# Intelligent Fully-automatic Colony Counter Software Operating Manual


Software Operating Manual

# 1. Software Operating Guide

**1.1 Software login and authorization:** Click the icon, and the software pops up the login interface. The username contains four options: operator, reviewer, administrator and System. The default password for the operator is 000000; the default password for the reviewer is 111111; the default password for the administrator is 222222; and the default password for the System is 333333. If you select different identities to log in the software, the scope of operation authorities will be different. The main authorization and functions of each login identity are as follows:

1.1.1 System (top level): Responsible for creating and managing the accounts and login passwords of all operators and reviewers. Ensure account segregation and data segregation between operators and between operators and reviewers.

1.1.2 Data administrator (senior level): Responsible for file management of all test data and computer database management. Archive all the test reports that have passed the review, or back up and export the original images and test data, thus ensuring the integrity and security of the data.

1.1.3 Operator: Responsible for measuring and correcting the bacteriostatic ring, forming an electronic report, submitting it for review, and printing the report of the document that has passed the review.

1.1.4 Reviewer: Responsible for reviewing the test report submitted by the operator. Checking the data input and processing process, but have no right to modify; permanently archiving the "Review passed" reports to ensure the originality and authenticity of the data.

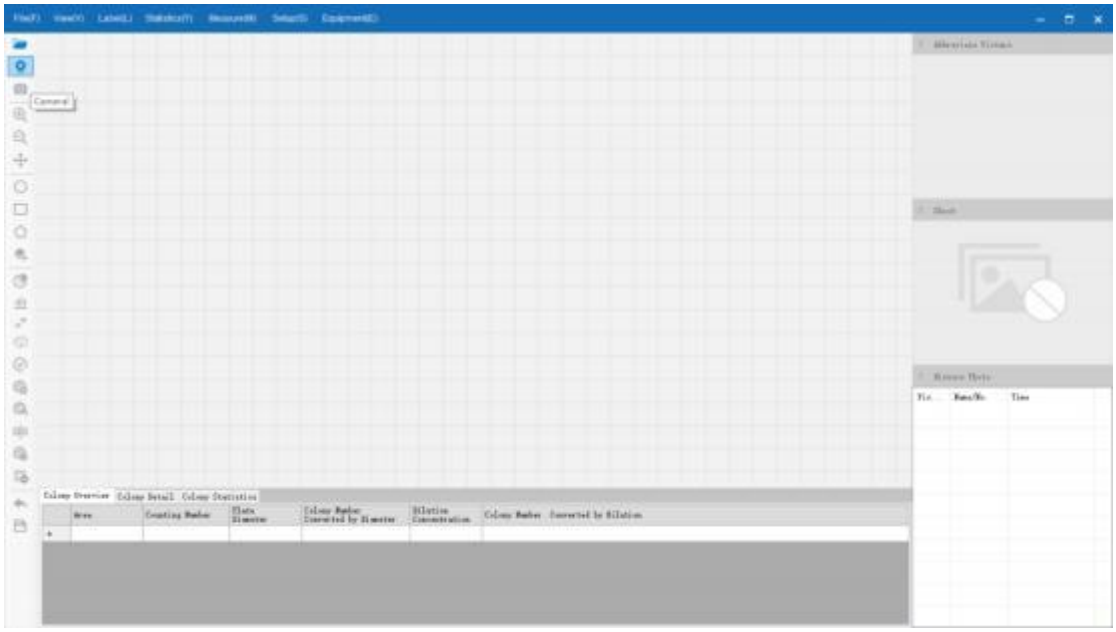
After logging in the software with different identities, please refer to the following table for specific software operation authorities:

| S/N | Authorization | System | Administrator | Reviewer | Operator |
|---|---|---|---|---|---|
| 1 | Add user | √ | × | × | × |
| 2 | User query | √ | × | × | × |
| 3 | Audit track | √ | × | × | × |
| 4 | Data storage | × | √ | × | × |
| 5 | Data back-up | × | √ | × | × |
| 6 | Data review | × | × | √ | × |

| | | | | | |
|---|---|---|---|---|---|
| 7 | Export as pdf | × | × | × | √ |
| 8 | Export as excel | × | × | × | √ |
| 9 | function operations | × | × | × | √ |

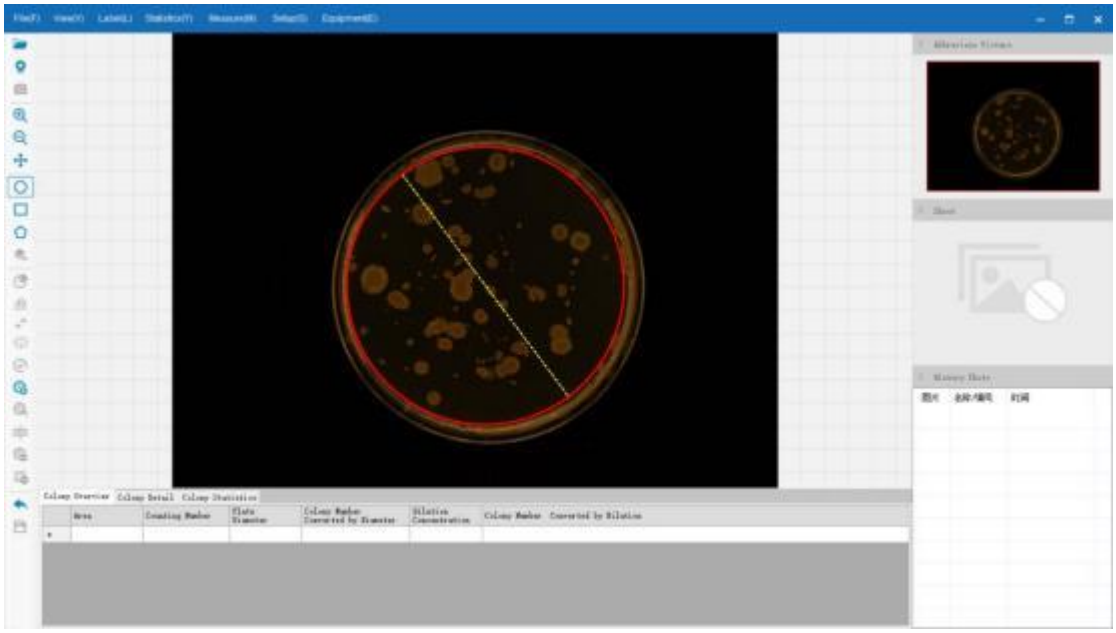
**1.2 Quick login:** Log in as an operator with default password of 00000 to enter the software. Click  to open the camera, and the main interface will display the preview interface of the sample in the light box, indicating that the instrument camera is successfully connected.


**1.3 Light source selection and photo taking:** According to the characteristics of the sample, select to switch the upper light source, lower light source or ultraviolet light, adjust the appropriate light intensity (this operation is carried out on the instrument panel), and then click  to take photos, so as to complete the photo taking of the sample.

