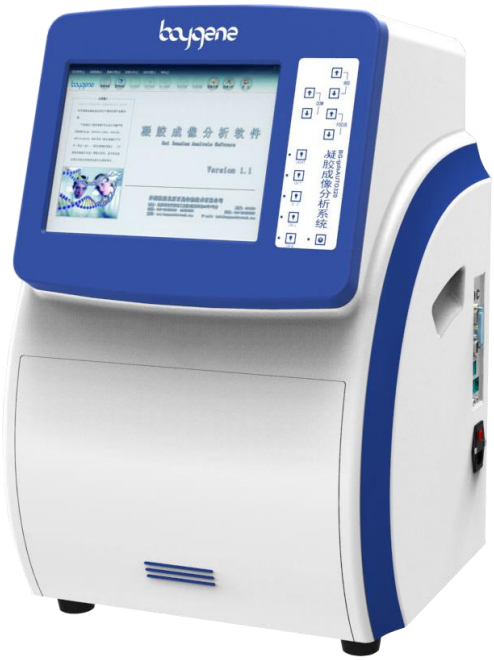
BG-gdsAUTO UV Gel Imaging Analysis System User Manual



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- Please read this manual carefully before operating the instrument。
- Please keep this manual carefully so that it can be used as needed.

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In this document, BG-gdsAUTO is referred to BG-gdsAUTO UV Gel Analysis System.
This manual applies to both BG-gdsAUTO320 and BG-gdsAUTO520

CONTENTS

CHAPTER 1 INTRODUCTION

1.1 INSTRUMENT INTRODUCTION

The BG-gdsAUTO UV gel imaging analysis system is designed for the bio-electrophoresis image analysis. It could be used for UV and visible light imaging analysis and recording of nucleic acid and protein electrophoresis gel in many fields, such as molecular biology.

The BG-gdsAUTO UV gel imaging analysis system integrates a lot of functions including high-resolution image collection, processing, analysis, database management, printing, and so on. It is a gel image analysis system designed and developed specifically for protein and nucleic acid gel electrophoresis experiments, which could help researchers to get the gel image correctly and quickly, then analyze the results. The system includes the BG-gdsAUTO UV gel imager and the Gel imaging analysis software (called as this software). This applications of the software are as follows :

Protein lane analysis

DNA/RNA Molecular weight calculation

Single band analysis

Dot – blot electrophoresis analysis

Colony count-Petri dish count

Area and density measurement

Radioautographic film of blotting membranes

Microplate reader

TLC plates (Thin Layer Chromatography Plates) test, and so on.

This software can automatically or manually run qualitative or quantitative analysis of the experimental results. Moreover, the software also provides a simple method for image processing.

1.2 INSTRUMENT PERFORMANCE

1、All results direct from this system are automatically reading and analysis, which can effectively remove artificial errors.

2、The instrument has efficient and automatic image collection and analysis system.

3、The system provide an easy and fast way for information input and data management.

4、The instrument has friendly Interface and can automatically generate reports.

5、The instrument has enough data storage capacity, which can provide customers scientific, complete data analysis and information management.

1.3 SYSTEM CONFIGURATIONS

Digital integration camera with high resolution and low illumination

Electric varifocal lens

Special multi-layer coating filter lens

Transmission ultraviolet light source (312nm)

UV to Visible Light converter

Reflected UVlight source(UV254nm/365nm, optional)

Observation device of gel cutting

built-in computer

Touch screen

Gel imaging analysis software

1.4 SOFTWARE INSTALLATION REQUIREMENTS

The personal computer (PC) configuration for software installation is as below:

CPU > 1.8GHz

Memory > 1G SDRAM

Hard disc > 40G

USB2.0

Display resolution：1024 X768

Operating system (OS)：WinXP 32/64, Win7 32/64, Win10.

Note: Specifications and designs may be changed at any time without prior notice.

CHAPTER 2 SOFTWARE INSTALLATION

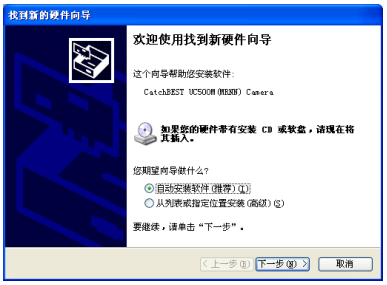
The instrument has a built-in computer and pre-installed software. This chapter describes software reloading or upgrading.

2.1 INSTRUMENT CONNECTION

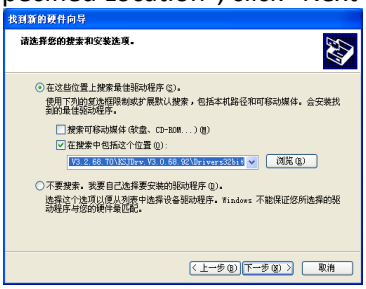
Make sure the instrument is installed, then turn on the power.

2.2 DRIVE INSTALLATION

Plug the USB cable into the computer. The prompt is as follows:



Select “Install from List or Specified Location”, click “Next”



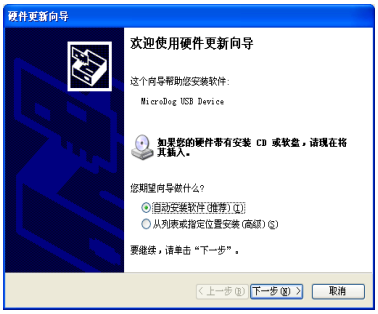
Select "Include this location in search", path: \ Gel Image Software \ Drives \ Cammera, click "Next";

Click on "Complete" to finish the installation;

2.3 SOFTWARE INSTALLATION

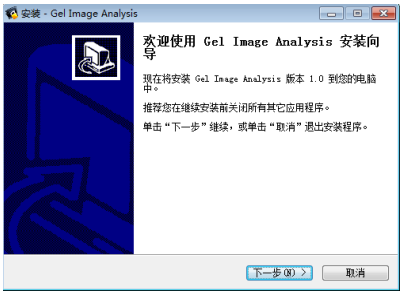
Plug the software dongle into the USB port of the computer;

Choose “Auto- Installation”; Click the "Next" button to automatically complete the hardware installation;

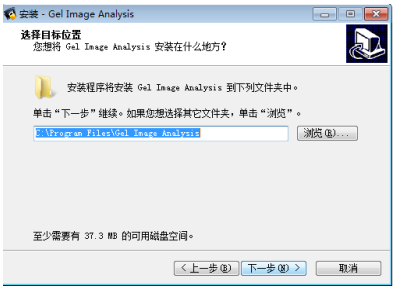


2.4 APPLICATION SOFTWARE INSTALLATION

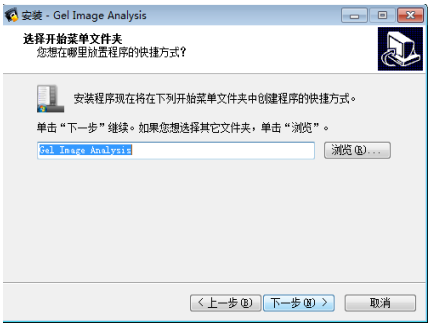
Open the folder of software installation and double-click the "Gel Image Analysys.setup" file:



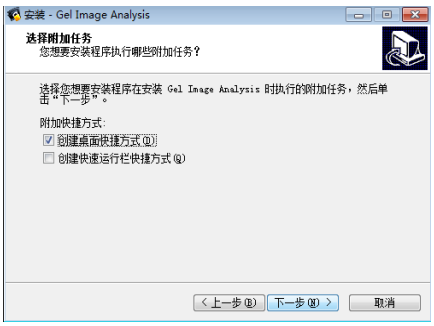
Click “Next”



Change installation directory or default installation pathway. Click “Next”

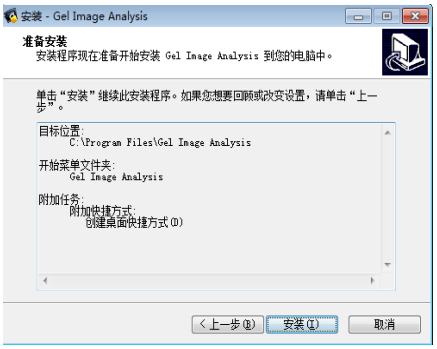


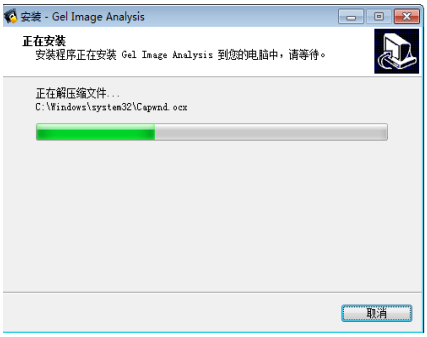
Click “Next”



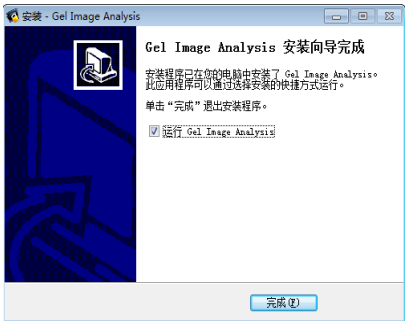
Check the attachment shortcut

Click “Next”





Click on Installation



Click on "Complete" to finish the application software installation;

CHAPTER 3 SYSTEM OPERATIONS

3.1 APPLICATION METHOD

This instrument is a dark box automatic gel image analyzer. It can be used to observe and analyze the experimental results directly on the preview screen or computer screen when experimental samples put in.

The detail steps are as below:

1、Plug in 220V power supply, then turn on the power switch on the back of the instrument (if you want to connect an external computer display, please use a VGA line to connect the instrument VGA interface with computer display VGA port).

2、Open the sample drawer, select the UV or visible sample glass plate, place the sample, close the drawer and push it tight. (Note: This instrument is designed with an anti-UV leakage device. If the drawer is not pushed, the UV lamp will not be illuminated.)

3、Open" Gel Image Analysis.exe" on the computer and log in, create a new report (software database management), and click to activate the image (start preview image), click POWER to open, select UV1, UV2 (for tapping workbench) or Light.

4、According to the size and needs of the experimental sample, click the software interface (or the operation panel) ZOOM+, -, Iris+, -, Focus+, - to obtain a clear image, and you can take photos by capturing images.

5、The software has the functions of image acquisition, image processing and data analysis. It can process and analyze the captured images (imported into external images), as well as print reports and data export.

6、Since the UV light is harmful to the human body, in addition to the above UV protection device, the system is equipped with a special gel cutting device. The observing window of this device is coated with an anti-UV film, which can effectively prevent the ultraviolet rays from harming the operators

7、 Please take out the sample and clean the sample box after the operation. It is recommended to put a plastic film on the sample plate and then put a gel sample on the film, which can effectively keep the inside of the box clean. Finally, turn off the main power on the back of the instrument.

3.2 SYSTEM OPERATIONS

First, make sure the dongle is plugged into the computer's USB port and make sure the computer is automatically recognized (Figure 3-1).

(Figure 3-1)

Double click on the desktop or start menu 

icon

You can enter the login interface (Figure 3-2): (Initial value----Username: admin; Password: admin)

(Figure 3-2)

After the user correctly selects or enters the “user name” and “password”, press <Login> to enter the system.

Check the <Remember> item, the system will automatically remember the password, you can log in without entering the password next time.

