

EDUCATION

Ten simple rules for successfully carrying out funded research projects

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Introduction

Receiving research funding, from external or internal sources, is one of the most important and challenging tasks for investigators around the world [1,2]. There are many prestigious research funding organizations, such as the National Institutes of Health of the US (NIH), the National Health Service of the UK (NHS), the National Science Foundation of the US (NSF), the European Commission (EC), the National Natural Science Foundation of China (NSFC), and the Japan Society for the Promotion of Science (JSPS), among many others. Although several scientific articles have provided important advice on how to write adequate research proposals and how to present them to be funded [3–5], how to become a principal investigator [6], and/or how to establish a laboratory [7], there is still a scarcity of articles addressing how to carry out research projects successfully and in an ethical way after the proposal has been granted.

Obtaining funding is usually the beginning of the research cycle [2] and an adequate implementation of the scientific activities, as proposed in the grant application, is of paramount importance for the generation of new knowledge, the preservation of scientific collaborations, and the academic advancement of the researchers [1].

In these Ten Simple Rules, we provide valuable recommendations for successfully carrying out funded research projects, from our perspective and experience as both researchers and peer reviewers. These Ten Simple Rules are focused on activities carried out after a grant is awarded and they will be particularly useful for junior researchers globally. Regarding the presentation order of these Ten Simple Rules, some of them involve activities that are sequential (such as Rules 5, 6, and 9) and others comprise actions in parallel (such as Rules 3, 4, and 7). A graphical overview of the proposed Ten Simple Rules is presented in Fig 1.

Rule 1: Focus the efforts on achieving the goals and deliverables of the project

Usually, funding bodies generate a contract, or a similar document, with the defined deliverables of the research project, such as peer-reviewed publications, presentations, patent applications, training of students, and public outreach activities, among others. In many cases, the contract is sent to administrative offices in the institution of the principal investigator and, depending on the funder, the expected deliverables are previously defined in the call for applications. The contract, or a similar document, will be a key guide from the start



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Fig 1. An overview of the Ten Simple Rules.

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of the project, as the timeline, and budget, of a proposal is focused on the generation of those deliverables and the achievement of the proposed research goals; considering those deliverables from an early stage of the project will be important for an adequate and successful execution. Commonly, the timeline of a research project is presented in a Gantt chart, describing the main activities and the corresponding months or weeks projected for their execution [8].

Rule 2: Define and assign responsibilities and roles of the research team members

Commonly, the grant application involves researchers with specific roles, such as the Principal Investigator (PI, the person leading the project) and the coinvestigators, who are proposed as responsible for certain activities, such as evaluation of patients or animals or statistical analysis of data, based on their academic profiles and research experience. In large projects, there is a possibility of hiring a Project Manager (PM), who is responsible for coordinating multiple scientific and administrative tasks [9]. Each member of a research team should have clear responsibilities, in order to complete the expected tasks in the predefined timeline and to avoid conflicts between them; it is of particular relevance for multicenter studies or for projects with challenging topics or methods. Other roles involve external advisors, administrative staff or students, each with a specific participation in the research project. It is advisable to plan for contingencies related to team members, such as having standard procedures for handling transitions associated with the arrival or departure of staff. Details of authorship should be reviewed in advance, following international recommendations and taking into account the main principles of research integrity [10].

Rule 3: Schedule regular meetings among the research team members

Adequate communication among members of a research team, and between sub teams, is a key aspect in a research project. Regular meetings facilitate the periodic presentation of advances, in addition to providing a platform for discussion and documentation of findings and of potential challenges. In addition, consultations with administrative personnel from institutional offices (such as those related to budget or research oversight) are also important. Meetings should have a well-structured agenda about key issues and their frequency should be balanced, in order to avoid having too many sessions and wasting the valuable time of researchers.

An early identification and management of issues, such as difficult situations in communication between the research team or failures in experiments, may avoid occurrence of larger problems in the future. In the context of multi-institutional and international collaborations (which have particular challenges in terms of needing further definitions of roles and responsibilities), online systems for videoconferencing are time efficient and cost effective approaches for project meetings, in addition to in-person meetings [11]. Other online resources and technological tools for project management and collaboration, such as instant messaging applications, could contribute to the generation of knowledge and facilitate communication between research team members and collaborators [12].

