



# California Drug Counseling

## 3D Structure of HIV is 'revealed'

Scientists have created a map showing the 3D structure of the virus which causes Aids.

The variable size and shape of HIV has made it hard to map, the team said in the journal Structure.

So the UK-German team took hundreds of images of viruses, that are 60 times smaller than red blood cells, and used a computer program to combine them.

Oxford University's Professor Stephen Fuller said the 3D map would assist in understanding how the virus grows.

### Unusual features

He told the BBC: "You say can you show me the structure of the HIV virus and the question is which one.

"HIV is very variable. It varied in diameter by a factor of three."

The way the research team, from the

Wellcome Trust Centre for Human Genetics at Oxford University, dealt with this was by taking multiple images at different tilts.

Working with colleagues in Heidelberg and Munich, they took about 100 images of 70 individual HIV viruses and then looked at similarities.

Despite the variability, the team found some consistent features.

### T cells

This included the finding that the core of virus - which is cone-shaped - spans the width of the viral membrane.

But there are spikes on the outside which bind to human immune cells, called T cells, and allow the virus to invade them.

The significance of this is that whereas most viruses have internal structures

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## Drinking and Smoking a Dangerous Duo

Treatment for alcoholism could change radically as researchers learn more about the interplay between smoking and drinking, and how the two addictions feed each other to devastating effect on the brain.

New evidence suggests that alcohol and nicotine work on the same inhibitory amino acids in the brain, which makes the inclination to do both doubly strong. However, experts think that could mean both addictions could be battled simultaneously, and not separately, in the future.

"While among non-drinkers smoking

rates are 20 to 30 percent in the Western world, rates are up to 80 or 90 percent among alcoholic patients," noted Dieter J. Meyerhoff, a professor of radiology at the University of California, San Francisco, and an organizer of a recent symposium on the phenomenon.

"There is research that suggests this is not by chance," he said.

Results of the symposium, which focused on brain injuries caused by smoking and drinking separately and together, appear

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### Special points of interest:

- Revealing the 3D structure of HIV may not sound very exciting but it's actually really useful, giving us more information about the virus and how it grows.
- Alcohol tends to lower IQ and impede other long-term brain functioning

## Federal Marijuana Monopoly Challenged

For decades, the federal government has been the nation's only legal producer of marijuana for medical research. Working with growers at the University of Mississippi, the National Institute on Drug Abuse has controlled both the quality and distribution of the drug for the past 36 years.

But for the first time the government's monopoly on research marijuana is under serious legal challenge. The effort is being spearheaded by a group that wants to produce medicines from currently illegal psychedelic drugs and by a professor at the University of Massachusetts who has agreed to grow marijuana for the group if the government lets him.

In a hearing due to start today before an administrative law judge at the Drug Enforcement Administration, professor Lyle Craker and his supporters will argue for a DEA license to grow the research drugs. It is the climax of a decades-long effort to expand research into marijuana and controlled drugs and of Craker's almost five-year effort to become a competing marijuana grower.

"Our work is focused on finding medicinal uses of plants, and marijuana is one with clear potential," said Craker, director of the medicinal plant program of the university's Department of Plant, Soil and Insect Sciences in Amherst, Mass., and editor of the Journal of Herbs, Spices and Medicinal Plants. "There's

only one government-approved source of marijuana for scientific research in this country, and that just isn't adequate."

The DEA, which has to license anyone who wants to grow marijuana, disagrees.

The agency, as well as the National Institute on Drug Abuse, which formally runs the marijuana research program, argues that it is not in the public interest to have more than one source of marijuana, in part because it could lead to greater illicit use. What's more, they said in legal briefs, the Mississippi program supplies all the marijuana that researchers need. Agency officials declined to comment further.

In his suit against the DEA for a license to grow marijuana, Craker has backing from 38 members of Congress, the two senators from Massachusetts, numerous medical societies and even Grover Norquist, the president of the conservative Americans for Tax Reform.

The effort has been organized by Richard Doblin, president of the Multidisciplinary Association for Psychedelic Studies (MAPS) and a longtime advocate of medical research into controlled drugs. It was Doblin who recruited Craker after the association concluded it would never get a dependable supply

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## 3D Structure of HIV

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which define the size, in the HIV virus it is the membrane which defines the size.

This could inform the development of more effective therapeutic approaches

Professor Stephen Fuller  
Wellcome Trust Centre for Human Genetics

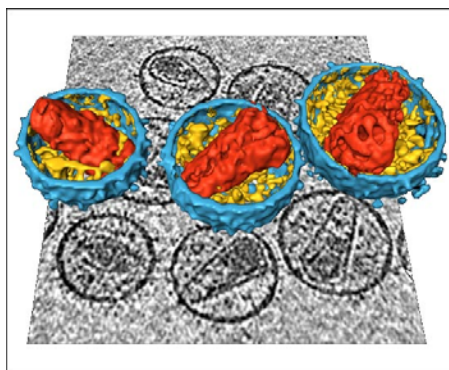
This puts constraints on the way it can assemble, the team said.

Professor Fuller said: "Identifying how the virus grows will allow us to address the formation of this important pathogen and how it accommodates its variability.

"This could inform the development of more effective therapeutic approaches," he added.

But Professor Fuller, who continues to work on HIV, acknowledges that a new HIV vaccine or treatment resulting from his research was a long way off.

But he says the research could provide an insight into the way to prevent the virus from assembling.



**3D Structure of HIV**

Treatments?

Like any virus, HIV is not a cell but rather strands of genetic code wrapped in protein.

The virus invades living cells and take them over by usurping the cell's genetic code with its own.

