

NIDA International Program



Summary of Fiscal Year 2007 Program Accomplishments



National Institute on Drug Abuse
National Institutes of Health
U.S. Department of Health and Human Services



NIDA'S GLOBAL PERSPECTIVE

The United States is one of the few countries to have a research institute dedicated exclusively to the study of drug abuse antecedents and consequences. From its roots in a 1935 U.S. Public Health Service Hospital research facility, the National Institute on Drug Abuse (NIDA) has grown to be the major global source of research support and discovery in the field of drug abuse. The United Nations Office on Drugs and Crime (UNODC) estimates that more than 200 million people aged 15 to 64—from every country on earth—have used drugs at least once in the past 12 months. Furthermore, UNODC reports that drug abuse and addiction are global issues: advances by one country or region in addressing the public health challenges of drug use, abuse, and addiction are frequently offset by increased challenges in another part of the world.

NIDA recognized early the global nature and significance of drug abuse and its correlated health consequences. Since the early 1990s, the NIDA International

Program has been working to create local, regional, national, and international networks that advance scientific knowledge through research, address the public health impact of drug abuse and addiction by building research capacity internationally, and effectively disseminate the knowledge gained through NIDA-supported research to scientists, treatment providers, and policy makers around the world.

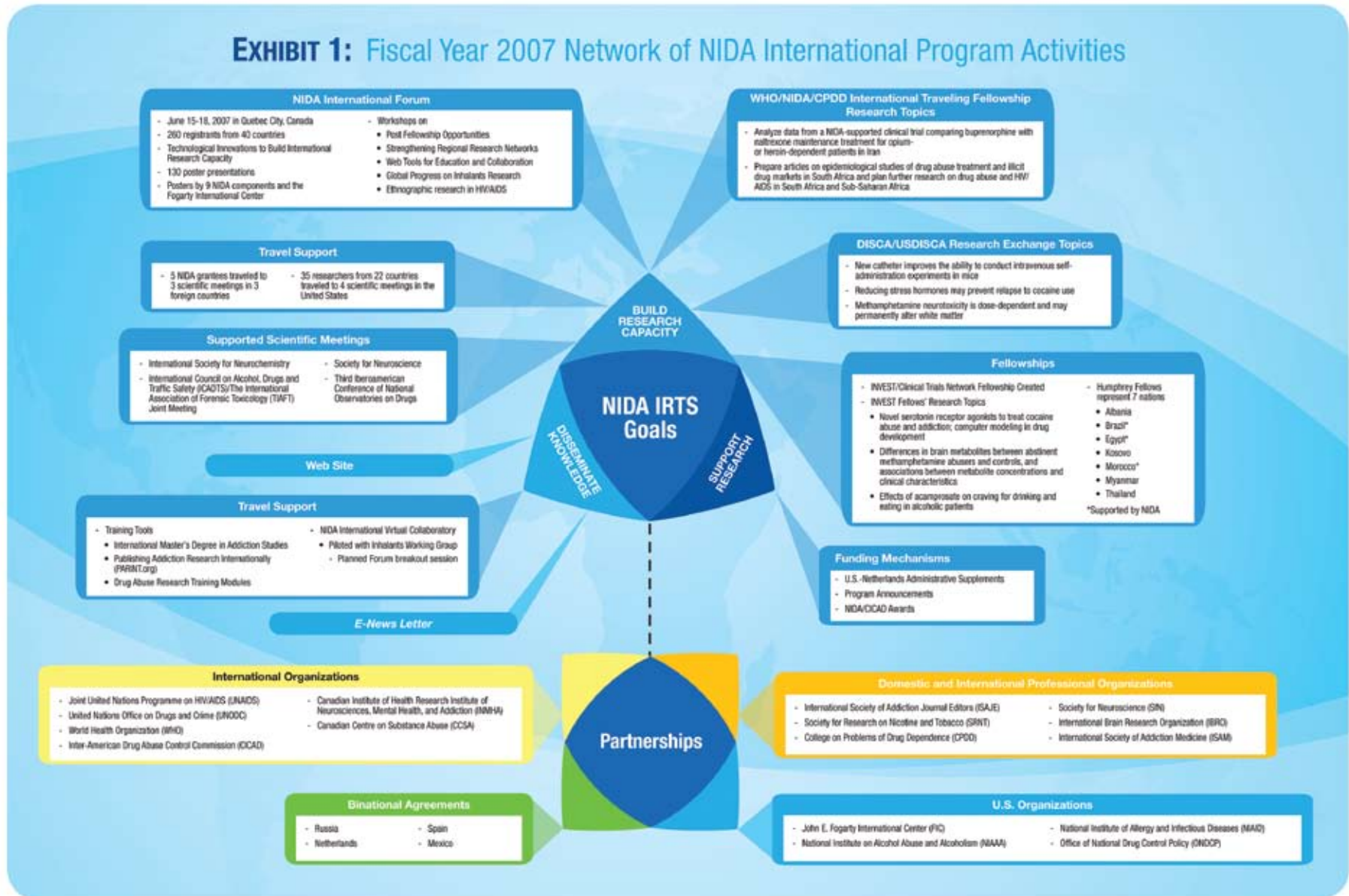
NIDA International Program activities include a variety of funding opportunities, fellowship and research exchange programs, meetings and symposia, partnerships with other international funding organizations, Web-based research and training tools, and information dissemination. Although each NIDA International Program activity independently addresses one aspect of addiction's impact on public health, the integration of each activity into the wider network of NIDA's international activities multiplies the effects of a single activity. Exhibit 1, Fiscal Year 2007 Network of NIDA International Program Activities,

graphically demonstrates how the International Program achieves its goals by connecting its 2007 tasks into a coordinated network of activities and partners.

