International Research Interests and Opportunities

NIDA
NATIONAL INSTITUTE
ON DRUG ABUSE
The Science of Drug Abuse & Addictions

NIDA and Fogarty International Center Poster Presentations at the

2008 NIDA International Forum:
Globally Improving and Applying Evidence-Based Interventions for Addictions
June 13-16, 2008

NIDA International Program

NATIONAL INSTITUTES OF HEALTH

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES

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NATIONAL INSTITUTE ON DRUG ABUSE
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NIDA International Program

MISSION STATEMENT

The NIDA International Program addresses the global impact of addiction on public health by:

- **Taking advantage of unique opportunities to advance scientific knowledge through research**
- **Building research capacity internationally**
- **Sharing NIDA-supported research findings with scientists, treatment providers, and policy makers.**

NIDA International Goals

The problems of drug abuse and addiction know no boundaries, and every nation is affected by them. By encouraging rigorous collaborative and peer-reviewed international research, the International Program of the National Institute on Drug Abuse (NIDA):

- Strengthens and stimulates international drug abuse research networks
- Partners with other international funding organizations
- Develops distance learning programs and Web-based research and research training opportunities.

The science-based information generated by NIDA researchers and International Program alumni contributes to international efforts to develop, adopt, and evaluate government policies, prevention programs, and treatment protocols that effectively address drug abuse and its consequences.

International collaborations introduce NIDA grantees to new perspectives and differing attitudes about the fundamentals of drug abuse research. Highly trained scientists from other nations bring unique insights to the Institute's research efforts. National variations also provide NIDA grantees with opportunities to study aspects of drug abuse not available in the United States and to examine the effect of national differences in such areas as policies, drug-using populations, abused drugs, patterns of abuse, special populations, prevention programs, and treatment protocols.

Contact Us

Keep informed about NIDA International Program activities through the Web site and a bimonthly e-mail listserv.

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NIDA International Fellowships and Research Exchange Programs

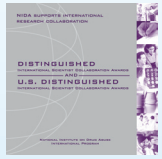
Through fellowships and scientific exchange programs, NIDA seeks to increase opportunities for collaboration between NIDA-supported researchers and their colleagues in other countries.

NIDA International Fellowships

- The *INVEST Research Fellowship* provides a unique opportunity for 1 year of postdoctoral training with an established scientist engaged in NIDA-supported research at a U.S. institution. Each Fellow receives training in drug abuse research methods and participates in professional development activities. The fellowship is fully funded by NIDA. **http://www.international.drugabuse.gov/invest.html.**
- *INVEST/Clinical Trials Network Research Fellowships* provide postdoctoral training in the United States with a scientist affiliated with one of the 16 Clinical Trials Network Regional Research and Training Centers. **http://www.international.drugabuse.gov/research/fellowships_investCTN.html**

- *NIDA Hubert H. Humphrey Drug Abuse Research Fellowships* are competitive, 10-month fellowships for mid-career professionals from low- and middle-income countries. Fellows enroll in mentored academic study at Virginia Commonwealth University, complete a research affiliation and professional experience with a NIDA-supported scientist, and participate in scientific meetings and NIDA orientations. **http://www.international.drugabuse.gov/hhhdarf.html.**

Research Exchange



- *NIDA Distinguished International Scientist Collaboration Awards (DISCA) and NIDA U.S. Distinguished International Scientist Collaboration Awards (USDISCA)* are competitive results- and product-oriented awards that support 1- to 3-month professional visits to advance collaborative research efforts. USDISCA is for U.S. citizens and permanent residents; DISCA is for applicants from any other country. **http://www.international.drugabuse.gov/disca.html.**

Grants for International Research

NIDA supports research on the biomedical and behavioral causes, consequences, prevention, and treatment of drug abuse and addiction.

- **Foreign Grants** allow researchers from other nations to compete for funding to conduct research in their home countries using expertise, resources, populations, or environmental conditions not readily available in the United States.
- **Domestic Grants** with a Foreign Component enable U.S.-based principal investigators to conduct cooperative international studies with foreign partners. The foreign component is part of the original grant; the entire application is scored competitively.

Scientific Priorities and Program Announcements

NIDA's scientific priority areas include linkages between HIV/AIDS and drug abuse, adolescent and prenatal tobacco exposure, methamphetamine, inhalants, and drugged driving. Program Announcements (PAs) inform researchers about areas of science for which NIDA wants grant applications, and are listed at **http://www.drugabuse.gov/funding.** PAs of interest to the international research community include:

International Research Collaboration on Drug Addiction
- R01: PA-07-275; R21: PA-07-310; R03: PA-07-311

Drug Abuse, Risky Decision Making, and HIV/AIDS
- R01: PAS-07-324; R21: PAS-07-325; R03: PAS-07-326

Drug Abuse Aspects of HIV/AIDS
- R01: PA-07-307; R21: PA-07-309; R03: PA-07-308

Fogarty International Research Collaboration Award (FIRCA)
- Basic Biomedical (FIRCA-BB) R03: PAR-07-335
- Behavioral, Social Sciences (FIRCA-BSS) R03: PAR-06-437

Epidemiology of Drug Abuse
- R01: PA-08-124; R21: PA-08-125; R03: PA-08-126

Therapies for Opiate Addiction
- R01: PAS-08-061

Genetic Epidemiology of Substance Use Disorders
- R01: PA-07-413; R21: PA-07-415; R03: PA-07-414

Medications Development for the Treatment of Cannabis-Related Disorders
- R01: PA-07-365; R21: PA-07-366

Neuroscience Research on Drug Abuse
- R01: PA-07-226; R21: PA-07-227; R03: PA-07-228

Inhalant Abuse: Supporting Broad-Based Research Approaches
- R01: PA-07-117; R21: PA-06-327; R03: PA-06-328

Web-Based Resources

The NIDA International Program Web resources offer robust communications, research collaboration, and training tools, while centralizing access to resources such as databases and funding sources.

Methadone Research Web Guide and Tutorial
http://www.international.drugabuse.gov/methadone/methadone_web_guide/toc.html

NIDA's Methadone Research Web Guide reviews research supporting the U.S. approval of methadone maintenance to treat opioid addiction. The new, flexible Tutorial lets users test their knowledge in a variety of ways and customize a certificate of completion by successfully answering the Tutorial questions. Both are a model for future online education tools.

NIDA International Virtual Collaboratory (NIVC)
http://nivc.perpich.com

NIVC tools allow drug abuse researchers to communicate with live audio/video virtual meetings or with asynchronous discussion forums that can be stored for later access, document editing and storage tools, online resources, and a searchable and easily updated online database. User groups include an Inhalants Research Working Group and former NIDA Humphrey Fellows; newly forming groups include the International Women, Children, and Families Working Group, and Addiction Severity Index (ASI) researchers.

Other NIDA-Supported Online Resources

- The Research Assistant
  http://www.theresearchassistant.com/index.asp
  Grant-writing for behavioral scientists
- Publishing Addiction Research Internationally
  www.parint.org
  Developed by the International Society of Addiction Journal Editors

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AIDS Research Program (ARP)

MISSION STATEMENT

NIDA's AIDS Research Program (ARP) supports the development, planning, and coordination of HIV/AIDS priority research within NIDA's intramural and extramural programs, as well as with other NIH Institutes and DHHS agencies, to achieve an integrated vision and strategy to guide HIV/AIDS research throughout NIDA.

ARP Goals

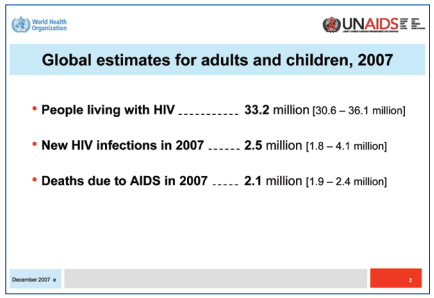
ARP provides direction and leadership for the development of an innovative and multidisciplinary HIV/AIDS research portfolio that addresses the unique dimensions of drug use and abuse as they relate to HIV/AIDS. The development and implementation of NIDA's HIV/AIDS research program is guided by the role of drug use and its related behaviors in the evolving dynamics of HIV/AIDS epidemiology, natural history/pathogenesis, treatment, and prevention, in coordination with the current priorities and objectives of the NIH Office of AIDS research strategic plan for HIV/AIDS research.

