop ideas that might inform both researchers, the public and policy makers going forward. Thus, there was a widespread desire to use ELSI to foster basic and applied research on the ethical, legal and social implications of genetic and genomic research for individuals, families and communities. These broad aims seem entirely unobjectionable, but they provide few operational constraints on the nature of ELSI's priorities. Indeed terms such as *human genome research*, *genomics*, *genetics*, *genomic science*, and *human genome project* are used interchangeably. Moreover the term ELSI has come to refer both to NHGRI's program and to any other activities arising from interest in the ethical, legal and social implications of developments on the biomedical frontier. Indeed in some venues "ELSI-type" initiatives encompass anything that impacts human life where issues of justice and other ethical concerns arise including, but not limited to matters of health disparities between nations and peoples. While the name ELSI certainly has historical and brand value some members of EAP felt that a name change for the program might help the leadership focus on setting a new set of priorities.

At the same time, however, the establishment of ELSI within NHGRI took place without too much thought regarding alternatives, and with limited consideration of how ELSI would relate to other NIH and NHGRI responsibilities in these areas. Understandably this was left to be worked out over time, but the matter has never been resolved. Several assessment efforts have preceded EAP's, but the two issues—the role of ELSI within NHGRI, and of ELSI within NIH have never been sufficiently and finally put to rest.

In any case, matters moved very quickly early on and NHGRI became ELSI's home well before any clear definition of its role either within NIH or the broader community of interest was established. Although many people had ideas and "interpretations of intent" regarding how ELSI's resources ought to be allocated, the views of the affected communities did not solidify around any particular model and the tensions among different ideas of what ELSI ought to accomplish remain today. In some

sense this is perfectly understandable since the very rapid movement of the scientific frontier brought new challenges almost every month and some of the “older” issues were either resolved (more or less) or suffered from a lapse in interest. For example, there has been an oscillation in the ELSI program’s focus on issues relating to the completion of the primary reference sequence phase of the Human Genome Project (HGP). Early work in the ELSI extramural program focused on education and broad, downstream issues such as genetic discrimination and privacy long before such issues became pressing policy matters. Over time, more attention was focused on issues in genome research and on the uptake and clinical implications of genetic information related to disease risks. More recently ELSI sponsored researchers have begun to focus on upstream issues of direct concern to genome scientists such as consent for the use of human biological materials and accompanying demographic and clinical information. Moreover there has been a constant tension between ELSI’s responsibilities to inform current policy discussions, or practical issues being faced by NHGRI investigators [requiring quick turnaround and/or effective anticipation of the ethical, social, and legal impact of technical advances] and ELSI’s basic research mission [requiring longer term investments]. An additional source of tension within ELSI is between scholars employing primarily empirical methodologies and scholars focused on conceptual and normative methodologies in such disciplines as law, history and ethics.. Indeed the standard NIH application form is not designed for and may be quite unsuitable for the latter approaches. In disciplinary terms it is widely perceived that lawyers and philosophers, for example, should now look elsewhere despite having been significant contributors to both basic and applied ELSI research.. The EAP understands that the program cannot and should not pursue all the possible approaches with the same vigor. Our point here is only that the leadership of ELSI must consider the alternative possibilities, welcome the productive tensions involved, articulate a set of priorities to guide the program, and make whatever creative adjustments are required to achieve those goals.

As a result it is our judgment that some particularly important aspects of ELSI’s mission have yet to be clarified. In particular there is no shared understanding [within

the community of interested scholars or policy makers] of how ELSI's efforts should be related either to other efforts at NIH or elsewhere that have a similar focus. As we have noted, this will require the cooperation of other leaders at NIH. Moreover it is not clear to what extent ELSI's programs ought or ought not to be more securely tied to the particular issues being confronted by NHGRI sponsored researchers, or how focused ELSI's programs ought to be on policy-related issues particularly those issues currently being addressed in policy discussions, or the importance of training within ELSI's portfolio. In short going forward it will be important to be considerably more specific, and more firm about the scope and/or boundaries of ELSI activities and the work of the key staff.

