The Analyses Tab

After samples have been added and associated with valid data files, in a Partek Flow project, a data node will appear in the *Analyses* tab (Figure 1). The *Analyses* tab is where different analysis tools and the corresponding reports are accessed.

- Data and Task Nodes
- The Context Sensitive Menu
- Running a Task
- Canceling and Deleting Tasks
- Task Results and Task Actions
- Layers
- Collapsing Tasks
- Downloading Data

Home > *New project (Project owner)*   ⚙

| **Analyses** | Metadata | Log | Project settings | Notebook | Data viewer | Attachments | 🔵 Venn diagram |

Unaligned reads

Toolbox

Click a node to see available options.

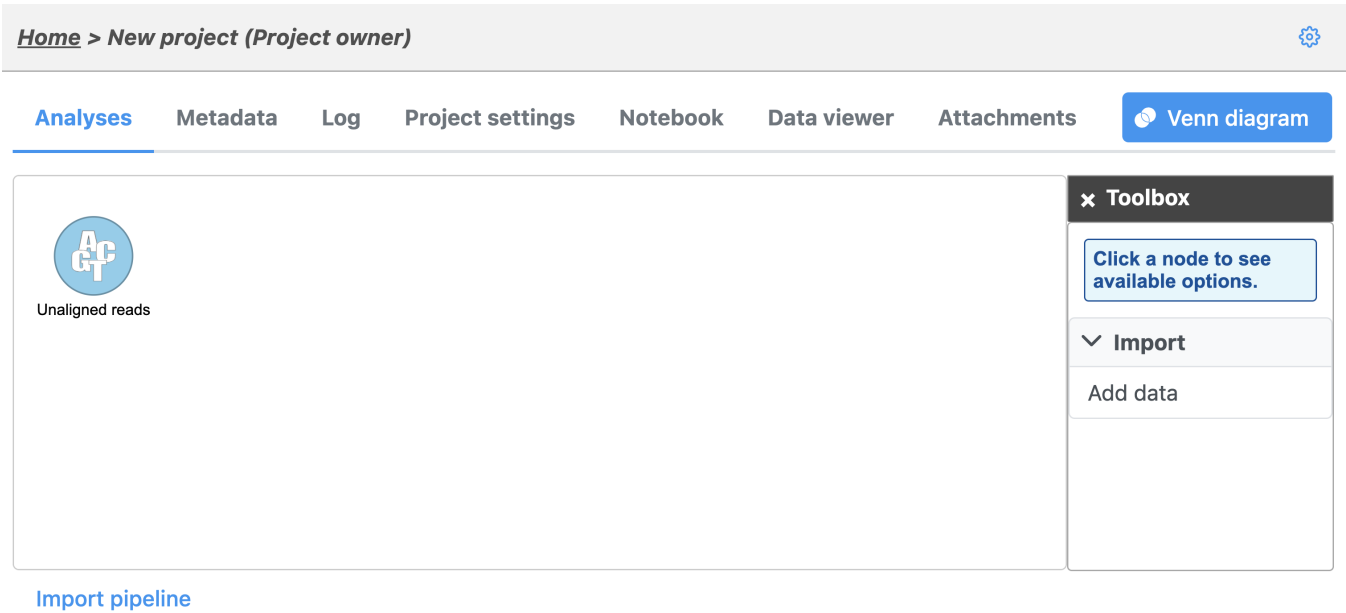∨ Import

Add data

Import pipeline

Figure 24. The Analyses tab showing a data node of unaligned reads

Data and Task Nodes

The *Analyses* tab contains two elements: data nodes (circles) and task nodes (rounded rectangles) connected by lines and arrows. Collectively, they represent a data analysis pipeline.
Data nodes (Figure 2) may represent a file imported into the project, or a file generated by Partek Flow as an output of a task (e.g., alignment of FASTQ files generates BAM files).

Figure 25. The Analyses tab showing a data node of unaligned reads

Task nodes (Figure 3) represent the analysis steps performed on the data within a project. For details on the tasks available in Partek Flow, see the specific chapters of this user manual dedicated to the different tasks.
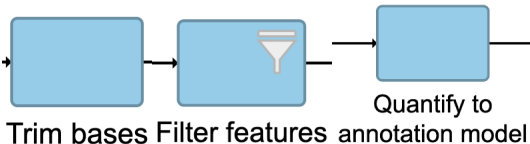
Trim bases   Filter features   Quantify to annotation model

Figure 26. Examples of different types of data nodes

The Context Sensitive Menu

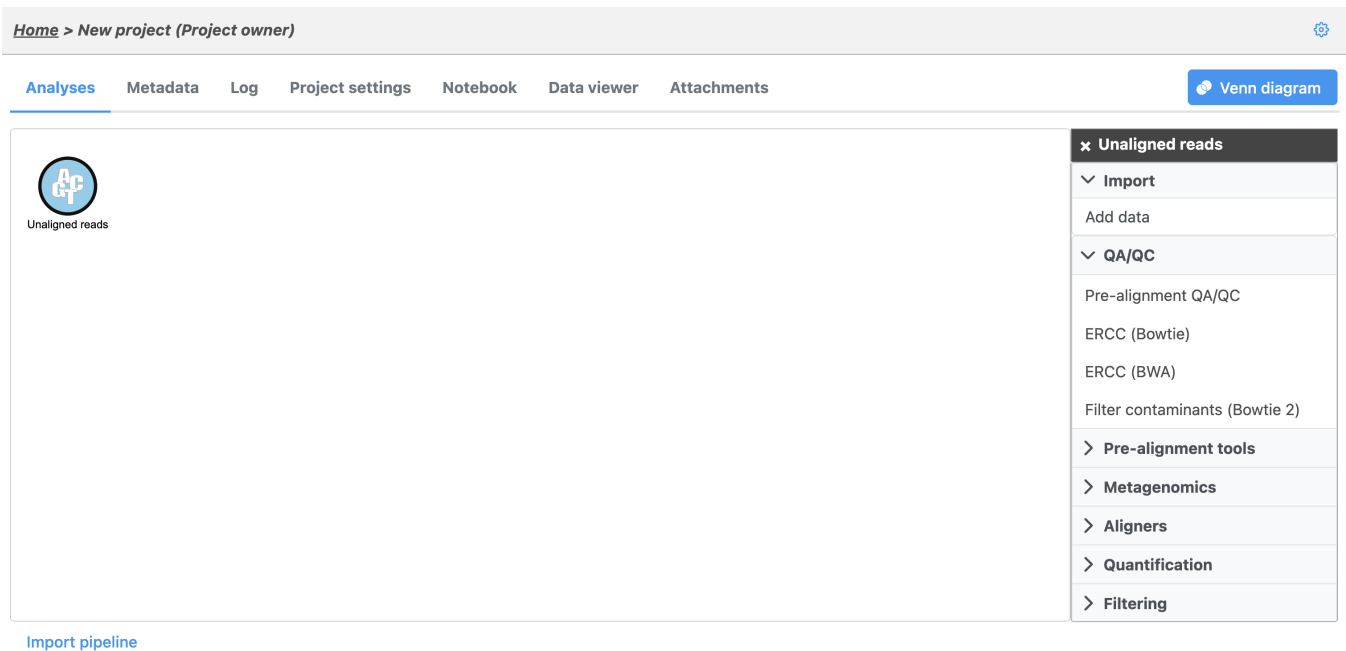Clicking on a node reveals the context sensitive menu, on the right side of the screen.

Figure 27. The context sensitive menu is revealed when a node is selected

Only the tasks that are available for the selected data node will be listed in the menu. For data nodes, actions that can be performed on that specific data type will appear.

