



On Minimizing Risk and Harm in the Use of Psychedelics

Jules Evans, M.A., Marc Aixalà, M.Sc., Brian T. Anderson, M.D. , William Brennan, Ph.D., Rebecka Bremler, B.Sc., Joost J. Breeksema, Ph.D., Lisa Burback, M.D., Abigail E. Calder, M.Sc., Robin L. Carhart-Harris, Ph.D., Katherine Cheung, M.A., Neşe Devenot, Ph.D., Ingmar Gorman, Ph.D., Jakub Greń, Ph.D., Peter S. Hendricks, Ph.D., Brian Holoyda, M.D., Edward Jacobs, M.Sc., Joy Krecké, M.Sc. , Daniel J. Kruger, Ph.D., David Luke, Ph.D., Tomislav Majić, M.D., Amy L. McGuire, J.D., Ph.D., Nicky J. Mehtani, M.D., David S. Mathai, M.D., Kristin Nash, M.P.H., Tehseen Noorani, Ph.D., Roman Palitsky, Ph.D., Oliver C. Robinson, Ph.D., Otto Simonsson, Ph.D., Elin Stahre, M.Sc., Michiel vanElk, Ph.D., David B. Yaden, Ph.D.

Objective: This article outlines recommendations from 30 psychedelic researchers on how to create a better psychedelic safety net.

Methods: A survey of 30 psychedelic researchers asked them to identify key critical research gaps around psychedelic harm and safety.

Results: The critical research gaps identified by the authors included defining the main types of psychedelic harm, the predictors of those harms, and the most effective way to treat those harms. They also call for better support for those experiencing post-psychedelic difficulties, including better online information, peer support groups, affordable therapy, and psychiatric consultation and medication. Finally, the authors call for better funding to create a psychedelic safety net, and suggest psychedelic philanthropists, investors and

companies could commit 1% of their investment in psychedelics into supporting safety measures such as research and support services.

Conclusions: The authors identify several practical steps to create a better psychedelic safety net and call for more funding to psychedelic safety measures such as research and support services.

Relevance to clinical practice: The authors outline important gaps in our knowledge around the safety and risk profile of psychedelic medicines and identify practical steps forward for researchers and clinical practitioners to make this promising field safer.

Psych Res Clin Pract. 2025; xx:1–5; doi: 10.1176/appi.prcp.20240128

Psychedelics hold potential for health and well-being. However, they are also associated with risks. By “psychedelics” we refer to classic serotonergic psychedelic drugs including psilocybin, LSD, mescaline and DMT (1). Many of our statements are also relevant to non-classic psychedelic drugs such as MDMA, ketamine, and ibogaine, although these have additional specific risk profiles. Preliminary evidence suggests that a minority (9%) of users of psychedelics in non-clinical settings have experienced functional difficulties lasting longer than a day following the acute effects of the substances (2). On some occasions, post-psychedelic difficulties can endure for weeks, months or years (3). These risks appear to be lower in clinical trials, possibly due to controlled conditions and screening for potential risk factors, but serious adverse events (AEs) can still occur in psychedelic clinical trials, with evidence of some AEs going unreported (4–7). During larger scale rollout and implementation, variations in treatment

HIGHLIGHTS

- A consensus paper from 30 psychedelic harm researchers suggests steps to make psychedelic culture and industry safer, as rising numbers of people are taking psychedelic drugs for recreational and healing purposes.
- The authors identify critical research gaps to fill, including defining the main types of psychedelic harm, the predictors of those harms, and the most effective way to treat those harms.
- They also call for better support for those experiencing post-psychedelic difficulties, including better online information, peer support groups, affordable therapy, and psychiatric consultation and medication.
- Finally, the authors call for better funding to create a psychedelic safety net, and suggest psychedelic philanthropists, investors and companies could commit 1% of their investment in psychedelics into supporting safety measures such as research and support services.

conditions, experience and expertise of providers, levels of oversight, and population heterogeneity may result in higher rates of AEs than reported in clinical trials, necessitating robust post-marketing surveillance and support (8).