Rule 4: Comply with regulatory, ethical, and research integrity guidelines

A research team should have a strong commitment to comply with scientific integrity principles and best practices [13], highlighting the requirement for establishing internal strategies that promote the continuous adherence to national and local ethical regulations, such as guaranteeing the confidentiality of clinical data from participants [14]. In an era of electronic publication and social media [15], failures of scientific integrity or occurrence of research misconduct are even more visible.

In this context, in addition to international guidelines, countries have different types of laws and local regulations related to ethical and research integrity aspects, which should be actively taken into account by the research team. In terms of research involving human subjects, 2 main aspects emerge: approval by an institutional research ethics committee, which is commonly required by funders before the start of the project, and the signing of informed consent forms by participants [16], a process that should be carefully monitored. Regarding research with animal models, approval by an institutional animal ethics committee is commonly required [17]. In addition, other legal and administrative permissions, such as those from external or public institutions, might be needed in certain cases.

A Scientific Integrity Consortium, composed by representatives from 27 institutions from the United States and Canada, has developed a set of 9 core principles and best practices for scientific integrity that every researcher should comply with [18]. Some of these principles, of interest for teams carrying out research projects, are requiring universal training on responsible research practices, encouraging reproducibility of research and strengthening scientific integrity oversight [18].

Rule 5: Follow predefined data analysis plans

An adequate application of key statistical concepts, such as the calculation of sample sizes, is important not only for the analysis of results, but also for design and execution of research

projects [19,20]. In this context, data analysis plans are common key components of grant applications, predefining aspects such as definitions of groups, key variables to be analyzed, and statistical tests to be used [21]. Many funders require data management plans and a previous Ten Simple Rules paper gave advice about its creation [22]. Following those predefined plans would facilitate an adequate analysis of data [23], avoiding “p-hacking” [24], among other inadequate practices. In multiple research areas, there has been a growth in carrying out preregistration of studies [25,26] and recently Lakens has provided recommendations about when and how to deviate from preregistrations [27]. In the era of Open Science, a research team must be aware that scientific journals may require them to share their data plans when submitting a derived manuscript [28,29].

Rule 6: Use validated methods for data collection and keep backups of data and analyses

The use of well-established methods for data collection, such as the employment of previously validated psychosocial scales [30] or well-known and reliable molecular methodologies, is key for obtaining high-quality research results [22]. A periodic monitoring of data quality is beneficial for research projects [31] and there are multiple approaches for doing so (such as the use of positive and negative controls or external standards, among others), depending on the specific methods used. As an example from molecular methods [32], a positive control is a sample known to have the feature of interest (such as a target for PCR amplification) and a negative control is a sample known as not having the feature of interest.

In some cases, the project might involve the creation, adaptation, or refinement of novel methods [30], which usually requires time and resources for their comparison with previous approaches. In many cases, an initial pilot phase [33] allows the identification of minor adjustments needed for data collection on a larger scale. In multicenter projects, it is advised that all participating sites employ the same protocols.

Misplacement, accidental damage, or loss of research data, such as results from phenotypic evaluations or molecular studies, would be catastrophic for any research project. In this context, strategies such as the use of Electronic Laboratory Notebooks [34,35], in addition to the frequent employment of multiple backups (in the cloud and in different computers) would avoid the loss of research data [22]. Constant backup of derivative files, with evolving versions of data analyses and manuscripts, is also recommended. An adequate structure of databases [36] involves their complete annotation and facilitates future data reanalysis. Another previous Ten Simple Rules article about digital data storage [29] would be a very useful resource for researchers. In addition, Boland and colleagues wrote an interesting paper about enabling multisite collaborations through data sharing [37].

Rule 7: Implement the research budget and promote adequate administrative management

Although there are differences between calls for applications and between funders, there are 2 main types of costs, direct and indirect. Direct costs are related to the specific needs of the project and commonly include categories such as personnel, consultations and subcontracts, equipment, supplies, and travel, among others [12,38]. On the other hand, indirect costs are funds to cover the research infrastructure of the institution [39].

Commonly, costs associated with personnel are some of the largest in a research budget and there are previous suggestions regarding the adequate selection, recruiting, hiring, and management of scientific personnel [9].

