



## CRediT author statement

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.

CRediT offers authors the opportunity to share an accurate and detailed description of their diverse contributions to the published work. The corresponding author is responsible for ensuring that the descriptions are accurate and agreed by all authors.

- The role(s) of all authors should be listed, using the relevant above categories.
- Authors may have contributed in multiple roles.
- CRediT in no way changes the journal's criteria to qualify for authorship.

CRediT statements should be provided during the submission process and will appear above the acknowledgement section of the published paper as shown further below.

<b>Term</b>	<b>Definition</b>
Conceptualization	Ideas; formulation or evolution of overarching research goals and aims
Methodology	Development or design of methodology; creation of models
Software	Programming, software development; designing computer programs; implementation of the computer code and supporting algorithms; testing of existing code components
Validation	Verification, whether as a part of the activity or separate, of the overall replication/ reproducibility of results/experiments and other research outputs
Formal analysis	Application of statistical, mathematical, computational, or other formal techniques to analyze or synthesize study data
Investigation	Conducting a research and investigation process, specifically performing the experiments, or data/evidence collection
Resources	Provision of study materials, reagents, materials, patients, laboratory samples, animals, instrumentation, computing resources, or other analysis tools
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 reuse

Term	Definition
Writing - Original Draft	Preparation, creation and/or presentation of the published work, specifically writing the initial draft (including substantive translation)
Writing - Review & Editing	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 postpublication stages
Visualization	Preparation, creation and/or presentation of the published work, specifically visualization/ data presentation
Supervision	Oversight and leadership responsibility for the research activity planning and execution, including mentorship external to the core team
Project administration	Management and coordination responsibility for the research activity planning and execution
Funding acquisition	Acquisition of the financial support for the project leading to this publication

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## Sample CRediT author statement

**Zhang San:** Conceptualization, Methodology, Software **Priya Singh.:** Data curation, Writing-Original draft preparation. **Wang Wu:** Visualization, Investigation. **Jan Jansen:** Supervision.: **Ajay Kumar:** Software, Validation.: **Sun Qi:** Writing- Reviewing and Editing,



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