Risks and adverse drug reactions are associated with all effective drug treatments, including psychotropic medicines, though some of these are often only identified post-approval through Phase IV studies and pharmacovigilance reporting programs. Psychedelic drugs are not exceptional in this regard. Although the risks of dependency and death (through accidents or toxicity) are substantially lower for classic psychedelic drugs than for many other psychotropic drugs (9), there are psychedelic-specific risks that need to be better understood and communicated. Furthermore, psychotherapeutic treatments have known AE profiles that range from 7% to 15% of patients (4); given that psychedelics are typically co-administered alongside psychotherapy or at a minimum “psychological support,” adverse responses to interpersonal components of treatment, and their interaction with drug effects, should be monitored as well (10, 11).

As usage of psychedelic drugs increases in some countries, and national and local authorities consider bills to legalize or decriminalize their access (12), it is important to learn more about psychedelic risks, communicate them more accurately, prevent them where possible, and support those who experience AEs. These steps are challenging but achievable, and will enhance the potential of psychedelic-assisted therapy to improve quality of life.

LEARNING MORE ABOUT HARMS

Through an online survey, we asked 30 psychedelic researchers, included as co-authors of this paper, to identify key research gaps around psychedelic safety, harms, and harm reduction. The most common responses were:

× *Identifying and understanding psychedelic harms:* Emerging data suggests several types of potential harms that can potentially occur during and after psychedelic use (2, 3, 13). Harms that might possibly persist beyond the acute stages of a psychedelic experience according to emerging evidence, include (1) emotional problems including anxiety, depression, and affective dysregulation, (2) manic/hypomanic and/or psychotic episodes (14), (3) increased feelings of social disconnection (15), (4) prolonged existential confusion, (5) intense or extended derealization and/or depersonalization, and (6) Hallucinogen Persisting Perception Disorder. In addition, psychedelics can sometimes increase vulnerability to interpersonal harms such as negligence, exploitation, or boundary violations on the part of friends, therapists, facilitators, or other members of a

psychedelic community (10, 16–18). Although we don't yet have a clear picture of the prevalence of these harms, it is clear they can cause intense and sometimes enduring suffering (19). There is very little research on these and other types of harms, how often they occur, or what helps people cope with them (4, 20). In addition, we need to learn more about risks unique to each individual psychedelic within various contexts.

- × *Defining and understanding predictors of adverse outcomes:* More needs to be known about the circumstances and individual differences that might predict when therapeutic use of psychedelics can lead to harms. What biological, mental, social, contextual or other predictors might account for adverse reactions, why do AEs sometimes persist after dosing sessions, and why do post-psychedelic difficulties appear to last a few days for some and months to years for others? When might challenges be part of a healing process, and when are they simply harmful? When are harms the result of suboptimal or improper care, and what practices, standards, and safeguards could prevent or reduce those harms? Some prior empirical work exists on predicting responses to psychedelics (21–24), including worsening mental health outcomes (19) but more research is needed to improve our ability to screen and otherwise safeguard against risk, a priori.
- × *Post-psychedelic “integration” psychotherapy and support:* There is consensus on the value of post-psychedelic “integration” psychotherapy or support, referring to various practices that serve to minimize harms and maximize benefits. However, research on integration is very scarce, which makes it impossible to describe the available models or practices as evidence-based (25, 26).
- × *Harm reduction and safety measures:* There is a need to better understand how to minimize harm in extra-medical and extra-legal contexts, including at retreats, festivals, churches, or when taken in private settings; the types of harms that can occur across these contexts; and specific behavior strategies, interventions, and regulations that may improve safety, including harm reduction interventions and public health education. It is of course difficult to influence people's drug-taking behavior in naturalistic settings, but certain measures might help, such as public health campaigns and better ethics and safety guidelines for retreats.

Coordinated and collaborative research is needed to address these and other research gaps regarding psychedelic risks. Several research teams are developing psychometric instruments to evaluate psychedelic-specific AEs (4, 27, 28); we encourage clinical trials and legal treatment programs to implement and further validate these instruments and, where possible, lengthen periods of monitoring to promote comparability of long-term data.

BETTER SUPPORT

We also see a need for improved support services that are responsive to different contexts of psychedelic use. This includes better online information, peer support groups, affordable therapy, and psychiatric consultation and medication, as well as better government-funded public health education. People recovering from post-psychedelic difficulties say they are helped by non-judgmental and non-dogmatic therapeutic support, whereas they sometimes feel less supported by psychedelic integration therapists who see psychedelics as spiritual agents and tell them to “trust the medicine” or similarly dogmatic statements (29). Findings that describe common psychedelic-related problems should be shared with therapeutic and psychiatric professions, including emerging evidence on efficacious remedies.