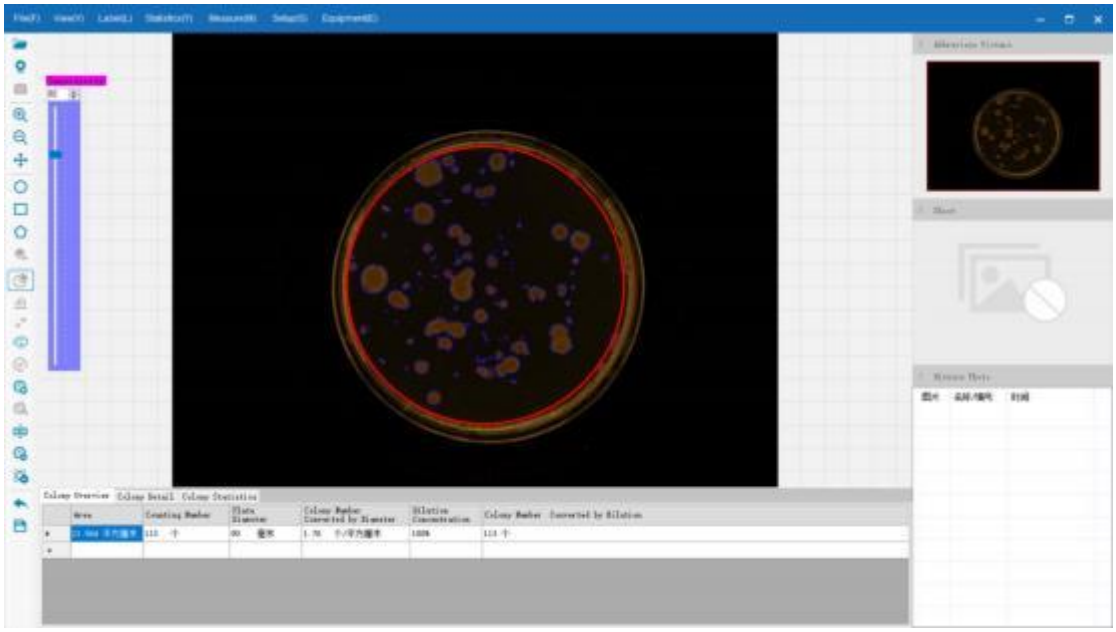


**1.4 Quick counting, saving and report generation:** A 90mm culture dish is taken as an example to briefly describe the process of counting and analysis by the software.

1.4.1 Left click the circle  on left side of the software to select the counting area, move the mouse to the image that has been taken, left click the edge of the 90mm culture dish, and pull the mouse until the red circle box encircles all colonies in the culture dish. See the figure below:



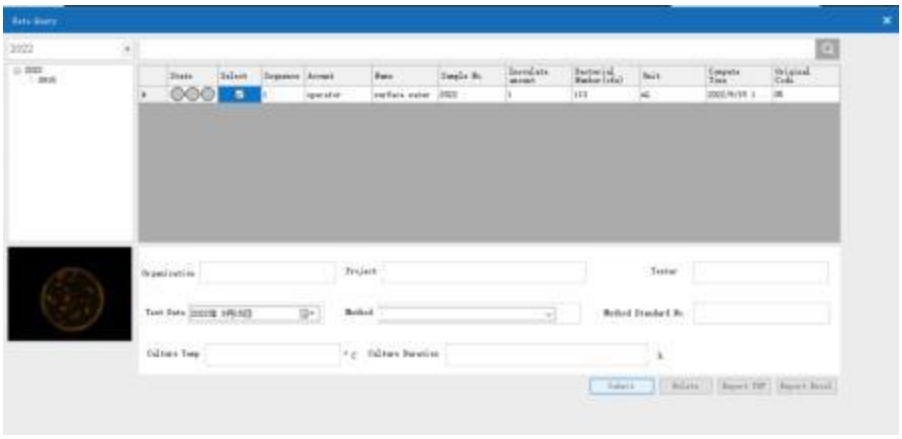
1.4.2 Click  for quick statistics to complete quick counting of the selected area. Click "Sensitivity adjustment" on the left to achieve sensitivity adjustment of value 0~100 until a satisfactory statistical result is obtained. See the figure below:



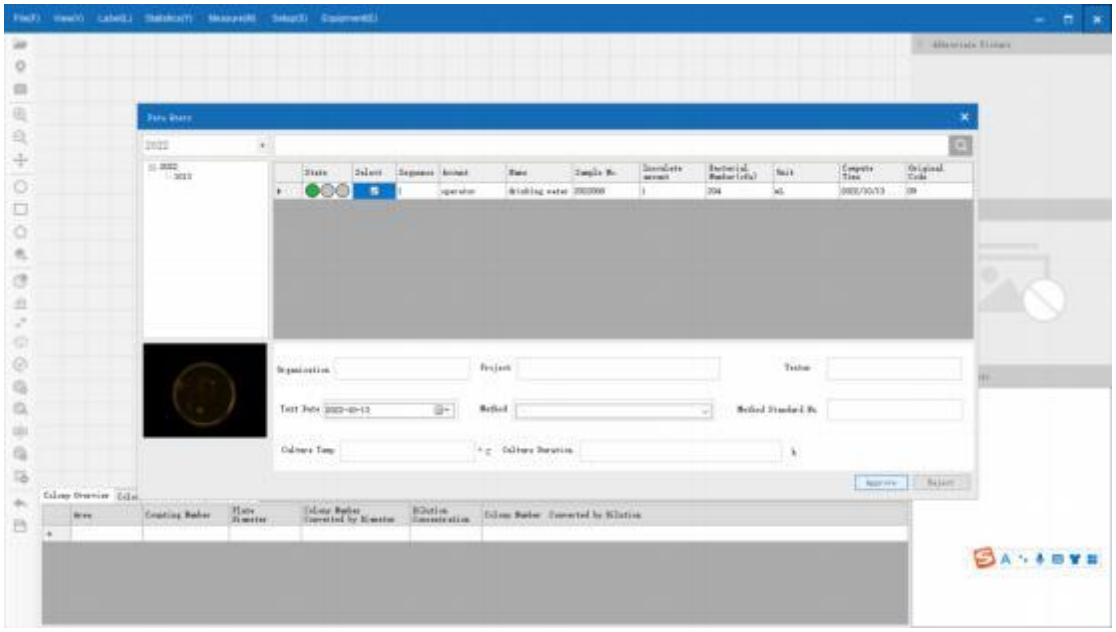
1.4.3 Click "File", select "Save" from the drop-down menu, and the Data Save window will pop up. Enter the sample name, sample number, inoculation type, inoculation volume, etc., and click "OK".


1.4.4 Click "Save"  or click "File", select "Query" from the drop-down menu, and the data query window will pop up. Select the year when the data is saved in the upper left corner, then click the date when the data is saved, and all the data completed on that day will popup.

