GENETICS

Research weed is more like hemp

Genome of cannabis used for science differs from commercial strains, study suggests.

BY SARA REARDON

The cannabis used for research in the United States is genetically different from the stuff people are smoking, says a recent study. The finding suggests that work investigating the plant's biological effects might not completely replicate the experience of people using commercially available strains — something researchers have long suspected.

Scientists studying cannabis in the United States must get it from the University of Mississippi in Oxford. The facility is the only one licensed by the Drug Enforcement Administration (DEA) to grow and distribute cannabis for research purposes, and it has a contract with the National Institute on Drug Abuse (NIDA) to dispense its products.

Critics have long complained that NIDA's pot is weaker than strains typically sold to the public in states where the drug is now legal, or available on the street. NIDA's crop "doesn't look like marijuana, it doesn't smell like marijuana", says Anna Schwabe, a plant geneticist at the University of Northern Colorado in Greeley, who co-authored the cannabis genome comparison. The study was published in late March on the preprint server bioRxiv (A. L. Schwabe *et al.* Preprint at bioRxiv http://doi.org/c5bz; 2019).

A DIFFERENT PURPOSE

Schwabe and her colleagues looked at 49 cannabis strains from sources including NIDA and dispensaries in states where pot is legal. Their samples included one of the NIDA strains classified as having very high levels (over 10%) of tetrahydrocannabinol (THC) — the main psychoactive chemical responsible for weed's 'high' — and a second that contained THC and cannabidiol, a compound with potentially therapeutic properties. The team also examined hemp, a non-psychoactive cannabis strain.

The researchers compared ten genetic markers across each sample: they chose random, non-functional sections of the genome that probably haven't been influenced by evolution, to get the truest estimate possible of genetic diversity. The plants seemed to cluster into two categories: drug-type and hemp-like strains. According to this classification, NIDA's two varieties looked more like hemp than the marijuana typically used as a drug.

It's an interesting study, says Jonathan Page, chief scientific officer at Aurora Cannabis, a research institute in Vancouver, Canada. But he'd like to see work investigating whether the genetic differences and various chemical compounds in marijuana strains affect the body in different ways.

Mahmoud ElSohly, who directs the cannabis programme at the University of Mississippi, says that his lab seeks to create consistency in research cannabis — not to approximate strains found on the street or in dispensaries. "That's not our charge." If other labs gained DEA permission to grow cannabis for research, scientists could begin comparing strains, says ElSohly. ■