

# JATS Supports Modern Publishing and Open Science

JATS was designed for journal publishing as practiced *in the early 2000's*. JATS now supports both open science and modern publishing practice with the extensive metadata and features described below.

Deborah Aleyne Lapeyre

Mulberry Technologies, Inc.

<dalapeyre@mulberrytech.com>

## ALI License Reference (Supports Open Science)

<ali:license\_ref> is a pointer inside <license> referencing a URI that carries either human-readable or machine-readable *public license* terms or waivers specifying how a work may be used. The element was defined in *NISO RP-22-2015 Access License and Indicators Recommended Practice*. ‘*Public license*’ means that the offer is generally and not privately offered.

```
<license>
  <ali:license_ref
    xmlns:ali="http://www.niso.org/schemas/ali/1.0/"
    start_date="2015-02-03"
  >http://www.examplesite.org/open_license.html
</ali:license_ref>
</license>
```

## License terms in the XML (Supports Open Science)

A statement of the license terms suitable for display, can be preserved in the XML metadata:

```
<license license-type="open-access"
  xlink:href="http://creativecommons.org/licenses/by/2.0/">
<license-p>This is an open-access article
distributed under the terms of the Creative
Commons Attribution License, which permits
unrestricted use, distribution, and reproduction
in any medium, provided the original work is
properly cited.</license-p>
</license>
```

## Data Availability Statements (Supports Open Science)

Data Availability Statements (DAS), typically published as a section (<sec>) of an article, describe where the data supporting the research reported by an article can be found. The Force11 Data Availability Statement subgroup recommends as Best Practice: DAS be provided both for information integrated into the article (tables and figures) and for data stored externally (datasets, spreadsheets, etc.).

**Identify DAS for discovery:** Attribute @sec-type names the section as a Data Availability Statement

```
<sec sec-type='data-availability'>...</sec>
```

**Tag Data Citations:** Data citations should be tagged to all referenced data

```
<mixed-citation
  publication-type="data"
  use-type="generated-data">...</mixed-citation>
```

**Data citation in Reference Lists:** Place <ref-list>s in either the back matter of the <article> or at the end of a <sec>, so data citations can be inside a DAS section:

**Example:**

```
<sec sec-type="data-availability">
<title>Data Availability Statement</title>
<p>The following datasets were generated or
analyzed for this study:</p>
<ref-list>
<ref id="pone.0167830.data001">
  <label>D1</label>
  <element-citation
    publication-type="data"
    use-type="generated-data"
    specific-use="isSupplementedBy">
    <name><surname>Read</surname>
    <given-names>K</given-names></name>
    <data-title>Sizing the Problem of Improving
    Discovery and Access to NIH-funded Data: A
    Preliminary Study (Datasets)</data-title>
    <source>Figshare</source>
    <year iso-8601-date="2015">2015</year>
    <pub-id pub-id-type="doi"
      assigning-authority="figshare"
    xlink:href="https://doi.org/10.6084/m9.figshare.1285515"
    >https://doi.org/10.6084/m9.figshare.1285515</pub-id>
    </element-citation>
  </ref>

  <ref id="pone.0167830.data002">
    <label>D2</label>
    <element-citation
      publication-type="data"
      use-type="analyzed-data"
      specific-use="references">
      <name><surname>Kok</surname>
      <given-names>K</given-names></name>
      <name><surname>Ay</surname>
      <given-names>A</given-names></name>
      <name><surname>Li</surname>
      <given-names>L</given-names></name>
      <data-title>Genome-wide errant targeting by
      Hairy</data-title>
      <source>Dryad Digital Repository</source>
      <year iso-8601-date="2015">2015</year>
      <pub-id pub-id-type="doi"
        assigning-authority="dryad"
      xlink:href="https://doi.org/10.5061/dryad.cv323"
      >https://doi.org/10.5061/dryad.cv323</pub-id>
      </element-citation>
    </ref>
  <ref-list>
</sec>
```

## Publish Peer Reviews (with the article, but separate)

Open, published peer reviews are becoming more and more common, and JATS provides a mechanism to publish peer reviews with the article as <sub-article>s, which are related articles within the XML-tagged-document of the parent article.

**Where:** <sub-article>s and <response>s follow the back matter in an article

**How:**

**Recursive:** <sub-article> elements are recursive and may contain either other <sub-article>s or <response>s or both. So peer review sub-articles could contain one or more responses/rebuttals from the original authors

**Type Attribute:** Attribute @article-type on <sub-article> defines the type of review document (such as Peer Review, Decision Letter, Author-Response, or Collected Reviews)

**Metadata:** Sub-articles have their own complete metadata, which describe the review (not the article) and could include:

<article-id>s such as DOIs

<contrib> with <contrib-id> (such as an ORCID) names the reviewer and uses attribute @contrib-type with values such as ‘reviewer’, ‘editor’, ‘author’