1.4.5 Tick the data in the check box, and then click the first option in the lower right corner to submit the data for review, so that the data will be submitted to the reviewer for further review. See the figure below:

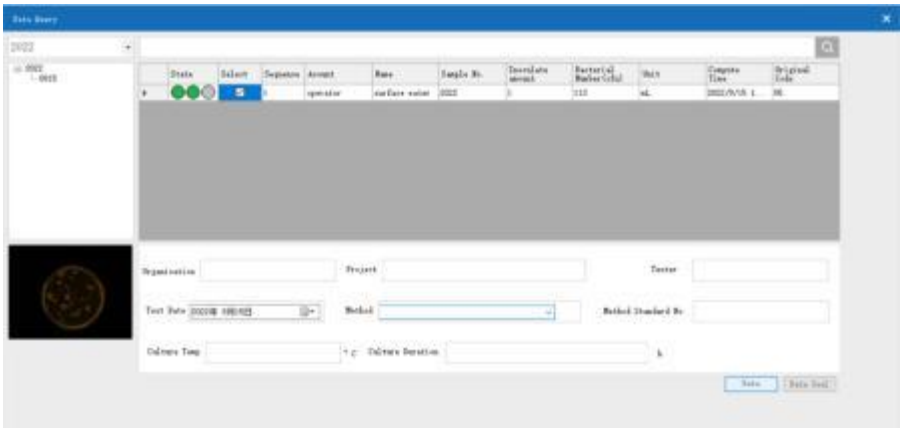


1.4.6 After logging in the software with default password of "111111", the reviewer clicks the "Query" button under the first "File" directory in the upper left corner to enter the database window, selects the data to be reviewed, and clicks "Review passed" to complete the review and submit it for next review. See the figure below:

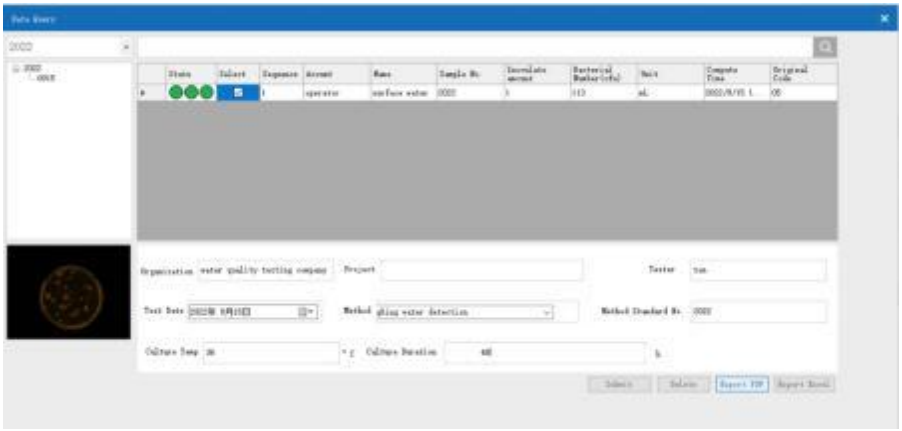


1.4.7 After logging in the software with default password of "222222", the data administrator clicks the "Query" button under the first "File" directory in the upper left corner to enter the database window, selects the data to be processed, and clicks "One click archive" to archive all the data that has passed the review, then "three green" is displayed in the state bar simultaneously. After the data is archived, no one is allowed

to tamper with or delete the original data. Click "One click backup" to export all the archived historical data in excel format. See the figure below:



1.4.8 Log in the software again as an operator, enter information such as organization name, project name, tester, test date, method name, method standard No., culture temperature and culture duration at the bottom of Data Query window. Click "Export" to save the test report as a pdf file.



# Automatic Colony Count Report

Inspect Time: 2022-10-13

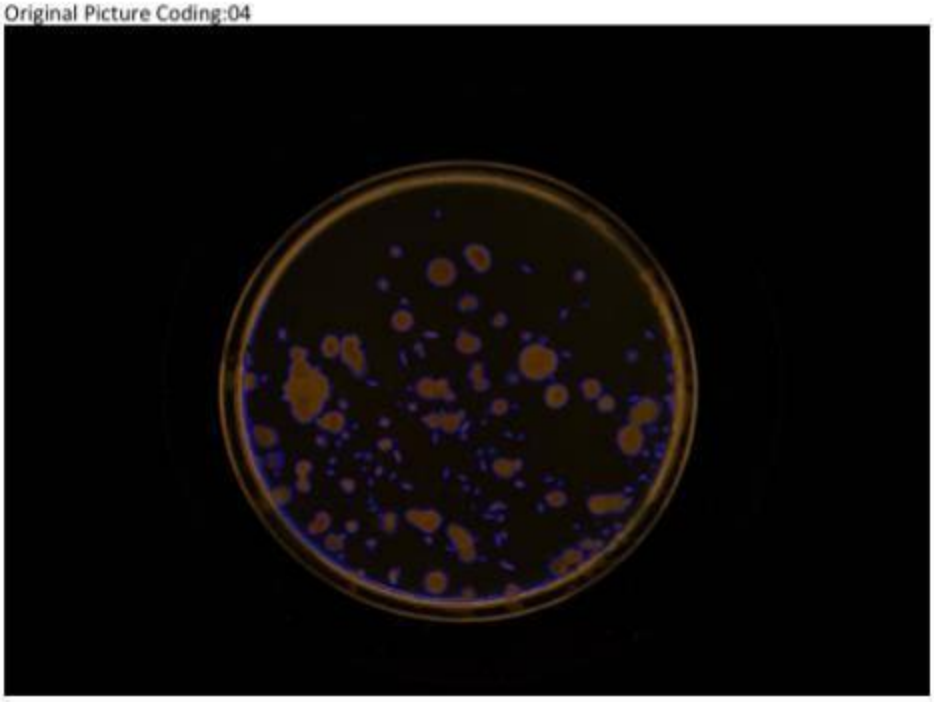
**One、Inspection Information**

Company Name: AMDSTC
Project Name: drinking water test
Method Name: testing NO.1
Method Standard No.: LKBCA01
Culture Temperature: 36 (℃)
Culture Duration: 48 (h)
Inspector: Gibson

**Two、Analysis Result**

| State | Sequence Number | Account | Sample Name | Sample Number | Inoculation Amount | Unit | Colony Count (cfu) | Process Time | Original Picture Coding |
|---|---|---|---|---|---|---|---|---|---|
| ●●● | 1 | operator | drinking water | 20220187 | 1 | mL | 153 | 2022/10/13 11:21:17 | 04 |

