

September 24, 2020

## Welcome

### Summary

- Cytoscape v3.8.1 is now available for download.
- Addresses 24 issues relative to v3.8 (see Section 8 for details)
- Upgrades to core functionality
  - Bug fixes to address memory leaks and race conditions in automation scripts.
  - Bug Fixes for the renderer:
    - Edge tooltip not rendering
    - Edge bend editing causing all edges to bend
    - Network view double click not working
- Numerous app updates and releases since 3.8.0 release .
- What to do next ...

Release notes: <http://www.cytoscape.org/releasenotes.html>

### Dear Cytoscape User

We are proud to release Cytoscape v3.8.1. This new release contains improvements to functionality and documentation as described in Sections 6 and 8.

*As of the v3.5 release, we officially withdrew support for Cytoscape 2.x versions, though installable code and documentation will remain available on the Cytoscape web site.*

*V3.8.1 will not work on Java 8 and lower, as official support for these JVM distributions will be discontinued. Certain features of Cytoscape may not function with these JVMs. For users with Java 8 or older, it is highly recommended to upgrade to a newer Java, but Cytoscape versions 3.7.2 and older can be used. Check the relevant release notes for compatibility.*

*For Windows and Mac systems, v3.8.1 installs its own JVM 11 and can operate on systems having Java 8 and later. Linux systems must have JVM 11 on the path or referenced by the JAVA\_HOME environment variable.*

This release marks successful tests with the system configurations most common among our user base, including 7 different combinations of operating systems and Java Virtual Machines across Windows, Linux, and Mac OS platforms. Check out your system's configuration here:  
<https://tinyurl.com/y5ypm3gx>.

To browse the Apps that were updated during the 3.8.1 development cycle, visit the app store (<http://apps.cytoscape.org>). There are 363 apps available for download. We expect a v3.9 release in early 2021. As our plans firm up, we'll publish them to the Cytoscape community (<http://www.cytoscape.org/roadmap.html>).

*If you are a new or casual Cytoscape user, **welcome aboard!** Feel free to either read on or jump ahead to *What to Do Next* for a quick start.*

## What to Do Next

We hope to help you use Cytoscape in the most productive way. Your next steps depend on how experienced you are with Cytoscape and what you would like to do. In the table below, please find the category that best describes you, and proceed accordingly.

Type of Cytoscape User	Where to Read Next
<b>New</b>	<b>For New Users</b> (Section 1)
<b>Power</b>	<b>For Power Users</b> (Section 2)
<b>App Developers</b>	<b>For App Developers</b> (Section 3)

# 1. For New Cytoscape Users

## What is Cytoscape?

Cytoscape is software that can help you visualize complex networks (aka *graphs*) representing relationships between genes, proteins, or other entities. Cytoscape tracks and displays these entities (as graph *nodes*) and relationships between them (as graph *edges*). Cytoscape, per se, does not assign meaning to either nodes or edges – you can assign your own meanings to them, and you can add your own node or edge attributes (e.g., name, measurements, states, etc.) that customize your graph to represent semantics important to you. While Cytoscape provides simple analytics and visualizations, others are available as apps from the Cytoscape App store (see Section 5).

## What Do I Need Before I Can Use Cytoscape?

At the very least, you must provide Cytoscape with a list of nodes. You can also provide a list of edges and attributes. You can enter your network manually or import it from your own files – Cytoscape supports a wide variety of file formats, including text and Excel. Cytoscape can also load pre-configured networks (e.g., from BioGRID) so you can leverage them without having to enter them yourself.

## Can Cytoscape Help Me Get Started?

Yes! The Cytoscape team has provided many resources tailored for all kinds of users (see Section 7). To start, there is an Installation Guide and numerous tutorials. Once you load your graph, you may find additional useful analytics and visualizations at the App Store (see Section 5).

## Which Cytoscape Version Should I Use?

Cytoscape v3.8.1 is strongly recommended. It has many improvements over previous Cytoscape v3.x releases.

*Note that if you have already installed a previous Cytoscape version, you can install v3.8.1 without uninstalling your previous version.*

## How to Download and Install Cytoscape

- Surf to <http://www.cytoscape.org>, click on the Download Cytoscape button, and follow the prompts
- ***Be sure to consult with the Release Notes (viewable via the Release Notes button) for issues and solutions pertaining to your installation***
- Surf to <http://manual.cytoscape.org> and follow the instructions in the *Launching Cytoscape* section.

## How to Troubleshoot Cytoscape Installation?

Normally, the main requirement for installing Cytoscape is a Java Virtual Machine (JVM) appropriate for your workstation. For Windows and Mac users, Cytoscape 3.8.1 provides a suitable JVM if your system doesn't already have one (AdoptOpenJDK JVM 11.0.4). For Linux users, be sure to have a JVM (Java 11 version 11.0.4 or later) available on your PATH or named via the JAVA\_HOME environment variable.

