MINUTES FROM THE

NINTH ANNUAL MEETING

NHGRI RESEARCH TRAINING ADVISORY COMMITTEE MEETING WITH DAP[1] AND T32 GRANTEES

DANA-FARBER CANCER INSTITUTE

8:30 am October 18, 2011 to 1:30 pm October 19, 2011

The Ninth Annual DAP meeting was hosted by Dana-Farber Cancer Institute. A copy of the agenda and the participants' list can be found in Appendices I and II, respectively.

PURPOSE OF MEETING: There were four open and one executive sessions.

Session I: Pre-Meeting Tutorial with T32 Training Directors to discuss challenges with preparing IRB packages and gaining access to Research Electronic Data Capture (REDCap-http://project-redcap.org/) database.

Session II: Results of pilot to capture data on a limited number of past T32 trainees.

Session III: DAP pilot using REDCap.

Session IV: a multi-session to include: (a) research and program highlights by current and past trainees; (b) a panel discussion on the Science articles on Race, Ethnicity, and NIH Funding (http://www.sciencemag.org/site/feature/data/hottopics/race-nihfunding/) and (c) a briefing from a member of the Diversity in Biomedical Research Working Group (http://acd.od.nih.gov/DBR.asp), NIH Advisory Committee to the Director (ACD).

Session V: Executive Session with Research Training Advisory Committee, DACC Team and NHGRI staff.

INTRODUCTIONS

David Hill, Co-Investigator of the Dana-Farber Cancer Institute's Center of Excellence in Genomic Science (CEGS) welcomed the participants to the meeting. Participants included, in addition to the grantees, DACC Team and NHGRI staff, two NHGRI national advisory council members, trainees in the Boston area, and a member of the Diversity in Biomedical Research Working Group (http://acd.od.nih.gov/DBR.asp), a subcommittee of the NIH, ACD.

MEETING SUMMARY

Session I: IRB/REDCapTutorial for T32 Training Program Directors. This session was targeted to the T32 Training Program Directors who are in still in the process of receiving IRB approval**s and** had

---

[1] DAP is the Diversity Action Plan. The name was changed to be more in line with the NIH diversity programs. The goals of the DAP are the same as they were for the DAP

questions about the IRB package and how to enter data into REDCap. This was an opportunity for grantees to have in-depth discussions with the DACC team.

Session II: T32 Pilot Using REDCap. In February 2011 there was a conference call with the T32 program directors to discuss the IRB process and how to use the REDCap database. The DACC Team provided them with a template IRB package that could be modified for their institution's IRB approval. Many received access to REDCap only several weeks prior to the annual meeting. In order to test the system before asking them to submit data on all their trainees into the database, they were asked to submit records on twenty students: 10 who were some of the first trainees and ten who were still students but no longer on NHGRI's institutional training grant. Most of the information could be obtained from trainee appointment forms or other information in the trainees' files or applications. In addition to data entry, grantees were also asked to address issues they had with the database and program highlights, such as challenges, recruitment/retention, accomplishments, etc.

A comprehensive list of issues is reported in Appendix III. A summary of these issues include: DACC should review all questions to eliminate ambiguities; program directors or their designees should check that appointment forms are complete and accurate; the ethnicity/diversity report needs to be corrected for individuals who check more than one; clarify what is meant by medical research vs. STEM vs. clinical practice; and GPA range should be flexible to accommodate grading systems that are outside the normal 4.0 range.

DISCUSSION

Follow Up: Record keeping is difficult because PIs change; trainees do not complete all the information on the appointment/termination forms; programs do not maintain current contact information on past trainees; lack of a secure, follow-up could be enhanced with a QCed, on-line self-reporting system; alumni could be kept involved by inviting them as speakers and to annual retreats, graduates could be encouraged to keep in touch with dissertation advisor.

Recruitment//Retention: Admission committees should be encouraged to consider letters of recommendation, research experience and passion for research in addition to GRE and GPA; alumni should be highlighted on website; program directors should network with undergraduate summer programs, partner with HBCUs and Hispanic-serving institutions, use T32 students to recruit students; closely and continuously monitor students, select good mentors, have dedicated personnel to URM recruitment, educate the admissions committee about the importance of diversity and let them know if a student with potential is applying, network with other T32 or DAPs for students, improve the writing skills of trainees, develop recruitment brochures targeted to URMs, develop long-term relationships with schools from which you wish to recruit students by involving their faculty in your programs or offering sabbaticals, recruit students closer to the recruiting institution, eliminate graduate school application fees, be a science judge at local and national student meetings, and encourage students to apply early to graduate school; trainees need mentors for science skills as well as career development skills; summer undergraduate programs are good recruiting grounds for graduate students whether or not they matriculate at the institution providing the experience.

Program Enhancements: Conduct fellowship/grant writing seminars; encourage URM graduate students to apply for F31 fellowship to promote diversity (http://grants2.nih.gov/grants/guide/pa-files/PA-10-109. html; encourage postdoctoral students to apply for F32 fellowships (http://grants2.nih.gov/grants/guide/pa-files/PA-10-110.html); Pathway to Independence Awards (http://grants1.nih.gov/grants/guide/pa-files/PA-11-197.html);and the NIH Loan Repayment Program (http://www.lrp.nih.gov/); provide trainees with an opportunity to perform classroom teaching; provide training in leadership and mentoring; institute mock study section reviews; and encourage students to write grant applications.

Future Support of Undergraduate Training on T32 Training Grants. The T32 program directors were reminded that undergraduate and short-term research and training activities must now be supported as a companion R25 application (http://grants.nih.gov/grants/guide/pa-files/PAR-09-245.html) to their training

grant. The R25 application must be submitted at the same time as the T32 renewal and the PI on the R25 must be the same as the PI on the T32 application.

Action Items: (1) Follow-up with Stanford to see what permissions are needed to allow data to be transferred to the DACC. (2) Modify the fields in REDCap as recommended by the participants (3) investigate ways to allow self-reporting with QC conducted by the program directors prior to being incorporated into REDCap. (4) Investigate ways to allow counting of URMs who benefit from the training program because they have received individual fellowships and therefore, do not receive funding from the T32 grant. (5) Review all questions to eliminate ambiguities. A complete list of action items can be found in Appendix III.

Session III: DAP pilot Using REDCap. Last year, **t**he DAP grantees entered their trainee data on excel spreadsheets because they did not have the necessary IRB approvals to submit their data into REDCap for analysis. This year, most of the DAPs were able to enter and update their data directly into REDCap.

A comprehensive list of issues is reported in Appendix III. A summary of these issues include: review all questions to eliminate ambiguities; expand alternatives for faculty categories; clarify what is meant by medical research vs. STEM vs. clinical practice; add new categories for elements that characterize program activities and mentoring; update profiles on a regular basis; ensure that individuals who participate in DAPs at various levels have only one record and the last program the person participated in should be responsible for tracking; explore ways for participants to enter data directly into REDCap and control for quality.

DISCUSSION

Follow-up: Ways to encourage follow-up responses are: do not survey too often; keep alumni engaged with current students; and streamline communications with alumni.

Challenges: Need to: provide students with an understanding of molecular biology and critical thinking skills; encourage mentors to be stakeholders in the program; place more emphasis on graduate school readiness; in collaboration with trainee, develop work plans/goals/expectations; ensure that students gain an interest in, make a commitment to, and be successful in science; and build sense of community early in the process among cohorts.

