

# CASRAI CRediT Taxonomy of Contributor Roles: Implementation at Cell Press

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# CRediT: Cell Press Approach

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- Background
- Workflow
- Capturing the Roles
- Lessons & Advice





A word cloud of research-related terms. The words are arranged in a dense, overlapping manner. The largest words are 'Conceptualization', 'Investigation', 'Writing Original Draft', and 'Writing Review and Editing'. Other prominent words include 'Funding', 'Acquisition', 'Methodology', 'Supervision', 'Resources', 'Visualization', 'Data', 'Curation', 'Formal Analysis', 'Project Administration', 'Software', and 'Validation'.

Conceptualization  
Formal Analysis Funding Acquisition  
Investigation Methodology  
Project Administration Resources Software Supervision  
Validation Visualization Writing Original Draft  
Writing Review and Editing

## Background

# *The CRediT Taxonomy*

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14 terms that provide transparency about the contributions of researchers to scholarly published work

Developed from a cross-organizational working group and now managed by the [CASRAI](#) CRediT Program Committee

# The CRediT Taxonomy

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Conceptualization

Data curation

Formal analysis

Funding acquisition

Investigation

Methodology

Project administration

Resources

Software

Supervision

Validation

Visualization

Writing – original draft

Writing – review & editing

# CReditT: Understanding the Need

- The traditional author list...

## REPORT

### Characterization of Large Structural Genetic Mosaicism in Human Autosomes

Mitchell J. Machiela,<sup>1</sup> Weiyin Zhou,<sup>1,2</sup> Joshua N. Sampson,<sup>1</sup> Michael C. Dean,<sup>3</sup> Kevin B. Jacobs,<sup>2,4</sup> Amanda Black,<sup>1</sup> Louise A. Brinton,<sup>1</sup> I-Shou Chang,<sup>5</sup> Chu Chen,<sup>6</sup> Constance Chen,<sup>7</sup> Kexin Chen,<sup>8</sup> Linda S. Cook,<sup>9</sup> Marta Crous Bou,<sup>7,10</sup> Immaculata De Vivo,<sup>7,10</sup> Jennifer Doherty,<sup>11</sup> Christine M. Friedenreich,<sup>12</sup> Mia M. Gaudet,<sup>13</sup> Christopher A. Haiman,<sup>14</sup> Susan E. Hankinson,<sup>10,15</sup> Patricia Hartge,<sup>1</sup> Brian E. Henderson,<sup>14</sup> Yun-Chul Hong,<sup>16</sup> H. Dean Hosgood, III,<sup>1,17</sup> Chao A. Hsiung,<sup>18</sup> Wei Hu,<sup>1</sup> David J. Hunter,<sup>7,10,19</sup> Lea Jessop,<sup>1</sup> Hee Nam Kim,<sup>20</sup> Yeul Hong Kim,<sup>21</sup> Young Tae Kim,<sup>22</sup> Robert Klein,<sup>23</sup> Peter Kraft,<sup>7</sup> Qing Lan,<sup>1</sup> Dongxin Lin,<sup>24,25</sup> Jianjun Liu,<sup>26,27</sup> Loic Le Marchand,<sup>28</sup> Xiaolin Liang,<sup>29</sup> Jolanta Lissowska,<sup>30</sup> Lingeng Lu,<sup>31</sup> Anthony M. Magliocco,<sup>32</sup> Keitaro Matsuo,<sup>33</sup> Sara H. Olson,<sup>29</sup> Irene Orlov,<sup>29</sup> Jae Yong Park,<sup>34</sup> Loreall Pooler,<sup>35</sup> Jennifer Prescott,<sup>7,10</sup> Radhai Rastogi,<sup>29</sup> Harvey A. Risch,<sup>31</sup> Fredrick Schumacher,<sup>14</sup> Adeline Seow,<sup>36</sup> Veronica Wendy Setiawan,<sup>14</sup> Hongbing Shen,<sup>37,38</sup> Xin Sheng,<sup>35</sup> Min-Ho Shin,<sup>39</sup> Xiao-Ou Shu,<sup>40</sup> David VanDen Berg,<sup>14</sup> Jiu-Cun Wang,<sup>41,42</sup> Nicolas Wentzensen,<sup>1</sup> Maria Pik Wong,<sup>43</sup> Chen Wu,<sup>24,25</sup> Tangchun Wu,<sup>44</sup> Yi-Long Wu,<sup>45</sup> Lucy Xia,<sup>35</sup> Hannah P. Yang,<sup>1</sup> Pan-Chyr Yang,<sup>46</sup> Wei Zheng,<sup>47</sup> Baosen Zhou,<sup>48</sup> Christian C. Abnet,<sup>1</sup> Demetrius Albanes,<sup>1</sup> Melinda C. Aldrich,<sup>47,49</sup> Christopher Amos,<sup>50</sup> Laufey T. Amundadottir,<sup>1</sup> Sonja I. Berndt,<sup>1</sup> William J. Blot,<sup>47,51</sup> Cathryn H. Bock,<sup>52</sup> Paige M. Bracci,<sup>53</sup> Laurie Burdett,<sup>1,2</sup> Julie E. Buring,<sup>54</sup> Mary A. Butler,<sup>55</sup> Tania Carreón,<sup>55</sup> Nilanjan Chatterjee,<sup>1</sup>