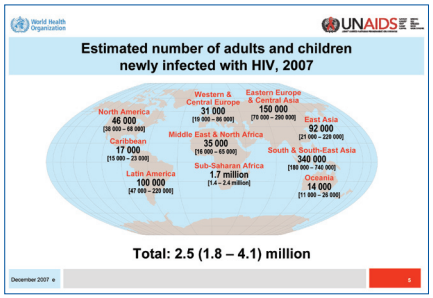
International Focus

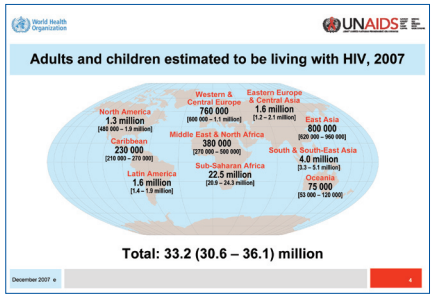
AIDS knows no borders; it is an international as well as a U.S. public health threat. HIV/AIDS has now become a pandemic; worldwide, more than 25 million people have already died. More than 30 million people are estimated to be living with HIV/AIDS. While AIDS is a global phenomenon, the nature of the epidemic varies geographically, and risk factors vary within and across populations. NIDA supports international research to elucidate the pivotal role of drug use and abuse in the transmission and progression of HIV/AIDS and to evaluate preventive interventions such as drug abuse treatment.

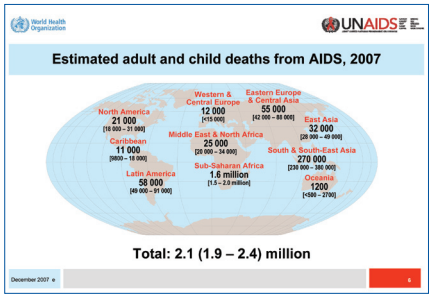
International Funding Priorities

- Development of new methods for gathering HIV epidemiological data and tracking HIV diffusion
- Development of prevention strategies addressing HIV/injection drug use epidemics in different geographic areas (Russia, China, Southeast Asia, India, Eastern/Central Europe)
- Development of regional research networks
- Role of immigration and migration in HIV transmission
- Assessment of drug treatment as HIV prevention, including development of long-acting, sustainable therapies
- Development of models for combined HIV and drug treatment
- Impact of emerging drugs (e.g., methamphetamine) and development of interventions
- Prevention strategies among adolescents (e.g., vulnerability of young women, young male injectors)
- HIV and co-infections (e.g., HCV, TB)









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NIDA
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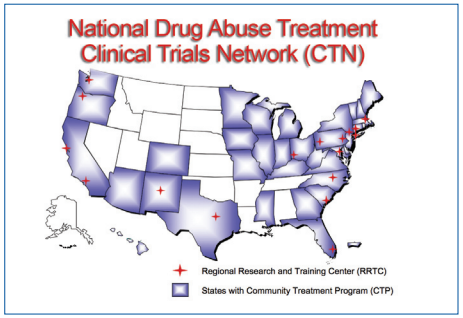
Center for the Clinical Trials Network

MISSION STATEMENT

Forging partnerships to improve the quality of drug abuse treatment by studying scientifically based interventions in real-world settings.



The Center for the Clinical Trials Network (CCTN) at the National Institute on Drug Abuse (NIDA) is the home of the National Drug Abuse Treatment Clinical Trials Network (CTN). The CTN currently has 16 Regional Research Training Centers (RRTCs) and 240 affiliated Community-Based Treatment Programs (CTPs) across 36 States and Puerto Rico.

The CTN provides an infrastructure in which treatment researchers, community-based service providers, and NIDA collaboratively develop, validate, refine, and deliver efficacious drug abuse treatment options to patients in community-level clinical practice. This unique partnership between community treatment providers and academic research leaders enables CTN to develop interventions that are more transferable, acceptable, and sustainable in the drug abuse treatment community.

CTN Snapshot Since 1999

- 26 trials initiated
  (protocol details: **http://www.nida.nih.gov/CTN/Index.htm**)
  - 22 trials completed
  - 4 trials currently recruiting
- Nearly 9,000 participants enrolled in trials to date
- 56 papers published or in press
  (details: **http://ctndisseminationlibrary.org**)
- CTN dissemination library averaging more than 2,400 hits per month
- 5 different CTN trials contributed key knowledge to NIDA/SAMHSA Blending tools
- Data from 11 trials now available on CTN Web site for public use
- More than three dozen additional studies using CTN network as a research platform

CTN Clinical Trial Results

Buprenorphine/Naloxone Taper: A Comparison of Two Schedules
- Key finding: A 7-day schedule may be the most beneficial option for those tapering off buprenorphine.

Motivational Interviewing in Pregnant Substance Users (in press)
- Key finding: Motivational Enhancement Treatment (MET) is not more effective than treatment as usual for pregnant substance users in general.
- The efficacy of MET varied between sites and was more beneficial in minority participants.

Reducing HIV Risk Behaviors: HIV/STD Groups for Men
A five-session motivational and skills training HIV/AIDS group intervention designed for men in methadone maintenance and outpatient psychosocial treatment programs, called "Real Men are Safe" (REMAS), was more effective than a standard, one-session HIV education (HIV-Ed) group intervention.
- Key finding: REMAS participants engaged in fewer unprotected sexual intercourse occasions (USOs) during the 90 days prior to the 3- and 6-month follow-ups.

Reducing HIV Risk Behaviors: HIV/STD Groups for Women
A five-session HIV/STD safer sex skills building (SSB) group intervention for female drug users in community-based Methadone Maintenance and Outpatient Psychosocial treatment programs was more effective than a one-session group HIV/STD Education intervention (HE).
- Key finding: The study showed the superiority of SSB to reduce USOs in female drug users. At 3 months, both interventions produced significant declines in USOs, with no significant difference. At 6 months, whereas women in SSB maintained this decline, women in HE increased their USOs.

Results Still to Be Published:
Four CTN protocols have been completed, and study results are being analyzed and reported:
- Buprenorphine for Opioid-Dependent Adolescents and Young Adults
- Women's Treatment for Trauma and Substance Use Disorders
- HIV and HCV Intervention in Drug Treatment Settings
- Motivational Enhancement Treatment to Improve Treatment Engagement for Spanish-Speaking Substance Users

HIV Studies and Plan:
Drug treatment as HIV prevention is one important topic in the CTN, and the network plans to launch a new HIV protocol in 2008–CTN0032: HIV Rapid Testing and Counseling in Community Drug Treatment Programs.

Opportunities for International Collaboration

CTN's International Dissemination Plan
CTN encourages its researchers and practitioners to include international counterparts in CTN research training activities, as the following investigators have:
- Dr. George Woody (Delaware Valley Node)–South America and St. Petersburg, Russia
- Dr. Water Ling (Pacific Node)–Shanghai, China
- Dr. Peter Banys (San Francisco-Arizona Node)–Vietnam
- Drs. Doug Denton and Susana Mendez (Texas Node)–Chiclayo, Peru

CTN as a Translational Research Expert Resource
CTN has substantial experience in translating behavioral and pharmacotherapeutic drug abuse treatment research into drug abuse practice among diverse populations, and CTN encourages international drug abuse researchers or practitioners to contact RRTCs or CTPs for technical support in similar research settings.

CTN as an International Training Resource
The CTN training network includes locally recognized master trainers and specialists in protocol-specific research instruments such as GCP, ASI, and CIDI. These training opportunities can be readily shared with the international drug abuse research and treatment community.

CTN as a Training Platform for NIDA INVEST/CTN Fellows
International researchers may apply for NIDA INVEST/CTN Drug Abuse Research Fellowships to spend 1 year conducting postdoctoral research with a mentor affiliated with one of CTN's 16 RRTCs (**http://www.international.drugabuse.gov/research/fellowships_investCTN.html**). The first three INVEST/CTN fellows are Dr. Amit Chakrabarti, India, working with Dr. Roger Weiss, McLean Hospital (Northern New England Node); Dr. Gvantsa Piralishvili, Georgia, working with Dr. George Woody, University of Pennsylvania (Delaware Valley Node); and Dr. Chen Hanhui, China, working with Dr. Walter Ling, University of California, Los Angeles (Pacific Node).

Data Sharing
The international community can initiate independent or collaborative secondary data analysis using 11 research data sets posted on the CTN Data Share Web site (**http://www.nida.nih.gov/CTN/Data.html**), including SAS and ASCII data sets, annotated case report forms, define files (a.k.a. data dictionary), and study protocols with references to publications. Data sets for CTN protocols comply with the Health Insurance Portability and Accountability Act (HIPAA) and the Clinical Data Interchange Standards Consortium (CDISC) standards and become available after (1) the main outcome paper is accepted for publication or (2) the data are locked for more than 18 months, whichever comes first.