There are some previous recommendations regarding the implementation of the research budget, such as the need for its revisions after the notice of award, the importance of including projections of inflation in multiyear grants and taking into account the possibility of having increased costs for certain categories [40]. Of particular interest for certain world regions, such as the Global South, there is the common need of considering the increased costs and times related to importing certain equipment and reagents from abroad. In terms of project management, which involves multiple administrative aspects, certain aspects are key, such as the need for strategic planning, adequate communication, and frequent monitoring, among others [8]. Additional elements to take into account are the constant need for training on budget management for the PIs, the adequate communication between the PI and the Project Manager, and having frequent administrative support from the institution [38].

Rule 8: Assign enough time for reports

Final, and partial or progress, reports are major deliverables from research projects and their elaboration commonly involves a large amount of time and dedication. Partial or progress reports are quite useful for evaluating the performance of project activities in previous periods and adequately planning experiments and analyses for upcoming periods.

Final reports include a description and discussion of the results obtained and the perspectives for future studies, in addition to budget reports and generated deliverables. In many cases, it involves weeks of work and the participation of several researchers and support staff. Although its writing would need the involvement of all team members, the coordination of its elaboration is commonly a major responsibility of the PI (in close collaboration with the PM, when possible). As previously discussed, an adequate documentation of research procedures and findings would diminish the possibility that the departure of team members, among other unexpected events, negatively affect the elaboration of the research reports.

Rule 9: Publish the findings and share the results of your project

Publication in peer-reviewed scientific journals remains one of the main forms to communicate research findings [41]. Publishing your positive or negative results, avoiding an overinterpretation of actual research findings [42], facilitates that the international scientific community receives and discusses the results and conclusions from your project [43]. In addition to original articles, which are the primary form of publication for new research results, consider other types of articles such as reviews, viewpoints, perspectives, and special articles to disseminate your insights about a research topic. A recent Ten Simple Rules paper provided suggestions for writing Registered Reports [44], which are a type of research publication where the proposed methodology is peer reviewed prior to data collection, to avoid publication and reporting biases. It involves 2 stages: Stage 1, where the introduction and proposed methods and analysis plans are reviewed, and Stage 2, where the results and discussion are included and reviewed [44].

Following international standards for the reporting of studies, such as those from the EQUATOR Network [45], promotes an adequate presentation of research findings. From an Open Science perspective, deposition of open research data in public repositories promotes transparency of results [46, 47] and facilitates replications of results and secondary analyses [48]. In this context, the FAIR Guiding Principles are important and involve the following aspects: being Findable, Accessible, Interoperable, and Reusable [49]. Many funding organizations have policies with specific requests about research data sharing and some examples of these policies can be found at: <https://sharing.nih.gov/data-management-and-sharing-policy>

(for the NIH, USA) and <https://wellcome.org/grant-funding/guidance/data-software-materials-management-and-sharing-policy> (for the Wellcome Trust, UK).

Rule 10: Share your results with the general public

Public outreach is another major aspect of scientific research [50], particularly because scientific projects are commonly taxpayer-funded, among others. In this regard, appropriate communication of research results to the public is of paramount importance, which involves strategies such as talks or texts oriented for the communities, using an easily understandable language [51] and avoiding exaggeration or misrepresentation of the actual research findings [52]. In addition, communication of research results at national and international conferences [53], and to other major stakeholders, such as professional societies or associations of patients, is also recommended. Social media, infographics, and podcasts are evolving as useful tools for the dissemination of new scholarly material and resources [53]. Consequently, it is becoming increasingly important for research teams to undergo training in the effective dissemination and knowledge translation of their work [54].

Future considerations

Several of the Ten Simple Rules presented here are not exclusive to the process of carrying out funded research projects, as they are also necessary for other related scientific processes, such as the writing of grant applications or manuscripts. Scientific research is in constant evolution, and it is possible that in the near future, the execution of research projects also changes, taking into account aspects such as the increase of international mega-collaborations [55], the growth in the use of automated and high-throughput tools, including recent tools from generative artificial intelligence, and the constant need to verifying the integrity and quality of research findings [39], among others. Of particular importance, researchers should always carry out research projects with the highest standards of ethics and research integrity [56], avoiding negative practices, such as “Helicopter Research” [57], or gift or ghost authorship [10]. For the individual research teams, each new project is an opportunity to learn from both failures and successes, in order to refine and improve management strategies for future research initiatives. Finally, research institutions and groups should consider the need for frequent training activities related to multiple aspects of the execution of scientific projects [38].

