

The Networker

The Nitty-gritty of Transdisciplinary Research

Denis Prager, RWJF Consultant

This, the first issue of *The Networker*, deals with the nitty-gritty of translating a lofty goal into practice. It describes how the seven TTURCs are promoting and facilitating the necessary integration of disciplines to understand the determinants of tobacco use and apply this understanding to effective interventions. It was the pursuit of this lofty goal that motivated NCI, NIDA, and RWJF to fund a group of centers committed to overcoming the many barriers involved in conducting research that transcends disciplinary boundaries.

We know the prerequisites for successful transdisciplinary activities: (a) commitment to solving critical health problems; (b) strong, sensitive leadership; (c) maturity, security, openness, and trust among participants; (d) patience; (e) adequate and stable resources; (f) institutional permission, intellectual space, and support. But, knowing and doing are two different things. *Doing* transdisciplinary research requires that we overcome real institutional and personal obstacles. That's where the nitty-gritty comes in!

We can all recount the institutional obstacles to transdisciplinarity – departmental structures that reify disciplinary distinctions; promotion systems that reward quantity over quality; and financial systems that mitigate against sharing of resources across organizational units. We know that the dominant culture of science rewards reductionism – the search for the single gene, molecule, reaction, or environmental factor responsible for a particular biological, behavioral, or social action. But, there are also personal barriers

to transdisciplinarity – the human proclivity to seek comfort, safety, and control, by narrowing one's focus and building a kind of "disciplinary nest" of familiar questions, methods, models, colleagues, journals, meetings, and funders. These tendencies constrain the kind of exploration, openness, and collaboration that are the prerequisites of research that transcends disciplines and links research and practice.

This newsletter presents innovative ways that the TTURCs are stretching their boundaries and moving outside comfort zones to be "transdisciplinary."

- Brown utilizes their Training Workshops as formal opportunities for sharing in-depth knowledge and stimulating exploration across boundaries.
- UCI documents the process of transdisciplinarity using ongoing analysis and assessment of what works and what doesn't.
- Minnesota keeps focus on their overarching vision of harm reduction.
- Penn/Georgetown works to establish common foundations of knowledge on which to build transdisciplinary collaborations.
- USC draws people from different disciplines in examining social, economic, and cultural factors in addictive behaviors.
- Wisconsin brings researchers together at retreats to implement transdisciplinarity.
- Yale utilizes regular, ongoing seminars as a forum for open, cross-boundary discussions.

Inside this issue:

Training the Transdisciplinary Scientist	2
Building Bridges Across Disciplines	2
Creating Transdisciplinary Partnerships	3
Going Back to the Basics	3
Studying Youth, Culture, and Smoking	4
Addressing Transdisciplinarity Creatively	5
Collaborating Across Disciplines	6

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## Training the Transdisciplinary Scientist: Brown University

Suzanne Moriarty, Communications Officer

"How does this new information change my perspective or offer new direction to my research? Encouraging participants to reflect on this central question is the objective of the Brown TTURC training workshops," states **Tony Spirito**, Ph.D., Career Development Core PI. **David Abrams**, Ph.D., Brown TTURC PI, further explains, "Bi-monthly workshops aim to provide in-depth knowledge within a specific discipline, to stimulate discussion of transdisciplinary issues beyond specific research projects, and to strengthen convictions in the value of the transdisciplinary process."

Career Development Core members note recent improvements in the training workshops. "A member of this Core is assigned as a moderator for each workshop.

The moderator, from a different discipline, reviews the presentation with the speaker and asks questions during the presentation to make sure that the session is understandable and bridges multiple disciplines," shares **Melissa Clark**, Ph.D., Co-I, Measures Core. **Susan Santangelo**, Sc.D., Co-I, Genetics Core continues, "Luncheon discussions before all workshops encourage informal conversations and are a way for investigators to get to know each other, this is especially important for investigators like me who are at Harvard or



Brown TTURC Postdoctoral fellows, Brian Hitsman, PhD and Lynn Winquist, PhD discuss training plans with Justin Nash, PhD, Training Director (center).