Secondary Data Analysis
CCTN wants to maximize the utility of the rich data source accumulated from CTN trials. Through its Data and Statistics Center (DSC) at Duke Clinical Research Institute (DCRI), expert assistance is available to CTN grantees, including:
- Informal statistical consultation
- Preparing work-files in a usable format with between 30 and 50 variables
- Providing complete work-files and statistical analyses

Research Dissemination Efforts

CTN is part of the NIDA Blending Initiative with the Substance Abuse and Mental Health Services Administration (SAMHSA) Center for Substance Abuse Treatment (CSAT). By blending resources, information, and talent, the agencies integrate science and practice to improve drug abuse and addiction treatment. The international community can benefit from the training manuals and packages available at **http://www.nida.nih.gov/Blending/:**
- Buprenorphine Awareness
- S.M.A.R.T. Treatment Planning
- Motivational Interviewing
- Buprenorphine Detoxification
- Promoting Awareness of Motivational Incentives (PAMI)

Another free public resource, the CTN Dissemination Library contains CTN's research findings, treatment manuals, NIDA Blending Team products, and scientific publications. The CTN Library is especially useful to community drug treatment programs that may not have access to the information sources typically available to researchers in academic institutions. The Web address is **http://ctndisseminationlibrary.org.**

Contact Us

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Division of Basic Neuroscience and Behavioral Research (DBNBR)

MISSION STATEMENT

The Division of Basic Neuroscience and Behavioral Research (DBNBR) supports basic research on the causes and consequences of drug abuse and addiction, thus providing the scientific foundation for the development and enhancement of prevention efforts and treatment approaches to drug abuse and addiction.

DBNBR Goals

The Division's primary goal is to develop and support an extramural program of basic biomedical and behavioral science research that addresses the public health problem of drug abuse and addiction. DBNBR comprises four branches:

- **Behavioral and Cognitive Science Research Branch (BCSRB)**
  Minda Lynch, Ph.D., Branch Chief
  mlynch1@nida.nih.gov
  Supports laboratory research on behavioral and cognitive factors in drug abuse and addiction with human volunteers and with animal models. BCSRB's portfolio includes research on acute and chronic effects of drugs, individual differences in vulnerability to drug abuse, the role of learning and social factors in drug abuse, and gender differences in all of the aforementioned topics.
- **Chemistry and Physiological Systems Research Branch (CPSRB)**
  Rao Rapaka, Ph.D., Branch Chief
  rrapaka@nida.nih.gov
  Supports research on all aspects of chemistry and physiological systems affected by drugs of abuse, and administers the NIDA Drug Supply Program.
- **Functional Neuroscience Research Branch (FNRB)**
  Nancy Pilotte, Ph.D., Branch Chief
  npilotte@nida.nih.gov
  Supports research that focuses on the regulation of the mechanisms of neurotransmission under normal, drug-exposed, and drug-withdrawn conditions, such as studies on neuropharmacology and receptor binding, internalization and intracellular trafficking of proteins, signal transduction, neurophysiology, and neurotoxicity. The FNRB portfolio includes research on neuronal-glial interactions and the etiology, pathogenesis, and sequelae of neuroAIDS related to drug addiction; neuroadaptations and their functional consequences in neuroresilience and protection, neuroplasticity, and neurogenesis; and interactions between stem and progenitor cells and their microenvironment in the normal and compromised nervous system. Grants assigned to FNRB employ multidisciplinary, integrated approaches to the study of drug abuse, including analysis at the levels of the single cell, protein, circuit, and behavior.
- **Genetics and Molecular Neurobiology Research Branch (GMNRB)**
  Jonathan Pollock, Ph.D., Branch Chief
  jpollock@nida.nih.gov
  Supports research on the genetic basis of addiction vulnerability, the fundamental cellular mechanisms that underlie addiction and the response to drugs of abuse, and basic neurobiology. Also supports investigations into epigenetic mechanisms that may influence behavioral, functional, or trans-generational phenotypes associated with drug responses, neuroplastic changes, pain, or neural development.

Web site: **http://www.nida.nih.gov/about/organization/DBNBR/index.html**

Research Interests

Research supported by DBNBR investigates the neurobiological and behavioral effects of drugs of abuse and provides fundamental information to prevent or intervene in drug abuse and addiction.

- *Genetic Basis of Vulnerability to Drug Addiction.* All aspects of the genetic basis of vulnerability to drug addiction are of interest to DBNBR.
- *Models of Addiction.* Neural circuits underlying natural and drug reward; biobehavioral models of craving, relapse, and compulsive behavior; neural systems and drug/behavior interaction; vertebrate and invertebrate models; computational approaches.
- *Drug-Induced Neuroadaptation and Neuropathology in Brain Systems.* Consequences of acute or chronic exposure to addictive drugs; neurotoxicity and its behavioral, physiological, or biochemical consequences; neuroAIDS; adaptation (sensitization, tolerance, and plasticity).
- *Pain and Analgesia.* Modulation of acute and chronic pain by brain and spinal mechanisms; antinociceptive actions of opioids, cannabinoids, and peptides; cellular processes of pain, analgesia, and tolerance; alternative pain therapies (i.e., virtual reality); the abuse of prescription pain drugs.
- *Cognitive Processes.* The cognitive antecedents of drug abuse and the neural mechanisms of drug-induced modification of cognitive processes (learning, memory, attention, associations, decision making).
- *Social Neuroscience.* Drug abuse frequently occurs in a social context, and its consequences typically include a large social component. DBNBR is thus interested in the genetics and neurobiology of social behavior related to drug abuse.
- *Developmental Effects.* Consequences of *in utero* and perinatal drug exposure on the nervous system and other organs; ontogenetic effects throughout the lifespan; adaptation and developmental cellular biology (nonclassical neural communication).
- *Neuropsychopharmacology of Drugs of Abuse.* Relating drugs of abuse to neural systems (mechanism of action of psychomotor stimulants on monoaminergic systems or nicotine and cholinergic neurotransmission); behavioral consequences of receptor subtype activation; regulation of neural systems; function of endogenous systems (endorphins, anandamide, excitatory amino acids) in health and disease.
- *Neuroimmune Relationships, Including Studies of HIV and AIDS Related to Neural or Infectivity Processes.* Cytokine and chemokine modulation of neural function, amplification/diminution of these processes by toxins; interaction of these systems with the immune system and modulation of disease.
- *Innovative Chemical Design of New Entities and Probes.* Design, development, and characterization of molecular probes, imaging agents, receptor-selective ligands, potential new drug candidates using methods of computer-aided drug design, the study of structure-activity relationships, combinatorial chemistry, screening technologies, and other related approaches.

Funding Opportunities

International Neuroscience Fellowship (INF)

DBNBR and three other NIH Institutes—the National Institute of Neurological Disorders and Stroke (NINDS), the National Institute of Environmental Health Sciences (NIEHS), and the National Institute on Aging (NIA)—have created INF (PAR-06-227; **http://grants.nih.gov/grants/guide/pa-files/PAR-06-227.html**) to provide 1 to 2 years of research training in the United States for qualified junior or mid-career foreign neuroscientists. The INF will advance the training of qualified foreign neuroscientists by enhancing their basic or clinical research skills in a research setting in the United States, preparing awardees for future leadership positions in research, academia, or public health institutions in their home countries. It is hoped that the INF will enhance the quality and quantity of international neuroscience research while fostering long-lasting collaborations between foreign and U.S. neuroscientists.

International Neuroscience Fellowship research proposals focusing on, but not limited to, the following areas are encouraged:

- The transition to addiction (i.e., from controlled use to uncontrolled, compulsive use of drugs).
- The consequences of drug abuse and addiction (e.g., drug-induced neuroadaptations, neurotoxicity, altered cognitive and behavioral processes, developmental deficits).
- The antecedents to drug addiction and relapse (e.g., genetics, stress, environmental precipitants).
- The neurobiological bases of pain and their alleviation by opiates, other analgesics, adjunctive medications, and alternative therapies (e.g., acupuncture or virtual reality).
- The neurobiological bases of drug abuse and addiction.
- The interrelationship among HIV/AIDS progression, transmission, and drug abuse.

Applicants must have a sponsor in the United States who is affiliated with an eligible U.S. organization, be proficient in English, hold a doctoral or similar degree, and procure both the endorsement of their home institution and a guaranteed appointment in an institution in their home country upon completion of the fellowship. Preference will be given to applicants from low- to middle-income countries.

International Focus

DBNBR supports international research and promotes international scientific cooperation and communication through a variety of mechanisms:

- DBNBR supports international research grants and U.S. and international research collaborations.
- DBNBR sponsors major international meetings, including the College on the Problems of Drug Dependence (CPDD) Annual Meeting and the International Narcotics Research Conference (INRC).
- DBNBR also co-sponsors meetings with organizations that promote international research (e.g., CPDD, INRC, International Union of Pharmacology, International Brain Research Organization, International Cannabinoid Research Society, and International Drug Abuse Research Society).
- DBNBR participates in the Interagency Committee on Drug Control (ICDC), which makes international scheduling recommendations and resulting obligations with respect to drug control.
- DBNBR oversees the NIDA Drug Supply Program, under which several hundred investigators, including international researchers, receive compounds free of charge for research purposes. For more information on this program, contact:
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Division of Clinical Neuroscience and Behavioral Research (DCNBR)

MISSION STATEMENT

The Division of Clinical Neuroscience and Behavioral Research (DCNBR) aims to provide a translational approach to drug abuse within a clinical research context to advance our understanding of brain, behavior, and health.

