PARC News

Portland Alcohol Research Center Newsletter
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Center Director: John C. Crabbe, Ph.D. Editor: Deborah A. Finn, Ph.D.

Andrey Ryabinin joins the Department of Behavioral Neuroscience

The newest recruited Assistant Professor to the Department of Behavioral Neuroscience at Oregon Health Sciences University (OHSU), **Andrey Ryabinin, M.D., Ph.D.** came to the United States six years ago as part of an exchange program fellowship sponsored by the National Institute on Alcohol Abuse and Alcoholism (NIAAA) and the USSR Narcology Center. When Ryabinin graduated with his Ph.D. in 1991, he stated that he was "interested in science, but did not think that he would be able to travel." However, Ryabinin's graduate advisor talked to him about participating in the NIAAA/USSR exchange program for "one year." Boris Tabakoff, Ph.D., who was the Director of Intramural Research at NIAAA at that time, was one of the officials instrumental in arranging for Ryabinin to come to the US.

Ryabinin received an equivalent of the B.S./M.D. degree in medical biochemistry at the Medico-Biological department of the Second Moscow Medical Institute (now called Moscow Medical University) in 1985. The department combined a biological undergraduate education and a medical school education with the aim of producing researchers that had a full understanding of the medical application of the biological sciences. Although it was not written on the diploma, the unspoken rule was that graduates with this medical degree were not allowed to practice medicine.

In 1986 Ryabinin entered a Ph.D. program in the microbiological department of the same Institute and was conducting research on inducible DNA repair systems in bacteria. When his PI had a stroke and retired, Ryabinin left the program and went to work at the Institute of Normal Physiology and applied to their Ph.D. program. His research investigated the induction of immediate early gene expression after adaptational changes in the mammalian nervous system. Ryabinin stated, "At that time, immediate early gene expression in brain was a new and unexplored field in neurobiology." His studies, which combined learning models in rodents with molecular analysis of gene expression, resulted in a Ph.D. thesis entitled "Expression of *c-fos* and *c-jun* in the mouse brain after active and passive avoidance learning" in 1991.

In order to pursue the research direction of his Ph.D. thesis, Ryabinin was awarded a fellowship from the NIAAA/USSR Narcology Center exchange program to work as a visiting scientist in an alcoholism related field in the laboratories of Michael Wilson, Ph.D. and Floyd Bloom, M.D. at the Scripps Research Institute in La Jolla, California. During this time Ryabinin was involved in several projects which were utilizing the expression of immediate early genes in brain to chart neuronal structures involved in adaptation to stressful stimuli via habituation and learning, as well as how alcohol intoxication interferes with the processing of these stimuli. The results indicated that most brain regions respond with induction of immediate early gene expression when an animal is subjected to stressful stimuli, which habituates when the animal adapts to the stimuli. More important, the induction and habituation of immediate early gene expression was stressor-specific and independent of the function of the adrenal. Ryabinin emphasizes, "this was the first paper to show that induction of immediate early genes was experience dependent and therefore, due to the animal's perception of the stressor, rather than due to activation of the hypothalamic-pituitary-adrenal axis." Subsequently, Ryabinin demonstrated that acute alcohol intoxication lead to a selective blockade of the "experience-dependent" immediate early gene induction in the hippocampus. As a functional consequence of this blockade, alcohol intoxication also preferentially blocked the formation of hippocampal-dependent, but not hippocampal-independent forms of long-term memory.

Ryabinin arrived in Portland in January, 1997. He successfully applied for an R29 grant from NIAAA to continue his investigation of the interaction between alcohol, learning and immediate early gene induction. Specifically, the aims of his proposal are to investigate the effects of acute alcohol intoxication on hippocampus-dependent and independent fear

conditioning, to map the effects of acute administration of alcohol on experience-induced immediate early gene expression, and to investigate the effects of repeated alcohol intoxication on fear conditioning. The overall goal of this work is to better understand the mechanisms of alcohol-induced amnesia.