In Figure 4, a node that contains _Unaligned reads_ is selected (bold black line). The tasks listed are the ones that can be performed on unaligned data (_QA /QC_, _Pre-analysis tools_, and _Aligners_).

To hide the context sensitive menu, simply click the [X] symbol on the upper left corner of the context sensitive menu. Clicking the triangles will collapse (>) or expand (∨) the different categories of tasks that are shown.

After a task is performed on a data node, a new task node is created and connected to the original data node. Depending on the task, a new data node may automatically be generated that contains the resulting data. For details of individual tasks, see Task Menu.

In Figure 5, alignment was performed on the unaligned reads. Two additional nodes were added: a task node for _Align reads_ and an output data node containing the _Aligned reads_.

Analyses   Metadata   Log   Project settings   Notebook   Data viewer   Attachments

🔗 Venn diagram

✕ **Toolbox**

Click a node to see available options.

Unaligned reads   STAR   Aligned reads
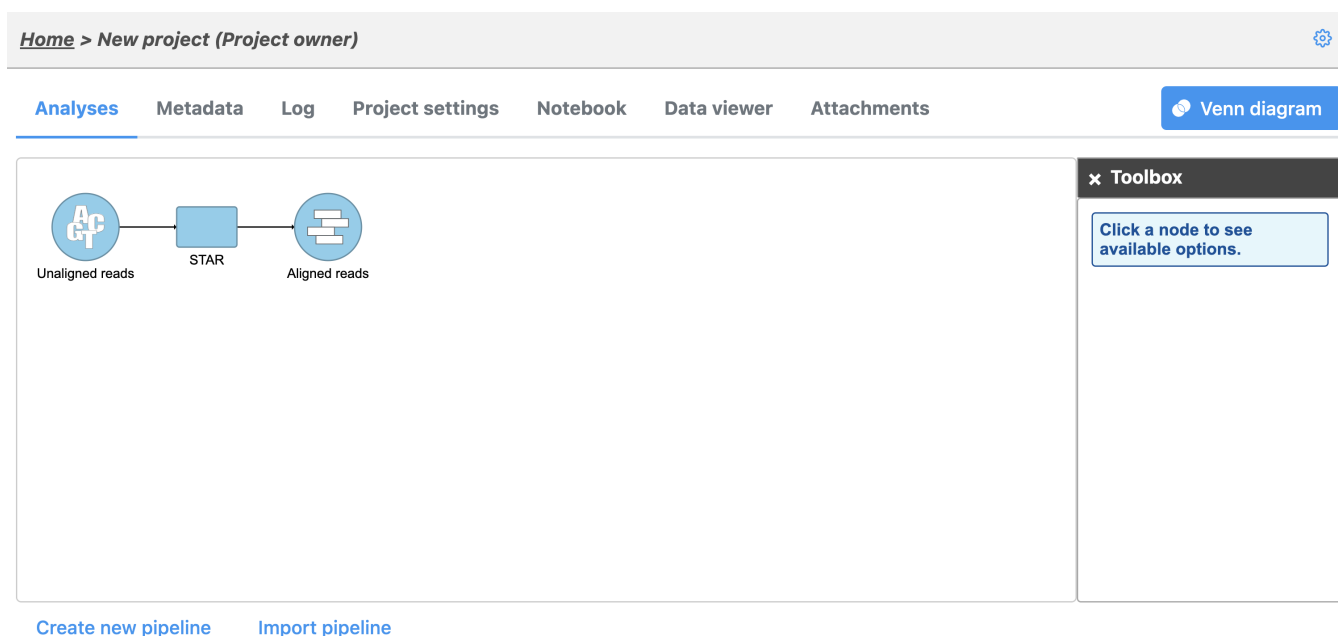
Create new pipeline   Import pipeline

Figure 28. Certain tasks performed on a data node generate additional data nodes. The example shows the Aligned reads node, which was generated upon

Running a Task

To run a task, select a data node and then locate the task you wish to perform from the context sensitive menu. Mouse over to see a description of the action to be performed. Click the **specific task**, set the additional parameters (Figure 6), and click **Finish**. The task will be scheduled, the display will refresh, and the screen will return to the project's *Analyses* tab.

In Figure 6, the STAR aligner was selected and the choices for the aligner index and additional alignment options appeared.

Select STAR 2.7.8a index

Assembly

Homo sapiens (human) - hg19 ⌄

Index

Whole genome (Administrator) ⌄

Alignment options

☐ **Generate unaligned reads**
This is at the expense of an increase in running time and disk space.

Advanced options

Option set

-- Default -- ⌄   **Configure**

Back   Finish

Figure 29. Running a STAR alignment task in Partek Flow. Dialog boxes to set the parameters appear

Tasks that are currently running (or scheduled in the queue) appear as translucent nodes. The progress of the task is indicated by the progress bar within the task node. Hovering the mouse pointer over the node will highlight the related nodes (with a thin black outline) and display the status of the task (Figure 7).

If a task is expected to generate data nodes, expected nodes appear even before the task is completed. They will have a lighter shade of color to indicate that they have not yet been generated as the task is still being performed. Once all tasks are done, all nodes would appear in the same shade.
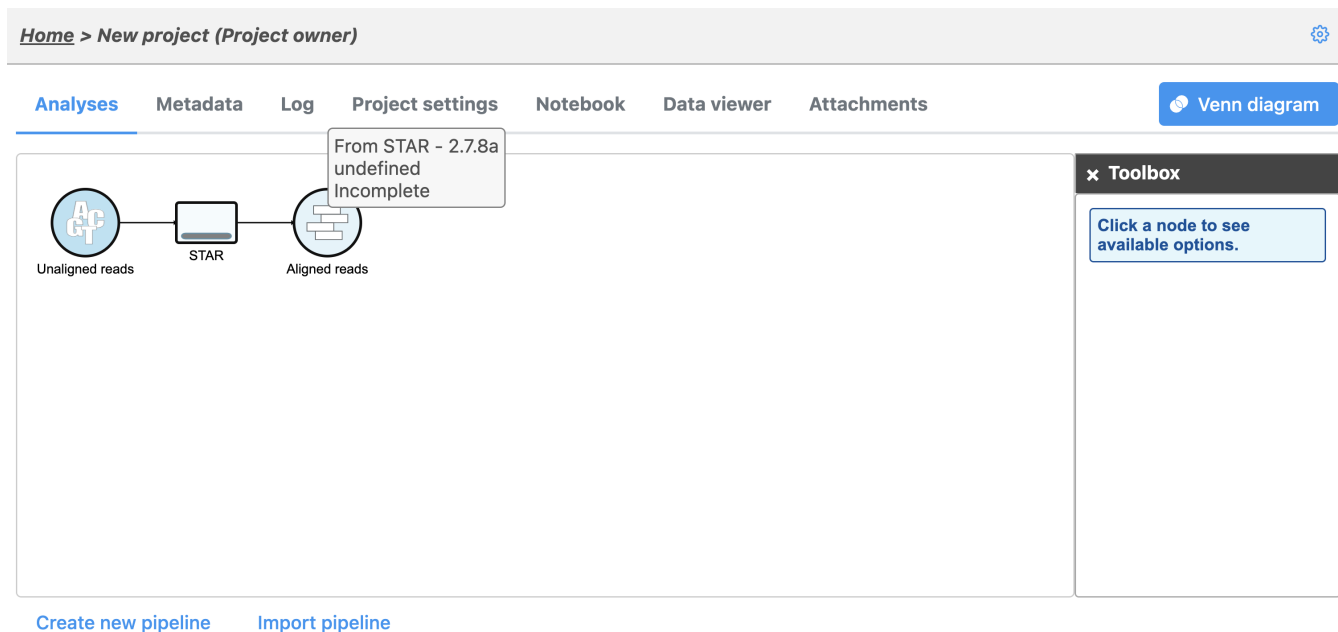
Figure 30. A running task showing the progress indicator. The output data node, also in the lighter shade of color, appears even before the task completes. task is still in progress

Canceling and Deleting Tasks

Tasks can only be cancelled by the user that started the task or by the owner of the project. Running or pending tasks can be canceled by clicking the right mouse button on the task node and then selecting **Cancel** (Figure 8). Alternatively, the task node may be selected and the **Cancel task** selected from the context sensitive menu.