DCNBR Goals

The overarching goal of DCNBR is to promote high-caliber research to identify the key developmental, genetic, social, and brain mechanisms associated with drug abuse, and to translate resultant findings into therapeutic interventions that decrease the extent and burden of drug abuse. We believe that conceptualizing drug abuse as a human developmental neurobiological disorder will generate important scientific findings that advance NIDA's mission to lead the Nation in bringing the power of science to bear on drug abuse and addiction.

To accelerate progress toward this goal, DCNBR's organizational structure intentionally promotes collaboration and translation across three branches: the Behavioral and Brain Development Branch (BBDB), Clinical Neuroscience Branch (CNB), and Behavioral and Integrative Treatment Branch (BITB). Highlights from recent published reports exemplify the developmental, mechanistic, and translational goals of DCNBR.

- **Behavioral and Brain Development Branch**
  Results show greater memory impairment and concomitant functional aberrations (via fMRI) during nicotine withdrawal among adolescent smokers who experienced, compared with those who did not, gestational exposure to maternal smoking (Jacobsen, Slotkin, Westerveld, Menci, & Pugh. Neuropsychopharmacology 31, 1550-1561, 2006).
- **Clinical Neuroscience Branch**
  Among treatment-seeking methamphetamine addicts, individual differences in activation of specific brain regions (e.g., right insula and left cingulate gyrus via fMRI) correctly predicted 91 percent and 94 percent of remitters and relapsers, respectively, after 1 year (Paulus, Tapert, & Schuckit. Archives of General Psychiatry 62, 761-768, 2005).
- **Behavioral and Integrative Treatment Branch**
  Opioid-dependent patients receiving an interactive computer-delivered community reinforcement approach (CRA) intervention plus vouchers did just as well in terms of number of weeks of continuous opioid and cocaine abstinence as those receiving a comparable therapist-delivered treatment. Both treatments produced better abstinence results than standard treatment. Findings suggest that a computerized program may enable more widespread dissemination of the evidence-based CRA plus vouchers approach in a manner that is cost-effective and ensures fidelity (Bickel, Marsch, Buchhalter, & Badger. Experimental & Clinical Psychopharmacology 16, 132-143, 2008).

Research Interests

- **Behavioral and Brain Development Branch**
  The Behavioral and Brain Development Branch (BBDB) supports research, research training, and career development designed to increase understanding of how human developmental processes and outcomes are affected by drug use/exposure and related factors (e.g., environment, HIV/AIDS), and to increase understanding of the role of human brain and behavioral processes in drug use, abuse, addiction, relapse, and associated risk behaviors. BBDB also supports research on interventions designed to prevent or ameliorate negative consequences of drug use/exposure and related factors on human development.
- **Clinical Neuroscience Branch**
  The Clinical Neuroscience Branch (CNB) supports research, research training, and career development on the clinical neuroscience and biological etiology of drug abuse and addiction. CNB accomplishes this mission by promoting research for clinical (human) and parallel infrahuman investigations integrating neurobiology, cognitive/behavioral neuroscience, and genetics. The scope of research supported by CNB includes studies of both normal and dysfunctional processes associated with all aspects of drug use from predisposition through drug seeking, initiation, abuse, addiction, and relapse. CNB serves a translational purpose by drawing upon advances in preclinical research to provide the foundation for human investigations of brain, behavior, and genetics that can inform prevention and treatment strategies.
- **Behavioral and Integrative Treatment Branch**
  The Behavioral and Integrative Treatment Branch (BITB) supports broad research, research training, and career development programs directed toward (1) development, refinement, and testing of behavioral/psychosocial treatments and complementary/alternative interventions for drug abuse, alone and in combination with medications; (2) development, refinement, and testing of interventions to promote adherence to treatment; (3) development, refinement, and testing of HIV prevention interventions for use in drug abuse treatments; (4) development and validation of screening and diagnostic methods and instruments; and (5) translational treatment research, including the development of behavioral interventions drawing on findings from basic research as well as development of behavioral interventions to make them more amenable to practice and community settings.

International Focus

- **Behavioral and Brain Development Branch**
  - Long-term (infancy to adolescence and early adulthood) outcomes associated with *in utero* exposure to marijuana and tobacco in Canada
  - Prenatal methamphetamine exposure and early (infant) developmental outcomes in New Zealand
  - Developmental outcomes of prenatal exposure to MDMA/"Ecstasy" in England
- **Clinical Neuroscience Branch**
  - Establishment of brain imaging capabilities in South Africa
  - Training investigators from China, South Korea, Ireland, and South Africa in brain imaging
  - Investigation of cognitive dysfunction in drug abusers in Bulgaria and Russia
  - Neuroimaging studies of MDMA, methamphetamine, and cannabis abusers
- **Behavioral and Integrative Treatment Branch**
  - Testing the feasibility of delivering evidence-based behavioral treatments in pharmacological drug abuse treatment clinics in two sites in Vinnitsya, Ukraine
  - Testing a screening and brief advice intervention for drug-using adolescents in primary care settings in the Czech Republic
  - Testing a method of training community-based treatment providers in South Africa to deliver cognitive-behavioral therapy for drug abusers
  - Modifying and pilot testing a cognitive-behavioral therapy for HIV+ drug abusers in Trinidad and Tobago, with emphasis on developing a culturally relevant behavioral treatment approach
  - Testing the community reinforcement approach (CRA) plus vouchers in achieving cocaine abstinence and treatment retention among cocaine-dependent outpatients in Spain.
  - Testing whether standard U.S.-delivered buprenorphine treatment is sufficient for treating heroin dependence in Malaysia or whether enhanced behavioral treatments improve its efficacy and cost-effectiveness.

International Funding Priorities

- **Behavioral and Brain Development Branch**
  - Health and development of drug- and HIV/AIDS-exposed children and youth
    - Drug-exposed includes *in utero* exposure, drug use during childhood or adolescence, and exposure to drug-using environments
    - HIV/AIDS-exposed includes HIV-infected, HIV/AIDS-exposed *in utero* but not infected with HIV, and affected by HIV/AIDS (e.g., living with caregivers, family, peers, or in communities with HIV/AIDS)
- **Clinical Neuroscience Branch**
  - Training for non-U.S. investigators in state-of-the-art-methods in clinical and cognitive neuroscience
  - Research targeting unique populations or expertise not available in the United States to advance understanding of the clinical neuroscience of drug addiction
- **Behavioral and Integrative Treatment Branch**
  - Research utilizing unique technologies, populations, or expertise not available in the United States to develop and/or test behavioral and/or HIV risk reduction interventions
  - Studies focused on improving adherence to HIV treatment in different cultures or populations
  - Studies of ways to disseminate behavioral interventions internationally via distance learning or other paradigms

Contact Us

Please feel free to contact Dr. Joseph Frascella for help in finding the DCNBR Program Officer to best discuss your research, to further discuss DCNBR programs, or to help identify NIDA funding opportunities.

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Division of Epidemiology, Services and Prevention Research (DESPR)

MISSION STATEMENT

To improve public health by promoting integrated approaches to understand and address interactions between individuals and environments that contribute to the continuum of problems related to drug use and addiction. DESPR includes three branches: the Epidemiology Research Branch (ERB), Services Research Branch (SRB), and Prevention Research Branch (PRB). The ultimate goal of DESPR is to promote extraordinary public health research to end drug abuse.

DESPR Goals and Research Foci

Epidemiology Research Branch (ERB)

- **Goal:**
  ERB promotes a national and international extramural research program that examines individual, developmental, and social/environmental factors associated with drug abuse, HIV/AIDS, and other behavioral, social, and health outcomes.
- **Research Focus:**
  - Basic Epidemiology: Studies of rates, patterns, and trends in drug abuse and its consequences, including HIV/AIDS.
  - Etiology: Studies of multi-level risk and protective factors and their interactions that influence pathways to drug abuse, with emphasis on human development, transitions from use to addiction, co-occurring risk behaviors, genetic factors, HIV and other infections, and morbidity.
  - Context and Consequences: Studies of how intrapersonal, environmental, developmental, and genetic factors interact, including their relationship to drug-related behavioral, social, and health consequences, HIV/AIDS and other diseases, and the translation of epidemiology into interventions.
  - Methodology: Methodological studies to improve the accuracy, efficiency, scope, timeliness, and analytical field of drug abuse epidemiologic data and research and the translation of epidemiology research into prevention and clinical interventions.

