NEWSLETTER

ISGIDAR

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INTERNATIONAL STUDY GROUP INVESTIGATING DRUGS AS REINFORCERS

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ABOUT ISGIDAR:

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ABOUT ISGIDAR NEWSLETTER:

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Annual Meeting of the International Study Group Investigating Drugs as Reinforcers

Keystone Resort Dillon, Colorado June 20, 1992

John D. Roache, Melinda A. Stanley, and Daniel L. Creson, University of Texas Health Science Center at Houston Diazepam-reinforced self-medication behavior in anxious patients.

Susan Schenk and Emily S. Davidson, Texas A & M University Variability in response to cocaine's reinforcing effects: Results of human and animal studies.

Student Travel Awardee: Richard J. DeGrandpre. University of Vermont Effects of income on drug choice in humans.

Frank George, University of New Mexico What is reinforcement?

A genetic approach to questions in behavioral pharmacology.

Student Travel Award Finalist: Sharon Rosenzweig-Lipson, Harvard University

The high-efficacy D₁ dopamine receptor agonist SKF 81297
as a candidate therapeutic for cocaine dependence.

Nancy A. Ator and Roland R. Griffiths, Johns Hopkins University Oral alprazolam reinforcement in baboons.

Michael A. Nader, University of Chicago The effects of reinforcement schedule history on cocaine self-administration by rhesus monkeys.

Presentation,

Student Travel Award Finalist: Mary Ann D. Chutuape. University of Chicago Subjective effects of ethanol and diazepam: Correlates of drug self-administration.

John R. Hughes, Alison H. Oliveto, Stephen T. Higgins, Warren K. Bickel, William Valliere and Sue Terry, University of Vermont Caffeine as a reinforcer in 10-15 year old soda drinkers: Preliminary results.

Invited speaker: Tsutomu Suzuki. Hoshi University Genetic differences in abused drugs.

appetitive effect of

Jack Kinsora and David A. Downs, Park-Davis Pharmaceutical Research Division

Vascular access ports for intravenous drug delivery in squirrel monkeys.

James P. Zacny, University of Chicago The subjective, cognitive and effects of subanesthetic doses of an intravenous general anesthetic, propofol, in healthy volunteers.

psychomotor

Richard A. Meisch, University of Texas Health Science Center at Houston Orally self-administered cocaine in rhesus monkeys: Transition from negative or neutral behavioral effects to positive reinforcing effects.

Richard W. Foltin and Marian W. Fischman, Johns Hopkins University Effects of a non-drug option on intravenous cocaine choice by humans.

ISGIDAR BUSINESS MEETING

Minutes of last year's meeting were approved.

mee Way reports

Dr. Meisch called the meeting to order at 4:25. The four nominees for membership in ISGIDAR were Leslie Amass, Jack Bergman, Pamela Doty and Ralph Spiga. All were voted in as members.

The treasurers report indicated that, after the fees and expenses for the meeting we should have a balance of around \$2,000.

The meeting was attended by over 80 persons and was successful. A note was made to have coffee in the morning at registration at the next meeting.

Bill Woolverton reported that FDA had recently published guidelines for ethical animal practices. Interested members can contact Bill to examine and/or make comments on these guidelines. Dr. Woolverton also mentioned that the legislation to protect research facilities from attacks by animal rights movement persons is still in the House Judiciary Committee and those interested might want to write the members of that committee.

The format for having invited speakers and travel was discussed and the prior format was endorsed.

There was a discussion about changing the format of the meeting to fewer but longer papers, but this did not seem acceptable.

John Hughes discussed the possibility of ISGIDAR sponsoring a meeting on definitions of reinforcement. After much discussion, the consensus was that a meeting was in order and that it would be best done by collaborating with a NIDA technical review. There was no consensus as to whether the meeting should be combined with ISGIDAR or should be a separate meeting. John Hughes is to follow up on this.