Regardless of your workstation operating system, you can learn whether your environment is sufficient to execute Cytoscape by following the Troubleshooting instructions at <http://www.cytoscape.org/troubleshooting.html>.

## 2. For Cytoscape Power Users

### How to Prepare for Cytoscape

1. If you have already installed a v3.8.1 RC version, *please uninstall it before proceeding*. Previous Cytoscape versions can coexist with v3.8.1, and do not need to be uninstalled.
2. Consult the App Store (Section 5) to verify that the apps you need are available. Some apps have become part of the Cytoscape core, and you won't need to download them. Other apps are available in the Cytoscape App store.
3. Browse the Cytoscape Roadmap (<http://www.cytoscape.org/roadmap.html>) and Support Offering table (Section 7) to see where the Cytoscape community is going.

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Regardless of your workstation operating system, you can learn whether your environment is sufficient to execute Cytoscape by following the Troubleshooting instructions at <http://www.cytoscape.org/troubleshooting.html>.

### 3. For Cytoscape App Developers

Cytoscape manages graph storage and display, and contains a number of common analytic and visualization functions. App Developers may write *apps* (formerly known as *plugins*) to perform problem-specific analytics, graph layouts, or other visualizations.

Before starting app development, you should be familiar with overall Cytoscape usage and functionality – see the Power Users section (Section 2) to start working with Cytoscape if you have not already done so.

#### How Do I Get Started With App Development?

To get started with app development:

<https://github.com/cytoscape/cytoscape/wiki/Cytoscape-App-Ladder>

For a broader view of the Cytoscape system (including the Core), refer to:

[http://wikiold.cytoscape.org/Cytoscape\\_3/CoreDevelopment](http://wikiold.cytoscape.org/Cytoscape_3/CoreDevelopment)

#### Are there App Samples?

Yes! Sample code appears in the App Cookbook:

[http://wikiold.cytoscape.org/Cytoscape\\_3/AppDeveloper/Cytoscape\\_3\\_App\\_Cookbook](http://wikiold.cytoscape.org/Cytoscape_3/AppDeveloper/Cytoscape_3_App_Cookbook)

## 4. General Background

The overall mission of Cytoscape is to be a freely available worldwide asset supporting network analysis and visualization for systems biology science.

The major focus of v3.x is the modularization and rationalization of code to solve stability issues in v2.x encountered as multiple developers pursued multiple agendas. Under v2.x, internal programmatic interfaces evolved from one release to the next, leading to the failure of working plugins over time and negative interactions between otherwise working plugins. Ultimately, this resulted in loss of programmer and user productivity, and undermined community confidence in Cytoscape.

v3.x addresses these issues by adopting modular coding practices promoted by the OSGi architectural framework<sup>1</sup>. This enables both the Cytoscape core and externally developed apps (formerly called *plugins*) to evolve independently without compromising unrelated functionality. At the logical level, Cytoscape leverages OSGi precepts to produce v3.x APIs having cleaner and clearer demarcations between functional areas. At the deployment level, OSGi enables on-the-fly substitution of one processing element for another (e.g., apps) in order to tailor Cytoscape to meet user requirements at runtime without reinstalling or reconfiguring Cytoscape.

Creating v3.x occupied an international team of engineers for over a year, and represents a strong investment toward reducing future development and support costs, and increasing reliability and evolvability. With the completion of v3.x, we expected to leverage v3.x as a platform to satisfy the evolving needs of multiple stakeholder groups, and as a platform enabling research on leading edge analysis and visualization techniques. v3.x is the successor to v2.x, with 2.x now out of support.

During the creation of v3.x, a number of features were added, as listed in the Update Table below.

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<sup>1</sup> [www.osgi.org](http://www.osgi.org) – also used as the basic framework for Eclipse and numerous commercial products

## 5. The Cytoscape App Store

The Cytoscape App Store targets broad demographics through specific features:

Cytoscape User	Benefit
<b>New or Casual</b>	Find Cytoscape functionality easy via familiar paradigms of search and tag navigation
<b>Power or Frequent</b>	Find and install apps easy and provide crowdsourced rating and reviews
<b>App Developers</b>	Have a dedicated presence for their work, including a direct line to their users and critical statistics to justify their development on the Cytoscape platform.

Furthermore, the App Store supports contests and social incentives that encourage critical technical and community development, including porting, analytics, rating/reviewing, and so on.

