

Contributor Roles Taxonomy (CRediT)

Contributor	1. Conceptualization	2. Data Curation	3. Formal Analysis	4. Funding acquisition	5. Investigation	6. Methodology	7. Project administration	8. Resources	9. Software	10. Supervision	11. Validation	12. Visualization	13. Writing (orig. draft)	14. Writing (review-edit)
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#	ROLES	DESCRIPTION
1 -	Conceptualization	Ideas, formulation or evolution of overarching research goals and aims.
2 -	Data curation	Management activities to annotate (produce metadata), scrub data and maintain research data (including software code, where it is necessary for interpreting the data itself) for initial use and later re-use.
3 -	Formal analysis	Application of statistical, mathematical, computational, or other formal techniques to analyze or synthesize study data.
4 -	Funding acquisition	Acquisition of the financial support for the project leading to this publication.
5 -	Investigation	Conducting a research and investigation process, specifically performing the experiments, or data/evidence collection.
6 -	Methodology	Development or design of methodology; creation of models.
7 -	Project administration	Management and coordination responsibility for the research activity planning and execution.
8 -	Resources	Provision of study materials, reagents, materials, patients, laboratory samples, animals, instrumentation, computing resources, or other analysis tools.
9 -	Software	Programming, software development; designing computer programs; implementation of the computer code and supporting algorithms; testing of existing code components.
10 -	Supervision	Oversight and leadership responsibility for the research activity planning and execution, including mentorship external to the core team.
11 -	Validation	Verification, whether as a part of the activity or separate, of the overall replication/reproducibility of results/experiments and other research outputs.
12 -	Visualization	Preparation, creation and/or presentation of the published work, specifically visualization/data presentation.
13 -	Writing - original draft	Preparation, creation and/or presentation of the published work, specifically writing the initial draft (including substantive translation).
14 -	Writing - review & edit	Preparation, creation and/or presentation of the published work by those from the original research group, specifically critical review, commentary or revision - including pre- or post-publication stages.

Citation

Amy Brand, Liz Allen, Micah Altman, Marjorie Hlava, Jo Scott. Beyond authorship: attribution, contribution, collaboration, and credit. *Learned Publishing*. Vol. 28, Issue 2, pp. 151-155 (April 2015)

Background

ANSI/NISO Z39.104-2022, CRediT, Contributor Roles Taxonomy. (<https://doi.org/10.1087/20150211>)

CRediT (Contributor Roles Taxonomy) was introduced with the intention of recognizing individual author contributions, reducing authorship disputes and facilitating collaboration. The idea came about following a 2012 collaborative workshop led by Harvard University and the Wellcome Trust, with input from researchers, the International Committee of Medical Journal Editors (ICMJE) and publishers, including Elsevier, represented by Cell Press.

Caveat

Early and frequent discussions about authorship is the most effective way of avoiding authorship disputes. CRediT does not dictate which contributions warrant authorship, but provides a framework to facilitate these discussions. An individual contributor may be assigned multiple roles and a given role may be assigned to multiple contributors. When there are multiple people serving in the same role, a degree of contribution may optionally be specified as 'lead', 'equal', or 'supporting'. It is recommended that corresponding authors assume responsibility for role assignment, and that all contributors be given the opportunity to review and confirm assigned roles.