Revio® instrument software release notes v13.5

Overview

Supported SMRT® Link versions

Revio instrument software v13.5 is compatible with SMRT Link v26.1.

Supported data transfer options

- Direct transfers to network storage over an encrypted connection provided by SSH.
- Direct file transfer to cloud storage for Amazon S3, Google Cloud Storage, and Microsoft Azure Blob Storage, and S3-compatible API, including Oracle Cloud Object Storage and Cloudflare R2.

Unencrypted rsync daemon transfers are no longer supported for Revio. File transfers using this option will fail and transitioning to a supported transfer option, such as SSH (srs) or direct to cloud, is required.

Note: Revio instrument software v13.5 introduces rclone as the underlying file transfer infrastructure to support future enhancements and improve transfer reliability. As part of the transfer reporting workflow, a /metadata/*.transferfail file is generated when a transfer failure occurs.

New Features

The Revio system instrument software v13.5 introduces support for the new Revio SPRQ™-Nx consumables including multi-use SMRT Cells.

- The updated work deck touch screen menu includes the new **System tools** option containing:
  - **Disk space summary** for viewing and removing data from previous runs.
  - **Self test** for verifying instrument hardware and software function.
  - **Multi-use SMRT Cells** to manage and view the status of multi-use SMRT Cells.

- New Revio + SPRQ- Nx features for run planning and monitoring:
  - The **Multi-use SMRT Cells** option in **System Tools** provides “Start Within” time and “Remaining Uses” for each multi-use cell on the system to support run planning.
  - The Multi-use SMRT Cells **Discard SMRT Cells** option in System Tools removes all remaining multi-use cells on the instrument stages even if there are more uses remaining.
  - The front panel display provides the number of remaining uses for each multi-use cell on the instrument, when at least one use remains, and “Start within” time for the soonest closing re-use window.

- Updated DeepConsensus model trained on both SPRQ and SPRQ-Nx data improves HiFi sequencing accuracy. For optimal variant calling performance at 20× coverage, use DeepVariant v1.10.0.

- Updated on-instrument methylation calling using `jasmine` v26.1 including models for SPRQ-Nx chemistry and a model for strand-specific 5hmC detection at CpG sites. See `jasmine` change log for additional details: https://github.com/PacificBiosciences/jasmine#changelog.

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Fixed Issues

- Fixed an issue where the instrument was reporting an excessive number of SMRT Link connection errors.
- Fixed an issue where on-instrument demultiplexing could fail when processing more than 500 barcoded samples.
- Fixed an issue where runs that use STRAND consensus mode failed to load preview metrics.
- Fixed an issue where the Q30+ bases statistic is missing in runs that use STRAND consensus mode.
- On-instrument 6mA calling is now supported for runs that use STRAND consensus mode.
- Fixed an issue where the IUI was falsely warning of "Expired SMRT Cells".
- Fixed an issue where the instrument UI did not clearly warn users that runs requiring 3 full tip boxes would fail if insufficient tip boxes were loaded.
- Improved the reliability of data transfer to user provided storage
- Various bug fixes and additional service tools implemented to improve support and performance, including basecaller crashes.

Known Issues

- On-instrument 5mC methylation calling is not currently supported for runs that use STRAND consensus mode.
- In the work deck touch screen menu System Tools, the **Network diagnostic** option is inactive.
- In some instances, when multi-use SMRT Cells with a remaining use are on stages, the IUI will display an empty tray warning. This warning can be ignored.
- If SMRT Cells expire with uses remaining while on the stages, the user must wait 15 minutes after expiration, and with the door closed, for the instrument to discard expired SMRT Cells before starting their next run. If a user does not wait 15 minutes, a new run cannot be started: the **Continue** button is not selectable. Additionally, if the door is open, the 15-minute countdown will not begin.
- Some existing AWS S3 transfer schemes may fail data transfer after upgrading to Revio instrument software v13.5. If this occurs, recreate or update the transfer scheme.

Note: In a future software release, the 0x4 “single-stranded” fail_flag bit will be removed. Single-strand reads generated in STRAND consensus mode will continue to be output in hifi_reads.bam without the fail_flag bit set.