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References

1. Forero DA, Moore JH. Considerations for higher efficiency and productivity in research activities. *Bio-Data Min.* 2016; 9:35. Epub 2016/11/12. <https://doi.org/10.1186/s13040-016-0115-3> PMID: 27833658.
2. Moses H 3rd, Matheson DH, Cairns-Smith S, George BP, Palisch C, Dorsey ER. The anatomy of medical research: US and international comparisons. *JAMA.* 2015; 313(2):174–189. Epub 2015/01/15. <https://doi.org/10.1001/jama.2014.15939> PMID: 25585329.
3. Bourne PE, Chalupa LM. Ten simple rules for getting grants. *PLoS Comput Biol.* 2006; 2(2):e12. Epub 2006/02/28. <https://doi.org/10.1371/journal.pcbi.0020012> PMID: 16501664.
4. Guyer RA, Schwarze ML, Gosain A, Maggard-Gibbons M, Keswani SG, Goldstein AM. Top ten strategies to enhance grant-writing success. *Surgery.* 2021; 170(6):1727–1731. Epub 2021/07/24. <https://doi.org/10.1016/j.surg.2021.06.039> PMID: 34294451.
5. Weidmann AE, Cadogan CA, Fialova D, Hazen A, Henman M, Lutters M, et al. How to write a successful grant application: guidance provided by the European Society of Clinical Pharmacy. *Int J Clin*