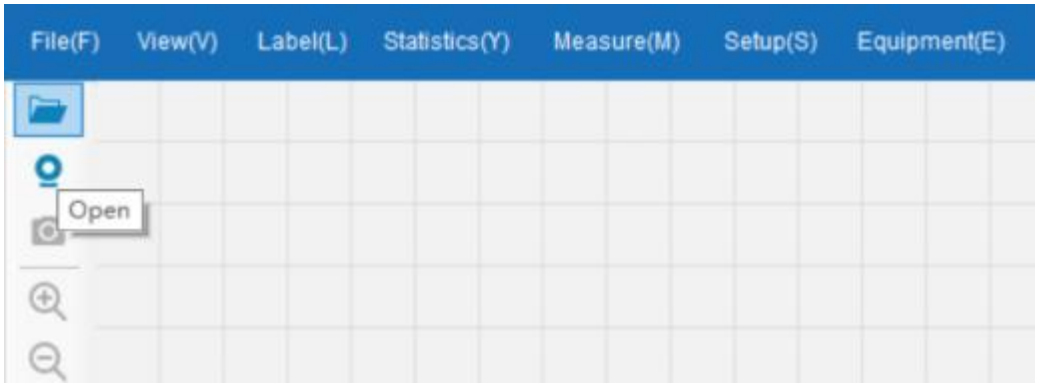
Original Picture Coding:04



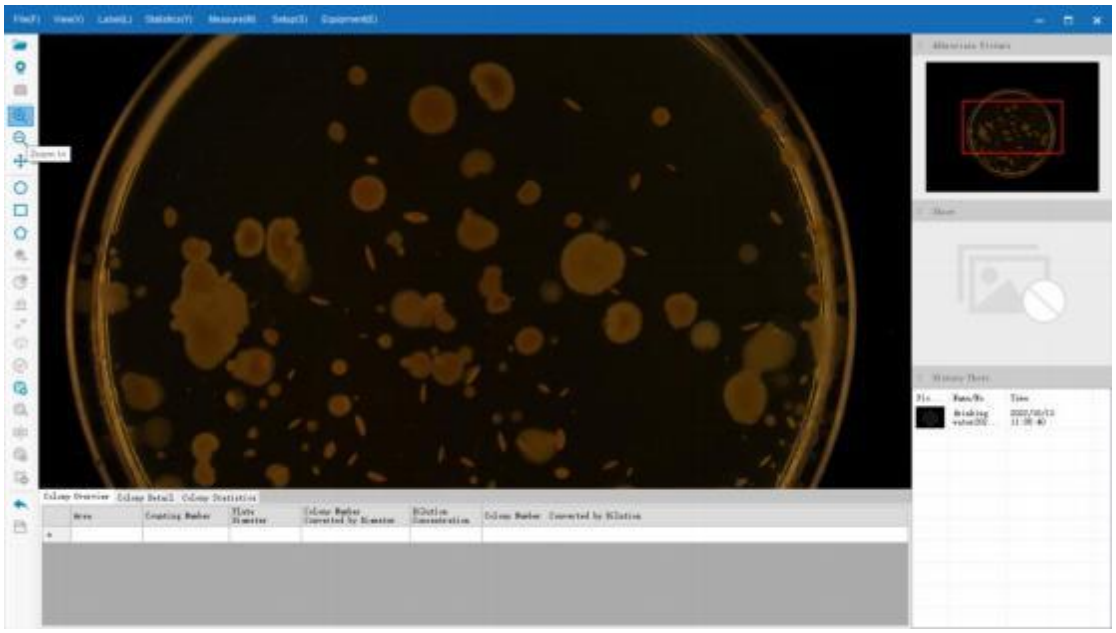
Operator: Reviewer: Administrator:

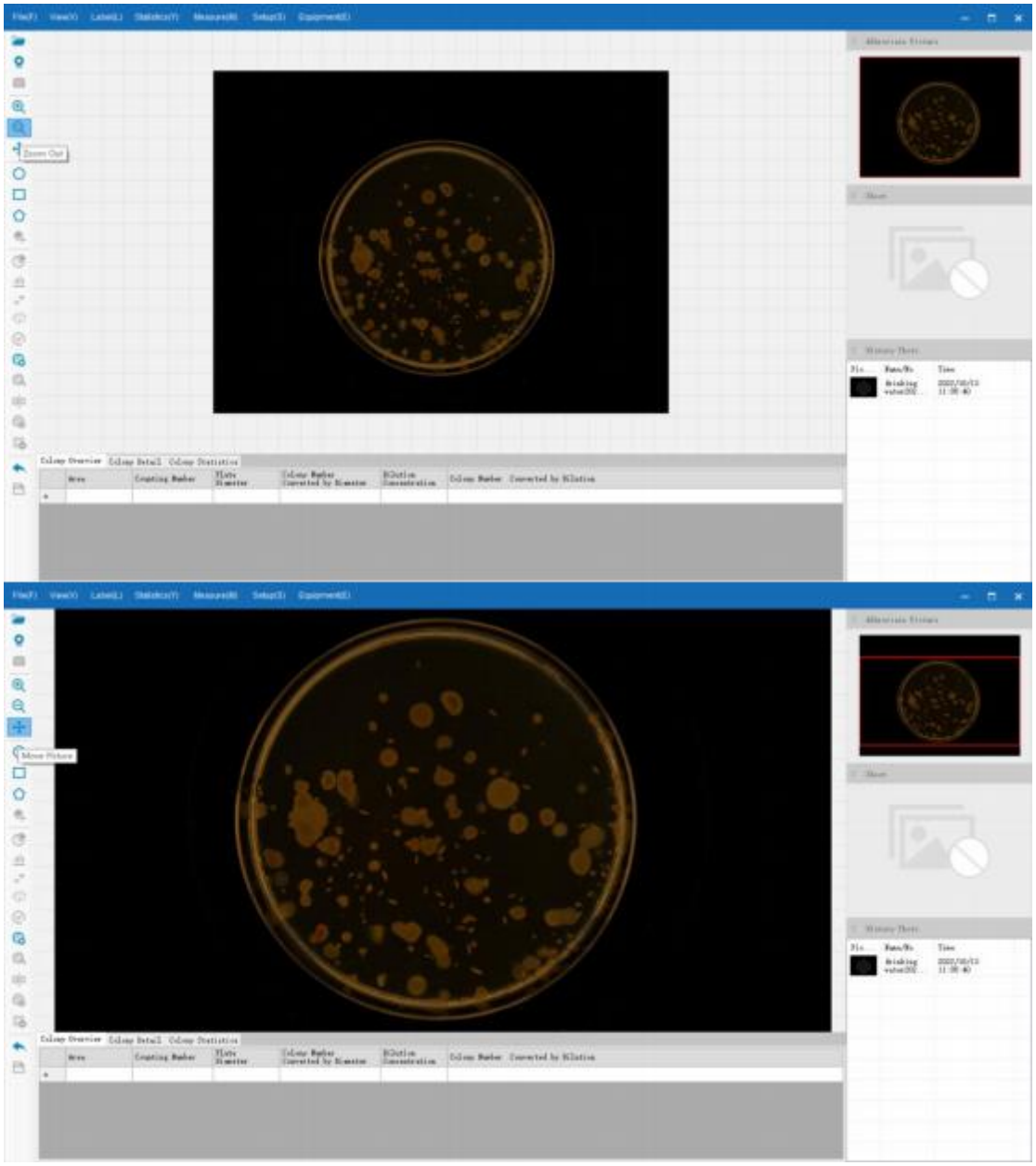
### 1.5 Detailed description of other functions of the software

**1.5.1 Image invocation:** Click "File"  to open the folder where the image is saved (★ The image scale should be 4:3, and other scales may stretch or distort the image).

