

**U.S. Department of Health and Human Services
National Institutes of Health**

**Minutes of the Third Joint Meeting of the
National Advisory Council on Alcohol Abuse and Alcoholism,
National Advisory Council on Drug Abuse, and
National Cancer Advisory Board**

**February 4, 2015
Rockville, Maryland**

Members of the National Advisory Council on Alcohol Abuse and Alcoholism (NIAAA), National Advisory Council on Drug Abuse (NIDA), and the National Cancer Advisory Board of the National Cancer Institute (NCI) convened for their third joint meeting on February 4, 2015, in Rockville, Maryland. Chaired by Dr. George Koob, Director of NIAAA, and Dr. Nora Volkow, Director of NIDA, this open session convened at 9:05 a.m.

National Advisory Council on Alcohol Abuse and Alcoholism Members Present:

Andrea Barthwell, M.D.
Carol Casey, M.D.
Fulton T. Crews, Ph.D.
Suzanne de la Monte, M.P.H., M.D.
Carlo C. DiClemente, Ph.D.
James H. Eberwine, Ph.D.
Marianne L. Fleury, B.A.
Joseph Thomas Flies-Away, J.D., M.P.A.
Andres G. Gil, Ph.D.
Paul Gruenewald, Ph.D.
Paul J. Kenny, Ph.D.
Sarah Mattson Weller, Ph.D.
Craig J. McClain, M.D.
Robert Messing, M.D.
Patricia Molina, Ph.D.
Rajita Sinha, Ph.D.

National Advisory Council on Drug Abuse Members Present:

Anne Andorn, M.D.
Laura Bierut, M.D.
Regina Carelli, Ph.D.
James Hildreth, Ph.D.
Terry L. Jernigan, Ph.D.
Robert H. Lenox, Ph.D. (via telephone)
Kelvin Lim, M.D.
Michael A. Nader, Ph.D.
John P. Rotrosen, M.D.

National Cancer Advisory Board Members Present (via telephone):

Elizabeth M. Jaffee, M.D.

Beth Y. Karlan, M.D.

Richard J. Thomas, M.D., M.P.H. (ex officio)

Chairs: George Koob, Ph.D., and Nora Volkow, M.D.

National Institute of Alcohol Abuse and Alcoholism (NIAAA) Director: George Koob, Ph.D.

National Institute on Drug Abuse (NIDA) Director: Nora D. Volkow, M.D.

NIAAA Deputy Director: Kenneth R. Warren, Ph.D.

NIDA Deputy Director: Wilson Compton, M.P.H., M.D.

NIAAA, Director Office of Extramural Activities: Abraham P. Bautista, Ph.D.

NIDA, Director, Division of Extramural Research: Susan B. Weiss, Ph.D.

NCI, Director, Division of Extramural Activities: Paulette S. Gray, Ph.D.

NIDA Senior Staff: Cheryl Boyce, Ph.D., Redonna K. Chandler, Ph.D., Wilson Compton, M.D., M.P.E., Kevin Conway, Ph.D., Dave Daubert, Roger Little, Ph.D., Gerald McLaughlin, Ph.D., Ivan Montoya, M.P.H., M.D., Joni Rutter, Ph.D., Phil Skolnick, Ph.D., D.Sc. (hon.), Jack Stein, MSW, Ph.D. Mark Swieter, Ph.D. Betty Tai, Ph.D.

NIAAA Senior Staff: Vivian Faden, Ph.D., Ralph Hingson, D.Sc., Robert Huebner, Ph.D., Keith Lamirande, Gary Murray, Ph.D., Antonio Noronha, Ph.D., Patricia Powell, Ph.D.

NCI Senior Staff: None Present

Additional Participants

Approximately 70 observers joined the meeting, including representatives of constituent groups, liaison organizations, and members of the general public.

Call to Order and Introductions

Dr. George Koob, Director, NIAAA, called to order the third joint meeting of the National Advisory Councils of NIAAA, NIDA, and NCI in open session at 9:05 a.m. on Wednesday, February 4, 2015, and welcomed participants. Council members and Institute leaders introduced themselves.

NIAAA Director's Presentation

Dr. Koob presented an update of NIAAA's research activities, noting that the Institute focuses on alcohol use disorders across the life span. He explained that similar to the other Institutes, NIAAA is experiencing a steady increase in the number of applications but little change in the number of applications funded. This scenario provides an impetus to review portfolios more carefully and to decide where to allocate scarce resources.