MESSAGE FROM THE PRESIDENT

This year's meeting was well attended. Fourteen papers were presented. Seven papers concerned studies with human subjects, and similarly seven were studies with laboratory animals. The comments I received indicated that people enjoyed the meeting. More than 75 people attended, and 70 were present at the lunch. This level of participation and interest indicates that ISGIDAR continues to be a strong organization.

The FDA has published "Draft Guidelines for Good Academic Research Practices in Animal Pharmacology." Individuals interested in regulations regarding the testing of drugs in animals for pharmaceutical companies may wish to look at the Guidelines and submit their comments to the Director of the Pilot Drug Evaluation Staff, Food and Drug Administration. Copies of the Guidelines may be obtained from Dr. David A. Downs, Warner-Lambert/Parke-Davis, 2800 Plymouth Road, Ann Arbor, Michigan 48105.

Two Japanese companies, Taisho Pharmaceutical Co., Ltd and Shionogi & Co., Lts., donated money to ISGIDAR and because of this donation we were able to give extra travel support to Dr. Suzsuki who was our invited speaker at the 1992 meeting. We are very appreciative of their support.

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1993 MEETING

The 1993 ISGIDAR meeting will held on Saturday, June 12th at the Toronto Hilton. As in the past, ISGIDAR will be conducted as a satellite session of the Committee on Problems of Drug Dependence. Note that the meeting will be held on **Saturday**.

INVITED SPEAKERS FOR THE 1993 MEETING

We are seeking suggestions for speakers to invite to the 1993 meeting. Invited speakers should be individuals who do not regularly attend the ISGIDAR meeting, and who are doing interesting research related to drugs as reinforcers. They will be paid a \$100 honorarium. Members are urged to submit suggestions to Richard Meisch.

1993 TRAVEL AWARD: STUDENT PAPER COMPETITION

ISGIDAR will again sponsor a Student Paper Competition Award for a new investigator to present a paper on drug self-administration research. Up to \$500 in reasonable and documented travel costs will be paid to the winner to attend the meeting of the Committee on Problems of Drug Dependence, 1993 to present a paper at the ISGIDAR satellite session. Payment will be made upon submission of travel receipts to the ISGIDAR Treasurer. Those who did not receive the award, but who did receive good reviews will be encouraged to present their papers at the ISGIDAR meeting.

ELIGIBILITY: Applicants must be enrolled in a graduate program and be working toward a doctorate or have received their doctorate within the last five years (after June 1, 1987).

Applicants who are not ISGIDAR members must be sponsored by an ISGIDAR member.

The research to be reported at ISGIDAR must not already be published.

MANUSCRIPT REQUIREMENTS: Papers should not be more than 10 pages excluding figures and references.

The length and scope of the paper should be consistent with a 20-25 minute slide presentation. Please include paper title, name, address, phone number and author's signature on the cover page of the manuscript.

The signature and typed name of the author's sponsor should also appear on the cover page after a statement indicating that the applicant made a significant scientific contribution to the research.

Submit four copies, double-spaced.

REVIEW: Each manuscript will be independently reviewed by the ISGIDAR officers for originality, scientific contribution, sound methodology and clarity of the manuscript.

Blind review is possible upon request.

Reviewers will not participate in the review of papers from their own institution.

Submit manuscripts to

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DEADLINE FOR SUBMISSION: April 15, 1993

POSTDOCTORAL FELLOWSHIPS

Johns Hopkins University School of Medicine

Postdoctoral fellowships are available at the Johns Hopkins University School of Medicine to develop and implement human behavioral pharmacology research -- in both laboratory and clinic -- related to substance abuse. Stimulating and productive environment. Projects include evaluation of behavioral and pharmacological treatments, drug interaction studies related to medications development; also, drug discrimination, abuse liability assessment, physical dependence, performance effects, contingency management, behavioral counseling, smoking cessation. Broad range of substances under study: opioids, cocaine, sedatives, tobacco, marijuana, caffeine. Ph.D. in experimental or clinical; research experience desirable. Stipend: USPHS levels, based on experience. Minorities encouraged. Send letter of interest, vita, and phone numbers of three references to: George E. Bigelow, Ph.D.; BPRU/Psychiatry, D-5-W; Johns Hopkins/Key Medical Center; 4940 Eastern Avenue; Baltimore, MD 21224; (301) 550-0035.