International Partnerships

Working to maximize resources, the NIDA International Program creates partnerships with other organizations that support research funding and training activities, including international organizations, other U.S. Government agencies, domestic and international professional societies, and individual foreign governments. During Fiscal Year (FY) 2007, the NIDA International Program partnered with the Inter-American Drug Abuse Control Commission (CICAD) to cosponsor regional meetings of Latin American epidemiologists, support research conducted by pre- and postdoctoral students, and—with additional partners—international meetings addressing drug abuse issues in Iberoamerica. NIDA will shortly become a Collaborating Center of the World Health Organization (WHO), formalizing the

EXHIBIT 1: Fiscal Year 2007 Network of NIDA International Program Activities



long-standing cooperation between the two agencies. Other examples of International Program partnerships include NIDA support for the UNODC TreatNet project to translate research results into clinical practice, and

binational agreements between NIDA and research organizations in Mexico, the Netherlands, Russia, and Spain. These and other partnerships help the International Program develop new international

scientific relationships and significantly enhance existing associations. Each of these partnerships promotes new research initiatives, builds international research capacity, and disseminates knowledge.

Exhibit 2—Fiscal Year 2007 NIDA International Program Activities

Category	Number of Activities	Number of Countries
International Research Activities		
• Projects Funded Through Domestic Grants With Foreign Components	124	44
• Projects Funded Through Direct Foreign Grants	17	9
• Binational Agreements	4	4
• Grants Awarded by Interagency Funding Agreements	43	33
• NIDA/CICAD Awards	15	6
Fellowships and Research Exchanges		
• DISCA/USDISCA	3	3
• INVEST Fellowships	5	4
• NIDA Hubert H. Humphrey Fellowships	7	7
• WHO/NIDA/CPDD International Traveling Fellowships	2	2
Scientific Exchange and Capacity Building		
• International Program Meetings	1	1
• Symposia	4	3
• Travel Support		
— NIDA Grantees	5	3
— Foreign Researchers	35	22

This coordinated network of activities and partners helps the NIDA International Program successfully promote collaborative research and technical consultation by scientists around the world. Exhibit 2, Fiscal Year 2007 NIDA International Program Activities, summarizes the activities the NIDA International Program supports to fulfill its mission:

- Take advantage of unique opportunities to advance scientific knowledge through research.
- Address the global impact of addiction on public health through activities that build research capacity internationally.
- Effectively disseminate and share the knowledge gained through NIDA-supported research to scientists, treatment providers, and policy makers around the world.



ADVANCE SCIENTIFIC KNOWLEDGE THROUGH RESEARCH

NIDA-supported international collaborative research plays an important role in global public health efforts to address drug abuse and addiction. NIDA supports a broad array of biomedical and behavioral research to understand how drugs work and elucidate the interconnected web of social, environmental, and developmental factors that we now know influence addiction and relapse. 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.

NIDA has identified five research priorities: linkages between HIV/AIDS and drug abuse, adolescent and prenatal tobacco exposure, inhalant abuse, methamphetamine, and drugged driving. Drug-using behaviors influence HIV transmission and the progression of HIV disease to AIDS. Although the dangers of tobacco use are well known, it remains

a problem in industrialized nations and is a rapidly expanding crisis in low- and middle-income countries. Inhalant abuse is not well understood, but it is pervasive and can cause significant medical consequences, including sudden death. Abuse of amphetamine-type stimulants—which encompasses amphetamines (amphetamine, methamphetamine), Ecstasy (MDMA and related substances), and other synthetic stimulants (methcathinone, phentermine, fenetylline)—is a growing problem and a very significant factor in promoting high-risk sexual behaviors that contribute to HIV transmission. Global research documents increased prevalence of drugged driving, and international collaborative research is needed to improve data collection on core variables, set standards, and design comparative research protocols. Program Announcements (PAs) solicit grant applications on these priority areas. International research is funded through two mechanisms: foreign grants, which allow researchers from other nations to compete for funding to conduct

research in their home countries; and domestic grants with a foreign component, which enable U.S.-based principal investigators to conduct cooperative international studies with foreign partners.

Research Funding

During FY 2007, NIDA supported more than 140 projects in 44 nations through direct foreign grants or domestic grants with foreign components. NIDA and its sister agencies in the National Institutes of Health used interagency agreements to fund another 17 projects in 9 countries. These projects take advantage of unusual talent, resources, populations, or environmental conditions not available in the United States and speed scientific discovery. The NIDA International Program also issued three new PAs, created a new research support program as part of its Latin American Initiative, and funded four new projects through its binational agreement with the Dutch Addiction Program.

NIDA expanded its PA on International Research Collaboration on Drug Addiction to use two additional funding mechanisms. In addition to the traditional Research Project Grants, known as R01 awards, scientists are now invited to submit grant applications that propose international collaborative research using the Small Grant Awards, also known as an R03, and the Exploratory/Developmental Research Grants, or R21 awards. Applications under the three PAs on International Research Collaboration must be proposed by binational teams and may be for new or continuing funding.

Through its Latin America Initiative, NIDA and the Inter-American Drug Abuse Control Commission (CICAD) cosponsor the Competitive Research Award Fund to support drug use research in the region.

Awards support pre- or postdoctoral students conducting research in any area of the drug use field. Priority is given to projects involving secondary analysis of existing research databases, such as national drug use surveys. The national drug commissions in

Organization of American States member countries review initial applications and forward appropriate projects to the CICAD Inter-American Observatory on Drugs for review by representatives from NIDA, CICAD, and the U.S. National Hispanic Science Network. Exhibit 3, Fiscal Year 2007 NIDA/CICAD Awards, summarizes the 15 research projects conducted by scientists from six nations.