Dr. Koob enumerated a number of key NIAAA initiatives and programs, and highlighted recent research findings. Key activities include Early Diagnosis of Fetal Alcohol Spectrum Disorder (FASD), Neurobiology of Adolescent Drinking in Adulthood (NADIA), National Consortium on Alcohol and Neurodevelopment in Adolescence (N-CANDA), Adolescent Brain and Cognitive Development (ABCD) National Longitudinal Study, College Alcohol Intervention Matrix program, Biosensor Initiative, and Post-traumatic Stress Disorder (PTSD) Comorbidity.

Recent research has shown, for example, that changes in the upper lip indicate FASD and correlate with changes in brain volume, suggesting that diagnostic measures have predictive validity and may be useful for interventions in the future. Dr. Koob noted the profound negative consequences of binge drinking, where the amount consumed in a binge is rising among adolescents, although the percentage of adolescents drinking has declined. For example, hospitalizations related to alcohol overdoses among adolescents have increased 67%. Binge drinking is especially dangerous because the frontal cortex is not fully developed until age 25, and that part of the brain plays a critical role in controlling aspects of the addiction process: impulsivity and sensitivity to stress. Recent animal research on binge drinking reveals that adolescent alcohol reduces prefrontal connectivity.

Dr. Koob highlighted the importance of studying adolescent exposure to alcohol and drugs: The adolescent brain does not develop fully until age 25; short-term alcohol use disrupts the frontal lobes (which regulate decision making and impulse control), hippocampus (memory), amygdala (fear and anxiety), and brainstem (vital reflexes); short-term alcohol use locks in cues associated with drinking; and long-term alcohol misuse can alter the trajectory of adolescent brain development and cause lingering cognitive deficits. NIAAA is supporting studies that examine the vulnerability and resilience factors in adolescent brain development. NIAAA's N-CANDA, a large cross-sectional, longitudinal imaging study of the effects of alcohol exposure on adolescent brain in the context of development, has already examined 788 subjects in 2 years and is engaged in their 1-year follow-up. In this work scientists have harmonized data from different laboratories. As expected, data showed that white matter increases with age and grey matter declines; these changes can be measured as human subjects perform an impulsivity test while actually in the scanner. Adolescents improve in measures of impulsivity, which correlate well with their age group and maturation of the brain. NIAAA will continue this cross-sectional, longitudinal study to complement and provide critical information for future longitudinal studies such as the Adolescent Brain Cognitive Development study where there are plans to enroll 10,000 youth over 10 years and follow alcohol, drug and tobacco use. The multi-Institute Adolescent Brain Cognitive Development (ABCD) initiative will play a critical role in understanding the impact of alcohol and drugs on the adolescent brain.

NIAAA is significantly invested in prevention of underage drinking with its CollegeAIM and Screening and Brief Intervention activities. As part of its College Drinking Initiative, NIAAA hopes its College Alcohol Intervention and Prevention Matrix (CollegeAIM) will encourage more campuses to join its college presidents' group. The matrix offers a number of activities to help schools decide to undertake activities that fit their student demographics best; a similar portfolio for Native population sites is under development, and NIAAA expects to discuss working in this area with NIDA in the future.

NIAAA also has initiated development of an attractive, sophisticated, wearable alcohol biosensor to monitor alcohol use. NIAAA plans to work with NIDA and the National Institute of Mental Health (NIMH) to expand research on the neurobiological mechanisms that underlie co-occurring PTSD and alcohol use

disorders, in hopes of improving treatment. Dr. Koob concluded his remarks by promoting the NIAAA publication and website “Rethinking Drinking.”

Discussion. Several Council members commended NIAAA on its work. Ms. Mimi Fleury praised efforts to translate the research into lay terms to enable parents and students to understand the science that explains the effects of alcohol on young brains. She noted the usefulness of an NIAAA-developed slide presentation for students and parents, “The Science of Decision Making,” which can help young people internalize reasons for not wanting to drink. Dr. Koob noted the need to educate primary care physicians about alcoholism and addiction, and solicited insights on how to incorporate questions on addiction into medical board exams. Ms. Fleury stated that her organization is engaged in a program with a local hospital to disseminate NIAAA publications to pediatricians’ and counselors’ offices.

