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PRESS RELEASE

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NICOTINE CLUES FOR DEMENTIA TREATMENT

A team of London scientists have found clues for the potentially therapeutic benefits of nicotine on learning, memory and attention while minimising the risk of addiction. The research announced in Geneva today (Monday 14 July) will assist the search for new drugs for dementia.

"Nicotine, like many other drugs, has multiple effects some of which are harmful whereas others may be beneficial," said Professor Ian Stolerman from the Institute of Psychiatry, King's College London. Previous research has revealed these cognitive effects in humans and in laboratory animals. "They are small effects and," he warned, "for healthy people they do not outweigh the harmful effects."

The pharmaceutical industry has striven to discover nicotine-like substances for conditions such as Alzheimer's disease. Nicotine itself is difficult to administer by conventional means. The differences between doses that produce cognitive and toxic effects are small and, most significantly, there is also high risk of addiction. The balance, however, between costs and benefits is much more favourable for people with serious illnesses such as dementia.

Speaking at Europe's biggest neuroscience conference, Professor Stolerman explained that newer substances are based upon the chemical structure of the nicotine molecule. Research in rats has shown a nicotine-induced improvement in sustained attention to visual stimuli.

The King's College team studied the underlying mechanisms that produced this change and have helped to identify the roles of nicotinic receptors – the proteins on cells that respond to nicotine - as well as the involvement of several chemicals in the brain, including dopamine, noradrenaline, glutamate and serotonin.

PRESS-OFFICE
PALEXPO, GENEVA
Bureau 3, 12 – 16 July only
Tel: +41 (0) 22 761 25 10
Fax: +41 (0) 22 761 25 11

BEFORE AND AFTER FENS:
International/
English language
Elaine Snell
Snell Communications Ltd
London UK
Tel: +44 (0)20 7738 0424
Fax: +44 (0)20 7978 4494
elaine@snell–communications.net

Schweiz , Österreich, Deutschland
Barbara Ritzert
ProScience Communications
Andechser Weg 17
D-82343 Pöcking
Fon: +49-(0)8157-93970
Fax: +49-(0)8157-939797
ritzert@proscience-com.de

“We found several similarities and only small differences between the cognitive mechanisms and those involved in the addictive effects of nicotine,” said Professor Stolerman. “The cognitive ‘boost’ that many smokers experience from nicotine probably contributes to the reason people smoke cigarettes, so it may not be possible to totally prevent addiction. Nevertheless, the potential for abuse of a medicine based on a pure nicotine-like substance is likely to be very small.”

The new knowledge about mechanisms of nicotine action may speed the discovery of agents that are more effective as cognitive enhancers than nicotine itself, with longer-lasting effects. “This is a promising stage in the years of research that have endeavoured to separate the beneficial from the harmful effects of nicotine,” Professor Stolerman concluded.

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Notes to Editors
FENS 2008 is hosted by the Swiss Society for Neuroscience and will attract over 5,000 international delegates. The Federation of European Neuroscience Societies, founded in 1998, aims to advance research and education in neuroscience, representing neuroscience research in the European Commission and other granting bodies. FENS is the European partner of the American Society for Neuroscience. FENS represents a large number of national European neuroscience societies and has around 16000 members. http://fens2008.neurosciences.asso.fr/