University of Texas Health Science Center-Houston, School of Medicine, Substance Abuse Research Center.

Postdoctoral positions in Behavioral Pharmacology supported by a NIDA Training Grant awarded to the Substance Abuse Research Center(SARC) at the University of Texas Health Science Center at Houston. SARC consists of 12 faculty members actively engaged in research supported by nine NIH grants and a drug contract. Three components of SARC are involved in training: (1) the Addictive Behaviors Clinic with a staff of five counselors and two nurses, (2) the Human Behavioral Pharmacology Laboratory containing 13 human operant chambers, and (3) the Preclinical Laboratories which have a large facility for rodent and primate research. Most of the research activities are concerned with the treatment of substance abusers, the study of human and animal drug self-administration, and the study of drug effects upon human and animal behavior. Interested individuals should send a c.v. and letter of interest to: John Grabowski, Ph.D.(Clinical research/human drug self-administration), Richard Meisch, M.D., Ph.D. (animal drug self-administration), Don R. Cherek, Ph.D. (human behavioral pharmacology) or Peter B. Silverman, Ph.D. (animal behavioral pharmacology) at Substance Abuse Research Center, Department of Psychiatry & Behavioral Sciences, Univ. Texas Health Science Center, 1300 Moursund St., Houston, TX 77030-3497. (713)-792-7925.

Medical College of Virginia

One or more postdoctoral fellowship or research associate positions in the behavioral pharmacology laboratories of Drs. Robert Balster and Robert Mansbach will be opening during 1992-93. Research methods include operant behavior and drug discrimination in mice, rats, squirrel monkeys and rhesus monkeys, i.v. drug self-administration in rhesus monkeys, and startle responding in rats and mice. Areas of research include the behavioral relevance of amino acid receptor activation and antagonism, the development and use of animal models for assessing new pharmacotherapies for substance abuse, the discriminative stimulus and reinforcing properties of cocaine, the behavioral effects of abused inhalants, and drug abuse potential evaluation. Send vita and letter describing research interests to Drs. Balster or Mansbach, Department of Pharmacology and Toxicology, Medical College of Virginia, Richmond, VA 23298-0613.

ISGIDAR BIBLIOGRAPHY

Listing of recent publications or manuscripts in press on the behavioral pharmacology of drugs of abuse by ISGIDAR members:

RA = published, reprints available IP = in press SU = submitted NA = published, reprints not available

Dr. Robert L. Balster Department of Pharmacology and Toxicology Medical College of Virginia Box 613 Richmond, VA 23298-0613

Balster, R.L. Discriminative stimulus properties of phencyclidine and other NMDA antagonists. In: Glennon, R.A., Jarbe, T.U.C., Frankenheim, J. (Eds). <u>Drug Discrimination: Applications to Drug Abuse Research</u>. <u>NIDA Research Monograph Series 116</u>. Washington, US Gov't Printing Office, pp. 163-180, 1991.

Beardsley, P.B., Balster, R.L. (1992). The intravenous self-administration of antihistamines by rhesus monkeys. <u>Drug</u> and <u>Alcohol Dependence</u> 30:117-126. (RA).

Gold, L.H., Balster, R.L. (1992). Effects of buspirone and gepirone on IV cocaine self-administration in rhesus monkeys. <u>Psychopharmacology</u> 108:289-294. (RA).

Gold, L.H., Balster, R.L., Barrett, R.L., Britt, D.T., Martin, B.R. (1992). A comparison of the discriminative stimulus properties of Δ⁹-tetrahydrocannabinol and CP 55,940 in rats and rhesus monkeys. <u>Journal of Pharmacology and Experimental Therapeutics</u> 262:479-486. (RA).

Jortani, S.A., Willets, J., Balster, R.L. (1992). Systemic magnesium chloride administration fails to produce phencyclidine-like discriminative stimulus effects in rats. <u>Neuroscience Letters</u> 135:136-138. (RA).