Once again we want to emphasize that these uncertainties and ambiguities have not prevented ELSI from sponsoring a great deal of interesting and important work as the staff and those advisors helping to direct the program identified a number of very valuable objectives (e.g. capacity building in the areas of ELSI interest) over the last almost two decades. Indeed whatever else ELSI may have lacked it was not, until very recently, attention and thoughtful advice. Over time NHGRI has established a series of advisory committees to help it resolve issues surrounding its appropriate portfolio and for at least a decade it worked jointly with DoE in areas of mutual interest. In the early 1990s there was the ELSI Working Group which itself was evaluated in the mid 1990s. At that time (1996) the recommendation was that the Working Group be replaced with a trio of DoE/NHGRI advisory committees. Interestingly the three recommended advisory committees reflected, in our judgment, the continuing ambiguity regarding the relative weights to assign to various matters that potentially could fall within ELSI's research/policy portfolio. Thus one proposed committee was to advise on the research portfolios of both NHGRI and DoE within the ELSI arena (i.e. setting priorities). A second was to assure some coordination across NIH on ELSI related matters (i.e. trans NIH issues), and a third to work with DHHS on policy issues (i.e. perhaps something like SACGHS). NHGRI took the only action over which it had direct authority in response to this set of proposals by establishing the Research Advisory Group within NHGRI (i.e. DoE "dropped out"). The other proposed committees require action by NIH and DHHS.

### **The Current Situation**

The largest initiative in the last few years has been the establishment initially of four Centers [CEERS] plus two added this year each with a particular focus, but sharing broad responsibilities for training and improving interactions between the ELSI and scientific communities. However, it was the uneven results of the interim review of the four initial Centers and plans to establish up to four more that was one cause for the establishment of EAP. It brought a new level of awareness of the Council that the Center initiative might exhaust too large a portion of the ELSI budget. Moreover it has become clear that, given the extraordinary developments in genomic research, NHGRI sponsored researchers are anxious to have more guidance on ELSI type issues relating to the accumulation of very large data sets including complete genome sequences on large numbers of people, on a set of controversial issues that might arise in behavioral genetics and those that surround potential genetic variations that may be associated with, for example, ethnicity and gender. Moreover there is a series of issues that surround policies with respect to genetic testing and commercial marketing of genetic tests (the latter a matter also of business ethics) that might also require some government oversight. Indeed an increasing proportion of the ELSI staff's time is being spent as consultants to other NHGRI and NIH programs, both internal and external. Despite the important priority setting exercise confronting the ELSI program, ELSI is currently functioning without an effective advisory mechanism and with too little leadership.

Thus the same three issues are before NHGRI leadership and the Council again namely: What share of the extramural ELSI budget should be devoted to issues of special concern to other NHGRI researchers (including ELSI program staff time given to consulting on particular NHGRI projects)? What share of the ELSI budget should be devoted to current policy issues? And finally, how much should be devoted to joint efforts with other NIH Institutes and offices on matters of mutual interest in scholarship, training, and policy? Whatever the answers to the above questions, a final and crucial

issue is to define more explicitly the boundaries and nature of its research program. At the same time, more than one of EAP's consultants suggested that it was time to transform the ELSI program, or certain aspects of the ELSI program into a trans-NIH initiative. As with several other matters addressed in this report, action to broaden the reach of NHGRI's ELSI program, or the need to address ethical, legal, social and policy issues within the programs of other NIH Institutes, or to create a trans-NIH ELSI program, must involve the other Institute Directors as well as the Director of NIH.