After login, the interface is shown in Figure 3-3:

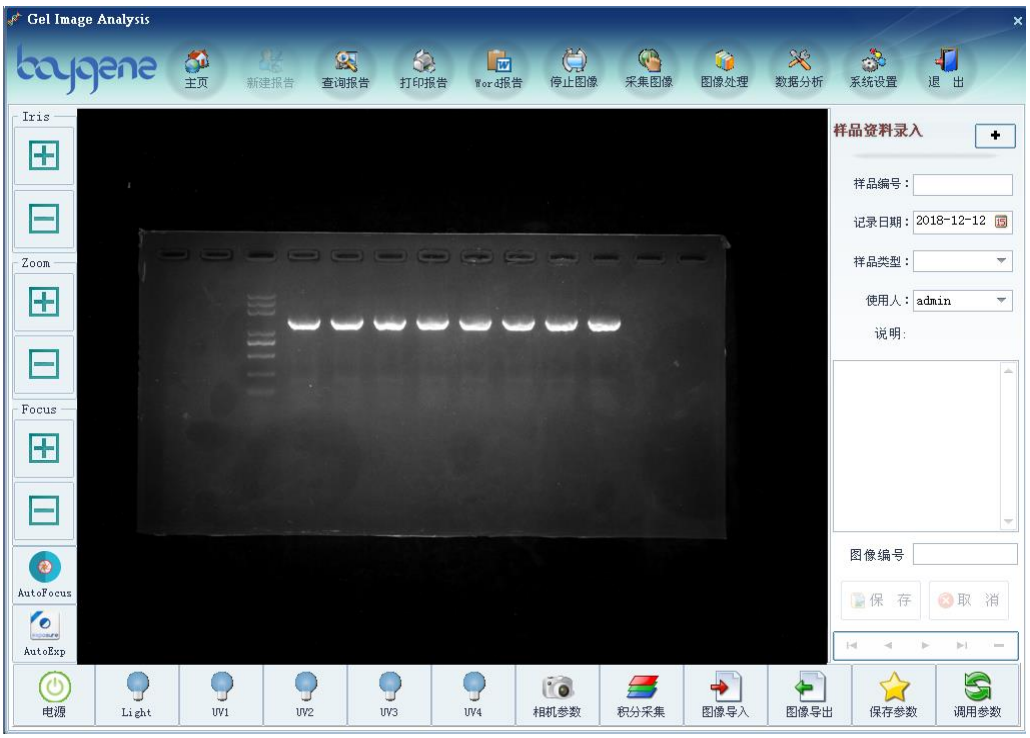
(Figure 3-3)

CHAPTER 4 REPORTING MANAGEMENT

This chapter describes how to create a report and collect images after the user logs in to the system.

4.1 NEW REPORT

Click <New Report> in the toolbar to enter the report interface (Figure 4-1) interface.



(Figure 4-1)

Users can enter relevant information on this interface: (Figure 4-2)

In the report, the system can automatically generate information, Such as date, user, etc.

Users can refer to the modification.

Remember to click the <Save> button after making changes.

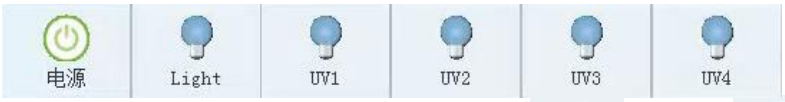
(Figure 4-2)

4.2 IMAGING CAPTURE

4. 2. 1 Place the gel on the center of the UV glass in the sample box and adjust the gel in the right direction.

4. 2. 2 Choose light source：

Click the <Power> button. If the button turns green, click the corresponding light button (or operate it through the operation panel).



Turn on the light source. When the light source is 

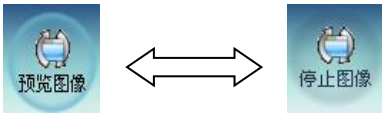
turned on, the button icon changes:

(Note: Please refer to the reagent instructions for the light source required.)

4. 2. 3 Camera control：

Click the <Activate Image> button, the button changes to <Stop Image>, and the image area displays the dynamic image;

Click the <Stop Image> button, the button changes to <Preview Image>, and the image area displays a still image.



Click the <Acquire Image> button to capture the image.

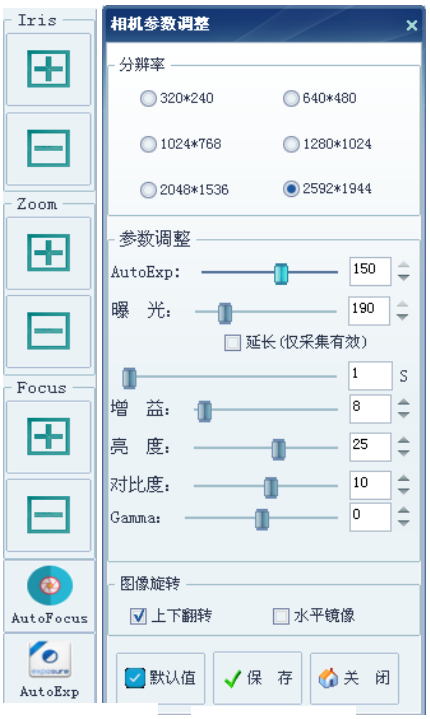
4.3 DYNAMIC IMAGE ADJUSTMENT

4.3.1 Lens parameter adjustment (Figure 4-3):

If the user is not satisfied the captured image, such as blurred, too large or too small, try to adjust Iris <+> or <->; Zoom <+> or <->; Focus <+> or <-> buttons through the software interface (or operation panel).

Click <AutoFocus> button to adjust the Focus automatically.

Click < AutoExp> button to adjust the exposure according to the AutoExp parameter you set in the camera parameter (Figure 4-4) automatically.



(Figure4-3) (Figure 4-4)

4.3.2 Camera parameter adjustment (Figure 4-4):

If the user feels that the image quality is not ideal enough, try to adjust the camera and picture parameter with the <Camera Parameters> button.

Adjustable parameters include:

Preview resolution, acquisition resolution, AutoExp, gain, exposure, brightness, contrast, gamma, image rotation, etc.

Click <Save> button to save the user-adjusted parameters to the system.

Click <Default Value> button to restore the parameters which the instrument was set at the factory.

(Note: If the band is not bright enough, prefer the longer exposure time to larger gain value. Larger the gain value is, more noise the image has.)

<AutoExp> button: Automatic exposure is based on the AutoExp value you set here. (Note: it needs enough amount of light)

4.4 SOFT INTEGRAL CAPTURE

After adjusting the lens and camera parameters, if the user feels that the image band is still weak, the system also provides a soft integral function to enhance the signals.

Click the <Integral Capture> button to pop up the window (Figure 4-5):

(Figure 4-5)

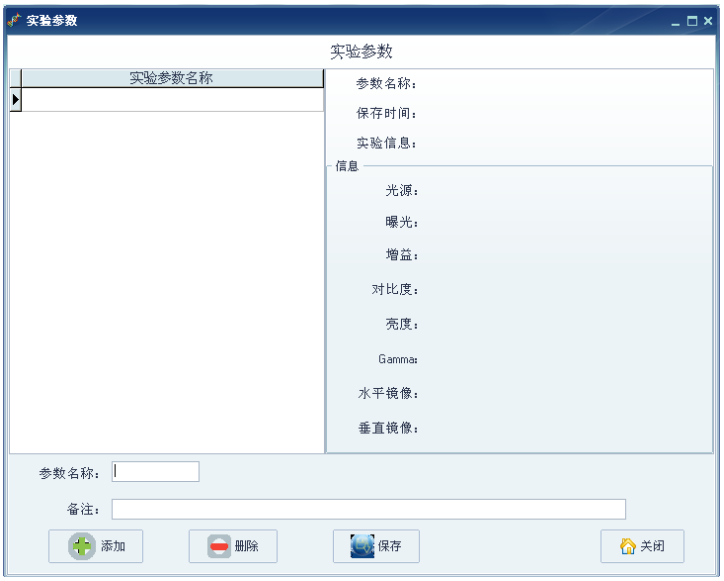
In the edit box of collection frame number, fill in the number of frames that need to be integrated, and click 'Start' to take the integral shot.

When finished, choose whether to save the captured image.

4.5 SAVE AND CALL PARAMETERS

The user can save the current experimental parameters, which is convenient for the next similar experiment.

Click the <Save Parameters> button to the pop up the window (Figure 4-6)



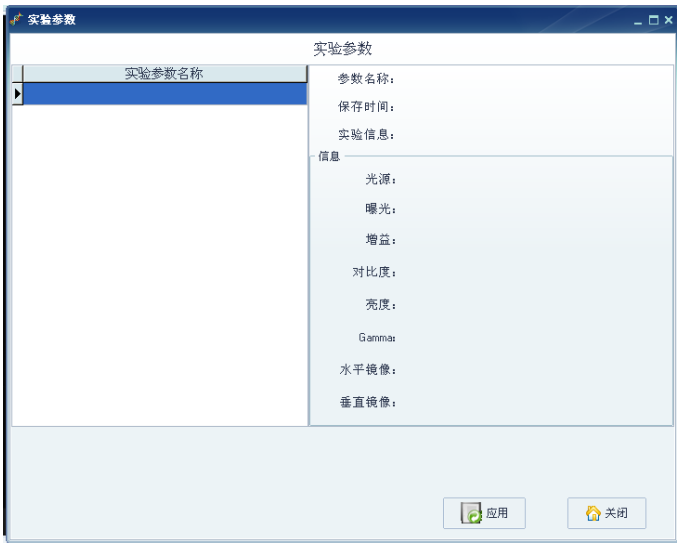
(Figure 4-6)

Click the <Add> button, enter the parameter name and related information, and click the <Save> button.

Click the <Delete> button to delete the selected experiment parameters.

Click the <Call Parameters> button to pop up the window (Figure 4-7).

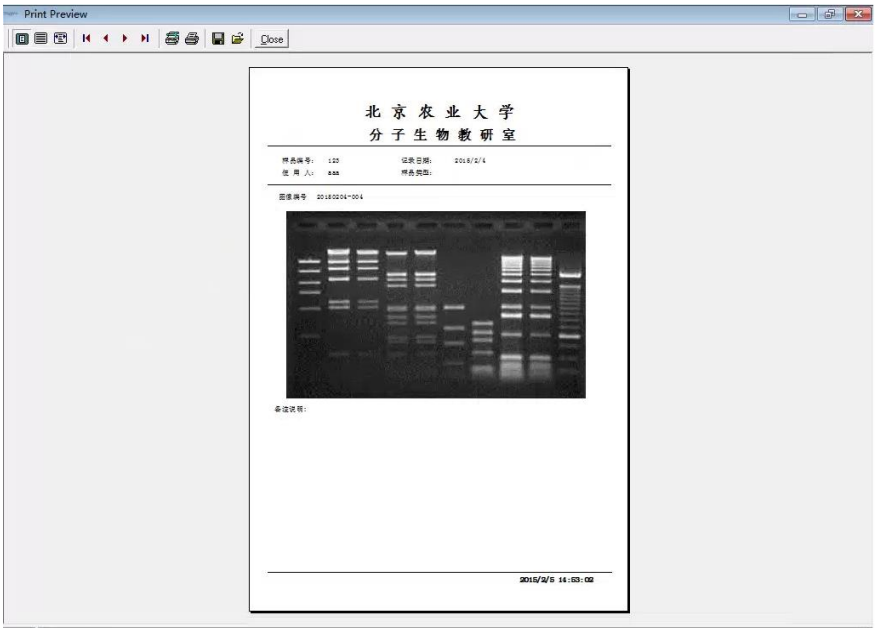
Click the <Apply> button to apply the experimental parameters to the current settings.



