



# IDARS NEWS



## IDARS PRESIDENT'S COLUMN

**MICHAEL J KUHAR, Ph.D.**



I am happy to report that our society has laid a strong foundation for growing and pursuing our scientific and educational missions. We have accomplished much, just in the last year. First, our most recent IDARS meeting in Merida, Mexico had excellent science, a great venue, and good organization and planning; we thank Syed Ali, our tireless Executive Director,

for all this. As we prepare for our second IDARS meeting in Seoul, South Korea in August of 2009, we look forward to a successful meeting and networking where new collaborations can be formed.

Secondly, IDARS has continued to fulfill the mission of advancing the understanding of drug abuse and addiction by bringing together scientists from varying backgrounds and disciplines within the field of drug abuse research. This was also achieved by the International symposium on drug of abuse held in the island of Sao Miguel, Azores, Portugal in July 2008, which was sponsored by IDARS.

There was also the successful exhibition booth of IDARS at the Society for Neuroscience (SFN) meeting in Washington DC in the fall of 2008. The IDARS social event at this SFN meeting included a dinner party where Dr. John Satterlee, from the National Institute on Drug Abuse (NIDA), presented a timely talk on the epigenetics of human disease and an overview of funding opportunities at NIDA and the National Institutes of Health. His presentation is summarized in this issue of our newsletter. At the end of the dinner, our President-Elect, Dr. George Koob presented awards to IDARS winners, who received their plaques and envelopes. The pictures of the awardees receiving their awards are also shown in this newsletter.

Our website has recently been revitalized by Syed, and it provides for all aspects of IDARS needs and membership information. There are, however, challenges including the need to strengthen and increase membership and to pay dues. Another critical point to ponder is when and how to initiate an IDARS journal, which would have a global appeal. Our journal would have to be broad in content and include material from molecular to imaging science.

In our letter to President Obama and his team, we called for an investment in addiction and mental health disorders research and offered our support (letter is available at IDARS website). Our international expertise is a unique resource.

Finally, as outgoing president, I want to thank everyone for their willingness to help and serve our society and field. This has been a wonderful experience for me, even though I had to deal with many difficult, personal issues over the last years. We all have established a new international society, in a niche with a future, and with much more to be done. Syed Ali has been "superman" and we all owe him a lot! Finally, I congratulate our new president, George Koob, and wish him well.

Best regards,  
Michael J Kuhar, PhD  
President, IDARS

Newsletter of the International Drug Abuse Research Society

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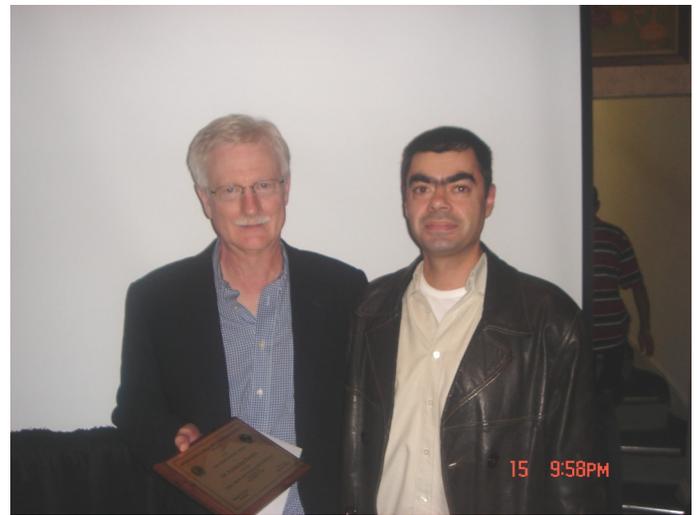
**IDARS President  
Michael Kuhar**

**Executive Officer  
Syed F. Ali**

## MESSAGE FROM THE PRESIDENT-ELECT Dr. George Koob

As incoming president of IDARS, I would like to congratulate Mike Kuhar and Syed Ali on their great success in creating IDARS and I hope to follow in Mike's innovative footsteps to further promote the organization. I believe we have an opportunity to develop a vibrant and exciting international mechanism not only for scientific interactions in the domain of addiction between countries but also ultimately as resource for informing public policy across nations. This is particularly exciting period in the study of the neurobiology of addiction where brain circuitry and molecular mechanisms are providing hope for understanding not only the vulnerability to addiction but also providing new targets for treatment of addiction. I look forward to serving IDARs with these two themes at the forefront. Please feel free to contact me if you have any thoughts or programs for helping IDARS become the international society for the promotion of drug abuse research.