(Continued on page 6)

## Building Bridges Across Disciplines: University of California, Irvine

Lourie Groves, Director of Communications

Investigators define their identity primarily from their ability to develop a precise set of arguments within a body of scientific knowledge in their respective areas. These researchers are rugged individualists -- trained in specific approaches that are propagated within science dynasties. So how do investigators set aside deep-rooted values to consider new approaches and perspectives?

"The value of transdisciplinarity lies in its ability to identify issues and challenges from a broader, more inclusive perspective," said UCI-TTURC Director, **Frances Leslie**, Ph.D. "We are all committed to structuring our Center towards a more collaborative approach both operationally and within our research activities."



UCI TTURC Project Leader Larry Jamner, Ph.D., presents his findings during a scientific meeting between UCI and USC TTURC investigators.

In its third year, the Center enjoys substantial progress in its research and operations, yet continues to address two barriers. "We are a new hub with no walls," said Leslie. Leslie's statement seems simple to resolve with time. However the

situation becomes more complex, as the first barrier of creating a new organization compounds on the second issue of managing components that are housed and administered under different university departments.

### The Transdisciplinary Core (TD) Study serves as the Center's

**final tool towards transdisciplinarity.** The Core is conducting a study of transdisciplinary processes and outcomes as they evolve both within and between the Centers. The TD Core is unique in that it provides a historical analysis during a five-year period. "The interview, survey, web-based reports, and behavioral observation protocols we developed enable us to record and interpret key processes and outcomes of transdisciplinary collaboration," said TD Core Project Leader **Daniel Stokols**, Ph.D. "It is our hope that our findings may prove generalizable to other TTURCs and non-university based scientific and community collaborations aimed at resolving public health problems such as nicotine addiction and tobacco use."

To date, the TD Core is integrating data and identifying major themes reflected in the multiple data sets compiled. The team will also develop a plan to facilitate transdisciplinary collaborative processes using struc-

(Continued on page 4)

*"The value of transdisciplinarity lies in its ability to identify issues and challenges from a broader perspective."*  
- Frances Leslie

## Creating Transdisciplinary Partnerships: University of Minnesota

Annette Scotti, Communications Director

Communication of a well-defined vision has been key to propelling 35 researchers across disciplines to work together at the University of Minnesota TTURC. The UM-TTURC organizes itself around the theme of identifying biomarkers and assessing methods for harm reduction through reduced exposure to tobacco. “Each of us sees tremendous value in collaboration,” explains **Anne M. Joseph**, M.D., M.P.H., general internist at the Minneapolis Veterans Administration Medical Center and an associate professor of medicine at the University. “The value for me includes the opportunity to better serve my patients, leverage research and technology, and partner with education entities and the public to advance our goals in decreasing morbidity and mortality due to tobacco use.”

The center is not only interdisciplinary in terms of having established partnerships across the university schools and hospitals but also across the state of Minnesota. This year focus groups were conducted on the theme of harm reduction with local policy makers, health practitioners, and youth counselors. “The tobacco industry’s introduction of numerous so-called ‘safer’ tobacco products, as well as the potential use of existing pharmacological products for reducing smoking rather than cessation are all stimulating public debate concerning the impact of these harm reduction ap-

proaches,” says **Dorothy Hatsukami**, Ph.D., professor of Psychiatry and Principal Investigation of the UM-TTURC. “The focus group discussions are a way for us to improve public health by thoroughly understanding these issues and their implications for short and long-term public health.” New areas of research also include public perception of issues related to potential FDA regulation of the tobacco industry.