Wiley, J.A., Balster, R.L. Preclinical evaluation of N-methyl-D-aspartate antagonists for antianxiety effects: A review. In: Kamenka, J.M., Domino, E.F. (Eds.) <u>Multiple Sigma and PCP Receptor Ligands: Mechanisms for Neuromodulation and Neuroprotection?</u>, Ann Arbor, NPP Books, pp. 801-815, 1992. (RA).

Wiley, J.L., Porter, J.H., Compton, A.D., Balster, R.L. (1992). Antipunishment effects of acute and repeated administration of phencyclidine and NPC 12626 in rats. <u>Life Sciences</u> 50:1519-1528. (RA).

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Bickel, W.K., DeGrandpre, R.J., Higgins, S.T., Hughes, J.R. (1990). Behavioral economics of drug self-administration. I. Functional equivalence of response requirement and drug dose. <u>Life Sciences</u> 47:1501-1510. (RA).

Bickel, W.K., DeGrandpre, R.J., Hughes, J.R., Higgins, S.T. (1991). Behavioral economics of drug self-administration. II. A unit-price analysis of cigarette smoking. <u>Journal of the Experimental Analysis of Behavior</u> 55:145-154. (RA).

Bickel, W.K., Hughes, J.R., DeGrandpre, R.J., Higgins, S.T., Rizzuto, P. (1992). Behavioral economics of drug self-administration. IV. The effects of response requirement on the consumption of and interaction between concurrently available coffee and cigarettes. <u>Psychopharmacology</u> 107:211-216. (RA).

DeGrandpre, R.J., Bickel, W.K., Hughes, J.R., Higgins, S.T. (1992). Behavioral economics of drug self-administration. III. A reanalysis of the nicotine regulation hypothesis. <u>Psychopharmacology</u> 108:1-10. (RA).

Dr. Harriet deWit Department of Psychiatry The University of Chicago 5841 S. Maryland Avenue Chicago, IL 60637

Zacny, J.P., deWit, H. (1991). Effects of food deprivation on subjective effects and self-administration of marijuana in humans. <u>Psychological Reports</u> 68:1263-1274. (RA).

deWit, H., Bodker, B., Ambrc, J. (1992). Rate of increase of plasma drug level influences subjective response in humans. <u>Psychopharmacology</u> 107:352-358. (RA).

Dohrn, C.S., Lichtor, J.L., Rinn, R.S., Uitvlugt, A., Coalson, D.W., Rupani, G., deWit, H., Zacny, J.P. (1992). Subjective and psychomotor effects of nitrous oxide in healthy volunteers. <u>Behavioral Pharmacology</u> 3:19-30. (RA).

Zacny, J.P., Bodker, B.K., deWit, H. (1992). Effects of setting on the subjective and behavioral effects of damphetamine in humans. Addictive Behaviors 17:27-33. (RA).

Zacny, J.P., deWit, H. (1992). The effects of restricted feeding regimen on cigarette smoking in humans. <u>Addictive Behaviors</u> 17:149-157. (RA).

Zacny, J.P., Lichtor, L.L., deWit, H. (1992). Subjective, behavioral and physiological responses to intravenous dezocine in health volunteers. <u>Anesthesia and Analgesia</u> 74:523-530. (RA).

Zacny, J.P., Lichtor, J.L., deWit, H. (1992). Effects of food deprivation on responses to intravenous fentanyl in healthy volunteers. <u>Journal of Substance Abuse</u> 4:197-207. (RA).

Zacny, J.P., Lichtor, J.L., Zaragoza, J.G., deWit, H. (1992). Subjective and behavioral responses to intravenous fentanyl

in health volunteers. Psychopharmacology 107:319-326. (RA).

Cole-harding, S., deWit, H. Self-administration of pentobarbital in light and moderate alcohol drinkers. <u>Pharmacology</u>, <u>Biochemistry and Behavior</u>. (IP).

deWit, H., Chutuape, M. Increased self-administration of alcohol in social drinkers following alcohol preloads. Behavioural Pharmacology. (IP).

