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Duke center studies addiction to nicotine

07.08.11 - 11:08 pm

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DURHAM -- Want to quit?

Researchers in a nondescript warren of offices behind a frosted-glass door in the basement of the Hock Building on Erwin Road are working on ways to help you give up those cigarettes.

The little-known Duke Center for Nicotine and Smoking Cessation Research is dedicated to developing and evaluating "new smoking cessation treatments and to find new applications and combinations of existing treatments."

The center conducts human and animal subject studies and uses state-of-the-art brain imaging techniques and PET scans to investigate nicotine's effects on rodents and also on people.

Despite the efforts by researchers at the center over the past three decades, more than 443,000 deaths in this country each year are attributable to smoking. Worldwide, nearly 6 million people die from tobacco use each year.

Breaking the addiction is not easy, acknowledged Jed Rose, director of the center.

"We're trying to figure out why do people smoke, and why are they addicted to nicotine," Rose said. "Really, why it's so difficult for people to stop smoking is still somewhat mysterious."

Unlike cocaine, alcohol and heroin, he pointed out, which produce euphoric highs, nicotine is much more subtle. "All these addictive drugs release dopamine," a neurotransmitter in the brain that regulates reward and pleasure centers. Rose said. "But nicotine doesn't get them as high."

According to brain imaging the center has done, the "reinforcement passages" in smokers' brains get stimulated by puffing on a cigarette, and "that makes the urge to reach for a cigarette really powerful," Rose said. "We know that what makes something addictive is more than the euphoria."

The researchers have found that the "stop signal" in the brain -- its regulation system -- is weakened and that the ritualistic component of smoking can take over.

When smokers are given intravenous shots of nicotine, researchers have discovered, "it's not really satisfying to them," Rose said. "They want the habit of smoking."

If the center, which also has clinical offices in Raleigh, Charlotte and Winston-

Salem, can't help smokers quit, it wants to at least reduce the harm when they do smoke.

"If you need the nicotine but can get it without the toxic components of combustion, that would be better," Rose said.

The center is working on a technology that lets users inhale nicotine without smoking. Philip Morris International, the world's largest nongovernmental cigarette seller, recently bought the patent for the aerosol nicotine delivery system developed by Rose.

"The purchase is "an important step in our efforts to develop products that have the potential to reduce the risk of smoking-related diseases," said Doug Dean, a Philip Morris senior vice president.

The aerosol delivery system is not the full answer and there may not be a silver bullet to help everyone stop smoking, Rose acknowledged. Even the new graphic images on packs of cigarettes won't dissuade everyone who is addicted.

But "we have to go beyond nibbling at the edges," Rose said. "We can do better, and that's what we're working at."

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