

Gene x Environment x Development Interactions (GEDI) NIDA Strategic Planning Workgroup

April 17, 2015

Organizational Meeting

Co-Chairs:

Naimah Weinberg, M.D. (NIDA)

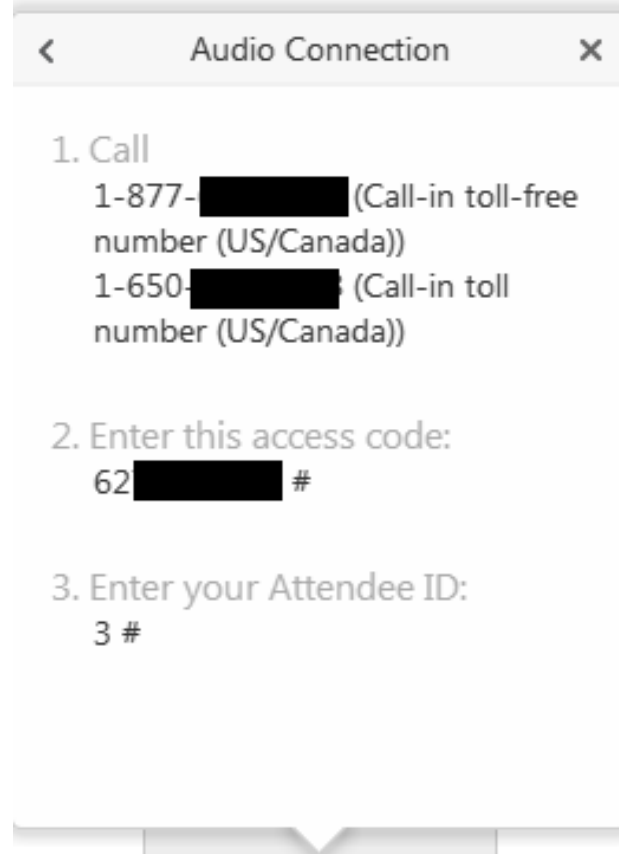
Jonathan Pollock, Ph.D. (NIDA)

WebEx Logistics

- Workgroup members have been made **panelists** in this WebEx Event
- You should have received the special panelist WebEx access url by email
- **First**, join the WebEx Event by clicking on your panelist url and enter all passcodes and passwords contained in the email

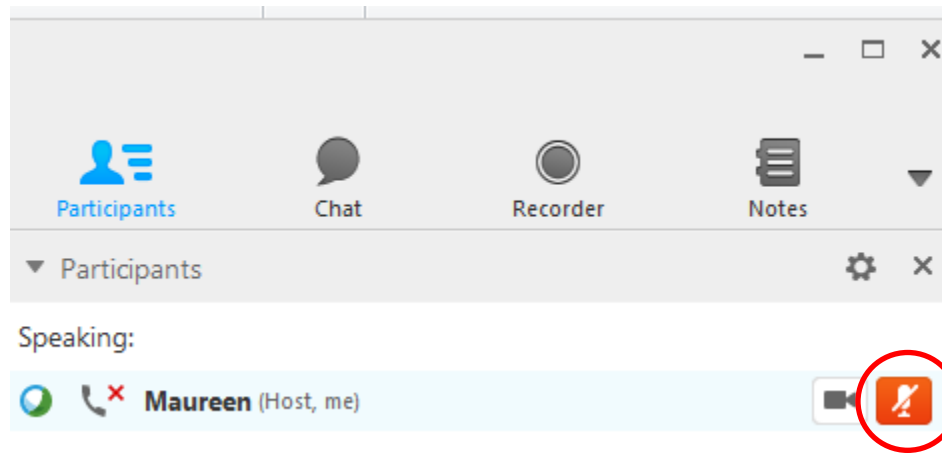
WebEx Logistics

- **Second**, join the WebEx Event by phone
 - Please dial in through the phone instead of using your computer and enter access code and attendee ID:



WebEx Logistics

- Third, you may mute yourself during the event to reduce background noise.
- We will mute panelists as necessary to control noise. Please **unmute to speak**.



