

THE ETHICS OF BIO HACKING





With the rapid advance of technology, humanity now has the ability to alter our own biology in ways that were once only possible in science fiction films. This newfound power raises important ethical questions, particularly regarding the implications of bio hacking on future generations.

The field of biohacking is one of the most promising emerging technologies with the capacity to alter the human experience. Few other technologies have the same potential to be as transformational as biohacking.

When we talk about biohacking, we are referring to the use of technology to alter or improve our own biology. This practise has the potential to profoundly transform how we live and interact with the rest of the world.

For example, biohacking could allow us to have better control over our own bodies, including our health and physical appearance. Additionally, biohacking could enable us to enhance our cognitive abilities or even give us superhuman strength. As you can see, the potential applications of biohacking are virtually limitless.

With such great potential comes great responsibility. As we begin to experiment with biohacking, it is important to consider the ethical implications of our actions. One major concern is that bio hacking could lead to a widening of the gap between the rich and the poor, as those who can afford to enhance their bodies will have a significant advantage over those who cannot.

Additionally, there is the risk that bio hacking could be used to unfairly manipulate people or control populations.



Nutrigenomics

Nutrigenomics is a type of bio hacking that is becoming increasingly popular. The field of nutrigenomics (or nutritional genomics) is relatively new, and as such, the ethical implications of this branch of science are still being explored. It is the study of how nutrients interact with our genes to influence our health. This area of research has the potential to revolutionize the way we approach nutrition and disease prevention. For example, by understanding how certain nutrients can affect gene expression, we may be able to develop targeted nutritional therapies for a variety of conditions (1).

However, there are also some concerns about the ethical implications of nutrigenomics. One worry is that this knowledge could be used to manipulate people's diets in unethical ways. For example, it is possible that companies could use nutrigenomic information to create 'customized' foods that are designed to exploit an individual's genetic vulnerabilities. This could lead to a situation where people are eating foods that they don't even realize are harmful to their health. An example of this is the fortification of breakfast cereals with folic acid. This is beneficial for some members of the population. However, it can mask Vitamin B12 deficiency which can impact cognition in those affected (2).

Another ethical concern is that nutrigenomic information could potentially be used to discriminate against people based on their genes. For example, insurance companies could use this information to deny insurance cover to people who are at increased risk of certain conditions (3). Employers could also use nutrigenomic information to screen out applicants who are more likely to get sick or have genetic disorders; and therefore have time off work (4).



Nootropics

Let us now turn our attention to another aspect of bio hacking: nootropics. In recent years, nootropics have become increasingly popular as a means of enhancing cognitive performance. Often referred to as “smart drugs”, these substances can help to improve focus, memory, and problem-solving ability. However, the ethics of taking nootropics are often called into question.

Some argue that the use of these substances is tantamount to cheating, as it gives users an unfair advantage over those who do not take them. Others argue that nootropics are simply tools that can be used to level the playing field, providing an equal opportunity for all individuals to excel. One reason cognitive enhancement is so controversial is because it changes the way the body works.

Historically, people are more likely to support drug use for symptom management, than for cognitive enhancement in healthy people (5). However, it could be argued that prevention is better than cure. If taking nootropics or herbal supplements prevents the development of disease, and keeps people healthier for longer, is that not a valid argument?

Nootropics are often taken to increase concentration and reduce fatigue (6). One of the most commonplace substances used by many people on a daily basis, is caffeine. A good strong cup of Joe, is often used by the general public to keep them going when they are at work or even at play.

Students are renowned for working late into the night before a deadline, to hand in an assignment, or cramming before an exam. These students often



reach for a strong coffee, can of Red Bull, or other so-called energy drinks to keep them awake and alert. Is that ethical? I doubt many people would even worry about the ethics of this.

However, when nootropics are taken by students to increase cognition and performance, it could be argued that they then have an unfair advantage over their peers. Is this the same as the ethical issues regarding drug-induced enhanced performance in sports? (7)

You are probably aware that medical professionals work long hours, often without a break. These people are caring for us yet often work double shifts or carry out surgery that lasts for 8 or more hours; surgery that saves the life of the patient being operated on. Yet do we ever consider how that doctor manages to concentrate or perform such complex surgery for such a long time? Many medical personnel rely on nootropics to maintain focus, ward off fatigue and prevent them from making poor or impulsive decisions (8). Is this ethical if it is ultimately for the benefit of others?