Continuation of Training Following Termination of CEGS: Several of the CEGS Training Coordinators expressed concern about the future of their training initiatives which have been very successful when the second five year period of the CEGS ends. Possible ways to continue the support are: (1) the CEGS PI can apply for a second CEGS as a new research initiative and (2) institutions with T32 grants can apply for a companion R25 to continue these activities.

Action Items: (1) Follow-up with USC and California Institute of Technology regarding the letter from Their IRB allowing the data to be transferred to the DACC. (2) Follow-up with Stanford and Cal Tech to See what permissions are needed to allow data to be transferred to the DACC. (3) Review all questions To eliminate ambiguities. A complete list of action items can be found in Appendix III.

Session IVa: Presentations by DAP Trainees (Current and Past). The Boston area is home to several NHGRI supported research training and education awards: two T32s; one large-scale sequencing grant; one model organism database grant and one CEGS. As a group, they provide research training experiences to individuals from high school to faculty. The Boston group assembled a panel of past participants to give a brief presentation of the work they had conducted as trainees or in the case of the faculty invitee, his current research. The panel was moderated by Eboney Smith, Training Coordinator of the large-scale sequencing laboratory at The Broad. The participants were also asked to reflect upon the benefits of participating in this program and their suggestions for changes. All were very enthusiastic about their research experience and gave excellent presentations. Briefly, some of their reflections included:

Benefits: Provided an opportunity to: conduct research beyond the tradition "cookie-cutter" lab classes at their home institution; to network with individuals at various career levels; excitement about attending scientific conferences; develop interest in new research areas; write fellowship application which helped lower the bar for writing a future grant application.

Suggestions: put more focus on academic development by including courses relevant to survival in graduate school early in the training training (specific to postbac programs); encourage collaborations/partnerships between programs; add career mentors who can help one to survive the non-science part of academic life, but critical to career advancement; encourage the love of science for those in middle school; encourage high school students to have research experiences in university laboratories; increase the diversity of scientists as role models; make science exciting; encourage a national policy to improve math and science skills of K-12 students.

MD versus MD/Ph.D or Ph.D. encourage more URMs to pursue Ph.D. or MD/Ph.D; invite MD/Ph.D URMs as speakers; show a path from undergraduate to researcher that shows a passion for science and provides financial security.

Session IVb. Panel Discussion on Race, Ethnicity and NIH Awards. The T32 programs directors present were asked to participate in a panel to discuss the issues outlined in the Ginther et. al, and two other companion papers (http://www.sciencemag.org/site/feature/data/hottopics/race-nihfunding/.). In summary, after controlling for many variables, the research showed that Black applicants, unlike other minorities, were far less likely to receive NIH funding for a research application than any other group, white or non-white. In fact, the funding rate of Black applicants was 10 percentage points lower than that of white applicants. The purpose of the discussion was for training directors to share how they are training students to ensure that all the tools required for good grant writing are being addressed, such as critical thinking skills, quality publications, career mentoring, etc are integral to the training programs. It was understood that how applications are reviewed is not something that program directors can address. To start the discussion, Jose C. Florez, Member, Diversity in Biomedical Research Working Group, NIH ACD, presented the findings in the Ginther paper. Kim Nickerson, one of the Research Training Advisors, moderated the session. A brief summary of the discussion included the following points:

- Mentorship is very important. Mentors need to ensure that trainees master critical thinking skills and be exposed to career enhancing techniques.
- Writing and language matter when preparing a grant application. Poorly written/edited applications put applicants at risk.
- Must be careful with analyses that "blame the victim." Unconscious bias is real[2]. There is a significant body of literature to support this position.
- The minority view (Michael Price) suggested that race is not an issue when applications are reviewed; sometimes it is difficult to tell the race/ethnicity/gender of applicants.
- Training programs should encourage mock study section reviews to orient trainees to the peer review process.
- Bias may be due to the types of research questions that applicants are studying, for example, behavior and violence in race/ethnic groups. These may be topics that are not of interest to the scientific community or funding agencies.
- One way to reduce bias is to review only the science; one problem with this is that the competency of the principal investigator and the institutional environment are among the (reasonable) review criteria.
- Grant programs targeting minority scientists may delay the hard knocks that may occur when applying for regular grants.
- Applicants should be encouraged to revise and resubmit applications.
- Biases exist in places other than academia; URMs have to rise above the concerns to be successful.

---

[2] See Appendix IV

- Study section members (regardless of ethnicity or gender) need to be constantly sensitized to cultural, gender and racial biases.
- Institutional biases exist; poorly prepared undergraduate students may need to take additional courses in order to rise to the challenge in graduate school. However, students should be counseled that in spite of this problem, they can be better students, can perform academically and can be successful, if they have the will.
- Has NSF conducted a similar study? If so, it would be good to compare the outcomes of their review.
- It would also be good to compare outcomes across individual NIH institutes.
- It would also be good to compare outcomes across individual NIH institutes.
- Did the Ginther paper examine the success of Native Americans in the NIH peer review system?
- An experiment designed to test bias was recommended whereby applications would be completely de-identified and rescored based on the science alone without knowledge of the PI or institution. Differences in scores between the two review processes would be tested.

Some of Jose Florez's comments regarding his working group's charge and his own views:

- We need additional good reasons to justify why diversity is important in shaping the biomedical workforce of the future; "losing talent" is not sufficient, must articulate a compelling rationale to sway public opinion.
- Besides the "losing talent" argument, there is an issue of basic justice
- Opponents will argue that quotas undermine quality; we must be clear that there should be no compromise on quality.
- Diversity enriches the enterprise.
- We need nurturing role models.
- Conscious versus unconscious biases—it is difficult to erase all identifiers in an application.
- In general, only three or four individuals in a study section provide comments on unscored applications; thus working to make panel composition more diverse is unlikely to matter much, since triage rates are higher for Black applicants.
- In evaluating applications, an analogy may be made between Olympic athletes in whom the differences between the gold medalist and the silver medalist can be extremely small. Thus, it is possible that candidates who have advanced through various stages in which diversity was considered a positive attribute (e.g. training grants, institutional hiring, invitation to review panels), all other things being equal, may be slightly less prepared than their majority peers on some other aspects; when a review stage takes place where diversity is not considered (e.g. R01 applications), they may thus be at a slight disadvantage
- Mentoring is very important, especially during the application writing stage.
- This is not just a pipeline issue, since for people who have made it onto the pipeline, the rates of acceptance are still lower.
- Application resubmission rates for URMs tend to be low; the reasons need to be investigated.

NHGRI Director's Remarks. Eric Green thanked the attendees for their participation in this session. He stated that NHGRI from the very beginning of its existence took diversity very seriously and he will continue that, both in the extramural and the intramural programs.   Additional comments included:

- *Changes at NHGRI.* Mark Guyer has been appointed Deputy Director, NHGRI. Mark was involved in the initiation of the Human Genome Project. With the publication of the new strategic plan (http://www.genome.gov/27543215), NHGRI will be expanding its mission and Dr. Guyer's experience in managing NHGRI's extramural programs should be very useful in making the transition. This may also result in a new structure for the extramural program.

  The strategic plan encompasses an expanded research agenda which will eventually be more clinically oriented and will take much longer to attain. The cross-cutting areas are bioinformatics, computational biology, societal implications of genomics, and research training/education.

Since NHGRI's budget is 1.7% of the NIH budget, it will be very important to leverage our funds and all programs will be reviewed to ensure that they align with the new strategic plan. NHGRI has a significant amount of its resources in centers. However, NHGRI is committed to supporting R01 research and the basic sciences supporting genomics and proteomics.

Training and bioinformatics/computational biology are the topics that draw the most interest from the community. We need to be sure that our training goals are consistent with our strategic plan.