WebEx Logistics

- **Note:**

- All strategic planning WebEx events are open to the public and recorded
- Non-workgroup members (attendees) will be muted throughout the meeting until the end
 - Public comments and questions will be accepted via chat and phone during the last 5 minutes
- There is a note-taker on the call and summaries will be posed on the website:
<http://www.drugabuse.gov/about-nida/strategic-plan>

Agenda

1. Introductions
2. NIDA Strategic Planning Process
3. Workgroup Charge
4. Workgroup Logistics
5. Background and Context
6. Discussion
7. Questions/comments
8. Action Items
9. 5 Minute Public Comment Period
10. Adjourn

GEDI Work Group Members

NAME	AFFILIATION
WORKGROUP CHAIRS	
Naimah Weinberg, MD	NIDA
Jonathan Pollock, PhD	NIDA
EXTRAMURAL WORKGROUP MEMBERS	
Danielle Dick, PhD	Virginia Commonwealth University
Margaret Daniele Fallin, PhD	Johns Hopkins Bloomberg School of Public Health
Hugh Garavan, PhD	The University of Vermont
John Rice, PhD	Washington University School of Medicine
E. Jane Costello, PhD	Duke University Center of Developmental Epidemiology
William G Iacono, PhD	University of Minnesota
Kenneth Kendler, MD	Virginia Commonwealth University
Eric Johnson, PhD	RTI International
Gustavo Turecki, MD, PhD	McGill University
NIH STAFF	
Maureen Boyle, PhD	NIDA
Hal Gordon, PhD	NIDA
Raul Mandler, MD	NIDA
Michele Rankin, PhD	NIDA
Joni Rutter, PhD	NIDA
John Satterlee, PhD	NIDA

NIDA Strategic Planning

- **December 2014**: RFI released to solicit feedback on NIDA's draft strategic priorities:
 - **Basic Neuroscience**: Improve our understanding of the basic science of drug use, addiction, vulnerability to addiction, and recovery
 - **Clinical and Translational Science**: Support the development of new and better interventions and treatments that incorporate the diverse needs of individuals with Substance Use Disorders (SUDs)
 - **Public Health**: Increase the public health impact of NIDA research and programs
 - **Science Infrastructure**: Enhance the national research infrastructure to support advancements in science
- **January 30, 2015**: Comment period closed
<http://grants.nih.gov/grants/guide/notice-files/NOT-DA-15-005.html>

Updating the NIDA Strategic Plan

- **Next steps:**

- **Bold Goals Challenge**: award up to \$10k in prizes for top ideas
- **Priority Area Workgroups**: created to gather input from internal and external experts on cross-divisional topics to develop strategic priorities for:
 - Big Data
 - Gene x Environment x Development interactions
 - Complex patients (multiple comorbidities)
- NIDA Division strategic planning is underway

NIDA Strategic Planning Timeline

- **RFI** – closed Jan 30, 2015
 - Review comments, by Mar 6, 2015
- **Priority Area Workgroups**
 - February through July, 2015
- **Bold Goals Challenge**
 - Winner selection, by August 2015
- **Draft Strategic Plan out for public comment**
 - Summer 2015
- **Final Strategic Plan**
 - Fall 2015

Workgroup Charge

- Develop strategic priorities for increasing our understanding of gene x environment x development interactions in substance use research.
 - Identify measurable objectives for each priority
 - Specify benchmarks for gauging progress toward each objective
- Deliverable: 3-5 page summary of recommendations for NIDA on GEDI research for the next 5 years
- Completion date: by Friday June 26th

Cross-cutting Themes to Consider During Strategic Planning

- The workgroup should also consider these cross cutting themes as appropriate
 - Training needs (training of clinicians common theme in RFI comments)
 - Addressing sex and gender issues
 - How to leverage technology advances
 - Leveraging innovations from other fields