Olga Ryabinina, M.D. is no stranger to the academic research environment. She and Andrey were in the same M.D. program at Moscow Medical University. As a matter of fact, they were in the same class of ten students, did their first research project together and did thesis projects on molecular microbiology in the same laboratory. Olga happened to be the class "monitor," and, as Andrey said with a smile, "I married the class monitor." They were married during their fourth year of study, and their first son Stepan was born during their fifth year of study. Olga postponed her graduation for one year, and graduated with the B.S./M.D. degree in 1986. Upon arriving in California, she went to work as a research assistant in Gerald Edelman's laboratory at Scripps, conducting research on the cellular adhesion molecules. Currently, Olga has a position in the laboratory of Bruce Magun, Ph.D., in the Department Cell and Developmental Biology, and is investigating molecular mechanisms of the cellular stress response.

The Ryabinins have two sons. Stepan (12 years old) attends Jackson Middle School, whereas Peter (8 years old) is in third grade at Smith Elementary School. Both boys play hockey at Valley Ice Arena. As a matter of fact, the entire family are avid hockey fans. It should be interesting around the Ryabinin household these days as both of their favorite NHL teams, the Detroit Redwings and Philadelphia Flyers have made it to the playoffs. The Ryabinins added, "With so many Russian professionals playing in the NHL, the US feels alot like home."

Chromosomal Regions Conferring Risk to Acute Physical Dependence Identified

exerpts from a press release, paraphrased by Robin D. Wood, Ph.D.

Assistant professor of Behavioral Neuroscience, **Kari Buck, Ph.D.**, and her colleagues **John Crabbe, Ph.D., John Belknap, Ph.D.** and **Pamela Metten, Ph.D.** from the Portland Alcohol Research Center at OHSU and the Veterans Affairs Medical Center (VAMC), have mapped three gene regions that influence susceptibility to alcohol dependence in mice. This ground-breaking work represents the first scientific evidence of specific gene regions involved in physical dependence (characterized by withdrawal) on alcohol or other drugs of abuse.

The study, reported in the May 15 issue of the Journal of Neuroscience, shows that mice carrying three specific gene regions are at an increased risk for acute physical dependence on alcohol when compared with mice lacking these genes. Using quantitative trait loci (QTL), a new genetic mapping technique, Buck's research team identified regions on mouse chromosomes 1, 4, and 11 which conferred risk for physical dependence on alcohol. Mice carrying different alleles in these gene regions were protected from alcohol withdrawal symptoms. Due to the similarities between mouse and human genomes, Buck believes that the identified mouse gene regions correspond to regions on human chromosomes 1 and 5. Therefore, these chromosomes may carry the human versions of genes that contribute to alcohol withdrawal. Interestingly, the collaborative study on the Genetics of Alcoholism, sponsored by NIAAA, has examined regions of human chromosomes that correspond to the genetic markers identified in mice and also found evidence for a gene on chromosome 1 that appears to be involved in alcohol dependence.

Now, a major focus of the project will be to hone in on the specific genes contributing to increased risk for alcohol dependence. "It is compelling that out study identifies a discrete region of mouse chromosome 11 that contains three GABA receptor genes," says Buck. Previous studies suggest that susceptibility to alcohol withdrawal in humans and mice may include changes in brain activity involving the inhibitory neurotransmitter GABA.

"These studies in animal models are important because they enable us to pinpoint the chromosomal regions associated with a specific component of alcohol dependence," says Enoch Gordis, M.D., director of NIAAA. "Because of the importance of alcohol withdrawal in clinical manifestations of alcoholism, and because of the similarities between the mouse and human genomes, this study will contribute significantly to the ultimate development of new treatments."

Scientist Update

- **John Crabbe** was honored as a Alberta Heritage Foundation Visiting Lecturer in March, 1997, and discussed his research on "Drug abuse genes: Approaches to gene identification." Crabbe also spoke at Washington State University, Pullman, in April, 1997 as part of the Grass Traveling Scientist Program. His talk was entitled "Mapping genes for drug responses."
- **Chris Cunningham, Ph.D.** gave an invited presentation in Great Britain at the Durham Drug Dependence Symposium 1997: Mechanistic Approaches to the Treatment of Drug Dependence in

April, 1997. Cunningham discussed his research pertaining to "Seeking genes for drug-seeking behavior."