- *NIH Budget.* The discussion at the weekly NIH Institute Center's and Director's meetings that takes up most of the meeting time is the budget and how to accomplish the research agenda. There is the possibility that the government will be on a long-term continuing resolution (CR). The current purchasing power is about what it was eight years ago. The NIH strategy for living within its budget is to review program effectiveness, rather than across the board percent reductions. The outlook for fiscal year 13 is even bleaker. NIH does have advocates in Congress, but it is not clear how this support will hold up given the current economic climate.

  Bioinformatics is an issue that affects all of NIH and there have been many high level discussions about this. It may take corporate NIH longer to deal with this issue. However, NIGMS has a new director and there may be the opportunity for NIGMS and NIH to increase the pace of these discussions.

Discussion on Career Pathways of DAP Coordinators. Cherilynn Shadding surveyed the DAP coordinators and led the discussion. The purpose of the survey and discussion was to address potential career issues/aspirations of Training Coordinators. The survey was sent to 17 trainers; 11 responded, but not to all questions.

Briefly, the survey findings were:

(1) Demographics- -approximately 80% of the coordinators had MS or Ph.D degrees; approximately one-third of coordinators had been in their positions for five years or more; training coordinator tasks represented approximately 70% effort of most coordinator's time; their primary position within the institution was staff or non-tenured faculty; most were supervised by the PI of the grant; most coordinators were non-Hispanic females; and approximately one-third were first generation college.

(2) Career Development/Promotion- -Most Training Coordinators were involved in administration, research, teaching prior to being hired as DAP trainers; they are involved with similar duties in their current jobs. Approximately half had applied for grants as PIs and10% had received a grant. Some of the accomplishments as DAP coordinators included promotions, invitations to speak at national conferences, reviewers for grant applications and to a lesser degree authorship on peer-reviewed papers or reviewers for these articles. The major career aspirations included higher administration in academia, teaching, PI on research grant and tenure-track faculty, and consulting. Ninety percent or more of respondents agreed that their DAP work aligns with their career aspirations. The same percentage agreed that the DAP could play a role in their career development.

(3) Suggestions for ways that the DAP could play in the career development of Training Coordinators- - career development workshops; release time to conduct research; collaborators on ongoing research grants; reinstate the coordinators' meeting; peer mentoring by PIs to become familiar with journal and grant application reviews and grant writing; recognition of the coordinator's role in the DAP by being co-PIs.

(4) Comments from survey participants- -DAP has helped develop skills in management, strategic thinking, negotiation and proposal writing. Working with students has played a role in training coordinator's career development. Role with DAP has allowed the training coordinator to pursue interest in ethical, legal and social issues (ELSI). Mentor/PI has played a role in educating faculty

and administration about the challenges URM students face and in being a phenomenal advocate for the Training Coordinator.

The participants were very receptive of the presentation. Some of the comments and suggestions were:

- The Training Coordinators should be applauded for taking the initiative to bring this to the attention of the leadership both of their home institution and the NHGRI and for thinking about their future. This demonstrates the collegiality of the Training Coordinators.
- Principal Investigators should look more holistically at and be sensitive to the career aspirations of Training Coordinators. It would be an irony if the Training Coordinators are helping trainees pursue their ambitions while the ambitions of the Training Coordinators are ignored.
- Training Coordinators should be provided release time to get expertise in areas they wish to pursue as the next step along their career path, such as taking courses, collaborating on a research project, etc.
- Training Coordinators should discuss their career aspirations with their PIs.
- Training Coordinators should be encouraged to find appropriate mentors in their own or other institutions, based on their future interest.
- Training Coordinators should be encouraged to explore the concrete steps necessary to lead them to their career goals.
- Training Coordinators should take advantage of free tuition offered by most institutions to acquire expertise needed to pursue their career aspirations.
- The resulting explorations of the Training Coordinators should lead them to learn more about training interventions and evaluations, which should translate into stronger programs and stronger evaluation.

No decisions were made at this meeting, but the issue is important enough that it will be continued in future meetings.

National Human Genome Research Institute
National Institutes of Health

AGENDA
NHGRI Research Training Advisory Committee Meeting with DAP[3] and T32 Grantees
Ninth Annual Meeting

Dana-Farber Cancer Institute

The Inn at Longwood Medical
Boston, MA

8:30 am October 18, 2011 - 1:00 pm October 19, 2011

PURPOSE OF MEETING: This meeting will have four open and one executive sessions.

Session I: Pre-Meeting Tutorial with T32 Training Directors to discuss challenges with preparing IRB packages and gaining access to REDCap

Session II: Results of pilot to capture data on a limited number of past T32 trainees

Session III: DAP pilot using REDCap.

Session IV: a multi-session to include: (a) research and program highlights by current and past trainees; (b) a panel discussion on the Science articles on Race, Ethnicity, and NIH Funding (http://www.sciencemag.org/site/feature/data/hottopics/race-nihfunding/) and (c) a briefing from a member of the NIH Director's ACD Diversity in Biomedical Research Working Group (http://acd.od.nih.gov/DBR.asp)

Session V: Executive Session with Research Training Advisory Committee, DACC Team and NHGRI staff.

Tuesday, October 18, 2011

8:00 am   Registration/Coffee/Meet/Greet

Session I   **IRB/REDCapTutorial for T32 Training Program Directors**
8:30 am   T32 Program Directors and DACC Team

Session II

---
[3] Diversity Action Plan, formerly Minority Action Plan

9:30 am   T32 Pilot Using REDCap[4] (15 minute per program)

                                University of Michigan (17)
                                University of Washington (17)
                                Stanford University (15)
                                Washington University, St. Louis (13)
                                University of Pennsylvania (13)
                                University of California, Berkeley (12)
                                University of California, Los Angeles (10)
                                University of Wisconsin (9)
                                Massachusetts Institute of Technology (9)
                                Yale University (8)
                                Princeton University (8)
                                MIT/Whitehead/Broad (3)

12:30 pm   DACC Cumulative Data from REDCap
                        Open Discussion

1:00 pm   Lunch

2:00 pm
Session III   DAP pilot using Spreadsheets and REDCap (15 minutes per program)

                        Centers of Excellence in Genomic Sciences

                        Arizona State University/U. Washington
                        Johns Hopkins University
                        University of Southern California
                        Stanford University
                        Harvard Medical School
                        Dana-Farber Cancer Institute

                        Large Scale Sequencing Centers

                        The Broad Institute
                        Washington University, St. Louis
                        Baylor College of Medicine

                        Databases

                        Harvard University/University of New Mexico
                        University of California, Santa Cruz
                        The Jackson Laboratory

5:30   DACC Cumulative Data from REDCap
                        Open Discussion

6:30 pm   Adjourn

7:00 pm   Dinner and Networking[5]

---

[4] Number in parenthesis indicates number of years the program has been active.

8:00 am	Coffee (Meet/Greet/Networking)

Session IV: **DAP Symposium**

8:30 am Introduction --Bettie J. Graham

Session IVa **DAP Trainees' (Current and Past) Presentations**
Moderator: Eboney Smith

Chris Guzman
UG(6/11-8/11)→UG(Senior)
Boston College

Luis Barrera
UG (Summer 2009)→Grad School
Harvard/MIT

Danielle Brydsong
PostBac(3/08-6/10)→Graduate School
U Mass Medical School

Yemi Adesnoka
PostDoc (9/2007-3/2011)→Entrepreneur
Pathogenica

Levi Garraway
F31 MD/PhD Student (1992-1999)→Faculty
Dana Farber Cancer Institute

Session IVb **Panel Discussion on Science Article: Race, Ethnicity, and NIH Funding[6]**
Introduction: Bettie J. Graham
Moderator: Kim Nickerson (NHGRI Research Training Advisor)
Participants: T32 Program Directors

Isaac Kohane (Harvard/MIT)
Barak Cohen (Washington University, St. Louis)
Alison Gammie (Princeton)
Jeanette Papp (UC, Los Angeles)
Jo Handelsman (Yale University)
David C. Schwartz (University of Wisconsin)

---

[5] Karen Burns White has reservations for 7:00 p.m., Tuesday, October 18; Darryl's Corner Bar and Kitchen; 604 Columbus Ave. (1 block from Mass Ave.); Boston, MA 02118; 617-536-1100.

