

R Highlight!

CRAN & Bioconductor

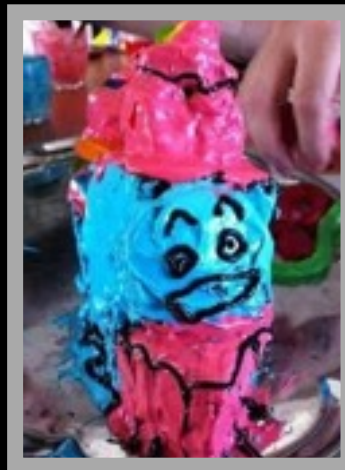
Major repositories for **R packages**
that extend R functionality

CRAN: Comprehensive R Archive Network

- CRAN is a network of mirrored servers around the world that administer and distribute R itself, R documentation and **R packages** (basically add on functionality!)
- There are currently ~9,000 packages on CRAN in the areas of finance, bioinformatics, machine learning, high performance computing, multivariate statistics, natural language processing, *etc. etc.*

<https://cran.r-project.org/>

Side-note: R packages come in all shapes and sizes



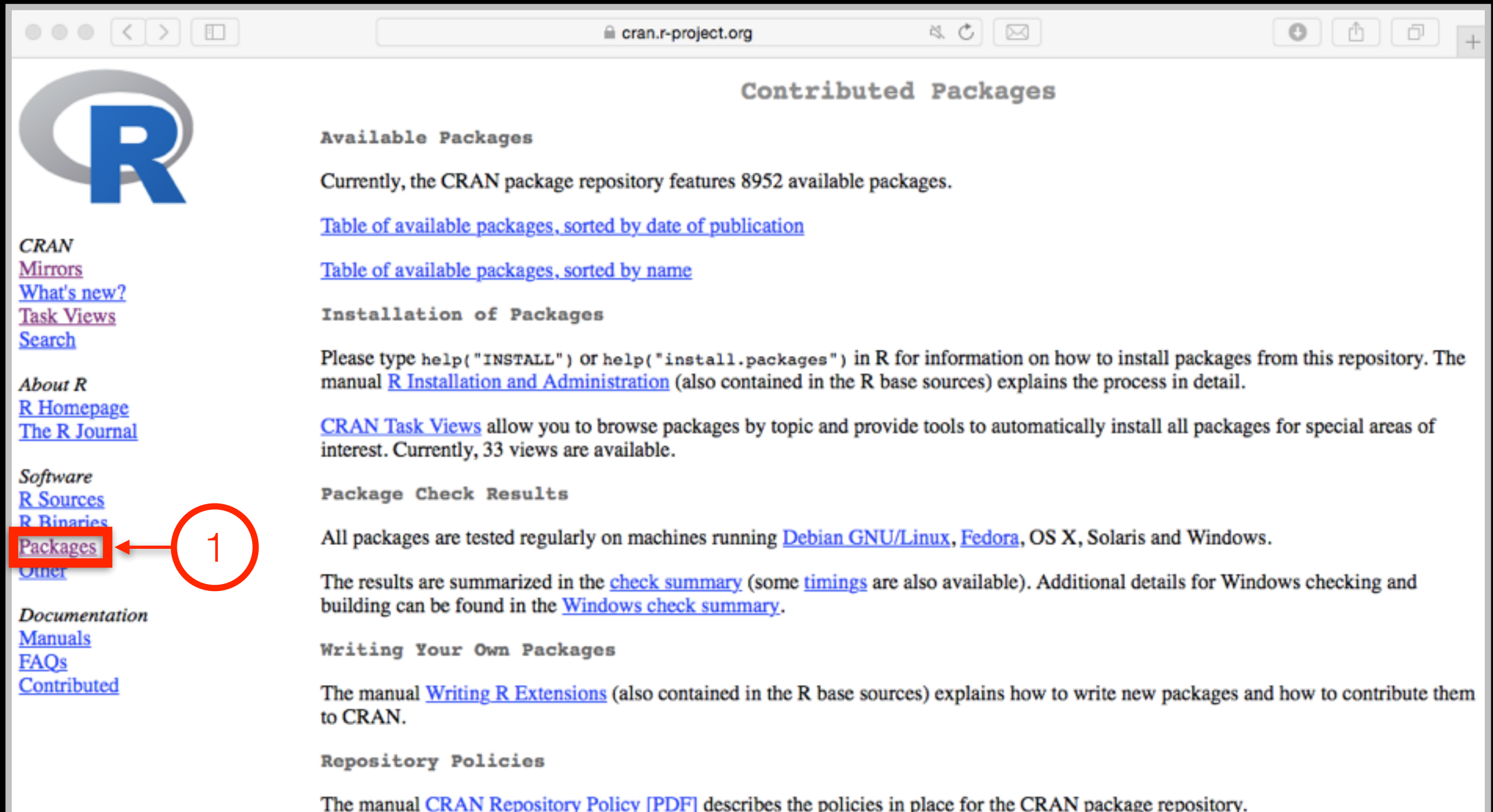
R packages can be of variable quality and often there are multiple packages with overlapping functionality.

