



WITH TOBACCO USE RESEARCH CENTERS

Advancing Transdisciplinary Science and Policy Studies

The Networker

Introduction

By: Nicole Greenway

The focus of this edition of The Networker stems from the TTURC Partners Winter Conference in Phoenix (January 2002) which highlighted the work of multiple investigators at each of the centers. At this meeting, we experienced the diverse nature of the TTURC initiative by listening to presentations on a variety of topics. The meeting was a great success in that it provided an opportunity to hear more about the work being conducted at each center and also served

as a forum for networking. In keeping with this spirit, this issue presents the work of pilot studies and junior investigators at each of the TTURCs. Included are articles about the biological aspects of smoking, the role genetics play in the cue reactivity of smokers, doctoral students who presented their work in Taiwan, the metabolism of nicotine in African-Americans and Whites, and smoking cessation in young adults and pregnant women. Please read on and get to know better some members of the TTURC community.

The TTURC Monograph Series

By: Kim Kobus

A truly collaborative and transdisciplinary venture is underway, with participation from the seven research centers, as well as affiliates at NCI and NIDA, and the RWJF-funded National Program Office (Partners). The task: To write a series of papers that a) identifies the unique contribution of a transdisciplinary approach to advancing tobacco research, b) demonstrates how to take transdisciplinarity from a concept to a novel project, c) communicates to tobacco researchers how transdisciplinarity can advance the field, and d) highlights the work at the centers. Currently, eight papers have been identified as part of the TTURC Monograph Series. The first four papers take a conceptual and process oriented view of transdisciplinarity, providing a foundation for this approach and discuss the “hows” of

transdisciplinarity. The second four papers are topic focused, and provide examples of the products, or the “whats,” of transdisciplinarity. Specifically, the papers are 1) Transdisciplinary Theory/Lifespan Overview, 2) Facilitating Transdisciplinary Science, 3) Training the Transdisciplinary Scientist, 4) Evaluating Transdisciplinary Science, 5) Intergenerational Transmission, 6) Youth Smoking, 7) Smoking Treatment, and 8) Culture and Smoking. An introduction and reviewer commentary are also planned.

The Monograph will be the focus of the next TTURC Partners Conference – June 18-20, 2002, in Providence, RI – where paper workgroups will have time to meet and discuss these papers.

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Elisabeth Lloyd-Richardson Studies Young Adult Smoking Cessation Treatments

By: Suzanne Moriarty

Early Intervention in a Technical School Population is one of two pilot projects within the **Brown TTURC**: New England Family Study, Brown Medical School/The Miriam Hospital. The goal of the study is to identify effective smoking cessation treatments for young adults. The study tests the effectiveness of adding an intensive, motivationally enhanced intervention to a brief counseling plus nicotine replacement therapy cessation program for young adults (ages 18-30 years). All of the study's participants attend either a technical school or a four-year college.

Elisabeth Lloyd-Richardson, Ph.D., Assistant Professor of Psychiatry and Human Behavior at Brown Medical School and staff psychologist at The Miriam Hospital, is the principal investigator of this TTURC pilot project. She states, "We hope this study informs the development of successful treatment guidelines for young adults, ultimately reducing smoking prevalence in future generations." **David Abrams, Ph.D.**, Brown TTURC PI adds, "This pilot complements our TTURC's investigation into the lifelong progression of nicotine dependence. The primary studies look at smoking progression through the lifecourse: in utero exposure, adolescent progression, and adult smoking. Young adult smokers are especially important as the age of smoking initiation has increased to include 18-24 year olds."



Elisabeth Lloyd-Richardson, Ph.D.

The study has overcome some challenges. Lloyd-Richardson explains, "Due to recruitment difficulties early on, we expanded recruitment to college students and completed some qualitative research to better understand the students' perceived benefits and barriers to smoking cessation. The intervention was modified based on the students' perspectives."