Services Research Branch (SRB)

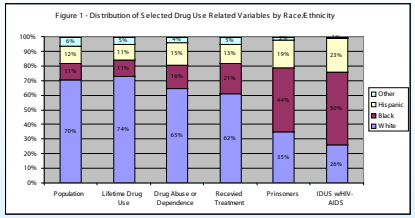
- **Goal:**
  - The SRB mission is to improve the quality of the drug abuse treatment system by enhancing the delivery of effective care at a reasonable cost to all those in need over the course of the drug use disorder, across multiple developmental stages, episodes of care, and service sectors.
- **Research Focus:**
  - Health Services: Using multidisciplinary approaches to identify the most effective ways to organize, manage, finance, and deliver high-quality drug abuse treatment and care.
  - Financing: Identifying ways that financing for drug abuse treatment can help expand access to care, ensure high-quality performance, and foster coordination of service delivery across systems.
  - Innovative Therapeutic and Business Practices: Stimulating the adoption and effective application of innovative evidence-based therapeutic and business practices among the nation's substance abuse treatment providers.
  - Workforce: Enhancing and sustaining a cadre of professional health service providers devoted to the delivery of high-quality, evidence-based treatments.

Prevention Research Branch (PRB)

- **Goal:**
  PRB supports basic, clinical, and services research on the development, testing, and translation of prevention interventions that target the initiation of drug use, the progression to abuse and dependence, and the transmission of HIV infection.
- **Research Focus:**
  - Basic Prevention Science Research: Small-scale pilot or feasibility studies that test empirically or etiologically derived or theory-driven hypotheses with the potential for developing new prevention approaches and examine features of prevention programs that may account for successful intervention outcomes.
  - Efficacy and Effectiveness Research: Randomized control or equivalent design studies testing the efficacy of theory-based or empirically derived prevention approaches using relatively small, well-defined, and controlled samples and implementing such approaches in controlled studies with larger, more diverse samples in real-world settings.
  - Systems Research: Studies that take effective interventions to scale to examine factors that affect program sustainability and dissemination, including the selection, adoption, organization, and delivery of the prevention services.
  - Methodology: Studies considering missing data in randomized trials, intervention fidelity, or multilevel longitudinal analyses.

Distribution of Selected Drug Use Related Variables by Race/Ethnicity

One of DESPR's foci is to monitor drug use in the United States. This systemic monitoring indicates that drug use and drug use disorders are distributed across the major racial/ethnic groups in approximately the same proportions as these groups are represented in household populations (Figure 1). However, when some of the most serious consequences of drug use are examined, for example, imprisonment and AIDS, African Americans and Hispanics are disproportionally represented, indicating a need for interventions.



International Foci and Funding Opportunities **http://www.drugabuse.gov/about/organization/despr/GrantsInfo.html**

Epidemiology Research Branch (ERB)

ERB supports international research on the etiology and epidemiology of drug abuse and co-occurring behavioral, developmental, social, and health and medical problems of drug abuse, including HIV/AIDS and other bloodborne infections. ERB's international research portfolio includes studies in Canada, Brazil, Argentina, Nicaragua, Chile, Costa Rica, Russia, Lithuania, Bulgaria, Vietnam, India, China, Tanzania, South Africa, Malawi, and along the U.S.-Mexico border. In addition, through NIDA's National Hispanic Science Network, ERB is facilitating the establishment of a Latin American epidemiology network on drug abuse. With the other DESPR branches, ERB seeks to foster and strengthen its collaborative relationship with the NIH Fogarty International Center (FIC), through NIDA's participation in FIC program initiatives and announcements and its own outreach to promising international scientists.

Services Research Branch (SRB)

In collaboration with the Fogarty International Center, SRB supports international grants in Africa, Southeast Asia, Central America, the Eastern Mediterranean region, and North America to improve the quality of treatment services for HIV and tuberculosis; train clinical researchers in conducting services research; provide treatment services for tobacco/nicotine use and addiction; and develop a drug use screening instrument. SRB is now supporting an International Clinical, Operational, and Health Services Research and Training Award (ICOHRTA) grant to develop short- and long-term training curricula in Haiti in research methodology and ethics, program management, and scientific writing; a grant for research in Uganda to expand that nation's capacity to address the public health and scientific challenges of the evolving HIV and TB epidemics through clinical, operational, and health services research; and a study in China and Thailand to examine and compare characteristics and processes of Therapeutic Communities treatment with those in the United States.

Prevention Research Branch (PRB)

PRB and FIC fund research training in Peru, Chile, China, India, Thailand, Vietnam, Burma, and Laos. PRB also supports research in South Africa, Thailand, Norway, Ukraine, Russia, Hungary, Bulgaria, and Canada. With support from Norway and NIDA, researchers are evaluating the adoption, adaptation, and implementation of evidence-based parent management training. In South Africa, a randomized control efficacy study is investigating a 2-year, school-based universal drug abuse and HIV/AIDS prevention intervention for 14- to 16-year-olds. Researchers in Russia, Hungary, and Bulgaria are investigating whether social diffusion models of HIV prevention can be implemented through informal network leaders to reduce sexual and drug use risks for HIV. Another group seeks to reduce and prevent methamphetamine use in Thailand. A cross-national study in Ukraine, Poland, and Russia is studying the World Health Organization rapid policy assessment and response process in relation to legal and structural barriers to HIV prevention among injection drug users.

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Division of Pharmacotherapies and Medical Consequences of Drug Abuse (DPMCDA)

MISSION STATEMENT

To improve drug abuse treatment throughout the nation using science as the vehicle to ensure the identification, evaluation, and development of new and improved treatments, including pharmacotherapeutic and immunological treatment agents, that will address the unmet needs of the drug abuse treatment community, and support research on the medical consequences of drug abuse and infections including HIV.

DPMCDA Goals

The Division of Pharmacotherapies and Medical Consequences of Drug Abuse (DPMCDA) was created to fulfill NIDA's congressional mandate to establish a medications development program (MDP). The MDP is modeled after a typical pharmaceutical company with the ability to conduct all phases of medications development, from synthesis and screening of potential drug entities to preparing submissions for New Drug Applications (NDAs). Our goal is to develop proprietary compounds and marketed medications that show promise for the treatment of drug dependence, employing two approaches to obtaining compounds: top down (marketed medications) and bottom up (basic science, discovery). DPMCDA has an extensive clinical trial infrastructure administered through contracts and interagency agreements. This infrastructure is capable of conducting Phase I clinical pharmacology studies and Phase II and Phase III multicenter clinical trials.

DPMCDA actively seeks collaborators (from pharmaceutical companies, academic research institutions, and other commercial entities) to exchange resources, expertise, and data for the progression of a medications project. The Division utilizes six types of agreements to accomplish these goals and has had several successful collaborations with pharmaceutical companies.

Medications development projects must undergo a series of multilevel concept and safety reviews and requirements, including special expert consultant reviews, Institutional Review Boards, Data Safety Monitoring Boards, the U.S. Food and Drug Administration, and medical (Adverse Event Reporting) and study monitors (Good Clinical Practices adherence).

The Medical Consequences Branch of DPMCDA supports research on medical consequences of drugs of abuse and co-occurring viral and bacterial infections, including HIV, hepatitis (B, C, and D), tuberculosis, STIs, and other human infections (special studies are supported in women, minorities, children and adolescents, and underserved populations). Research may include, but is not limited to, studies of the impact of drug addiction on medical/health conditions and the spread of infectious diseases and other conditions that might affect all physiological or biochemical systems.

DPMCDA's medications development program has a proven success record-it has obtained three NDA approvals:
- LAAM
- Buprenorphine
- Buprenorphine/Naloxone

DPMCDA's research activities are administered through the following branches:
- Medical Consequences Branch
- Medications Research Grants Branch
- Chemistry and Pharmaceutics Branch
- Clinical Medical Branch
- Medications Discovery and Toxicology Branch

Research Interests

DPMCDA currently operates five medications development projects (MDPs):

Cannabis
DPMCDA issued a Program Announcement (PA) in 2007, **Medications Development for the Treatment of Cannabis-Related Disorders,** for R01 (PA-07-365) and R21 grant applications (PA-07-366). New scientific findings prompted DPMCDA to start this MDP:
- Availability of newly marketed medications whose mechanisms of actions may have potential therapeutic effects on the clinical manifestations of cannabis dependence.
- Recent discovery of an endogenous cannabinoid system with specific receptors and endogenous ligands.
- The availability of genetically engineered knockout mice that lack functional cannabinoid receptors permits us to study genetic predispositions to the effects of cannabinoids.
- Reliable preclinical models have been developed to study the rewarding and addiction-producing effects of THC.
- New chemical entities, some of them already being investigated at the clinical level, target the cannabinoid system and have potential therapeutic benefits.