### President-Elect, Dr. George Koob presented awards to IDARS AWARDEES.



During IDARS socials at SFN meeting in 2008, Dr. Koob presented the IDARS-NIDA awards, to: top left, Michela Ferrucci, from Pisa, Italy, top right Frederico Pereira, from Coimbra, Portugal, bottom left, Hideko Yamamoto, Tokyo, Japan and bottom right, Alejandro Higuera Mata, Madrid, Spain.

## Addiction at NIDA: Genetics, Epigenetics and Innovation



**Dr. John Satterlee**

Our current knowledge indicates that drug addiction is influenced by the interaction of genes and environment and a number of approaches have been utilized to identify genetic contributions to drug addiction. However, it is increasingly evident that genetics alone may not be able to explain the complexity of addiction. There is an emerging understanding of the important role of epigenetic modifications that can regulate gene expression. So, Dr. Satterlee, summarized aspects of epigenetics of human disease and epigenetic changes associated with drugs of abuse. Epigenetic changes are defined as heritable changes in gene activity and expression that are not caused by changes in DNA sequence. Epigenetic mechanisms include DNA methylation, histone modification, imprinting and RNA silencing. Epigenomic changes have been implicated in a wide variety of human diseases including cancer, aging, neurodevelopmental disorders, schizophrenia, depression and addiction.

Epigenetics may help to explain the relationship between an individual's genetic background, the environment, aging and disease. Since epigenetic changes can regulate gene expression, new insights reveal that epigenetic mechanisms play a key role in establishing the link between environmental exposures and phenotype. Such epigenetic changes have already been associated with the effects of drugs of abuse. Thus, epigenetic changes can alter the phenotype without changing the genotype.

In a specific example of work from the Nestler lab, epigenetic changes in the striatum and manipulation of histone deacetylase were shown to alter locomotor and reward responses to cocaine. While mapping epigenetic marks across an entire genome is a huge task, the promise of therapeutic intervention aimed at the epigenome is becoming an epicenter of modern medicine. Dr. Satterlee described the NIH Roadmap Epigenomics Program, including funding opportunities and future directions in epigenetics and disease research.

One of the activities during IDARS social event at the Society For Neuroscience (SFN) meeting in Washington DC in 2008 included a dinner party where Dr. John Satterlee from the National Institute on Drug Abuse (NIDA) gave a timely presentation on the genetics and epigenetics of addiction. He also gave an overview of funding opportunities and related mechanisms of funding across the National Institutes of Health (NIH).

He explored the state of our knowledge of the genetics and epigenetics of addiction and the way forward.

