diagnostic subtypes that reflect predominantly genetic or predominantly environmental forms of alcoholism.

NEW FELLOW'S INVITED ADDRESS
Chair: *Stephen Fowler*, University of Mississippi, University, MS.

BRAIN REWARD MECHANISMS AND THE NEUROBIOLOGY OF CRAVING. Eliot L. Gardner. Albert Einstein College of Medicine, New York, NY.

Self-administered electrical brain-stimulation reward is one of the most powerful reinforces known, rivalled only by the most intensely habit-forming drugs (e.g., cocaine). In humans, such stimulation produces intense pleasure or euphoria. The brain systems subserving this reward apparently consist of synaptically interconnected neurons associated with the medial forebrain bundle (MFB). "First-stage" neurons run caudally within the MFB and synapse in the ventral tegmental area on "second-stage" dopaminergic neurons running rostrally within the MFB which are preferentially activated by habit-forming drugs and which synapse in the nucleus accumbens on "third-stage" endogenous opioid peptide neurons. Many other types of neurons synapse onto this reward circuit to regulate hedonic tone. Also, this reward circuit is strongly implicated in the pleasures produced by natural rewards (e.g., food, sex). It is widely assumed that craving is mediated by these same circuits. Some theories posit that craving results from neurotransmitter depletion within the reward circuitry. Other theories posit that "opponent-process" neural systems exist within the reward circuitry, mediating both positive and negative hedonic processes. In this view, craving results from functional dominance of neural systems mediating negative hedonic tone over those mediating positive hedonic tone. Neurophysiological, neurochemical, neuropharmacological, and neurobehavioral data will be presented which favor this latter view of the neurobiology of craving, and clinical implications for the treatment of aberrant craving states (e.g., opiate addiction, cocaine addiction) at the human level will be discussed.

NEW FELLOW'S INVITED ADDRESS
Chair: *Maxine L. Stitzer*, The Johns Hopkins School of Medicine, Baltimore, MD.

APPLYING BEHAVIORAL PRINCIPLES TO THE TREATMENT OF COCAINE DEPENDENCE. Stephen T. Higgins. University of Vermont, Burlington, VT.

Cocaine dependence continues to be a widespread and serious public health problem in the US. Unfortunately, no consensus exists about how to treat cocaine dependence. Various pharmacological and psychological therapies have been investigated with mixed results. This presentation reviews findings from a programmatic series of studies conducted during the past four years to assess the efficacy of an outpatient behavioral treatment for cocaine dependence. The treatment is based on the concepts and principles of behavior analysis and behavioral pharmacology, and integrates contingency-management procedures with the community reinforcement approach. Results obtained to date indicate this treatment is very acceptable to patients, effectively retains them in treatment, engenders clinically significant levels of cocaine abstinence, and is effective in treating other forms of substance abuse common in this population. Overall, we believe the treatment represents an important step towards the development of empirically based and effective treatments for cocaine dependence.

NEW FELLOW'S INVITED ADDRESS
Chair: *Alice M. Young*, Wayne State University, Detroit, MI.

PREVENTING AIDS: DRUG TREATMENT AND NEEDLE EXCHANGE PROGRAMS. James L. Sorenson. University of California, San Francisco, CA.

The spread of acquired immunodeficiency syndrome (AIDS) among injection drug users has redirected the focus of many drug abuse treatment programs. A greater emphasis has emerged on harm minimization rather than abstinence from drugs of abuse. The epidemic has also spawned a new AIDS prevention approach, the needle exchange. This address presents new evidence about the effectiveness and limitations of these approaches as well as ways that they interact in practice.

Several recent federal reports summarize the efficacy of drug abuse treatment in preventing AIDS. Well-conducted research has established that programs can reduce needle use, prevent new HIV infection, and be a platform for mounting other interventions (e.g., tuberculosis screening and treatment). The intensity of treatment programs, however, limits their accessibility to the addict population.

Needle exchanges are a new approach to AIDS prevention. Research on this modality is also new. In the 1980s exchanges grew in popularity with the idea that they would discourage needle-sharing and provide a link to street-based drug users who were not in drug treatment. Exchanges have also met with opposition with the idea that they may condone injection drug use. Research has been promising but controversial.

A recent study has been examining USA needle exchange programs through site visits and collection of records. An intensive examination of 12 programs included questions about the degree to which exchanges and treatment programs interact. This presentation will examine questions about the collaboration versus competition of these modalities and the degree to which needle exchanges serve as a bridge to drug abuse treatment.

NEW FELLOW'S INVITED ADDRESS
Chair: *Chris Ellyn Johanson*, NIDA Addiction Research Center, Baltimore, MD.

NOVEL ANALYSIS AND TREATMENT STRATEGIES FOR NICOTINE AND OTHER DRUG DEPENDENCIES. Jed E. Rose. VA Medical Center, Durham, NC.

Several novel approaches have been developed in our research program for analyzing nicotine dependence and reducing the harmful effects of cigarette smoking. These methods may also have potential applications to other drugs of abuse. One major pharmacologic approach has been transdermal drug replacement, using a nicotine skin patch for smoking cessation treatment. Transdermal administration has key advantages which may be applicable to other abused drugs, including opiates and psychostimulants. Recently, we have found that combined administration of an agonist (nicotine)