Analyses Metadata Log Project settings Notebook Data viewer Attachments 🌐 **Venn diagram**

✕ STAR

∨ **Task results**

Task details

❯ **Task actions**

View report
Notify of finish
Cancel
Edit description
Collapse tasks
Change color

Unaligned reads STAR eads

Create new pipeline   Import pipeline

Figure 31. Canceling a task may be done by right clicking on the running task or by selecting Cancel task in the task panel

A verification dialog will appear (Figure 9) asking to confirm the task cancellation, the cancelled tasks will remain in the Analyses tab but will be flagged by gray x circles on the nodes (Figure 10)**.**
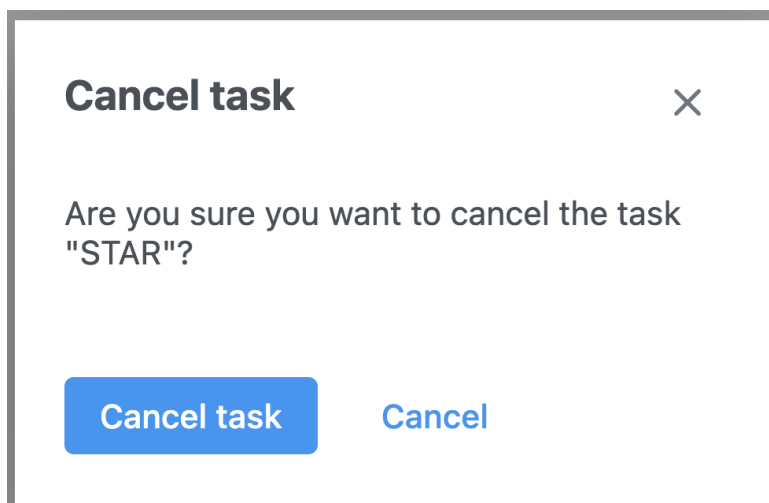

Cancel task   ✕

Are you sure you want to cancel the task "STAR"?

Cancel task   Cancel

Figure 32. Verification of Task Cancellation

Data nodes connected to incomplete tasks are also incomplete as no output can be generated (Figure 10).
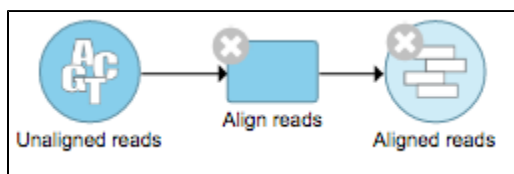

Figure 33. Warnings indicate that the task failed (or was cancelled) and the data node is empty

To delete tasks from the project click the right mouse button on the task node and then select **Delete** (Figure 11). Alternatively, click the task node and select **Delete task** from the context sensitive menu.
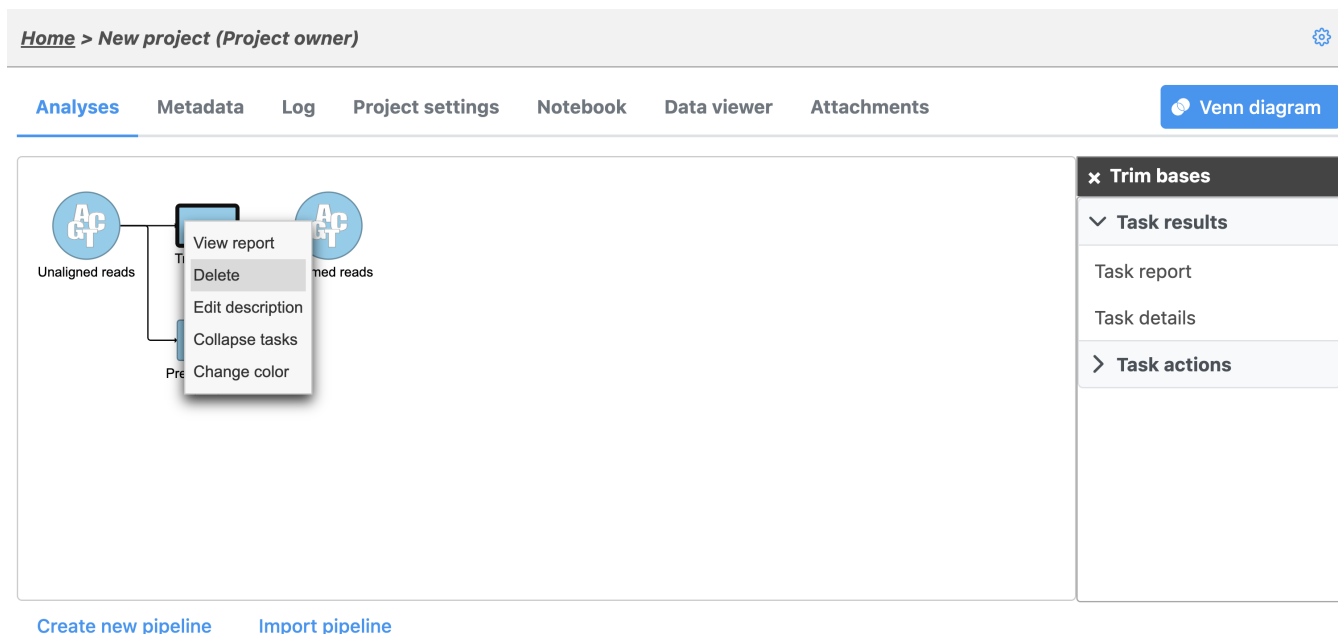
Figure 34. A task can be deleted by right clicking on the task and selecting Delete or selecting Delete task in the context sensitive menu