(Author list continued on next page)

# CReditT: Considerations

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- **Optional** versus **mandatory**
- **Low-tech** versus **high-tech**
- **Resources** and **workload**
- Whether to allow the **3 degrees of contribution**
- **Clarity** and **utility**



# CRediT: Cell Press Approach

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## Lean approach

- Optional
- Low-tech



Current uptake:  
~23% of papers

## Engage community

- Blog posts
- Work with CASRAI and other organizations

## Gauge uptake and response

- Track uptake
- Conduct feedback surveys



A word cloud on a light gray textured background. The words are in various shades of blue and black, with sizes corresponding to their frequency. The most prominent words are 'Conceptualization', 'Investigation', 'Writing Original Draft', 'Writing Review and Editing', 'Acquisition', 'Methodology', 'Supervision', 'Funding', 'Resources', 'Visualization', and 'Data'. Other smaller words include 'Formal', 'Analysis', 'Project', 'Administration', 'Software', 'Validation', and 'Curation'.

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Formal Analysis Funding Acquisition  
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Project Administration Resources Software Supervision  
Validation Visualization Writing Original Draft  
Writing Review and Editing

# Workflow

# CRedit: Recommendation

May 2015: began *encouraging* the use of CRedit

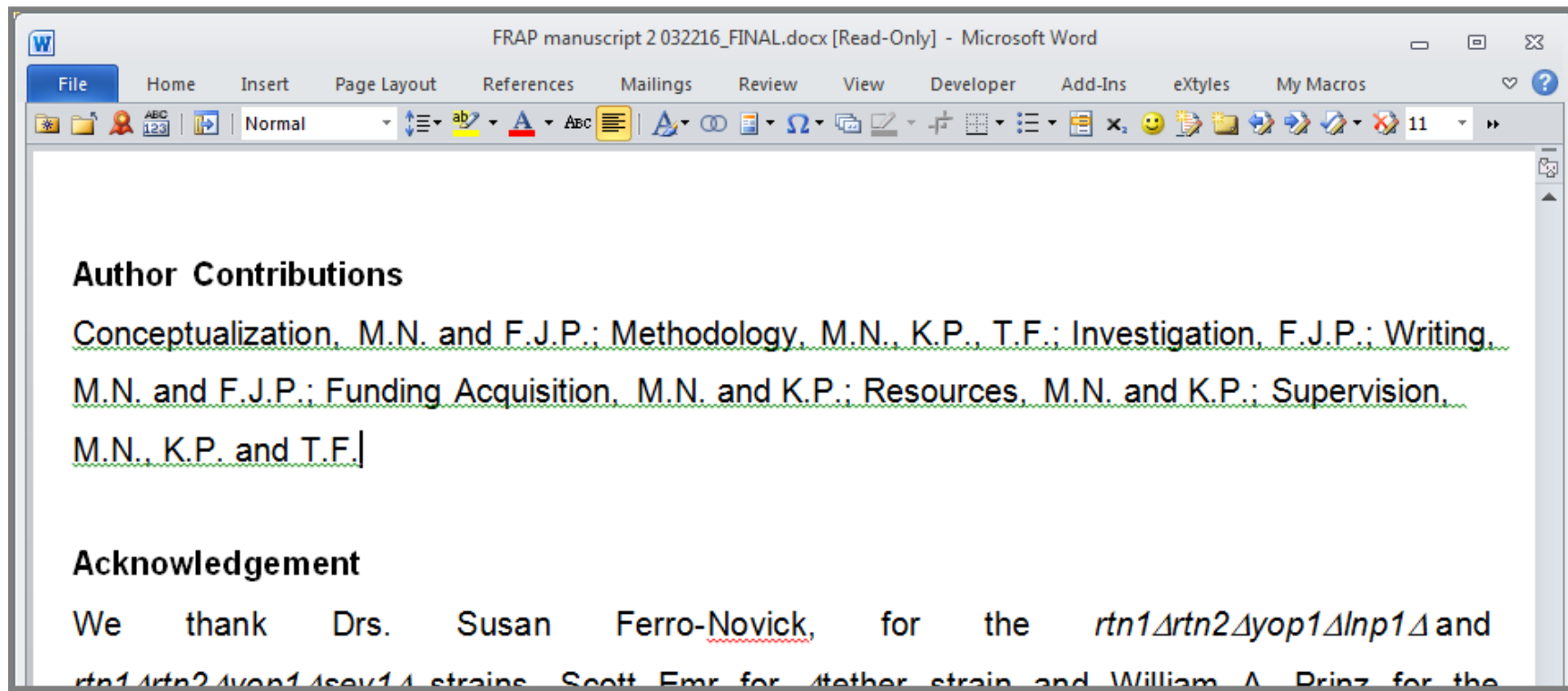
## Author Contributions

For primary research papers, we ask you to include a dedicated Author Contributions section preceding the Acknowledgments to give information about individual author contributions to the work. Please keep this section as concise as possible and use initials to indicate author identity. All of the authors listed on the paper should be mentioned in this section at least once. We are happy for you to use a traditional format such as “A.B. and C.D. conducted the experiments, E.F. designed the experiments and wrote the paper...” but would also encourage you to use the CRedit taxonomy instead.

“We are happy for you to use a traditional format ... but would also encourage you to use [the CRedit taxonomy](#) instead.”