As we enter this brave new world of self-directed evolution, it is critical that we consider the potential risks and ensure that we maintain our core values of equality and social justice. Only by proceeding with caution and care can we hope to realize the great potential of biohacking without losing sight of our humanity.

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Bio hack your sleep with supplements

Another way to bio hack your way to better sleep is by using supplements. Melatonin is a hormone that helps to regulate the body's sleep-wake cycle (22) and it's available as a supplement in pill form. Just one to three milligrams of a melatonin supplement can help people fall asleep more quickly and improve the quality of their sleep (23). If you're struggling with insomnia, you may want to try taking a melatonin supplement an hour before bedtime. Valerian root is another popular sleep supplement. This herb has been used for centuries to treat sleeping disorders and anxiety. Valerian root can help to improve the quality of sleep and reduce the time it takes to fall asleep (24). If you're interested in trying valerian root, start with a low dose and increase gradually as needed.

Ashwagandha is an herb known as "Indian ginseng", with a long history of use as a medicinal herb. It is best known for its ability to relieve stress and promote relaxation. The herb is thought to work by reducing levels of the stress hormone, cortisol. This ability to reduce anxiety and promote calmness makes it an ideal herbal supplement to improve sleep and as an effective natural remedy for insomnia (25). It has been found to improve the sleep quality of people suffering from insomnia if used continuously for a few weeks (26).

Mindfulness meditation

Meditation is a way to bio hack your mind to help you relax, clear your mind and lower your blood pressure, which can then reduce disturbed sleep, and insomnia. If you struggle to meditate on your own, there are loads of apps to help, such as Headspace, Calm, and Smiling Mind (27). Pzizz and Sleepiest are amongst other mindfulness apps that specifically help you sleep (28).



While discussing technology and how it can help you sleep, it is worth mentioning wearables.

How technology can bio hack your sleep.

Most people are familiar with the concept of a fitness tracker. These devices are worn on the wrist and track things like steps taken, heart rate, and calories burned. However, many people don't realize that there are also devices that can track sleep. These wearables use sensors to monitor things like heart rate and body movement during the night. Unfortunately, this is not entirely accurate as it does not measure brainwaves, which would give more precise data (29). Wearables can be helpful in spotting trends and determining whether or not your sleep is improving.

If you want more accurate data on your sleep quality, there are other devices you can use to bio hack your slumber. These include Apnealink air, Nox T3, Philips Alice PDx and Alice NightOne (30). These are slightly more invasive, less compact and can cause some discomfort. There are even devices that can be sewn into your pyjamas to monitor your sleep more accurately (30).

The Oura ring is another wearable tracking device that monitors sleep and activity (31). It uses sensors to measure heart rate, body temperature, and respiratory rate. The data is then used to estimate sleep stages, including light sleep, deep sleep, and REM sleep. The Oura ring also provides information on the length of time it takes to fall asleep, how often you wake up during the night, and how much time you spend in bed. This information can be used to improve sleep habits and track progress over time. The Oura ring is an effective tool for monitoring sleep and improving sleep quality.



Or you can go even further and buy a bed, with artificial intelligence, that monitors sleep. As you can imagine, these are not cheap, costing nearly two thousand dollars. They have many features, which include raising your head when snoring is sensed, monitoring the temperature and humidity of your bedroom, waking you up when the lightest phase of sleep is identified and a sleep coaching program to help improve your sleep (32). There are even devices that can sense when you get into or out of bed and control the lights and temperature in your bedroom, as appropriate (33). Unfortunately, these devices don't have your coffee ready for you when you wake up; but I am sure that is only a matter of time!

Bio hack your genes to help you sleep better

DNA testing is a quick and easy way to bio hack your sleep patterns. The Home DNA test analyses the genetic links between insomnia and your family, so that you can find out if you have inherited this trait (34).

The genes that are linked to sleep and your body clock are CLOCK, PER, CRY and BMAL1 (35). If you discover that there are genetic variations, called polymorphisms, in your genes, it is even more important to follow the bio hacks described in this article.

As you can see, there are a number of ways that you can bio hack your way to better sleep. Some cost nothing, some are pretty expensive. If you are struggling to sleep, it is worth considering some of these methods and seeing which bio hack works best for you. Sweet dreams!

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