Continuing the uniquely successful binational funding agreement between NIDA and the Dutch Addiction Program (DAP), four new research teams received funding to use brain imaging, animal models, and Ecological Momentary Assessment to explore ways to address the use of and dependence on marijuana, cocaine, and nicotine. NIDA funds the U.S. researchers; DAP supports the Dutch scientists. The newly funded research teams include:

- Linda Porrino, Wake Forest University, and A.E. Goudriaan, University of Amsterdam, will use fMRI and cognitive

testing to study the neurobiological correlates of poor decision-making in chronic marijuana users.

- Anna Rose Childress, University of Pennsylvania, and Wim van den Brink, University of Amsterdam, will conduct brain imaging studies to evaluate the effects of Varenicline in the brain of patients who use cocaine to test that compound as a potential cocaine pharmacotherapy.
- Andrew Waters, Uniformed Services University, and I.H.A. Franken, Erasmus University, will study how cognitions in drug abusers may influence the success or failure of treatment (i.e., abstinence or relapse), using remote monitoring of craving or urges, with data entered by the subject into a hand-held computer.
- Paul Phillips, University of Washington, and Matthijs Feenstra, Netherlands Institute of Neuroscience, will compare compulsive drug use with learning to obtain a natural reward (sugar) in animals

Exhibit 3—Fiscal Year 2007 NIDA/CICAD Awards

Country	Research Topics
Bolivia	Risk Factors Associated With Drug Consumption Among Adults in the City of La Paz During 2006
Chile	<ul style="list-style-type: none"> • How Family Relationship and School Factors Relate to Different Drug Consumption Profiles in the Secondary School Population of Chile: In Search of a Predictive Model • Self-Esteem and Its Relationship With Drug Consumption Among Eighth-Year Basic Education Students in Two Municipal Schools in Copiapo • Drug Consumption Among University Students: Protective and Risk Factors • Effects of the Student-School Relationship on Cigarette Consumption Among Adolescents in Chile • School Attendance and Prevention: The Adolescent View
Colombia	<ul style="list-style-type: none"> • Evaluation of the Association Between Psychoactive Substance Use and Physical Abuse Among Youth Within the Social Protection System • Determining the Association Between Antisocial Personality Disorder and the Factors Attributable to Exposure and Population According to Psychoactive Substance Use in the Bellavista Prison in Medellin
Costa Rica	Patterns of Alcohol Use Among First-year Students at the University of Costa Rica Rodrigo Facio Campus
Ecuador	The Social Conditions That Predispose Adolescents to Psychoactive Substance Addiction Among Adolescents Attending the Virgilio Gerrero and Buen Pastor Therapeutic Communities
Uruguay	<ul style="list-style-type: none"> • Application of a Study on Drug Consumption Among New Inmates, 2004–2005 • Effects of Coca Paste Consumption on Intellectual Performance • Consumption of Psychoactive Substances Among Secondary School Youth • Prevention of Drug Consumption Among Secondary School Students in Uruguay • Epidemiological Study on the Population Involved in the Plan de Asistencia Nacional a la Emergencia Social (PANES) Convoked Through the Construyendo Rutas de Salida Prevention Program in Uruguay Between October 2006 and March 2007

that have been characterized as risk prone or risk averse in an effort to discover if there are changes in the neural activity that underlie the formation of habits.

Research Publications

NIDA International Program alumni and grantees contribute to scientific knowledge by publishing their research findings in peer-reviewed journals. During FY 2007, 32 former fellows from 18 countries published 97 articles in 68 different scientific journals. Highlights of research published during FY 2007 include the following articles:

- *Drug and Alcohol Dependence* 88(1), pp. 28–35, 2007: A research team supported by INVEST and DISCA awards found that methamphetamine neurotoxicity is dose-dependent and may permanently alter white matter.
- *Behavior Modification* May 31(3), pp. 298–312, 2007: A binational research team supported by a NIDA-DAP Administrative Supplement found

that manualized behavior therapy was significantly more effective in treating disruptive behavior disorder children compared to family therapy, but that there was no significant difference when care as usual consisted of behavior therapy.

- *Journal of Addiction Medicine* 1(3), pp. 133–138, 2007: Two former INVEST Fellows and their colleagues suggested that the DRD2 Taq1A1 allele seems to be associated with reward dependence in adolescents who engage in excessive Internet video game play.
- *Journal of Substance Abuse Treatment* (doi:10.1016/j.jsat.2007.03.006): A U.S.-Spain joint research team found that a community reinforcement approach plus vouchers was effective in treating Spanish cocaine abusers and was generalizable to a community treatment setting outside the United States.

In an effort to assess the involvement of the international research community, identify funding organizations, and describe

the topics of drug abuse research being conducted, the International Program conducted a bibliometric study of articles published in *Addiction and Drug and Alcohol Dependence* from 1998 through 2004 (see pages 21–22). The authors' institutions represented 60 countries, and 10 percent of the articles were cross-country collaborations. The authors credited 443 unique funding sources from 39 countries. Just five organizations constituted 60 percent of the funding sources, all of them U.S. Government agencies. NIDA supported 41 percent of the research. Although more than 5,700 Medical Subject Heading categories were recorded in the more than 1,800 articles that met the inclusion criteria, 10 categories accounted for 50 percent of the total: psychology, epidemiology, therapeutic use, rehabilitation, pharmacology, administration and dosage, statistics and numerical data, drug effects, methods, and adverse effects.