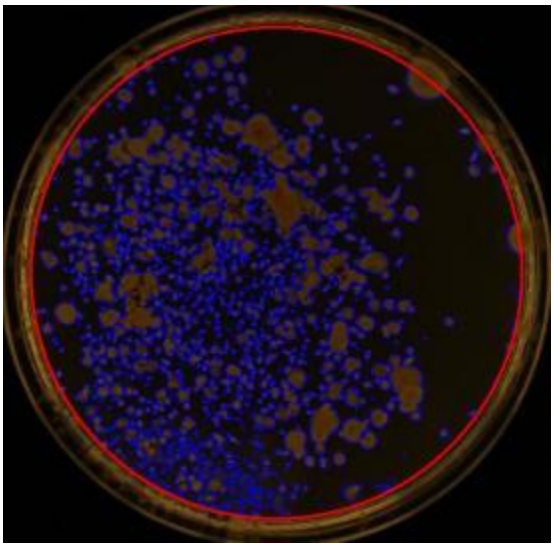



**1.5.2 Image zooming in & out and moving:** Click "Zoom in" , then put the mouse on the image and click it to zoom in the image; click "Zoom out" , then put the mouse on the image and click it to zoom out the image; click "Move image" , then put the mouse on the image and drag it to achieve plane movement of the image;

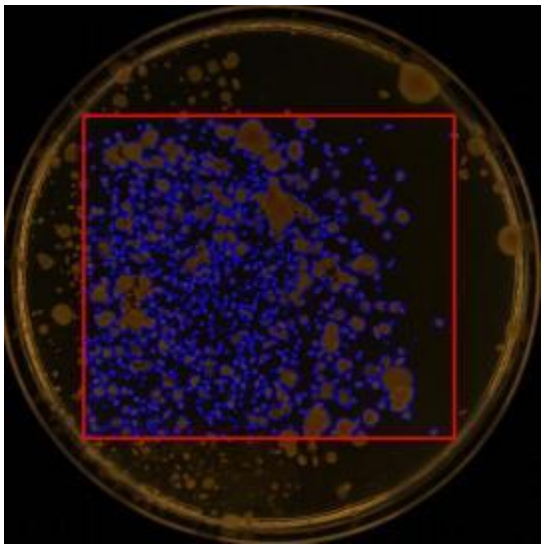




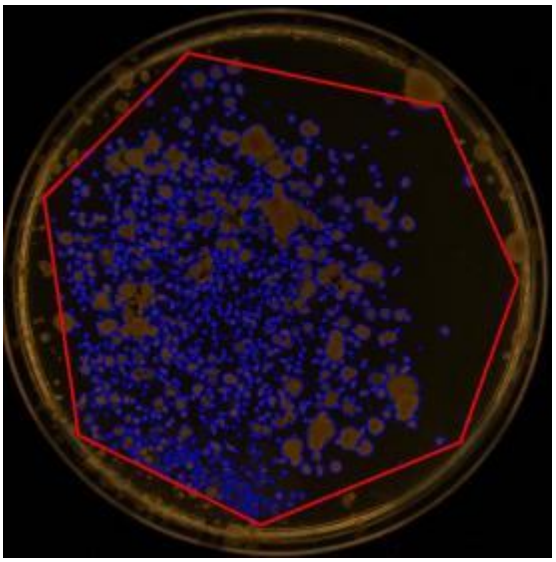
**1.5.3 Selection of counting area:** Click the circle  to select circular counting area. Move the mouse onto the image, press the left button and drag it to complete area selection; click the rectangle  to select rectangular counting area. Move the mouse onto the image, press the left button and drag it to complete area selection; click the polygon  to select polygonal counting area. Move the mouse onto the image, and click the left button to complete area selection.