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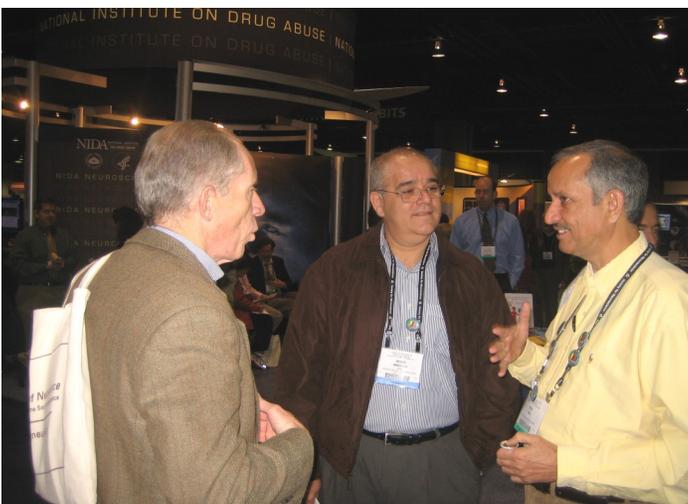
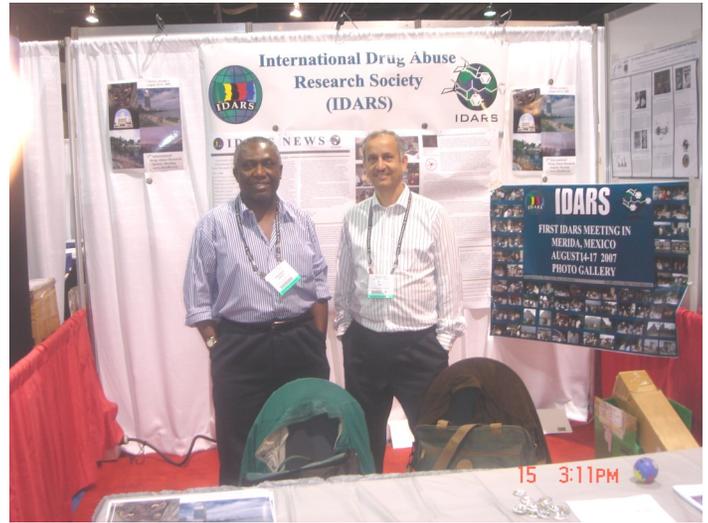
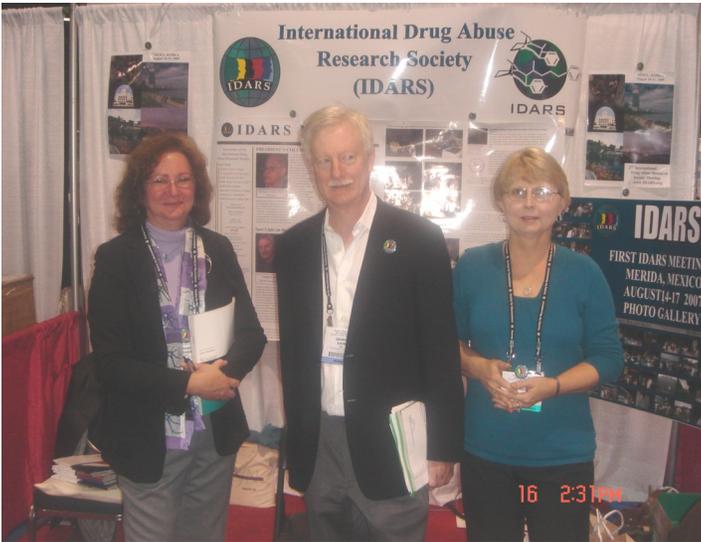
[www.idars.org](http://www.idars.org)

**IDARS Sponsored International symposium on drugs of abuse held in the island of Sao Miguel, Azores, Portugal in July 2008.**



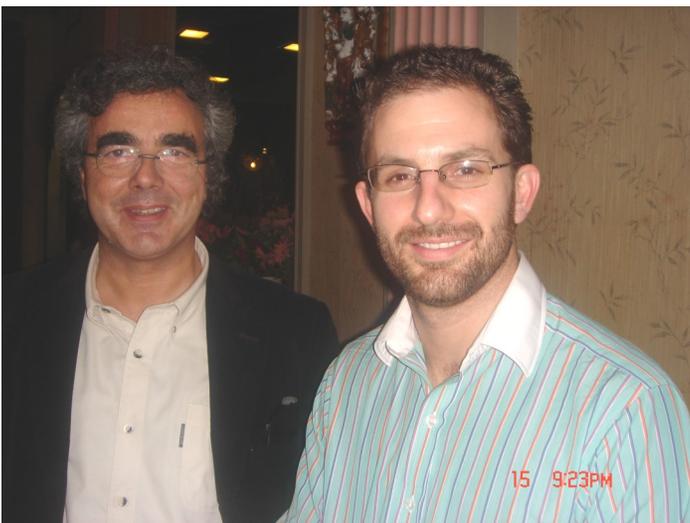
**Pictures from the International Symposium on Drugs of Abuse held in the Island of Sao Miguel, Azores, Portugal, in July 28-29, 2008. The success of this meeting fostered the organization of an international congress on drug abuse in Porto, Portugal. Pictures above show panelists and attendees at the meeting.**