### **Some Additional Findings and Recommendations**

1. The ELSI program should deploy a wider variety of strategies for addressing particular issues. Here we have in mind initiatives that are short term and focused on solving a particular problem. A certain number of objectives need to be achieved on an expedited time schedule. An example might be the need to draft a proposed consent form suitable for GWAS studies. This might involve a contract, or any other suitable means that would create a rapid response capacity, rather than a more standard research protocol. Another example is to exploit NHGRI's substantial convening power to run workshops, commission special papers, etc. to focus intently on a newly emerging issue that needs attention. The EAP recommends that workshops, or other measures be undertaken with the aim of attracting more RO1 or RO3 proposals from currently underrepresented disciplines, professions, and communities. Towards the goal of keeping "ELSI scholars" up to date on current and anticipated scientific developments it might also prove useful to define a venue, perhaps a web site, or periodic conference that supported the expenses of current and aspiring ELSI investigators devoted to bringing them up to date with current genome science. These sorts of approaches might also be helpful when the NHGRI leadership feels the need for a rapid reaction to an emerging policy issue.
2. NHGRI's obligation to help train new investigators, particularly those from underrepresented minorities remains incompletely fulfilled. It is the Committee's

judgment that some fresh approaches are required given the challenges faced by many educational and research institutions in fulfilling this responsibility. It is the view of EAP that the ELSI leadership ought to consider a program that would reward those investigators that already have a positive track record in this arena by providing further support to underwrite their continued efforts. If this is not a viable approach (i.e. there are too few successful investigators with good records in this area) then ELSI resources ought to be deployed in a fashion that rewards success rather than unsuccessful efforts. In designing a new approach in this area ELSI staff ought to take into account that there are a growing number of graduate programs in bioethics and related areas that are not currently being supported by NHGRI and some of these could play an effective part in training the next generation of ELSI investigators.

3. ELSI leadership and program staff should encourage and the relevant study sections ought to be open to a wider array of scholarly methodologies that might yield insights on the ethical, legal, and social issues arising on the biomedical frontier. As our understanding of the ethical legal and social issues both broadens and deepens the methodologies and disciplines that become relevant quickly expand. In particular some attempts need to be made to accomplish two objectives. First, a review of the grant application process, including the composition and function of the study section needs to take place with the objective of ensuring that important issues and approaches outside the arena of empirical research are properly attended to. Achieving this will require the willing participation of NIH leadership, particularly the staff that oversees the review of proposals. Second, that the ELSI leadership and extramural program staff actively seek out innovative new scholarly approaches that use methodologies that are new to the ELSI community, but are well established within the various disciplines such as cognitive psychology. Both these objectives reflect the Committee's concerns that ELSI , for all that it has accomplished, has not maximized its impact on the humanities, social sciences, and the law. The Committee acknowledges that there is no way to fully resolve the tension

between conceptual and empirical work, and between NHGRI's particular needs versus broader societal concerns. However, we believe this tension can be a healthy one, but it needs to be better managed. It is startling that at a time of great interest in those matters that fall within the ELSI world that there is a falling number of applications to the program and that within the grant applications there is a demonstrable lack of diversity in research approaches.

4. The leadership of NHGRI needs to provide quite specific guidance regarding how the ELSI staff should allocate their efforts as between consults to other programs (generally widely appreciated) both within and beyond NHGRI, how much of the research portfolio should be allocated to issues of special interest to NHGRI researchers, what resources should be allocated to capacity building, and how much effort should be devoted to research that would focus either on understanding what policy options are available, or responding in real time to contemporary policy issues.
5. The communication between scientists, especially those supported by NHGRI, and ELSI investigators is still minimal. We recommend as an experiment that the larger NHGRI grants require the incorporation of a small element that deals with the ethical, legal, and social issues of direct concern either to the scientists involved, or to others focused on the work of these grantees. This might also help attack the challenge of making a larger number of ELSI scholars better versed in current developments on the scientific frontier. Perhaps one could move forward with this suggestion by insisting that the grantees be responsible for recruiting ELSI scholars (not necessarily full time) to become part of their efforts with ELSI providing the additional support. Any initiative in this arena needs to clarify whether its chief objective is to build a workable consensus on a widely discussed and controversial issue, or to identify brand new issues that may be emerging. We recognize that this would not be the first time efforts have been launched in this direction. Thus some new imagination needs to be deployed to impact this area.

