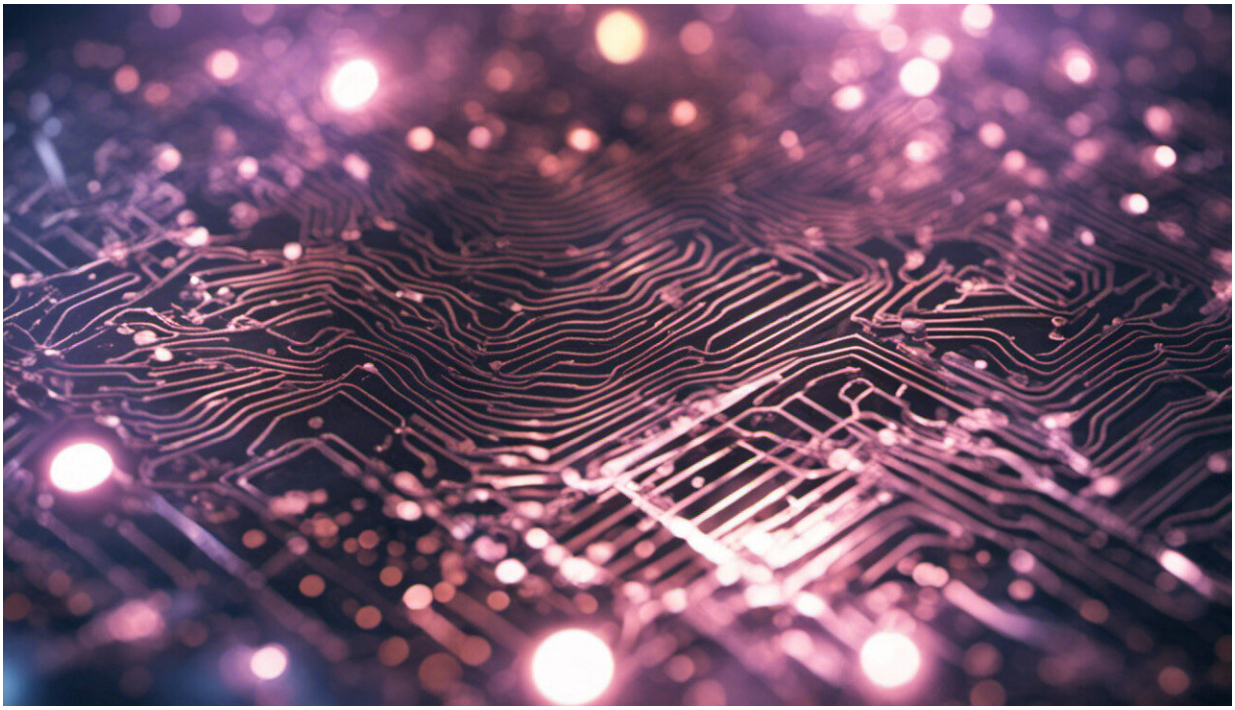
The dangers of biohacking 'experiments'– and how it could harm your health

September 26 2018, by Rohan Anand



Credit: AI-generated image (disclaimer)

Biohacking or "do it yourself" biology has been on the rise in recent years – it now even has various organised conferences. Following a recent VICE news documentary about a start-up company called Ascendance Biomedical – who are self-testing drugs – biohacking has had further exposure outside of its circle of devout followers.

Biohacking is an open innovation and social movement that seeks to further enhance the ability of the human body. This includes humans trying to get cyborg like features, achieve hyper human senses, and also seek out new medicines and cures for disease via the promotion of self-experimentation.

According to their website, Ascendence Biomedical are currently exploring HIV/AIDS and herpes elimination, and "muscular optimisation". It sounds futuristic and appealing, but those critical of the approach say a major concern is that the methods of the biohacking community are housed outside of the relevant scientific processes – as governmental, academic, charitable and pharmaceutical institutions that operate with high safety standards for medical research are held to. This means that the biohacking pathway is anything but safe, as it is not regulated.

Why biohack?

Common reasons for biohacking drugs are that there are not enough cures, that drug prices are too high, and that participating in biohacking is taking a stand against the establishment – primarily Big Pharma.

Although modern medicine has progressed rapidly in the last few decades we are still left without cures for many diseases especially chronic conditions such as multiple sclerosis or certain cancers. It is natural that anyone suffering from such a disease would be desperate to rid their symptoms and be healthy.

The average cost of getting a drug out of the lab and to patients is US$2.6 billion, and on average it takes around 12 years of research. The process is expensive and slow and it's estimated that less than 1% of candidate drugs get approved.

The research costs of these drugs are also passed onto the patients, meaning they can pay a high price for treatment. And with patent protection, steep prices and years of waiting for cures, it's easy to see why people get frustrated and try to take this process into their own hands.

Why is it dangerous?

In essence, trying to discover drugs through biohacking compromises on quality scientific research. The drugs usually skip key toxicity tests before being administered to patients and in doing so seriously jeopardises the safety of those involved. Without rigorous pre-clinical testing in the laboratory, it is very difficult to predict how that drug will fully interact with the complexity of the human body.

Gene therapies pose another complexity, they aim to introduce new genetic material into our DNA, essentially rewriting our biological instructions. Edit the wrong part of DNA and you run the risk of seriously interfering with your body such as inducing a tumour. Watching those injecting themselves with unapproved gene therapies is unsettling. And there's also the issue that conclusions drawn from such biohacking "experiments" are far from evidence-based medicine.

The government cannot intervene if an individual chooses to self-experiment. And while it's illegal for a company to market something as medicine if it hasn't been approved, chemicals can still be sold as research compounds.

How to carry out medical research?

It is vital not to skimp on medical research. Multiple lab experiments are needed to discover the complex mechanisms of drugs and gene therapies to determine if they are safe for humans. Then human testing is best

conducted through a series of clinical trials, where each aspect is tightly regulated to ensure scientific integrity and most importantly patients that are safeguarded.

Such trials require an increasingly multidisciplinary team including medics, nurses, methodologists and statisticians to set up and conduct the trial. These trials can minimise bias – for example by using placebo controls. The right number of patients means enough data also allows for statistical validity and legitimate conclusions to be made. Currently this process can be long and expensive, but it produces quality data as to best answer the question of whether a drug or treatment will work.

That said, trials are becoming more efficiently designed and programmes are in place in the UK and US to accelerate drug discovery. Each year the boundaries of medical knowledge are pushed. So things are getting better.

Provided by The Conversation