*“Each of us see tremendous value in collaboration, and that value for me includes the opportunity to better serve my patients, leverage research and technology, and partner with education entities and the public to advance our goals in decreasing morbidity and mortality due to tobacco use.”*  
-Anne Joseph

Equally important in fostering collaborative research efforts was a national conference hosted by the Center on biomarkers. As conference organizer, **Paul Pentel**, M.D., clinical pharmacologist at the Hennepin County Medical Center, and professor of medicine at the University of Minnesota states, “because the scientific inquiry was representative of so many different areas, we came away better informed on what the current knowledge base is. From here we can begin to understand how to use the tools we have in hand, and what kinds of tools we still need, in order to evaluate harm reduction strategies in a more rigorous manner.”

## Going Back to the Basics of Smoking and Genetics: University of Pennsylvania/Georgetown University

Richard Sorian, PI Communications Grant

When researchers at the University of Pennsylvania and Georgetown University initiated their research on genetic predictors of response to smoking treatment, they quickly realized that transdisciplinary research presented some challenges of its own. In bringing together experts from a variety of fields – including psychology, law, bioethics, anthropology, genetics, medicine, communication, and political science – **Caryn Lerman**, Ph.D., and **Alexandra Shields**, Ph.D., found that they needed to take a step back and begin with some basic information about tobacco, its impact on the human body, and the field of genetics.

*“Before we could delve into the ethics issues, we had to educate the non-basic scientists on the fundamental concepts in genetics and neurobiology”*  
- Caryn Lerman

Lerman is director of the Penn/Georgetown TTURC. Shields is the PI of a Robert Wood Johnson Foundation supported policy research project examining the implications of clinical integration and ethics.

“Before we could delve into the ethics issues, we had to educate the non-basic scientists on the fundamental concepts in genetics and neurobiology,” Lerman said. “These topics cannot be covered adequately in a

*(Continued on page 5)*



Judith Feder, Ph.D. (right), Dean of Georgetown’s Public Policy Institute speaks during the UPenn/Georgetown Ethics Meeting. Alexandra Shields, Ph.D., RWJF Policy PI, looks on.

# Studying Youth, Culture, and Smoking— A Transdisciplinary Approach: University of Southern California

Jeff Baskin, Communications Director

This past spring, Principal Investigator C. Anderson Johnson, Ph.D. and a team of researchers launched a smoking prevention project in 6th grade classes throughout Los Angeles that illustrates how we work across disciplines to design and conduct research at the USC-TTURC.

“We’re trying to discover the most effective way in the classroom to steer adolescents away from tobacco use,” Johnson said. “Here in Los Angeles, that means understanding the cultural and ethnic dynamics that may make one approach effective with Anglo children but not with newly arrived students from Latin America or Asia. We’re already turning up some fascinating data. Population migration and historical developments have taken us a long way from the homogenous culture that characterized the American landscape in the middle of the twentieth century,” Johnson said. “World events in recent months remind us of the great range of cultural beliefs and practices represented in the world and in nearly every urban environment of the U.S. We are attempting to understand the role of culture and cultural evolution in health practices such as tobacco use, so that we might develop more effective intervention strategies that keep pace with cultural developments. We face a moving target in our efforts to control the tobacco use practices of youth in America and worldwide. Our program of research is designed to address the social, economic, and cultural determinants of tobacco use to prevent and control its impact on future generations.”

The five-year longitudinal study surveys more than



Andy Johnson (center) and the members of the USC TTURC

3,600 sixth-graders in 24 schools. Tobacco-use prevention curricula were delivered earlier this year. Follow-up surveys and revised curricula will be delivered throughout the remainder of middle school and into high school. The survey includes questions not only about tobacco

use but also acculturation, cultural values, media exposure, body image and

ethnic identity. Developing and delivering the survey and curricula, as well as collecting data and maintaining good relations with the school communities, drew on a variety of disciplines, including public health, clinical health experimental social psychology, statistics, demography and anthropology.

We brought sociology and educational theory to bear when we conducted focus groups and tested curriculum activities before launching the survey and classroom work. Anthropologists were engaged in ethnographic work and advised us if scenarios used in the curricula were realistic for the targeted youth from Pacific Rim cultures.