Dr. John Rotrosen suggested combining college alcohol and drug abuse initiatives as a CRAN initiative, and both Institute Directors endorsed the suggestion.

Dr. Volkow concurred with Dr. Laura Bierut’s observation on the need to study social change and messaging, noting also the benefit of enhancing research on messaging to include social interactions. Dr. Koob added that it will be important for NIAAA to look at this issue in terms of translational research. He pointed out that young people listen to music with alcohol messaging that helps to shape their perceptions about drinking. Dr. Fulton Crews stated that the communication must be parent to young adolescent; expecting groups of adolescents to communicate protective messages may be limiting. Data suggest that family structures can create dynamics that can help. Ms. Fleury concurred and stated that Community of Concern presents a school program called Conversations That Count, which convenes parents and students for a discussion about addiction and to engage the participants in a conversation about real-life situations. Dr. Gil cautioned against ignoring the group of young people for whom family involvement would not be helpful, and Dr. Patricia Molina cautioned against devising messages that reinforce a message that alcohol is bad and marijuana is okay.

Dr. Molina advised that problematic alcohol use has significant biomedical consequences for the aging population. Dr. Koob expressed interest in this topic, though he noted that NIAAA has not yet engaged. Dr. Barthwell suggested the need to find pathways that help families avoid intergenerational disease; some families celebrate when a young family member joins Alcoholics Anonymous. Dr. Koob remarked that evidence begins to suggest that epigenetic phenomena cross generations, raising the issue of how the interaction between expression of genes and the environment interact, and raising hope that basic research will develop biomarkers for addiction and alcoholism. Dr. Sinha urged attending to the effects of recent trauma and stress, in addition to PTSD, in the context of alcoholism. Dr. Koob added that physical brain trauma also interacts with PTSD because of effects on the frontal cortex. Judge Joseph Flies-Away expressed appreciation for NIAAA’s efforts with tribal and indigenous people, noting the high prevalence of multigenerational alcoholism.

Responding to Judge Flies-Away’s question about the feasibility of universal brain scans, Dr. Koob stated that the technology is not sufficiently advanced, it is prohibitively expensive, and is not readily available. Dr. Volkow added that the ABCD imaging study and its database will help to develop imaging standards and to identify clinically accessible biomarkers that can provide information on developmental brain trajectories.

National Institutes of Health and the Biomedical Workforce

Dr. Sally J. Rockey, Deputy Director for Extramural Research, NIH, described new findings about NIH's biomedical workforce, recommendations for NIH to support a sustainable biomedical infrastructure in the future, and the findings' implications for producing the next generation of scientists. The Biomedical Research Workforce Working Group aimed to develop a model for a sustainable and diverse U.S. biomedical research workforce that can inform decisions about training the optimal number of people for the appropriate types of positions that will advance science and promote health. The impetus for the study was a concern over the increasing age at which PhDs now receive their first independent position.

Dr. Rockey explained that 70% of principal investigators (PIs) at NIH have PhD degrees, and the working group's investigation concentrated on that population. Members of the working group learned that over the past 25 years the age at which most people earn PhDs is 31. Nevertheless, due to the increasing length of postdoctoral positions, the age that PhDs receive their first independent position has advanced to about 38 or 39. This progression concerns NIH, which prefers that people become truly independent scientists in their thirties, presumably at the height of their creativity.

NIH wants its PhD trainees to take academic positions, but surprisingly only 43% of NIH PhDs trained in the United States end up in academia. About 16.4% of the post-training workforce conducts industrial research; 5.2% work at NIH; and 44.7% work in academic research or teaching. Only about 23% of academic researchers obtain tenure-track positions.

Regarding the current state of affairs, the working group observed a large upsurge in PhDs, an increasing influx of foreign-trained PhDs, and aging of the biomedical research workforce, all of which pose difficulties for a researcher in launching a traditional, independent, academic career. The long training time and relatively low early-career salaries, compared to other scientific disciplines and careers, may render a biomedical research career less attractive to the best and brightest young people. Current training programs do little to prepare people for careers other than academic research careers. Despite special considerations to target new investigators since 2007, to date 42 is the average age of PhD investigators to receive their first R01 grant.

