March 26, 2018

Welcome

Summary

- Cytoscape v3.6.1 is now available for immediate download.
- Addresses 5 issues relative to v3.6 (see Section 10)
- Significant upgrades to core functionality
  - Automatic JVM v8 installation for Windows & Mac
  - Included support for loading and saving networks in NDEx
  - Command parameters allow camelCase
- 5 more Apps are available in the App Store as compared to the v3.6 release.
- What to do next …

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

Dear Cytoscape User

We are proud and pleased to release Cytoscape v3.6.1. This new release contains both new features and improvements to functionality and documentation as described in Sections 7 and 10.

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.

v3.6.1 retains support for 32 bit JVMs and Windows XP, as they are a significant portion of Cytoscape installations. However, certain features of Cytoscape may not function with 32 bit JVMs.

For Windows and Mac systems, v3.6.1 installs its own JVM (v8) and can operate on systems having Java 9 and later. Linux systems must have JVM 8 (rev 151 or higher) 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 16 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/y83buz5c.

Finally, in v3.6.1, 5 Apps were added to the App Store (http://apps.cytoscape.org), bringing the total to 206. The apps new for v3.6.1 include:

    CountTriplets
    CyNDEx-2
    CytoMOBAS
    Jesse
    MORO

We expect a v3.7 release in Q2 2018. As our plans firm up, we'll publish them to the Cytoscape community (http://www.cytoscape.org/roadmap.html). For more on our roadmap, see Section 9.

*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.*

For Cytoscape v2.x Users

As of the Cytoscape v3.5 release on March 27, 2017, Cytoscape releases at the 2.x level are no longer supported. This reflects both the great success Cytoscape v3 has had since its initial release on February 4, 2013 and the rapidly diminishing user base for Cytoscape 2.x.

While all version 3 releases are upwardly compatible with previous Cytoscape versions (i.e., they can load, analyze, and display networks and attributes stored using previous versions, including v2.x), they can coexist with previous versions on the same workstation. It is not necessary to uninstall previous versions before installing a newer release, and you can choose to use both on the same workstation.

Version 3 has matured and achieved a reputation for speed, reliability, and support that makes it a *superior choice* (compared to v2.x) for most uses. If you are using v2.x, please switch to v3.6 and enjoy the new v3 features and the Apps available in the App Store (http://apps.cytoscape.org).

A table describing Cytoscape support is presented in Section 8.

We are very excited to make this release, and hope you find it an indispensable tool in your research. To get you started, we have provided additional introductory material to set you on the right foot, and we have also provided background material for general interest.

Please let us know how we're doing and how we can better advance your research!

The Cytoscape Team

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
New	**For New Users** (Section 1)
Casual	**For Casual Users** (Section 2)
Power	**For Power Users** (Section 3)
App Developers	**For App Developers** (Section 4)
General Interest	Try getting oriented by reading: **General Background** (Section 5) **Cytoscape App Store** (Section 6) Then try browsing: **New Features** (Section 7) **Support Offering** (Section 8) **Future Plans** (Section 9) To get your feet wet, try: **For New Users** (Section 1)

1. For New Cytoscape Users

What is Cytoscape?

Cytoscape is software that can help you visualize complex networks (as *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 6).

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 graph 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 8). 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 6).

Which Cytoscape Version Should I Use?

Generally, you should use v3.6.1 (the newest version). v2.x has been in the field for several years and is no longer supported. Cytoscape v3.6.1 has many improvements over previous Cytoscape v3.x releases.

Note that if you have already installed a previous Cytoscape version, you can install v3.6.1 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 3.6.1 provides a suitable JVM if your system doesn't already have one (v8, rev 151 or later). For Linux users, be sure to have a JVM (v8, rev 151 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 Casual Cytoscape Users

If you're confident of your Cytoscape skills, please read the Power Users information (Section 3).

If you're Cytoscape skills are rusty, please continue with the New Users information (Section 1).

3. For Cytoscape Power Users

Is v3.x for Me?

The answer is most likely yes! Cytoscape 2.x is out of support.

Most modern v2.x plugins have been converted to v3.x apps, and new v3.x apps are more plentiful than v2.x plugins (-- *app* is the v3.x name for the installable features known as a *plugin* in v2.x). To take stock, you can browse the App Store directly (Section 6).

