UC Berkeley Modifies Freshmen DNA Testing Project

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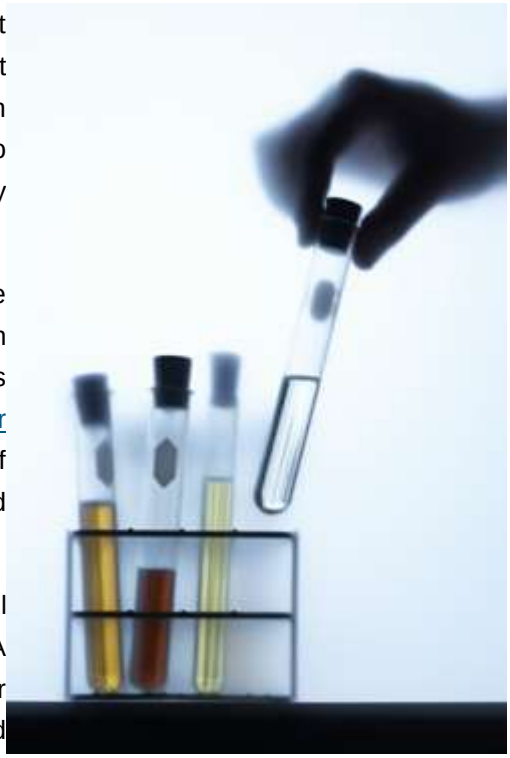

"Bring Your Genes to Cal", a genetic testing project by the University of California Berkeley, was meant to be an educational tool for incoming freshmen on personalized medicine, but has turned into education for the university on the politics and policy of medical testing, reported SF Gate.

The project is part of an annual exercise in which the university involves new students in a common educational experience. This year's theme was personalized medicine. The Chronicle of Higher Education added that Mark Schlissel, dean of biological sciences, said he hoped the project would spark students' interests for science.

Incoming freshmen received testing kits in the mail and were given the option to voluntarily submit DNA samples that the university would then screen for metabolism of folate, tolerance of lactose and metabolism of alcohol. Students were to be given their individual analyses, but after a Department of Public Health ruling, the university will only present aggregated information.

According to the Department of Public Health, because students were supposed to receive individual genetic results, the school's laboratory conducting the testing must be licensed or testing must take place in certified laboratories for reliability and accuracy.

Inside Higher Ed reported that UC Berkeley had looked into 12 other laboratories and found that it would be five times more expensive to have them involved in the project. Additionally, most labs declined to test "just a handful of genetic variants" and requested the school provide a larger sample that would include genes with medical significance, which Jasper Rine, UC Berkeley professor of genetics, genomics and development, said would be inappropriate since the project was only an educational exercise.

According to The Chronicle of Higher Education, Schlissel and other science professors argued that the project should not have been subject to the regulation as it was only for educational purposes. Furthermore, the genes to be tested are innocuous and have no known connection to a disease. Students also were not going to be given any medical diagnoses.

Critics of the project primarily had privacy and ethical concerns, reported The Daily Californian. Lee Tien, a senior staff attorney with the Electronic Frontier Foundation, pointed out that incoming freshmen lack the level of experience necessary to participate in such a project. Tien

stated that freshmen students may feel forced to participate in something they do not fully understand. Hank Greely, director of the Center for Law and the Biosciences at Stanford University where a similar testing program is taking place for medical students, noted that if students had received individual test results, they could have misinterpreted the information and made misinformed health decisions.

Jeremy Gruber, president of the council for Responsible Genetics, told Inside Higher Ed, "The university didn't do its homework. The university was caught with not having sufficiently reviewed the regulatory environment to even understand what would be required to process the DNA samples."

According to SF Gate, although Schlissel disagreed with the department's decision, the university will continue with its research, but will no longer give students access to their personal results, which Arthur Caplan, director of the Center for Bioethics at the University of Pennsylvania, told Inside Higher Ed, is still effective. "It's less sexy, but it's interesting," Caplan said.

Schlissel also noted that the controversy may have been beneficial as it encourages broader discussions. "It opens up a whole lot of questions," he said. "Who has the authority to tell an individual what they're allowed to know about themselves?"