- **Deborah Finn, Ph.D.** was an invited speaker at the 1997 Workshop on Steroid Hormones and Brain Function in April, 1997. Her presentation, entitled "Neurosteroids modulate ethanol drinking and withdrawal," was part of a workshop on "Steroid-Alcohol Interactions."
- **Larry Crawshaw, Ph.D.** gave an invited seminar entitled "Ethanol, body temperature and thermoregulation" at the FASEB Meeting in April, 1997.
- **John Crabbe** was a panel organizer and speaker at the Winter Conference on Brain Research in January, 1997. **Kari Buck** and **Tamara Phillips, Ph.D.** also participated in the workshop, which was entitled "Progress on the path from QTL to gene."
- **John Crabbe** was also an invited speaker at the Gallo Clinic and Research Center in San Francisco in March, 1997 and spoke on "Drug abuse genes." During the month of April, Crabbe was invited to talk at the International Congress on Schizophrenia Research and discussed "Mouse models for identifying risk and protective genes for substance abuse and alcoholism." He was also invited to speak at the Program in Neural Science at Indiana University, where he discussed his research pertaining to "Gene mapping for substance abuse loci." In May, Crabbe spoke about "Approaches to the identification of drug abuse genes" as part of the Neuroscience Graduate Program Seminar series at OHSU.
- **Charles Meshul, Ph.D.** was invited to speak to the Department of Anatomy and Cell Biology at East Carolina University School of Medicine in November, 1996. His talk was entitled "Antipsychotic drugs affect striatal glutamate synapses." In the Fall of 1996, Meshul also visited Oregon Regional Primate Center and discussed his research pertaining to "Ultrastructural changes associated with antipsychotic drug treatment."
- **Judith Grisel, Ph.D.**, who has worked with John Crabbe and was supported on departmental training grants and an individual post-doctoral National Research Service Award (NRSA) from NIAAA, recently accepted a tenure track position as an Assistant Professor in the Department of Psychology at Furman University, which begins in the Fall of 1997. Her research will continue to focus on the genetic contributions to drug reinforcement and sensitivity using β-endorphin and dopamine D4 receptor "knock-out" mice created by Malcolm Low, M.D. and David Grandy, Ph.D.
- High school students were made aware of the risks of drug abuse during pregnancy by **Judy Grisel**. In April she talked to students at Roosevelt High School in North Portland about "Teratology of Abused Drugs."

Awards

New Grant Awards

John Belknap recently received a five year RO1 grant ($122,00 direct cost per year) from the National Institute on Drug Abuse (NIDA) to continue his investigation involving "Gene Mapping for Sensitivity to Cocaine and Amphetamine." **John Crabbe** and **Tamara Phillips** are co-Investigators on the project.

Tamara Phillips received a three year RO1 grant ($171,000 direct cost per year) from NIAAA to investigate "Neurogenetics of Alcohol and Serotonin." **John Crabbe** is a co-Investigator on the project, as are René Hen, Ph.D. (Columbia University) and Dan Goldowitz, Ph.D. (University of Tennessee).

Charlie Meshul was recently awarded a three year grant ($73,835 direct costs per year) from the Smokeless Tobacco Research Council, Inc. to study "Nicotine-Glutamate Interactions in Rat Striatum."

Julie Broadbent, Ph.D. was awarded a grant ($24,950 direct cost) from the Medical Research Foundation of Oregon to continue her investigation of "Pavlovian Conditioned Responses: Relationship to Drug Abuse."

Fellowships

The Department of Behavioral Neuroscience is pleased to acknowledge the recipients of two Individual NRSAs. **Judy Grisel** received a post-doctoral NRSA from NIAAA for research which is investigating "Sensitivity to Ethanol in Mice Lacking β-endorphin" in the laboratory of John Crabbe. **Kristan Burrows, M.S.** was the recipient of a pre-doctoral NRSA from NIDA to study "Effects of Methamphetamine on Basal Ganglia Ultrastructure" in the laboratory of Charlie Meshul.