MORE ACCURATE COMMUNICATION

Finally, there is a need for more accurate communication regarding the potential benefits and risks of psychedelic drugs by researchers, companies, academic institutions, investors, campaigners, and media. As with other forms of medicine, practitioners must strive to obtain informed consent, which includes accurately and transparently conveying the risk of symptoms worsening, adverse effects, or unexpected changes (e.g., in metaphysical beliefs) (30), without negatively priming the client/patient (31, 32). It is incumbent upon all stakeholders to find a balance between inadequate and excessive caution, which can be challenging in a complex media environment oriented towards simplistic narratives.

Some of these harm reduction issues are exacerbated by systemic barriers, such as the continued illegality of most psychedelic drugs in most jurisdictions, and the lack of significant government investment in psychedelic research or public health communication. In the absence of significant funding toward psychedelic safety from government bodies, pharmaceutical companies developing psychedelic therapies and/or leading psychedelic philanthropists could commit as little as 1% of their investments to funding research, education, and support services to support psychedelic safety initiatives. One precedent for this is the 3% of total funding from the U.S. National Center for Human Genome Research, which is committed to Ethical, Legal, and Social Implications Research (33).

These measures would constitute important steps toward developing a psychedelic “safety net” to inform the public of risks, support those who experience post-psychedelic difficulties, and maximize the potential benefits of psychedelic medicines.

AUTHOR AND ARTICLE INFORMATION

The Challenging Psychedelic Experiences Project, London, UK (Evans); International Center for Ethnobotanical Education, Research and

Services (ICEERS), Barcelona, Spain (Aixalà); Department of Psychiatry & Behavioral Sciences, University of California, San Francisco, California, USA (Anderson); Center for the Science of Psychedelics, University of California Berkeley, Berkeley, California, USA (Anderson); GuideSite Consulting LLC, New York City, New York, USA (Brennan); Centre for Psychedelic Research, Imperial College London, London, UK (Bremner); Department of Psychiatry, Research School of Behavioural and Cognitive Neurosciences, University Medical Center Groningen, University of Groningen, Groningen, the Netherlands (Breeksema); Department of Psychiatry, University of Alberta, Edmonton, Alberta, Canada (Burbach); Molecular Psychiatry Lab, Faculty of Science and Medicine, University of Fribourg, Fribourg, Switzerland (Calder); Psychedelics Division - Neuroscape, Department of Neurology, University of California San Francisco, San Francisco, California, USA (Carhart-Harris); Department of Health Policy and Management, Johns Hopkins Bloomberg School of Public Health and the Berman Institute of Bioethics (Cheung) and University Writing Program (Devenot), Johns Hopkins University, Baltimore, Maryland, USA; Fluence Training LLC, Woodstock, New York, USA (Gorman, Stahre); Institute of Psychiatry and Neurology, Warsaw, Poland (Gręń); Department of Psychiatry and Behavioral Neurobiology, University of Alabama at Birmingham, Birmingham, Alabama, USA (Hendricks); Department of Psychiatry & Behavioral Medicine, Medical College of Wisconsin, Milwaukee, Wisconsin, USA (Holoýda); Contra Costa County Detention Health Services, Martinez, California, USA (Holoýda); Medical Sciences Division, Department of Psychiatry, University of Oxford, Oxford, UK (Jacobs); Department of Psychology, Psychopharmacology and Addiction Research Centre, University of Exeter, Exeter, UK (Krecké); Jacobs School of Medicine and Biomedical Sciences, University at Buffalo, Buffalo, New York, USA (Kruger); School of Human Sciences, University of Greenwich, London, UK (Luke, Robinson); Psychedelic Substances Research Group, Psychiatric University Clinic of Charité at St. Hedwig Hospital, Charité – Universitätsmedizin Berlin, Berlin, Germany (Majić); Center for Medical Ethics and Health Policy, Baylor College of Medicine, Houston, Texas, USA (McGuire); Department of Medicine, University of California San Francisco, San Francisco, California, USA (Mehtani); Department of Psychiatry and Behavioral Sciences, Baylor College of Medicine, Houston, Texas, USA (Mathai); William G. Nash Foundation, Santa Monica, California, USA (Nash); School of Pharmacy, University of Auckland, Auckland, New Zealand (Noorani); Emory Center for Psychedelics and Spirituality, Emory University, Atlanta, Georgia, USA (Palitsky); Department of Neurobiology, Care Sciences and Society, Karolinska Institute, Stockholm, Sweden (Simonsson); Cognitive Psychology, Institute of Psychology, Leiden University, Leiden, The Netherlands (van Elk); Center for Psychedelic and Consciousness Research, Johns Hopkins University School of Medicine, Baltimore, Maryland, USA (Yaden).