"We hope this study informs the development of successful treatment guidelines for young adults, ultimately reducing smoking prevalence in future generations."
—David Abrams

Lloyd-Richardson builds on her early career success to take the lead on this important pilot. In 1999, she received a Faculty Scholar Mentorship Award from the Robert Wood Johnson Foundation's Tobacco Etiology Research Network. This award launched her current work on a longitudinal investigation of smoking among college freshman at a large Midwestern university. In 2000, she received a New Investigator Research Award from the Society for Research on Nicotine and Tobacco, acknowledging her novel research that used a national data set to investigate influences on the stages of adolescent smoking.

Lloyd-Richardson also serves as Co-Investigator and Project Director on several smoking cessation studies, including one that evaluates the role of motivational interventions and nicotine replacement therapy in an HIV-positive population and another that tests the effectiveness of combining bupropion, with either standard behavioral counseling or cognitive-behavioral therapy for mood management.

Jesse Mason Examines Nicotinic Metabolic Differences Between African-Americans and Whites

By: Annette Scotti

While **Jesse Mason** knew as an undergraduate that he wanted to become a scientist, it was the ministry that inspired him to pursue a career in substance abuse research. "I grew up in the South in a drug infested environment," Mason states. "Down there, the



Carrie Link instructs Jesse Mason on how to conduct biomarker analysis for a metabolic profile.

church is a logical mechanism for reaching the African-American community about drug prevention and health issues related to substance abuse." Mason became an ordained minister in 1998. In May, 2000, he graduated *Magna cum Laude* from Morris Brown College with a degree in Psychology.

"In addition to one day teaching students, I hope that my work will play a strong role in taking laboratory and clinical trials research into churches of African-Americans for programs in drug abuse."
-Jesse Mason

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Bradley Collins Studies Genetic Mediators of Smoking Cue Reactivity

By: Maggie Angle

Research has documented the connection between reactivity to smoking cues (i.e., smoking paraphernalia, coffee, being in a bar) and smoking relapse. Treatment components based on “extinction” principles are designed to prevent relapse by decreasing smokers’ craving for cigarettes in the presence of smoking cues; however, such approaches have not been as successful as similar “cue exposure” treatments for other addictions. While there are many conceivable explanations for this, researchers have yet to study individual differences in cue reactivity that may account for the limited response to this form of treatment.

“The overall goal of this project is to gain a better understanding of the neurobiological basis of individual differences in tobacco-cue reactivity and extinction.”—Brad Collins

Bradley Collins, Ph.D., lead investigator on the *Genetic Mediators of Smoking Cue Reactivity Pilot Project*, will examine genetic mechanisms hypothesized to influence smokers’ reactivity and subsequent extinction to smoking-related environmental cues. A Junior Investigator with the **UPenn/Georgetown TTURC**, Collins is an Assistant Professor of Psychology in the Department of Psychiatry at the University of Pennsylvania. His main research focus is in addictions – with a broader focus on health psychology.



Brad Collins, Ph.D., Project PI and Freda Patterson, M.S., Project Manager discuss the latest data.

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Anamara Ritt-Olson and Dennis Trinidad Present Dissertation Data in Taiwan

By: Jeff Baskin

The Association of Pacific Rim Universities (APRU), which consists of 34 Pacific Rim universities in 16 countries, sponsored an annual conference of doctoral students from its associated institutions. They invited **Anamara Ritt-Olson** and **Dennis Trinidad** to present papers at this year’s March gathering in Taipei, Taiwan. The conference explored how global and local issues interact with one another and the new challenges faced by Pacific Rim countries.

Ritt-Olson and Trinidad are completing their Ph.D.s in preventive medicine from the Keck School of Medicine at the University of Southern California, and are also researchers at **University of Southern California’s TTURC**. Their data is drawn from the diverse Asian/Pacific Islander and Latino communities in the Los Angeles area.

“The APRU conference gave Anamara and me an opportunity to share our findings with a diverse group of young researchers who may not be aware of the scope of adolescent tobacco use in the U.S. in general and smoking prevention efforts specifically. ...” - Dennis Trinidad

Trinidad’s paper, entitled *Emotional Intelligence and Adolescent Smoking*, was based on his doctoral dissertation. Trinidad said, “My work explores the relationship between adolescent smoking and emotional intelligence, a concept defined as the ability to accurately perceive, express and regulate emotions. Adolescents with low emotional intelligence may be at greater risk for

smoking, and emotional intelligence is a modifiable factor that may reduce such risk.”