[6] Science article, Race, Ethnicity and NIH Funding:
http://www.sciencemag.org/site/feature/data/hottopics/race-nihfunding/

Arend Sidow (Stanford University)
Willie Swanson (University of Washington, Seattle)

Session IVc	**Overview-NIH Director's ACD Diversity in Biomedical Research Working Group** Jose C. Florez Member of Working Group
11:300 am	**Remarks** Eric Green, Director National Human Genome Research Institute
12:00	**Open Discussion**
12:30	Working Lunch--Career Paths for Training Coordinators Cherilynn Shadding, Moderator
1:00	Adjourn

_____

_____

1:30	**Executive Session** (Advisors, DACC Team, NHGRI Staff)

Last revised October 12, 2011.

Appendix II

NHGRI Research Training Advisory Committee Meeting with DAP[7] and T32 Grantees
Ninth Annual Meeting
Dana-Farber Cancer Institute
The Inn at Longwood Medical | Boston, MA
8:30 am October 18, 2011 - 1:00 pm October 19, 2011

Participant List

NIH DIRECTOR'S ADVISORY COMMITTEE TO THE DIRECTOR

Jose C. Florez, M.D., Ph.D.
Member,
Diversity in Biomedical Research Working
Group
Assistant Professor of Medicine
Harvard Medical School
Center for Human Genetic Research
Diabetes Unit, Department of Medicine
Massachusetts General Hospital
Richard B. Simches Research Center
50 Staniford St. 3rd floor
Boston, MA 02114
(617) 726-8722

TRAINEE PANEL

Luis Barrera, B.S
Graduate Student
Harvard & MIT
77 Massachusetts Avenue
Cambridge, MA
lbarrera@fas.harvard.edu
Undergrad & Grad (T32)
BIG Summer & HST PhD program
Summer 2009 & Current

Danielle Brydsong, B.S
Graduate Student
U Mass Medical School
55 Lake Avenue North
Worcester, MA
danielle.byrdsong@umassmed.edu
Post Baccalaureate
DFCI CEGS
March 2008-June 2010

Yemi Adesnoka, Ph.D
Entrepreneur
Pathogenica
245 First Street
Cambridge, MA
yemi@Pathogenica.com
Post Doctoral Fellow
Harvard CEGS

Chris Guzman
Undergraduate (Senior)
Boston College
140 Commonwealth Ave
Chestnut Hill, MA
guzmanch@bc.edu
Harvard CEGS
June to August 2011

---

[1]Diversity Action Plan, formerly Minority Action Plan
[2]Will not attend

Sept 2007-March 2011

Levi Garraway, MD/Ph.D
Faculty
Dana Farber Cancer Institute
44 Binney St
Boston, MA
levi_garraway@dfci.harvardd.edu
Graduate/Medical Student (F31)
(1992-1999)

NATIONAL HUMAN GENOME RESEARCH ADVISORY COUNCIL MEMBERS

Pearl O'Rourke, M.D.
Director, Human Research Affairs
Suite 1002
Partners HealthCare Systems, Inc.
116 Huntington Avenue
Boston, MA 02115
(617) 424-4152
porourke@partners.org

David R. Williams, Ph.D.
Florence Sprague Norman & Laura Smart
Norman Professor of Public Health
Professor of African and African American
Studies and of Sociology
Harvard School of Public Health
677 Huntington Ave, 6th Floor
Boston, MA 02115
(617) 432-6807
dwilliam@hsph.harvard.edu

RESEARCH TRAINING ADVISORY COMMITTEE

Walter E. "Skip" Bollenbacher
Integrated Learning Innovations
55219 Broughton
Chapel Hill, NC 27517
(919) 370-9425
skipbollenbacher@mac.com

Kim J. Nickerson
University of Maryland, College Park
Tydings Hall, Room 2141
College Park, MD 20742
(301) 405-7599
knickerson@bsos.umd.edu

Vanessa Northington Gamble
The George Washington University
2130 H Street, NW
Washington, DC 20052
(202) 994-0978
vngamble@gwu.edu

Merna Villarejo[2]
University of California, Davis
2530 Whittier Drive
Davis, CA 95618
(530) 756-2342
mrvillarejo@ucdavis.edu

CENTERS OF EXCELLENCE IN GENOMIC SCIENCE

Lee Bistoi
Harvard Medical School
77 Avenue Louis Pasteur, NRB 238H
Boston, MA
(617) 432-5742
lbitsoi@genetics.med.harvard. edu

Steven Finkel
University of Southern California
1050 Childs Way, RRI 201
RRI 201, Los Angeles, California 90089-2910
(213) 821-1498
sfinkel@usc.edu

Allison Kang
University of Washington
Box 352180
(206) 221-3056
allikang@u.washington.edu

Deirdre R. Meldrum
The Biodesign Institute
Arizona State University
1001 S. McAllister Ave.
Tempe, AZ 85287-7101
(480) 727-9397
deirdre.meldrum@asu.edu

Vicky Schneider
Johns Hopkins University
5901 Smith Avenue, McAuley Hall Ste 400
Baltimore, MD 21209
(410) 735-6219
vschneider@jhu.edu

Marc Vidal
Dana-Farber Cancer Institute
450 Brookline Avenue
Boston, MA 02115
617-632-5114
Marc_Vidal@dfci.harvard.edu

Andy Feinberg
Johns Hopkins University School of Medicine
855 N. Wolfe St., Rangos 570
Baltimore, MD 21205
(410) 614-3489
afeinberg@jhu.edu

David E Hill
Dana-Farber Cancer Institute
450 Brookline Avenue
Boston, MA 02115
617-582-9115
David_Hill@dfci.harvard.edu

Kimberly Lohrfink
Johns Hopkins University
McAuley Hall Ste 400
5901 Smith Avenue
Baltimore, MD 21209
(410) 735-6219
klohrfi1@jhu.edu

Lisa Peterson
University of Washington
Box 352180
Seattle, WA 98195-2180
(206) 685-2593
lisapete@u.washinton.edu

Simon Tavare'
University of Southern California
1050 Childs Way, RRI 201
Los Angeles, CA 90089-2910
(213) 740-1498
stavare@usc.edu

Karen Burns White
Dana-Farber Cancer Institute
44 Binney Street BP322A
Boston, Massachusetts 02115
(617) 632-3244
Karen_burnswhite@dfci.harvard.edu

Dawayne Whittington
Strategic Evaluations, Inc
5501 Woodberry Road
Durham, NC 27707
(919) 403-9584
Dawayne@ncstrategic.com

Elizabeth Zdunich
Dana-Farber Cancer Institute
450 Brookline Ave, BP322A
(617) 632-3028
elizabeth_zdunich@dfci.harvard.edu

LARGE SCALE SEQUENCING

Bruce Birren
Broad Institute
7 Cambridge Center
Cambridge, MA 02142
(617) 258-0913
bwb@borad.mit.edu