6. While the ELSI program requires a better articulation of the relative importance of RO1s, RFAs, and other methodologies, this needs to await a fuller articulation of the program's objectives. Since NHGRI is entering a reconsideration of its portfolio going forward we recommend that the ELSI program be a part of this effort.
  
7. As we have already noted at the current time there is inadequate strategic leadership within the staff or from above. Moreover the staff is too small given its portfolio of responsibilities, especially since the staff seems to devote a good deal of its time to consulting for other NIH and NHGRI initiatives, and 25% of the staff is currently "detailed" elsewhere.

Finally we would like to express our gratitude to the staff and leadership of NHGRI for their assistance, candor and thoughtfulness at every stage of our review. We understand that it is the NHGRI leadership and Council that must make the key decisions going forward and we simply hope that our observations and recommendations will be useful to them. We continue to believe that the ELSI program has played and should continue to play an important role in assisting us to fully realizing the benefits of movements on the biomedical frontier.

**Appendices**

## Appendix 1

**ELSI Assessment Panel Interview Schedule**  
5635 Fishers Lane, Conference Center Room 508  
February 1, 2008

- 8:30 am Welcome  
*Harold Shapiro*
- 8:45 CEERS Directors (20 minutes each)
- *Wylie Burke*
  - *Eric Juengst*
- 9:25 ELSI Program Staff (20 minutes each)
- *Jean McEwen*
  - *Elizabeth Thomson*
  - *Joy Boyer*
  - *Vivian Ota Wang*
- 10:45 Break
- 11:05 Non-ELSI Program Staff (15 minutes each)
- *Jane Peterson*
  - *Lisa Brooks*
  - *Adam Felsenfeld*
- 11:50 pm Scientific Review Administration (Panel)
- *Rudy Pozzatti*
  - *Cheryl Corsaro*
- 12:05 Working Lunch
- 1:05 OD Staff (15 minutes each)
- *Laura Rodriguez*
  - *Vence Bonham*
- 1:35 Other Agencies (Panel)
- *DOE- Dan Drell*
  - *HRSA- Penny Kyler*
- 2:05 Non-ELSI Program Staff (continued, 15 minutes each)
- *Bettie Graham*
  - *Teri Manolio*

2:35 Break

2:45 Young Investigators (2, 90 minute panels)

Panel 1 (main room):      Panel 2 (5<sup>th</sup> floor conf. room):

- *Rene Sterling*
  - *Lynn Dressler*
  - *Holly Tabor*
  - *Amy McGuire*
- *Kimberly Tallbear*
  - *Josephine Johnston*
  - *Sandra Soo-Jin Lee*

4:15 EAP discussion and wrap-up

5:30 Adjourn

## Appendix 2

### The Telephone Interviews

These interviews were carried out by members of EAP and were somewhat “guided” by a set of questions we had agreed on in advance. These questions are attached. On the other hand members of the committee made full use of their freedom to depart from or add on to this list as circumstances seem to dictate. There were a very wide variety of opinions on almost every issue. There were some who thought that ELSI was too involved in policy issues and some who thought ELSI was not sufficiently attentive to policy discussions. Some thought the ELSI staff very helpful, others thought they were inaccessible and not very responsive. Moreover there were mixed assessments of the impact of ELSI sponsored research etc. etc. However, there seemed to be more agreement on some issues such as the following: disenchantment with the review process, lack of “risk” taking, a portfolio of research that was not forward looking enough and not focused enough either on clinical and/or policy applications and the law and philosophy, the need to integrate ELSI activities more closely with the work of NHGRI research teams and broader NIH objectives, the need to maintain a diversified portfolio, the need to further clarify ELSI’s agenda. Finally it seemed important to some interviewees that NHGRI understand that social change is unlikely to move as quickly as scientific change and/or develop such “neat” and universally compelling answers to important questions. With respect to this latter comment it is important to realize that in moral philosophy there are no rules to compellingly demonstrate which of a number of competing moral theories deserve our commitment.