Ritt-Olson’s presentation, *Evidence of Peer Influences as a Mediator on the Relationship Between Depression and Smoking Initiation in Young Adolescents* also drew on her doctoral dissertation. Ritt-Olson stated that “depression is linked to first-time smoking. In addition, depression may make teens more susceptible to peer influences, so my study explores how peers affect the relationship between depressive symptoms and smoking. That relationship, I’ve found, varies depending on an adolescent’s ethnicity. I’d like to further explore the relationship among depression, smoking, peer influences and ethnicity in longitudinal studies.”



Doctoral student Anamara Ritt-Olson presenting her latest results.

“The APRU conference gave Anamara and me an opportunity to share our findings with a diverse group of young researchers who may not be aware of the scope of adolescent tobacco use in the U.S. in general and smoking prevention efforts specifically,” said Trinidad.

APRU’s objective is to help its 34 member universities become more effective contributors to the development of an increasingly integrated Pacific Rim community.

Pam Pletsch Explores Pregnant Women's Reasons to Quit Smoking

By: Gloria Meyer

Smoking during pregnancy is a topic that concerns healthcare providers. However, research conducted with pregnant smokers who are able to quit during their pregnancy may provide useful information for smoking cessation treatment. A study being conducted by **Pam Pletsch**, Ph.D, RN, University of North Carolina at Chapel Hill, is designed to examine life circumstances that motivate pregnant women to quit smoking, to stay quit, and to prevent post-partum relapse. This study is one of three pilot studies awarded grants by the **University of Wisconsin TTURC**.



Pam Pletsch, Ph.D., R.N., pilot project P.I.

“We are hopeful that findings from this study will add to our understanding of the challenges women face and negotiate over the course of pregnancy,” said Pletsch. “We also hope it will provide us with new perspectives about smoking abstinence and relapse prevention for pregnant and post-partum women.”

The aims of the study are to examine the meaning and impact of being pregnant on women's smoking behavior and to explore personal, environmental, social, and pregnancy-specific contextual factors in pregnant women's lives which motivated them to quit smoking,

enable them to stay quit during the course of pregnancy, and are related to “slips” or relapse during pregnancy and post-partum.

In order to gather in-depth information about women's spontaneous smoking cessation experiences, the study is using a longitudinal qualitative design. In depth interviews using semi-structured guides are conducted three times—once early in pregnancy, once at 36 weeks gestation and once at three months post-partum.

“We are hopeful that findings from this study will add to our understanding of the challenges women face and negotiate over the course of pregnancy. We also hope it will provide us with new perspectives about smoking abstinence and relapse prevention for pregnant and postpartum women.”—Pam Pletsch

“Qualitative designs like this are common in anthropology, sociology, and nursing,” said Pletsch. “I believe this methodology brings a transdisciplinary perspective to the study of tobacco control.”

Preliminary findings indicate pregnancy as a prime motivator for cessation. Considerable variation seems to exist in pregnancy smoking patterns and in expectations about post-partum resumption. Many women describe losing the taste for cigarettes during pregnancy but the taste returns post-partum. This study began January, 2000 and is expected to be completed September 2002.

Jesse Mason Continued...

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Today, Mason is a second year graduate student in Cognitive and Behavioral Psychology at the **University of Minnesota**. He works at the TTURC lab under the guidance of Clinical Psychologist, **Dorothy Hatsukami**, Ph.D., Center P.I. “It is talented young researchers like Jesse who help us bridge the transdisciplinary research at Minnesota,” said Hatsukami, “We are really pleased to have successfully recruited him to the Center. Working with aspiring scientists enhances our overall research strength.”