Selection of circular area

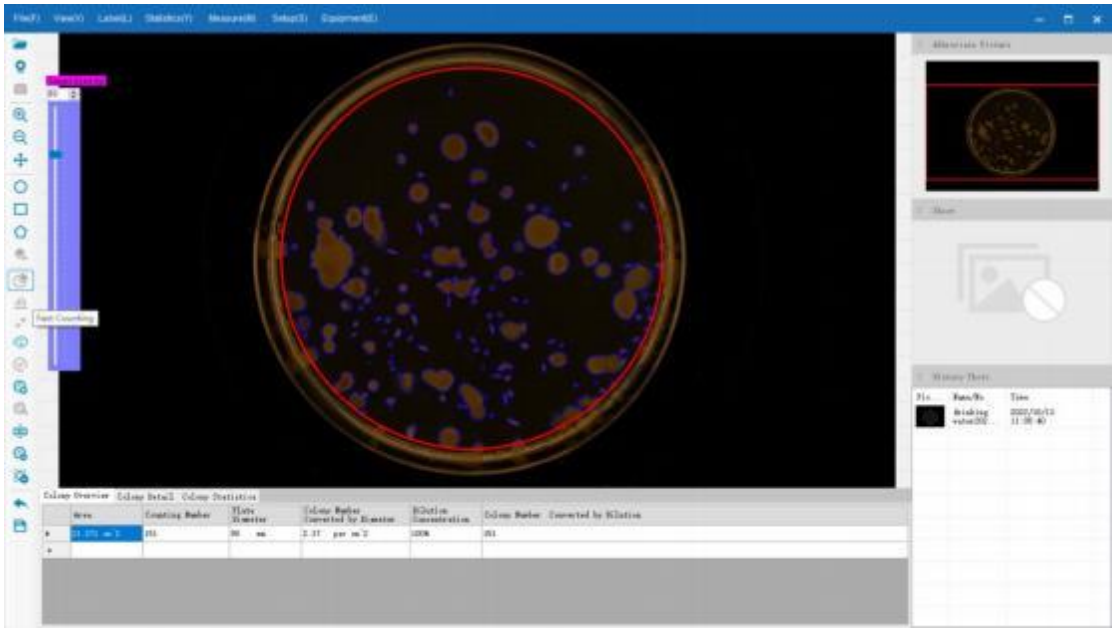


Selection of square area

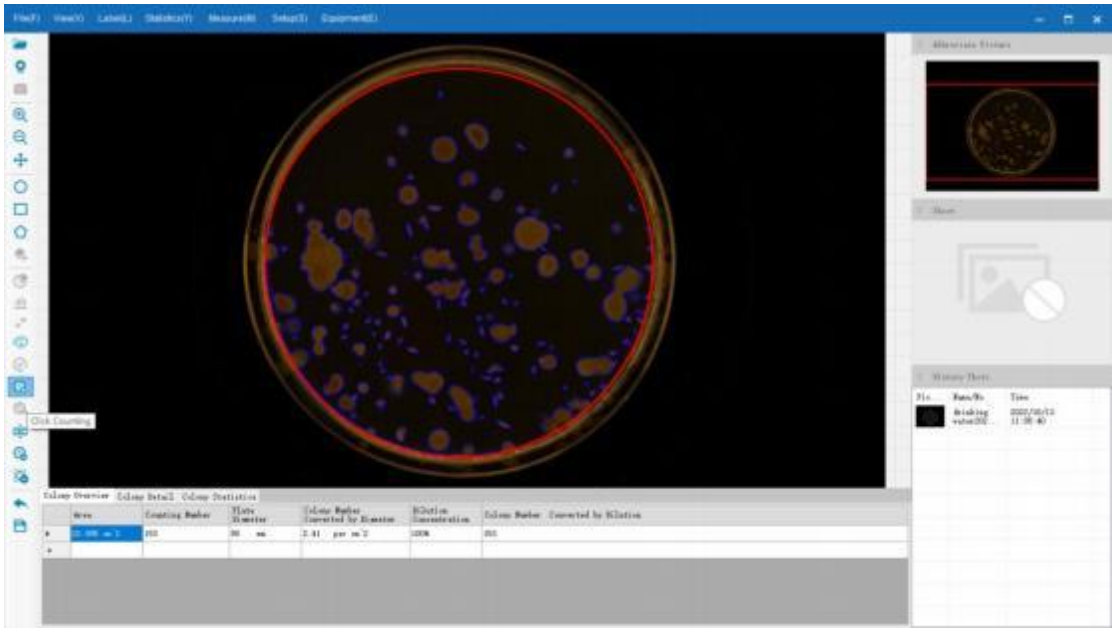


Selection of polygon area

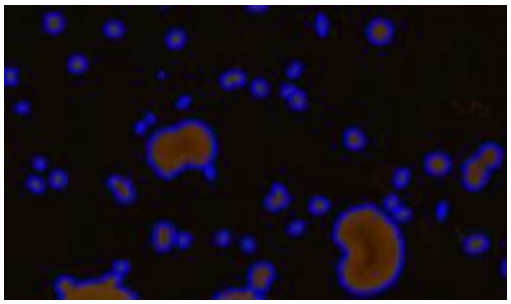
**1.5.4 Selection of counting mode:** Click "Quick statistics"  to complete quick counting of the selected area; click "Accurate statistics"  to complete accurate counting of the selected area; click "Trans-statistics"  to complete trans-statistics of the selected area. Click "Color bacteria statistics"  , then click the colony color to be counted on the image, and click "Color recognition and confirmation"  to complete the color bacteria counting of the selected area.

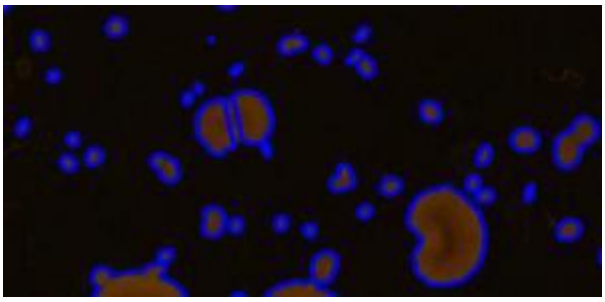


**1.5.5 Counting by click and rollback:** Click "Counting by click" and click the colony that has not been counted with the left mouse button to complete the counting statistics of a single colony. Then click "Counting rollback"  to rollback the result of the counting by click.



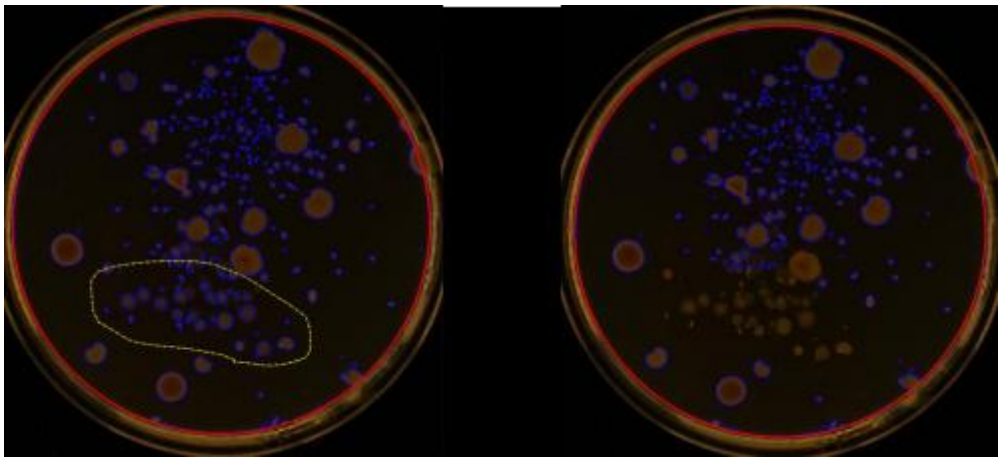
**1.5.6 Adhesion segmentation:** Click "Manual adhesion segmentation"  , and draw a line at the colony adhesion with the left button, so that 1 colony can be cut into 2 colonies.





Before adhesion segmentation After adhesion segmentation

**1.5.7 Area deletion:** Click "Area deletion" , draw acircle for the area to be deleted with the left button, and select it to be deleted to complete area deletion.