BUILD RESEARCH CAPACITY INTERNATIONALLY

The NIDA International Program builds research capacity by providing research training and professional development opportunities for the international drug abuse research community. The NIDA International Program administers the INVEST and INVEST/Clinical Trials Network Drug Abuse Research Fellowships for postdoctoral scientists; the NIDA Hubert H. Humphrey Drug Abuse Research Fellowships for mid-career drug abuse professionals from low- and middle-income countries; the Distinguished International Scientist Collaboration Program for senior scientists; and—with its partners—the WHO/NIDA/CPDD International Traveling Fellowships for researchers from low- and middle-income countries.

A 2007 study of NIDA International Program Fellowship alumni concluded that participation in the research training and exchange programs appears to contribute to the fellows' scientific productivity. Between 1990 and 2006, the NIDA International Program funded 107 fellows from 47 countries; 72 percent

of those countries were low- or middle-income nations. During those years, the International Program also recruited 49 DISCA partners and INVEST mentors representing 34 institutions in 20 U.S. states. A Web-based survey was distributed in December 2006 to former NIDA INVEST, Humphrey, and Distinguished Scientist (DISCA) program participants, asking them to report on their scientific productivity after completing the research and exchange program. Scientific productivity was defined as scientific publications, presentation at scientific conferences, and acquisition of research funding. The response rate varied from 38 percent to 70 percent among participants in the three fellowships. The outcomes for the INVEST and Humphrey programs were combined because these programs target early career scientists; the DISCA outcomes were presented separately because the program is restricted to senior-level scientists. DISCA scientists represented 11 countries; 55 percent reported a scientific publication, 55 percent reported a scientific presentation, and 100 percent

reported receiving a research grant. Four DISCA scientists received funding from the U.S. National Institutes of Health; three, from government agencies in their home country; and one, from a nongovernmental organization. The former INVEST and Humphrey Fellows represented 37 countries; 32 percent reported a scientific publication; 32 percent reported a scientific presentation; and 30 percent reported receiving a research grant. Seven former INVEST and Humphrey Fellows received funding from the U.S. National Institutes of Health; 20, from government agencies in their home country; 7, from government agencies outside their home country; and 11, from nongovernmental organizations. The study results were presented at the College on Problems of Drug Dependence (CPDD) Annual Scientific Meeting in June 2007.

The success of the International Program fellowship programs led NIDA to create a new version of the INVEST Drug Abuse Research Fellowship, offering postdoctoral research training in clinical trials. In addition to the normal cohort of INVEST Fellows,

the NIDA International Program and Center for Clinical Trials Network (CTN) now offer INVEST/CTN Fellowships to non-U.S. scientists to work with a mentor affiliated with one of the 16 CTN Regional Research and Training Centers. Like the regular INVEST Fellowships, the INVEST/CTN Drug Abuse Research Fellowship combines postdoctoral research training in the United States with professional development activities and grant-writing guidance. Fellows may conduct their research in any aspect of the CTN research agenda on drug abuse and addiction, such as intervention research, clinical trials methodology, or drug abuse treatment as HIV/AIDS prevention. Fellows and their mentors are encouraged to develop jointly and seek funding for a collaborative research project to be conducted in the fellow's home country.

Research Exchanges and Fellowships

Through the Distinguished International Scientist Collaboration Award (DISCA) and Distinguished International Scientist

Collaboration Award for U.S. Citizens and Permanent Residents (USDISCA) programs, NIDA seeks to enhance international collaborative research on drug abuse and drug-related consequences by supporting professional exchange visits for senior drug abuse researchers from other countries and NIDA-supported scientists. During FY 2007, three researchers worked with their U.S. partners:

- Petri Hyytiae, Ph.D., Finland National Public Health Institute, and his research partner, Gregory Mark, Ph.D., Oregon Health and Science Institute, investigated the role of prefrontal cortex cholinergic neurotransmission in methamphetamine seeking and devised a catheter that improves the ability to conduct intravenous self-administration experiments in mice.
- Meera Vaswani, Ph.D., All India Institute of Medical Sciences, and her research partner, Nicholas Goeders, Ph.D., Louisiana State University, investigated the role of stress in relapse to cocaine use.

- In Kyoon Lyoo, M.D., Ph.D., M.M.S., Seoul National University Hospital, and his research partner, Perry F. Renshaw, M.D., Ph.D., McLean Hospital Brain Imaging Center and Harvard Medical School, investigated the impact of methamphetamine abuse on the developing brain. Their research, published in *Drug and Alcohol Dependence*, concluded that methamphetamine neurotoxicity is dose dependent and may permanently alter white matter.

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. During FY 2007, five scientists from three countries were awarded the 12-month INVEST Fellowships. Dr. Sung Jin Cho, Korea, worked with Dr. Alan P. Kozikowski, University of Illinois at Chicago; Dr. Jiang Du, China, worked with

Dr. Hser Yih-ing, University of California, Los Angeles; Dr. Adhi Wibowo Nurhidayat, Indonesia, worked with Dr. George Woody and Dr. David Metzger, University of Pennsylvania; Dr. Akiko Shimamoto Kiyoshima, Japan, worked with Dr. Klaus A. Miczek, Tufts University; and Dr. Wenhua Zhou, China, worked with Dr. Peter Kalivas, Medical University of South Carolina.

The NIDA International Program sponsors a component of the U.S. Department of State Hubert H. Humphrey Fellowships.

The NIDA 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. In FY 2007, Humphrey Fellows represented seven nations: Raina Abou Elenein, Egypt; Arian Boci, Albania; Fatima El Omari, Morocco; Marisa Felicíssimo, Brazil; Rushit

Ismajli, Kosovo; Boonsiri Junsirimongkol, Thailand; and Zar Ni Soe, Myanmar.