Debra Murray
Human Genome Sequencing Center – Baylor
One Baylor Plaza N1519
Houston, TX 77030
(713) 798-8083
ddm@bcm.edu

Cherilynn Shadding
Washington University in St. Louis
4444 Forest Park Blvd
(314) 286- 1897
cshadding@wustl.edu

Eboney Smith
Broad Institute
7 Cambridge Center
Cambridge, MA 02142
(617) 324-1237
esmith@broad.mit.edu

INSTITUTIONAL TRAINING GRANTS

Anita Blanco
Stanford University
300 Pasteur Dr. M350
Stanford, CA 954305-5120
(650) 736-7435
Anita.blanco@stanford.edu

Brian D. Gregory
Penn Genome Frontiers Institute
433 South University Avenue
Philadelphia, PA 19104-6108
(215) 746-4398
bdgregor@sas.upenn.edu

Susanne Churchill
Harvard-MIT Division of Health Sciences
&Technology (HST)
77 Avenue Louis Pasteur, c/o 250
Boston, MA 02115
(615) 525-4465
schurchill@partners.org

Barak Cohen
Washington University School of Medicine
Campus Box 8510,
4444 Forest Park Parkway
St. Louis, MO 63130
(314) 3624-3674
cohen@genetics.wustl.edu

Alison Gammie
Princeton University
334 Lewis Thomas Laboratory
Princeton, NJ 08540
(609) 258-6380
agammie@princeton.edu

Jo Handelsman
Yale University
219 Prospect Street
(203) 432-9119
jo.handelsman@yale.edu

Dawn Keene
University of Michigan
1415 Washington Heights, MA2424
Ann Arbor, MI 48109
(734) 647-3944
dhke@umich.edu

Louise Pape
University of Wisconsin-Madison
3445 Biotechnology Center
425 Henry Mall
Madison WI 53706
(608) 265-7935
lpape@wisc.edu

David C. Schwartz
University of Wisconsin-Madison
425 Henry Mall
Madison, WI 53706
(680) 265-0546
dcschwartz@wisc.edu

Arend Sidow
Stanford University
300 Pasteur Drive
Stanford, CA 94305
(650) 498-7024
arend@stanford.edu

Hannah Chervita
University of Pennsylvania
4125 Blockley Hall
432 guardian Drive
Philadelphia, PA 19104
(215) 746-2807
chervitz@exchange.upenn.edu

Isaac Kohane
Harvard Medical School
Children's Hospital Boston
Director, Countway Library of Medicine, HMS
Co-Director, Ctr for Biomedical Informatics, HMS
Director, Children's Hospital Informatics Program
Director, i2b2 National Center for Biomedical Informatics
(617) 432-2145
isaac_kohane@hms.harvard.edu

Jeanette Papp
University of California, Los Angeles
695 Charles E. Young Drive South
Los Angeles, CA 90095-7088
(310) 825-6204
jcpapp@mednet.ucla.edu

Julianna Prieto
Stanford University
300 Pasteur Dr
Stanford, CA 94305
(650) 736-7435
jeprieto@stanford.edu

Willie J. Swanson
University of Washington
1705 NE Pacific Street
Seattle, WA 98195
(202) 616-5065
wswanson@gs.washington.edu

DATABASES

William Gelbart
Harvard University
16 Divinity Avenue, Room 4059
Cambridge, MA 02138
(617) 495-2906
Gelbart@morgan.harvard.edu

Paul Szauter
The Jackson Laboratory (Harvard/UNM)
600 Main Street
Bar Harbor, ME 04609
(207) 288- 6426
Paul.Szauter@jax.org

Susan McClatchy
Mouse Genome Informatics
The Jackson Laboratory
600 Main Street
Bar Harbor, ME 0460
(207) 288-6431
smc@informatics.jax.org

Zia Isola, Ph.D.
University of California, Santa Cruz
1156 High Street, CBSE-ITI, University of
California, Santa Cruz, CA 95064
(813) 459-1702
isola@soe.ucsc.edu

DATA ANALYSIS AND COORDINATING CENTER

Treva Rice
660 South Euclid Avenue Box 8067
St. Louis, 63110
(314) 362-3662
treva@wubios.wustl.edu

Donna Jeffe
Washington University School of Medicine
4444 Forest Park Blvd Box 8504
St. Louis, MO 63108
Dijeffe@dom.wustl.edu

Karen Clark Laseter
Washington University School of Medicine
4444 Forest Park Blvd Box 8504
St. Louis, MO 63110
(314) 362-2349
karen@wubios.wustl.edu

Jeanne Cashman
Washington University School of Medicine
4444 Forest Park Blvd Box 8504
St. Louis, MO 63110
(314) 362-3615
jeanne@wubios.wustl.edu

NATIONAL HUMAN GENOME RESEARCH INSTITUTE STAFF

Patricia Brown (Technical Assistance)

National Human Genome Research Institute
National Institutes of Health
5635 Fishers Lane, Suite 4076/MSC 9305
Rockville, MD 20852-9305
(301)435-5662

campbelled@mail.nih.gov

Christine Cutillo (Analytical Assistance)
National Human Genome Research Institute
National Institutes of Health
5635 Fishers Lane, suite 4076/MSC 9305
Bethesda, MD 20892-9305
(301) 594-7116
cutilloc@mail.nih.gov

Carla L. Easter
National Human Genome Research Institute
National Institutes of Health
Bldg 31, Room B1B55, MSC 2070
31 Center Drive
Bethesda MD 20892-2070
(301) 594-1364
esterc@mail.nih.gov

Bettie J. Graham
National human Genome Research Institute
National Institutes of Health
5635 Fishers Lane, Suite 4076
Bethesda, MD 20892-9305
(301) 496-7531
Bettie_graham@nih.gov

Eric D. Green
Director
National Human Genome Research Institute
National Institutes of Health
31 Center Drive
Building 31, Room 4B09
Bethesda, MD 20892
(301) 496-0844
egreen@nhgri.nih.gov

Faith Harrow
NHGRI Training Program Coordinator
NHGRI Intramural Training Office
Building 12A, Room 1013, 123 South Drive
Bethesda, MD 20892-5613
(301) 451-3645
harrowf@mail.nih.gov

Carolyn Taylor (Technical Assistance)
National Human Genome Research Institute
National Institutes of Health
5635 Fishers Lane, Suite 4076/MSC
Rockville, MD 20852-9305
301.435.5565
taylorca@mail.nih.gov

Mark Guyer
National Human Genome Research Institute
National Institutes of Health
5635 Fishers Lane, Suite 4076
Bethesda, MD 20892-9305
(301) 496-7531
Mark_guyer@nih.gov

Jeffery A. Schloss
National Human Genome Research Institute
National Institutes of Health
5635 Fishers Lane, Suite 4076
Bethesda, MD 20892-9305
(301) 496-7531
Jeff_schloss@nih.gov

Revised 10/12/2011

Appendix III

Questions are listed primarily under the type of program (DAP or T32) being discussed when the question was posed. However, some of the questions will apply equally to both databases. Also, selected notes from the follow-up Advisory meeting listed.

