

# ImageQuant™ TL 11.0 and ImageQuant™ TL GxP 11.0

## Release Notes

### 1 Introduction

This document describes the implemented changes in ImageQuant™ TL (IQTL) 11.0, which replaces version 10.2.

#### Installation

Follow the installation instructions for your software package and operating system. Refer to the following documents:

- *ImageQuant TL 11.0 Installation Instructions for Windows (29751074)*
- *ImageQuant TL 11.0 Installation Instructions for macOS (29751072)*
- *ImageQuant TL 11.0 GxP Installation Instructions (29750806)*
- *ImageQuant TL 11.0 License Setup Guide for Windows (29745244)*
- *ImageQuant TL 11.0 License Setup Guide for macOS (29751073)*

#### Compatibility

ImageQuant TL version	Operating system
11.0	Windows 11 Pro (64-bit) Windows 10 Enterprise (64-bit) Windows 11 Enterprise (64-bit)
	macOS Sonoma 14.7, or higher macOS Sequoia 15.1, or higher

ImageQuant TL version	Operating system
GxP 11.0	Windows 11 Pro (64-bit) Windows 10 Enterprise (64-bit) Windows 11 Enterprise (64-bit)

## 2 Main features of IQTL

- Image analysis software for Windows and macOS with four modules:
  - **Gel and Blot Analysis**
  - **Analysis Toolbox**
  - **Array Analysis**
  - **Colony Counter**
- **Image Editor** for precise editing of both single and multi-channel files.
- Fully compatible with .tif, .img, and .gel files, for example, from Amersham™ ImageQuant 800 and Amersham Typhoon™ (see also section [Known limitations, on page 5](#)).
- Create and analyze multiplex .ds files.
- Files up to 1 GB in size can be analyzed in the **Analysis Toolbox** module.
- **GxP** version available for 21 CFR Part 11 support.
- 3D view of images.

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### New features for all modules

- Version 11 is available both as a light trial version and full functionality pro version.
- New Cytiva license manager utility tool.
- Compatibility with Windows 10, Windows 11, and macOS (see [Compatibility, on page 1](#), for details about operating systems).
- New interface visuals with rotating wallpapers in launcher screen.
- Updated tutorial images.
- Import of meta data also for .img files.
- Easy navigation function between multiple images and projects.

- Identification and display of multi-channel fluorescent images with pre-defined colors.
- Pixel-by-pixel alignment of multi-channel images in all modules.
- Multi-step analysis *Protocols* for reproducible analysis which can be saved, opened and edited.
- Annotation of images and graphs.
- Number of decimals can be set in *Settings*.
- Export images with color scale bar and scale.
- Sort functions in all result tables.
- Improved report layout.

## New features re-introduced from IQTL

### 8.2 Gel and Blot Analysis module

- Automatic lane detection, with option to use area of interest.
- *Rf* band position unit.
- Display and copy of equations used for *MW* and *Quantity Calibration*.
- Manual background subtraction option.
- Select and remove several bands in image.
- Calculate median, average, and mode intensity.
- Move lane box edges as straight line to not change *Rf* values.

### New features in Gel and Blot Analysis

- Add band and adjust band width in image.
- Zoom in lane profile occurs when zooming in the image.
- Edge average background subtraction.
- *Similarity Score* tool display with dendrogram zoom and export.
- Display of non-normalized raw data of lane volumes in *Normalization*.
- Display of different chromatograms and fractions from ÄKTA™ runs in the same graph.
- Display and renaming of lane names.
- In *MW* view, bands are displayed in boxes.

### New features in Analysis Toolbox

- Redesigned toolbox for quicker navigation.
- Auto-shape settings have been simplified to create single shapes.

- Export of line profile raw data.
- Creation of multiple irregular shapes in a user-set area of interest for analysis of non-regular shapes, for example, tissue samples.

## New features in Array Analysis

- Presence and absence in table is reflected by color of the wells.

## New features in Colony Counter

- Multi-channel colony analysis.
- Automatic calculation of transformation (or transfection) efficiency in multi-color images, using one reference channel to count the total number of colonies.