Educators were instrumental in recruiting the schools in the project. They also taught the tobacco prevention curricula in the middle schools and trained others to do the same. A communications specialist and a health behavior researcher explored social networks within the 6th grade classrooms to help identify classroom-based peer groups. We also exercised communications and public relations skills to organize a meeting at which middle school teachers and principals were able to meet the TTURC investigators and receive updates on the progress of the project.

*“World events in recent months remind us of the great range of cultural beliefs and practices represented in the world... We are attempting to understand the role of culture and cultural evolution in health practices such as tobacco use, so that we might develop more effective intervention strategies that keep pace with cultural developments.”*  
- Andy Johnson

## University of California, Irvine continued...

(Continued from page 2)

tured exercises and team interventions. As the Core gains a better understanding of key factors that enhance or impede the success of transdisciplinary scientific research, they will begin to facilitate multi-, inter-, and transdisciplinary scientific collaboration within the

TTURC.

According to the Executive Committee, the team interventions and exercises will cement the collaborative environment within the UCI TTURC, as the lessons learned from the study will be utilized to address any deficiencies.

# Addressing Transdisciplinarity Creatively – A Retreat: University of Wisconsin

*Gloria Meyers, Communications Director*

In the midst of fielding three clinical trials on relapse to smoking, the University of Wisconsin TTURC took time last month to pause and consider the meaning of transdisciplinarity. On December 4, 2001, 35 UW-TTURC researchers and staff took part in a retreat to discuss transdisciplinarity in practical terms—examining how it currently is manifested at the center, how it can be increased and what it holds for the future.

Collaboration was the first item on the agenda. “Our rationale was that opportunities for collaboration and transdisciplinary work may be missed because of the need for a process within our center for sharing ideas for research both within and beyond a specific discipline,” said **Marguerite Burns**, M.A., the researcher involved in a mid-grant assessment of transdisciplinarity at the UW-TTURC.

Participants suggested procedures for sharing information about current research, information gained at seminars and conferences, potential collaborations, and creative ideas for potential research. Procedures included sharing current research through a password-protected website, holding brown bag sessions for conference reporting and discussion and scheduling multi-discipline forums for generating transdisciplinary research ideas.

Retreat participants then turned to the definition of transdisciplinarity and its evidence in current UW-TTURC research. Prior to attending the retreat, partici-

pants listed the disciplines currently involved in UW-TTURC research. These included: clinical psychology, biostatistics, genetics, cognitive neuroscience, medicine, human factors engineering, risk management, public health, healthcare administration, and journalism/communication. Participants looked at expanding the contribution of these disciplines as well as attracting others for tobacco research studies.

*“... being transdisciplinary takes hard work, but the results are unquestionable worth the effort.”  
- Michael Fiore*

The most difficult to answer questions addressed at the retreat involved the “how’s of transdisciplinarity.” How do you attract people from other disciplines who have interests in tobacco research? How do you know who might already be interested in tobacco research? How do you broaden research studies to be more transdisciplinary? Retreat participants generated a series of ideas concerning how to broaden research studies. Some included holding brainstorming sessions with other disciplines, holding side meetings at conferences, exchanging ideas and referrals with other TTURCs, contacting researchers in other addictive disciplines and so on. Next steps include refining ideas and developing action plans for the most promising ideas. A conclusion drawn from the retreat, according to **Michael Fiore**, M.D., M.P.H., co-principal investigator, “being transdisciplinary takes hard work but the results are unquestionably worth the effort.”

## University of Penn/Georgetown continued...

*(Continued from page 3)*

one-hour presentation. We are trying to think creatively about how to get everyone up to speed, without burdening them with lots of reading.”

By going back to basics, Lerman and Shields hope to engage the experts in a discussion of an issue that had not previously been on their research agenda – the role that race plays in genetic research and treatment of tobacco addiction. Under current federal rules, researchers must make sure to enroll a racially diverse group of participants in all NIH-funded clinical trials. Research findings then are reported according to racial categories. Shields and a transdisciplinary consortium of experts are examining whether racial categories add sufficient value to research results or if it might be more appropri-

ate to create categories based on differences in the genetic structure of the population.