NIDA, WHO, and CPDD cosponsor International Traveling Fellowships for international researchers to conduct research visits to NIDA grantees and participate in two scientific meetings: the NIDA International Forum and the CPDD Annual Scientific Meeting. In FY 2007, the WHO/NIDA/CPDD Fellows were Dr. Azarakhsh Mokri, Iranian National Center for Addiction Studies, and Dr. M.N. (Nancy) Phaswana-Mafuya, South African Human Sciences Research Council. Dr. Mokri worked with Dr. Richard Schottenfeld, Yale University, to complete analyses on their NIDA-supported clinical trial comparing buprenorphine with naltrexone maintenance treatment for opium- or heroin-dependent patients. Dr. Phaswana-Mafuya worked with Dr. Bruce Johnson, National Development and Research Institutes, to plan and implement their institutions' memorandum of understanding for collaborative research on drug abuse and HIV/AIDS issues in South Africa.

Scientific Meetings and Travel Support

The NIDA International Program supports scientific meetings, symposia, and travel support for researchers from around the world to stimulate collaborative research efforts, identify new research topics, and strengthen existing professional associations. A major new initiative began during FY 2007: the initial meeting of the Latin American epidemiology group, Red Epidemiologica de Drogas para Latinoamerica (REDLA), took place in Cartagena, Colombia. REDLA is a joint effort between NIDA and the Inter-American Drug Abuse Control Commission (CICAD) at the Organization of American States to create a drug epidemiology network for Latin America that parallels NIDA's Community Epidemiology Working Group in scope and purpose. NIDA's support for REDLA is part of the Institute's Latin American Initiative. Representatives of Argentina, Brazil, Canada, Chile, Colombia, Costa Rica, Mexico, Nicaragua, and the United States summarized the drug use

situation in their countries, identifying reliable sources of information for future investigations. In addition to their discussions about drug use patterns in the hemisphere and future activities for REDLA, participants discussed ways to integrate REDLA activities with those sponsored by the National Observatories on Drugs.

Technological innovation was the theme of the 2007 NIDA International Forum.

The NIDA International Program; the Institute of Neurosciences, Mental Health, and Addiction of the Canadian Institutes of Health Research; and the Canadian Centre on Substance Abuse cosponsored the meeting in Quebec City, Canada, which attracted more than 260 registrants from 40 countries. Introducing the meeting theme, Technological Innovations To Build International Research Capacity, Daniel Olguin Olguin of the Massachusetts Institute of Technology Media Lab described developmental projects where researchers use electronic or social sensor technologies to track social signals provided by speech and body gestures as well as

physiological responses to track individual or group communication patterns, develop mathematical models of human behavior, identify individuals or groups with similar interests, and automatically record organizational interactions. Other plenary session speakers discussed high-tech tools—such as Ecological Momentary Assessment, computerized intervention software, and automated clinical bookkeeping for contingency management programs—in drug abuse prevention and treatment research projects. During the poster session, more than 130 drug abuse scientists from around the world presented their research to NIDA Forum and CPDD participants while representatives from nine NIDA components and the NIH Fogarty International Center presented posters summarizing the units' goals, research interests, international focus, and international funding priorities. Concurrent workshops focused on ethnographic research in HIV/AIDS; international trends in inhalant abuse and a multinational effort to better define and classify inhalants; and Web resources supported by NIDA and

the National Institutes of Health. Working groups also met during the Forum, focusing on the Addiction Severity Index, CTN, ethnography, HIV/AIDS in Iberoamerica and Central-Eastern Europe, inhalants abuse, and women, children, and families. The 2007 NIDA International Program Awards of Excellence were presented to Wallace Mandell, Johns Hopkins, Excellence in Mentoring; David S. Metzger, University of Pennsylvania, Excellence in International Leadership; and Richard S. Schottenfeld, Yale University, and Mahmud Mazlan, Malaysian Substance Abuse Center Maur, Excellence in Collaborative Research.

Researchers at the NIDA-sponsored meeting, Drug Abuse and Risky Behaviors, discussed the successes, research challenges, and opportunities for addressing the evolving HIV/AIDS pandemic. Presenters provided a broad understanding of the multiple ways that drug abuse and addiction affect HIV/AIDS and how research can inform public health policy. The International Program supported the participation of 11 Hubert H. Humphrey Drug Abuse Research

Fellows. The International Program also supported the participation of Humphrey Fellows at the NIDA Special Populations Office meeting, Southern Africa Initiative: Research Progress and Perspectives. NIDA officials and representatives from the binational research teams discussed ongoing research in Southern Africa, the impact of NIDA funding on research and capacity development, and barriers encountered while conducting research in the region.

The NIDA International Program also encourages capacity building by providing travel support for NIDA grantees or international researchers participating at scientific meetings. During FY 2007, researchers received support to participate in the Society on NeuroImmune Pharmacology, Congress of Neuroimmunology, University of Chile International Summer School, the Iberoamerican College of Addictive Disorders, the Society for Research on Nicotine and Tobacco Latin American Congress, and the Iberoamerican Conference on Tobacco Control. During FY 2007, the International Program contributed

programmatic or financial support for the following scientific meetings sponsored by other organizations:

- NIDA provided support for a satellite meeting, New Research Frontiers and Advances in Drug Addiction, at the International Society for Neurochemistry meeting held August 14–17, 2007, in Merida, Mexico. The satellite was cosponsored by the International Drug Abuse Research Society, the International Society for Neurochemistry, and the American Society for Neurochemistry. Participants discussed the role of genomics, proteomics, and metabonomics in drug-induced neurotoxicity; medication development; molecular biology and free radicals in drug-induced neurotoxicity; substituted amphetamines-induced neurochemical changes and relationship to neurotoxicity; imaging brain structure and function; and GHB, volatile solvent, and inhalant neurotoxicity.
- NIDA supported the joint meeting of the International Council on Alcohol, Drugs and Traffic Safety and The International Association of Forensic Toxicology in Seattle, Washington, August 26–30, 2007. The three scientific tracks at the meeting examined driving under the influence of drugs; behavioral, post-mortem, and analytical toxicology; and road safety.
- NIDA focused on drug abuse and drug-related neuroscience research by 19 young investigators from 11 countries by partially supporting the Society for Neuroscience Research Early Career Investigators Poster Session.
- NIDA, Organization of American States/CICAD, the Spanish Plan Nacional Sobre Drogas, and the Agencia Espanola de Cooperacion Internacional cosponsored the Third Iberoamerican Conference of National Observatories on Drugs, where participants addressed the role of drug abuse research on public policy, U.S. methodologies to conduct surveys of students and the general population, and morbidity indicators.