Send correspondence to Dr. Robinson (o.c.robinson@greenwich.ac.uk).

Jules Evans would like to acknowledge Daniel Ingram and Emergence Benefactors for their support in CPEP's work.

Dr. William Brennan is the co-founder of GuideSite Consulting and has received funding in the past 3 years from Cybin Inc, Gilgamesh Pharmaceuticals, Fluence, Psychedelics Today, and Naropa University. Prof. Robin L. Carhart-Harris has financial relationships with TRYP Therapeutics, Journey Collab, Osmind, MindState, and Otsuka. Jules Evans has received funding from Emergence Benefactors, the William G. Nash Foundation and the Sarlo Family. Dr. Peter Hendricks was previously in paid advisory relationships with Eleusis Benefit Corporation, Reset Pharmaceuticals Inc., and Silo Pharma and is currently in paid advisory relationships with Bright Minds Biosciences Ltd. and Journey Colab Corporation. Dr. Hendricks is also co-founder of Equulus Therapeutics and Mycelial Health. Dr. Amy McGuire serves as a paid consultant for Lykos Therapeutics and receives in-kind compensation from Andean Paths. Dr. Tehseen Noorani was the part-time Scholar-in-Residence at Tactogen Public Benefit Corporation

until May 2024, working on projects relating to justice, accessibility and expanded notions of psychedelic clinical trials. Dr. Roman Palitsky has received funding from the Jim Joseph Foundation through Shefa Jewish Psychedelic Support and the Sarlo Family Foundation. Dr. Otto Simonsson co-founded Eudelics AB and has received a small payment from Mindfully Sweden AB for providing educational content. Dr. Michiel van Elk received funding from the Netherlands Organization for Scientific Research (NWO), the BIAL Foundation and the John Templeton Foundation and he is a board member of Open Foundation. Dr. David Yaden has received research funding from the National Institute of Health (NIH), Heffter Institute, and through the Johns Hopkins Center for Psychedelic and Consciousness Research with support provided by Tim Ferriss, Matt Mullenweg, Blake Mycoskie, Craig Nerenberg, and the Steven and Alexandra Cohen Foundation, and has given paid lectures to the Integrative Psychiatry Institute. Marc Aixalà has received payment for consultant services from Compass Pathways, and has given paid lectures to the Integrative Psychiatry Institute, and the University Health Network, and has a financial relationship with ICEERS. Dr. Ingmar Gorman is the co-founder and Chief Executive Officer of Fluence, a company that has received funding from Cybin Inc., Tryptamine Therapeutics, Reset Pharmaceuticals, Beckley Psytech, ATAI Life Sciences, Lykos Therapeutics, Clairvoyant, Journey Clinical, Psyence, and Reunion Neuroscience. Additionally, Dr. Gorman serves on the Scientific Advisory Board of Journey Clinical. All other authors report no financial relationships with commercial interests. No funding was received for the preparation of this manuscript.

This is an open access article under the terms of the Creative Commons Attribution-NonCommercial License, which permits use, distribution and reproduction in any medium, provided the original work is properly cited and is not used for commercial purposes.

© 2025 The Author(s). Psychiatric Research and Clinical Practice published by Wiley Periodicals LLC on behalf of American Psychiatric Association.

Received October 18, 2024; revised January 6, 2025; accepted January 11, 2025.