### IDARS Exhibition at the Society for Neuroscience meeting in November 2008



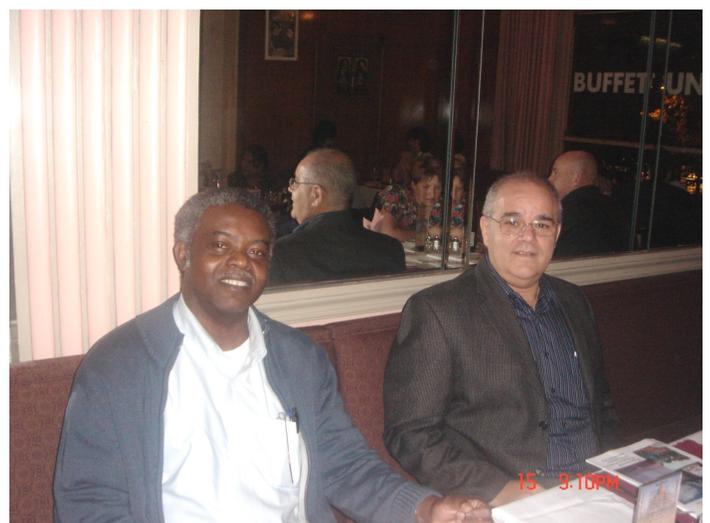
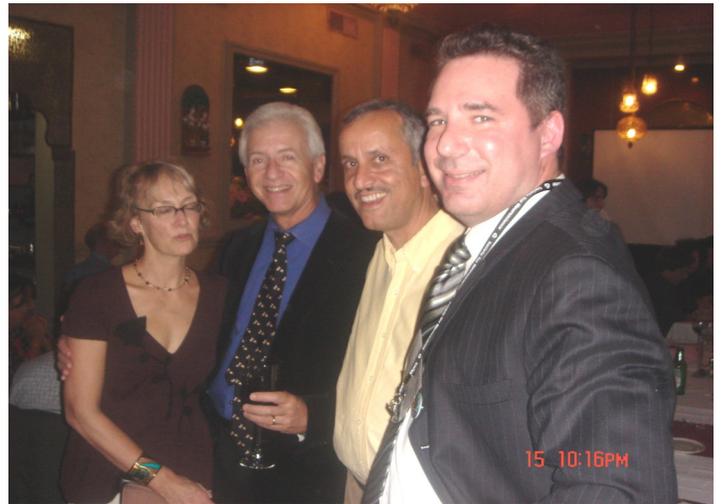
Top and middle panel: IDARS members took turns to man the IDARS booth and to introduce IDARS to SFN members. Bottom panel, Syed Ali introduces IDARS at the NIDA special symposium .

**IDARS dinner party at the Society for Neuroscience meeting in November 2008**



**Members of IDARS and guests at the dinner party during the Society for Neuroscience meeting in November 2008.**

**IDARS dinner party at the society for neuroscience meeting in November 2008**



**Members of IDARS and guests at the dinner party during the Society for Neuroscience meeting in November 2008.**

## Editorial Corner: *Welcome to our Newsletter\**

Emmanuel Onaivi, Ph.D., Newsletter Editor IDARS is delighted to publish our electronic newsletter, with information about the society, seeking ideas about our journal, and opportunities for our members. The intention of this newsletter is not only to communicate to you, but also, for you to be able to respond with suggestions for how IDARS may increase its role in your research. Please send us feedback, and get involved! As editor of this newsletter, I invite you to contact me with ideas for articles in future editions, or to volunteer to write an article yourself.

### *Drug Addiction – A Global Problem for the Rich and Poor by E. S. Onaivi.*

In reviewing the history of human drug addictions, one finds previous misconceptions that people addicted to drugs lacked willpower and were morally weak. But we now know that drug addiction is a chronic relapsing brain disease characterized by the compulsive use of addictive substances despite adverse consequences to the individual and society. Addiction to drugs and alcohol is increasingly becoming a worldwide trend in lifestyle that is prevalent in rich and poor countries alike. Addiction to alcohol, drugs and cigarette smoking is now regarded as a major public health problem. Other forms of addiction including gambling, sex and food also have severe consequences on the health of the individual and to society. The worldwide epidemic of obesity is a good example that global trends in lifestyle, eating behavior and cultural adaptation contribute to the rapid increase in obesity around the world.- a global problem for the rich and poor.