A verification dialog will appear (Figure 12). A yellow ⚠ warning sign will show up if there some downstream tasks performed by collaborators will be affected. Deleting the tasks output files optional. If this is not selected, the task nodes will disappear from the Analyses tab but the output files will remain in the project output directory.
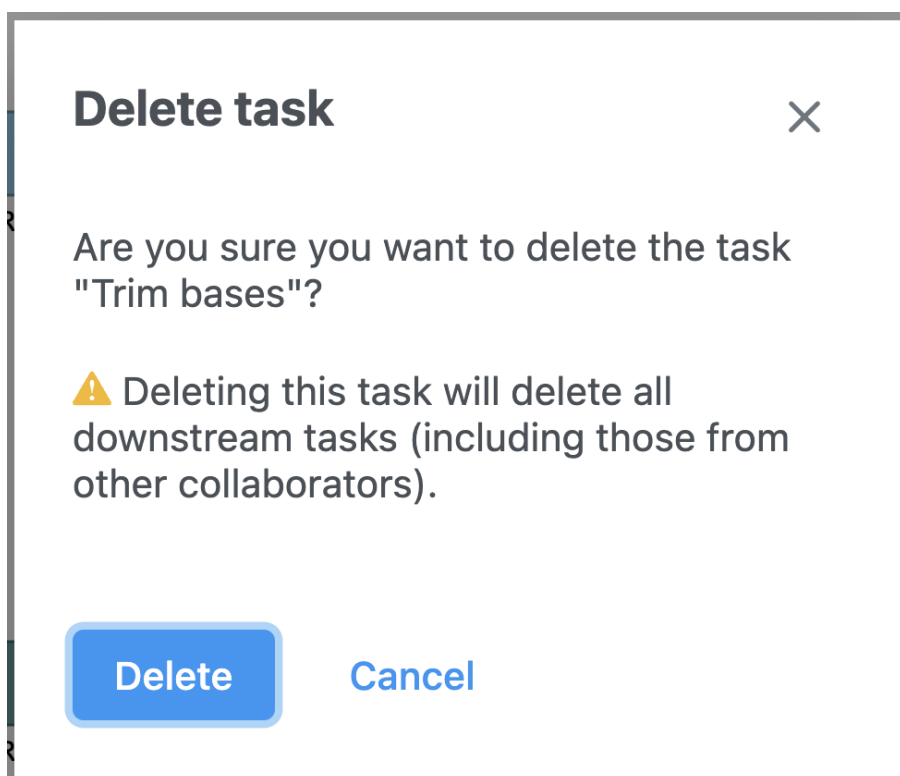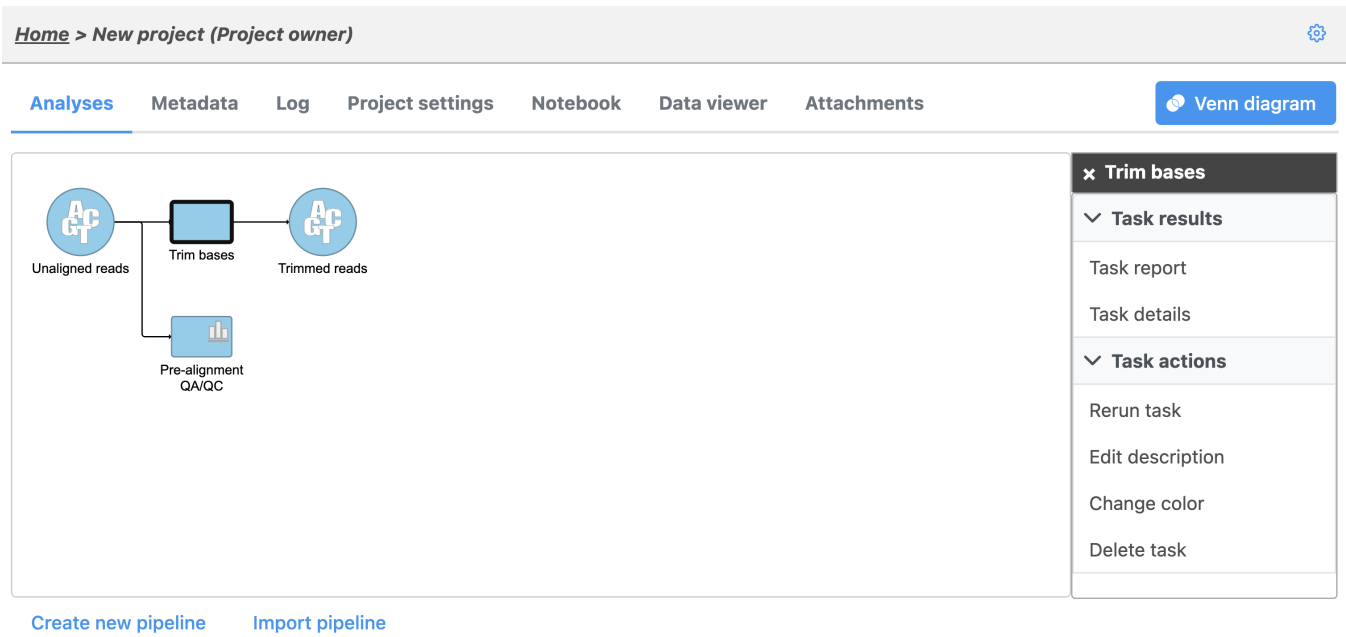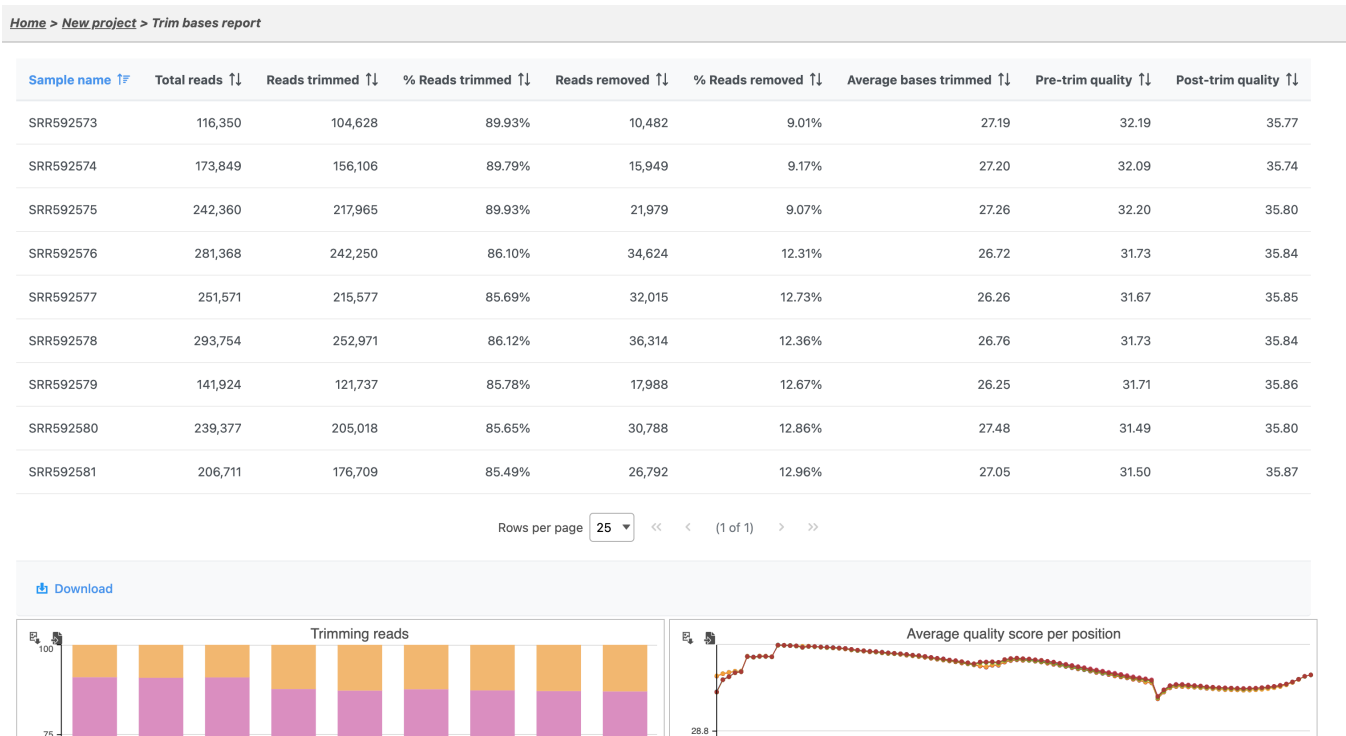

Figure 35. Verification of Task Deletion

Task Results and Task Actions

Selecting a task node will reveal a menu pane with two sections: *Task results* and *Task actions* (Figure 13).