# CRedit: Author Submission

Authors provide an Author Contributions section – with or without CRedit – in the final submitted manuscript





# CRedit: Published Example

## AUTHOR CONTRIBUTIONS

Conceptualization, M.S.L., P.P., G.G., N.J.H., P.S., D.A.W., E.S., K.R.C., A. Koren, and J.K.; Methodology, M.S.L., P.P., N.J.H., and P.S.; Software, N.J.H. and M.S.L.; Formal Analysis, N.J.H., M.S.L., and P.P.; Investigation, N.J.H., P.P., and M.S.L.; Resources, M.S.L., G.G., A. Koren, and D.A.W.; Data Curation, E.R., N.J.H., P.P., M.S.L., and A. Koren; Writing – Original Draft, N.J.H., M.S.L., A. Koren, P.P., and G.G.; Writing – Review & Editing, N.J.H., M.S.L., A. Koren, P.P., G.G., D.A.W., P.C.H., E.S., K.R.C., E.R., J.M.H., P.S., Y.E.M., A. Kamburov, and L.Z.B.; Visualization, N.J.H. and M.S.L.; Supervision, G.G., M.S.L., P.P., A. Koren, D.A.W., and P.C.H.

<http://dx.doi.org/10.1016/j.cell.2015.12.050>

The section is copyedited, but no tags are applied to the roles or the authors in the article XML.



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## Capturing the Roles

# CRedit: XML Tagging in DTD

- July 2017: CRedit taxonomy incorporated into Elsevier DTD

```
<ce:author id="au19">
...
<ce:contributor-role role="http://dictionary.casrai.org/
Contributor_Roles/Conceptualization" degree="http://dictionary.
casrai.org/Contributor_Roles/Conceptualization/equal">
Conceptualization</ce:contributor-role>
<ce:contributor-role role="http://dictionary.casrai.org/
Contributor_Roles/Methodology">Methodology</ce:contributor-role>
```

# CRediT: XML Tagging Pilot

- Q4 2017, pilot: supplier tags authors in XML based on Author Contributions paragraph

## **AUTHOR CONTRIBUTIONS**

Conceptualization, M.S.L., P.P., G.G., N.J.H., P.S., D.A.W., E.S., K.R.C., A. Koren, and J.K.; Methodology, M.S.L., P.P., N.J.H., and P.S.; Software, N.J.H. and M.S.L.; Formal Analysis, N.J.H., M.S.L., and P.P.; Investigation, N.J.H., P.P., and M.S.L.; Resources, M.S.L., G.G., A. Koren, and D.A.W.; Data Curation, E.R., N.J.H., P.P., M.S.L., and A. Koren; Writing – Original Draft, N.J.H., M.S.L., A. Koren, P.P., and G.G.; Writing – Review & Editing, N.J.H., M.S.L., A. Koren, P.P., G.G., D.A.W., P.C.H., E.S., K.R.C., E.R., J.M.H., P.S., Y.E.M., A. Kamburov, and L.Z.B.; Visualization, N.J.H. and M.S.L.; Supervision, G.G., M.S.L., P.P., A. Koren, D.A.W., and P.C.H.