(Figure 4-7)

4.6 PRINT REPORT

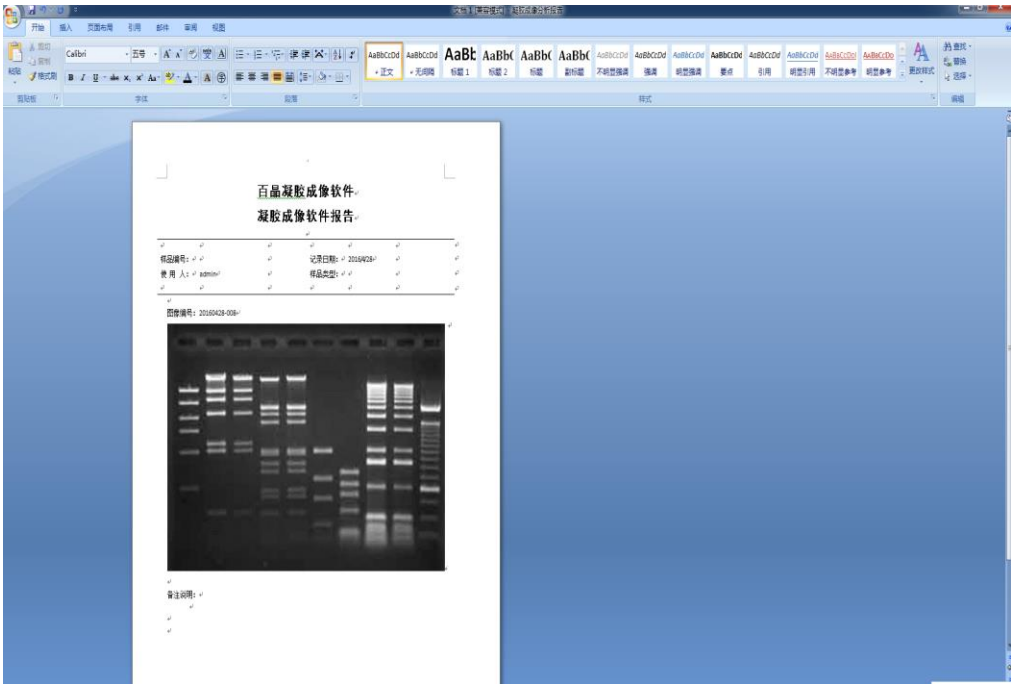
After capturing image is complete, click the <Print Report> button to preview the print results and click <Print> to print the image report. (Figure 4-8)



(Figure 4-8)

4.7 WORD REPORT EXPORT

After capturing image is completed, click the <Word Report> button on the toolbar to output the report to the Word document. (Figure 4-9)



(Figure 4-9)

4.8 IMPORT AND EXPORT IMAGES

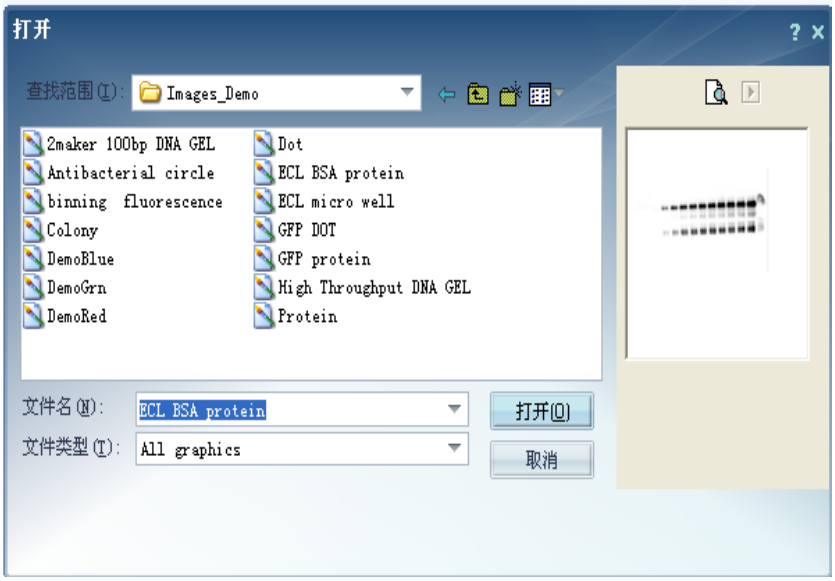
This system supports the import and export of common image formats including *.jpg, *.tif, *.pcx, *.png, *.bmp.

Click the <Image Import> button to pop up the window (Figure 4-10)

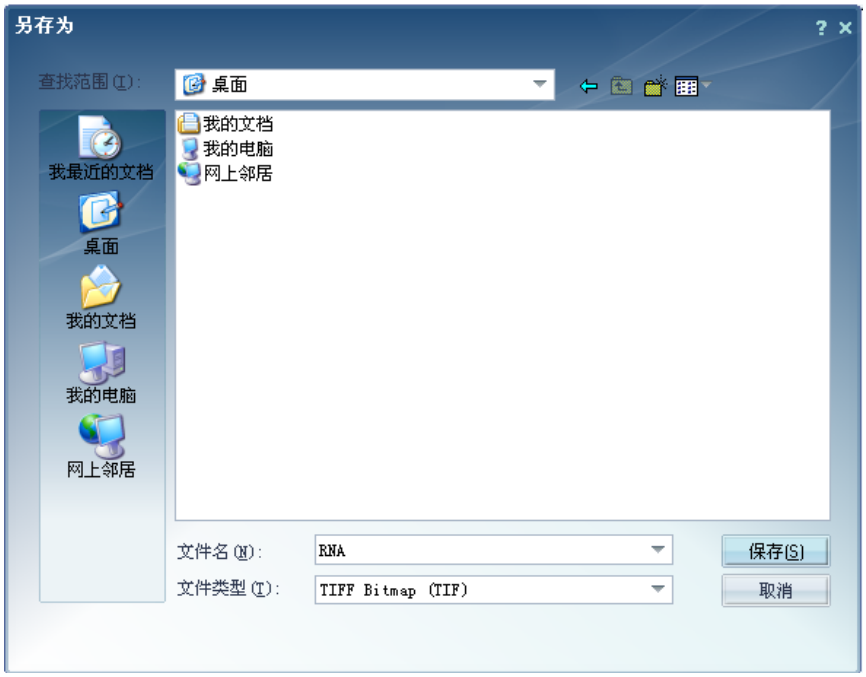
After selecting the relevant image file, click the Open button, the image can be transferred to the system for image analysis and processing.

Click the <Image Export> button to pop up the window (Figure 4-11)

Select the file format, enter the file name to be saved, and click the <Save> button to save the image.



(Figure 4-10)



(Figure 4-11)

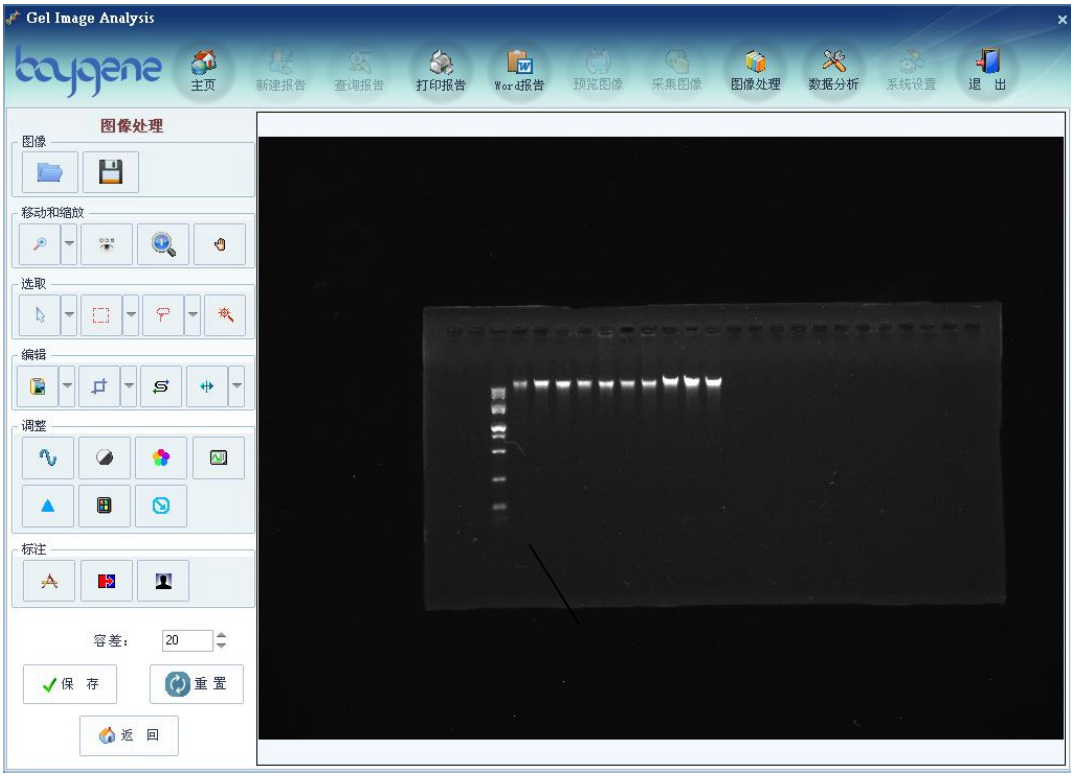
4.9 CLOSE REPORT

Click the <Home> button in the system toolbar to close this report and return to the home page.

CHAPTER 5 IMAGE PROCESSING

The system provides relatively complete image processing functions, including image selection, copying, pasting, cutting, cropping, mirroring, adding text arrows, image scaling, rotation, color adjustment, brightness contrast adjustment, reverse, filtering and other functions.

In the image capturing interface, click the <Image Processing> button to enter the image processing interface (Figure 5-1):



(Figure 5-1)

The user can achieve each image processing function by clicking each tool button on the left side of the image processing window, and hovering the mouse button to display the annotation of the tool button function.

5.1 IMAGE TOOLBAR


Open


Save as

5.2 TOOLBAR ZOOM AND MOVE


Zoom


Range


Original Size


Image fits window


Move

5.3 TOOLBAR SELECTION

The software includes the following selection tools: After clicking the corresponding button, drag the image to select the image (press the shift key at the same time to select more)

Select Cancel Rectangle Round Lasso Polygon Magic wand

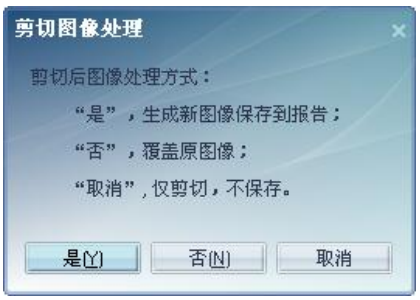
5.4 TOOLBAR EDITOR

Paste Cut Crop Delete Rotate Horizontal Vertical

Paste: First select the area, then click the paste button to complete the copy and paste operation. Select the pasted image and use the mouse to move the pasted image to the appropriate location.

Crop: Select the area first, then click the crop button to crop the image to the desired size. And pop up the processing window (Figure 5-2)

Rotate: Click the rotate button to rotate the image at any angle. (Figure 5-2)



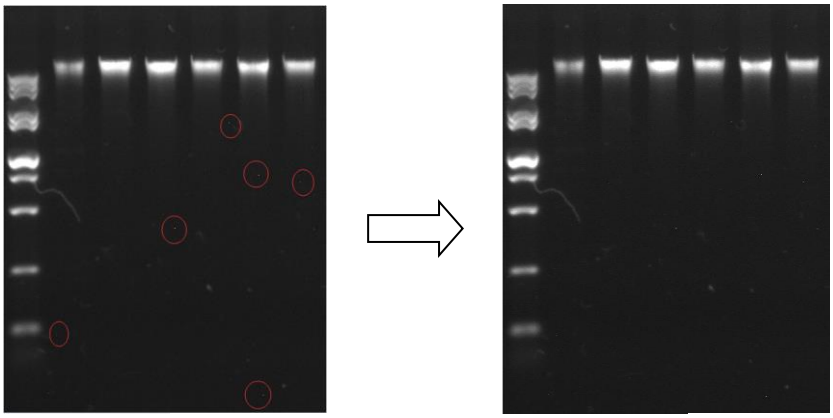
(Figure 5-2)

(Figure 5-3)

5.5 TOOLBAR ADJUSTMENT

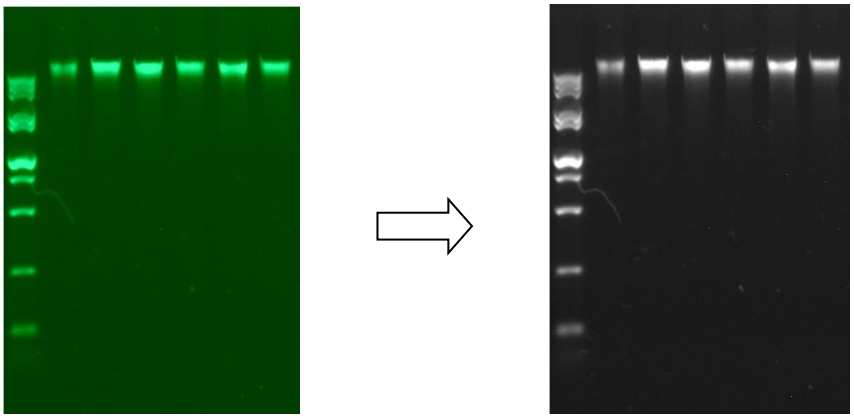
5.5.1  Median filtering：

The isolated point noise can be removed and the edge characteristics of the image can be preserved.