Cocaine
In its largest MDP effort, the Division and its contractors have clinically tested 68 pharmacotherapies to treat cocaine dependence. Three of these pharmacotherapies (topiramate, disulfiram, and modafinil) have shown some efficacy in double-blind, placebo-controlled studies and are undergoing further testing via the grants and contracts mechanisms. DPMCDA is interested in compounds that interact with the following targets for cocaine, methamphetamine, and possibly other drugs of abuse:
- D1 receptor agonists
- D3 receptor agonists and antagonists
- Glutamate modulators
- CRF-1 antagonists
- CB-1 antagonists
- GABA-mimetics
- Orexin receptor antagonists
- VMAT-2 inhibitors (methamphetamine)
- Muscarinic M5 agonists and antagonists

Methamphetamine
The second-largest MDP program currently funds 16 Phase I studies and 6 Phase II studies via the grants and contracts mechanisms. DPMCDA issued a PA in 2007, **Medications Development for the Treatment of Amphetamine and Amphetamine-Like Related Disorders,** for R01 (PA-07-333) and R21 (PA-07-334) applications, and a center grant is devoted solely to testing treatment agents for methamphetamine dependence in Phase I and Phase II clinical trials.

Opiates
The Division is collaborating with US World Meds on a multicenter trial of lofexidine for opiate withdrawal. Other projects involve kappa antagonists and depot naltrexone.

Vaccines
DPMCDA also supports research and development of monoclonal antibodies or vaccines for the treatment of substance use disorders, drug overdose indications, and nicotine dependence.

International Opportunities

NIDA invites applications for international collaborative research on drug abuse and addiction; medical consequences such as HIV, HCV, TB, or STIs; and behavioral or pharmacological interventions. DPMCDA has funded international research through:
- **International Research Collaboration on Drug Addiction** R01, PA-07-275; R03, PA-07-311; R21, PA-07-310
- **Collaborative Clinical Trials in Drug Abuse,** R01: PAR-07-232
- HIV Network for Prevention Trials (HIVNET) **http://www.scharp.org/ceg/**
- Fogarty International Center, **http://www.fic.nih.gov.**

Current International Projects

Baum, DA16551-Botswana clinical trial of antioxidant micronutrients to slow HIV disease progression

Dobs, DA14098-Study of metabolic (including nutritional) and endocrine disorders in Chinese IDUs

Gorbach, DA13868-Pilot work on metabolic (nutritional) consequences of HIV infection and substance abuse in Argentina through the Center for Drug Abuse and AIDS Research

Gorbach, DA022163-Metabolic and nutritional variations in HIV-infected drug abusers in India and Vietnam

Husbands, DA007315-Designing and synthesizing new compounds as potential pharmacotherapies for cocaine addiction (United Kingdom)

Kumar, DA13550-Pilot study of cognitive impairment of marijuana and HIV infection in India

Lai, DA15020-Cardiovascular complications of methamphetamine and HIV infection in China

Lai, DA21119, China MACS-Exploratory study of a multicity cohort of SMS in China

Morse, DA15024-Interactions between traditional medicine and antiretroviral drugs in HIV-infected substance abusers

Kosten, DA018863-Study to evaluate Naltrexone, Lofexidine, and their combination in conjunction with psychosocial treatment to prevent relapse in Russian detoxified heroin addicts

Fischer, DA018417-Study in Austria to assess in opioid-dependent pregnant women the efficacy of Buprenorphine for reducing neonatal abstinence syndrome relative to methadone

Selby, DA015741-Study in Canada to assess in opioid-dependent pregnant women the efficacy of Buprenorphine for reducing neonatal abstinence syndrome relative to methadone

Woody, DA017317-Comparison of impact of depot injectable Naltrexone vs. oral Naltrexone on retention and outcome in detoxified heroin addicts in Russia

Compton, DA15463-Analyzing and interpreting the Electric Stimulation technique, which is a valid control for the hyperalgesia measures obtained in this Australian collaboration

Raskin, TW006674-Study to facilitate the development of the natural product-based pharmaceutical capabilities in Uzbekistan and Kyrgyzstan while encouraging biodiversity conservation and exploration

International supplement:
Kleber, DA009236-Studying an implant formulation of Naltrexone in Australia

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Intramural Research Program
International Activities and Interests

MISSION STATEMENT

Promote international collaborative research that facilitates the elucidation of brain mechanisms underlying drug addiction and relapse, chronic pain, and the development of new treatment modalities. Provide extended predoctoral and postdoctoral training for foreign investigators and collaborative research experience for senior foreign investigators in state-of-the-art techniques for studying drug addiction and pain at the molecular, neurobiological, preclinical, and clinical levels.

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Medications Discovery Research Branch

Jonathan L. Katz, Ph.D. – Acting Branch Chief, Section Chief
Amy H. Newman, Ph.D. – Section Chief

Have
- Novel ligands, including irreversible and fluorescent compounds, that have high affinity and selectivity for the: (1) dopamine transporter, (2) dopamine D3 receptor, or (3) mGluR5 receptor.
- State-of-the-art analysis of behavior for preclinical assessment of pharmacological profiles.
- Assessments of the neurochemical effects of abused drugs (receptor binding and in vivo microdialysis).

Seek
- Selective receptor agonists, partial agonists, and antagonists with affinity for targets involved in drug abuse.
- Collaborative opportunities to use these novel tools in models of drug abuse that will contribute to our understanding of the molecular basis of cocaine addiction and provide new strategies for drug design.

Neuroimaging Research Branch

Elliot Stein, Ph.D. – Branch, Section Chief

Have
State-of-the-art instruments and techniques for real-time imaging of brain chemistry, structure, and function in humans and experimental animals (MRI, MRS, DTI, fMRI).

Seek
- New collaborative opportunities to develop novel MRI techniques.
- Novel tasks to probe human decision making as it applies to drug abuse treatment and prevention.
- New MR-contrast agents to reveal cellular and molecular information of the brain.

Recent Examples
- Collaboration with Trinity College, Dublin, on cognitive task development in healthy controls and applications in Baltimore (NIDA) using fMRI in drug-dependent subjects.
- Collaboration with Institute of Psychiatry, Kings College (London) on the affective (emotion) effects of marijuana.
- Collaboration with Cambridge University (United Kingdom) on implicit memory deficits in cocaine addiction.

Clinical Pharmacology and Therapeutics Research Branch

Kenzie Preston, Ph.D. – Branch Chief, Section Chief
Marilyn Huestis, Ph.D. – Section Chief
Stephen J. Heishman, Ph.D. – Unit Chief

Have
- State-of-the-art questionnaires for collection of self-report data from users of licit (tobacco/nicotine) and illicit (e.g., marijuana, heroin, cocaine) drugs in inpatient and outpatient studies.
- State-of-the-art gas-chromatography mass spectrometry and liquid chromatography tandem mass spectrometry methods for the analysis of illicit drugs and metabolites in biological fluids and tissues.
- Mathematical models for differentiating new drug use from residual drug excretion.
- Conceptual designs for monitoring blood, urine, oral fluid, sweat, and hair in pregnant drug addicts during gestation and detection of *in utero* drug exposure in the infant.
- State-of-the-art laboratory procedures for studying reactivity to smoking cues and direct effects of nicotine on cognitive functioning.
- State-of-the-art facility to treat adolescents seeking help to quit smoking.

Seek
- Collaborators able to translate questionnaires into their native language and administer them to samples of drug users of various ages from a variety of locations, including reports of experiences with withdrawal and coping techniques.
- Controlled drug administration studies in humans.
- In utero drug exposure of licit pharmacotherapies and illicit drugs.
- Biological monitoring in treatment studies.
- Driving under the influence, workplace drug testing and anti-doping studies.
- Alternative routes of cannabinoid agonist delivery.
- Cannabinoid antagonist administration studies.

Recent Examples
- Collaboration with French and Russian investigators who are creating French- and Russian-language versions of a Marijuana Quitting questionnaire.
- Discussions with colleagues in Latin America about translating the questionnaire into Spanish, collecting data at various sites using the same instrument, and sending the data to NIDA for analysis and cross-site comparisons.

Behavioral Neuroscience Research Branch

Roy Wise, Ph.D. – Branch, Section Chief
Steven R. Goldberg, Ph.D. – Section Chief
Yavin Shaham, Ph.D. – Section Chief
Toni Shippenberg, Ph.D. – Section Chief

Have
- State-of-the-art animal behavioral screening models for preclinical pharmacological profiles believed to be predictive of anti-addiction, anti-craving, and anti-relapse efficacy at the human level.
- State-of-the-art *in vivo* and *ex vivo* models for assessing neurochemical and neuroanatomical bases for elucidating underlying mechanisms for addiction, relapse, and persistent pain.
- State-of-the-art primate cannabinoid (THC) and nicotine self-administration models to assess potential human abuse liability efficacy and determine pharmacological profiles of potential new anti-smoking or anti-cannabis medications.
- State-of-the-art live cell imaging techniques to permit visualization and quantification of protein/protein interactions in real-time.
- State-of-the-art analytical chemical techniques for minute-by-minute quantification of neurotransmitter release in the behaving animal.