To address these issues, NIH has instituted a variety of initiatives, including improving and reducing the length of graduate and postdoc training. One strategy has been to initiate individual development plans for trainees to help them at the outset of their career. Under the BEST program, 20 institutions have experimented with programs to help graduates and postdocs acquire skills for a broader range of positions. Some Institutes have made pay lines more generous for early-stage investigators, and NIH has instituted a number of specialized awards to promote transition to independence, including, among others, the Pathway to Independence Award (K99/R00) and Early Independence Award.

Dr. Rockey stated that since the start of the program, the proportion of new investigators has risen from 23% to 33%; it is now 28%. Nevertheless, she pointed out, one might question the correct proportion. With a flat budget, funds for new investigators must come from somewhere. The question arises about whether new investigators must compete with well-established investigators in the next funding round.

In fact, the working group found, many new investigators leave the system following their first award because of competition in seeking their next award; little data describe their next steps, but some number change career paths. NIH examined dropout rates of three distinct cohorts of new investigators and found that retention is associated to some degree with the availability and stability of funding. Though in recent years funding has not kept up with inflation, Dr. Rockey hypothesized, at least

currently investigators can predict funding levels. The current cohort of investigators returns more often than those in the past to compete for awards.

Many factors contribute to increased age at winning one's first award, according to Dr. Rockey, including an aging workforce overall. Investigators with research grants in 1980 had an average age of 37, while currently the average age is 52 or 53, and 12% of investigators are over 66 years old. As a result, early career investigators find that a small number of faculty positions are available.

NIH has just announced an Emeritus Award to help well-established investigators to whom NIH has provided support to facilitate transition into other activities as the next phase of their careers. NIH seeks input on the Emeritus Award, on strategies to decrease the age of investigators, and on ways to develop more efficient and sustainable funding mechanisms and policies. Dr. Rockey described her "Get Connected to the Rock Talk Blog" (<http://nexus.od.nih.gov/all/rock-talk>).

Discussion. Dr. Regina Carrelli endorsed the Emeritus Award and individual development plans. She explained that while the decrease from 5 years to 4 years for post-PhD K99 awards has been useful in securing jobs, taking off an extra year has created problems for minorities and women. Dr. de la Monte and Dr. Carelli observed that people entering PhD programs may not plan to go into academia or science. Some schools encourage thinking about all opportunities because funding is limited. Dr. Carelli encouraged NIH not to overlook the value of established PhDs who enjoy their work without the pressure of applying for grants. Dr. de la Monte asserted that wherever creativity exists, it ought to be cultivated. She urged NIH to consider the range of individuals' goals in shaping a workforce. She called particular attention to minority educated people who can serve at multiple levels.

Dr. Rockey acknowledged the difficulty of shifting the composition of the workforce, and NIH works in partnership with universities and other entities. By contrast to Dr. de la Monte's findings regarding academic aspirations, Dr. Rockey's view of the field is that academia is the goal for most investigators. Nevertheless, she stated, the BEST program represents a systematic approach to broadening training. She added that NIH also is considering how to facilitate support staff scientists in the context of workforce and infrastructure stability.

To Dr. Robert Messing's question about the population that leaves the applicant pool, Dr. Rockey responded that the low success rate in securing awards drives the drop-off. Applicants currently apply for grants at a higher rate than in 1989, but fewer grants are made. In terms of the workforce as a whole, members of underrepresented groups fall off between the undergraduate and PhD programs, but women tend to fall off after the PhD and after they join faculty. Everyone falls off after the first grant. NIH is working to understand that pattern and to determine how to give support for a second grant that can take researchers on the track to success. Dr. Rockey stated that new investigators compete almost at the same levels as investigators returning for renewals. Dr. Messing observed the need to fund the best of that pool; Dr. Rockey stated that one Institute offers a different pay line for individuals applying for a second award.

Dr. Eberwine urged attention to development of U01s and large grants so as not to detract from R01 awards. Dr. Rockey replied that the proportion of NIH's RPGs has remained relatively constant.

NIDA Director's Presentation

Dr. Nora Volkow noted that interactions between NIAAA and NIDA have increased, and that the ability to integrate across disciplines is indispensable for the success of science and knowledge. She pointed out that drug and alcohol use disorders share many common elements, and acknowledged NCI's contributions to the research on the influence of nicotine.