The commonly used classes of drugs including alcohol, are psychostimulants, opiates, benzodiazepines, hallucinogens and marijuana. They all have profound action in the nervous system, particularly in the brain. Some of these substances such as opium, marijuana, cocaine, nicotine, caffeine, mescaline, and psilocybin are obtained from natural sources while others are synthetic or designer drugs. Furthermore some of these substances like alcohol and nicotine are legal while some others that are legally available by prescription have addictive potential in vulnerable individuals. A number of addictive substances are illegal in most countries and this fuel the illegal drug trafficking and business that are often associated with criminal activities. The initiation of the use of these substances induces euphoria, reward and a state of well-being that can lead to physical and psychological dependences. Withdrawal syndrome occurs when the individual attempts to stop the use of addictive substances and this leads to the cycle of dependency. The mechanism (s) associated with the cycle of addiction include neuronal adaptation with tolerance or sensitization involved in the action of addictive substances. A number of factors have also been associated with addiction, including the availability, cost, method of administration, environmental factors such as behaviors acceptable in a community, peer influences and genetic and epigenetic factors. *Continued on page 10*

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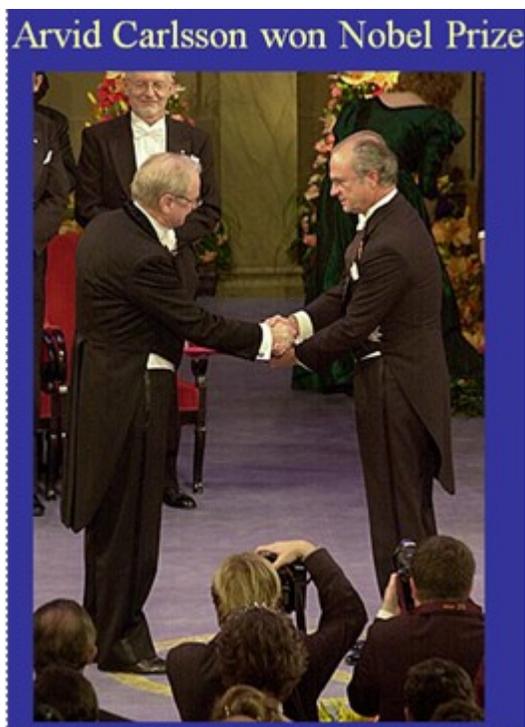
Syed F. Ali, Ph.D.  
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#### ***IDARS-NIDA AWARDEES***

- *Michela Ferrucci  
 Italy*
- *Frederico Pereira  
 Portugal*
- *Hideko Yamamotor  
 Japan*
- *Alejandro Higuera matas  
 Spain*

# IDARS NEWS

## SPOT LIGHT ON IDARS EMERITUS MEMBER.



**Arvid Carlsson, Ph.D.**, along with Paul Greengard and Eric Kandel were jointly awarded the Nobel prize in Physiology or Medicine in 2000 for their discoveries concerning “signal transduction in the nervous system”. Dr. Carlsson’s work identified dopamine as a neurotransmitter in the brain and that it plays a role in motor behavior. He also showed that the symptoms caused by reserpine were similar to the syndrome of Parkinson’s disease. This led, in turn to the finding that Parkinson’s disease patients have abnormally low concentrations of dopamine in the basal ganglia. So L-dopa was developed as a drug against Parkinson’s disease and today, it is still the most important treatment for the disease. The work of Dr. Carlsson have had great importance not only for Parkinson’s disease treatment but also for the treatment of schizophrenia and depression.

### Addiction Reviews

Addiction Reviews, a new publication, serves as an annual review in addiction. The Annals of New York Academy of Sciences already published the first volume. We look forward to the second volume for which IDARS President-Elect, Dr. George Koob will contribute the introduction.

### IDARS has 3 categories of membership.

- *Emeritus Members:* Upon retirement, any member of IDARS may apply for Emeritus status. In some cases, distinguished scientists will be nominated for Emeritus membership. There are no annual dues for Emeritus members.
- *Regular Members:* Any credentialed research scientist or health professional working in the field of substance abuse may be considered or Regular Membership. Annual dues are \$75.
- *Student and Post-Doctoral Fellow Members:* Any post-baccalaureate student matriculated in an advanced degree program, or anyone participating in a post-doctoral training program, in a field related to drug abuse research, may be considered for this category of membership. Annual dues are \$30.

