A New Era for Psychedelic Medicine

AMANDA FEILDING

After many decades, during which psychedelic research has been stifled by repressive drug laws and stigma, we are finally re-opening the doors to this fertile field. As the potential benefits of responsible use of psychedelics in therapeutic settings are uncovered, and the media awakens to these discoveries, a new enthusiasm for what psychedelics can offer both science and society is taking hold.

The combination of advancing neuroscientific knowledge, modern brain-imaging technology and psychedelics provides a unique microscope to the mind, allowing us to map changes in consciousness to changes in neuronal and physiological activity. This opens up a new universe in which we can explore novel pathways to treat many of our most intractable illnesses, and to expand our understanding of consciousness itself.

My own passion for exploring these issues was born over fifty years ago, after gaining a new understanding of the physiological changes underlying altered states of consciousness brought about by LSD. In 1998 I set up the Beckley Foundation to scale the political wall that had kept psychedelics out of contemporary medicine since the late 1960s. Through the Foundation I have initiated and carried out innumerable collaborative programs with scientists and universities around the world, to investigate the effects of cannabis and psychedelics on consciousness and well-being. This research has expanded our understanding of these substances, which has contributed to global drug-policy reform by providing an evidence-base to inform policy decisions. The Foundation has also, through its seminars and reports, stimulated a shift in global attitudes to drug-policy.

One of my key collaborative ventures has been the Beckley/Imperial Research Programme, which I set up with Dave Nutt in 2005. This programme, which successfully combines psychedelics with brain-imaging, has broken considerable new ground. In 2016, we published our results from the first-ever LSD brain-imaging study, generating many fascinating findings, and fulfilling my promise to Albert Hofmann.
to reintegrate his “problem child” into the scientific world.

The study shed light on many phenomena reported by users of psychedelics. It increased our understanding of the mechanisms underlying ‘ego-dissolution’, and its significance in the therapeutic process. It also revealed the neurological changes underlying the richness and intensity of the multi-sensory LSD experience. We saw increased blood-flow to the visual cortex, and dramatically increased connectivity between the visual cortex and over 20 regions across the rest of the brain, not usually involved in the visual process (see Figure 1).

Feelings of ‘ego-dissolution’ correlated with a ‘loss of integrity’, or reduced communication between the regions of the Default Mode Network (DMN). The DMN is particularly important in regulating our conscious experience. It is a high-order brain network involved in autobiographical memory, planning the future and self-awareness, and is most active when our minds wander during those times when we are not engaged in specific tasks. When functioning normally, the DMN affords a relative stability to one’s sense of self, but an overactive network can result in maladaptive thought patterns and compulsive behaviours. A common underlying mechanism of many mental illnesses is abnormal hyperactivity of the Default Mode Network (see Figure 2).

When, through the action of a psychedelic, the blood-supply to the DMN is reduced, there is an increase in cross-talk between diverse regions of the brain which normally don’t communicate with each other. This creates a more chaotic, fluid and creative state of consciousness, which breaks the rigidity of the neurotic patterns of thought and behaviour that underlie conditions such as depression and addiction.

A second Beckley/Imperial study also published last year and led by Robin Carhart-Harris, investigated the use of psilocybin in overcoming treatment-resistant depression. Our study group had suffered from chronic depression for an average of 18 years and had failed to show improvements from at least two previous treatment courses. This study had the remarkable success rate of 67% of subjects attaining remission from depression after the first week of treatment with psi.

Figure 1. LSD increases the connectivity between the human visual cortex and the rest of the brain.

Figure 2. LSD decreased the connectivity between the parahippocampus (PH) and retrosplenial (RSC) cortex (an important region of the default mode network), and this decrease correlated with increased ratings of ego-dissolution.
Opening up another promising avenue of research, the Beckley/Sant Pau Research Programme, led by Jordi Riba, has found that two components of ayahuasca—harmine and tetrahydroharmine, stimulate neurogenesis i.e., the birth of new neurons, in hippocampal stem cells in vitro. If this can be replicated in vivo, it may lead to new treatments for neurodegenerative disorders such as Alzheimer’s and Parkinson’s disease (see Figure 4).

The Beckley Scientific Programme is researching many of the effects of psychedelics, such as their interaction with music; their capacity to enhance mindfulness; the importance of the mystical experience; and the mechanisms underlying visual hallucinations. We are also conducting an exciting new study to investigate the subjective and neural effects of the under-researched molecule DMT, which will allow us to compare its mechanisms of action with those of LSD and psilocybin. In the pipeline is a study investigating the efficacy of LSD-assisted psychotherapy in overcoming alcohol addiction, for which we are currently applying for ethical approval.

An increasing number of studies suggest that psychedelics can help treat those conditions that often elude modern medicine—conditions characterized by rigid thoughts and behaviours, such as chronic depression, addiction, posttraumatic stress disorder, and obsessive-compulsive disorders. One of the remarkable characteristics of psychedelics is how one, or possibly two doses can bring about long-lasting positive change. The psychedelic experience is like a reset-button—it shakes the rigidity and prepares the ground for new seeds to grow.

LSD, psilocybin and ayahuasca have all shown long-lasting...
positive effects. Our studies showed that the personality traits of optimism and openness increased for at least two weeks after ingestion of LSD, and the extent of these long-term changes correlated with the extent of the network disintegration and desegregation experienced under LSD.

Our studies with ayahuasca have shown that regular use increases the qualities of openness, optimism and mindfulness. Another observation has revealed a shrinking of the posterior cingulate cortex (PCC) – one of the brain-regions involved in representing the self and self-awareness - among regular ayahuasca users. What’s more, a smaller PCC correlated with higher scores on several mindfulness-related traits: self-transcendence, transpersonal feelings, and spirituality.

As this new era of psychedelic research progresses, it will be essential to understand the minutiae of the physiological and neuronal changes underlying the psychedelic state. It is also imperative that we create the political environment to support this research, and to facilitate the licensing and prescription of these potent medicines, and help make available clinics that will provide psychedelic-assisted psychotherapy to those in need.

After forty years of near-total stagnation, the psychedelic state is finally beginning to be understood. It won’t be long before our small-scale studies are followed by large scale clinical trials, which we hope will demonstrate once and for all, just how valuable psychedelic substances can be for the future of medicine.

**Amanda Feilding** is the Founder and Director of the Beckley Foundation. Amanda established the foundation in 1998 to further research into the therapeutic and transformative potential of psychoactive substances forbidden by prohibitionist policies, and has since been called the “hidden hand behind the renaissance of psychedelic science and drug policy reform.” Through the Scientific Programme, Amanda orchestrates collaborations with leading scientists worldwide, investigating cannabis, psilocybin, LSD, Ayahuasca, DMT and MDMA. These include clinical trials identifying the effects of psychoactive substances on cerebral circulation, brain function, subjective experience, and clinical symptoms. She co-directs the thriving Beckley/Imperial Research Programme with Prof David Nutt. She can be reached at amanda@beckleyfoundation.org.