## Changed functionality

- The *Normalization* functions have been re-named and descriptions added for clarity.
- The *Mw Power* fitting functions have been removed and replaced with a *Quadratic* fitting function ( $y(x) = a \cdot x^2 + b \cdot x + c$ ).
- The *Mw Exponential* and *Exponential (offset)* fitting functions have been replaced with a general *Exponential* fitting function ( $y(x) = a \cdot \exp(bx) + c$ ).

## Corrected defects

A number of minor defects in ImageQuant 10.2 have been fixed, including:

- The display colors now include the correct blue color.
- The image display histogram for `.gel` and `.img` images show actual pixel values.
- Display of the image window added an extra row of pixels outside of the image with zero value.
- Overlap of the image title and footer in reports.
- The possibility to select the same well twice in the calibration curve.
- Lanes were not displaying with correct size after exporting image with lanes.
- Issue with line breaks and data overlap in some reports.
- In the colony edit feature, drawing a circle to maximum the size led to an even larger circle.
- Selection and creation of multiple colony areas was not robust.
- After separation of colors of `.jpeg` images the software would sometimes crash when adjusting the contrast.

## Known limitations

- The following limitations exist when opening project files from version 10.2 in 11.0:
  - **Gel and Blot Analysis**
    - Rolling ball lane length changed to %.
    - ÄKTA chromatograph peaks are cleared.
    - MW data is cleared.
  - **Array Analysis**
    - Quantity calibration curve changed.
  - **Colony Counter**
    - No upgrade possible from 10.2.
- .tif files from ImageScanner 3 are not supported.
- .gel files from ImageQuant LAS4000 imagers and Typhoon Trio scanners are not supported.
- .img files from imaging systems other than Amersham Typhoon are not supported.
- **Image Editor** does not edit .img files.
- Multiplex images can only be opened if a .ds file is in the same folder as the image files.
- If region of interest is placed outside of an image, then all values outside of the image are set to zero. Calculated values based on such regions are indicated with an asterisk.
- **Image Editor** has limitations in file size for editing large images.
- For optimal performance, we recommend analyzing a maximum of four images in multiplex files.
- When saving a *Protocol* in the **Gel and Blot Analysis** module, manually detected bands and quantity calibration steps are not saved.

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### Features

- In the **Gel and Blot Analysis** the new **Purity** analysis step allow the user to compare purity values for bands in lanes and import .asc files from ÄKTA chromatography runs. The chromatogram curves can be annotated and included in analysis PDF reports.

- **Export Presentation image** is available for all displayed images. The displayed image can be exported to .png, .bmp, or .jpg files, with or without overlays. It is also possible to select the number of pixels (dpi) in the exported image.
- The pan and zoom tool have been improved both for images and profile curves. Zoom in on individual pixels and position objects in **Analysis Toolbox** with single pixel precision.
- Change pixel units to pixels, mm, cm, or inches.
- Auto-trace function added in **Analysis Toolbox**.
- pH unit introduced in custom markers.
- Some sections in the analysis report are optional and can be selected.
- Volume calculations allow negative volumes if the background is higher than the signal of interest.
- In **Quantity Calibration**, at least three bands need to be selected for curve fitting.
- Copy table results function added in the results view.
- In **Array Analysis** module, multiple wells can be selected as a negative control or for reference.

## Corrected defects

- M1 Mac processor is compatible with IQTL 10.2.
- .jpg image scale has been corrected.
- Multi-channel analysis of different images with different sizes is not possible.
- When analyzing multi-channel images and using in-channel normalize, the largest band for each channel is used.
- A standard deviation bug in **Analysis Toolbox** which occurred for saturated bands has been fixed.

Minor **GxP** module defects have been fixed, for example, for emergency user login, exploring data in read-only mode, and in 10.2 it is also possible to view analysis data after request to **Sign Off**.

## Known limitations

- The unit for **Contrast** settings for .gel, .img, and .od-tif image files is arbitrary, it does not reflect the actual pixel intensities. For .tif files the contrast scale correspond to the pixel intensity values.
- Rotating 3D view image by left to right, and vice versa, can be done using the **Shift + left-mouse button**.
- Multiplex images can only be opened if a .ds file is in the same folder as the image files.

