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HIGHLIGHTS

DATE: 6/19/90

BIOBEHAVIORAL RESEARCH

Psychophysiology of Smoking - Dr. Wally Pritchard submitted a manuscript titled "The brain in fractal time: 1/f power spectrum scaling and the human electroencephalogram" for review prior to publication.

Data from two smoking subjects in the 1988 smoking/EEG study that had been omitted from EEG/chaos analysis because of eye blinks were converted to ASCII format and sent to Dr. Dennis Duke of Florida State University. These data will now be included in the analysis using the modified program capable of handling blink-contaminated EEG.

Conversion of data from the 1989 smoking/EEG study to ASCII format for chaos analysis was begun.

The proposed 1990 WINSTON/Marlboro EEG study was approved by the HRRC. On a pre- to post-smoking basis, in-house research has shown that smokers obtain the same plasma nicotine 'rise' from the two products. The proposed study will examine the time course of EEG changes in the seconds immediately following puffing/inhalation in order to determine whether the two products differ in the rate at which nicotine from a single puff impacts the brain.

Support to Brands R&D - A cost estimate and timetable for analysis of the 1988 HSB Study was received from Research Triangle Institute (RTI). Estimated cost for completed data analysis was \$65,000.00 and would require 20 weeks to complete. Based on this information, it was decided that the data analysis should be done by the competing bidder, Marketing Dynamics.

Smoke Component Dose - Mr. Mitch Stiles has been tentatively scheduled to visit the laboratory of Dr. H. Van Vunakis, Department of Biochemistry, Brandeis University, Waltham, Mass. during July 9-13. The purpose is to learn the determination of nicotine and cotinine by the radio-immunoassay (RIA) technique. Advantages of the RIA technique include: a) substantial sensitivity for nicotine in plasma/serum, saliva, and urine, b) elimination of extensive sample preparation prior to analysis, and c) relatively low cost on a per sample basis. Disadvantages of the RIA technique are: a) the use of radio-isotopes (tritium labelled), b) possible requirement for a clean room, c) two separate assays must be used to analyze for both nicotine and cotinine, and d) the kits must be purchased from Dr. Van Vunakis.

Basic Sensory Research - An improved method for the collection of human brain waves during the inhalation of diluted nicotine vapor via the olfactometer was successfully tested. Implementation of this new method will further strengthen current data which have shown that evoked potentials can be obtained in response to nicotine inhalation.

Mr. Roger Jennings and Dr. David Griffith met with Ms. Lisa Bates (Brands R&D), Mr. Mickey Smith (Product Development) and Mr. Walt Morgan (Statistical Support/A.I.) to discuss the involvement of Brands R&D in the development of the CHEMSENSE database. The group identified specific information within the LIMS system that would be of the greatest interest to Brands staff for product optimization. CHEMSENSE is a relational database on the sensory properties of chemical compounds in tobacco and

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tobacco smoke. It is currently under development by Biobehavioral R&D.

A presentation titled "Role of Trigeminal Nerve in Avian Feeding and Chemoreception" by Roger Jennings, Jim Walker, and Wayne Silver (WFU) was approved by the PPRC. The talk, to be presented by Dr. Walker at a joint meeting of the American Ornithological Union and the Cooper Ornithological Society in June 1990, is an overview of the current neurobehavioral information on the importance of the trigeminal nerve in avian behavior. This presentation will form the basis for an invited book chapter by the same authors. Information gathered for the presentation and book chapter is being evaluated to guide chemosensory studies here in R&D using the pigeon model. The role of the trigeminal system in olfaction and its sensitivity to cigarette smoke chemicals in comparison with humans will be thoroughly evaluated.

Nicotine Receptor Pharmacology - Dr. Eric Fluhler reviewed the literature to assess the possibility of studying other key neurotransmitters which might show synergistic properties with nicotine. In addition to glutamate (currently being evaluated) the NMDA and GABA systems are candidates for study.

Dr. Lippiello reviewed a manuscript by Dr. Susan Wonnacott (University of Bath, UK) on work being supported by RJRT.

Dr. Lippiello completed preparations for two invited seminars to be presented at the Institute for Psychiatry, London and at the University of Bath, UK.

Analog Research Program - Preparations are under way by Drs. Lippiello, Caldwell and Perfetti to forward 26 compounds to Dr. Allan Collins (University of Colorado) for pharmacological testing. Mr. Rick Williams has completed updating data on octanol:water partition coefficients existing compounds in the Analog Data Base.

Miscellaneous - Mr. Stiles attended two sessions on data acquisition. They were sponsored by the Data Acquisition Migration Project Team as part of an effort to find/replace a more suitable chromatography package than PeakPro (CALS) for use in R&D.

Dr. Steve Dworkin (Bowman Gray School of Medicine) signed a contract with RJRT to conduct studies of rats' self-administration of four compounds (cocaine, nicotine, caffeine and one compound to be determined). Dr. Robinson met with Dr. Dworkin to discuss a timetable for this project. Behavioral chambers for testing have been ordered and are expected to arrive by mid-July. Experiments are scheduled to begin as soon as the equipment has been assembled and tested (estimated as late July, early August).

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