Figure 36. Context sensitive menu after selecting a task node

Items from the *Task results* section inform on the action performed in that node. Certain tasks generate a *Task report* (Figure 14), which include any tables or charts that the task may have produced.

Sample name ↓=	Total reads ↑↓	Reads trimmed ↑↓	% Reads trimmed ↑↓	Reads removed ↑↓	% Reads removed ↑↓	Average bases trimmed ↑↓	Pre-trim quality ↑↓	Post-trim quality ↑↓
SRR592573	116,350	104,628	89.93%	10,482	9.01%	27.19	32.19	35.77
SRR592574	173,849	156,106	89.79%	15,949	9.17%	27.20	32.09	35.74
SRR592575	242,360	217,965	89.93%	21,979	9.07%	27.26	32.20	35.80
SRR592576	281,368	242,250	86.10%	34,624	12.31%	26.72	31.73	35.84
SRR592577	251,571	215,577	85.69%	32,015	12.73%	26.26	31.67	35.85
SRR592578	293,754	252,971	86.12%	36,314	12.36%	26.76	31.73	35.84
SRR592579	141,924	121,737	85.78%	17,988	12.67%	26.25	31.71	35.86
SRR592580	239,377	205,018	85.65%	30,788	12.86%	27.48	31.49	35.80
SRR592581	206,711	176,709	85.49%	26,792	12.96%	27.05	31.50	35.87

Rows per page 25 ‹‹ ‹ (1 of 1) › ››

Figure 37. An example of a Task report for the Trim bases task

The *Task details* shows detailed diagnostic information about the task (Figure 15). It includes the duration and parameters of the task, lists of input and output files, and the actual commands (in the command line) that were run.

Task	**Trim bases**	**Submitted**	14 Nov 2023, 10:37 AM CST		**User**	Matt Luberti
Status	Done	**Started**	14 Nov 2023, 10:37 AM CST			
Duration	00:00:06	**Ended**	14 Nov 2023, 10:37 AM CST			

Output folder /home/flow/FlowData/project_output/Project_New project_186/TrimBasesResult-682317528329774

Flow version 11.0.23.1105

Description

[   ]   **Save**

Download node as project zip
Download node and downstream tasks as project zip

Download logs
Download output files

View input files   **View output files**

Input parameters

Option	Value
trimType	Quality score
End min quality level (Phred)	35
Trim from end	3-prime (right end)
Min read length	25

Figure 38. An example of a Task details page for a Pre-alignment QA/QC task

Additionally, the *Task details* page would contain the error logs of unsuccessful runs. The user can download the logs or send them directly to Partek. This page plays an important role in diagnosing and troubleshooting issues related to task.

Double clicking on a task node will show the *Task report* page. However, if no report was generated, the user will be directed to the *Task details* page.

In the *Task actions* sections, the selected task can be **Re-run w/new parameters**, and in case it is part of a pipeline that includes additional tasks after it, running the *Downstream tasks* is an option. Re-running tasks will result in a new layer being made in the *Analyses* tab.

Another action available for a task node is **Add task description** (Figure 16), which is a way to add notes to the project. The user can enter a description, which will be displayed when the mouse pointer is hovered over the task node.
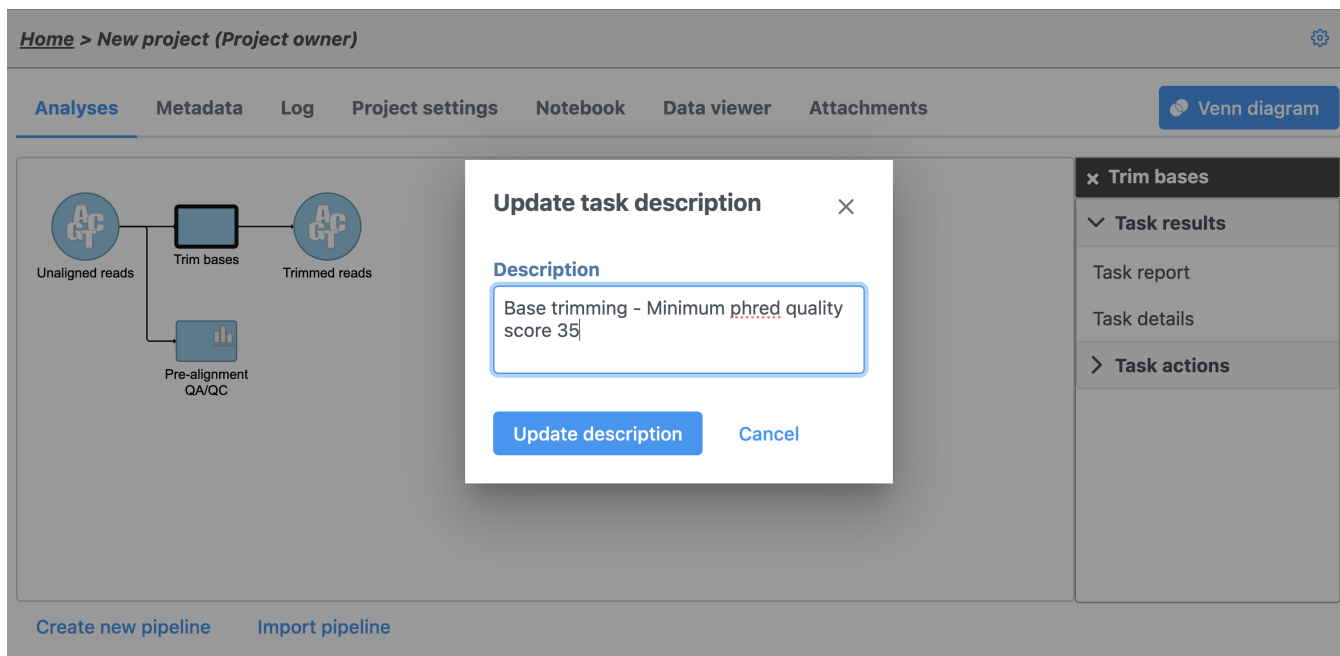
Figure 39. Adding a task description

Layers

It is common for next-generation sequencing data analysis to examine different task parameters for optimization. Users may want to modify an upstream step (e.g. alignment parameters) and inspect its effect on downstream results (e.g. percent aligned reads).