- Pharmacol. 2023; 45(3):781–786. Epub 2023/03/07. <https://doi.org/10.1007/s11096-023-01543-7> PMID: 36877291.
6. Tregoning JS, McDermott JE. Ten Simple Rules to becoming a principal investigator. *PLoS Comput Biol.* 2020; 16(2):e1007448. Epub 2020/02/23. <https://doi.org/10.1371/journal.pcbi.1007448> PMID: 32078632.
 7. Kaiser M. Ten simple rules for establishing an experimental lab. *PLoS Comput Biol.* 2024; 20(1): e1011778. Epub 2024/01/25. <https://doi.org/10.1371/journal.pcbi.1011778> PMID: 38271301.
 8. Guanci G, Bjork C. An introduction to project management. *Nurs Manage.* 2019; 50(10):20–26. Epub 2019/09/10. <https://doi.org/10.1097/01.NUMA.0000580584.07510.9b> PMID: 31498215.
 9. Kang DH, Davis L, Habermann B, Rice M, Broome M. Hiring the right people and management of research staff. *West J Nurs Res.* 2005; 27(8):1059–1066. Epub 2005/11/09. <https://doi.org/10.1177/0193945905279926> PMID: 16275698.
 10. Misra DP, Ravindran V, Agarwal V. Integrity of Authorship and Peer Review Practices: Challenges and Opportunities for Improvement. *J Korean Med Sci.* 2018; 33(46):e287. Epub 2018/11/13. <https://doi.org/10.3346/jkms.2018.33.e287> PMID: 30416407.
 11. Lin Y, Frey CB, Wu L. Remote collaboration fuses fewer breakthrough ideas. *Nature.* 2023; 623(7989):987–991. Epub 2023/11/30. <https://doi.org/10.1038/s41586-023-06767-1> PMID: 38030778.
 12. Moutinho JA, Rabechini R Junior, Fernandes G. Ecosystem of a collaborative research center in project studies: A conceptual framework. *Rev Adm Mackenzie.* 2023; 24:eRAMR230254.
 13. Helgesson G, Bülow W. Research integrity and hidden value conflicts. *J Acad Ethics.* 2023; 21(1):113–123.
 14. O’Keefe CM, Rubin DB. Individual privacy versus public good: protecting confidentiality in health research. *Stat Med.* 2015; 34(23):3081–3103. Epub 2015/06/06. <https://doi.org/10.1002/sim.6543> PMID: 26045214.
 15. Wen J, Wang W. The future of ChatGPT in academic research and publishing: A commentary for clinical and translational medicine. *Clin Transl Med.* 2023; 13(3):e1207. Epub 2023/03/22. <https://doi.org/10.1002/ctm2.1207> PMID: 36941774.
 16. Mehta P, Zimba O, Gasparyan AY, Seil B, Yessirkepov M. Ethics Committees: Structure, Roles, and Issues. *J Korean Med Sci.* 2023; 38(25):e198. Epub 2023/06/27. <https://doi.org/10.3346/jkms.2023.38.e198> PMID: 37365729.
 17. Kiani AK, Pheby D, Henehan G, Brown R, Sieving P, Sykora P, et al. Ethical considerations regarding animal experimentation. *J Prev Med Hyg.* 2022; 63(2 Suppl 3):E255–E266. Epub 2022/12/09. <https://doi.org/10.15167/2421-4248/jpmh2022.63.2S3.2768> PMID: 36479489.
 18. Kretser A, Murphy D, Bertuzzi S, Abraham T, Allison DB, Boor KJ, et al. Scientific Integrity Principles and Best Practices: Recommendations from a Scientific Integrity Consortium. *Sci Eng Ethics.* 2019; 25(2):327–355. Epub 2019/02/28. <https://doi.org/10.1007/s11948-019-00094-3> PMID: 30810892.
 19. Dwivedi AK. How to write statistical analysis section in medical research. *J Invest Med.* 2022; 70(8):1759–1770. Epub 2022/06/17. <https://doi.org/10.1136/jim-2022-002479> PMID: 35710142.
 20. Makin TR, Orban de Xivry JJ. Ten common statistical mistakes to watch out for when writing or reviewing a manuscript. *Elife.* 2019; 8. Epub 2019/10/10. <https://doi.org/10.7554/eLife.48175> PMID: 31596231.
 21. Cressman KA, Sharp JL. Crafting statistical analysis plans: A cross-discipline approach. *Stat.* 2022; 11(1):e528.
 22. Michener WK. Ten Simple Rules for Creating a Good Data Management Plan. *PLoS Comput Biol.* 2015; 11(10):e1004525. Epub 2015/10/23. <https://doi.org/10.1371/journal.pcbi.1004525> PMID: 26492633.
 23. Schwab S, Janiaud P, Dayan M, Amrhein V, Panczak R, Palagi PM, et al. Ten simple rules for good research practice. *PLoS Comput Biol.* 2022; 18(6):e1010139. Epub 2022/06/24. <https://doi.org/10.1371/journal.pcbi.1010139> PMID: 35737655.
 24. Head ML, Holman L, Lanfear R, Kahn AT, Jennions MD. The extent and consequences of p-hacking in science. *PLoS Biol.* 2015; 13(3):e1002106. Epub 2015/03/15. <https://doi.org/10.1371/journal.pbio.1002106> PMID: 25768323.
 25. Hardwicke TE, Wagenmakers EJ. Reducing bias, increasing transparency and calibrating confidence with preregistration. *Nat Hum Behav.* 2023; 7(1):15–26. Epub 2023/01/28. <https://doi.org/10.1038/s41562-022-01497-2> PMID: 36707644.
 26. Hou H, Ding G, Zhao X, Meng Z, Xu J, Guo Z, et al. Comparisons between protocols and publications of case-control studies: analysis of potential causes of non-reproducibility and recommendations for enhancing the quality of personalization in healthcare. *EPMA J.* 2019; 10(2):101–108. Epub 2019/07/02. <https://doi.org/10.1007/s13167-019-00165-2> PMID: 31258815.

