

News Release

University of Pennsylvania School of Medicine
University of Pennsylvania Health System

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CONTACT: Olivia Fermano
(215) 349-5653
olivia.fermano@uphs.upenn.edu

Angela Pinto
(215) 746-7171
pintoa@mail.med.upenn.edu

Penn Study Shows Genes May Affect Response to Different Quit-Smoking Medications

(Philadelphia, PA) - A study by researchers at the Transdisciplinary Tobacco Use Research Center (TTURC) of the **University of Pennsylvania School of Medicine** indicates that a smoker's genetic make-up may affect whether they quit or not while using either bupropion (Zyban®) or nicotine replacement therapies (NRTs) such as the nicotine patch or nasal spray. The results appear in the August issue of *Neuropsychopharmacology*.

"This study provides new evidence that genetic differences in the brain-reward pathways of smokers may reveal whether they would benefit more from Zyban® or nicotine replacement therapy as an aid to quitting smoking," said lead author **Professor Caryn Lerman, PhD**, Director of the TTURC and Associate Director for Cancer Control Population Sciences at **Penn's Abramson Cancer Center**.

Lerman led a research team that completed two randomized clinical trials each with a six-month follow-up period: a double blind placebo-controlled trial of bupropion and an open-label trial of transdermal nicotine patch versus nicotine nasal spray. Both trials examined the roles of functional genetic variation in the dopamine D2 Receptor (*DRD2*) gene called *DRD2* -141C. At this location in the *DRD2* gene, people carry one of two different variants, a *Del C* variant or an *Ins C* variant (Del is for deletion and Ins is for Insertion). The research team found that smokers with two copies of the *DRD2* -141 *Ins C* variant were significantly more likely to be abstinent at the six-month follow-up if they used Zyban®, as compared to smokers carrying the *Del C* variant. By contrast, smokers carrying the *Del C* variant had significantly higher quit rates if they used NRTs as compared to those with the *Ins C* variant.

This research may have important implications for the delivery of quit-smoking medications that are targeted to individual smokers' needs. "Although these results require confirmation in a larger study prior to translation to practice," said Lerman, "they do suggest that genetic information may be useful in selecting the type of nicotine dependence treatment that will be most beneficial for a particular smoker."

This research was funded by the National Cancer Institute and the National Institute on Drug Abuse and was conducted by the University of Pennsylvania Transdisciplinary Tobacco Use Research Center.

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***The Abramson Cancer Center of the University of Pennsylvania** was established in 1973 as a center of excellence in cancer research, patient care, education and outreach. Today, the Abramson Cancer Center ranks as one of the nation's best in cancer care, according to U.S. News and World Report, and is one of the top five in National Cancer Institute (NCI) funding. It is one of only 39 NCI-designated comprehensive cancer centers in the United States. Home to one of the largest clinical and research programs in the world, the Abramson Cancer Center of the University of Pennsylvania has 275 active cancer researchers and 250 Penn physicians involved in cancer prevention, diagnosis and treatment. More information about the Abramson Cancer Center is available at: www.pennhealth.com/cancer*

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The University of Pennsylvania Health System includes: its flagship hospital, the Hospital of the University of Pennsylvania, consistently rated one of the nation's "Honor Roll" hospitals by U.S. News & World Report; Pennsylvania Hospital, the nation's first hospital; Penn Presbyterian Medical Center; a faculty practice plan; a primary-care provider network; two multispecialty satellite facilities; and home health care and hospice.

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