March 24, 2017

Welcome

Summary

- Cytoscape v3.5 is now available for immediate download.
- Cytoscape v2.x is no longer supported.
- Major new features
  - ID Mapper
  - Export Dialog UI improvements
  - CoSE Layout (for compound nodes)
  - Consolidated Node Layout Tools
  - New API for long running remote tasks
  - Drag/drop for network and table files now works
  - Faster deleteRows()
- Addresses 148 issues relative to v3.4 (see Section 10)
  - Memory leak and forever growing .cys files is fixed
  - Improved recognition of floating point numbers in Excel spreadsheets
  - Multiple file section in Open dialogs now works on Mac
  - Import network via HTTPS now works
  - Visual style now set when network is opened via command line argument
- 39 more Apps are available in the App Store as compared to the v3.4 release.
- Ready for use by all segments of the Cytoscape community.
- Continues v3.4's core feature set, specifically:
  - Upward compatible and can coexist with previous Cytoscape versions
  - Most popular plugins from v2.x versions are available as apps, with more to follow.
- What to do next …

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

Dear Cytoscape User

We are proud and pleased to release Cytoscape v3.5. This new release contains both new features and improvements to functionality and documentation as described in Sections 7 and 10.

With this release, we officially withdraw support for Cytoscape 2.x versions, though installable code and documentation will remain available on the Cytoscape web site.

v3.5 retains support for 32 bit JVMs and Windows XP, as they are a significant portion of Cytoscape installations.

v3.5 fully supports Java 8, but not Java 7.

This release marks successful tests with the system configurations most common among our user base, including 24 different combinations of operating systems and Java Virtual Machines across Windows, Linux, and Mac OS platforms. Check out your system's configuration here: http://tinyurl.com/kelwscg.

Finally, in v3.5 , 39 Apps were added to the App Store (http://apps.cytoscape.org), bringing the total to 184. The apps new for v3.5 include:

BEL Navigator	CytoMCS	Network Randomizer
CHAT	Diffusion	NetworksInfo-writer
Color Cast	DisGeNET-app	Orthoscape
CompleteGraph	DyNetViewer	PCM
CX Support	EClerize	PEmeasure
cy3sabiork	FileWatcher	PEWCC
CycleDetector	GNC	PhenomeScape
CyDataSeries	GTA	PTMOracle
CyFinder	ISMAGS	RINspector
CyGenexpi	Modeler	SAFE
CyNetSVM	Motif-Discovery	SDP Model Builder
CytoGTA	NDB Reader	SiGNetApp
cytoHubba	netIMP	WikiDataScape

We expect to make a v3.6 release in mid Q4 2017. 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 <u>new</u> or <u>casual</u> 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, the 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 v3.5 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 v3.5 (the newest version). v2.x has been in the field for several years and is now out of support. Cytoscape v3.5 has many improvements over previous Cytoscape v3.x releases.

Note that if you have already installed a previous Cytoscape version, you can install v3.5 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 users, the JVM commonly installed is a 32 bit version, even if the Windows itself is 64 bits. **For Cytoscape use, the 64 bit version is highly recommended instead**. For all workstations, Java 8 is required.

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 v3.5 RC version, *please uninstall it before proceeding.* Previous Cytoscape versions can coexist with v3.5, 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
- ***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?
Cytoscape v3.5 requires Java 8, preferably with 64 bit support. 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.

Note that v2.x plugins do not work with v3.x. In order get the benefits of improved stability, the Cytoscape team found it necessary to change the relationship between plugins/apps and the Cytoscape core. Many plugins have been ported to v3.x (see Section 6). The porting exercise is substantial, and once a plugin is converted to an app, it will continue to work at least until v4.0 is released – there is no v4.0 planned at this time. For more on this topic, see:

http://wiki.cytoscape.org/Cytoscape_3/CoreDevelopment/Motivation

Should I Convert My v2.x Plugin to a v3.x App?
Yes! Cytoscape v2.x is now out of support.

How Do I Get Started With App Development?
To get started with app development:

http://wiki.cytoscape.org/Cytoscape_3/AppDeveloper/Cytoscape_App_Ladder

To convert a v2.x plugin to a v3.x app, refer to:

http://wiki.cytoscape.org/Cytoscape_3/AppDeveloper/PluginPortingGuide
or
http://f1000research.com/articles/3-150/v1

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

http://wiki.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://wiki.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 now out of support.

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
ID Mapper	All users	8.4. Mapping Identifiers
Export Dialog Improvements	All users	22. Export Your Data
CoSE Layout (for compound nodes)	Power users	12.3. Automatic Layout Algorithms
New API (CyJob) for Long Running Tasks	App developers	
Drag/Drop for Network and Table Files	All users	5.1. Import Fixed-Format Network Files 8.1. Import Data Table Files
Consolidated Node Layout Tools	Power users	12.8. Node Layout Tools