The implementation of *Layers* makes optimizations easy and organized. Instead of creating separate nodes in a pipeline, another set of nodes with a different color is stacked on top of previous analyses (Figure 17). To see the parameters that were changed between runs, hover the mouse icon over the set of stacked task nodes and a pop-up balloon will display them. The text color signifies the layer corresponding to a specific parameter.
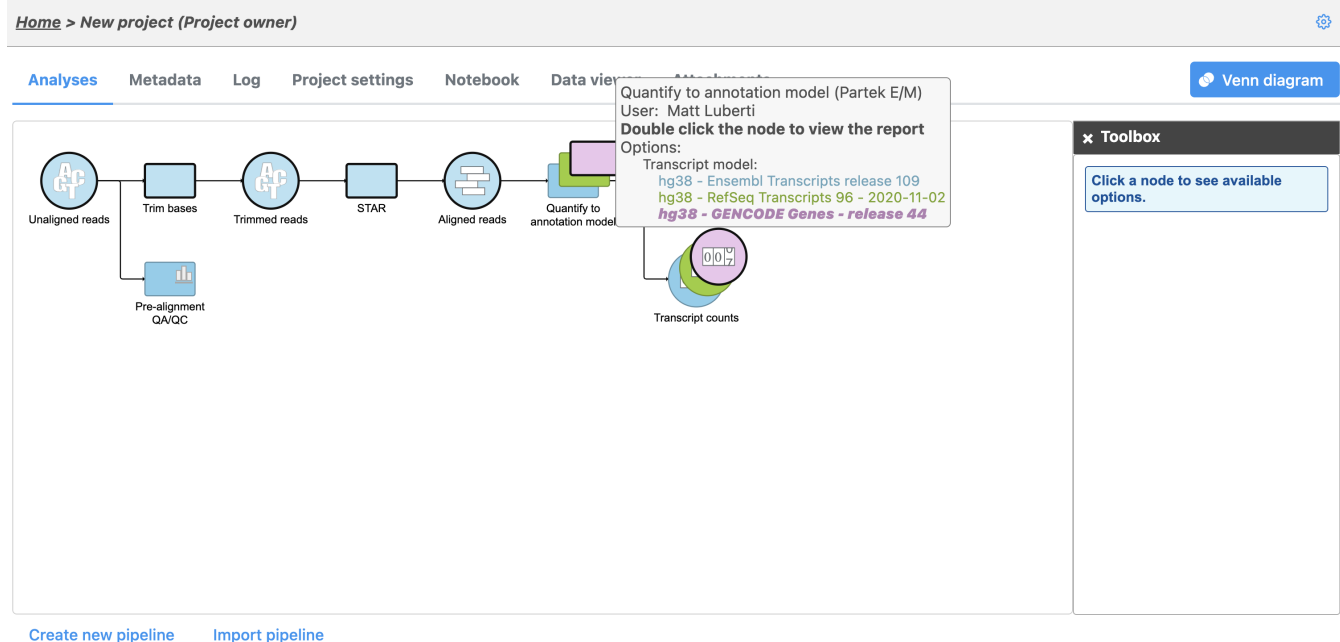

Figure 40. Layers and balloon text correspond to different parameters

Layers are formed when the same task is performed on the same data node more than once. They are also formed when a task node is selected and the **R e-run it w/new parameters** is selected in the context sensitive menu. This will allow the users to change the options only for the selected task. The user may choose to re-run the task to which the changes have been made, as well as all the downstream tasks until the analysis is completed. To do so, select **Re-run w/new parameters, downstream tasks** from the context sensitive menu.

To select a different layer, use the left mouse button to click on any node of the desired layer. All the nodes associated with the selected layer have the same color and when clicked will be displayed on the top of the stack.

Collapsing Tasks

Addition of task and resulting data nodes to project may lead to creation of long pipelines, extending well beyond the border of the canvas (Figure 18).
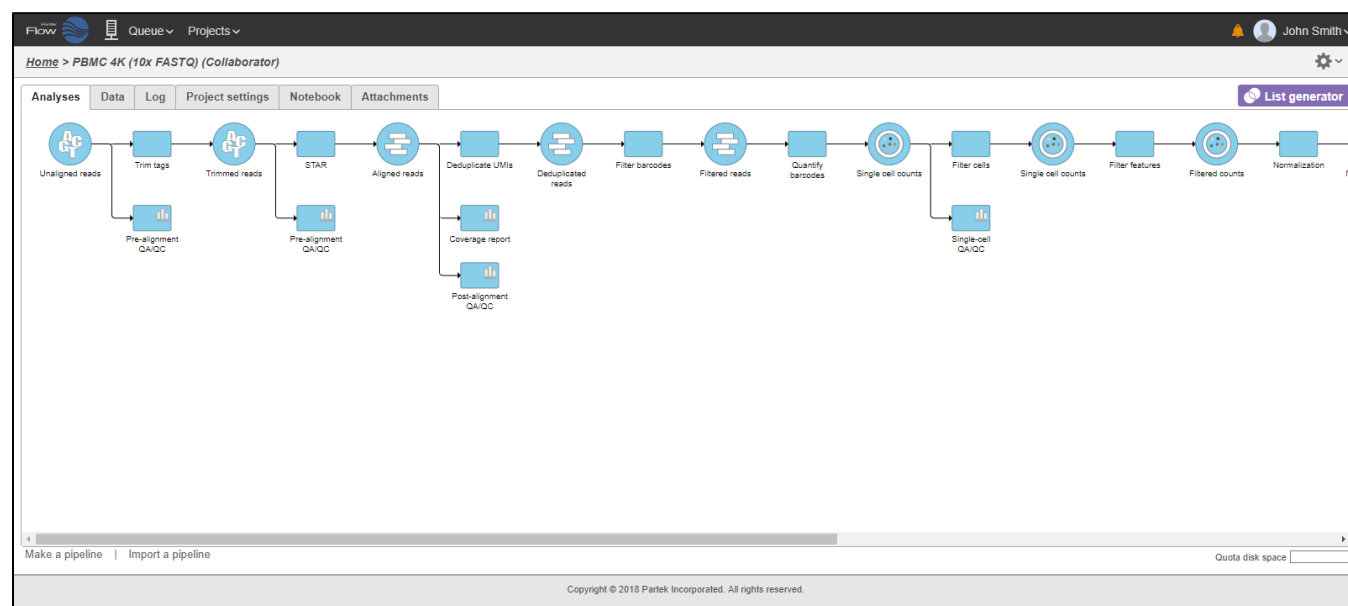

Figure 41. Addition of tasks may extend the pipeline beyond the borders of the canvas

In that case, the pipeline can be collapsed, to hide the steps that are (no longer) relevant. For example, once the single-cell RNA-seq data has been quantified, *Single cell counts* data node will be a new analysis start point, as the subsequent analyses will not focus on alignment, UMI deduplication etc. To start, **right-click** on the task node which should become a boundary of the collapsed portion of your pipeline and select **Collapse tasks** (Figure 19).
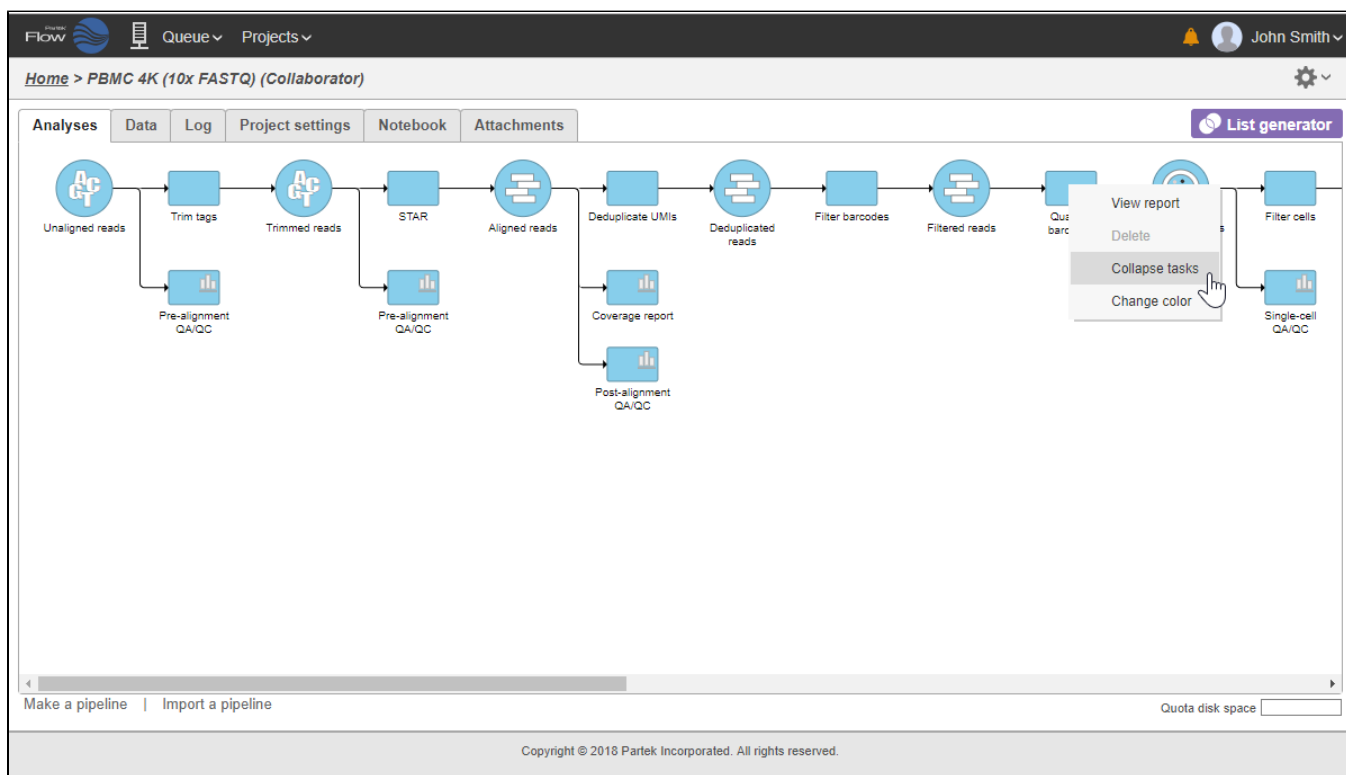
Figure 42. To collapse a part of the pipeline, right-click on a task node