### NIDA-Director Dr. Nora Volkow at IDARS Booth



Dr. Volkow visited the IDARS Exhibition booth at the SFN Meeting in 2008. Picture above with Dr. Koob, IDARS-President Elect.

*Continued from page 8****Drug Addiction – A Global Problem for the Rich and Poor***

Over the years a number of therapeutic approaches for drug and alcohol addiction have been utilized. However, relapse the resumption of drug taking following a period of drug abstinence, is considered the main hurdle in treating drug addiction. Unfortunately pharmacological treatment of drug and alcohol dependency has largely been disappointing and new therapeutic targets and hypotheses are needed. For many years, it was assumed that all drugs of abuse release dopamine in the brain's reward system to produce pleasure and euphoria and consequently leading to addiction in vulnerable individuals. But, many agents, such as inhalants, barbiturates or benzodiazepines, do not activate midbrain dopamine-mediated transmission consistently, despite the fact that these drugs have rewarding properties and are heavily abused. Therefore dopamine is not a simple marker of reward or hedonia and might no longer be tenable to suggest that drugs of abuse are simply activating the brains 'natural reward system. Thus an endocannabinoid hypothesis of drug reward has been postulated and tested. Much progress in cannabinoid research has revealed an endocannabinoid (ECS) system in animals and humans. The ECS consists of genes encoding cannabinoid receptors (CB1-Rs and CB2-Rs), their endogenous ligands called endocannabinoids and proteins that synthesize and degrade these endogenous cannabinoid ligands. Both CB1-Rs and CB2-Rs are distributed in the brain and peripheral tissues and are activated by endocannabinoids, and cannabinoids, the active constituents in marijuana. The results obtained from our studies indicate the involvement of cannabinoid receptors in neural basis of addiction. Therefore, cannabinoids and endocannabinoids appear to be involved in adding to the rewarding effects of addictive substances including, nicotine, opiates, alcohol, cocaine and BDZs. This suggests that the endocannabinoid system may be an important natural regulatory mechanism for drug reward and a target for the treatment of addictive disorders. With the lack of effective medical treatment of addiction, the concept of spirituality in relation to addiction recovery and general psychiatry has been investigated with beneficial and compromising outcomes.

In conclusion, we now know that addiction is a brain disease and a global issue for the rich and the poor. Thus, there is a lot more research to be done to better understand the neurobiological basis of drug and alcohol addiction and effective therapeutic approaches.

**2<sup>nd</sup> INTERNATIONAL DRUG ABUSE RESEARCH SOCIETY and INTERNATIONAL SOCIETY  
FOR NEUROCHEMISTRY MEETING**

**Title:** Recent Frontiers and Advances in Drug Addiction

**Location and Dates:** Grand Hyatt Hotel, Seoul, S. Korea, August 18 – 21, 2009

**Chairperson:** Syed F. Ali (USA)

**Organizers:** Syed F. Ali (USA), Hyoung-Chun Kim (S. Korea), Michael Kuhar (USA), Francesco Fornai (Italy), M. S. Kwon (Korea) Kiyofumi Yamada (Japan) Toshitaka Nabeshima (Japan) and George Koob (USA).

**Format:** This IDARS and ISN satellite meeting will bring together basic scientists and clinical investigators from the international community to provide in-depth understanding and current knowledge concerning new conceptual insights into the drugs of abuse, addiction and potential treatment of drug addiction. Psychostimulants such as methamphetamine, cocaine, MDMA, PMA and different solvents are the most widely abused drugs in Europe, the United States, Central America, South America and Asian Countries and their use has dramatically increased over the last two decades. These drugs of abuse are known to cause addiction in several species including rodents, dogs and nonhuman primates, but also in humans. However, precise neurochemical mechanisms underlying addiction remain unclear. This meeting will address the following: 1) Role of Epigenetic, Proteomics and Metabonomics in Drug abuse and addiction 2) Drugs of Abuse and Medication Development, 3) Molecular Biology and Free Radicals in Drug addiction 4) Substituted Amphetamines-induced Neurochemical Changes and Relationship to addiction 5) Drug of Abuse and Imaging Brain Structure and Function, 6) GHB/Volatile Solvent/Inhalant drug abuse. The format of the meeting will result in a useful exchange of information not only for neurochemists but also investigators from other disciplines. See our website for complete information. [www.idars.org](http://www.idars.org)