Seek
- Highly potent and selective receptor agonists, partial agonists, and antagonists for receptor subtypes thought to impact addictive processes.
- New approaches to assess interactions between neurotransmitter-neuromodulator systems, receptors, and heteromeric receptor complexes.
- New cannabinoid compounds that selectively modulate the actions of endogenous cannabinoid systems, with potential beneficial effects for the treatment of psychiatric disorders or drug dependence.

Recent Examples
- Collaboration with the University of Barcelona, Spain, on adenosine 2A-cannabinoid CB1-dopamine D2 heteromeric receptor complexes and their function in addictive brain reward processes.
- Collaborations with the University of Sydney, Australia, and University of Barcelona, Spain, on the role of novel signaling molecules in inflammatory pain.
- Collaboration with the University of Strasbourg, France, on the role of endogenous opioid peptide systems in modulating psychostimulant and opiate addiction.
- Collaboration with Université de Poitiers, France, on endocannabinoid mediation of addictive processes.
- International collaboration on regulation of dopamine transporter function by G-protein coupled receptors.
- Collaboration with University of Toronto, Canada, on evaluation of medications for smoking cessation.
- Collaboration with Institute of Experimental Medicine, Budapest, on endocannabinoid modulation of cognition, anxiety and emotional disorders.

Molecular Biology Research Branch

George Uhl, M.D., Ph.D. – Branch, Section Chief

Have
State-of-the-art molecular genetics and molecular neurobiology of addictions and related conditions in humans and mouse model systems.

Seek
- Well-characterized samples from substance-dependent individuals who are successful vs. unsuccessful in quitting.
- Well-characterized substance dependent and matched control individuals.
- Well-characterized samples from individuals with individual differences in regional brain volumes and/or activation patterns and mnemonic systems.
- Collaborations in characterizing knockout mice with related phenotypes.

Recent Examples
- Humans
  - Collaboration with Taiwan Methamphetamine Genetics Collaboration which has produced more than 500 million person/genotypes in methamphetamine abusers and ethnically matched controls.
  - Collaboration with Japanese Genetics of Drug Abuse Consortium, which has produced more than 124 million person/genotype equivalents from amphetamine abusers and ethnically matched controls.
  - International multi-site collaborations for samples with narcolepsy has confirmed second human gene variant for this disorder.
  - International multi-site collaboration for PD confirmed and ruled out several candidate gene loci for PD.
- Mice
  - Collaboration with Japan on studies of mouse models for human allelic variants that differ between addicts and control individuals.

Molecular Neuropsychiatry Research Branch

Jean Lud Cadet, M.D. – Branch, Section Chief
Yun Wang, Ph.D. – Section Chief

Have
State-of-the-art methods for cDNA microarray analysis of gene expression and proteonomics for identification of biomarkers using clinical samples from drug-dependent individuals.

Seek
Well-characterized samples from drug-dependent individuals and matched control individuals.

Recent Example
Collaboration with Université de Poitiers, France, on effects of methamphetamine using cDNA array and other molecular techniques.

Chemical Biology Research Branch

Kenner C. Rice, Ph.D. – Branch, Section Chief
Richard B. Rothman, M.D., Ph.D. – Section Chief
Eliot L. Gardner, Ph.D. – Section Chief

Have
State-of-the-art instruments and techniques in organic/medicinal chemistry and pharmacology for determining mechanisms underlying drug abuse processes and for studying structure and function of neurotransmitter systems in mammalian CNS, molecular mechanisms of action of CNS drugs, nucleic acid receptor systems, chemotherapy of viral or neoplastic disease, and the regulation of the hypothalamic-pituitary-adrenal axis coordinating neuroendocrine, autonomic, immune and behavioral responses to stress through cortical receptor hormones.

Seek
Collaborations on *in vivo* or *in vitro* studies of novel opioids, CRH receptor antagonists, and agonists or antagonists that are involved in drug abuse.

Recent Examples
- Collaboration with Newcastle University, UK, for determination of the receptor mediation of 5-HT and alpha-methyl-5HT on glycogen metabolism in rat hepatocytes. Alternative routes of cannabinoid agonist delivery.
- Collaboration with Ghent University, Belgium, for determination of biodistribution of radiolabeled dopamine/seratonin/norepinephrine biogenic reuptake inhibitors in mice.
- Collaboration with National Taiwan University to conduct studies on the interactions of 5-DMDPH in rat brain.

Cellular Neurobiology Research Branch

William Freed, Ph.D. – Acting Branch Chief, Section Chief
Carl Lupica, Ph.D. – Section Chief

Have
- State-of-the-art methods for microarray and Q-PCR assessment of gene expression and proteonomics for identification of biomarkers using clinical samples from drug-dependent individuals.
- Cell lines and differentiated ES cells that respond to drugs of abuse *in vitro*

Seek
- Collaborations on *in vitro* studies (e.g., treating cell preparations with drugs and providing protein or RNA for further experiments).
- Well-characterized post-mortem human brain samples from substance-dependent and matched control individuals.
- Determination of changes in gene expression which occur in human substance abusers.

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Special Populations Office

SPO Goals

In 1993, NIDA established the Special Populations Office (SPO) to address:

- The underrepresentation of research on drug abuse and addiction as it affects racial/ethnic minority and other special population groups.
- The underrepresentation of racial/ethnic minority scientists involved in NIDA-supported and other drug abuse research.

The SPO has made concerted efforts to develop and support programs and initiatives that address the development of racial/ethnic minority scientists and the scientific knowledge base on drug abuse and addiction in racial/ethnic minority groups and other special populations. These efforts have been executed through a number of programs, initiatives, and workgroups including:

- Research Supplements to Promote Diversity and Health-Related Research ("Diversity Supplements")
- Special Populations Research Development Seminar Series
- Summer Research with NIDA
- The Minority Institutions' Drug Abuse Research Program (MIDARP)
- Minority Workgroups of Researchers and Scholars
- Health Disparities Initiative
- Historically Black Colleges and Universities (HBCU) Initiative
- Southern Africa Initiative
- African American Initiative
- Summer Internship Program at the NIDA Intramural Research Program (an intramural program)

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International Focus

The Special Populations Office has limited ongoing international activities. The Office is home to the Southern Africa Initiative and is active in the newly formed NIDA Latin America Initiative.

Southern Africa Initiative

The Southern Africa Initiative's primary goal is to stimulate binational collaborative drug abuse research between the United States and Southern Africa in the areas of:

- Epidemiology
- Early interventions
- Clinical, prevention, treatment, and health services research aimed at reducing drug abuse and addiction and their associated adverse behavioral, social, and health consequences (e.g., violence and infectious diseases such as HCV, HIV/AIDS, or pulmonary diseases).

The Special Populations Office held a follow-up meeting, *Southern Africa Initiative: Research Progress and Perspectives*, in April 2007 to discuss ongoing research in Southern Africa and the impact of NIDA funding on research, capacity development, and barriers encountered while conducting research in the region.

Latin America Initiative

The Latin America Initiative is a multicomponent set of activities designed to enhance the research and research capabilities of Latin American countries. The activities include those to:

- Increase training in medical schools and schools of nursing on early detection and evaluation of drug use disorders
- Increase training in secondary data analysis to mine existing data sets to provide information useful to policy makers
- Increase access to NIDA materials in Spanish
- Increase training and participation in clinical trials
- Improve and stimulate the creation of regional networks to enhance surveillance and research.

The Special Populations Office works closely with the International Program and other components of the Latin America Initiative to assist NIDA in identifying and interacting with other Federal partners working in the region. In addition, the Office coordinates the involvement of the National Hispanic Science Network in the initiative.

NIDA
NATIONAL INSTITUTE ON DRUG ABUSE
The Science of Drug Abuse & Addictions

Women and Sex/Gender Differences Research Program

Goals

NIDA's Women and Sex/Gender Differences Research Program promotes the study of women and sex/gender differences in all areas of drug abuse research. Until recent years, the subjects in drug abuse research, as in other fields of public health, were almost exclusively male; as a result, few data were available on women. For well over a decade, however, NIDA has actively promoted drug abuse research focusing not only on the study of women, but also on sex/gender differences, as this approach permits identification of outcomes that vary by sex/gender. This research is now supported in all of NIDA's programmatic branches, and the research findings have clearly established its importance. Growing numbers of studies are reporting research outcomes that are specific to either males or females and outcomes that are opposite in males and females. From basic studies of molecular genetics and neurotransmitters to studies of etiology, epidemiology, and prevention/treatment interventions, the scientific and clinical importance of studying factors specific to women and analyzing data separately for males and females is becoming more and more evident.