Education and Community Events

Mentoring of High School Students

High school students are gaining research experience in the laboratory of **John Crabbe** through several different programs. As part of the Health Occupations Program, two students from Benson High School visited the laboratory for four weeks, on two afternoons per week. Through the Saturday Academy apprenticeship, students will participate in the laboratory for an eight week summer program. **Pam Metten** supervises the students in the daily laboratory activities, whereas Crabbe and Metten meet with the students to provide mentoring about academic research.

VA National Research Week Features PARC Laboratory

As part of the National Veterans Affairs Research Week activities, the Portland VAMC Research Service offered an open house and guided tour through six research laboratories at the VA Medical Center on March 31, 1997. One of the featured laboratories was the PARC genotyping laboratory in Building 6, which is central to all gene mapping efforts of the Center. Over 80 people, including Rep. Elizabeth Furse, congresswoman from Oregon, and several media representatives, were given a tour and brief talk about PARC gene mapping projects for alcohol-related traits. Spokespersons for the Center were **John Belknap**, **Kari Buck** and **John Crabbe**.

Research Retreat for NIDA/NIAAA Trainees

The Department of Behavioral Neuroscience has two ongoing training grants from the National Institute on Drug Abuse (NIDA) and the National Institute on Alcohol Abuse and Alcoholism (NIAAA). Every year the department sponsors a research retreat to give faculty and trainees the opportunity to exchange ideas in an off-campus setting as well as to enjoy research presentations by selected faculty and the trainees.

NIDA/NIAAA training faculty gave research presentations in the morning session. Gary Westbrook, M.D. (NIDA training faculty) spoke about "GABA-mediated inhibition in the hippocampus: What makes it long and why should NIDA care?" Center Scientist **Amy Eshelman, Ph.D.** (NIDA training faculty) discussed "Regulation of dopamine transporter function," while Edwin McClesky, Ph.D. (NIDA training faculty) discussed "Opiates and nociceptors." Center Scientist **Chris Cunningham** (NIAAA training grant director and NIDA training faculty) presented research pertaining to "Drug conditioning and drug seeking behavior."

The afternoon session comprised poster presentations by the NIDA/NIAAA trainees. Five post-doctoral trainees presented research which varied from behavioral investigations of morphine responses and ethanol withdrawal effects on conditioned place preference and drinking behavior to measurement of acetylcholine release following low and high doses of amphetamine. Structural determinants of G-protein coupling in dopamine D2 receptors as well as sensitization of adenylate cyclase by dopamine D2 receptors were also discussed. Six pre-doctoral trainees also presented research on topics ranging from ethanol-induced ataxia and morphine consumption in mice lacking serotonin 1B receptors, duration of ethanol-induced sensitization and GABAergic modulation of ethanol-induced conditioned place preference to ultrastructural changes in GABAergic and glutamatergic nerve terminals following amphetamine as well as glutamate uptake in mice selectively bred for differences in ethanol withdrawal severity.

PARC Investigators Participate in NIAAA Sponsored Conference

In April of 1997, NIAAA sponsored a conference at NIH entitled "Genes and the Environment in Complex Diseases: A Focus on Alcoholism." The four sessions included research which focused on "Animal Model Contributions in the Study of Responses to Alcohol" (Session I), "Possible Genetic Mechanisms in the Development of Alcoholism" (Session II), "Research Findings from the Collaborative Study on the Genetics of Alcoholism" (Session III) and "Gene Environmental Interactions" (Session IV). **John Crabbe** and **Tamara Phillips** participated in Session I, which was chaired by Crabbe. Crabbe spoke on "Alcohol withdrawal," whereas Phillips discussed research pertaining to "QTL for alcohol reward phenotypes."

Center Scientist Participates in HAPS Conference

At the tenth annual international Human Anatomy and Physiology Society (HAPS) Conference, **Larry Crawshaw** presented a seminar entitled "Alcohol and temperature regulation." Briefly, his seminar reviewed neuronal and energetic aspects of temperature regulation as well as the effects of alcohol on thermoregulation. Data on the thermal changes produced by ethanol intake were utilized to clarify the effects of acute alcohol intake, tolerance and withdrawal.