As part of Mason's training, he spends 60% of his time conducting his own research activities while he also studies and does research with several other senior faculty members. Mason recently designed and conducted a pilot clinical trial called, *Racial Differences in Nico-*

tine Metabolism Using Transdermal Patches. This study investigated possible nicotine metabolic differences that may exist between Blacks and Whites, and its role in nicotine addiction. He will soon start working with Biochemist, **Sharon Murphy**, Ph.D., Co-P.I. of the TTURC Biomarkers Core, where he will learn to perform the chemical analyses needed to profile and rate the nicotine metabolisms of the populations used in his pilot study.

Mason ultimately hopes his work will enable him to remain involved in the church, education, and research of ethnic and racial differences in nicotine and cocaine addiction. “In addition to one day teaching students, I hope that my work will play a strong role in taking laboratory and clinical trials research into the churches of African Americans for programs in drug abuse.”

Tony George's Study Shows Promise in Increasing Smoking Abstinence

By: Pem McNerney

During the course of his work at the Connecticut Mental Health Center (CMHC), **Tony George**, M.D. sees many smokers who are poor, mentally ill, not very well educated and not really motivated to quit smoking.

"These people have a lot of negative things going on in their lives," George says. "In addition to their other problems, they often live in stressful environments, and where everyone else smokes."

Finding solutions for these people is all in a day's work for George, a psychiatrist, and an assistant professor of Psychiatry at **Yale**. George, director of the Program for Research in Smokers with Mental Illness (PRISM) at CMHC, is also the project leader for one of three TTURC pilot projects on smoking cessation.

George's goal was to evaluate the monoamine oxidase B (MAO-B) inhibitor, selegiline hydrochloride (Deprenyl), compared to a placebo for the treatment of nicotine dependence in smokers. Inhibition of MAO-B in the brain leads to increases in the brain's dopamine and norepinephrine levels. Selegiline is used to treat Parkinson's disease, a neurological disorder associated with dopamine deficiency. Some unknown component of cigarette smoke

"The key thing was that we needed to combine pharmacotherapy with psychotherapy, and behavioral counseling to produce the most effective treatment outcome. You can only effectively do that within a transdisciplinary environment." - Tony George

(not nicotine) inhibits the brain's monoamine oxidase activity in smokers.

The results from this pilot study are promising. Smoking abstinence rates were found to be significantly higher in the selegiline group compared to the placebo. Interestingly, smokers with depression at study entry had poorer smoking cessation outcomes. These results have been submitted for publication. He also has applied for a NIDA RO1 grant to do a more detailed study.

The 40 participants who were involved in this study also received counseling to support their quit attempts. The counseling drew heavily on the Agency for Health Care Policy and Research Clinical Practice Guideline on Smoking Cessation, developed by the University of Wisconsin-Madison Medical School, Center for Tobacco Research and Intervention, where another TTURC is based. George said that he heavily relied on advice and support from his Yale TTURC colleagues who had expertise in other disciplines while designing the study. "The key thing was that we needed to combine pharmacotherapy with psychotherapy, and behavioral counseling to produce the most effective treatment outcome," he said. "You can only effectively do that within a transdisciplinary environment."



Tony George, M.D.

Bradley Collins continued...

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"The overall goal of this research is to gain a better understanding of the neuro-biological basis of individual differences in tobacco cue reactivity (a large component of nicotine addiction) and extinction (reduction or elimination of cue reactivity through the process of exposure and response prevention procedures)," Collins said.

Starting in April, sixty former smokers will participate in this study by completing a laboratory-based extinction trial. Participants will be presented with either smoking cues (a cigarette, ashtray and lighter) or a single neutral cue (a pencil) and instructed to imitate smoking behavior. Reactivity will be measured through a self-reported smoking urge, heart rate, blood pressure

and skin conductance.

Funded by the Penn/Georgetown TTURC and institutional funds from the University of Pennsylvania Cancer Center, this project will further advance the Penn/Georgetown TTURC's work of linking genetic factors with smoking behavior.

"We are very excited about this project, as it will help to elucidate the processes by which specific genes may export their effects on smoking relapse," explained UPenn/Georgetown TTURC Director **Caryn Lerman**, Ph.D. "This project will hopefully lead to the targeting of relapse prevention strategies that are tailored to individual smokers' needs."