Research Interests

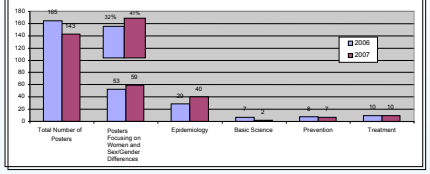
The growing body of research on women and sex/gender differences in drug abuse is pointing to many aspects of drug abuse in which male-female differences are likely to exist but remain unexplored. Such research in the long run will improve our understanding of the mechanisms and etiology of drug abuse and addiction and how to tailor prevention and treatment interventions that maximize outcomes for both males and females. To further this research, in 2007, NIDA, along with the National Institute on Alcohol Abuse and Alcoholism (NIAAA), issued three program announcements (PAs) titled **Women and Sex/Gender Differences in Drug and Alcohol Abuse/Dependence,** calling for grant applications in all areas of drug abuse research. These PAs can be accessed by Googling PA-07-329, PA-07-330, and PA-07-331.

International Focus

The NIDA International Forum, a satellite to the CPDD meeting, features drug abuse research being conducted around the world. In 2006, the International Forum had 289 participants from 53 countries, and in 2007, more than 260 participants from 40 countries. In 2006, meeting participants presented 165 posters, and in 2007, 143 posters.

In an effort to determine the representation of research on women and sex/gender differences at the 2006 and 2007 International Forums, we analyzed the content of the 165 poster abstracts from the 2006 Forum and the 143 poster abstracts from the 2007 Forum. We identified abstracts that met at least one of the following three criteria: (1) the research was focused only on female subjects, (2) examination of sex/gender differences was the focus of the research, (3) results of a sex/gender analysis were reported, although they were not the focus of the research. Having identified the women and sex/gender differences posters, we then sorted them into the following four research areas specified by the NIDA Forum: epidemiology, basic science, prevention, and treatment. Finally, we sorted the abstracts with respect to the country represented by the abstract's first author.

Figure 1
2006 and 2007 NIDA International Forums – Number and Percentage of Posters Focusing on Women and/or Sex/Gender Differences and their Areas of Research



In Figure 1, the first set of bars shows that the total number of NIDA Forum posters in 2006 and 2007 was 165 and 143, respectively. The second set of bars shows that the number of posters on women and/or sex/gender differences was 53 in 2006 and increased to 59 in 2007. The insert over those bars shows that this increase in the absolute number of posters represents an increase from 32% of the total Forum posters in 2006 to 41% of the total Forum posters in 2007.

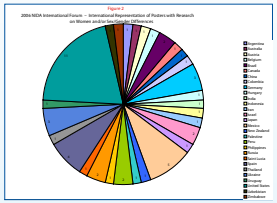
The remaining sets of bars in Figure 1 show that the number of epidemiology posters increased from 29 (55%) to 40 (68%) from 2006 to 2007; the number of basic science posters in 2006 and 2007 was 7 (12%) and 2 (3%), respectively; the number of prevention posters was 8 (15%) in 2006 and 7 (12%) in 2007; and there were 10 (19%) treatment posters in 2006 and 10 (17%) in 2007.

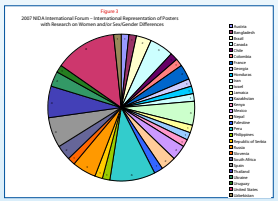
Examples of epidemiology studies include:
- Gender differences in drug abuse behaviors and perceptions among youth in Palestine
- Substance use during pregnancy
- Characterization of gender differences in the relationship between violent behavior and cocaine use.

Examples of basic science research include:
- Sexual dimorphic effects in rat retrosplenial cortex
- Maternal-paternal pre-mating nicotine exposure in mice and its effects on nicotine reward and nicotine-induced locomotion in offspring.

Examples of prevention research include:
- Gender differences in IDUs' attitudes and beliefs about HIV and its relationships to other topics, particularly, intentions to adopt safer needle and sexual practices
- Adolescent Caribbean girls' attitudes and intentions toward risk behaviors, including drugs, alcohol, drugs, and HIV/AIDS risk behaviors, and the role of the relationship with their mothers.

Examples of treatment research include:
- Examination of the association between a patient's and therapist's verbal behavior during an MI-based smoking intervention for women post partum
- Characterization of the postnatal environment of infants born to mothers receiving methadone maintenance treatment.





Figures 2 and 3 depict the large number of countries representing research on women and/or sex/gender differences in 2006 (Figure 2) and 2007 (Figure 3). In both years, researchers from 29 countries presented posters on women and/or sex/gender differences, although the same 29 countries were not represented each year. Over 2006 and 2007, researchers from a total of 42 countries presented posters on women and/or sex/gender differences.

A number of the posters on women and/or sex/gender differences were supported by NIDA, including posters on the following topics:
- The impact of crack smoking using crushed aluminum cans as makeshift pipes on female crack smokers of Porto Alegre, Brazil.
- The association between perceived parental monitoring and drug use in representative samples of adolescents in three cities in Peru.
- Gender differences in the relationship between sexual abuse and drug use among students in two middle schools located in downtown Mexico City.
- Gender differences in the role of early behavioral intentions expressed in childhood with respect to later onset of tobacco smoking in young adulthood in Peruvians.
- A U.S./Georgia research collaboration to provide female partners with tools to support the male's drug abstinence.
- A brief, women-focused, HIV prevention intervention for Black and Colored high-risk drug-using women in Cape Town.
- Analyses of the National Survey on Drug Use and Health to investigate the first onset of cocaine dependence among recent onset cocaine users revealed that excess risks associated with crack-smoking included being female and of African heritage.
- Substance abuse problems in Ukraine with results showing that 97 percent of HIV-positive children were infected by their mothers.

Contact Us

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U.S. National Institutes of Health

JOHN E. FOGARTY INTERNATIONAL CENTER

FOR ADVANCED STUDY IN THE HEALTH SCIENCES

MISSION STATEMENT

The Fogarty International Center, the international component of the NIH, addresses global health challenges through innovative and collaborative research and training programs and supports and advances the NIH mission through international partnerships.

Fogarty International Center Goals

The Fogarty International Center (FIC) forges collaborations with domestic and international partners in international research and training related to global health needs and focused on developing and transitional (low and middle-income, LMIC) countries to pursue three core objectives:

- Accelerate the pace of discovery and its application by enabling scientists worldwide to share expertise, conceptual insights, analytic methods, data sets, patient cohorts, or special environments.
- Help develop a cadre of highly capable foreign investigators positioned to address global, regional and local health needs through research and to cooperate with U.S. scientists in areas of the world that-due to geography, population structure, or disease burdens-provide unique opportunities to understand disease pathogenesis, anticipate disease trends, or develop interventions.
- Engage and assist both young and established U.S. investigators to address scientific challenges related to global health.

These objectives form the conceptual basis for current FIC programs related to research and research training on topics such as HIV/AIDS, emerging infectious diseases, maternal and child health, population research and demographic science, environmental and occupational health, medical informatics, nervous system disorders and function, and drug discovery from biodiversity. The disciplinary fields described are pursued through a range of funding mechanisms, including:

- Institutional research training grants for young LMIC investigators
- Cooperative agreements
- Small research collaboration grants
- Early career development awards for U.S. investigators
- Fellowships for U.S. medical and Ph.D. students
- Multilateral initiatives involving international organizations

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Fogarty Center—NIDA Programs

Research Grants

- The **Global Health Research Initiative Program for New Foreign Investigators (GRIP)** supports the return of NIH-trained foreign investigators to their home countries to enhance the scientific research infrastructure in developing countries and to stimulate research on high-priority global health-related issues. Former NIDA INVEST Fellows are eligible to compete for GRIP awards (PAR-07-328).
- **Brain Disorders in the Developing World (BRAIN)** supports collaborative research and capacity-building projects on nervous system disorders in developing countries (R01: PAR-08-112; R21: PAR-08-113).
- The **Fogarty International Research Collaboration Award—Behavioral, Social Sciences** (FIRCA-BSS; PAR-06-437) and the companion **Fogarty International Research Collaboration Award—Basic Biomedical** (FIRCA-BB; PAR-07-335) facilitate collaborative research between scientists supported by NIDA and investigators in developing and transitional countries.
- The **International Cooperative Biodiversity Groups Program** addresses the interdependent issues of drug discovery, biodiversity conservation, and sustainable economic growth.
- The **International Tobacco and Health Research and Capacity Building Program** supports transdisciplinary research on tobacco consumption in low- or middle-income nations.

Research Training Grants

- **AIDS International Training and Research Program (AITRP) Awards** support biomedical and behavioral research training in developing and transitional countries on HIV/AIDS and tuberculosis (TB), and research on prevention of HIV infection among drug-using populations (PAR-07-348).
- **International Clinical, Operational, and Health Services Research and Training Awards (ICOHRTA)** support institutional training programs for collaborative, multidisciplinary, international research in developing and transitional countries.
- **ICOHRTA—AIDS/TB** awards support research training programs in developing countries where AIDS, TB, or both are significant problems.
- **International Research Ethics Education and Curriculum Development Awards (BIOETH)** support institutional grants to develop bioethics curricula on research in low- and middle-income nations.

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