HAPS is a national organization for human anatomy and physiology instructors; its members are committed to quality teaching. The annual HAPS conference, regional conferences and newsletter provide members an important means of updating their knowledge, improving technical skills, investigating new technologies for the laboratory and classroom, and networking with their peers.

QTL Mapping Workshop in September

The PARC will be sponsoring a small workshop-conference for Thursday - Saturday, September 18-20, 1997. The working title is "QTL mapping: Progress in mapping alcohol-related traits." The goals of the workshop are to consider the state of the art, discuss methodological advances, and consider future goals and directions. The general idea is of a working conference rather than one designed to instruct interested non-practitioners. The conference is being organized by the Portland Alcohol Research Center, and will be co-sponsored by the Colorado and Indianapolis Alcohol Research Centers. For information, contact Kelly Donan (VA 195-6653, kdonan@teleport.com).

Center Scientist Participates in Acupuncture Study at Hooper Memorial Center

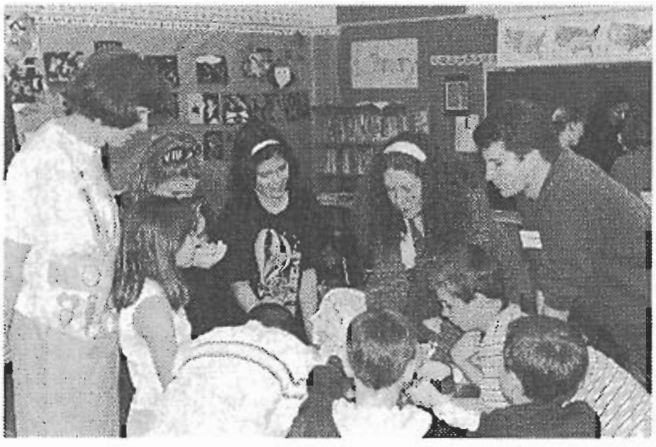
A pilot investigation of the effects of a new type of compact electro-stimulating device designed by Ji Sheng Han, M.D., head of the neuroscience research center at Beijing Medical University, on relieving symptoms of opioid withdrawal has been conducted at a local detox facility. The Han device generates a specific set of frequencies, which were correlated with assays of neurotransmitters in the spinal fluid of patients in China. It is hypothesized that generating these frequencies would release particular endogenous opioids, thereby easing a patient's symptoms of opioid withdrawal.

The Han device is undergoing trial at the Hooper Memorial Center, a 52-bed live-in detox facility in Portland, OR. **Judy Grisel** and several students from Reed college participated in conducting the pilot study, which was under the direction of David Eisen, L.Ac., M.S.W., of the Portland Addictions Acupuncture Clinic. Before and after each treatment session, researchers asked the patients to complete brief questionnaires, which assessed restlessness, achiness, drug craving, as well as ability to sleep and overall impression of the treatment session. Results of the pilot study suggest that there was a significant improvement in restlessness, achiness and overall treatment comfort in patients receiving the electro-acupuncture treatment to a specific area of the hand, when compared to patients who were receiving more traditional acupuncture style needling. Additional studies are underway at Hooper to evaluate the ability of electro-acupuncture to relieve opioid withdrawal symptoms in a clinical setting.

Participation in Northwest Science Fair

The Northwest Science Fair is an opportunity for middle-school and high school students to present a research project in a poster format. Examples of research areas are Behavioral Science, Computer Science, Math and Medicine. Research projects are judged for scientific ability, knowledge of the project and originality. Winners in the individual research areas are also judged in a general competition for the best of Fair. Every year, several departmental faculty, post-docs and students participate as judges. This past April, **Ed Gallaher, Ph.D.** , **Nancy Bormann, Ph.D.** and **Gwen Schafer, M.S.** participated in the Northwest Science Fair as judges in the Behavioral Science research area and also in the general competition for best of Fair.