DAP

- THESE TASKS SHOULD BE COMPLETED IMMEDIATELY SO THAT DATA ENTRY CAN CONTINUE AFTER ADJUSTING A FEW ITEMS
    - Review all questions to ensure none are ambiguous: e.g.
        - Karen has a list of questions from <u>both DAPs and T32s</u>
    - Some questions not appropriate for given program type:
        - Need to ensure data scored appropriately
    - Expand alternatives for faculty categories, e.g. leader of research group (<u>both DAP and T32</u>)
        - Make sure there are "other" categories for faculty level positions
    - Year started educational level (<u>both DAP and T32</u>)
        - For each degree entered (high school, bachelors, masters, doctorate, etc)
    - Major activity: Medical research vs. STEM vs. Clinical practice only (<u>both DAP and T32</u>)
        - Ensure these questions are presented clearly, unambiguously
    - Termination: (<u>both DAP and T32</u>)
        - Allow trainee to be "dropped" from further follow-up and specify reasons such as, choice/decision by trainee, death, etc
    - Race and Ethnicity Coding: (<u>both DAP and T32</u>)
        - Hispanic (yes, no)
        - Multiple boxes for race
        - Re-calculate percent minorities
    - Fields of interest possibility (<u>both DAP and T32</u>)
        - Allow for multiple interests (check all that apply)
    - Honors at high school
        - Typically, students give too much information (too much to code), need to work with the K-12 program coordinators to determine specifically what honors are important to record.
    - Coding educational degrees: Need to add post-bacc (number already reserved, but need to activate it)
    - Ensure we are capturing promotions at follow-up (both DAP and T32)
- THESE ITEMS WILL TAKE LONGER TO OPERATIONALIZE AND SOME WILL REQUIRE DISCUSSION BEFORE DECIDING WHETHER TO INITIATE
    - New Categories of Questions to add to <u>Program</u> database (<u>both DAP and T32</u>) -- Program components – what kind of training is provided in the program. <u>Allow for multiple check boxes (as describe below) as well as other-specify.</u> Note, these questions are asked ONLY at the program level (not for each trainee). HOWEVER, will allow for the possibility that new components may be added or old ones removed across time. Thus, a given program description will apply during specified training periods. The following is a <u>first draft</u> of some basic program components:
        - Scientific preparation, including didactic coursework

- Research methods training
  - Bench, statistical, computer
- Communication skills
  - Presentation skills training and practice
  - Scholarly writing
- Career preparation, including CV construction
- Mentoring and Interactions with other academics
  - Department- or University-wide exposure
    - Attending seminars (and interacting) with other researchers / faculty / staff
  - Primary Daily Work Environment: Classroom setting, Laboratory setting, Library setting
  - Daily supervision: Who provides daily supervision? Faculty, post-docs, research scientists, lab leaders, staff/technicians, other students
  - Daily evaluation: Who provides daily/regular evaluation? Faculty, post-docs, research scientists, lab leaders, staff/technicians, other students
  - Primary Mentoring: Who provides daily/regular/primary intellectual stimulus and feedback: Faculty, post-docs, research scientists, lab leaders, staff/technicians, other students
  - How often do trainees receive feedback on work / progress
- Upload CV on a regular basis … ideally CV should be "standardized"
- Upload official biosketch on a regular basis … appropriate only for upper-level trainees / alumni
- REMEMBER, need to balance need for additional questions with the potential for overburdening the trainees
  - Ways to reduce load include gathering some data from public sources e.g. …
    - Publications, rather than ask trainee to enter, get information from uploaded CVs and from performing online searches (medline, scopus, web of knowledge)
    - Presentations and honors, also get from uploaded CV
    - Have student sign releases in order to gather standardized scores from official sources (GPAs, GRE, MCAT, SAT, ACT, etc.)
- Trainees who participate in multiple programs (both DAP and T32s)
  - Keep same ID number
  - Making the connection
    - If secondary program knows about former participation (specific baseline question about former DAP and non-DAP program participation) can ask DACC for old ID. But if not known, DACC will make the connection later.
      - DACC-level mechanism to check new entries against old entries (name and DOB). Program-wide check (across DAPs and T32's) at regular follow-up intervals. Allows for identifying and tracking the same student as they matriculate through more than one program.
  - Program responsible for follow-up is the last program that trainee attended
    - Baseline data from old program will be available to new program. Thus, new program should only need to fill in any missing data from baseline rather than collect new baseline data from scratch.

- o DATA ENTRY
  - ▪ IMPORT DATA DIRECTLY INTO REDCap from other data entry systems using excel format (both DAP and T32)
    - • Some programs apparently already have on-line systems in place to collect data. They are requesting that DACC send the basic REDCap required information (in form of excel file) so that they can add this to their own on-line surveys. This would be efficient for them because they will not have to re-keypunch data into REDCap after it is collected in alternative format.
      - o It will likely involve extensive set-up time
      - o It will likely involve extensive investment in time if/when REDCap database is revised … this is particularly true in the early period when database is still being developed
  - ▪ SELF-REPORT – TRAINEES ENTER DATA DIRECTLY INTO SURVEY FOR FOLLOW-UP.
    - • How would this possibility overlap / conflict with the previous suggestion to bypass REDCap altogether and just send excel information to DACC?
    - • For example, program coordinators send first message … it's coming … then DACC sends hard message with link …
      - o Discussion: Some are in favor, and others are not. Probably not an issue of data quality, but rather an issue of reduced quantity of data in the long run if the personal touch from coordinators is not primary contact.
        - ▪ Suggestion … have data coordinators still do initial follow-up contact and short phone interview
      - o In fact, even having the program coordinators send the online link also (rather than having DACC send link) may encourage better participation for self-reporting directly into database
- • THESE ARE NON-DATA BASE QUESTIONS THAT CAME UP DURING THE MEETING
  - o Questions concerning whether there are additional things the program coordinators can do at follow-up to help promote the careers of the alumni? Some categories include …
    - ▪ Post doc support – apply for F32 for second year (paying for fringes?)
  - o TO ENCOURAGE MAXIMUM FOLLOW-UP PARTICIPATION:
    - ▪ Is yearly too often?
    - ▪ What's in it for me? Summary report from database … e.g. create a resume/report to end back to them

T32'S
- • THESE TASKS SHOULD BE COMPLETED IMMEDIATELY SO THAT DATA ENTRY CAN CONTINUE AFTER ADJUSTING A FEW ITEMS
  - o Review all questions to ensure none are ambiguous: e.g. (both DAP and T32)
    - ▪ Baseline education question misinterpreted as current
      - • Karen has a list of questions from both DAPs and T32s
        - o Create Combined pre-doc/post-doc category for Type of T32 Program
  - o Trainees not completing all information on appointment form or questions about quality / accuracy of data
    - ▪ Should coordinators fill in with what is known from other sources or not?
    - ▪ Answer:

- Until IRB is taken care of, cannot accept data from other sources.
- Should update this baseline information when get to other baseline questions (after IRB approved)
  - o Older versus new Statement of Appointment forms (PHS-2271)
    - Race/ethnicity questions missing information on older forms (<u>both DAP and T32</u>)
      - Codes on older forms are not defined. Data should be entered "as is" even though codes not defined.
        - o DACC (and NIH) will discover (or reverse engineer if necessary) and define the codes
        - o DACC to add field that will identify form version
      - Correct calculation of % underrepresented minorities considering separately questions for Hispanic and allowing for multiple races to be checked
    - Also, compare other fields for differences across time (fields of study, educational background, etc)
      - For example, do code definitions remain constant across forms
  - o Grading system (<u>both DAP and T32</u>)
    - Allow for specifying grading system (GPA)
    - However, this is NOT a question on the Statement of appointment form
    - <u>Will likely need to do informatics search and check to school to see if conversion is necessary</u>
  - o Drop-down menu for other DAP / T32 programs (<u>both DAP and T32</u>)
    - For questions about other DAPs or T32's attended, have drop-down menu for all current and previous (if known) NHGRI programs (country-wide)
    - Additional drop-down choice would be "other" and then specify
- THESE ITEMS WILL TAKE LONGER TO OPERATIONALIZE AND SOME WILL REQUIRE DISCUSSION BEFORE DECIDING WHETHER TO INITIATE
  - o Generate periodic reports (<u>both DAP and T32</u>)
    - Missing data reports
    - DACC QC: Specific items that seem out of range that coordinators need to check
    - Program QC: Once reports are generated and sent to Programs, they should review and let DACC know if data do not match their understanding/knowledge.
  - o Future: undergrad R25 + grad (T32)
  - o Online self-reporting system for long-term follow (see similar DAP question)
  - o Additional questions (similar to DAP)
    - Focus on mentorship – no questions currently in database about mentorship (?)
      - NOT cookie cutter academic advising
    - Capture information about the program
      - # and diversity of faculty
      - What was the "pool" that trainees selected from … did other programs on campus get 1st pick
    - Early applicants doing better than later applicants?
      - Add date of application and range of dates that applications were accepted?
  - o Adding additional trainees to T32 forms?
    - T32 and other efforts contribute to URMs but not actually funded on T32
      - How to incorporate into the DACC database
      - <u>Need to talk with Bettie</u> to see exactly what might be needed here
      - MIT will be having UG program soon. Need to allow for this.
  - o Try "randomized trial" --- Jo H. suggested, but this is not design of our project

- Rather, will compare our numbers to national statistics (see section below)
  - o Ask T32s if they all use PHS 416-7 (<u>Termination</u> of Appointment Form)

Advisors Suggestions regarding database items
- Be sensitive to balance between overburden in terms of ensuring follow-up versus have informative dataset
- Program elements:
  - o Codes for universities (typically found such as top research, education, etc) as well as resources for funding the trainees. For example, what other types of training programs and funding sources for students are available at that institution? Some programs may have less access to top level students because other programs get first pick.
- Stay current with other National databases and Programs and make annual comparisons with our own
  - o IPEDS (earned doctorates) (http://nces.ed.gov/ipeds/)
  - o ISR (Michigan)
  - o NIGMS: Minority Biomedical Research Support (MBRS) (http://www.nigms.nih.gov/Research/Mechanisms/MBRSAwards.htm) and several programs including
    - Support of Competitive Research (SCORE—for minority serving institutions), Research Initiative for Scientific Enhancement (RISE—for minority serving institutions) and Initiative for Maximizing Student Development (IMSD—for research-oriented institutions)
  - o NSF & IPEDS databases (https://webcaspar.nsf.gov/)
  - o National Center for Educational Statistics (http://nces.ed.gov/)
- Can our T32 database be a model for other NIH Institutes?
- Always keep eye on how our data can be used to make the programs better.
- Design Issues
  - o Buff up the program description database to include list of core program elements. This will be used for predictive analyses, but also for the White paper (see below)

WHITE paper: Consider writing a "white" paper for the NHGRI programs. This would best be done earlier than later (while the fire is still hot).

"For a modest investment of dollars, a National evaluation database has been set up to monitor education and training of … never been done before"

- Get copies of previous paper(s) for comparison
  - o For example, Meyerhoff paper (Maton, KI and Hrabowski III, FA)
- Need basic descriptions of each program … may be able to gather this from the grant applications … Bettie?
- Note, we are not randomizing people or treatments and so we will be using comparison groups (not formal controls) such as other national databases on educational attainment
  - o Will need to be current on national statistics as point of comparison
- Internal History: When first started thinking about this National Database ~2007 at BWI meeting (look at minutes posted on website
- Any "preliminary" stats can look at now?

Which is the "white paper" on the Meyerhoff program? Kim Nickerson says the earlier papers (prior to 2000) would best capture the "white paper" theme. However, in follow-up e-mail correspondence with Ken Maton, he indicated he had not written a white paper.

Appendix IV

Key References on Unconscious Bias
(Submitted by Jo Handelsman)

(Banaji and Greenwald 1995; Bertrand 2004; Council 2007; Dasgupta and Greenwald 2001; Dovidio and Gaertner 1996; Dovidio and Gaertner 2000; Dovidio and kawakami 1997; Fazio, Jackson, Dunton, and Williams 1995; Green, Carney, Pallin, Ngo, Raymond, Iezzoni, and Banaji 2007; Greenwald and Banaji 1995; Greenwald, Banaji, Rudman, Farnham, Nosek, and Mellott 2002; Gregg, Seibt, and Banaji 2006; Hodson 2002; Hurtado, Cabrera, Lin, Arellano, and Espinosa 2009; Kawakami, Dion, and Dovidio 1998; Kost-Smith 2011; Krieger, Carney, Lancaster, Waterman, Kosheleva, and Banaji 2010; Lowery, Hardin, and Sinclair 2001; Martell 1991; Migdal 1998; Mitchell, Ames, Jenkins, and Banaji 2009; Norton and Sommers 2011; Nosek, Smyth, Sriram, Lindner, Devos, Ayala, Bar-Anan, Bergh, Cai, Gonsalkorale, Kesebir, Maliszewski, Neto, Olli, Park, Schnabel, Shiomura, Tulbure, Wiers, Somogyi, Akrami, Ekehammar, Vianello, Banaji, and Greenwald 2009; Perdue, Dovidio, Gurtman, and Tyler 1990; Rosenthal and Crisp 2006; Schultz, Hernandez, Woodcock, Estrada, Chance, Aguilar, and Serpe 2011; Steele and Aronson 1995; Tregenza 2002; Uhlmann and Cohen 2005; Walton and Cohen 2011)

Banaji, M. R. and A. G. Greenwald. 1995. "Implicit gender stereotyping in judgments of fame." *J Pers Soc Psychol* 68:181-98.

Bertrand, M. and S. Mullainathan. 2004. "Are Emily And Greg Ore Employable Than Lakisha And Jamal? A Field Experiment On Labor Market Discrimination." *American Economic Review* 94:991-1013.

Council, National Research. 2007. *Beyond Bias and Barriers: Fulfilling the Potential of Women in Academic Science and Engineering*. Washington, D.C.: National Academy Press.

Dasgupta, N and A G Greenwald. 2001. "On the malleability of automatic attitudes: combating automatic prejudice with images of admired and disliked individuals." 81:800-814.

Dovidio, John F and Samuel L Gaertner. 1996. "Affirmative action, unintentional racial biases, and intergroup relations."75.

—. 2000. "Aversive racism and selection decisions: 1989 and 1999."319.

Dovidio, John F and Kerry kawakami. 1997. "On the nature of prejudice: Automatic and controlled processes." *Journal of Experimental Social Psychology* 33:510.

Fazio, Russell H, Joni R Jackson, Bridget C Dunton, and Carol J Williams. 1995. "Variability in Automatic Activation as an Unobtrusive Measure of Racial Attitudes: A Bona Fide Pipeline?" *Journal of Personality & Social Psychology* 69:1013-1027.

Green, A. R., D. R. Carney, D. J. Pallin, L. H. Ngo, K. L. Raymond, L. I. Iezzoni, and M. R. Banaji. 2007. "Implicit bias among physicians and its prediction of thrombolysis decisions for black and white patients." *J Gen Intern Med* 22:1231-8.

Greenwald, A. G. and M. R. Banaji. 1995. "Implicit social cognition: attitudes, self-esteem, and stereotypes." *Psychol Rev* 102:4-27.

Greenwald, A. G., M. R. Banaji, L. A. Rudman, S. D. Farnham, B. A. Nosek, and D. S. Mellott. 2002. "A unified theory of implicit attitudes, stereotypes, self-esteem, and self-concept." *Psychol Rev* 109:3-25.