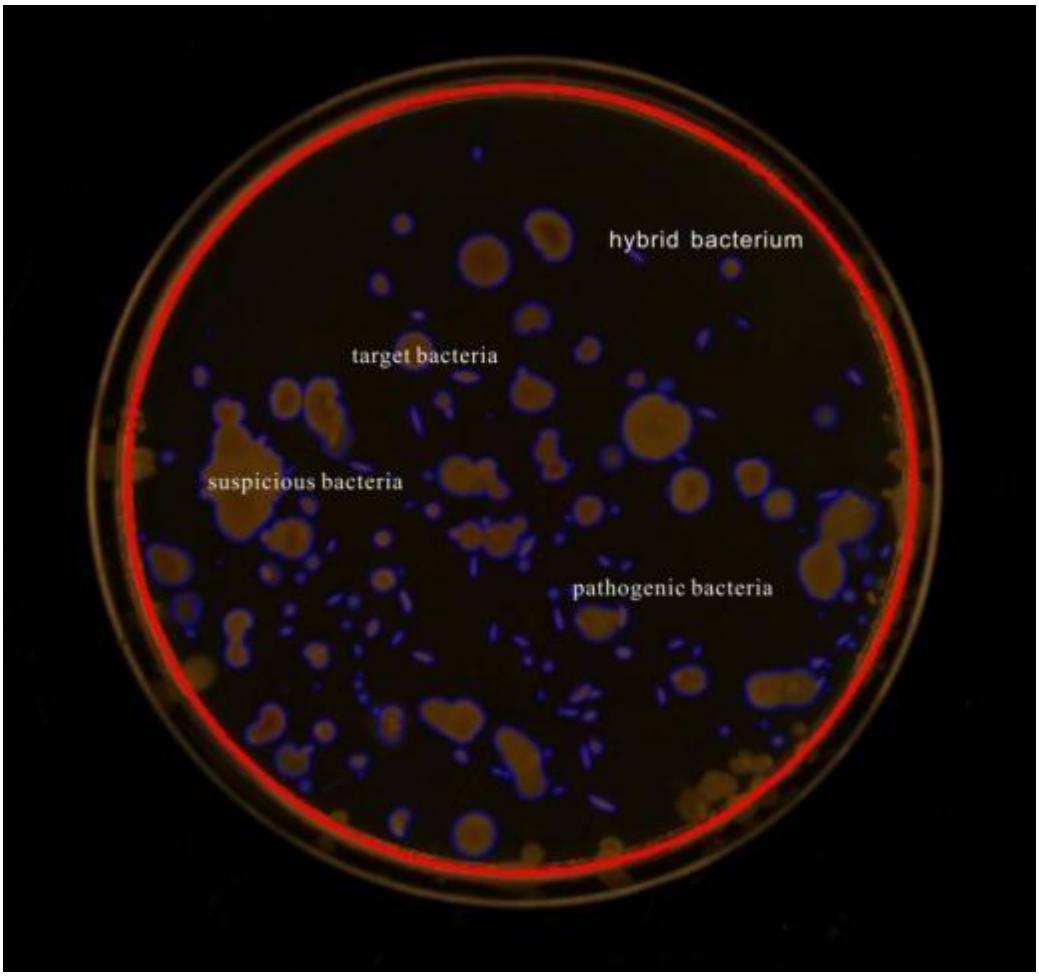


Before area deletion After area deletion

**1.5.6 Original image restoration:** Click "Original image restoration" to remove the statistical result and restore to the original image state.

**1.5.7 Data saving:** Click "Save" or click "File", select "Query" from the drop-down menu, and the data query window will popup. Select the year when the data is saved in the upper left corner, then click the date when the data is saved, and all the data completed on that day will popup.

**1.5.8 Image labeling:** Click "Labeling", select "Input text" from the drop-down menu, left click on the image and input the content to be labelled, then click "Enter" to complete the labeling, and click "Labeling rollback" to return to the previous step.




**1.5.9 Straight line measurement:** Click "Straight line measurement" and left click 2 points on the image, and the measurement information dialog box will pop up, which contains the number, type and measurement result. The measurement result is the straight-line distance between the 2 points, in millimeter.

**1.5.10 Angle measurement:** Click "Angle measurement" and left click 3 points on the image, and the measurement information dialog box will pop up, which contains the number, type and measurement result. The measurement result is the angle formed by the 3 points, in degrees.

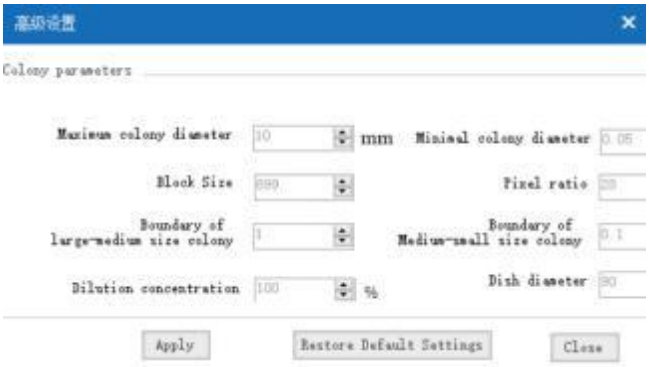
**1.5.11 Rectangle measurement:** Click "Rectangle measurement", left click and drag 2 points on the image, and the measurement information dialog box will pop up, which contains the number, type and measurement result. The measurement result is the area of the rectangle formed by the 2 points, in square millimeter.

**1.5.12 Circle measurement:** Click "Circle measurement", left click and drag 2 points on the image, and the measurement information dialog box will pop up,

which contains the number, type and measurement result. The measurement result is the area of the circle formed, in square millimeter.

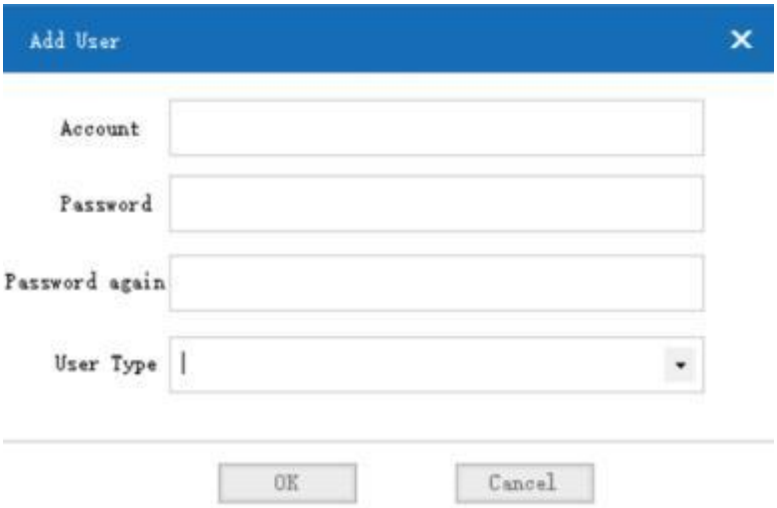
**1.5.13 General settings:** Click "Settings", select "General settings" from the drop-down menu, and the "General settings" dialog box will pop up. Set "Add colony manually" (small, medium and large colony), and set ROI and color of colony contour. Then select "Apply" for confirmation, and select "Restore default settings" to restore factory settings.


**1.5.14 Advanced settings:** Click "Settings", select "Advanced settings" from the drop-down menu, and the "Advanced settings" dialog box will popup. Set 8 colony parameters, including maximum colony diameter, block size, pixel ratio, sample dilution concentration, etc. ★Generally, it is not recommended for customers to make changes by themselves.

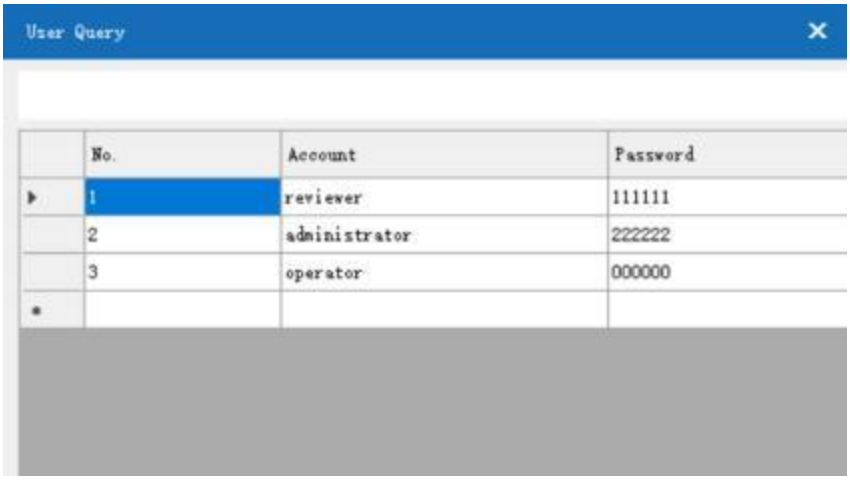



**1.5.15 Instrument maintenance:** Click "Instrument maintenance" and select "Calibration" from the pull-down menu to calibrate the measurement accuracy of the instrument. ★ Before delivery of the product, the engineer has already calibrated the instrument. Generally, it is not recommended for customers to calibrate by themselves.