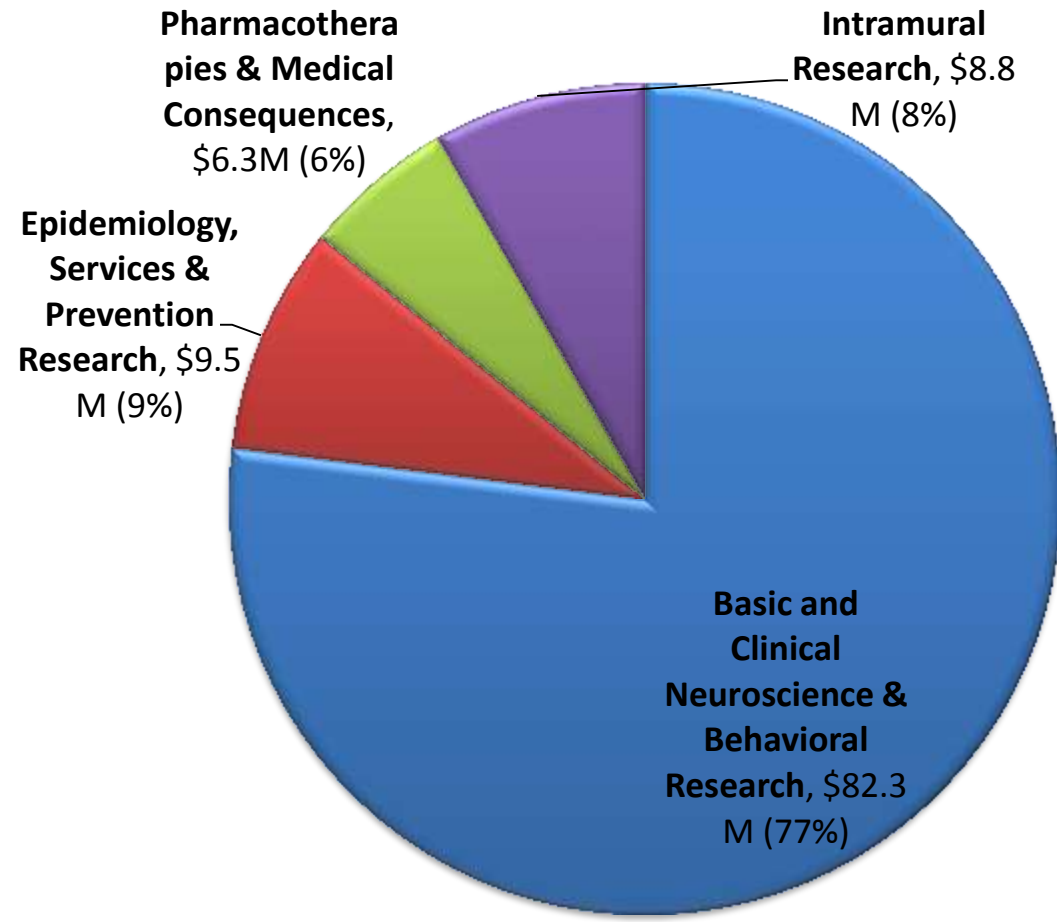
Workgroup Logistics

- Meet biweekly on Tuesdays from 3-4 pm EDT via WebEx
- All meetings are open to the public and will be recorded
- Meeting summaries will be provided to workgroup members within 5 business days
- All correspondence should be sent to:
NIDAOSPCPlanning@mail.nih.gov
- A web-based site will be established to facilitate document sharing