All the tasks on that layer will turn purple. Then **left-click** the task which should be the other boundary of the collapsed portion. All the tasks that will be collapsed will turn green and a dialog will appear (Figure 19). In the example shown in Figure 19, the tasks between *Trim tags* and *Quantify barcodes* will be collapsed. Give the collapsed section a name (up to 30 characters) and select **Save** (Figure 20).
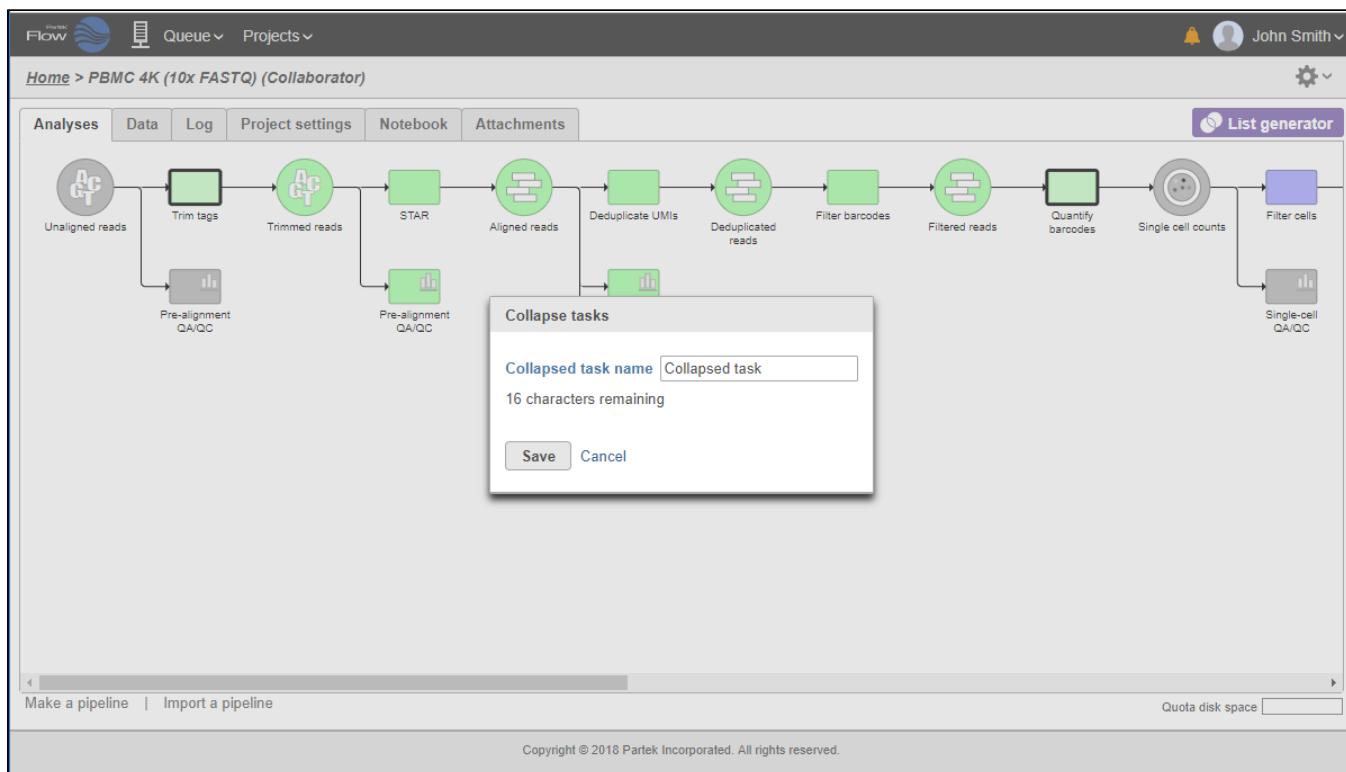
Figure 43. Tasks within the pipeline that will be collapsed are highlighted in green. Instead of them, a single new task node will appear, with the custom label

The collapsed portion of the pipeline is replaced by single task node, with a custom label ("*Single cell preprocessing*"; Figure 21).
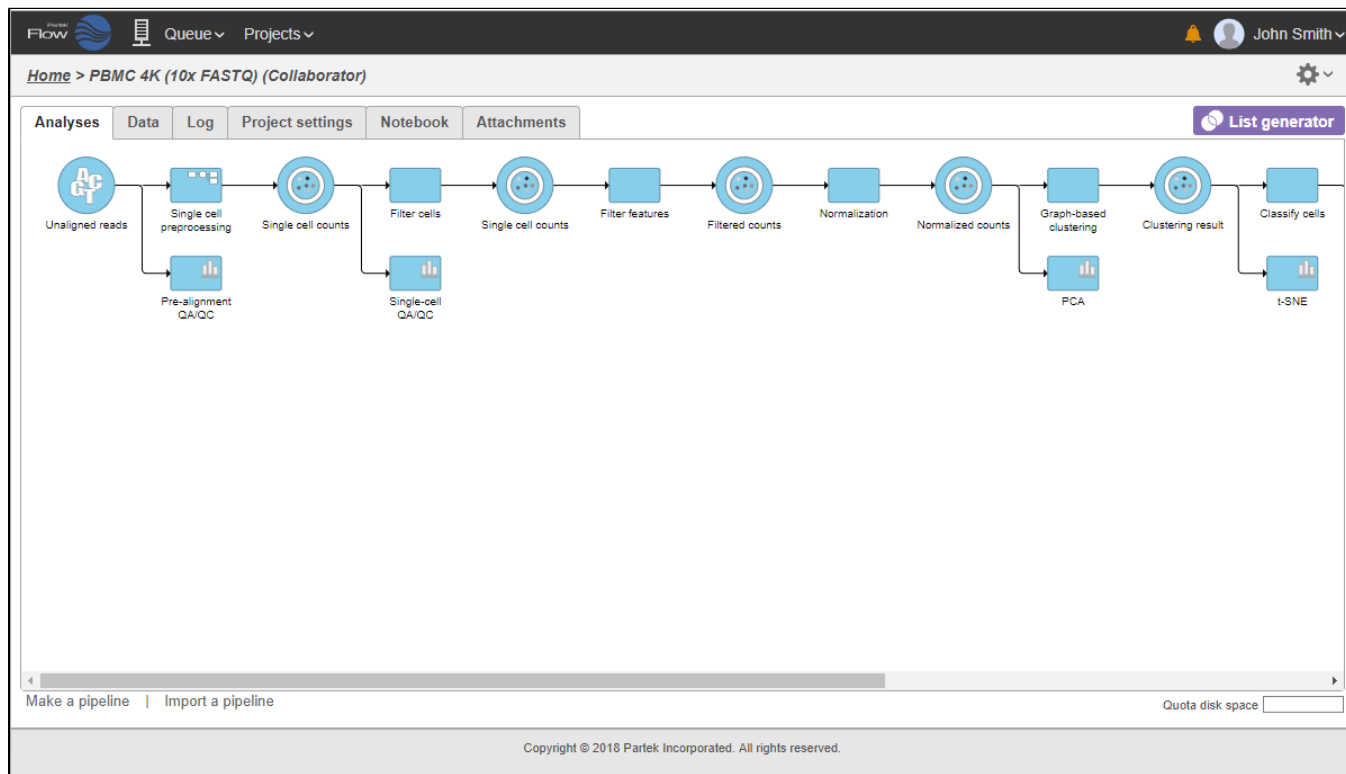