Refer to relevant publications, package citations, update/maintenance history, documentation quality and your own tests!

“ The journal has sufficient experience with CRAN and Bioconductor resources to endorse their use by authors. We do not yet provide any endorsement for the suitability or usefulness of other solutions. ”

From: “Credit for Code”. *Nature Genetics* (2014), 46:1

<https://cran.r-project.org>



The screenshot shows the CRAN website in a web browser. The browser's address bar displays 'cran.r-project.org'. The website features the R logo on the left and a sidebar with navigation links. The main content area is titled 'Contributed Packages' and includes sections for 'Available Packages', 'Installation of Packages', 'Package Check Results', 'Writing Your Own Packages', and 'Repository Policies'. A red circle with the number '1' is drawn around the 'Packages' link in the sidebar, with an arrow pointing to it.

Contributed Packages

Available Packages

Currently, the CRAN package repository features 8952 available packages.

[Table of available packages, sorted by date of publication](#)

[Table of available packages, sorted by name](#)

Installation of Packages

Please type `help("INSTALL")` or `help("install.packages")` in R for information on how to install packages from this repository. The manual [R Installation and Administration](#) (also contained in the R base sources) explains the process in detail.

[CRAN Task Views](#) allow you to browse packages by topic and provide tools to automatically install all packages for special areas of interest. Currently, 33 views are available.

Package Check Results

All packages are tested regularly on machines running [Debian GNU/Linux](#), [Fedora](#), OS X, Solaris and Windows.

The results are summarized in the [check summary](#) (some [timings](#) are also available). Additional details for Windows checking and building can be found in the [Windows check summary](#).

Writing Your Own Packages

The manual [Writing R Extensions](#) (also contained in the R base sources) explains how to write new packages and how to contribute them to CRAN.

Repository Policies

The manual [CRAN Repository Policy \[PDF\]](#) describes the policies in place for the CRAN package repository.

CRAN

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Installing a package

RStudio > Tools > Install Packages

```
> install.packages("bio3d")
```

```
> library("bio3d")
```

Pick a package to explore and install

Rmarkdown

- Reports, websites, documenting etc.: Promoting reproducibility.

ggplot2

- Popular graphics package: We have already explored this.

bio3d

- Widely used and highly cited structural bioinformatics package.

Bioconductor

R packages and utilities for working with
high-throughput genomic data

<http://bioconductor.org>



More pragmatic:

Bioconductor is a **software repository** of **R packages** with **some rules and guiding principles**.

Version 3.3 had 1211 software packages.

Bioconductor has
emphasized

Reproducible Research

since its start, and has been
an early adapter and driver
of tools to do this.

“Bioconductor: open software development for computational biology and bioinformatics”

Gentleman et al

Genome Biology 2004, 5:R80

“Orchestrating high-throughput genomic analysis with Bioconductor”

Huber et al

Nature Methods 2015, 12:115-121