Background and Context

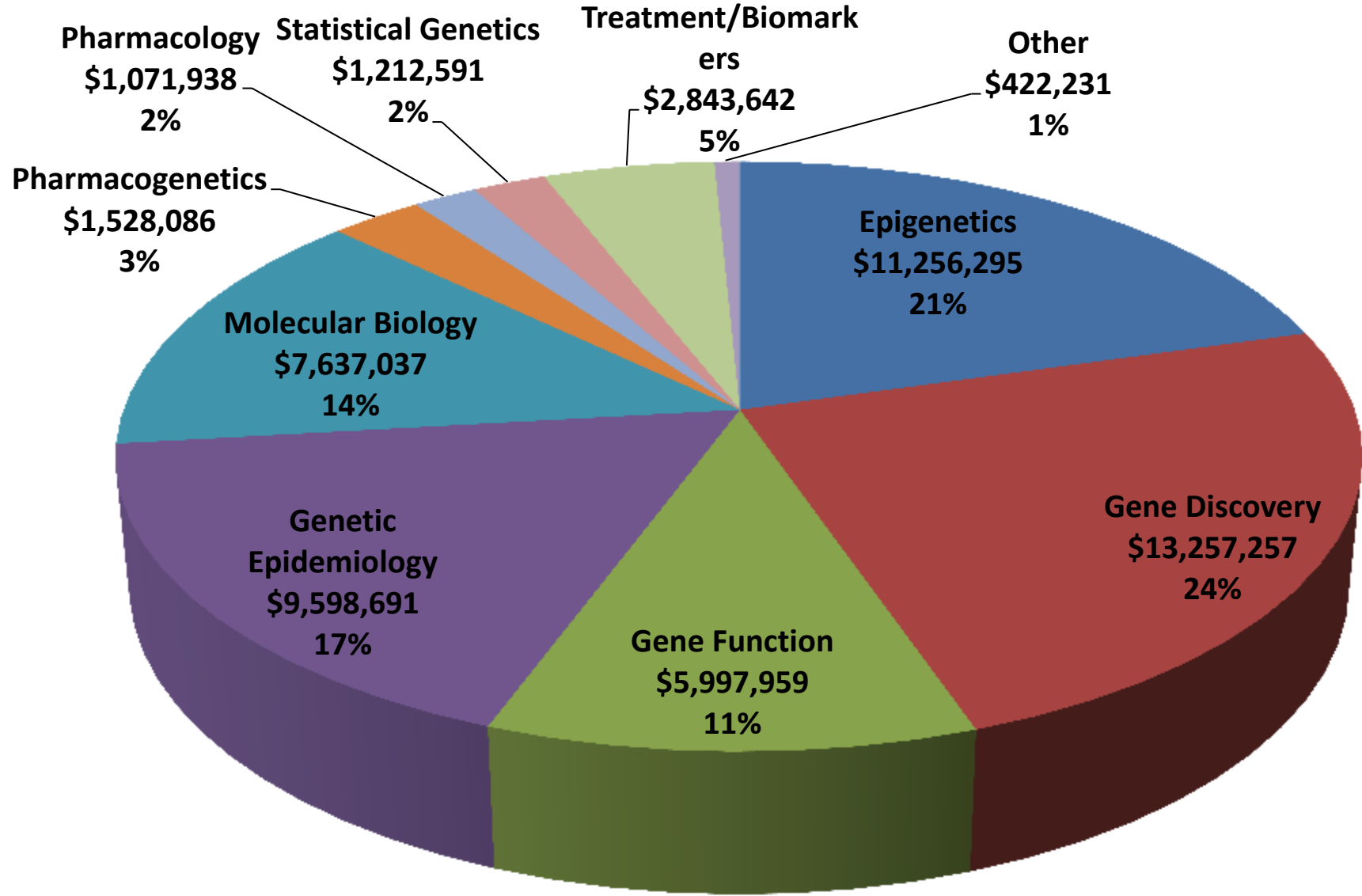
- NIDA investment in genetics research for fiscal years 2011-2014
- Distribution of funding by project activity and research area
- Research successes
- Research opportunities

NIDA FY14 Genetics Grants Portfolio



Total: Projects=334
Total Funding: Extramural grants, contracts, and IRP **\$109,367,884**

Distribution of NIDA Genetics R01 Grants (\$): FY13



NIDA Genetics Budget for past 5 years

FY	Project #	\$NIDA Genetics	\$NIDA total
09		\$119,673,292	\$1,032,457,000
10		\$123,466,484 (+3.1%)	\$1,059,266,000 (+2.5%)
11	308	\$117,644,982 (-4.8%)	\$1,048,776,000 (-0.99%)
12	334	\$117,842,083 (+0.1%)	\$1,051,410,000 (+0.2%)
13	317	\$106,412,147 (-9.7%)	\$ 993,404,000 (-5.5%)
14	334	\$109,367,884 (+3.0%)	\$ 1,017,956,722 (+2.4%)

NIDA Genetics Funding Opportunities

Title	Program Announcement ID	Release Date
Identification of Genetic and Genomic Variants by Next-Gen in Sequencing Non-human Animal Models	PAR-15-120 (U01)	February 13, 2015
Gene-Environment Interplay in Substance Use Disorders	PA-15-110 (R01) PA-15-111 (R03) PA-15-112 (R21)	February 05, 2015
Discovering Novel Targets: The Molecular Genetics of Drug Addiction and Related Co-Morbidities	PA-14-025 (R01)	December 10, 2013
Functional Genetics, Epigenetics, and Non-coding RNAs in Substance Abuse	PA-14-013 (R21) PA-14-014 (R01)	December 05, 2013
Research Education Grants for Statistical and Computational Training in the Genetics of Addiction	PAR-12-199 (R25)	June 08, 2012