Figure 44. "Single cell preprocessing" task node represents five collapsed tasks. Pipeline can be expanded by double clicking on the collapsed node

To re-expand the pipeline **double click** on the task node representing the collapsed portion of the pipeline. Alternatively, **single click** on the node and select **Expand...** on the context-sensitive menu. Within the same menu, you can also preview the contents of the collapsed task by selecting **View...** (Figure 22).
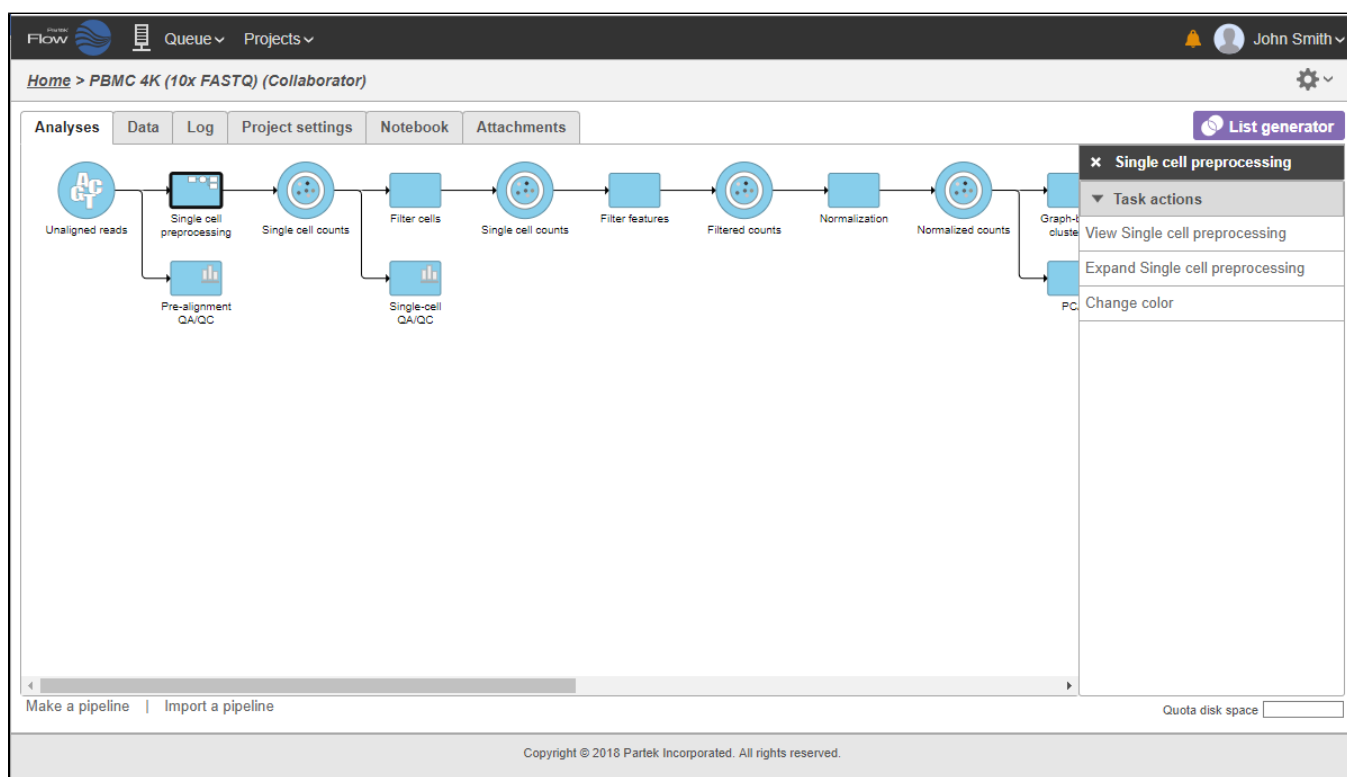
Figure 45. Options for a collapsed task (in this example: "Single cell preprocessing"): View..., Expand..., Change color

Downloading Data

Data associated with any data node can be downloaded using the ⤓ **Download data** link in the context sensitive menu (Figure 23). Compressed files will be downloaded to the local computer where the user is accessing the Partek Flow server. Note that bigger files (such as unaligned reads) would take longer to download. For guidance, a file size estimate is provided for each data node. These zipped files can easily be imported by the Partek® Genomics Suite® software.

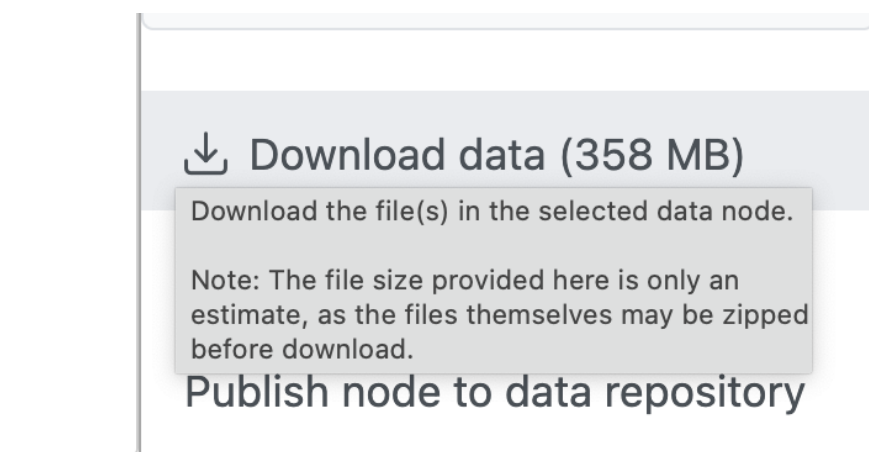*Figure 46. Downloading the data from a data node using the task pane (an example is shown)*

Additional Assistance

If you need additional assistance, please visit our support page to submit a help ticket or find phone numbers for regional support.

Your Rating: ☆☆☆☆☆   Results: ★★★★★ 40 rates