Dohrn, C.S., Lichtor, J.L., Coalson, D.W., Uitvlugt, A., deWit, H., Zacny, J.P. Reinforcing effects of extended inhalation of nitrous oxide in humans. <u>Drug and Alcohol Dependence</u>. ((IP).

Johanson, C.E., deWit, H. Lack of effect of social context on the reinforcing effects of diazepam in humans. Pharmacology. Biochemistry and Behavior. (IP).

Zacny, J.P., Divane, W.T., deWit, H. Assessment of magnitude and availability of a non-drug reinforcer on preference for a drug reinforcer. <u>Human Psychopharmacology: Clinical and Experimental</u>. (IP).

Roland R. Griffiths, Ph.D. Behavioural BIOLOGY Research Center FSKMC/Johns Hopkins 5510 Nathan Shock Drive, Suite 3000 Baltimore, MD 21224

deWit, H., Griffiths, R.R. (1991). Testing the abuse liability of anxiolytic and hypnotic drugs in humans. <u>Drug and Alcohol Dependence</u> 28:83-111 (RA).

Evans, S.M., Critchfield, T.S., Griffiths, R.R. (1991). Abuse liability assessment of anxiolytics/hypnotics: rationale and laboratory lore. <u>British Journal of Addiction</u> 86:1625-1632 (RA).

Evans, S.M., Griffiths, R.R. (1991). Dose-related caffeine discrimination in normal volunteers: individual differences in subjective effects and self-reported cues. <u>Behavioural Pharmacology</u> 2:345-356 (RA).

Griffiths, R.R., Lamb, R.J., Sannerud, C.A., Ator, N.A., Brady, J.V. (1991). Self-injection of barbiturates, benzodiazepines and other sedative-anxiolytics in baboons. <u>Psychopharmacology</u>, 103:154-161 (RA).

Sannerud, C.A., Allen, M., Cook, J.M., Griffiths, R.R. (1991). Behavioral effects of benzodiazepine ligands in non-dependent, diazepam dependent and diazepam-withdrawn baboons. <u>European Journal of Pharmacology</u> 202:159-169 (RA).

Sannerud, C.A., Ator, N.A., Griffiths, R.R. (1991). Comparison of the discriminative stimulus effects of midazolam after intracerebroventricular and peripheral administration in the rat. <u>Life Sciences</u> 49:261-268 (RA).

Sannerud, C.A., Ator, N.A., Griffiths, R.R. (1991). Methocarbamol: evaluation of reinforcing and discriminative stimulus effects. Behavioural Pharmacology 2:143-150 (RA).

Wolf, B., Griffiths, R.R. (1991). Physical dependence on benzodiazepines: Differences within the class. <u>Drug and Alcohol Dependence</u> 29:153-156 (RA).

Silverman, K., Griffiths, R.R. (1992). Low-dose caffeine discrimination and self-reported mood effects in normal volunteers. <u>Journal of the Experimental Analysis of Behavior</u> 57:91-107 (RA).

Evans, S.M., Griffiths, R.R. Caffeine tolerance and choice in humans. Psychopharmacology (IP).

Griffiths, R.R., Sannerud, C.A., Ator, N.A., Brady, J.V. Zolpidem behavioral pharmacology in baboons: Self-injection, discrimination, tolerance and withdrawal. <u>Journal of Pharmacology and Experimental Therapeutics</u> (IP).

Woodson, P.P., Griffiths, R.R. Control of cigarette smoking topography: Smoke filtration and draw resistance. Behavioural Pharmacology (IP).

Dr. B.G. Hoebel Department of Psychology Princeton University Princeton, NJ 08544-1010

Hoebel, B.G., Hernandez, L. (1990). Microdialysis studies of psychostimulants. <u>Committee on Problems of Drug Dependence</u>. NIDA Research Monograph 95:343-344.