Research Successes

- Identification of genetic polymorphisms on 15q25 associated with nicotine addiction and development of precision medicine based on these polymorphisms.
- Identification of the SNP within *CHRNA6* associated with DSM-5 cocaine use disorder is rs9298626.
- Identifications of variants for clearance of HCV
- Demonstration that A118G associated with opiate dependence increases heroin self-administration across days in transgenic mice engineered with the same variant.
- QTL on chromosome 11 regulates cocaine response
- Epigenetic control of Δ FosB expression in NAc regulates cocaine-elicited behaviors

Research Successes, continued

- Both polysubstance use and its shared etiology drop in late adolescence and early adulthood, while non-shared factors in alcohol, nicotine, and marijuana dependence predominate.
- Parent to child transmission of SUD risk is primarily due to nonspecific liability to externalizing disorders and genetic in nature; shared environmental factors play a greater role than previously thought and point to sibling transmission as an important environmental risk factor for externalizing disorders.
- A polygenic risk score approach found that smoking, alcohol, and cannabis use are influenced by aggregated, shared genetic risk factors. Many common genetic variants have a very small individual effect.
- Creative family designs contribute to understanding complex relationships between SUDs and psychiatric disorders:
 - Co-relative control design of national registry data suggests that family confounding contributes to cannabis-schizophrenia association.
 - A co-twin control study suggests that early onset cannabis use and early school leaving are highly correlated but do not support a causal relationship between adolescent cannabis use and low educational attainment.

GxExD Interaction Challenges

- Quantitative phenotypes
- Methods to quantify environmental variables and responses
- Statistical methods to analyze GxE that overcome multiple comparison problems, harmonize data
- Appropriate animal models to identify epistasis, pleiotropy, gene-development interactions
- Translating findings in animals to humans

GEDI Gaps and Opportunities

- What research opportunities exist that NIDA should develop/expand? Prioritize.
- What are potential new areas of research? Prioritize.
- What resources are needed?
- What are the training needs?
- Are there any other gaps and opportunities that NIDA should consider?

Plan to Accomplish Research Goals

- Charge to the GEDI workgroup:
 - Identify research priorities
 - List objectives for each priority
 - Identify benchmarks to measure progress towards each objective

Questions about what the workgroup is charged to do?

Resources for Work Group

- **NIDA Strategic Planning website** - All activities surrounding strategic planning efforts must be publically reported. OSPC has established a webpage that will provide this information to the public throughout the entire planning process and can be found here: <http://www.drugabuse.gov/about-nida/strategic-plan>
- **Request for Information – NIDA Strategic Planning** - <http://grants.nih.gov/grants/guide/notice-files/NOT-DA-15-005.html>
- **Responses to RFI** - <http://www.drugabuse.gov/about-nida/strategic-plan/comments-nidas-strategic-plan-rfi>
- **NIDA email for public comments** - For questions or concerns please contact the NIDA Strategic Planning Committee at NIDAOSPCPlanning@mail.nih.gov
- **Report from the NIDA Science of Genetics Review Work Group (May 2010)** - <http://www.drugabuse.gov/sites/default/files/geneticsreview.pdf>
- **Archived Meeting Summaries for Genetic Portfolio Reviews**
 - [Review of NIDA's Portfolio of Research on the Genetic Epidemiology of Drug Abuse](#)
 - Organizer: Naimah Weinberg
 - Date: February 22, 2005
 - [The Role of Behavior Genetics Research in NIDA's Vulnerability to Drug Addiction Initiative](#)
 - Moderator: Naimah Weinberg
 - Date: May 27, 1999
- **NIDA Genetic Workgroup** - <http://www.drugabuse.gov/about-nida/organization/workgroups-interest-groups-consortia/genetics-workgroup-gwg>
- **Archived RFAs, PAs, and Notices in the NIH Guide for Genetics and Epigenetics** - <http://www.drugabuse.gov/researchers/research-resources/genetics-research-resources/funding-genetics-research/archived-rfas-pa>

Meeting Wrap-up

- Action items for next meeting
 - Workgroup homework
- Public comment period – 5 minutes
- Adjourn

***Next Meeting – 3:00-4:00 pm EDT,
Tuesday, April 28, 2015**