27. Lakens D. When and How to Deviate from a Preregistration. *Collabra: Psychology*. 2024; 10(1):117094.
28. Banks GC, Field JG, Oswald FL, O'Boyle EH, Landis RS, Rupp DE, et al. Answers to 18 Questions About Open Science Practices. *J Bus Psychol*. 2019; 34(3):257–270. <https://doi.org/10.1007/s10869-018-9547-8>
29. Danchev V, Min Y, Borghi J, Baiocchi M, Ioannidis JPA. Evaluation of Data Sharing After Implementation of the International Committee of Medical Journal Editors Data Sharing Statement Requirement. *JAMA Netw Open*. 2021; 4(1):e2033972. Epub 2021/01/29. <https://doi.org/10.1001/jamanetworkopen.2020.33972> PMID: 33507256.
30. Sousa VD, Rojjanasrirat W. Translation, adaptation and validation of instruments or scales for use in cross-cultural health care research: a clear and user-friendly guideline. *J Eval Clin Pract*. 2011; 17(2):268–274. Epub 2010/09/30. <https://doi.org/10.1111/j.1365-2753.2010.01434.x> PMID: 20874835.
31. Ehrlinger L, Woss W. A Survey of Data Quality Measurement and Monitoring Tools. *Front Big Data*. 2022; 5:850611. Epub 2022/04/19. <https://doi.org/10.3389/fdata.2022.850611> PMID: 35434611.
32. Maurer JJ. Rapid detection and limitations of molecular techniques. *Annu Rev Food Sci Technol*. 2011; 2:259–279. Epub 2011/12/02. <https://doi.org/10.1146/annurev.food.080708.100730> PMID: 22129383.
33. Teresi JA, Yu X, Stewart AL, Hays RD. Guidelines for Designing and Evaluating Feasibility Pilot Studies. *Med Care*. 2022; 60(1):95–103. Epub 2021/11/24. <https://doi.org/10.1097/MLR.0000000000001664> PMID: 34812790.
34. Berezin CT, Aguilera LU, Billerbeck S, Bourne PE, Densmore D, Freemont P, et al. Ten simple rules for managing laboratory information. *PLoS Comput Biol*. 2023; 19(12):e1011652. Epub 2023/12/07. <https://doi.org/10.1371/journal.pcbi.1011652> PMID: 38060459.
35. Ten SS. Simple Rules for a Computational Biologist's Laboratory Notebook. *PLoS Comput Biol*. 2015; 11(9):e1004385. Epub 2015/09/12. <https://doi.org/10.1371/journal.pcbi.1004385> PMID: 26356732.
36. Ellis SE, Leek JT. How to share data for collaboration. *Am Stat*. 2018; 72(1):53–57. Epub 2018/01/01. <https://doi.org/10.1080/00031305.2017.1375987> PMID: 32981941.
37. Boland MR, Karczewski KJ, Tatonetti NP. Ten Simple Rules to Enable Multi-site Collaborations through Data Sharing. *PLoS Comput Biol*. 2017; 13(1):e1005278. Epub 2017/01/20. <https://doi.org/10.1371/journal.pcbi.1005278> PMID: 28103227.
38. Higdon J, Topp R. How to develop a budget for a research proposal. *West J Nurs Res*. 2004; 26(8):922–929. Epub 2004/11/13. <https://doi.org/10.1177/0193945904269291> PMID: 15539536.
39. Aubert Bonn N, De Vries RG, Pinxten W. The failure of success: four lessons learned in five years of research on research integrity and research assessments. *BMC Res Notes*. 2022; 15(1):309. Epub 2022/09/25. <https://doi.org/10.1186/s13104-022-06191-0> PMID: 36153631.
40. Rice M, Broome ME, Habermann B, Kang DH, Davis LL. Implementing the research budget. *West J Nurs Res*. 2006; 28(2):234–241. Epub 2006/03/04. <https://doi.org/10.1177/0193945905282971> PMID: 16513921.
41. Bourne PE. Ten simple rules for getting published. *PLoS Comput Biol*. 2005; 1(5):e57. Epub 2005/11/02. <https://doi.org/10.1371/journal.pcbi.0010057> PMID: 16261197.
42. Chiu K, Grundy Q, Bero L. 'Spin' in published biomedical literature: A methodological systematic review. *PLoS Biol*. 2017; 15(9):e2002173. Epub 2017/09/12. <https://doi.org/10.1371/journal.pbio.2002173> PMID: 28892482.
43. Forero DA, Lopez-Leon S, Perry G. A brief guide to the science and art of writing manuscripts in biomedicine. *J Transl Med*. 2020; 18(1):425. Epub 2020/11/11. <https://doi.org/10.1186/s12967-020-02596-2> PMID: 33167977.
44. Henderson EL, Chambers CD. Ten simple rules for writing a Registered Report. *PLoS Comput Biol*. 2022; 18(10):e1010571. Epub 2022/10/28. <https://doi.org/10.1371/journal.pcbi.1010571> PMID: 36301802.
45. Altman DG, Simera I. A history of the evolution of guidelines for reporting medical research: the long road to the EQUATOR Network. *J R Soc Med*. 2016; 109(2):67–77. Epub 2016/02/18. <https://doi.org/10.1177/0141076815625599> PMID: 26880653.
46. Wagenmakers EJ, Sarafoglou A, Aarts S, Albers C, Algermissen J, Bahnik S, et al. Seven steps toward more transparency in statistical practice. *Nat Hum Behav*. 2021; 5(11):1473–1480. Epub 2021/11/13. <https://doi.org/10.1038/s41562-021-01211-8> PMID: 34764461.
47. Zhao F, Chen Y, Ge S, Yu X, Shao S, Black M, et al. A quantitative analysis of the mass media coverage of genomics medicine in China: a call for science journalism in the developing world. *OMICS*. 2014; 18(4):222–230. Epub 2014/02/12. <https://doi.org/10.1089/omi.2013.0108> PMID: 24512309.