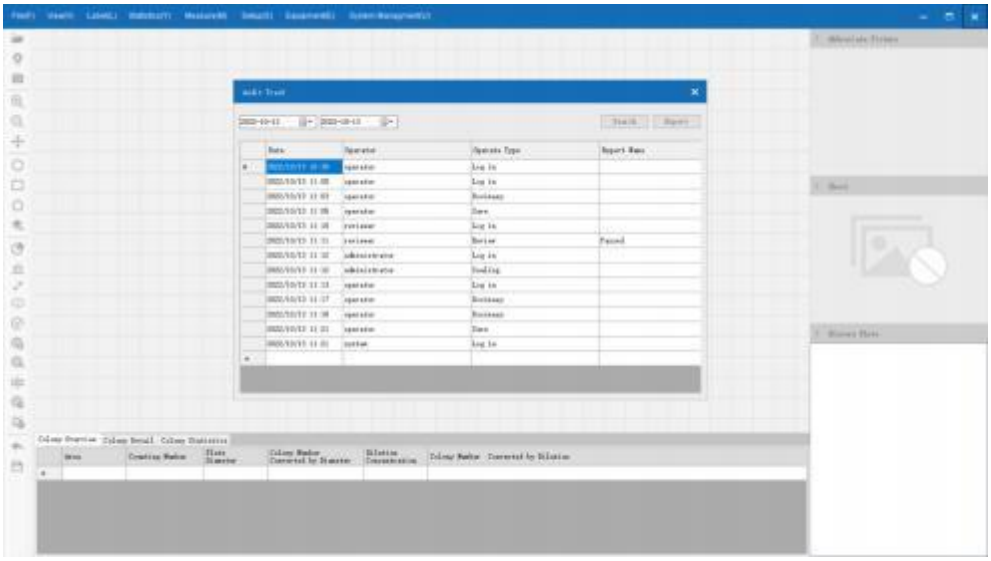
**1.5.16 Add account:** After logging in the software as the System, click "User management", select "Add user" from the drop-down menu, and the "Add user" dialog box will pop up. Then set the account, password and password again to create a new user of the software.




**1.5.17 Account management:** After logging in the software as the System, click "User management", select "User query" from the drop-down menu, and the "User query" dialog box will popup. Then you can delete, edit and add the accounts.

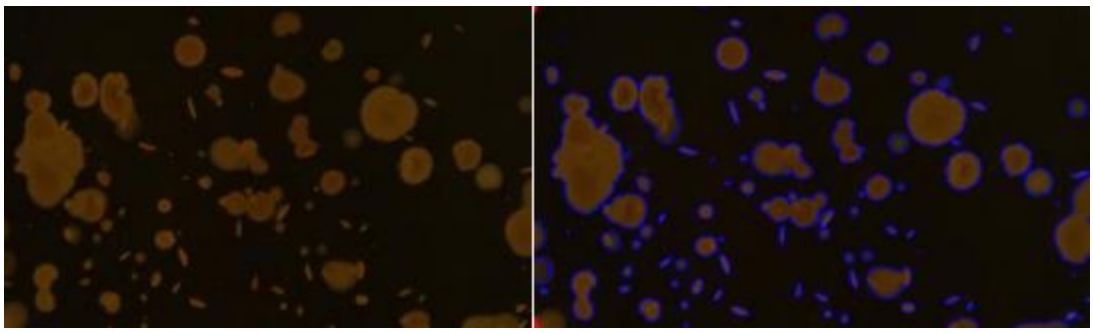



**1.5.18 Audit track:** After logging in the software as the System, click "User management", select "Audit track" from the drop-down menu, and the "Audit track" dialog box will popup. Then you can query the date, operator, operate type, report name, etc. in the "Audit track" dialog box at will, or export the audit track entries.



## 2. Software statistics effect display

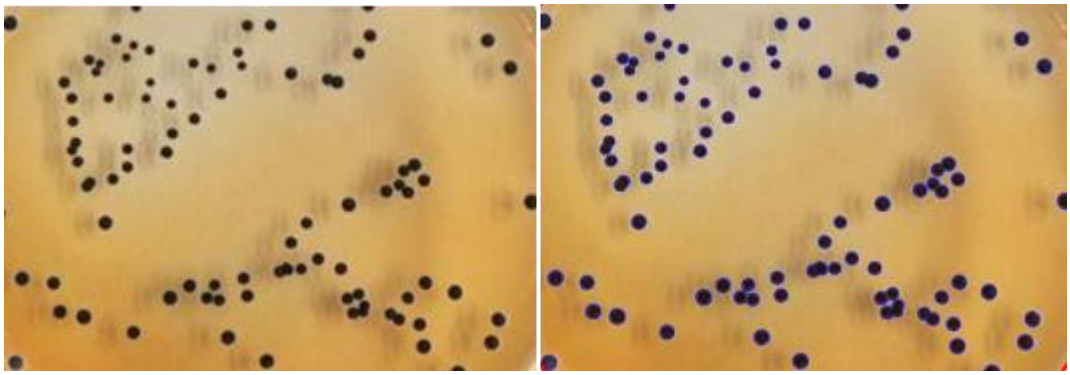
There are multiple built-in algorithms available in the ColonyAnalyse™ software, which will realize the identification and complex statistics of the culture media in different colors and the colonies with different characteristics. In addition, it has a sensitivity adjustment button, enabling users to obtain the required statistical effect by adjusting the sensitivity.



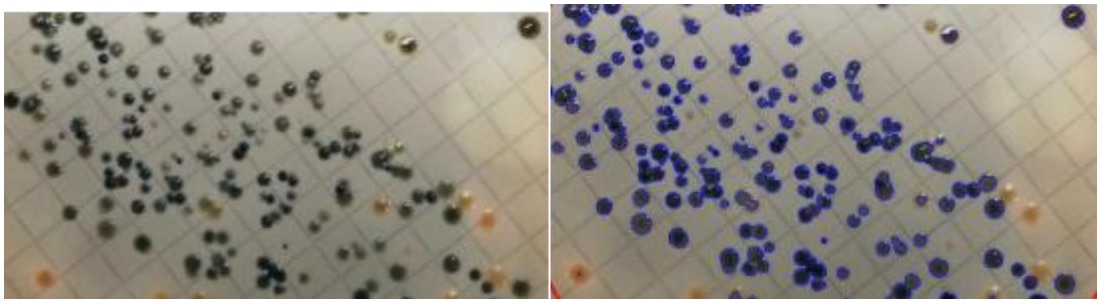
Before statistics After statistics

Before statistics After statistics

Before statistics After statistics



Before statistics After statistics



Before statistics After statistics