Science Presentations by OHSU NERDS



The NERDS program at OHSU is dedicated to Non-threatening Encouragement for the Recreational Discovery of Science. During the months of February through May of 1997, graduate students traveled to Parkrose Middle School, West Tualatin View Elementary School and Glencoe Elementary School to increase the awareness and appreciation of science through scientific demonstrations, followed by question and answer sessions. Participants from PARC laboratories were **Julia Chester, M.S., Heather Hain, Gwen Schafer** and **Kristan Burrows**, the NERDS program coordinator.

Recent Publications

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News from the Department of Behavioral Neuroscience

New Grant Awards

Jeri Janowsky, Ph.D. will receive an RO3 grant from the National Institute of Health (NIH; $72,146 direct cost) in June to study "fMRI Measures of Attention in the Oldest Old." Recently, Janowsky was awarded a one year grant ($50,00 direct cost) from the Alzheimer's Association to investigate "fMRI Measures of Short Term Memory in Incipient Dementia" as well as an additional one year grant ($60,000 direct cost) from Wyeth-Ayerst to determine "The Effects of Lifetime Estrogen Exposure on Alzheimer's Disease in Women."

Fellowships

Sarah Coste, M.S. was recently awarded a postdoctoral fellowship from the American Heart Association to study "Corticotropin-Releasing Hormone Receptors in Heart: Modulation by Bacterial Endotoxin," research which will be conducted in the laboratory of Mary Stenzel-Poore, Ph.D. in the Department of Molecular Microbiology and Immunology at OHSU. Coste's grant received the top priority score, so she also was honored with the 1997 James Metcalfe Research Award. Coste's position will be an American Heart Association, Oregon Affiliate Inc. Research Fellow.

Degrees

After successfully completing the requirements for the M.S. degree, **Ann Ward** (Dan Hatton, mentor) presented her Master's thesis entitled "Health Related Quality of Life, Nutrition Hassles, and Glycosylated Hemoglobin Assessment in People with Type II Diabetes Mellitus" in March, 1997.

Departmental Faculty Discusses Research at Local Schools

Recently, local high school students benefited from talks pertaining to brain development and memory by **Jeri Janowsky**. In February Janowsky spoke to the Monroe Teen Parent Program in the Portland Public Schools on "Brain Development and Cognition." As part of the Oregon Neonatal Seminar Series, Janowsky discussed "Nutrition, Cognition, and Brain and Retinal Development" in March, 1997. The following month, she was invited to speak to the Westview High School Honors Program in Beaverton on "Memory in the Brain."

OHSU Student Research Forum

The fourteenth annual OHSU Student Research Forum was held in May, 1997. This research forum is an opportunity to acknowledge the contribution of graduate students as essential contributors to the process of scientific discovery. The opening address was given by Larry Simonsmeier, J.D., executive director of Oregon Bioscience Association on "Why should you consider the biotech industry as a career option?" The two days of oral and poster presentations by graduate students came to a close with the Keynote Address by Henry Lester, Ph.D., Professor of Biology at California Institute of Technology. Lester discussed "Site-specific incorporation of unnatural amino acids in ion channels."

Several students from the Department of Behavioral Neuroscience participated in this year's Student Research Forum. **Gwen Schafer** and **Christina Lessov** gave oral presentations, whereas **Jennifer Buckman, M.S., Kristan Burrows, Julia Chester, Heather Hain** and **David Salat** presented their research in the general poster session. In addition, **Heather Hain** was a member of the Student Research Forum Committee as the Faculty Liaison. Faculty from the basic science departments at OHSU evaluated the oral and poster presentations in order to give the students feedback about their research and presentation style.