# CRediT: XML Tagging Pilot

- Q4 2017, pilot: supplier tags authors in XML based on Author Contributions paragraph

```
<ce:author id="au1" author-id="S1535610817304592-□□□"  
><ce:given-name>Leire</ce:given-name><ce:surname>Bejarano  
</ce:surname><ce:contributor-role role=  
"http://dictionary.casrai.org/Contributor_Roles/Investigati  
on">Investigation  
</ce:contributor-role><ce:contributor-role role=  
"http://dictionary.casrai.org/Contributor_Roles/Writing_%E2  
%80%93_original_draft">Writing – Original Draft  
</ce:contributor-role><ce:contributor-role role=  
"http://dictionary.casrai.org/Contributor_Roles/Writing_%E2  
%80%93_review_%26_editing">Writing – Review & Editing  
</ce:contributor-role><ce:cross-ref refid="aff1" id=  
"crosref0010"><ce:sup>1</ce:sup></ce:cross-ref></ce:author>
```

# CRediT: Editorial Manager

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- Editorial Manager (Aries Systems) offers an optional configuration: journals can request or require that corresponding authors designate the CRediT roles for all authors
- Cell Press has not yet implemented this option but other publishers have
- For more details, contact Aries Systems



# CRediT: Editorial Manager

## Journal A

REGISTER • UPDATE MY INFORMATION • JOURNAL OVERVIEW  
SUBMIT A MANUSCRIPT • INSTRUCTIONS FOR AUTHORS

Please Add, Edit, or Remove Authors

Please identify co-authors.

Current Author List

Anthony Au

+ Add Another Author

### Enter Author Details

Open Special Character Palette

Title

**Given/First Name\*** Sally

Middle Name

**Family/Last Name\*** Jones

**E-mail Address\*** SJones@trash.com

ORCID [Fetch](#)

[What is ORCID?](#)

Institution

Contributor Roles [Instructions](#)

- ☐ Conceptualization
- ☐ Data curation
- ☐ Formal analysis
- ☐ Funding acquisition
- ☐ Investigation
- ☐ Methodology
- ☐ Project administration
- ☐ Resources
- ☐ Software
- ☐ Supervision
- ☐ Validation
- ☐ Visualization
- ☐ Writing – original draft
- ☐ Writing – review & editing
- ☐ Other:



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## What We Have Learned

# CRediT: Lessons and Advice

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- Optional, low-tech approach:
  - easier to get off the ground
  - harder to prioritize development
- Awareness appears to be the greatest barrier
- Communication is key
- For input from a publisher that has taken the *mandatory* approach, contact Helen Atkins of PLOS: [hatkins@cell.com](mailto:hatkins@cell.com)

# CReditT: Author Feedback

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**Preliminary results from active survey of all corresponding authors in *Cell Reports* papers published in 2017:**

- Respondents: 147
- 27% had used CReditT
- 73% had not used CReditT

# CReditT: Author Feedback

## Top three reasons for not using CReditT:

- **63%:** Not aware of the option
- **26%:** Not familiar enough with CReditT
- **14%:** Preferred a different method of indicating contributions



# CRedit: Author Feedback

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*The first time you used CRedit, did you find it easy or difficult to apply the taxonomy?*

**76%** “very” or “moderately” easy

*How useful did you find CRedit in accurately reflecting the contributions of all authors?*

**66%** “extremely” or “very” useful

*Would you use the taxonomy in future papers?*

**37%** “definitely “ | **50%** “probably”

# CRediT: Author Feedback

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## Benefits:

- Clarity | Standardization | Transparency

## Drawbacks:

- Vagueness | Lack of specificity

*“It may not be perfect, but it's much better than having no system”*

# *Questions*

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**CellPress**

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# Appendix

# CRedit: History

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**2012:** Initial workshop at Harvard

**2013:** Taxonomy piloted on published papers from multiple publishers

**2014:** Project CRedit working group finalizes the 14 terms & descriptions

**2015:** Published to the CASRAI dictionary



# CRedit: Resources

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- Visit <http://docs.casrai.org/CRedit> for key resources pertaining to CRedit
- Contact Helen Atkins at PLOS for the perspective of a publisher that *requires* the use of the CRedit roles:  
[hatkins@plos.org](mailto:hatkins@plos.org)
- Contact Aries Systems for more about activating this functionality in Editorial Manager:  
<https://www.ariessys.com/>