Gregg, A. P., B. Seibt, and M. R. Banaji. 2006. "Easier done than undone: asymmetry in the malleability of implicit preferences." *J Pers Soc Psychol* 90:1-20.

Hodson, G. 2002. "Processes in racial discrimination: Differential weighting of conflicting information." *PERSONALITY AND SOCIAL PSYCHOLOGY BULLETIN* 28:460-471.

Hurtado, Sylvia, Nolan Cabrera, Monica Lin, Lucy Arellano, and Lorelle Espinosa. 2009. "Diversifying Science: Underrepresented Student Experiences in Structured Research Programs." *RESEARCH IN HIGHER EDUCATION* 50:189-214.

Kawakami, Kerry, Kenneth L Dion, and John F Dovidio. 1998. "Racial prejudice and stereotype activation."416.

Kost-Smith, L.E., Pollock, S.J., Finkelstein, N.D., Cohen, G.L., Ito, T.A. and Miyake, A. 2011. "Replicating a Self-Affirmation Intervention to Address Gender Differences: Successes and Challenges
" *PERC Proceedings, AIP Press*.

Krieger, N., D. Carney, K. Lancaster, P. D. Waterman, A. Kosheleva, and M. Banaji. 2010. "Combining explicit and implicit measures of racial discrimination in health research." *Am J Public Health* 100:1485-92.

Lowery, B S, C D Hardin, and S Sinclair. 2001. "Social influence effects on automatic racial prejudice." 81:842-855.

Martell, Richard F. 1991. "Sex Bias at Work: The Effects of Attentional and Memory Demands on Performance Ratings of Men and Women1." *Journal of Applied Social Psychology* 21:1939-1960.

Migdal, M J. 1998. "The effects of crossed categorization on intergroup evaluations: A meta-analysis." 37:303-324.

Mitchell, J. P., D. L. Ames, A. C. Jenkins, and M. R. Banaji. 2009. "Neural correlates of stereotype application." *J Cogn Neurosci* 21:594-604.

Norton, M. I. and S. R. Sommers. 2011. "Whites See Racism as a Zero-Sum Game That They Are Now Losing." *Perspectives on Psychological Science* 6:215-218.

Nosek, B. A., F. L. Smyth, N. Sriram, N. M. Lindner, T. Devos, A. Ayala, Y. Bar-Anan, R. Bergh, H. Cai, K. Gonsalkorale, S. Kesebir, N. Maliszewski, F. Neto, E. Olli, J. Park, K. Schnabel, K. Shiomura, B. T. Tulbure, R. W. Wiers, M. Somogyi, N. Akrami, B. Ekehammar, M. Vianello, M. R. Banaji, and A. G. Greenwald. 2009. "National differences in gender-science stereotypes predict national sex differences in science and math achievement." *Proc Natl Acad Sci U S A* 106:10593-7.

Perdue, Charles W, John F Dovidio, Michael B Gurtman, and Richard B Tyler. 1990. "Us and Them: Social Categorization and the Process of Intergroup Bias." 59:475-486.

Rosenthal, H E S and R J Crisp. 2006. "Reducing stereotype threat by blurring intergroup boundaries." *Personality and Social Psychology Bulletin* 32:501-511.

Schultz, P. W., P. R. Hernandez, A. Woodcock, M. Estrada, R. C. Chance, M. Aguilar, and R. T. Serpe. 2011. "Patching the Pipeline: Reducing Educational Disparities in the Sciences Through Minority Training Programs." *Educational Evaluation and Policy Analysis* 33:95-114.

Steele, C M and J Aronson. 1995. "STEREOTYPE THREAT AND THE INTELLECTUAL TEST-PERFORMANCE OF AFRICAN-AMERICANS." *Journal of Personality and Social Psychology* 69:797-811.

Tregenza, Tom. 2002. "Gender bias in the refereeing process?" *Trends in Ecology & Evolution* 17:349-350.

Uhlmann, Eric Luis and Geoffrey L Cohen. 2005. "Redefining Merit to Justify Discrimination." *Society* 16:474-480.

Walton, Gregory M. and Geoffrey L. Cohen. 2011. "A Brief Social-Belonging Intervention Improves Academic and Health Outcomes of Minority Students." *Science* 331:1447-1451.

Appendix V

Career Survey of DAP Coordinators Part 1 - Basic Information

1. For what type of NHGRI parent grant do you serve as the DAP Coordinator (select all that apply)?
Production center
Training
CEGS
Database
Other_____ please indicate

2. How long have you served as the DAP (MAP) Coordinator ? (Please indicate in "other" how you heard about the position, eg. referral by DAP member, human resources, email from a colleague, etc)

Greater than 5 years
1-5 years
 less than 1 year

3. What is your highest level of education?
BA
MS
MD
PhD
MD/PhD
Other ___please specify

4. Have you had any postdoctoral/residency training? (If yes, please state the total length of time in "other")
Yes
No

5. Your work with the DAP represents what percentage of your total position?
75%-100%
50-75%
25-50%
<25%

6. Which term below best describes your current position at your institution
Faculty (tenure-track)
 Faculty (non-tenure track)
 Staff (graduate school)
 Staff (medical school)
 Staff (departmental)
Student (graduate or medical)
Other (please specify)

 7.   Please indicate your ethnicity

Hispanic
Non-Hispanic

8. Please indicate your racial background with which you identify (select all that apply)
Race
White
Black
Asian ___specify
Native American _____specify
Pacific Islander
Other_____please indicate

9. Indicate your gender

Female
Male
Other _____

10. Are you first-generation college?

Yes
No

Career Survey of DAP Coordinators Pt 2 - Promotion/Development

1. What are your duties at your institution? Select all that apply.

Research
Teaching
Administration
Other _____Please specify

2. What were your duties PRIOR to your role as DAP coordinator?

Research
Teaching
Administration
Other _____Please specify

3. To whom do you directly report at your institution (select more than one, only if the person holds more than one of the below positions)?

Dean
Department Chair

PI of the DAP
Key DAP faculty
Other_____ indicate

4. Do you serve as PI on any grant from a major federal/private funding institution? If "yes", please indicate the institutions, if "no" leave blank

NIH
NSF
DOD
DOE
HHMI
Other _____

5. Have you ever applied for grant funding as Principal Investigator? If yes, indicate the agency in "other"
Yes
No
If yes please indicate the funding agency _____

6. As the DAP Coordinator, have you experienced any of the following as a result of your work with the DAP (select all that apply)

Authored a publication
Indicate: first, senior or coauthor

Promotion to a higher/next level position

Invitation as a speaker for national conference

Presented research findings at a national conference

Served as a grant reviewer for a government agency

Served as reviewer for peer reviewed journal articles

7. Do you have any of the following career aspirations? (select all that apply)

Faculty (tenure track)
Principal investigator
Higher Administration (Chair, Deanships, etc)
Private Industry
Teaching
Entrepreneurship
Consulting
Other_____

8. If you have been with the DAP for longer than 1 year, indicate your level of agreement with the following statement. "My work with the DAP aligns well with my future aspirations"
Strongly agree
Agree
Neutral
Disagree
Strongly disagree

9. Do you think the DAP as an entity can play a role in your career development? (If you answer yes, please explain in "question 10"
Yes
No

10. Please offer any comments regarding your role as the DAP Coordinator or any suggestions/ideas you have regarding how the NHGRI-DAP could be more instrumental in your career development. Please indicate if you feel that your role has hindered your aspirations in some way.