Hernandez, L., Guzman, N.A., Hoebel, B.G. (1991). Bidirectional microdialysis *in vivo* shows differential dopaminergic potency of cocaine, procaine and lidocaine in the nucleus accumbens using capillary electrophoresis for calibration of drug outward diffusion. <u>Psychopharmacology</u> 105:264-268.

Mark, G.P., Schwartz, D.H., Hernandez, L., West, H.L., Hoebel, B.G. Application of microdialysis to the study of motivation and conditioning: Measurements of dopamine and serotonin in freely-behaving rats. In: Robinson, T.E., Justice, J.B. (Eds.) <u>Microdialysis in the Neurosciences</u>, Amsterdam, Elsevier, pp. 359-385, 1991.

Mark, G.P., Blander, D.S., Hoebel, B.G. (1991). A conditioned stimulus decreases extracellular dopamine in the nucleus accumbens after development of a learned taste aversion. <u>Brain Research</u> 551:308-310.

McClelland, R.C., Hoebel, B.G. (1991). d-Fenfluramine and self-stimulation: Loss of fenfluramine effect on underweight rats. <u>Brain Research Bulletin</u> 27:341-345.

Pothos, E., Rada, P., Mark, G.P., Hoebel, B.G. (1991). Dopamine microdialysis in the nucleus accumbens during acute and chronic morphine, naloxone-precipitated withdrawal and clonidine treatment. <u>Brain Research</u> 566:348-350.

Rada, P., Pothos, E., Mark, G.P., Hoebel, B.G. (1991). Microdialysis evidence that acetylcholine in the nucleus accumbens is involved in morphine withdrawal and its treatment with clonidine treatment. <u>Brain Research</u> 561:354-356.

Rada, P., Mark, G.P., Pothos, E., Hoebel, B.G. (1991). Systemic morphine simultaneously decreases extracellular acetylcholine and increases dopamine in the nucleus accumbens of freely moving rats. <u>Neuropharmacology</u> 30:1133-1136.

Hoebel, B.G., Hernandez, L., Mark, G.P., Pothos, E. Microdialysis in the study of psychostimulants and the neural substrate for reinforcement: Focus on dopamine and serotonin. NIDA Research Monograph. (IP).

Sulzer, D., Pothos, E., Sung, H.M., Maidment, N.T., Hoebel, B.G., Rayport, S. Weak base model of amphetamine action. <u>Annals of New York Academy Sciences</u>. (IP).

Dr. John R. Hughes Human Behavioral Pharmacology Laboratory Department of Psychiatry University of Vermont 38 Fletcher Place Burlington, Vermont 05401-1419

Hughes, J.R., Hunt, W.K., Higgins, S.T., Bickel, W.K., Fenwick, J.W., Pepper, S.L. (1992). Effect of dose on the ability of caffeine to serve as a reinforcer in humans. <u>Behavioural Pharmacology</u> 3:211-218. (RA).

Hughes, J.R., Oliveto, A.H., Helzer, J.E., Higgins, S.T., Bickel, W.K. (1992). Should caffeine abuse, dependance, or withdrawal be added to <u>DSM-IV</u> and <u>ICD-10</u>? <u>American Journal of Psychiatry</u> 149:33-40. (RA).

Oliveto, A.H., Hughes, J.R., Higgins, S.T., Bickel, W.K., Pepper, S.L., Shea, P.J., Fenwick, J.W. Forced-choice vs free-choice procedures: Caffeine self-administration in humans. <u>Psychopharmacology</u>. (IP).

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MacKenzie-Taylor, D.R., Rech, R.H. (1991). Cellular and learned tolerances for ethanol hypothermia. <u>Pharmacology.</u> <u>Biochemistry and Behavior</u> 38:29-36 (RA).

MacKenzie-Taylor, D.R., Rech, R.H. (1991). Cellular and learned tolerances for pentobarbital hypothermia. Pharmacology. Biochemistry and Behavior 3: 249-256 (RA).

MacKenzie-Taylor, D.R., Rech, R.H. (1991). Cellular and learned tolerances to pentobarbital ataxia. <u>Pharmacology.</u> <u>Biochemistry and Behavior</u> 39:257-264 (RA).

