natureoutlook

CANNABIS

29 August 2019 / Vol 572 / Issue No 7771



Cover art: Susan Burghart

Editorial

Herb Brody, Richard Hodson, Elizabeth Batty, Jenny Rooke

Art & Design Mohamed Ashour,

Kate Duncan
Production

Nick Bruni, Karl Smart, Ian Pope, Kay Lewis

Sponsorship Stephen Brown, Claudia Danci

Marketing Nicole Jackson

Project Manager Rebecca Jones

Creative Director Wojtek Urbanek

Publisher Richard Hughes

VP, Editorial Stephen Pincock

Managing Editor David Payne

Magazine Editor Helen Pearson

Editor-in-Chief Magdalena Skipper Hifty years ago, cannabis was known as the drug most emblematic of counterculture. Today, many people promote it as a fount of treatments for almost any ailment imaginable. This immense about-turn is reflected in changes in legal regimes: medicinal use of cannabis is now permitted in many countries, and some also allow the drug to be used recreationally. The times, they have a-changed.

No aspect of the cannabis journey better exemplifies its current status than the fortunes of cannabidiol. This cannabis extract has received regulatory approval in the United States for use in treating certain rare forms of childhood epilepsy. But cannabidiol is also often promoted, with little supporting evidence, as a general health elixir (see page S2).

Numerous clinical trials that are investigating potential medical benefits of the many chemical components of cannabis are painting a promising picture (S20), albeit one that is blurred by a lack of clarity over how the plant's compounds interact (S12). Researchers are also looking into the effects of combining cannabis consumption with exercise, after decades of positive anecdotal reports from athletes (S14). But evidence of ill effects associated with cannabis use, including worrying correlations with mental illness, must be weighed against the drug's possible medical value (S16).

Legalization brings the benefits and burdens of operating a regulated industry. Cannabis growers are paying more heed to quality control (S10) and the environmental impact of cultivation (S8). And genetic engineering is enabling researchers to optimize the cannabis plant for the mass production of pharmaceutical drugs (S5). Meanwhile, policymakers who are seeking to integrate cannabis into society might need to rethink their approach (S19).

We are pleased to acknowledge the financial support of Auxly Cannabis Group Inc. in producing this Outlook. As always, *Nature* retains sole responsibility for all editorial content.

Herb Brody

Chief supplements editor

Nature Outlooks are sponsored supplements that aim to stimulate interest and debate around a subject of interest to the sponsor, while satisfying the editorial values of Nature and our readers' expectations. The boundaries of sponsor involvement are clearly delineated in the Nature Outlook Editorial guidelines available at go.nature.com/e4dwzw

CITING THE OUTLOOK

Cite as a supplement to *Nature*, for example, *Nature* **Vol. XXX**, No. XXXX Suppl., Sxx–Sxx (2019).

VISIT THE OUTLOOK ONLINE

The Nature Outlook Cannabis supplement can be found at www.nature.com/collections/cannabis-outlook
It features all newly commissioned content as well as a selection of relevant previously published material that is made freely

available for 6 months

SUBSCRIPTIONS AND CUSTOMER SERVICES

Site licences (www.nature.com/libraries/site_licences): Americas, institutions@natureny.com; Asia-Pacific, http://nature.asia/jp-contact; Australia/New Zealand, nature@macmillan.com.au; Europe/ROW, institutions@nature.com; India, npgindia@nature.com. Personal subscriptions: UK/Europe/ROW, subscriptions@nature.com; USA/Canada/Latin America, subscriptions@us.nature.com; Japan, http://nature.asia/jp-contact; China, http://nature.asia/hina-subscribe; Korea, www.natureasia.com/ko-kr/subscribe.

CUSTOMER SERVICES

Feedback@nature.com Copyright © 2019 Springer Nature Ltd. All rights reserved.

CONTENTS

S2 DRUG REGULATION

From menace to medicine
Obstacles to cannabidiol research

S5 BIOTECHNOLOGY

A boosted crop

Genetic engineering and cannabis

S8 ENVIRONMENT

A greener grass

Cannabis's complex footprint

S10 HORTICULTURE

A serious effort

Ensuring consumer safety

S12 EFFICACY

Unpicking the entourage effectDo cannabis compounds act in synergy?

S14 SPORT

Working out with weed

Exercise and cannabis use

S16 SAFETY

Balancing act

Determining health effects

S19 PERSPECTIVE

Policy with a dab of science

Make regulatory changes, says *Jahan Marcu*

S20 CLINICAL TRIALS

Research round-up

Highlights from recent studies