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://opentutorials.cgl.ucsf.edu/index.php/Portal:Cytoscape3
Presentation Slides on Web Site	Enable casual learning	All users	https://speakerdeck.com/cytoscape
Code Snippets	Commonly used App development code	App Developers	http://wiki.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 v3.5. Details for each issue can be found at Cytoscape's RedMine issue repository:

http://code.cytoscape.org/redmine

Issue	Description
3752	Help>Citations pops error dialog
3710	Network memory leak when loading new session
3700	Columns cannot be deleted after merging networks
3696	Double-clicking on a node to collapse its group can lead to an exception
3694	Exported Image does not correspond to network view when multiple networks are displayed in grid
3693	Manually set handle values in ContinousMappingEditor are not applied
3692	Import network via https URL not working
3664	Importing the same XGMML file twice creates networks with the same name
3663	Memory Leak in JUnit tests
3662	Setting preferred layout to "Group Attributes Layout" results in error when network imported....
3654	Biopax networks loose layout information when loaded from session files
3652	Visual style not set when galFiltered.cys opened with command-line argument
3648	NodeList tunable can't handle colons in attribute values
3647	BoundedInteger slider can freeze Cytoscape
3646	Tunable Slider labels overlap and String fields are too short
3645	Renderer not appearing in renderer select dialog dropdown.
3643	Tunable panel does not expand with the dialog
3641	Support the use of @ContainsTunables to combine UI for multiple tasks intoa single dialog
3633	Option to import network from public databases is hard to find
3630	I can't hide "Current Style" window
3624	Column filters not restored properly
3622	Edits to Tunable text fields not registered unless Enter pressed
3620	Add support for action button Tunable
3619	Dialog not refreshed when @ContainsTunables object value changed
3616	Creating multiple views in app results in indeterminate view selection status
3611	Can create a column with no name, can't delete it
3608	No networks listed in the Network panel when the session file network_list.xml is missing
3599	Support multiple file selection in FileUtil on Mac
3598	Excel import not workgin
3597	Unable to import excel spread sheet -cytoscape 3.4
3593	Bug: Memory Leak
3588	Using Rotate tools on empty network throw exceptions
3586	Export dialog improvements
3584	Drag & Drop of Recognized File Types for Import
3582	Menus duplicate when activating detached windows
3573	Intermittent crash on Cytoscape startup
3571	Columns with mostly numbers imported as String
3568	Importing NNF file twice creates second view for existing networks

3565	Copying Table Panel data misses initial tabs
3564	Birds-Eye view position does not update properly for Cy3D renderer
3547	Outdated file association instructions in Mac installer
3542	Missing refresh preview button
3541	App Manager app list doesn't always refresh on open/when site changed
3534	Help icons
3532	Simplify Tool Panel by combining tabs
3531	Backspace on Mac should delete
3516	Fonts do not scale
3509	Default Arrow Shape value overrides Discrete Mapping
3507	Memory leak
3488	"Delete selected nodes and edges" deletes all pasted nodes/edges
3483	Cross-column value shifting when copying from node/edge attributes tables
3466	Cytoscape won't start
3456	Right click
3438	Cytoscape not running
3433	Instalation Cytoscape
3420	Cannot open the software.
3415	Cytoscape v3.3 cannot always read a v2.8.3 .cys file
3406	no loading de program
3405	no loading de program
3401	freezing
3400	Implement a Compound Node layout
3378	Toolbar separators
3368	Use CyServiceRegistrar for lazy loading of services
3341	NPE when clicking button in tool panel
3295	unable to install more apps
3263	program loading
3252	failure to launch
3241	\\\"Installer is damaged (disk cannot be opened)
3228	Strings of type 23d, 164d recognized in java as a floating point while importing
3226	Adding Nodes
3221	Holding <cmd> and selecting a row in a table should add to the current selection not create a new selection
3200	Problem in manual addition of nodes and edges
3198	Reactome FI pathways
3196	BioGrid
3190	Table Merge UI doesn't refresh based on programmatic selection changes in TunableValidator
3185	Filters don't apply to all networks, should have some way to define a scope for a filter
3177	Plugin installation error
3169	EDGE_TARGET_ARROW_SHAPE can't keep "None" value
3164	Reactome Browser
3163	finalizing
3162	Hanging error
3161	Cannot import text files as tables without .txt ending
3156	right click mac
3135	Need a way to cleanup session

3132	Provide API for long-running tasks using web services
3109	Error message
3102	cytoscape loading bug
3100	Renaming Column Issue
3098	Proxy Settings
3097	Wikipathways
3091	unknown bugs
3086	installation
3077	App not visible
3070	agilent literature search
3066	Importing network data
3062	launching the program
3042	installations of Apps
3041	Problem with Bingo
3010	App
3008	syntax error
3007	syntax error in pom.xml
3006	Are you going to support java v8
2997	Selection window locked
2996	Numeric filter slider will not drag when specified minimum value is less than column minimum
2994	JAVA trouble
2986	graphics not showing
2985	Sometimes edges and nodes are perpetually selected
2951	unable to read (dot)sif files
2930	Could not find reader
2928	memory not released
2927	memory not released
2926	cytoscape unable to connect internet
2922	Not running.
2916	install 3.1.1
2900	Main window not appear
2890	Change Control Panel toggling between different panels (Network, Style,Select,....and all the apps that use it) to drop down or something similar
2845	App status doesn't show startup failures if App Manager opened shortly after startup
2787	Remove Duplicate Edges appears unresponsive, extremely slow on large networks
2720	"could not find reader" when opening a .cys
2702	Not Responding
2641	File-New-Network-Empty Network mapping tunable not automatically populated with current network collection columns
2624	Cant Access App Manager
2622	Program stuck
2614	plugin folder
2549	"Could not parse XGMML" message when importing already-existing network
2547	Cytoscape crash
2544	3.1.0 trouble
2542	Node border width of 0.0 not respected with passthrough and discrete mappings
2529	Running Cytoscape 3.0.2 after fresh 3.1 install (cleared CytoscapeConfiguration) results in hang