Dr. T.S. Shippenberg Addiction Research Center NIDA PO Box 5180 Baltimore, MD 21224

Shippenberg, T.S. (1991). Conditioned reinforcing effects of 8-hydroxy-2-(di-N-propylamino) tetralin: Involvement of 5-HTia and D₁ dopamine receptors. <u>Neuroscience Letters</u> 121:136-138 (RA).

Shippenberg, T.S., Bals-kubik, R, Huber, A., Herz, A. (1991). Neuroanatomical substrates mediating the aversive effects of d₁ dopamine receptor antagonists. <u>Psychopharmacology</u> 103:209-214 (RA).

Shippenberg, T.S., Herz, A. (1991). Influence of chronic lithium treatment upon the motivational effects of opioids: Alterations in the effects of u-but not k-opioid receptor ligands. <u>Journal of Pharmacology and Experimental Therapeutics</u> 256:1102-1106 (RA).

Shippenberg, T.S., Nikolarakes, K., Herz, A. (1991). Prolonged inflammatory pain modifies corticotropin-releasing-factor-induced, opioid peptide release in the hypothalamus. <u>Brain Research</u> 563:209-214 (RA).

Spanagel, R., Herz, A., Shippenberg, T.S. (1991). Modulation of the mesolimbic dopaminergic system by B-endorphin-(1-27) as assessed by microdialysis. <u>European Journal of Pharmacology</u> 200:319-324 (RA).

Spanagel, R., Herz, A., Bals-kubik, R., Shippenberg, T.S. (1991). B-endorphin induced locomotor stimulation and reinforcement are associated with an increase in dopamine release in the nucleus accumbens. <u>Psychopharmacology</u> 104:51-56 (RA).

Ayesta, F.J., Ableitner, A., Emmett-Oglesby, M.W., Herz, A., Shippenberg, T.S. (1992). Paradoxical effect of chronic fentanyl treatment on naltrexone-induced supersensitivity and upregulation. <u>Journal of Pharmacology and Experimental Therapeutics</u> 260:168-174 (RA).

Herz, A., Shippenberg, T.S., Bals-kubik, R., Spanagel, R. (1992). Opioid addiction: pharmacological and biochemical aspects. <u>Drug Research</u> 1:256-259 (RA).

Shippenberg, T.S. Motivational effects of opioids. In: Here, A. (Ed). <u>Handbook of Experimental Pharmacology</u>, Springer-Verlag, Heidelberg (IP).

Spanagel, R., Herz, A., Shippenberg, T.S. Opposing topically active androgynous opioid systems modulate the mesolimbic dopaminergic pathway. <u>Procedures of the National Academy of Sciences (USA)</u> 89 (IP).

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Fartel, G.M., Kleven, M.S., Woolverton, W.L., Seiden, L.S., Perry, B.D. (1992). Effects of repeated injections of cocaine on catecholamine receptor binding sites, dopamine transporter binding sites and behavior in rhesus monkeys. <u>Brain</u> Research 57:235-243.

Gui-Hua, C., Woolverton, W.L. (1992). Antagonism of quinpirole by (+)-AJ 76: Possible involvement of D3 receptors?

European Journal of Pharmacology 20:285-286.

Gui-Hua, C., Perry, B.D., Woolverton, W.L. (1992) Effects of chronic SCH23390 or acute EEDQ on the discriminative stimulus effects of SKF38393. <u>Pharmacology</u>, <u>Biochemistry and Behavior</u> 41:321-327.

Nader, M.A., Woolverton, W.L. (1992). Further characterization of adjunctive behavior generated by schedules of cocaine self-administration. <u>Behavioural Pharmacology</u> 3:65-74.

Nader, M.A., Woolverton, W.L. (1992). Evaluation of the discriminative stimulus effects of venlafaxine, a potential antidepressant, in rhesus monkeys. <u>Drug Development Research</u> 25:75-80.