Dr. Volkow stated that NIDA's purchasing power currently equals that of 1998 due to inflation and relatively flat budgets. The research enterprise grown has grown significantly, with many more investigators applying for grants, and the success rate has declined. New technologies have led to the development of large, open databases, providing alternative research models and infrastructure to maximize the ways in which science is evolving. To facilitate this process, the Institutes seek input from Council and others to help anticipate and be ready to prepare new scientists to take advantage of scientific advances.

Dr. Volkow presented 2014 "Monitoring the Future" (MTF) data on adolescent use of alcohol, tobacco, and marijuana, drugs with the greatest developmental impact. She highlighted a dramatic decrease in cigarette smoking—by more than 50% over the past decade, reflecting the influence of aggressive and effective prevention campaigns. Alcohol consumption also is declining, though the intensity of binge drinking has risen, and marijuana use has been stable for about 4 years rather than rising as expected. People who use marijuana often use it in conjunction with alcohol; prevalence of that combination may be rising.

The status of marijuana laws in various states is important to both Institutes, and researchers are studying how policy implementation differences affect consumption, especially by teenagers. Prevalence rates differ across states, and, with legalization in Colorado, data show increasing marijuana use and combined marijuana and alcohol use associated with fatalities from car accidents. In addition, with increased marijuana use, both the school dropout rate and the crime rate are rising. It will be important to measure factors objectively to guide future policy, Dr. Volkow pointed out, noting that social norms regarding drug taking influence the likelihood of drug use.

People have concerns about whether or not marijuana and alcohol are harmful. In fact, the primary cause of mortality among young people relates to drug and alcohol intoxication and accidents while driving. Considerable research has been conducted on the brain-development effects of alcohol use, but little research to date on the effects of marijuana and tobacco. There is thus great need to create evidence to quantify harms. Though multiple studies involving neuropsychological tasks have shown a significant decline in cognitive function after exposure to marijuana during adolescence, Dr. Volkow highlighted a recent imaging study that showed no differences in brain morphologies among those who used marijuana regularly and those who did not. She observed that the data may reflect great variability in measurements across independent labs and also diversity in response to drugs among teenagers. In addition, this study controlled for alcohol consumption, which suggests that the interaction of alcohol with marijuana may have driven many earlier findings of decreased volumes in the amygdala and hippocampus. Dr. Volkow stated that the scientists also see gender differences in nicotine exposure.

Because of the great variability across individuals, it is essential to recognize the importance of reproducibility in understanding the factors that drive this variability. Dr. Volkow described the Adolescent Brain Cognitive Development (ABCD), the large CRAN-led, multi-Institute, prospective, state-of-the-art imaging study that is designed to evaluate the trajectory of brain development in the transition from childhood to adulthood. This study of 10,000 children ages 10 to 20 years will assess interactions between drug taking and the emergence of mental illness, the effects of multiple drugs on

the brain, and the influence of genes on the brain. After a comprehensive planning process and with input from a variety of sources, a Notice of Intent to Publish a Funding Opportunity Announcement for ABCD was released in January 2015. A number of issues remain to be resolved, including timing of the imaging component; rapid recruitment, 10 years of follow-up, phenotypical characterization, and flexibility for new advances, which are expected to be incorporated into the project. Dr. Volkow emphasized that time is of the essence to gain better understanding, capitalizing on existing tools, to advance the science and help tailor data-based prevention measures.

Dr. Volkow stated that NIDA is working on its strategic plan for 2010–2015. Current and future issues include leveraging new technologies; developing standards, infrastructure, and tools to support Big Data; integrating with the BRAIN Initiative; collaborating on the Precision Medicine Initiative; training new scientists in different ways; responding to changes in the substance use landscape (e.g., marijuana policies, healthcare reform, e-cigarettes as drug-delivery devices). The challenges involve determining how to implement these goals and plans to develop, translate, and implement knowledge, and how to predict when entering a new arena with no precedents. Dr. Volkow stated that opening up the process to widespread comment is a key strategy.

Discussion. Several Council members applauded the ABCD Initiative. Dr. Crews observed that the ABCD study may help to define the development stage of adolescence. Dr. Volkow stated that adolescent brains are impacted not only by hormonal changes, but also by social and cultural constructs, and that the ABCD Initiative will explore that question.

Ms. Fleury commended the community outreach work of Dr. Susan Weiss, and urged continued collaboration by NIAAA and NIDA. Dr. Volkow responded that NIMH now participates with the two Institutes in community efforts.