48. Forero DA, Curioso WH, Patrinos GP. The importance of adherence to international standards for depositing open data in public repositories. *BMC Res Notes*. 2021; 14(1):405. Epub 2021/11/04. <https://doi.org/10.1186/s13104-021-05817-z> PMID: 34727971.
49. Wilkinson MD, Dumontier M, Aalbersberg IJ, Appleton G, Axton M, Baak A, et al. The FAIR Guiding Principles for scientific data management and stewardship. *Sci Data*. 2016; 3:160018. Epub 2016/03/16. <https://doi.org/10.1038/sdata.2016.18> PMID: 26978244.
50. Rouzer SK, Kalinowski LM, Kaseda ET. The importance of promoting scientific advocacy & outreach for trainees. *Neuropsychopharmacology*. 2023; 48(5):713–715. Epub 2023/01/12. <https://doi.org/10.1038/s41386-023-01530-6> PMID: 36631560.
51. Borowiec BG. Ten simple rules for scientists engaging in science communication. *PLoS Comput Biol*. 2023; 19(7):e1011251. Epub 2023/07/20. <https://doi.org/10.1371/journal.pcbi.1011251> PMID: 37471282.
52. König LM, Altenmüller MS, Fick J, Crusius J, Genschow O, Sauerland M. How to communicate science to the public? Recommendations for effective written communication derived from a systematic review. Preprint, PsyArXiv 2023.
53. Curioso WH, Alvarado-Vasquez E, Calderon-Anyosa R. [Using Twitter to promote continuous education and health research in Peru]. *Rev Peru Med Exp Salud Publica*. 2011; 28(1):163–164. Epub 2011/05/04. <https://doi.org/10.1590/s1726-46342011000100031> PMID: 21537792.
54. Thoma B, Murray H, Huang SYM, Milne WK, Martin LJ, Bond CM, et al. The impact of social media promotion with infographics and podcasts on research dissemination and readership. *CJEM*. 2018; 20(2):300–306. Epub 2017/09/14. <https://doi.org/10.1017/cem.2017.394> PMID: 28899440.
55. Armenteras D. Guidelines for healthy global scientific collaborations. *Nat Ecol Evol*. 2021; 5(9):1193–1194. Epub 2021/06/09. <https://doi.org/10.1038/s41559-021-01496-y> PMID: 34099901.
56. Garcia PJ, Curioso WH. Strategies for aspiring biomedical researchers in resource-limited environments. *PLoS Negl Trop Dis*. 2008; 2(8):e274. Epub 2008/10/15. <https://doi.org/10.1371/journal.pntd.0000274> PMID: 18852845.
57. Haelewaters D, Hofmann TA, Romero-Olivares AL. Ten simple rules for Global North researchers to stop perpetuating helicopter research in the Global South. *PLoS Comput Biol*. 2021; 17(8):e1009277. Epub 2021/08/20. <https://doi.org/10.1371/journal.pcbi.1009277> PMID: 34411090.