REFERENCES

- Nichols DE, Nichols CD, Hendricks PS. Proposed consensus statement on defining psychedelic drugs. *Psychedelic Medicine*. 2023;1(1):12–3. <https://doi.org/10.1089/psymed.2022.0008>
- Simonsson O, Hendricks PS, Chambers R, Osika W, Goldberg SB. Prevalence and associations of challenging, difficult or distressing experiences using classic psychedelics. *J Affect Disord*. 2023;326:105–10. <https://doi.org/10.1016/j.jad.2023.01.073>
- Evans J, Robinson OC, Argyri EK, Suseelan S, Murphy-Beiner A, McAlpine R, et al. Extended difficulties following the use of psychedelic drugs: a mixed methods study. *PLoS One*. 2023;18(10):e0293349. <https://doi.org/10.1371/journal.pone.0293349>
- Palitsky R, Kaplan DM, Perna J, Bosshardt Z, Maples-Keller JL, Levin-Aspenson HF, et al. A framework for assessment of adverse events occurring in psychedelic-assisted therapies. *J Psychopharmacol*. 2024;38(8):690–700. <https://doi.org/10.1177/02698811241265756>
- Breeksema JJ, Kuin BW, Kamphuis J, van den Brink W, Vermetten E, Schoevers RA. Adverse events in clinical treatments with serotonergic psychedelics and MDMA: a mixed-methods systematic review. *J Psychopharmacol*. 2022;36(10):1100–17. <https://doi.org/10.1177/0269881221116926>
- Mustafa RA, McQueen B, Nikitin D, Nhan E, Zemplyni A, DiStefano MJ, et al. MDMA-assisted psychotherapy for post-traumatic stress disorder: effectiveness and value; final evidence report. *Inst Clin Econ Rev*. 2024;1–56.
- Hinkle JT, Graziosi M, Nayak SM, Yaden DB. Adverse events in studies of classic psychedelics: a systematic review and meta-analysis. *JAMA Psychiatr*. 2024;81(12):1225–35. <https://doi.org/10.1001/jamapsychiatry.2024.2546>
- Meling D, Ehrenkranz R, Nayak SM, Aicher HD, Funk X, van Elk M, et al. Mind the psychedelic hype: characterizing the risks and benefits of psychedelics for depression. *Psychoactives*. 2024;3(2):215–34. <https://doi.org/10.3390/psychoactives3020014>
- Kopra EI, Penttinen J, Rucker JJ, Copeland CS. Psychedelic-related deaths in England, Wales and Northern Ireland (1997–2022). *Prog Neuro-Psychopharmacol Biol Psychiatry*. 2025;136:111177. <https://doi.org/10.1016/j.pnpbp.2024.111177>
- McNamee S, Devenot N, Buisson M. Studying harms is key to improving psychedelic-assisted therapy—participants call for changes to research landscape. *JAMA Psychiatr*. 2023;80(5):411–2. <https://doi.org/10.1001/jamapsychiatry.2023.0099>
- Perna J, Trop J, Palitsky R, Bosshardt Z, Valentine H, Dunlop B, et al. Prolonged adverse effects from repeated psilocybin use in an underground psychedelic therapy training program: a case report. *BMC Psychiatr*. 2024. in press.
- Kilmer B, Priest M, Ramchand R, Rogers RC, Senator B, Palmer K. Considering alternatives to psychedelic drug prohibition [Internet]. Santa Monica, RAND Corporation, 2024. https://www.rand.org/content/dam/rand/pubs/research_reports/RR2800/RR2825-1/RAND-RR2825-1.pdf. Accessed Sept 1, 2024
- Nayak SM, Johnson MW. Disorders due to substance use: hallucinogens and MDMA-related substances. In: Tasman A, editor. *Tasman's psychiatry*. Cham, Switzerland: Springer International Publishing; 2023. p. 1–34.
- Honk L, Stenfors CUD, Goldberg SB, Hendricks PS, Osika W, Dourron HM, et al. Longitudinal associations between psychedelic use and psychotic symptoms in the United States and the United Kingdom. *J Affect Disord*. 2024;351:194–201. <https://doi.org/10.1016/j.jad.2024.01.197>
- Weiss B, Sleep C, Miller JD, Campbell WK. Examining the therapeutic effect of ceremonial ayahuasca on narcissistic personality and antagonistic externalizing in adults. *J Pers Disord*. 2023;37(2):131–55. <https://doi.org/10.1521/pe.2023.37.2.131>
- Holoyda B. Malpractice and other civil liability in psychedelic psychiatry. *Psychiatr Serv*. 2023;74(1):92–5. <https://doi.org/10.1176/appi.ps.20220528>
- Holoyda B. The perilous policy of Oregon's psilocybin services. *J Am Acad Psychiatr Law*. 2023;51:160–6.
- Brennan W, Jackson MA, MacLean K, Ponterotto JG. A qualitative exploration of relational ethical challenges and practices in psychedelic healing. *J Humanist Psychol*. 2021;00221678211045265. <https://doi.org/10.1177/00221678211045265>
- Bremner R, Katati N, Shergill P, Erritzoe D, Carhart-Harris RL. Case analysis of long-term negative psychological responses to psychedelics. *Sci Rep*. 2023;13(1):15998. <https://doi.org/10.1038/s41598-023-41145-x>
- Palitsky R, Canby NK, Van Dam NT, Levin-Aspenson HF, Kaplan DM, Maples-Keller J, et al. Leveraging meditation research for the study of psychedelic-related adverse effects. *Int Rev Psychiatr*. 2024;13:1–5. <https://doi.org/10.1080/09540261.2024.2420745>
- Aday JS, Davis AK, Mitzkovitz CM, Bloesch EK, Davoli CC. Predicting reactions to psychedelic drugs: a systematic review of states and traits related to acute drug effects. *ACS Pharmacol Transl Sci*. 2021;4(2):424–35. <https://doi.org/10.1021/acspsci.1c00014>
- Haijen ECHM, Kaelen M, Roseman L, Timmermann C, Kettner H, Russ S, et al. Predicting responses to psychedelics: a prospective study. *Front Pharmacol*. 2018;9:897. <https://doi.org/10.3389/fphar.2018.00897>