Note that the App Store supports only Cytoscape v3.x and no longer accepts plugins compatible with earlier Cytoscape versions. Likewise, plugins that work with earlier versions are not compatible with v3.x – the App Store (<http://apps.cytoscape.org>) contains a list of apps available for v3.x.

To access the App Store from Cytoscape, access Cytoscape's new Apps menu and choose the App Manager menu item.

## 6. Updates in this Release

Feature	Beneficiary	Manual Section
<b>Bug Fixes</b>	All users	-

## 7. Support Options

Feature	Purpose	Beneficiary	URL
<b>Cytoscape Helpdesk Group</b>	Community response on best effort basis	All users	<a href="https://groups.google.com/forum/?hl=en_US/#!forum/cytoscape-helpdesk">https://groups.google.com/forum/?hl=en_US/#!forum/cytoscape-helpdesk</a>
<b>User Manual</b>	Comprehensive manual	All users	<a href="http://manual.cytoscape.org/en/stable/">http://manual.cytoscape.org/en/stable/</a>
<b>Installation Guide</b>	Cytoscape installation	New/Casual users	Section 2 of <a href="http://manual.cytoscape.org/en/stable/Launching_Cytoscape.html">http://manual.cytoscape.org/en/stable/Launching_Cytoscape.html</a>
<b>Tutorials</b>	Streamlined productivity	All users	<a href="http://tutorials.cytoscape.org/">http://tutorials.cytoscape.org/</a>
<b>YouTube Channel</b>	Enable casual learning	All users	<a href="https://www.youtube.com/channel/UCv6auk9FK4NgXiqrDLccw">https://www.youtube.com/channel/UCv6auk9FK4NgXiqrDLccw</a>
<b>Presentation Slides on Web Site</b>	Enable casual learning	All users	<a href="https://speakerdeck.com/cytoscape">https://speakerdeck.com/cytoscape</a>
<b>Cytoscape App Dev Group</b>	Community response on best effort basis	App Developers	<a href="https://groups.google.com/forum/#!forum/cytoscape-app-dev">https://groups.google.com/forum/#!forum/cytoscape-app-dev</a>
<b>Code Snippets</b>	Community response on best effort basis	App Developers	<a href="http://wikiold.cytoscape.org/Cytoscape_3/AppDeveloper/Cytoscape_3_App_Cookbook">http://wikiold.cytoscape.org/Cytoscape_3/AppDeveloper/Cytoscape_3_App_Cookbook</a>



## 8. Issues Addressed

The following issues were addressed in v3.8.1. Details for each issue can be found at Cytoscape's Jira issue repository:

<https://cytoscape.atlassian.net/>

### Bug Fix

- [CYTOSCAPE-12623] - Node table import to Collection doesn't update name column
- [CYTOSCAPE-12647] - Its not possible to edit custom annotations, the shape gets lost
- [CYTOSCAPE-12679] - Help and cyBrowser toolbar icons are not visible by default
- [CYTOSCAPE-12681] - Closing then reopening session takes longer and longer
- [CYTOSCAPE-12683] - It is hard to open the toolbar customization popup
- [CYTOSCAPE-12687] - Commands API Create Filter fails to create INCOMING filter
- [CYTOSCAPE-12688] - Commands "filter create" misnames filter
- [CYTOSCAPE-12694] - Race condition: selecting nodes and fitting content
- [CYTOSCAPE-12696] - node set attribute - cannot use commas in data
- [CYTOSCAPE-12697] - openBrowser needs an arg to not use default CyBrowser
- [CYTOSCAPE-12702] - Network View double click not working
- [CYTOSCAPE-12706] - Default option for importing table from file
- [CYTOSCAPE-12711] - Table SUID not mapped on session loading
- [CYTOSCAPE-12712] - NumberOfUnderlyingEdges edge column not created
- [CYTOSCAPE-12713] - 3.9.0-SNAPSHOT About box links don't function
- [CYTOSCAPE-12716] - Clicking the handle for a bend should automatically create a bypass.
- [CYTOSCAPE-12719] - After hiding edges, the Menu option "Select > Edges > Show All Edges" stays disabled
- [CYTOSCAPE-12720] - VizMap: Tooltip for edges doesn't appear
- [CYTOSCAPE-12721] - Network view memory leak
- [CYTOSCAPE-12723] - Transparency value out of range causes exception in renderer
- [CYTOSCAPE-12727] - Unable to update cyREST from 3.11.0 to 3.11.1
- [CYTOSCAPE-12730] - 'command pause' shows tiny dialog box when run from swagger
- [CYTOSCAPE-12734] - For app manager to use https
- [CYTOSCAPE-12735] - VizMap: Tooltip for edges doesn't appear
- [CYTOSCAPE-12738] - Cytoscape Style Preview shows the same style for every thumbnail