DISSEMINATE KNOWLEDGE

The NIDA International Program does more than support multidisciplinary drug abuse research and train junior scientists. The International Program has been an effective communicator: the global community of researchers, clinicians, policy makers and the general public now understand that addiction is a treatable and preventable brain disorder. Recognizing the potential of the Internet to deliver relatively low-cost communications outreach, education programs, and research training, the NIDA International Program has been a leader in developing Web-based resources to build research capacity through consistent learning opportunities. Science-based training modules are being prepared for the NIDA International Program Web site under Small Business Innovation Research (SBIR) contracts. To assist international researchers in publishing their results, IRTS partnered with the International Society of Addiction Journal Editors in developing the Web site, Publishing Addiction Research Internationally, and a

companion publication. To expand research training opportunities, the International Program supported the development of the International Master's Degree in Addiction Studies offered by a consortium of universities in Australia, the United Kingdom, and the United States.

The NIDA International Program introduced its *Methadone Research Web Guide* in 2007. The quick-reference tool for the international community and NIDA grantees reviews methadone maintenance treatment research findings in an easy-to-use question-and-answer format. The guide presents U.S. research outcomes about methadone maintenance treatment and its efficacy, reviews best practices in treatment program design and implementation, and disseminates evidence-based treatment protocols. *The Methadone Research Web Guide* also discusses recent research findings, emerging pharmacotherapies such as combined buprenorphine/naloxone, and

regulatory requirements in the international community, and also provides links to resources and definitions of terms.

The recommendation by participants in a 2005 meeting about inhalants abuse that NIDA provide a communications tool for a workgroup of pharmacologists and epidemiologists led to the International Program's SBIR award to JGPerpich LLC for development of the NIDA International Virtual Collaboratory (NIVC), designed to work over wireless, satellite, or slow modem connections as well as over standard cable-modem or DSL lines. The password-protected NIVC offers researchers a Virtual Meeting Room with live, recordable audio-video conferencing combining application sharing, instant messaging, and a whiteboard for real-time brainstorming. Listserv discussion forums can be archived for filtered searches, and the wiki is a collaborative writing and editing tool. The profile directory and resource center allow scientists to exchange information within NIDA's online community. During FY

The National Institute on Drug Abuse International Program Methadone Research Web Guide—

Now: Take the Methadone Research Web Guide Tutorial

NIDA's Methadone Research Web Guide offers the methadone research findings you want and the resources you need.



NIDA's **Methadone Research Web Guide** is a quick-reference tool for the international community and NIDA grantees. The guide presents U.S. research outcomes about methadone maintenance treatment and its efficacy, reviews best practices in treatment program design and implementation, and disseminates evidence-based treatment protocols. The guide also discusses recent research findings, emerging pharmacotherapies such as combined buprenorphine/naloxone, and regulatory requirements in the international community. In addition, the Methadone Research Web Guide provides links to resources and definitions of terms.

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.

- Answer the questions **before** you review the full Methadone Research Web Guide to identify subject areas where you need more information.

- Answer the questions **after** reviewing the full guide to assess your understanding of the material.

- Concentrate on the **section** of the guide that is most relevant to you.

- Answer all of the questions correctly to obtain your personalized **Certificate of Completion**.



http://www.international.drugabuse.gov/collaboration/guide_methadone/index.html

2007, the International Program pilot-tested NIVC with an Inhalant Working Group that has used the technology to plan workshops, draft a journal article, and identify areas for future research.

NIDA published an international consensus report setting guidelines for future international research into driving under the influence of drugs (DUID). The *Guidelines for Drugged Driving Research* contains recommendations for behavioral, epidemiological, and toxicological research into various aspects of DUID, such as

roadside surveys, prevalence studies, hospital studies, and fatality and crash investigations. The guidelines were developed by NIDA, the European Commission, the European Monitoring Centre for Drugs and Drug Addiction, the French Society of Analytical Toxicology, the International Council on Alcohol, Drugs and Traffic Safety, and The International Association of Forensic Toxicology.

The NIDA International Program Web site, www.international.drugabuse.gov, and the **bimonthly E-News Letter** disseminate

information about recent NIDA activities, funding opportunities, International Program research training and exchange programs, resources for researchers, NIDA-supported scientific meetings, and Web links to information or organizations of interest to the international drug abuse research community. Past issues of the E-News Letter are archived on the site.

Take Advantage of the National Institute on Drug Abuse International Program

NIDA International Virtual Collaboratory (NIVC)

Joining geographically distant partners in collaborative research, discussion, and education



Collaboration + Laboratory = Collaboratory

To register, visit <http://nivc.perpich.com>

The NIDA International Virtual Collaboratory Brings Cost-Effective Communication and Information Exchange Tools to Scientists Using Any Internet-Connected Computer

The password-protected NIDA International Virtual Collaboratory (NIVC) offers researchers a Virtual Meeting Room with live, recordable, audio-video conferencing combining application sharing, instant messaging, and a whiteboard for real-time brainstorming. Listserv discussion forums can be archived for filtered searches, and the wiki is a robust collaborative writing and editing tool. The profile directory and resource center allow scientists to exchange information within NIDA's online community. NIVC is designed to work over wireless, satellite, or slow modem connections as well as over standard cable-modem or DSL lines. Training is available to help researchers implement NIVC tools in real-life situations. Registration approval is required, but usually takes 24 hours or less.