23. Ko K, Carter B, Cleare AJ, Rucker J. Predicting the intensity of psychedelic-induced mystical and challenging experience in a healthy population: an exploratory post-hoc analysis. *Neuropsychiatric Dis Treat*. 2023;19:2105–13. <https://doi.org/10.2147/ndt.s426193>
24. Angyus M, Osborn S, Haijen E, Erritzoe D, Peill J, Lyons T, et al. Validation of the imperial psychedelic predictor scale. *Psychol Med*. 2024;54(12):3539–47. <https://doi.org/10.1017/s0033291724002204>
25. Thal SB, Baker P, Marinis J, Wieberneit M, Sharbanee JM, Bruno R, et al. Therapeutic frameworks in integration sessions in substance-assisted psychotherapy: a systematised review. *Clin Psychol Psychother*. 2023;31(1):e2945. <https://doi.org/10.1002/cpp.2945>
26. Greń J, Gorman I, Ruban A, Tylš F, Bhatt S, Aixalà M. Call for evidence-based psychedelic integration. *Exp Clin Psychopharmacol*. 2024;32(2):129–35. <https://doi.org/10.1037/pha0000684>
27. Calder AE, Hasler G. Validation of the Swiss psychedelic side effects inventory: standardized assessment of adverse effects in studies of psychedelics and MDMA. *J Affect Disord*. 2024;365:258–64. <https://doi.org/10.1016/j.jad.2024.08.091>
28. Carhart-Harris R, Giribaldi B, Watts R, Baker-Jones M, Murphy-Beiner A, Murphy R, et al. Trial of psilocybin versus escitalopram for depression. *N Engl J Med*. 2021;384(15):1402–11. <https://doi.org/10.1056/nejmoa2032994>
29. Robinson OC, Evans J, Luke D, McAlpine R, Sahely A, Fisher A, et al. Coming back together: a qualitative survey study of coping and support strategies used by people to cope with extended difficulties after the use of psychedelic drugs. *Front Psychol*. 2024;15:1369715. <https://doi.org/10.3389/fpsyg.2024.1369715>
30. Timmermann C, Kettner H, Letheby C, Roseman L, Rosas FE, Carhart-Harris RL. Psychedelics alter metaphysical beliefs. *Sci Rep*. 2021;11(1):22166. <https://doi.org/10.1038/s41598-021-01209-2>
31. Marks M, Brendel RW, Shachar C, Cohen IG. Essentials of informed consent to psychedelic medicine. *JAMA Psychiatr*. 2024;81(6):611–7. <https://doi.org/10.1001/jamapsychiatry.2024.0184>
32. Smith WR, Sisti D. Ethics and ego dissolution: the case of psilocybin. *J Med Ethics*. 2021;47(12):807–14. <https://doi.org/10.1136/medethics-2020-106070>
33. Dolan DD, Lee SS, Cho MK. Three decades of ethical, legal, and social implications research: looking back to chart a path forward. *Cell Genom*. 2022;2(7):100150. <https://doi.org/10.1016/j.xgen.2022.100150>