Roger Pebody, treatment specialist at HIV/Aids charity Terrence Higgins Trust, said: "Revealing the 3D structure of HIV may not sound very exciting but it's actually really useful, giving us more information about the virus and how it grows.

"The more we understand about HIV, the more likely we are to be able to develop effective treatments and hopefully one day a cure."

*SOURCE: BBC NEWS*

## Drinking and Smoking

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in the February issue of *Alcoholism: Clinical & Experimental Research*.

Genetics and environment appear to play a strong part in both addictions.

"Drugs, including alcohol and nicotine, may affect different individuals differently, depending on their genetic makeup," Yousef Tizabi of Howard University, co-author of a paper delivered at the seminar, said in a statement. "Similarly, drug-drug interactions are also influenced by genetic factors."

It appears that alcohol tends to lower IQ and impede other long-term brain functioning, while smoking appears to interfere with short-term cognition. When used with alcohol, nicotine exacerbates the damage by releasing free radicals and reducing blood flow to the brain, the researchers said.

Brain scans showed chronic smokers who are alcoholics had greater brain damage and slower metabolic recovery when compared to nonsmoking alcoholics, said Meyerhoff, though in time and with treatment alcoholics do recover brain tissue.

"So, with the two conditions, the question is what do you do?"

said Dr. Adam Bisaga, an addiction psychiatrist at the New York State Psychiatric Institute in New York City. "It's much more difficult for drinkers to quit smoking on their own. And smokers often insist, wrongly, that cigarettes help them think more clearly."

**Alcohol and nicotine work on the same inhibitory amino acids in the brain, which makes the inclination to do both doubly strong.**

Generally, it has been thought it was too much to ask patients to battle smoking and drinking at the same time, just as it was thought that no one should be asked to quit smoking marijuana when they were recovering from cocaine addiction.

"But that is not supported by empirical evidence," Bisaga said. "It's easier to become abstinent from alcohol if you quit smoking at the same time."

The idea now is that when a patient is in treatment and a "captive audience," all conditions should be dealt with, he said. Psychotherapy can be effective in treating multiple addictions, but more work is needed.

Bisaga said that while drugs have been developed to treat alcohol and smoking individually, it's time scientists concentrated on medications that help people beat both.

*SOURCE: HealthDay News*

## Federal Marijuana Monopoly

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of government marijuana.

"Dr. Craker has no goal here except to advance scientific research into marijuana, and our goals are the same," said Doblin, whose group is also sponsoring research into other controlled drugs, including MDMA (better known as "ecstasy") and the psychedelic mushroom psilocybin.

"By controlling who can research marijuana and how they can do it, the DEA has greatly limited promising research that could lead to [government] approved medications," Doblin said.

The problems, he said, are not limited to winning approval to buy the Mississippi marijuana. Doblin and other researchers contend that the government marijuana is low in quality and potency and could never be a stable source of basic ingredients if the Food and Drug Administration ever did approve a marijuana-based medication.

Marijuana, or cannabis, is now listed as a Schedule I drug -- with no medicinal use -- under the Controlled Substances Act. Its use was initially restricted in 1937 and eliminated from medicinal practice in 1942. On its Web site, the DEA lists marijuana as the most frequently abused illicit drug in America.

Since the 1970s, however, researchers have found potential uses for marijuana, or its active ingredient THC, in relieving nausea and vomiting associated with chemotherapy and to help with appetite loss in AIDS patients. A synthetic form of marijuana's active ingredient has been made into a prescription drug, Marinol.

Doblin said there are potentially many other medicinal uses of marijuana, including the treatment of multiple sclerosis and AIDS-related neuropathy. He also said researchers believe that if they can perfect a method of "vaporizing" marijuana -- allowing it to be inhaled rather than smoked -- it would be easier to administer as medicine.

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California Drug Counseling  
11751 Davis Street  
Moreno Valley, CA 92555

Phone: (951) 243-5129  
Fax: (951) 485-2642

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*The office is located at  
659 & 671 E Walnut Street  
Pasadena, CA 91101  
(626)844-0410  
Fax (626)844-3135*

*The Fresh Start office provides  
placement counseling and job  
assistance for ex-offenders.*

*The Fresh Start office is  
located at  
4344 Latham St. Suite #220  
Riverside, CA 92501  
(951) 781-0655*

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But because of fears of illicit use, he said, the agency has essentially blocked the research. "I believe the DEA policy is one of delay, and they've succeeded in essentially blocking marijuana development for 30 years," Doblin said.

In its filings with Administrative Law Judge Mary Ellen Bittner, the DEA disputes the charge that it is standing in the way of marijuana research.

It says that medical marijuana research is underway in California using its Mississippi supply, and that the drugmaker Malinckrodt Inc. has a contract with the Mississippi supplier to produce extracts of cannabis for its drug development program. In addition, DEA lawyer Brian Bayly told the law judge in August, when the first five days of testimony were heard, that the quality and potency of the government's

marijuana was acceptable to the researchers his agency surveyed.

The hearing is expected to continue through the week, with a decision several months later. If Craker and his team prevail, however, the DEA is not obliged to give him a license or change its policies. And as a result, Craker and his team plan to continue lining up political support, such as the Nov. 22 letter sent by Norquist to the DEA.

"The use of controlled substances for legitimate research purposes is well-established, and has yielded a number of miracle medicines widely available to patients and doctors," Norquist wrote. "This case should be no different. It's in the public interest to end the government monopoly on marijuana legal for research."

*SOURCE: Washington Post  
By Marc Kaufman*

## Federal Marijuana Monopoly