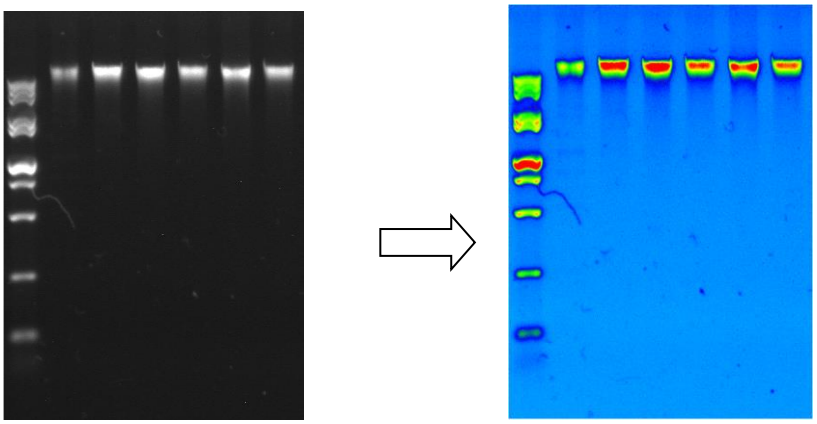
Unfiltered (Figure 5-4) Filtered (Figure 5-5)

5.5.2  Color convert to black and white: Images can be converted from color mode to black and white mode.



Color (Figure5-6) black and white (Figure5-7)

5.5.3  Pseudo-color: Bands can be converted into different colors , which is easier to be distinguished with the naked eyes.



Original (Figure5-8)　　Pseudo-color (Figure 5-9)

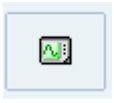
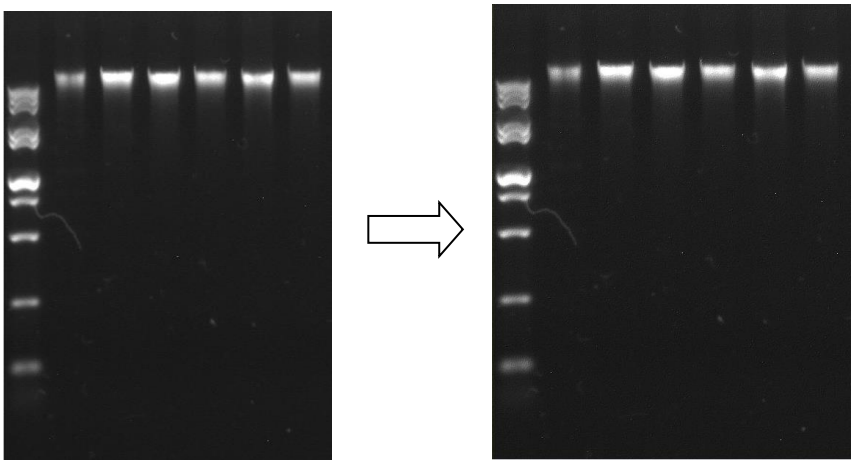
5.5.4  Brightness contrast adjustment: It can adjust the brightness contrast of the image, <Reset> button can be used to cancel the operation;

Figure5-10

5.5.5  Image can be sharpened.

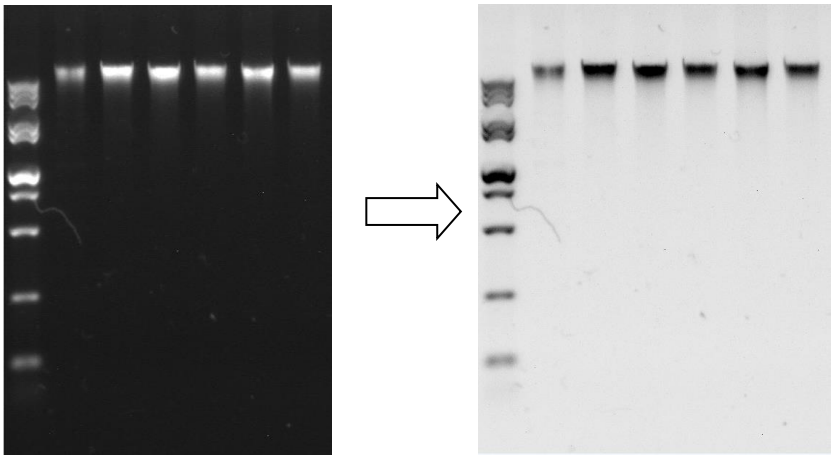


Unsharpened (Figure5-11) Sharpened (Figure5-12)

5.5.6  RGB adjustment: It can adjust the color of the image, <Reset> button can be used to cancel the operation;

Figure5-13

5.5.7  Inverse: You can reverse the image.



Uninverted (Figure 5-14) Inverted (Figure 5-15)

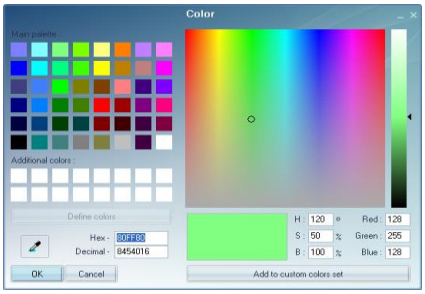
5.6 ADD TEXT AND ARROW

Text Arrow Font and arrow settings

Click the <Font and Arrow Settings> button to set the font and arrow, as shown in Figure 5-16:

(Figure 5-16)

To add the color of the arrow.



(Figure5-17)

Click the font settings to display the font settings.

(Figure5-18)

To delete an added text or arrow, click  the object selection tool, select the text or arrow, and click  the Delete Object tool to delete the text or arrow.

5.7 TOLERANCE SETTING

When using the Magic Wand tool, you can set the tolerance and change the extent of the selection.

5.8 IMAGE SAVE AND RELOAD

Save the edited image to the report.

Reload Image: Cancel all image processing operations back to the initial image processing interface.

CHAPTER 6 IMAGE ANALYSIS

It mainly provides functions such as identification, statistics, analysis and measurement for the experimental results of lane type, spotted gel image and colony culture. Click the <Image Analysis> button on the main interface to enter the analysis interface, as shown in Figure 6-1.

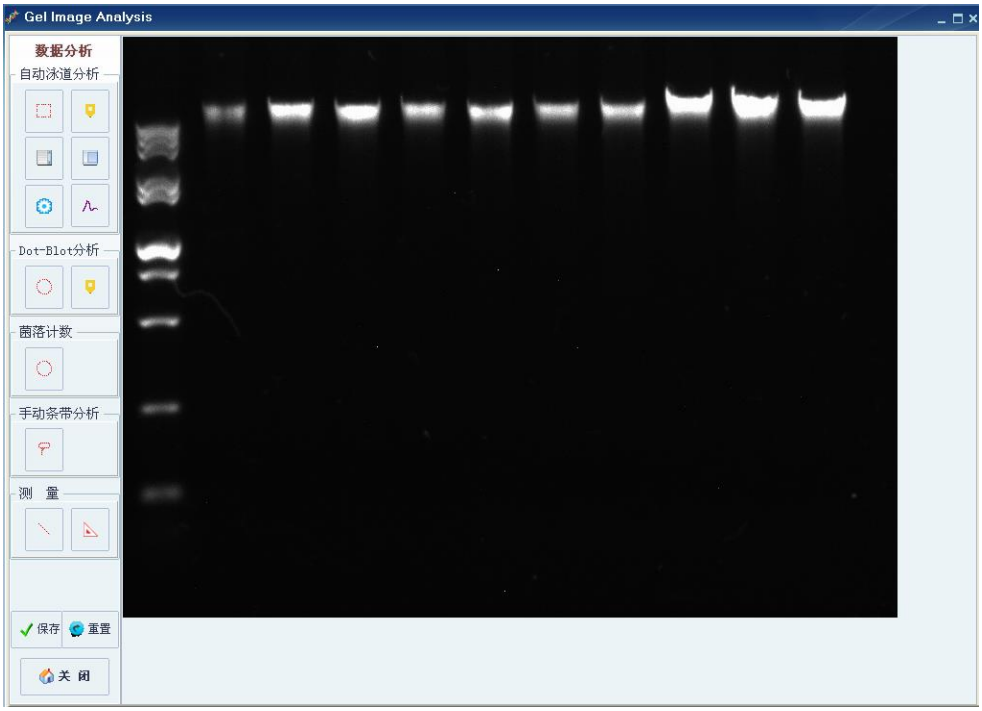


Figure6-1

6.1 LAND ANALYSIS

The system can automatically identify and analyze the lanes and strips of the gel image, and can automatically calculate the molecular weight and concentration of each band.

Note: When the mouse button hovers for 3 seconds, then the button description will be displayed.

6.1.1 LAND AUTO-DETECTION

First click on the <Rectangle> and select the part of the image you want to analyze (Figure 6-2):

Note: If you do not select the part of the image, the entire image will be recognized.

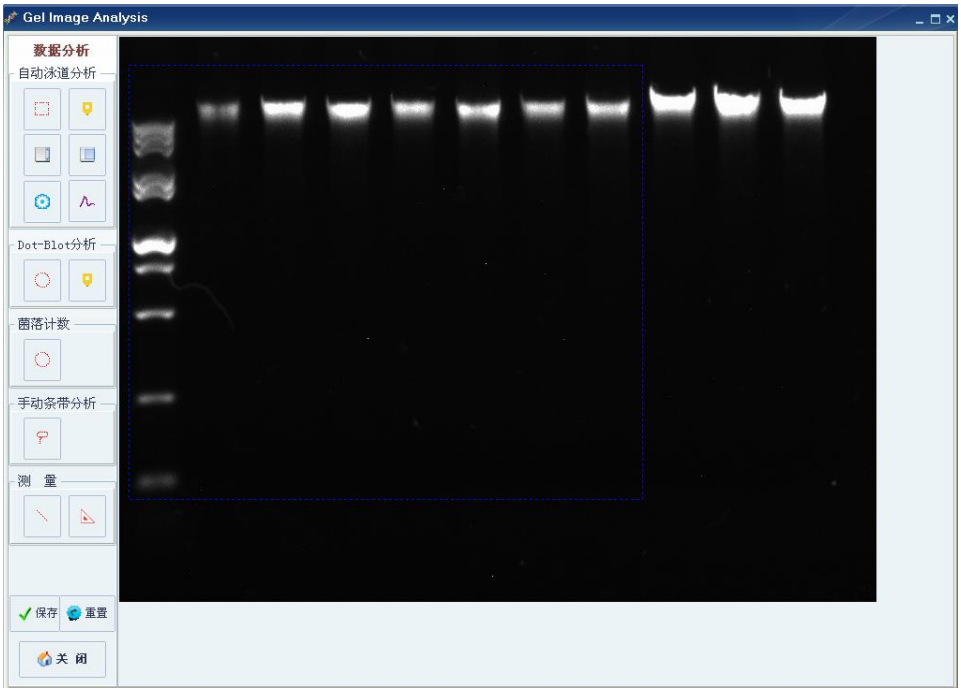


Figure 6-2

Click the <Automatic Identification>  button and the system will automatically identify the lanes and bands in the selected section.

The result is automatically recognized, as shown in Figure 6-3.