Live Audio/Video Virtual Meetings



Searchable Discussion Forum Archives



Profile Directory



Wiki



Resource Center

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BACKGROUND

This study utilizes a bibliometric approach to provide an overview of articles published in two addiction specialty journals. This overview describes the topics and focus of research being conducted, identifies sources of funding, and assesses the involvement of the international community of researchers. This research also ascertains trends in these categories over a 7-year period. There is only one other English-language bibliometric study published in the field (Jones 1999); it focused only on impact factors as measures of scientific productivity.

Table 1: The Number of Authors and Funding Sources Reported by Country

Countries	Number of Authors n (%)	Number of Funding Sources Reported n (%)
North America	1127 (53%)	1971 (74%)
Canada	81	39
Mexico	9	4
United States	1037	1928
Caribbean & Central America	5 (<1%)	1 (<1%)
Costa Rica	1	0
Ecuador	0	1
El Salvador	1	0
Honduras	1	0
Panama	2	0
South America	18 (1%)	6 (<1%)
Argentina	1	0
Brazil	16	6
Chile	1	0
Western Europe	649 (31%)	443 (17%)
Austria	13	4
Belgium	4	4
Denmark	6	10
Finland	30	21
France	31	21
Germany	46	32
Greece	8	1
Iceland	3	3
Ireland	2	2
Italy	38	13
Norway	28	24
Portugal	3	0
Spain	45	52
Sweden	56	41
Switzerland	47	50
The Netherlands	39	25
United Kingdom	250	140
Eastern Europe & Central Asia	38 (2%)	17 (<1%)
Belarus	1	0
Czech Republic	3	2
Estonia	1	2
Hungary	3	0
Lithuania	1	0
Poland	8	6
Romania	1	0
Slovakia	1	0
Slovenia	1	0
Russia	10	4
Turkey	6	3
Turkmenistan	1	0
Ukraine	1	0
Middle East & North Africa	18 (1%)	4 (<1%)
Iran	2	0
Israel	10	2
Jordan	1	0
Lebanon	2	1
Palestinian Territory	1	0
Syria	1	0
United Arab Emirates	1	1
Sub-Saharan Africa	7 (<1%)	4 (<1%)
Nigeria	1	0
South Africa	5	4
Zimbabwe	1	0
South & Southeast Asia	13 (1%)	3 (<1%)
India	8	2
Pakistan	2	0
South Korea	2	0
Vietnam	1	1
East Asia & Pacific	31 (1%)	21 (<1%)
China	15	14
Japan	12	5
Thailand	4	2
Oceania	215 (10%)	182 (7%)
Australia	194	141
New Zealand	21	41

METHODS

A search in PubMed was conducted to identify all of the articles published in *Addiction* (ADD) and *Drug and Alcohol Dependence* (DAD) from 1998 through 2004. In the present study, 2,494 articles were published in ADD and DAD during the timeframe and 1,867 of these articles met the inclusion criteria.

The data was captured in the Medline view of PubMed and then entered into a database. The data available from MedLine needed to be supplemented after it was determined that funding sources, particularly in articles with authors outside of the United States, were not consistently reported in MedLine. Therefore, all of the articles that meet the inclusion criteria were accessed electronically in order to: 1) verify or record the funding source reported in the "Acknowledgements" section of the manuscript; and 2) determine the co-authors' organizational and country affiliations (which are not available in MedLine). The data was analyzed in Stata SE Version 8.2 using descriptive statistics.

RESULTS

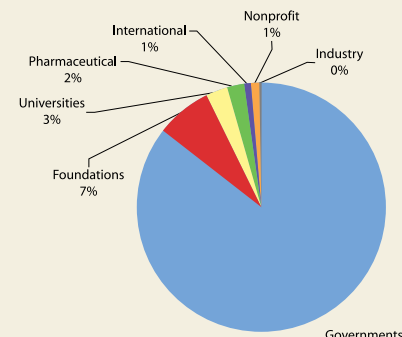
During the 7-year period, there were 996 (53 %) research articles in ADD and 871 (47 %) in DAD. The number of articles published increased during the 7-year period in both ADD and DAD. In 1998, ADD published 124 articles and DAD published 101; in 2004, this increased to 156 and 140 articles, respectively.

Authorship. The majority of the articles (91 %, n=1,695) were authored by more than one person and the mean number of authors per article was 3.8 (SD=2.0). Among the articles authored by more than one person, 90 percent (n=1,518) of the co-authors were from the same country, and among those articles with co-authors from the same country, 44 percent (n=663) were also from the same organization. Cross-national collaboration peaked in 1999 with 13.2 percent and in 2004 with 13.8 percent of articles with authors from different countries.

Countries of Authorship and International Collaboration. The authors represented 60 different countries. Among the 10 percent (n=177) of articles whose authors represented more than one country, the vast majority represented two countries (83 %, n=147). Among those articles with authors representing two countries, the top 10 collaborating countries were:

- United States and Canada (n=15),
- United States and United Kingdom (n=12),
- United States and Australia (n=11),
- United States and Sweden (n=5),
- United Kingdom and Australia (n=5),
- United States and Italy (n=5),
- Canada and Switzerland (n=4),
- Switzerland and United Kingdom (n=4),
- United States and France (n=4), and
- United States and Mexico (n=4).