**TELEPHONE INTERVIEW QUESTIONS**

1. Are you familiar with NHGRI's programs and objectives?
2. Are you familiar with the NHGRI ELSI Program's objectives and priorities? (If answer is "No," go to question 3.)  
  
If so, what do you understand them to be?  
  
Are these objectives and priorities appropriate?
3. What should be the objectives of the ELSI Programs? What should be its most important priorities?
4. In your judgment how critical are the following issues/areas for ELSI?
  - a. Issues surrounding genetic testing/marketing
  - b. Issues surrounding behavioral genetics
  - c. Issues surrounding the genetic contribution, if any, to observed traits that appear to some to correlate with race or gender
  - d. Issues surrounding international health
5. In your view, what would be the optimal balance within the ELSI Program between the particular issues confronting NHGRI-sponsored researchers and the broader set of questions dealing with the ethical, legal, and social issues generated by advances in biomedical research?
6. Have you ever applied for an ELSI grant?  
  
If not, why not?  
  
If yes, what was particularly good or bad about the process and the staff assistance? Were you satisfied with the review process and the staff assistance you received?
7. How would you rank the relative importance of investigator-initiated grants versus requests for proposals that focus on matters of interest to NHGRI?
8. What impact has ELSI had on bioethics? On genomics? On the application of genetics and genomics to medicine? On public discourse? On public policy?
9. Has ELSI made an impact on attracting underrepresented minorities to the field?

### Appendix 3

#### Success Rates, Priority Scores and Resources Committed/Expended

In recent years the success rate for ELSI grants has been about 50% while it has been much closer to 33% for NHGRI's other programs. On the other hand the average priority score of a little over 170 is about the same as for other NHGRI funded research. The attached table gives some more detail.

ELSI commitments in 2007 were close to \$17.9 million, down slightly from an average of over \$18.0 million in the previous three years. About \$13.5 million is already committed for 2008, but much less is currently committed for 2009 and 2010 creating room for new grants. Throughout these years the ELSI budget has been and is projected to be close to \$18.5 million.

## Appendix 4

**NHGRI ELSI Extramural Research Portfolio by Mechanism (FY2003-FY2009)**  
(mechanism definitions below)

**By Dollars**

Mechanism	2003 Awarded	2004 Awarded	2005 Awarded	2006 Awarded	200 Awarded	2008 Awarded Plus Committed	2009 Committed
D43	\$ 400,000	\$ 400,000	\$ 400,000	\$ 400,000			
F31				\$ 30,142	\$ 30,142	\$ 30,142	\$ 30,142
F32	\$ 56,308	\$ 56,536		\$ 50,428		\$ 52,048	
F33				\$ 71,261	\$ 71,261		
K01	\$ 282,205	\$ 277,831	\$ 141,733	\$ 121,003	\$ 120,954		
K99					\$ 85,316	\$ 85,586	
P20		\$ 547,524	\$ 552,439	\$ 727,468			
P41	\$ 725,195	\$ 445,804	\$ 428,982	\$ 431,472	\$ 431,524	\$ 444,474	\$ 457,801
P50		\$ 2,906,510	\$ 3,171,119	\$ 3,684,571	\$ 5,899,959	\$ 6,020,913	\$ 2,218,203
R01	\$11,170,478	\$ 9,273,266	\$ 9,984,462	\$ 9,436,835	\$ 8,162,870	\$ 6,171,665	\$ 2,775,195
R03	\$ 725,476	\$ 396,750	\$ 509,019	\$ 917,265	\$ 1,042,960	\$ 527,179	
R13	\$ 105,000	\$ 99,666	\$ 70,579	\$ 34,413	\$ 23,705	\$ 23,705	
R21	\$ 40,000	\$ 40,000					
R25	\$ 2,800,970	\$ 2,576,268	\$ 2,556,105	\$ 1,255,551	\$ 565,000	\$ 150,000	\$ 100,000
S07	\$ 44,076						
U01		\$ 50,876		\$ 1,031,757	\$ 1,461,646		
UH1	\$ 104,383	\$ 110,533					
<b>Total Awarded &amp; Committed</b>	<b>\$16,454,091</b>	<b>\$17,181,564</b>	<b>\$17,814,438</b>	<b>\$18,192,166</b>	<b>\$17,895,337</b>	<b>\$13,505,712</b>	<b>\$ 5,581,341</b>
<b>Estimated ELSI Budget (5% of DER Research Budget) for Current and Future Years</b>						<b>\$17,559,350</b>	<b>\$17,614,700</b>