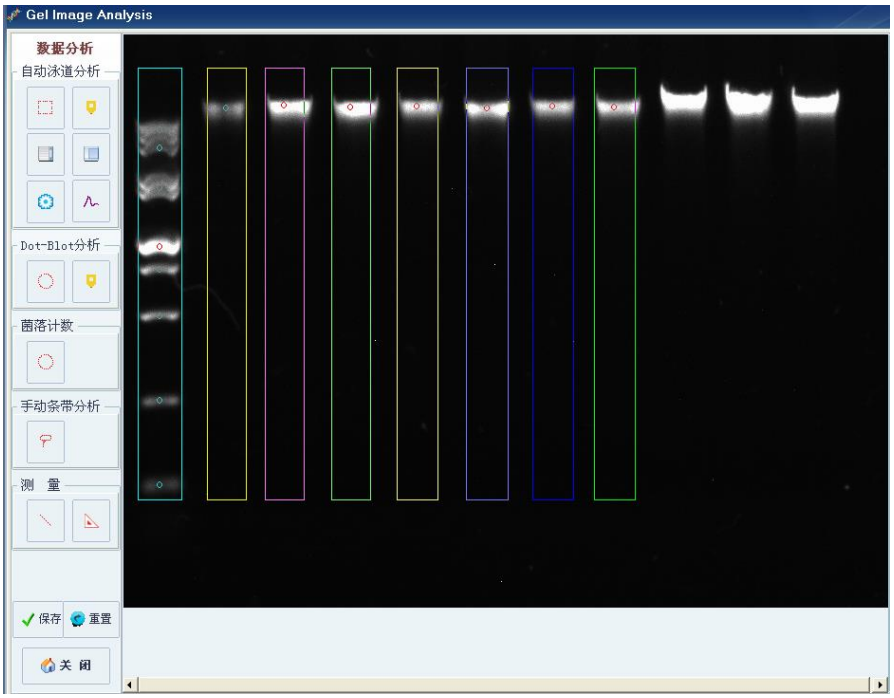


Figure 6-3

Figure6-4

a. The lanes are marked with a rectangular frame of different colors.

b. The band is indicated by "o".

(Note: Figure 6-3, the system has defined lanes as 1, 2, and 3 from left to right, and each lane is defined as 1, 2 and 3... from top to bottom. An "o" mark show the band has molecular weight or concentration data. Without "o" mark show the band has no data.)

6.1.2 ADD AND DELETE LANE AND BAND MANUALLY

Due to the variations of the image quality, shooting parameters and illumination, the automatically identified lanes and bands are sometimes different from the actual situation. You can do this by manually adding, deleting lanes and

bands. Click the <Identification Settings> button to display the recognition toolbar, as shown in Figure 6-4:

Click the <Add Lane> or <Delete Lane> button, a prompt box will appear, as shown in Figure 6-5.

Figure6-5

Use the mouse to move the cursor to the position where you want to manually add and delete the lane, and click the left button. To end the operation, click the <Close> button in the prompt box to end the addition and deletion.

Manually adding and deleting bands is similar to adding and deleting lanes.

6.1.3 MOLECULAR WEIGHT CALCULATION

After correctly identifying the lanes and bands, the molecular weight calculation can be performed.

Click the <Molecular Weight Data> button and the pop-up window is as shown in Figure 6-6:

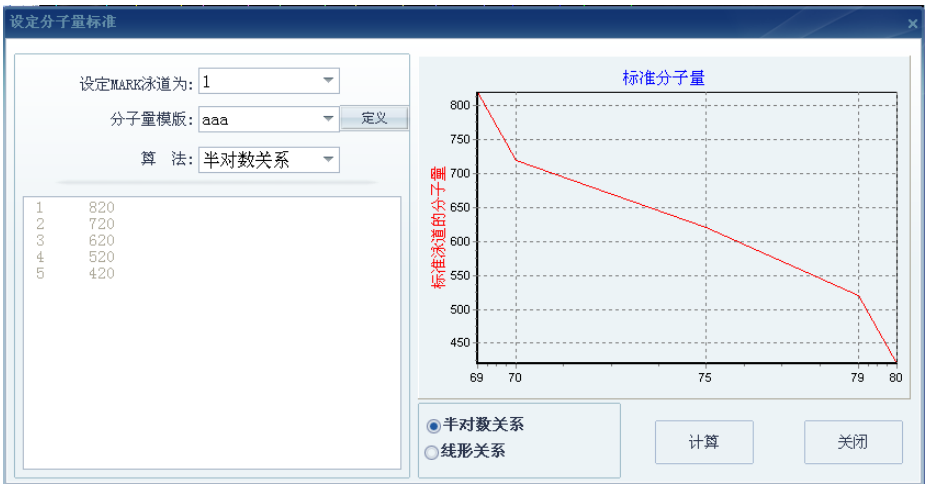


Figure6-6

On the left side of the dialog box you can customize the standard lanes and the molecular weight template of Marker. You can choose from the drop-down box. The right side shows the molecular weight curve of Marker, you can choose the calculation method, including semi-logarithmic relationship and linear relationship.

6.1.4 CUSTOMIZED TEMPLATE OF MOLECULAR WEIGHT

The molecular weight template can be set by custom way. Click the <Define> button to open the molecular weight template setting window, as shown in Figure 6-7:

Figure6-7

Click the < + > button to add a molecular weight template:

After inputting relevant information, you can directly input each band with standard data in the form table. After inputting, click the < √ > button to save.

Close the Molecular Template Setup window, as shown in Figure 6-8.

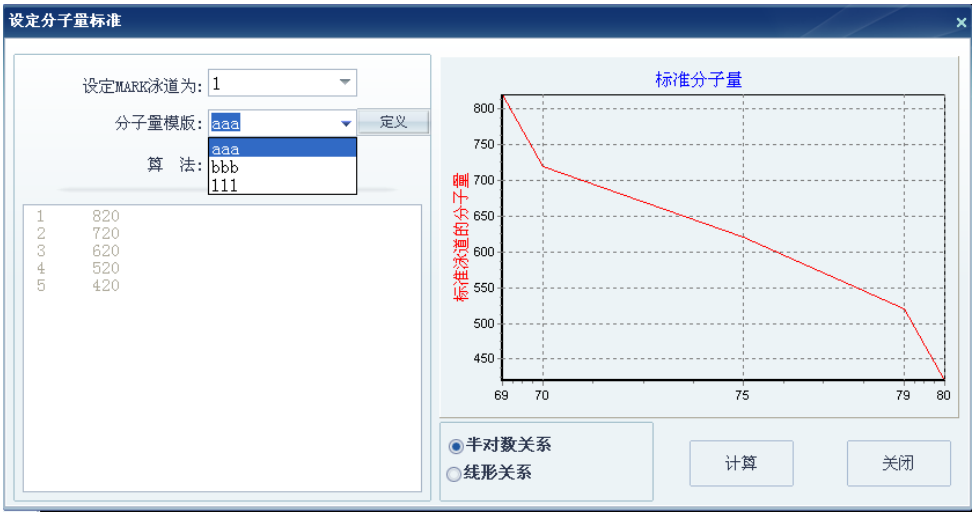


Figure6-8

After setting each parameter, click the <Calculate> button, and the system will automatically calculate all identified bands, as shown in Figure 6-9.

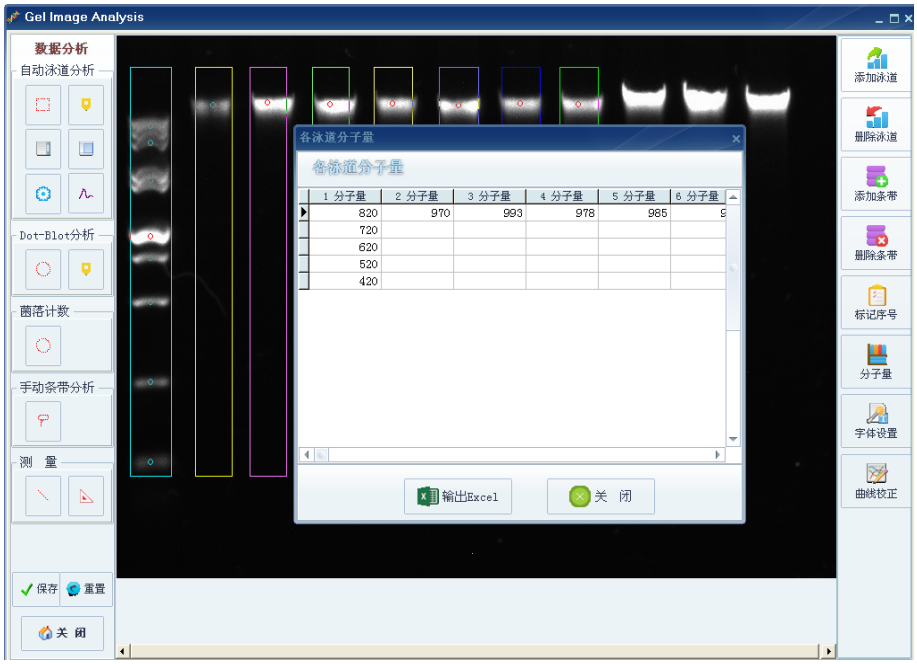


Figure6-9

Note: The experimental method is a semi-quantitative method, and the calculation will have some deviations.

Click the <Output Excel> button to export the data to the Excel.

6.1.5 CALCULATE CONCENTRATION

Click the <Content Data>  button to perform automatic concentration calculation for all bands, as shown in Figure 6-10.

Figure6-10

"Unmatched calculation" refers to whether the system performs concentration (optical density) calculation based on Marker bands. For example, if the calculation is unmatched, it means that the total number of bands in each lane is 100 (can be 100%, or other units such as np\kp), and then the concentration values of each band are calculated, as shown in Figure 6-11:

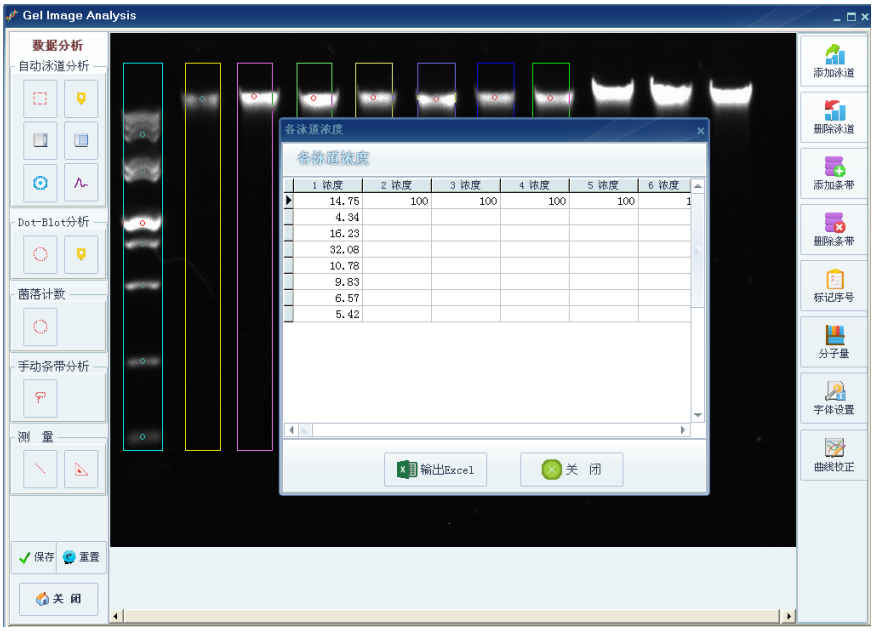


Figure6-11

As shown in Figure 6-12, if you do not select the “Unmatched calculation”, the system uses the interface setting band as the standard, and calculates the density of all other bands according to the gray value of the standard band:

Figure6-12

The calculation results are shown in Figure 6-13:

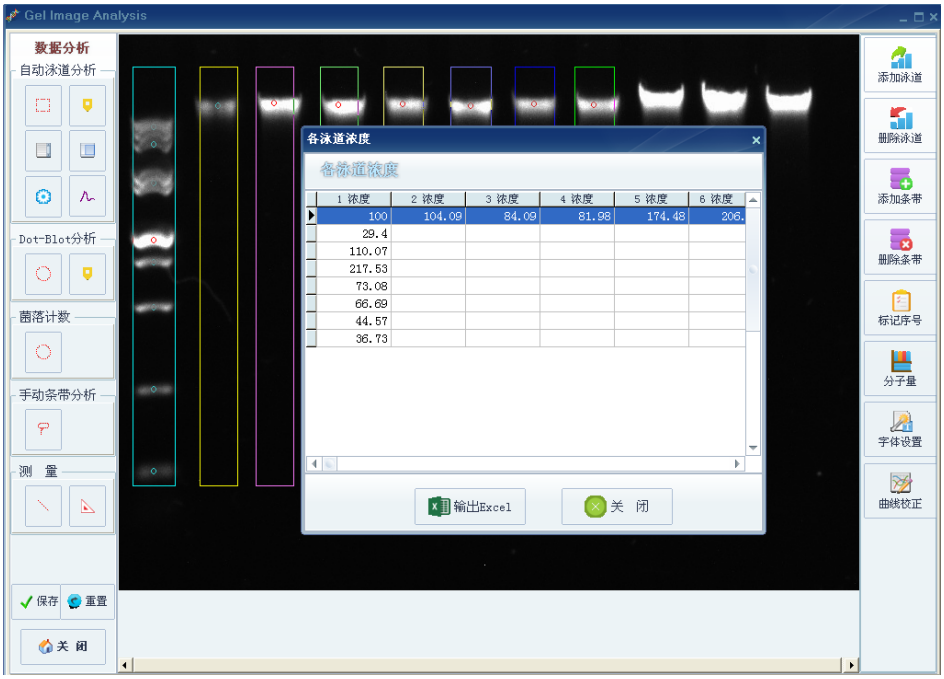


Figure6-13

Click the <output excel> button to export the data to the Excel.

