

# Package ‘biolink’

June 30, 2018

**Type** Package

**Title** Create Hyperlinks to Biological Databases and Resources

**Description** Generate urls and hyperlinks to commonly used biological databases and resources based on standard identifiers. This is primarily useful when writing dynamic reports that reference things like gene symbols in text or tables, allowing you to, for example, convert gene identifiers to hyperlinks pointing to their entry in the NCBI Gene database. Currently supports NCBI Gene, PubMed, Gene Ontology, CRAN and Bioconductor.

**Version** 0.1.6

**License** MIT + file LICENSE

**Encoding** UTF-8

**LazyData** true

**Imports** rentrez, xml2, DBI, RMySQL, glue, memoise

**Suggests** testthat, lintr, httr, covr

**RoxygenNote** 6.0.1

**NeedsCompilation** no

**Author** Aaron Wolen [aut, cre]

**Maintainer** Aaron Wolen <aaron@wolen.com>

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**biolink***biolink makes it easy to link to online resources*

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### Description

`biolink` provides functions for generating urls and hyperlinks to commonly used biological databases and resources. This is primarily useful when writing **dynamic reports** that reference things like gene symbols in text or tables, allowing you to, for example, convert gene identifiers to hyperlinks pointing to their entry in the NCBI Gene database.

### Notable features

- generate valid hyperlinks for LaTeX, HTML and Markdown documents
- hyperlink text and title attributes can be specified (where possible)
- *data tags* can be used to insert certain kinds of information from select databases

### See Also

the **annotate** package from Bioconductor

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**build\_link***Construct hypertext links*

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### Description

Convert a bare url to a valid hyperlink formatted for a Markdown, HTML or LaTeX document.

### Usage

```
build_link(url, text = NULL, title = NULL, format = "markdown")
```

### Arguments

<code>url</code>	URL where you want the link to point
<code>text</code>	displayed text
<code>title</code>	link title, often used in tooltips
<code>format</code>	generate links using "html", "markdown" or "latex" syntax

### Examples

```
build_link("https://r-project.org", "R", "The R Project")
```

---

links

*Construct hyperlinks to online resources*

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### Description

These resource-specific functions return a hyperlink to the relevant online database/resource based on the provided identifier (id).

### Usage

```
link_go(id, text = id, title = NULL, format = "html")
```

```
link_kegg(id, text = id, title = NULL, format = "html")
```

```
link_pubmed(id, text = id, title = NULL, format = "html")
```

```
link_entrez(id, text = id, title = NULL, format = "html")
```

```
link_cran(id, text = id, title = NULL, format = "html")
```

```
link_bioc(id, text = id, title = NULL, format = "html")
```

### Arguments

id	valid identifier for the relevant online database
text	displayed text
title	link title, often used in tooltips
format	generate links using "html", "markdown" or "latex" syntax

### Functions

- link\_go: to Gene Ontology Consortium
- link\_kegg: to KEGG Pathway Database
- link\_pubmed: to PubMed based on PMID (PubMed identifier)
- link\_entrez: to NCBI's database for gene-specific information based on Entrez ID
- link\_cran: for R packages available from CRAN
- link\_bioc: for R packages available from Bioconductor

### Link Customization

By default the hyperlinked text is just the id, so `link_pubmed("22066989")` becomes [22066989](#). The text argument allows you to customize the hyperlinked text. To display a hyperlinked URL (e.g., <https://www.r-project.org>), set `text = NULL`.

## Data Tags

For a few supported online resources, specially formatted tags can be passed to the `text` and `title` arguments to display live data obtained from the corresponding resource. For example, `link_entrez("4609", text = "<symbol>")`, produces **MYC**, displaying the gene symbol rather than the Entrez ID. We could also set `title = "<description>"` to produce a link that reveals the gene's description when a user hovers over the link (using a supported browser).

Currently supported data tags:

NCBI Entrez:

- `symbol`: Gene symbol
- `description`: Gene description
- `location`: Cytogenetic location

NCBI PubMed:

- `title`: Article title
- `year`: Publication year
- `journal`: Journal title

Gene Ontology:

- `name`: GO term name
- `definition`: GO term definition

## References

- [Gene Ontology Consortium](#)
- [KEGG Pathway Database](#)
- [NCBI PubMed](#)
- [NCBI Gene](#)

## Examples

```
link_go("GO:0005539", format = "html")
link_kegg("hsa04915", format = "html")
link_pubmed("22066989", format = "html")
link_entrez("4609", format = "html")
```

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urls *Construct urls to online resources*

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### Description

These resource-specific functions return a bare url (i.e., not a hyperlink) to the relevant online database/resource based on the provided identifier.

### Usage

```
url_go(id)
```

```
url_kegg(id)
```

```
url_pubmed(id)
```

```
url_entrez(id)
```

```
url_cran(id)
```

```
url_bioc(id)
```

### Arguments

`id` valid identifier for the relevant online database

### Functions

- `url_go`: for Gene Ontology Consortium
- `url_kegg`: for KEGG Pathway Database
- `url_pubmed`: for PubMed based on PMID (PubMed identifier)
- `url_entrez`: for NCBI's database for gene-specific information based on Entrez ID
- `url_cran`: for R packages available from CRAN
- `url_bioc`: for R packages available from Bioconductor

### Examples

```
# gene ontology url
url_go("GO:0005539")

# KEGG pathway url
url_kegg("hsa04915")

# PubMed article url
url_pubmed("23193287")
```

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