Vanover, K.E., Nader, M.A., Woolverton, W.L. (1992). Evaluation of the discriminative stimulus and reinforcing effects of sertraline in rhesus monkeys. <u>Pharmacology</u>, <u>Biochemistry and Behavior</u> 41:789-793.

Woolverton, W.L., Johnson, K.M. (1992). Cocaine abuse: Behavioral and neurobiological mechanisms. <u>Trends in Pharmacological Science</u> 13:193-200.

Kleven, M.S., Woolverton, W.L. Effects of three monoamine uptake inhibitors on behavior maintained by cocaine or food presentation in rhesus monkeys. <u>Drug and Alcohol Dependence</u>. (IP).

Nader, M.A., Woolverton, W.L. Effects of increasing response requirement on choice between cocaine and food in rhesus monkeys. <u>Psychopharmacology</u>. (IP).

Nader, M.A., Woolverton, W.L. Choice between cocaine and food by rhesus monkeys: Effects of conditions of food availability. Behavioural Pharmacology. (IP).

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Chait, L.D., Zacny, J.P. (1992). Reinforcing and subjective effects of oral delta-9-THC and smoked marijuana in humans. <u>Psychopharmacology</u> 107:255-262. (RA).

Dohrn, C.S., Lichtor, J.L., Rinn, R.S., Uitvlugt, A., Coalson, D.W., Rupani, G., deWit, H., Zacny, J.P. (1992). Subjective and psychomotor effects of nitrous oxide in healthy volunteers. <u>Behavioral Pharmacology</u> 3:19-30. (RA).

Zacny, J.P., Bodker, B.K., deWit, H. (1992). Effects of setting on the subjective and behavioral effects of damphetamine in humans. <u>Addictive Behaviors</u> 17:27-33. (RA).

Zacny, J.P., deWit, H. (1992). The effects of restricted feeding regimen on cigarette smoking in humans. <u>Addictive Behaviors</u> 17:149-157. (RA).

Zacny, J.P., Lichtor, J.L., Coalson, D.W., Finn, R.S., Uitvlugt, A.M., Glosten, B., Flemming, D.C., Apfelbaum, J.L. (1992). Subjective, behavioral and physiological responses to subanethetic doses of propofol in health volunteers. <u>Anesthesiology</u> 76:696-702. (RA).

Zacny, J.P., Lichtor, J.L., deWit, H. (1992). Subjective, behavioral and physiological responses to intravenous dezocine in health volunteers. <u>Anesthesia and Analgesia</u> 74:523-530. (RA).

Zacny, J.P., Lichtor, J.L., deWit, H. (1992). Effects of food deprivation on responses to intravenous fentanyl in healthy volunteers. <u>Journal of Substance Abuse</u> 4:197-207. (RA).

Zacny, J.P., Lichtor, J.L., Zaragoza, J.G., deWit, H. (1992). Subjective and behavioral responses to intravenous fentanyl in health volunteers. <u>Psychopharmacology</u> 107:319-326. (RA).

Dohrn, C.S., Lichtor, J.L., Coalson, D.W., Uitvlugt, A., deWit, H., Zacny, J.P. Reinforcing effects of extended inhalation of nitrous oxide in humans. <u>Drug and Alcohol Dependence</u>. (IP).

Zacny, J.P., Apfelbaum, J., Lichtor, J.L., Zaragoza, J.G. Effects of a 5-HT³ antagonist, ondansetron, on cigarette consumption, smoke exposure and mood in cigarette smokers. <u>Pharmacology</u>, <u>Biochemistry and Behavior</u>. (IP).

Zacny, J.P., Lichtor, J.L., Zaragoza, J.G., Coalson, D.W., Uitvlugt, A.M., Flemming, D.C., Binstock, W.B., Cutter, T. Apfelbaum, J. Assessing the abuse potential of propofol in health volunteers. <u>Drug and Alcohol Dependence</u>. (IP).

Zacny, J.P., Divane, W.T., deWit, H. Assessment of magnitude and availability of a non-drug reinforcer on preference for a drug reinforcer. <u>Human Psychopharmacology: Experimental and Clinical</u>. (IP).

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