

Sell your genome for cryptocurrency

Richard Kemerly

HOW much is your genome worth? Now you can decide. A number of start-ups are offering people the chance not only to own their genomic data, but to sell it to data-hungry scientists too.

EncrypGen, one firm in the vanguard of this movement, is launching its first product this week. Essentially, this is an online database where an individual can upload their digitised genome. It can then be left there until they want to show it to their doctor, for example. Or, if they opt in to a service launching later this year, their data can be sold to researchers too.

With this service, scientists scouring the database will see anonymous profiles, along with details such as hair colour or medical conditions. If they find a profile of interest, they can ask for access. Users will then be able to negotiate a price for handing over part or all of this genomic data.

As drugs are twice as likely to make it to market when they are based on human genetics, pharmaceutical firms are likely to be willing to pay the most.

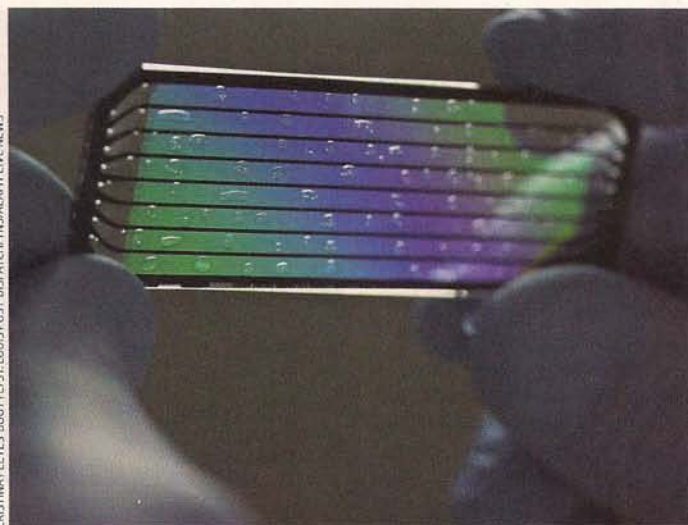
Payment to the data's owner will be in the form of EncrypGen's freshly minted cryptocurrency, DNA coin, which can then be traded or sold. Initially, there will be pricing guidelines, but David Koepsell, the firm's co-founder, believes market forces will eventually dictate genomic value.

The same laws of supply and demand should reward those with less common genomes. "Under-represented groups will benefit, so that in the future those from demographically disadvantaged populations and with rare diseases will better profit," says Koepsell.

EncrypGen will take a cut of DNA sales and will charge firms to access the database.

"Payment will come in the form of EncrypGen's freshly minted cryptocurrency, DNA coin"

There are already a lot of sequenced genomes out there. More than 12 million people took DNA genealogy tests in 2017, double the number of the previous year. Firms like 23andMe that offer to reveal your



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Individuals will set the price for access to their sequenced DNA

predisposition to certain diseases based on your genetics are booming too. Most charge for these services and then also sell the data on to researchers and pharmaceutical companies.

EncrypGen isn't alone in trying to return some control back to source. Luna DNA and Zenome both have a similar business model to EncrypGen's. And Nebula Genomics plans to include DNA tests in its offering, as well. In comparison, EncrypGen will suggest firms its customers can use to sequence their genomes.

From a researcher's point of view, the more data available the better, says Tim Frayling at the

University of Exeter, UK. However, there are risks. People may look to earn a quick buck "without really thinking about the consequences of knowing about what's in their genomes, and what that could reveal about their health". You may discover you have a mutation suggesting a predisposition to Alzheimer's or Huntington's disease, for example, but as neither of them has a cure, you may not want to know.

There is also the risk of trusting a company with such sensitive personal data, says Natalie Smolenski at tech start-up Learning Machine. "Why should we trust one particular vendor's 'black box' solution to not have back doors, side doors or other serious design flaws?" ■

Can psychedelic drug help with depression?

THE way you speak may reveal whether a psychedelic drug could help treat depression or anxiety.

Robin Carhart-Harris and his team at Imperial College London have been testing psilocybin - a hallucinogen found in magic mushrooms - in people with treatment-resistant depression. Their pilot study found that when it was given to 12 volunteers

alongside psychological support, five of them no longer met the clinical criteria for a depression diagnosis three months later.

But how can you tell if psilocybin might help someone? Working with the Imperial team, Facundo Carrillo at the University of Buenos Aires in Argentina and his colleagues tested the idea that speech patterns give a clue. Speech analysis has already been used to identify people with a range of mental health disorders, including depression.

They developed software to analyse interview responses given

by 17 people with treatment-resistant depression before psilocybin treatment, and 18 people without depression.

The psilocybin treatment seemed to reduce the symptoms of seven of the people with depression by more than 50 per cent. Using the results to train their software, the researchers say it can predict whether a person with depression will respond to psilocybin with 85 per cent accuracy (*Journal of Affective Disorders*, doi.org/gcw8nb).

They found that people with depression use significantly fewer

positive words than those without the condition. Those with depression who are likely to respond to treatment use fewer positive words than those who aren't.

This is a promising way to screen people, says Gabrielle Agin-Liebes at Palo Alto University in California. "It is a very intense treatment, so being able to screen for people who we think are the best matches would be a real asset."

She stresses that the tool, if shown to work in larger groups, should be used to aid doctors rather than replace them. Jessica Hamzelou ■