Dr. Sinha expressed concern that lack of a clear-cut way to describe harm from marijuana and binge drinking makes it difficult to present the science and to implement large-scale prevention and social intervention efforts. Dr. Volkow responded that the extremely important ABCD study is anticipated to generate objective data, controlling for known confounding factors in order to prevent results from being dismissed due to faulty methodology. She stated that she feels a responsibility to conduct the study, and if it reveals no adverse effects, that knowledge will be important to have, and more will be known about pathology. The ABCD study also will shed light on nicotine's effects on brain development and on substances' interactions with mental illness and brain trauma.

Dr. Terry Jernigan observed that scientists are just now beginning to understand the basics of the complex processes of the developing brain, and that an adequate, accessible, observational dataset to inform development of a more sophisticated brain development model through adolescence will be an important contribution of the ABCD study. Dr. Jernigan added that scientists themselves have differing phenotypes; for some people, great productivity relates to great organizational skills, creative ideas, powerful computational skills, or implementation skills. With large initiatives, it is important to recognize the benefit of such individuals working in an integrated way, to promote continuous innovation, and to find innovative ways to support these key people.

Dr. De la Monte suggested urgency in reviewing existing datasets to determine the factors that protect individuals from marijuana's adverse effects. Dr. Volkow concurred, especially in the context of many imminent policy decisions on marijuana.

Dr. DiClemente pointed out the need to manage and coordinate such large projects well. Dr. Volkow stated that NIAAA and NIDA have managed very large projects. Dr. Koob stated that N-CANDA demonstrates that conducting a large project is feasible with strong leadership, and the ABCD study will have a strong coordinating group that works well together. The cooperative agreement mechanism offers flexibility and accords NIH staff a prominent role that is necessary to coordinate this activity.

Collaborative Research on Addiction at NIH (CRAN) Update

Dr. Peggy Murray, Director, Global Alcohol Research Program, NIAAA, reported that since the last Council meeting, CRAN has funded 25 administrative and competitive research training supplements on a range of scientific topics, and an RFA on using social media in research on addiction. Two new Program Announcements (PAs) have been released that focus on novel targets for prevention and treatment. CRAN has also funded 14 supplements to T32 programs designed to expose trainees to the cross-cutting research areas of tobacco, alcohol, and other substance use, and to prepare trainees to conduct independent research in cross-cutting areas.

In response to RFA CA-14-008 on Using Social Media to Understand and Address Substance Use and Addiction, CRAN funded 11 applications out of 100 applications received. This RFA supported observational studies that use social media interactions as surveillance tools to understand the epidemiology of risk factors, attitudes, and behaviors associated with alcohol, tobacco, and other drug use. CRAN also sought applications that would measure the reach, engagement, and behavioral health impact of social media-based interventions for screening, prevention, and treatment. Dr. Murray highlighted two studies as examples. One aims to delineate the nature, extent, and engagement patterns of marijuana- and alcohol-related content to which young people are exposed via social media, and how that exposure associates with alcohol and marijuana behaviors, use, and norms. The other is an interventional study to show how online social networks influence smoking cessation.

The Novel Behavioral Targets FOA (PA 15-035, 036) is looking for translational studies aimed at understanding both the mechanism and the development of novel treatments and prevention interventions that directly target and modulate behavioral mechanisms. Topics include impulsivity, risk-taking propensities, sensation seeking, distress tolerance, delay discounting, self-regulation, and stress reactivity.

Discussion. Dr. Sinha observed the need to clarify the age range of “adolescence” in the Novel Targets announcements and urged inclusion of language on “transition period” to young adulthood to help review committees consider that stage of development. Dr. Murray responded that we would work with the CRAN project team to consider amending the FOAs. Dr. Susan Weiss suggested that the idea be presented to the committee that designed the PA to see if they want to make these changes. Dr. Susan Weiss responded to a question from Dr. Messing that the Novel Targets PA invites human research. Dr. Weiss reported that a Dutch research group has made overtures to collaborate on the Adolescent Brain Cognitive Development (ABCD) Longitudinal Study, which CRAN would welcome under certain circumstances.