Conflict of Interest statements

License and copyright information

<pub-date> and <event> elements

And nearly everything inside <article-meta>

```
Example:
<article dtd-version="1.2" article-
type="research-article" ...>
<front>
<article-meta>
  <title-group><article-title>Hot Schematron
    Tips</article-title></title-group>
  <contrib-group>
    <contrib contrib-type="author">
      <name><surname>Puppybreathe</surname>
      <given-names>Lewellen P.</given-names></name>
      <role degree-contribution="lead"
        >Writing – original draft</role>
      <xref ref-type="aff" rid="org1"/>
    </contrib>
    <aff id="org1">Group Practice, Washington,
      DC</aff>
    </contrib-group>
    <pub-date-not-available/>
    <history>...</history>
    <permissions><ali:free_to_read/>
    <license license-type="open-access"
      xlink:href="http://creativecommons.org/licenses/by/2.0/"
      >...</license>
    </permissions>
  </article-meta>
</front>
<body>...</body>
```

```
<sub-article article-type="peer-review">
<front-stub>
  <title-group><article-title>Schematron is a
    Great Idea!</article-title>
  </title-group>
  <contrib contrib-type="reviewer">
    <name><surname>Dismal</surname>
    <given-names>Fairly W.</given-names></name>
    <role>Reviewer</role>
    <aff id="org1">Group Practice, Washington,
      DC</aff>
  </contrib>
  <permissions>
    <ali:free_to_read/>...</permissions>
  </front-stub>
  <body>...</body>
  <back>
    <ref-list>...</ref-list>
  </back>
</sub-article>
```

```
<sub-article article-type="peer-review">
  <front-stub>...</front-stub>
  <body>...</body>
  <response article-type="rebuttle">...
</response>
</sub-article>
```

```
</article>
```

## Identify Organizations and Funders

**What:** Element <institution-id> holds an external identifier assigned to an organization, institution, or part of an institution (such as a department or lab) by a publisher, an archive, a library, a standard (e.g., ISNI, ISLL), or a recognized group that identifies institutions, such as the Open Funder Registry (Fundref) or Ringgold. Useful for determining and disambiguating affiliations, funding sources, conference sponsors, and more.

**Where:** <institution-id> may record an identifier for:

funding source or support source	affiliation
publisher	collaboration
conference sponsor	organization named in an address

**Keep name & ID together:** Container element <institution-wrap> holds the name of an organization and one or more external identifiers

**Provide multiple IDs:** A single institution may have multiple identifiers for: 1) different assigning agencies or 2) the organization belongs to more than one larger unit, for example, a laboratory may be part of multiple institutions

```
<award-group>
  <funding-source id="gs2" country="US">
    <institution-wrap>
      <institution>National Science
        Foundation</institution>
      <institution-id
        institution-id-type="doi"
        vocab="open-funder-registry"
        vocab-identifier=
          "10.13039/open_funder_registry"
        >10.13039/100000001
      </institution-id>
    </institution-wrap>
  </funding-source>
  <award-id>DMS-0404444</award-id>
  <award-id>DMS-0206666</award-id>
</award-group>
```

## Record Detailed Funding Metadata

**What:** Funding and support information is being required by more funders, countries, consortia, and publishing workflows. JATS can supply detailed metadata that travels *with the article* and describes the funding and/or non-monetary support for an article and for the research behind the article.

**How:**

**<support-group>:** Holds descriptions for both monetary funding and non-monetary support, within the article metadata (<article-meta>)

```
<article-meta>...
  <support-group>
    <funding-group>monetary finding</funding-group>
    <funding-group>...</funding-group>
    <contributed-resource-group>...non-monetary
      funding...</contributed-resource-group>
    <contributed-resource-group>...non-monetary
      funding...</contributed-resource-group>
  <support-group>
</article-meta>
```

**<funding-group>:** Describes monetary funding including: awards, grants, contracts, investigators, funding statements, and any open access fees for the article

```
<funding-group specific-use="crossref">
  <award-group>
    <funding-source country="UK">
      <institution-wrap>
        <institution>ABBEY AWARDS</institution>
        <institution-id
          institution-id-type="doi"
          vocab="open-funder-registry"
          vocab-identifier=
            "10.13039/open_funder_registry"
          >10.13039/501100000314</institution-id>
        </institution-wrap>
      </funding-source>
      <award-id>AA-WC26-07GH43098</award-id>
      <principal-award-recipient>...
    </principal-award-recipient>
    <principal-investigator>...
    </principal-investigator>
  </award-group>
</funding-group>
```

**<contributed-resource-group>:** Describes non-monetary support such as facilities, computer resources, data acquisition or donation, and other non-monetary support (including in-kind support). May include detailed descriptions of resources.

```
<contributed-resource-group
  resource-type="research-materials">
<resource-group>
  <resource-wrap>
    <resource-name>Slc9a4 (C05) tm1b Mus
      musculus</resource-name>
    <resource-id
      resource-id-type="rrid"
      vocab="Research Resource Identifier"
      >RRID:IMSR_HAR:5669</resource-id>
    </resource-wrap>
    <resource-wrap>...</resource-wrap>
  </resource-group>
</contributed-resource-group>
```

JATS elements translate easily into Open Funder Registry descriptions