**NHGRI ELSI Extramural Research Portfolio by Percentage (FY2003-FY2009)**  
*(mechanism definitions below)*

Mechanism	2003 Awarded	2004 Awarded	2005 Awarded	2006 Awarded	2007 Awarded	2008 Awarded Plus Committed	2009 Committed
D43	2.4%	2.4%	2.4%	2.4%			
F31				0.2%	0.2%	0.2%	0.2%
F32	0.3%	0.3%		0.3%		0.3%	
F33				0.4%	0.4%		
K01	1.7%	1.7%	0.9%	0.7%	0.7%		
K99					0.5%	0.5%	
P20		3.3%	3.4%	4.4%			
P41	4.4%	2.7%	2.6%	2.6%	2.6%	2.7%	2.8%
P50		17.7%	19.3%	22.4%	35.9%	36.6%	13.5%
R01	67.9%	56.4%	60.7%	57.4%	49.6%	37.5%	16.9%
R03	4.4%	2.4%	3.1%	5.6%	6.3%	3.2%	
R13	0.6%	0.6%	0.4%	0.2%	0.1%	0.1%	
R21	0.2%	0.2%					
R25	17.0%	15.7%	15.5%	7.6%	3.4%	0.9%	0.6%
S07	0.3%						
U01		0.3%		6.3%	8.9%		
UH1	0.6%	0.7%					



### Grant Mechanism Definitions

<b>D43</b>	<p><b>International Training Grants in Epidemiology</b></p> <p>To improve and expand epidemiologic research and the utilization of epidemiology in clinical trials and prevention research in foreign countries through support of training programs for foreign health professionals, technicians, and other health care workers.</p>
<b>F31</b>	<p><b>Predoctoral Individual National Research Service Award</b></p> <p>To provide predoctoral individuals with supervised research training in specified health and health-related areas leading toward the research degree (e.g., Ph.D.).</p>
<b>F32</b>	<p><b>Postdoctoral Individual National Research Service Award</b></p> <p>To provide postdoctoral research training to individuals to broaden their scientific background and extend their potential for research in specified health-related areas.</p>
<b>F33</b>	<p><b>National Research Service Awards for Senior Fellows</b></p> <p>To provide opportunities for experienced scientists to make major changes in the direction of research careers, to broaden scientific background, to acquire new research capabilities, to enlarge command of an allied research field, or to take time from regular professional responsibilities for the purpose of increasing capabilities to engage in health-related research.</p>
<b>K01</b>	<p><b>Research Scientist Development Award - Research &amp; Training</b></p> <p>For support of a scientist, committed to research, in need of both advanced research training and additional experience.</p>
<b>K99/R00</b>	<p><b>NIH Pathway to Independence (PI) Award (K99/R00)</b></p> <p>Provides up to five years of support consisting of two phases</p> <p style="padding-left: 20px;">I - will provide 1-2 years of mentored support for highly promising, postdoctoral research scientists</p> <p style="padding-left: 20px;">II - up to 3 years of independent support contingent on securing an independent research position</p> <p>Award recipients will be expected to compete successfully for independent R01 support from the NIH during the career transition award period</p> <p>Eligible Principal Investigators include outstanding postdoctoral candidates who have terminal clinical or research doctorates who have no more than 5 years of postdoctoral research training</p> <p>Foreign institutions are not eligible to apply</p> <p>PI does not have to be a U.S. citizen</p>
<b>P20</b>	<p><b>Exploratory Grants</b></p> <p>Often used to support planning activities associated with large multi-project program project grants</p>
<b>P41</b>	<p><b>Biotechnology Resource Grants</b></p> <p>To support biotechnology resources available to all qualified investigators without regard to the scientific disciplines or disease orientations of their research activities or specifically directed to a categorical program area.</p>
<b>P50</b>	<p><b>Specialized Center</b></p> <p>To support any part of the full range of research and development from very basic to clinical</p> <p>May involve ancillary supportive activities such as protracted patient care necessary</p>