Dr. Weiss responded to a question from Dr. Molina that although differences exist between T32s at NIDA and NIAAA, considerable overlap appears in all programs; for example, the same mentors are sponsored by both NIAAA and NIDA. Each Institute conducts its own T32 reviews, so it is necessary to ensure that reviewers are aware that the culture has changed, and that NIH no longer is interested in training investigators to address just one problem and not others. Dr. Abraham Bautista stated that the

NIAAA website has updated information on T32s; applicants are not penalized for inclusion of drug abuse-related studies. Both Institute Directors endorsed integrated research; the CRAN mechanism facilitates that approach.

Council Round Table Discussion

Ms. Fleury asked for clarification of the way in which reduced density of white matter as a result of marijuana and alcohol use impacts brain function. Dr. Volkow explained that white matter determines the speed at which interaction occurs between one area of the brain and another; without its protection, those areas of the brain begin to degenerate. Drugs can influence that connectivity in two ways. Cannabinoids, which are involved in the way that neurons communicate with one another, can impair connectivity during fetal development, childhood, and adolescence; data show that some brain areas are influenced more than others. Drugs, especially alcohol, can also influence connectivity through their toxic effects. Animal studies have shown that alcohol is proinflammatory, and inflammation of the brain can disrupt white-matter myelination.

Dr. McClain suggested that NIDA seek funding from the National Children's Study, which was recently discontinued. Dr. Volkow responded that the proposal submitted for a project using those funds was rejected.

Dr. Barthwell inquired about the prospect of future funding for various categories of research. Dr. Volkow responded that NIDA values NIH's mission to fund basic research, and that NIDA also has a proactive system to identify opportunities for translation. Dr. Koob pointed out that grants are not required to have a translational component. Dr. Carelli described difficulties with study section findings that studies that combine animal and clinical human research are overly ambitious. Dr. Volkow pointed out the additional disadvantage that integrated clinical and preclinical research studies are more expensive. She stated that NIDA has tried to promote research that has clinical and pre-clinical components. Nevertheless, NIDA can advance translational science in existing studies, and the ABCD study is hoped to provide many opportunities for that type of dialogue. She welcomed additional ideas. Dr. Koob reported some success with translational research on experimental animals, as well as on human laboratory studies. He advised on the importance of contacting program officers in NIAAA and NIDA to learn more about the institutes' priorities and the mechanisms available for such approaches. Dr. Carelli observed that some researchers would like to take this approach beyond the ABCD. Dr. Volkow suggested that the Institutes might reexamine how funding opportunities are targeted as the need for translation increases. Dr. Carelli suggested incorporating this issue into NIDA's strategic planning. Dr. Volkow stated that NIDA and some other Institutes use the Avant Garde mechanism to provide incentives for researchers to explore particular areas, but whose applications might not do well in study section.

Dr. Jernigan observed the need to appreciate the value added of communication and cross-education regarding the subtleties of their observations among researchers at different levels of a particular funding mechanism. Dr. Koob responded that NIAAA's Centers Program use that type of framework, with a critical mass of related R01-type of research projects. Dr. Volkow pointed out that strategies exist to create networks less expensive than Centers. She stated that it has become essential to involve experts in bioengineering, physics, mathematics, and computational scientists in interaction with basic and investigational scientists.

Adjournment

The meeting adjourned at 12:35 p.m.

CERTIFICATION

I hereby certify that, to the best of my knowledge, the foregoing minutes are accurate and complete.

For NIAAA:

/s/

George Koob, Ph.D.
Director
National Institute on Alcohol Abuse and Alcoholism
and
Chairperson
National Advisory Council on Alcohol Abuse and
Alcoholism

/s/

Abraham P. Bautista, Ph.D.
Executive Secretary
National Advisory Council on Alcohol Abuse and
Alcoholism
National Institute on Alcohol Abuse and
Alcoholism

For NIDA:

/s/

Nora Volkow, M.D.
Director
National Institute on Drug Abuse
and
Chairperson
National Advisory Council on Drug Abuse

/s/

Susan Weiss, Ph.D.
Executive Secretary
National Advisory Council on Alcohol Abuse
National Institute on Drug Abuse

For NCI:

/s/

Elizabeth M. Jaffee, M.D.
Acting Chair
National Cancer Advisory Board
National Cancer Institute

/s/

Paulette S. Gray, Ph.D.
Executive Secretary
National Cancer Advisory Board
National Cancer Institute