- If the region of interest is placed outside of an image then all values outside of the image are set to zero. Such calculated values are indicated with an asterisk.
- `.tif` files from ImageScanner 3 are not supported.
- `.img` files from imaging systems other than Amersham Typhoon are not supported.
- **Image Editor** has limitations in file size for editing large images.
- **Image Editor** does not edit `.img` files.
- For optimal performance, we recommend analyzing a maximum of four images in multiplex files.
- To terminate Windows services in **GxP**, follow the steps below:
  1. Type `cmd` in the Windows 10 search bar.
  2. Right-click on the **Command Prompt** tool and select **Run as administrator**.
  3. Type `sc delete [service name]` and press **Enter**.

This will remove the service and should allow you to create a new one without an error.

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### Features

- **Array Analysis** module.
- **Colony Counter** module.
- Quantity calibration using curve fitting (both **Gel and Blot Analysis** and **Array Analysis** modules).
- New user interface with view of table results.
- **Image Editor** for Mac.
- Free rotation of images with a 0.1 degree adjustment possible using the **Image Editor**.
- Improved multi-channel file edit in **Image Editor**. Multi-channel file creation results in one single file with all files embedded.
- Multi-channel files can be created within a GxP project.
- Detailed 3D view analysis and export.
- Improved image contrast settings.
- Possibility to set individual lane widths in gel and blot analysis.
- Possibility to delete or add bands in image.
- Additional copy and paste functionality for easy export of results.

- Zoom pane for easy identification of zoom area.
- Possibility to analyze multiple areas using multiple regions of interest.

## Corrected defects

- Fixed a defect which caused incorrect background values using the rolling ball and rubber band methods in the **Gel and Blot Analysis** module.
- Original image metadata is saved after editing in **Image Editor**.
- A minor defect in constant value and image rectangle background subtractions has been fixed.
- Other minor 10.0 defects have also been fixed.

## Known limitations

- Rotating 3D view image by left to right, and vice versa, can be done using the **Shift + left-mouse button**.
- Multiplex images can only be opened if a `.ds` file is in the same folder as the image files.
- If the region of interest in **Analysis Toolbox** is placed outside of an image then all values outside of the image are set to zero.
- `.gel` files from Typhoon Trio™ scanners are not supported.
- Calibrated `.tif` files from ImageScanner 3 are not supported.
- **Image Editor** has limitations in file size for editing large images.
- For optimal performance, we recommend analyzing a maximum of four images in multiplex files.
- To terminate Windows services in GxP, follow the steps below:
  1. Type `cmd` in the Windows 10 search bar.
  2. Right-click on the **Command Prompt** tool and select **Run as admin**.
  3. Type `sc delete "service name"` and press **Enter**.  
This will remove the service and should allow you to create a new one without an error.

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## Main features

- Analysis of files from Amersham ImageQuant 800 and Amersham Typhoon imaging systems, including `.tif`, `.img`, and `.gel` files.
- Files up to 1 GB in size can be analyzed.



- Analysis of multichannel images.
- 3D view of images.
- Customizable analysis report.
- Total protein normalization.
- Lane comparison tool with similarity score calculations and dendrograms.
- GxP version available for 21 CFR Part 11 support.
- **Analysis Toolbox** with drawing tools for general analysis.

## Known limitations

- **Image Editor** is currently available for Windows only.
- Original image metadata is not saved after editing in **Image Editor**.
- Saturated pixels are highlighted in orange for .tif files.
- If an image is opened for analysis, re-opening the same image in same window without saving before is not possible.
- Rotating 3D View image by left to right, and vice versa, can be done with **Shift + left-mouse button**.
- A multiplex image can only be opened if the .ds file is in the same folder as the image files.
- If the region of interest in **Analysis Toolbox** is placed outside of an image then all the values outside of the image are set to zero.
- .gel files from Typhoon Trio scanners are not supported.
- Calibrated .tif files from ImageScanner 3 are not supported.
- Directly after lane creation, a background subtraction will be performed according to settings in the background (BG) pane. Change the selected parameters to update the background subtraction.

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