6.1.6 MOLECULAR WEIGHT CURVE

Click the  button to open the Molecular Weight Curve window, as shown in Figure 6-14.

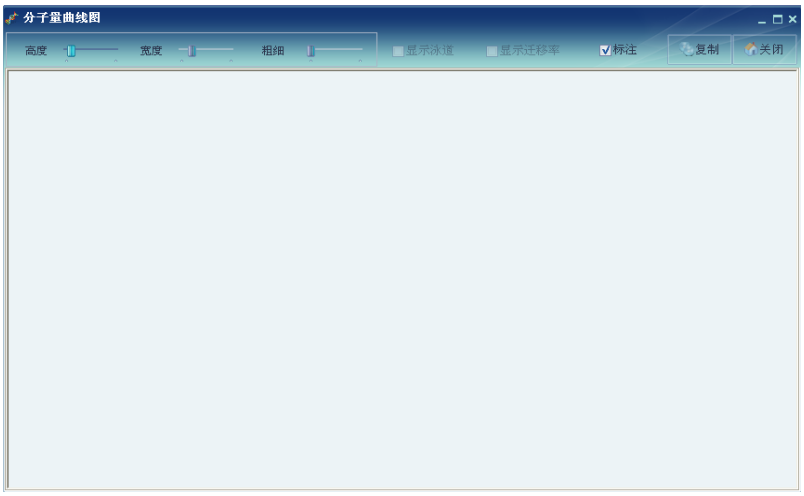


Figure6-14

Click on the identified lane and the system will automatically plot the lane curve, as shown in Figure 6-15.

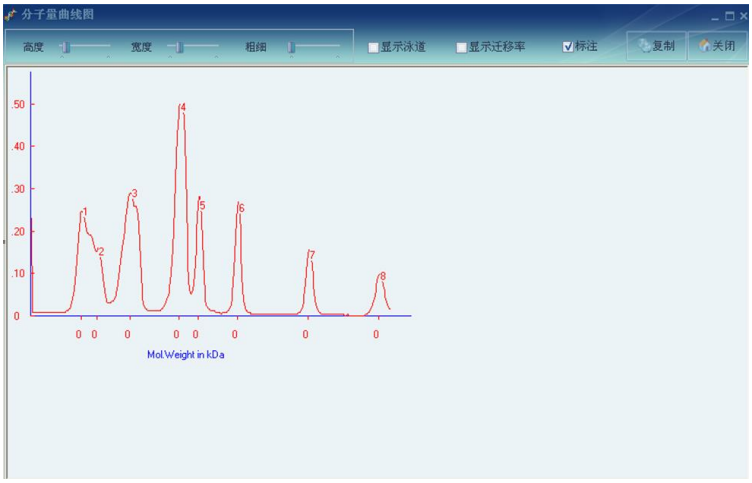


Figure6-15

The Y-axis (vertical direction) indicates the relationship of gray value among bands of the lane, and the X-axis (horizontal direction) indicates migration distance of each band. Click on a different lane to superimpose the line.

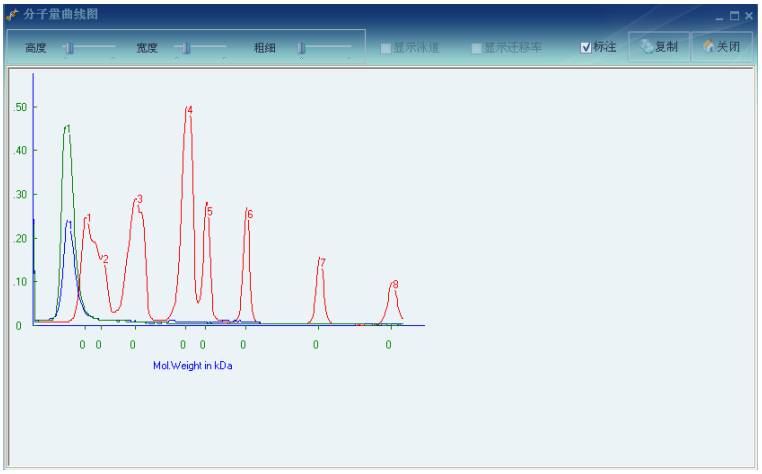


Figure6-16

The user can adjust the "height", "width" and thickness of the image.

When select ‘Show Lanes’, a single lane image placed horizontally is displayed below the line graph. When choose “Show Mobility", the X-axis (horizontal) is labeled as the band mobility. As shown in Figure 6-17.

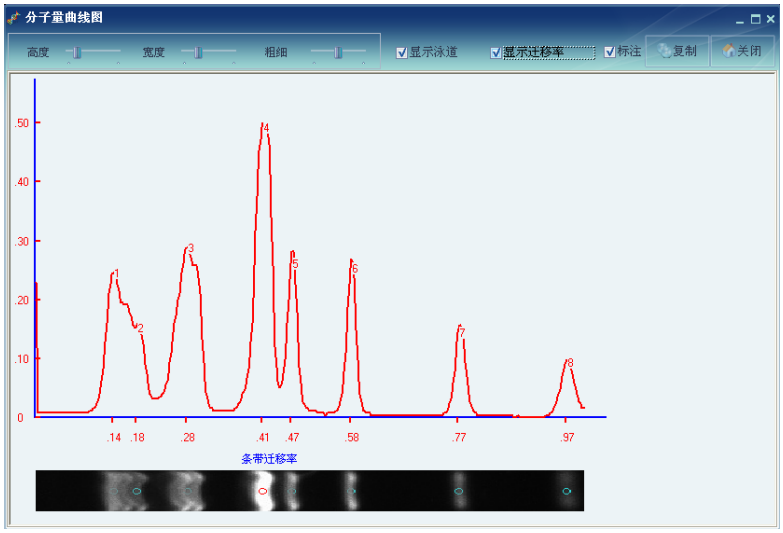


Figure6-17

Click the <Copy> button to copy the image to the pasteboard and paste it into other documents, such as Word.

6.1.7 INSTRUCTIONS OF MARK LANE

Click the <Mark No.> 

button in the lane toolbar to pop up a window (Figure 6-18). You can customize the name of each lane. (Note: only the identified lanes are marked)

Figure6-18

After click "OK" button, the system will mark each value at the top of each lane, as shown in Figure 6-19.

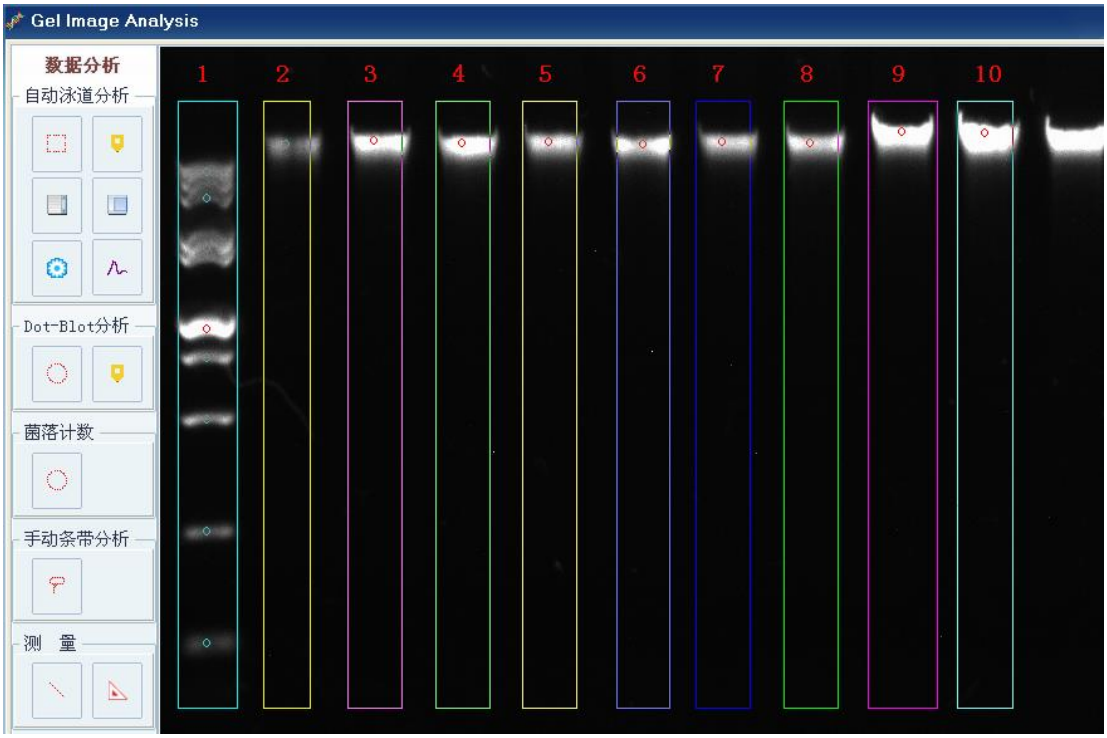


Figure6-19

6.1.8 MARK MOLECULAR WEIGHT

Click the <Molecular Weight> 

button in the lane toolbar to label the calculated molecular weight on the gel image, as shown in Figure 6-20.

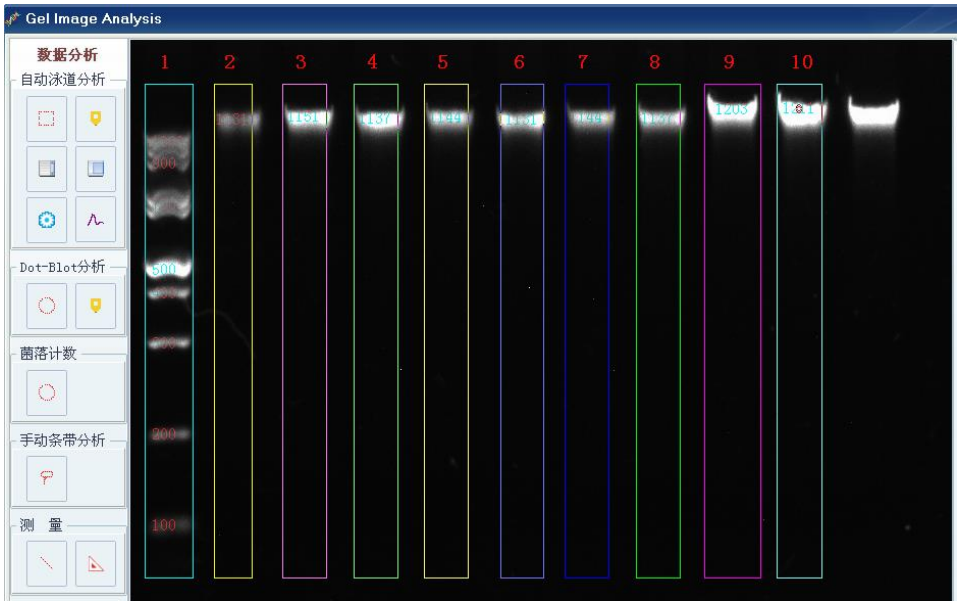


Figure6-20

6.1.9 LANE CURVE CORRECTION

The gel experiment is a relatively complicated process, and there are many factors affecting the imaging. Therefore, it is inevitable that the molecular weight of each band is automatically deviated from the actual situation. At this time, the curve can be corrected to meet the requirements.