Note that v2.x plugins are not compatible with v3.x apps. If you rely on v2.x plugins that are not yet available for v3.x, you may need to remain with v2.x instead of upgrading to v3.x, though v2.x is no longer supported.

Can I use v2.x and v3.x at the Same Time?

You can experiment with v3.x by installing it on your workstation – you can use both v2.x and v3.x on the same workstation.

How to Prepare for Cytoscape

1. If you have already installed a v3.6.1 RC version, *please uninstall it before proceeding.* Previous Cytoscape versions can coexist with v3.6.1, and do not need to be uninstalled.
2. Consult the App Store (Section 6) 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 Future Plans table (Section 9) and Support Offering table (Section 8) to see where the Cytoscape community is going.

How to Download and Install Cytoscape

- Surf to http://www.cytoscape.org, click on the Download Cytoscape button, and follow the prompts
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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.

4. 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 3) to start working with Cytoscape if you have not already done so.

Should I Convert My v2.x Plugin to a v3.x App?
Yes! Cytoscape v2.x is no longer supported.

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

Are there App Samples?
Yes! See:

http://opentutorials.cgl.ucsf.edu/index.php/Tutorial:Creating_a_Simple_Cytoscape_3_App

Also note the App Cookbook:

http://wikiold.cytoscape.org/Cytoscape_3/AppDeveloper/Cytoscape_3_App_Cookbook

5. 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[1]. 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 no longer supported.

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

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[1] www.osgi.org – also used as the basic framework for Eclipse and numerous commercial products

6. The Cytoscape App Store

The Cytoscape App Store targets broad demographics through specific features:

Cytoscape User	Benefit
New or Casual	Find Cytoscape functionality easy via familiar paradigms of search and tag navigation
Power or Frequent	Find and install apps easy and provide crowdsourced rating and reviews
App Developers	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.

7. New Feature Table

Feature	Beneficiary	Manual Section
Cytoscape Automation	Power users	24. Cytoscape Automation
yFiles Update	All users	11.7 yFiles Layouts
Network Search Bar	All users	5.3 Import Networks from Public Databases
Starter Panel	All users	4.1 Starter Panel
New Starter Networks	New users	
CyBrowser Integration	All users	http://apps.cytoscape.org/apps/cybrowser
Drag & Drop sessions, networks & tables	All users	5.1 Import Fixed-Format Network Files
Diffusion	All users	10.3 Diffusion
Copycat Layout	Power users	11.6 Automatic Layout Algorithms
Unattended Installation	Power users	2.2 Getting Started
High Sierra Support	All users	
Improved Selection Performance	All users	
Toolbar Customization	Power users	4.2 Basic Features

8. Support Offering Table

Feature	Purpose	Beneficiary	URL
Cytoscape Google Groups • Helpdesk • Discuss	Community response on best effort basis	All users	mailto:cytoscape-helpdesk@googlegroups.com mailto:cytoscape-app-dev@googlegroups.com
User Manual	Comprehensive manual	All users	http://manual.cytoscape.org
Installation Guide	Cytoscape installation	New/Casual users	Section 2 of http://manual.cytoscape.org
Tutorials	Streamlined productivity	All users	http://tutorials.cytoscape.org
Presentation Slides on Web Site	Enable casual learning	All users	https://speakerdeck.com/cytoscape
Code Snippets	Commonly used App development code	App Developers	http://wikiold.cytoscape.org/Cytoscape_3/AppDeveloper/Cytoscape_3_App_Cookbook

9. Future Plans Table

Feature	Purpose	Beneficiary	Timeframe
Distributed computing	Link to NDEx and other external storage and compute services	All users	Ongoing
Additional Visualizations			Ongoing
Additional Analytics			Ongoing
Wallpaper Collection	Publicize good results associated with Cytoscape	All users, potential users, general public	TBD

Cytoscape Clinics
    New/Casual User
    Power User
    App Developer
	Chat rooms give instant response based on community availability	All users	Ongoing

10. Issues Addressed

The following issues were addressed in v3.6. Details for each issue can be found at Cytoscape's RedMine issue repository:

http://code.cytoscape.org/redmine

Issue	Description
3998	Diffusion App Heat/Rank Modality not working
4001	JSON returns from ObservableTasks
4083	2-finger zoom
4108	Manually changing node properties is buggy
4112	Scroll Zoom not Working