Figure 1: Funding Source Categories



Funding Sources. A total of 2,693 funding sources were reported, and there were 443 unique funding sources across 39 different countries. The funding source categories are displayed in Figure 1. Collectively, the top 5 funding organizations constituted 60 percent of the funding sources reported and were: 40.9 percent National Institute on Drug Abuse (NIDA, n=1,100); 11.6 percent National Institute on Alcohol Abuse and Alcoholism (NIAAA, n=313); 3.8 percent National Institute of Mental Health (NIMH, n=101); 2.1 percent Substance Abuse and Mental Health Services Administration (SAMHSA, n=57); and 1.7 percent U.S. Department of Veterans Affairs (n=45).

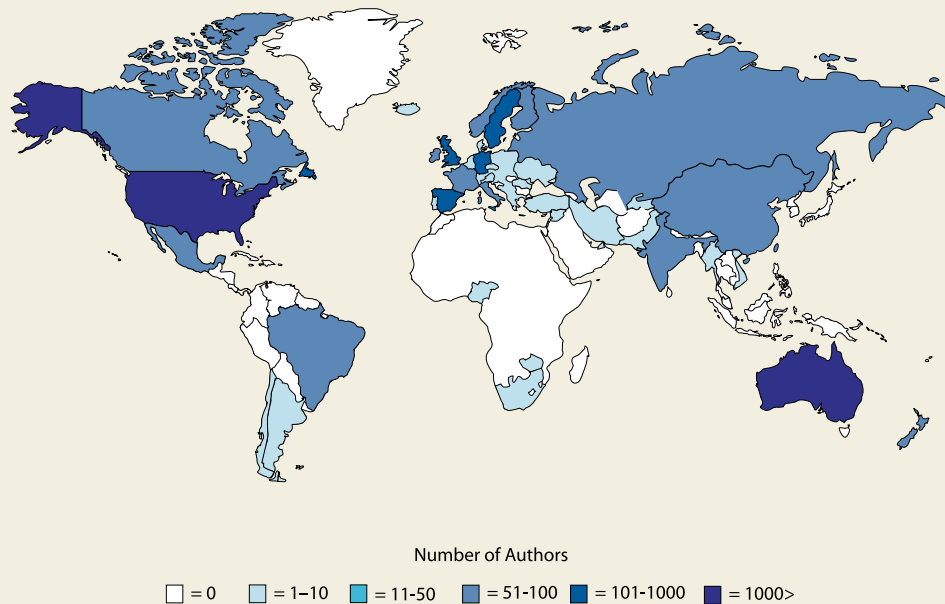
Subject Trends. A total of 5,737 Medical Subject Headings (MeSH) categories were recorded, 567 of which were unique categories. Thirty-six MeSH codes accounted for 75 percent of all MeSH codes. The 10 MeSH subjects that accounted for 50 percent of those mentioned are:

- Psychology (n=629),
- Administration and dosage (n=199),
- Epidemiology (n=529),
- Statistics and numerical data (n=197),
- Therapeutic use (n=322),
- Drug effects (n=177),
- Rehabilitation (n=239),
- Methods (n=165), and
- Pharmacology (n=231),
- Adverse effects (n=140).

The 3 major subject areas that grew the most during the timeframe were: epidemiology (+53), psychology (+38), and administration and dosage (+28). There was a decrease in the major subject areas of pharmacology (-32), physiopathology (-20), and drug effects (-11).

Collaboration and Funding

Figure 2: Funding Source Categories



DISCUSSION

Bibliometric analyses can provide a macro-level perspective, and this research summarizes publication trends, international collaboration, and funding sources on alcohol and other drug (AOD) research for two major journals in the field. AOD research, although dominated by the United States, is truly a global endeavor given that 60 countries were represented in the authors' organizational affiliations. Although AOD use and addiction is a global phenomenon, most peer-reviewed research published in DAD and ADD is authored by researchers from the United States, United Kingdom, and Australia, and these countries are the top collaborators as well.

Sixty-two percent of the reported sources of drug abuse research funding were attributed to 5 United States government offices and 86 percent of the funding sources were categorized as governmental. NIDA was the most frequently cited funding source, accounting for 42 percent of the funding sources reported. One unexpected finding was that 443 distinct organizations were cited by authors as providing funding for AOD research globally. Although the size of the research budgets of these funding organizations cannot be directly compared, it is likely that the budgets vary widely.

Although there were 567 unique primary MeSH subject codes reported, research published in ADD and DAD is concentrated in the 36 MeSH subject categories that accounted for 75 percent of the subjects reported. While both ADD and DAD are addiction specialty journals, the MeSH code "Substance-related Disorders" was used in only 32 percent of the articles appearing in DAD and 25 percent of the articles appearing in ADD.

Limitations. There are several limitations to this study: 1) DAD and ADD are very competitive and it is unknown the extent to which these journals truly represent the field of published or grey literature on AOD research; 2) it is uncertain the extent to which internal funding support is under-reported; and 3) it is likely that the actual amount of funding provided to individual authors varies considerably but could not be determined in this study.

CONCLUSIONS

In sum, this is the first study to provide a macro-level perspective on funding and international collaboration in a diverse field of research that spans the globe. AOD abuse is a global phenomenon that has elicited a global response from both researchers and funders.

Increasing the opportunities for inter-country international collaboration may be beneficial and contribute to the development of an enhanced global strategy to combat effectively the negative consequences associated with the use and misuse of psychoactive substances. Dissemination of global funding sources should help expand a global effort to advance the field of AOD addiction science and it may provide a sampling frame for future research on this topic.



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NIDA 
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National Institute on Drug Abuse
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