Smoking Found to Affect Your Genes

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Cigarettes leave you with more than a smoky scent on your clothes and fingernails. A new study has found strong evidence that tobacco use can chemically modify and affect the activity of genes known to increase the risk of developing cancer. The finding may give researchers a new tool to assess cancer risk among people who smoke.

DNA isn't destiny. Chemical compounds that affect the functioning of genes can bind to our genetic material, turning certain genes on or off. These so-called epigenetic modifications can

influence a variety of traits, such as obesity and sexual preference. Scientists have even identified specific epigenetic patterns on the genes of people who smoke. None of the modified genes has a direct link to cancer, however, making it unclear whether these chemical alterations increase the risk of developing the disease.

In the new study, published in Human Molecular Genetics, researchers analyzed epigenetic signatures in blood cells from 374 individuals enrolled in the European Prospective Investigation into Cancer and Nutrition. EPIC, as it's known, is a massive study aimed at linking diet, lifestyle, and environmental factors to the incidence of cancer and other chronic diseases. Half of the group consisted of people who went on to develop colon or breast cancer 5 to 7 years after first joining the study, whereas the other half remained healthy.

The team, led by James Flanagan, a human geneticist at Imperial College London, discovered a distinct "epigenetic footprint" in study subjects who were smokers. Compared with people who had never smoked, these individuals had fewer chemical tags known as methyl groups—a common type of epigenetic change—on 20 different regions of their DNA. When the researchers extended the analysis to a separate group of patients and mice that had been exposed to tobacco smoke, they narrowed down the epigenetic modifications to several sites located in four genes that have been weakly linked to cancer before. All of these changes should increase the activity of these genes, Flanagan says. It's unclear why increasing the activity of the genes would cause cancer, he says, but individuals who don't have cancer tend not to have these modifications.

Ashtray image via Shutterstock.

Smokers given genetic test to help them quit

By **Claire McKim**
December 2, 2012

SCOTTISH smokers could be given a genetic test to help them quit their nicotine habit.

Health officials in Glasgow are currently in talks over whether to introduce a screening test which would determine how best to help smokers quit.

One in four Scots smoke- and the test would work out how many out of a possible seven smoking genes each addict has.

It would then decide how strong a nicotine replacement patch should be to help the smoker give up.

Professor Robert Walton , of Barts and The London School of Medicine and Dentistry, says people with different types of genes respond differently to different anti-smoking techniques.

He argues genetic variations determine why people are at risk of becoming addicted and how people will respond to nicotine patches.

Prof Walton said: “People with certain genes respond differently to certain things. People whose bodies break down nicotine very quickly tend to be more addicted to tobacco and have a higher requirement for nicotine.

“But when we come to give them nicotine replacement therapy to try to help them stop smoking we give everyone the same dose.

“The dose has been set for an average level for the population so fast metabolisers are getting quite hopelessly under-dosed.”

He said the solution is “dead simple”.

“It would be quite easy to roll out a testing system where you identify people’s genetic makeup and give them more appropriate dose.

“You would just put more nicotine in the patch – or less – so some could contain 60mg instead of 20mg. People are sometimes worried about protecting themselves from overdosing and likewise in some cases they could get by with 10mg and why should they take more?” he added.

Smoke-free

Last week the Scottish Government announced it is drawing up plans for a virtually smoke-free Scotland by 2030.

Currently around one in four Scots are smokers, the Government hopes to slash this figure to fewer than One in 20.

Cancer Research claims one third of all cancer deaths in Scotland are due to smoking.

Prof Walton tested the genes of Scots-born Hollywood actor Brian Cox for a forthcoming BBC documentary on addictions.

He found Cox had only three of the seven genes linked to a tendency to smoke.

Cox said: “So I don’t smoke because I’m one of the lucky few who don’t have the genes for nicotine dependence but what my parents gave me was experience of passive smoking, which I came to hate.

“I can’t blame them for smoking. They were surrounded by a smoking majority; they lived through two world wars and the Great Depression – the sort of stressful time that always seems to bode well for cigarette sales.”