	<p>to the primary research or R&amp;D effort.</p> <p>The spectrum of activities comprises a multidisciplinary attack on a specific disease entity or biomedical problem area.</p> <p>Receive continuous attention from staff funding IC.</p> <p>Centers may serve as regional or national resources for special research purposes.</p>
<b>R01</b>	<p><b>NIH Research Project Grant</b></p> <p>Used to support a discrete, specified, circumscribed research project</p> <p>NIH's most commonly used grant program</p> <p>No specific dollar limit unless specified</p> <p>Advance permission required for \$500K or more (direct costs) in any year</p> <p><b><u>Grant Mechanism Definitions, continued</u></b></p> <p>Generally awarded for 3 -5 years</p> <p>All ICs utilize</p>
<b>R03</b>	<p><b>NIH Small Grant</b></p> <p>Provides limited funding for a short period of time to support a variety of types of projects, including: pilot or feasibility studies, collection of preliminary data, secondary analysis of existing data, small, self-contained research projects, development of new research technology, etc.</p> <p>Limited to two years of funding</p> <p>Direct costs generally up to \$50,000 per year</p> <p>Not renewable</p> <p>Utilized by more than half of the NIH ICs</p>
<b>R13</b>	<p><b>NIH Support for Conferences and Scientific Meeting</b></p> <p>Support for high quality conferences/scientific meetings that are relevant to NIH's scientific mission and to the public health</p> <p>Requires advance permission from the funding IC</p> <p>Foreign institutions are not eligible to apply</p> <p>Award amounts vary and limits are set by individual ICs</p> <p>Support for up to 5 years may be possible</p>
<b>R21</b>	<p><b>NIH Exploratory/Developmental Research Grant Award</b></p> <p>Encourages new, exploratory and developmental research projects by providing support for the early stages of project development. Sometimes used for pilot and feasibility studies.</p> <p>Limited to up to two years of funding</p> <p>Combined budget for direct costs for the two year project period usually may not exceed \$275,000.</p> <p>No preliminary data is generally required</p> <p>Most ICs utilize</p>
<b>R25</b>	<p><b>Education Projects</b></p> <p>Used in a wide variety of ways to promote an appreciation for and interest in biomedical research, provide additional training in specific areas, and/or to develop ways to disseminate scientific discovery into public health and community applications</p>
<b>S07</b>	<b>Human Subjects Research Enhancement Awards (HSREA)</b>
<b>U01</b>	<b>Research Project Cooperative Agreement</b>

	<p>Supports discrete, specified, circumscribed projects to be performed by investigator(s) in an area representing their specific interests and competencies</p> <p>Used when substantial programmatic involvement is anticipated between the awarding Institute and Center</p> <p>One of many types of cooperative agreements</p> <p>No specific dollar limit unless specified</p>
UH1	<p><b>HBCU Research Scientist Award</b></p> <p>To assist Historically Black Colleges and Universities (HBCU) in strengthening and augmenting their human resources by recruiting an established research scientist; to enhance the career of the recruited research scientist; and to strengthen other HBCU resources for the conduct of biomedical and/or behavioral research. The recruited research scientist must have received competitive and independent research support.</p>