Diane O'Dowd Examines How Nicotine Can Influence Information Transfer Between Neurons

By: Louri Groves

The characteristic functions of tissues and organs in our bodies result from the integrated activity of individual cells. This is particularly poignant in the human brain where the coordinated activity of billions of single neurons mediate complex behaviors including the generation of language and abstract thought. An infant learning to recognize its parents' faces, a senior citizen learning to play piano, or the process of addiction following repetitive exposure to specific drugs result from the formation of new connections between individual neurons or the modification of existing connections in the brain. While the functional output of the human brain is undeniably unique among the animal kingdom, recent studies have demonstrated that the basic rules governing formation and modification of connections between neurons has been highly conserved during evolution.

Diane O'Dowd, Ph.D., University of California, Irvine, associate professor of Anatomy & Neurobiology, studies the electrical activity of living neurons from the brains of fruit flies (*Drosophila*). The goal of her research project, *The Role of Nicotine in Regulation of nAChRs in Drosophila*, is to determine how environmental factors such as exposure to specific chemicals, including nicotine, can influence the information transfer between neurons. Using fruit flies with genetic mutations, O'Dowd is able to identify the role of specific genes in controlling the functional properties of neural circuits. "A basic understanding of the genes and environmental factors that influence communication between small groups of neurons is key to understanding information processing in the human brain that underlies functions such as learning, memory, and addiction," says O'Dowd.

Her work reveals that we can examine the properties of Nicotinic Acetylcholine Receptors (nAChRs) mediating fast excitatory transmission in pupal neurons known to be involved in mediating specific behaviors in the fruit fly. She has shown that activation of receptors by nicotine induces rapid ion fluxes across the cell membrane. "The combined use of our culture systems and mutants in *Drosophila* provides a unique opportunity for analysis of genetic and environmental influences important in regulation of neuronal responses to nicotine."

"This project represents an excellent example of the value of transdisciplinarity. Although Dr. O'Dowd is working at a molecular and cellular level in a very simple neuronal system, her findings will have a significant impact on our thinking about mechanisms underlying complex animal and human adaptive responses to chronic nicotine exposure."
- Frances Leslie

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Diane O'Dowd, Ph.D.

"This project represents an excellent example of the value of transdisciplinarity. Although O'Dowd is working at a molecular and cellular level in a very simple neuronal system, her findings will have a significant impact on our thinking about mechanisms underlying more complex animal and human adaptive responses to chronic nicotine exposure," said **Frances Leslie, Ph.D.**, UCI TTURC center director.

O'Dowd was recently awarded a 5-year RO1 grant from NIDA to extend her studies. She received her Ph.D. in Biology at the University of California and then completed her post-doctoral training at Stanford University.

TTURC News and Happenings

Upcoming Events

April 22-23, 2002 - Trans-Cultural Perspectives on Tobacco Use and Health Promotion Conference, University of Southern California Institute for Health Promotion & Disease Prevention Research, Alhambra, CA

June 18-20, 2002 - TTURC Partners Summer Conference, Providence, RI

Recent TTURC Publications

Audrain, J., Tercyak, K.P., Goldman, P., & Bush, A. (2002). Recruiting adolescents in genetics studies of smoking behavior. *Cancer Epidemiology Biomarkers & Prevention*, 11(3), 249-252.

Tercyak, K.P., Goldman, P., Smith, A., & Audrain, J. (2002). Interacting effects of depression and tobacco advertising receptivity on adolescent smoking. *Journal of Pediatric Psychology*, 27(2), 145-154.

Trinidad, D.R., & Johnson, C.A. (2001). The association between emotional intelligence and early adolescent tobacco and alcohol use. *Personality and Individual Differences*, 32(1), 95-105.

Unger, J.B., Rohrbach, L.A., & Ribisl, K.M. (2001). Are adolescents attempting to buy cigarettes on the internet? *Tobacco Control*, 10, 360-363.