Click the <Curve Correction> button in the lane toolbar to pop up the window, as shown in Figure 6-21:

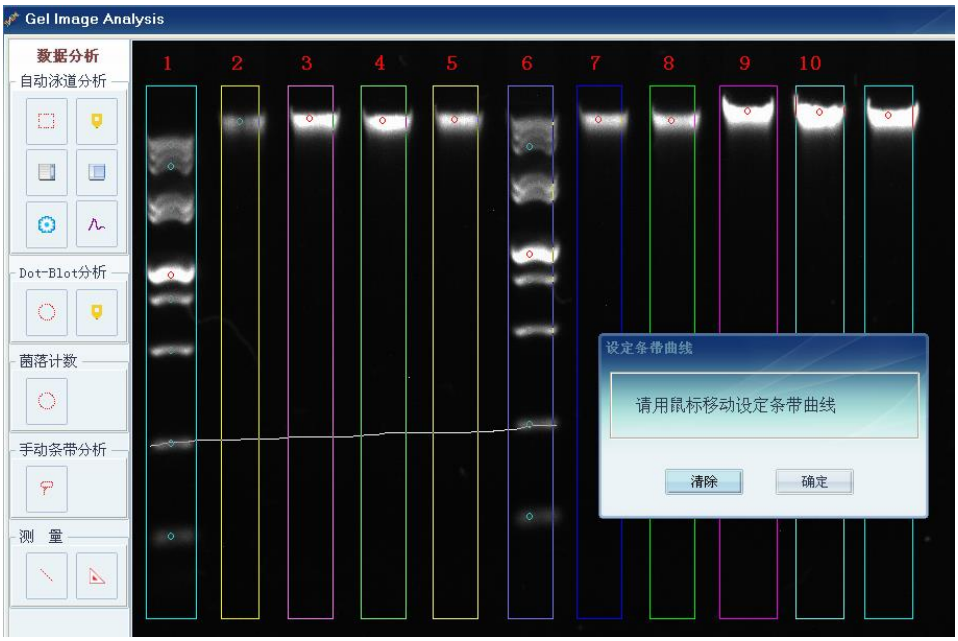


Figure6-21

The user can drag the mouse to manually draw the band calibration curve as needed; after confirming, click the <Molecular Weight Data> button and the system will recalculate the molecular weight based on the calibration curve.

6.2 DOT-BLOT ANALYSIS

The system provides recognition and analysis of Dot-Blot gel images.

Click the <Circle> in the Dot-blot bar to open the Spots toolbar, as shown in Figure 6-22

Figure6-22

After clicking the <Add Spot> button, you can click on the image to add a spot, as shown in Figure 6-23:

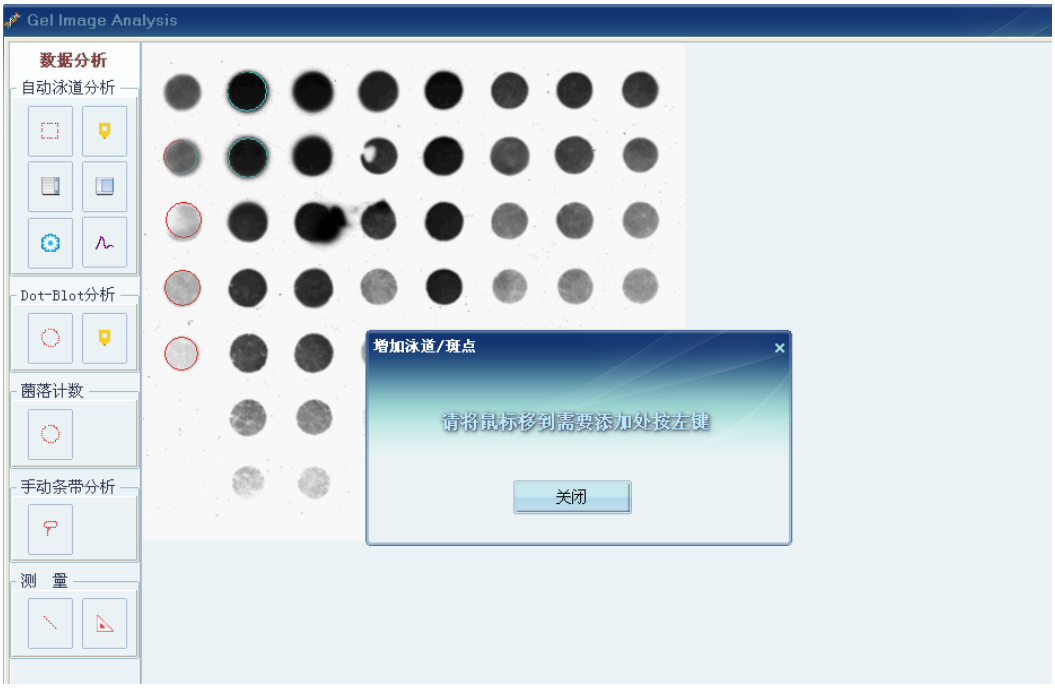


Figure6-23

After addition step, click the <Close> button. If you add it by mistake, you can click the <Delete Spot> button to delete it.

The system only calculates the data in the added circle, dragging the edge of the circle with the mouse to zoom in and out, and dragging the center of the circle to move the circle.

Click the <Calculate> button to perform the speckle calculation. The calculated result is the mass and optical density of each spot.

As shown in Figure 6-24:

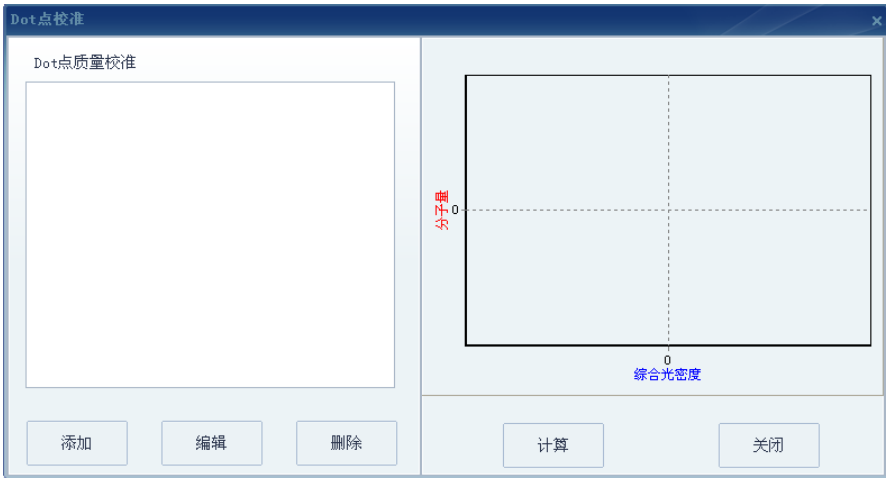


Figure6-24

Click the <Add> button to increase the calibration point, as shown in Figure 6-25.

Figure6-25

Use the mouse to click on an added circle as the calibration point, enter the quality of the point, and click OK.

Multiple correction points can be added continuously as above. When the calibration point is selected, the <Edit>, <Delete> button can perform the relevant calibration point operation.

Click the <Calculate> button to calculate all the spot data, including the maximum, minimum, average, sum, etc. The right side of the window is the spot quality curve, as shown in Figure 6-26:

Figure6-26

Click the Output Excel button to export to Excel.

6.3 COLONY COUNT

The system provides colony counting function, can automatically identify the number of colonies in the culture dish, calculate the size of each colony and classify it.

Click the <Circle> button in the colony count bar and drag the mouse to select the petri dish, as shown in Figure 6-27:

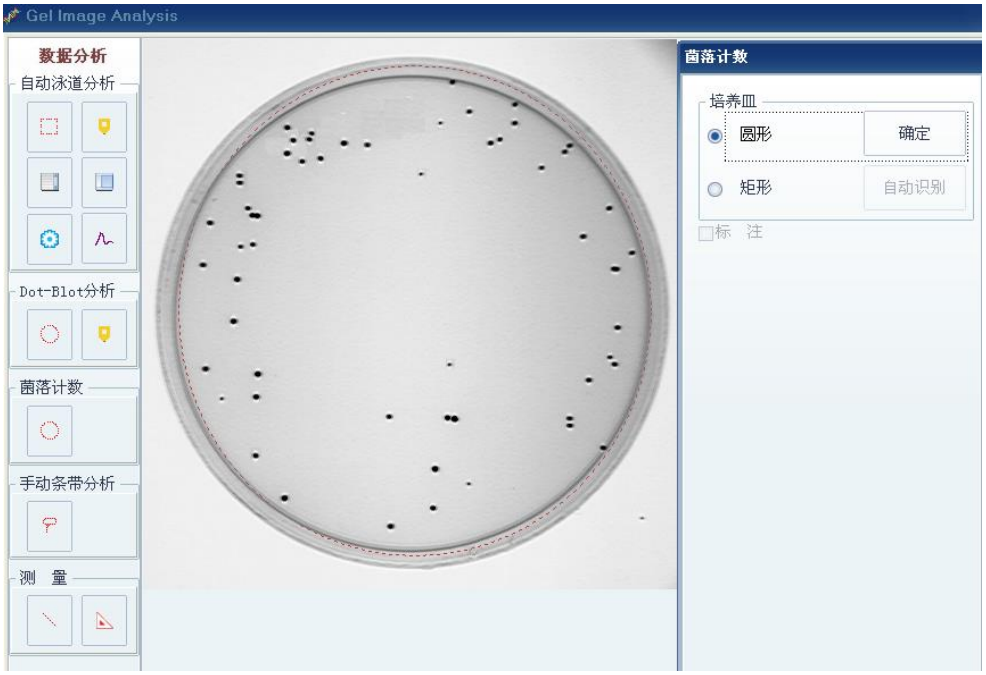


Figure6-27

The rounded edge can be dragged with the mouse for zooming. Click the <OK> button to capture the image inside the dish, as shown in Figure 6-28.

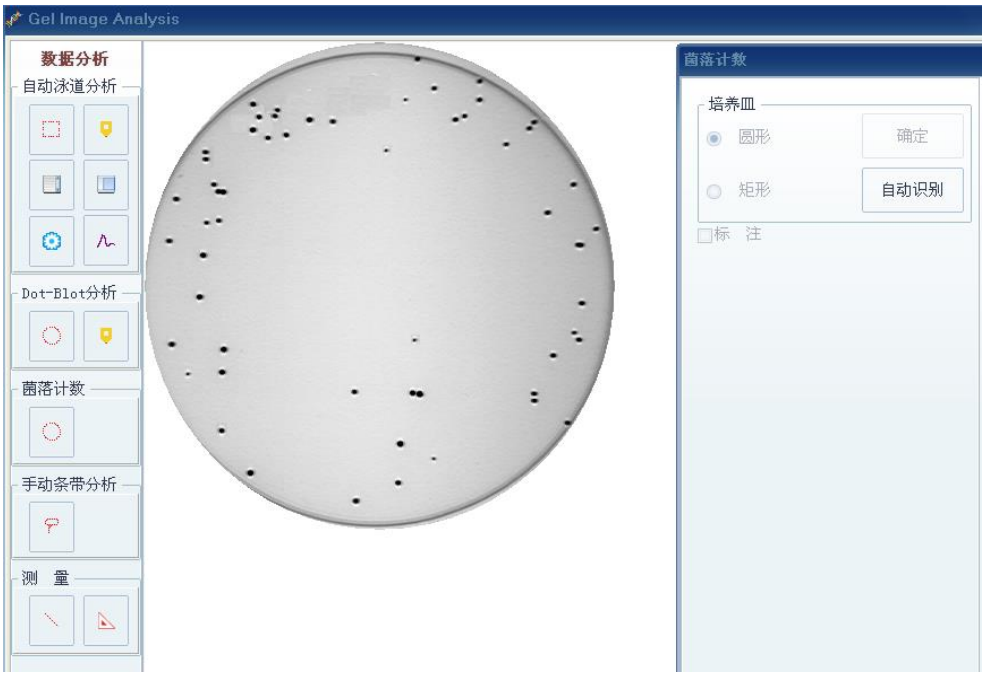


Figure6-28

After clicking the <Automatic Identification> button, select <Label Number> to mark the colony number. The “area threshold” is used to retain colonies that match the area. If the image is unclear, you can set the manual adjustment threshold to identify it, as shown in Figure 6-29.