Publications

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PARC Sponsored Research Seminars

January 1997

Michele Grubb, Department of Pharmacology, University of Virginia Health Sciences Center

"Characterization of antagonist precipitated clonidine withdrawal in rat"

Val Watts, Ph.D., NIAAA/NIDA Journal Club

February 1997

Leslie Devaud, Ph.D., Bowles Center for Alcohol Studies, Univ. of North Carolina Chapel Hill

"The influence of gender on alterations in GABA-A receptor gene expression elicited by chronic ethanol consumption"

Alan Keys, Ph.D., NIAAA/NIDA Journal Club

Kevin Quinn, Ph.D., Department of Physiology, Northwestern University Medical School

"Neural control of motor learning: Plasticity in the vestibulo-ocular reflex"

Robert Holson, Ph.D., PHS Food and Drug Administration, National Center for Toxicological Research

"Gestational exposure to non-lethal doses of retinoic acid: Sensitive periods for effects on brain and behavior"

Robert Holson, Ph.D., PHS Food and Drug Administration, National Center for Toxicological Research

"Does microdialysis probe insertion functionally alter the striatal dopamine system?"

Martin Wessendorf, Ph.D., Department of Cell Biology and Neuroanatomy, University of Minnesota

"Brain stem circuits in opiate analgesia"

March 1997

Scott Baraban, Ph.D., Department of Neurological Surgery, University of Washington

"Neurophysiological consequences of prenatal cocaine exposure in rats"

Heather Hain, Graduate Student Research Seminar

"The role of serotonin-1B (5HT1B) receptors in spinally mediated morphine analgesic tolerance"

Christina Lessov, Graduate Student Research Seminar

"Duration of sensitization to the locomotor stimulant effects of ethanol"

Brenda Wiens, Ph.D., NIAAA/NIDA Journal Club

Richard Paylor, Ph.D., Section on Behavioral Neuropharmacology Experimental Therapeutics Branch, NIMH

"Identifying cellular substrates for learning differences in mice"

April 1997

Kalpana Merchant, Ph.D., Pharmacia and Upjohn

"Amphetamine sensitization: Role of dopamine D4 receptors in behavioral and molecular effects"

Nancy Bormann, Ph.D., NIAAA/NIDA Journal Club

Heidi D. Nelson, M.D., M.P.H., Dept. of Medicine, Oregon Health Sciences Univ. and Dept. of Veteran Affairs Med. Center

"Moderate alcohol function and health of older women - An epidemiological study"

Wallace Lai, M.D., Dept. of Medicine, Oregon Health Sciences University

"Connexins: What do we know of cellular communications?"

Susan E. Bergeson, Dept. of Biochemistry, Oregon Health Sciences University

"The purine salvage pathway as a target for structure-based drug design"

May 1997

Jacqueline F. McGinty, Ph.D., Department of Anatomy and Cell Biology, East Carolina University

"Muscarinic cholinergic receptors regulate psychostimulant-induced neuropeptide and immediate early gene expression"

Judy Grisel, Ph.D., NIAAA/NIDA Journal Club

Michael Zigmond, Ph.D., Department of Neuroscience, University of Pittsburgh

"The neurochemical effect of partial damage to central dopamine neurons: Clinical and basic implications"

Questions, comments or suggestions for future news items should be made directly to the editor, Deborah Finn.

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Letter to the Editor

exerpts from a letter submitted by Sarah Finn and Leigh McLean, 4th graders at West Tualatin View Elementary

On Friday, April 4, our teacher Ms. Van Scoter informed the class that the next week would be very busy. She told us that on Tuesday, April 8, NERDS would be coming to teach 4 classes (2 mixed 4th/5th grade and 2 fifth grade) about science. The class looked at her as if she were crazier than normal. Then she explained that NERDS stands for Non-threatening Encouragement for the Recreational Discovery of Science. We then looked at her as if she were normal (well as normal as she will ever be).

Sure enough, on Tuesday there were smart people in our classroom setting up four stations. The stations were "What are 'good' versus 'bad' bacteria?," "What is DNA?," "How does the brain work?," and "How does the brain see?" We were very lucky because, number one, NERDS only visit about 3 or 4 schools a year. Number two, the fourth graders were very lucky because this presentation is meant for fifth and sixth graders.

We took a poll to see what station the kids in our class liked the best. From a total of 24 students, three people liked "How does the brain see?" as their favorite. Six people liked "How does the brain work?" the best. One person liked "What is DNA?" Four people liked "What is 'good' versus 'bad' bacteria?" as their absolute favorite. Even though one person did not like any of the stations, nine students really liked all of the stations for their favorite.