“We believe reporting results about racial differences in the frequencies of risk-conferring genotypes, without an accompanying analysis of what these socially constructed categories mean, may ultimately undermine the potential benefit of TTURC sponsored research,” said Shields. Working together across disciplines, the group is exploring the possibility of modeling alternative, possibly more clinically relevant ways of exploring human variation. According to Lerman, the work of Shields’ ethics group has already led her to conduct additional data analysis in her clinical trial related to racial differences in response to bupropion treatment.

## Brown University continued...

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at other sites." To increase visibility of the TTURC and attract new investigators and trainees, announcements are sent to targeted audiences at Brown and at other universities.

In addition to facilitating the transdisciplinary research culture through the training workshops, the Core is contributing to training the next generation of transdisciplinary researchers. The Core oversees the training of postdoctoral fellows. **Stephen Buka**, Sc.D., PI of the In-Utero Nicotine Exposure project points out, "TTURC fellows are assigned a primary and a secondary mentor from distinct disciplines to encourage a true transdisciplinary

experience."

Current fellows are **Stephen Gilman**, Sc.D.; **Brian Hitsman**, Ph.D.; and **Lynn Winquist**, Ph.D. Gilman and Hitsman agree that the advantages of the TTURC fellowship include the opportunity to collaborate with researchers who share a commitment to scientific investigations that are not constrained by the narrow focus on a single discipline. Another advantage is the opportunity to learn methods used by other disciplines to study nicotine dependence. **Justin Nash**, Ph.D., Director of Training concludes, "The Brown TTURC is pleased to welcome this highly qualified and diverse group of scientists to its Center."

## Collaborating Across Disciplines: Yale University

*Pem McNerney, Communications Director*

When **Joseph Cubells**, M.D., Ph.D., an associate professor of psychiatry at Yale, was applying for a grant to study genetic mechanisms and nicotine dependence, he knew where to go for help.

*"There is a real commitment to people participating from different disciplines. People are very good at explaining things. It's okay to say you don't get it."  
- Stephanie O'Malley*

Cubells is one of a large group that meets regularly with Yale's TTURC to share ideas, ask questions and further transdisciplinary research. The seminars, held at least twice a month, are attended not only by TTURC investigators, but also by people like Cubells who have an interest in tobacco research. The informal, lunch-time meetings have a reputation for being a safe place to probe ideas and ask basic questions about how things are done in other disciplines. Participants say the friendly and spirited discussions have had a profound impact on their work.

"Participation in the seminar and the follow-up electronic discussion was essential to preparation of the grant," said Cubells. Had it not been for the TTURC group, "it would have been 20 times more work. Neurobiology. Genetics. Chemistry. Mouse people. They were all here. Having the infrastructure in place is huge."

**Stephanie O'Malley**, Ph.D., the principal TTURC investigator, and a professor of psychiatry at Yale, says the seminars are one of several ways the Yale TTURC brings people together and builds bridges across disciplines. "There is a real commitment to people

participating from different disciplines," says O'Malley, a professor of psychiatry. "People are very good at explaining things. It's OK to say you don't get it."

There are numerous other examples of cross-disciplinary cooperation. A postdoctoral fellow in psychiatry revised the scope of her pre-clinical work based on discussions she had with an expert in psychopharmacology. An economist said participation in the group has led to an evolution in her thinking when it comes to research.

**Tracy Falba**, Ph.D., an economist working on Yale's RWJF-funded policy research project, gave as an example a recent talk on how nicotine affects memory functions in the brain. "The idea that certain stages of withdrawal can affect memory could have significance for productivity in the workplace. It lends validation to the concept that the economic impact of smoking goes beyond people just walking outside and taking long smoke breaks."