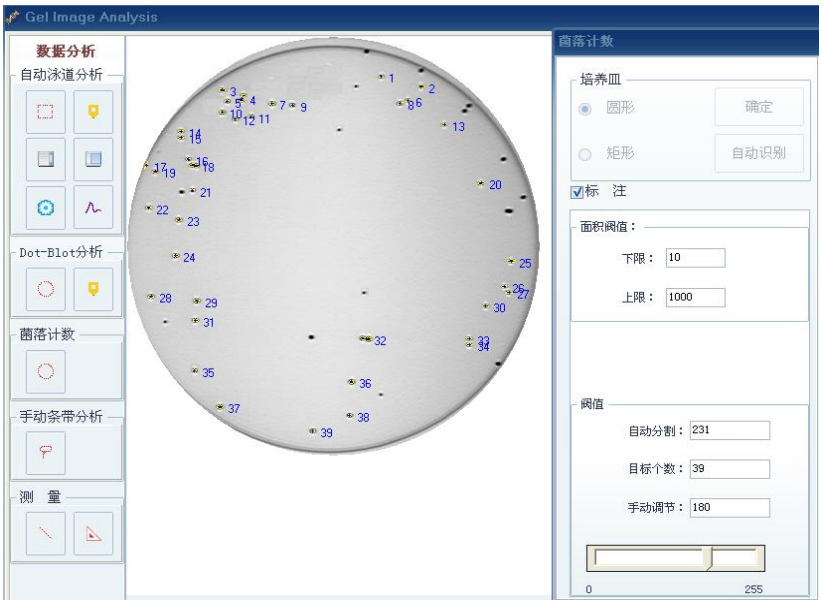


Figure6-29

Click the <Calculate> button to calculate each colony data, as shown in Figure 6-30:

Figure6-30

6.4 MANUAL BAND ANALYSIS

The system provides users with different band comparison functions between lanes, which is convenient for users to view the slight difference between the comparison bands. Click the <Lasso> button of the manual band analysis bar, and the pop-up window is shown in Figure 6-31.

Figure6-31

Select the appropriate tool to determine the selection in the map, and the data can be reflected in the data window in time, as shown in Figure 6-32.

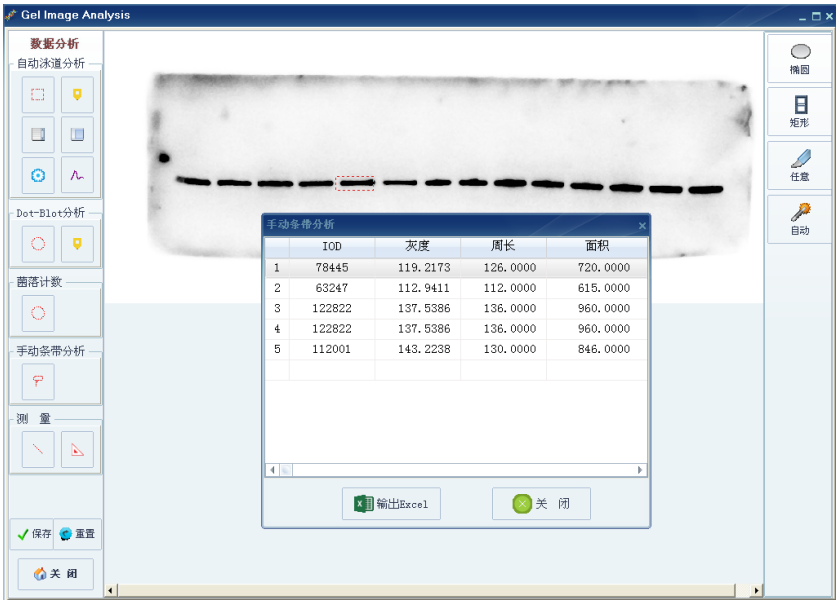


Figure6-32

6.5 MEASUREMENT

The measurement function can be corrected by a known length to obtain the actual value of the measured target. First click the <Correction>  button to drag the mouse over the image to measure the known length, as shown in Figure 6-33:

Figure6-33

The system automatically calculates the actual pixel value, fills in the actual value of the length in the correction value edit box, the system automatically calculates the proportional relationship, click the save button to save.

Click the “Measure”  button to measure and drag the mouse to measure the actual length of the measured object, as shown in Figure 6-34:

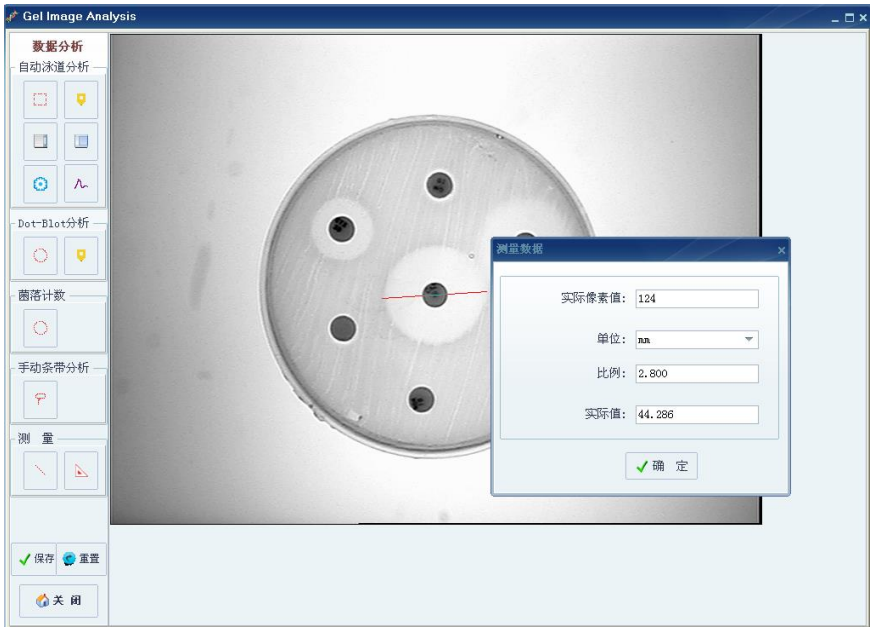


Figure6-34

6.6 SAVE AND RESET

: After the analysis is completed, you can click the <Save> button in the lower left corner to save.

: Reset function restoring the image to the initial state of the analysis.

CHAPTER7 INQUIRE AND OPEN REPORT

7.1 QUERY REPORT

Click the <Query Report> button, the interface for query report will appear, as shown in Figure 7-1.

While entering the interface, the current user can review all library records in the browse box by default.

According to different query requirements, the user enters the corresponding query condition option. After clicking the <Query> button, all the query results that meet the query conditions will be displayed in the following browse box.

If you want to modify the query conditions, you can move the cursor to the specified query condition, edit the changes directly, or click the <Clear Conditions> button to clear all current query conditions, and then re-enter the query options.

Figure7-1

7.2 OPEN REPORT

After the query is completed, the user can directly select the record in the record list for detailed view, click the specified record with the mouse, click the <Detail> button or double-click the specified record to open the record.

If the user does not enter the conditions, click the <Details> button, the system will open the first report record within the current user permissions by default.

7.3 DELETE REPORT

The user can directly select the record to be deleted in the record list, and click the <Delete> button below the window to delete the record, as shown in Figure 7-2.

Figure7-2

7.4 MODIFY AND EDIT REPORT

After opening the report, you can modify the content of the report according to your own requirements. After the modification is completed, click the “Save” button at the bottom left to save the current modification. If you click the "Cancel" button at the bottom left, you will abandon the previous modification and keep the original record.

CHAPTER 8 SYSTEM SETTINGS

Click the <System Settings> button to pop up the window, as shown in Figure 8-1.

Figure 8-1

8.1 SYSTEM USER MANAGEMENT

The system provides flexible user management functions, and different users can set different operation rights.

Click the <User Management> button to enter user management interface, as shown in Figure 8-2.

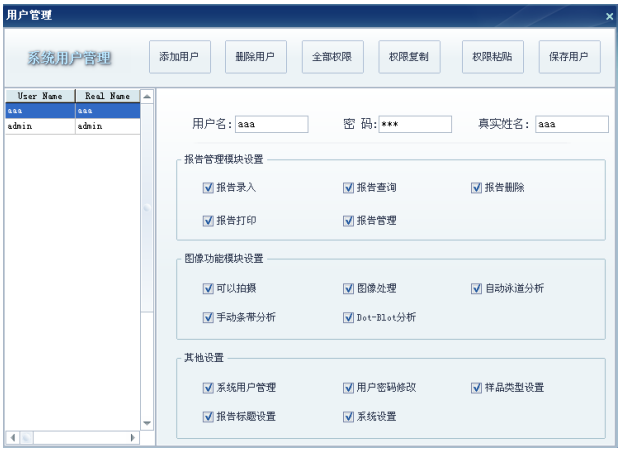


Figure8-2

This module can perform operations such as adding users, deleting users, and setting user permissions. After the user is set up, click the <Save User> button to save the operation.

8.2 CHANGE PASSWORD

Click the <Modify Password> button to pop up the window, as shown in Figure 8-3. The user enters the corresponding content in the corresponding edit box, and clicks OK to modify the password (as shown in Figure 8-4).

Figure8-3

Figure8-4

8.3 REPORT TITLE SETTINGS

The content of the report title can be freely set by the user according to his own requirements.

Click <Title Settings> to pop up the window, as shown in Figure 8-5. The user enters or modifies the contents of the main title and subtitles.

Figure 8-5

The font size, color, etc. of the main title and subtitles can be changed. Click the font button at the right of the edit box, as shown in Figure 8-6.

Figure 8-6

After setting, click the <OK> button to save.

8.4 SAMPLE TYPE SETTINGS

The sample type in the report can be added by the user.

Click <sample type> to pop up the window, as shown in Figure 8-7.

Users can add, delete and modify sample types. Click the <OK> or <Cancel> button when done.

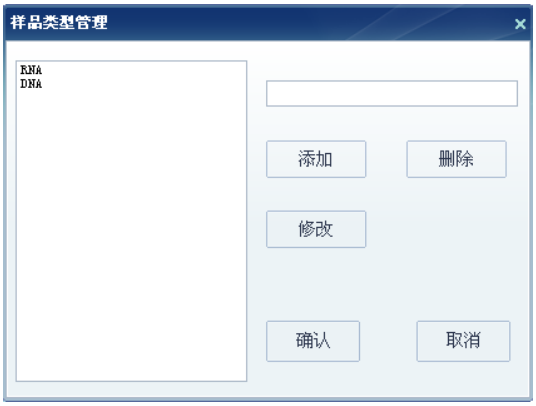


Figure8-7

8.5 COM PORT SETTINGS

Click <Com port Settings> to pop up the window, as shown in Figure 8-8.

Users can set up computer and instrument communication ports.

Figure8-8

8.6 SYSTEM BACKUP AND RECOVERY

Copy the installation root folder completely to the backup address. As shown in Figure 8-9.

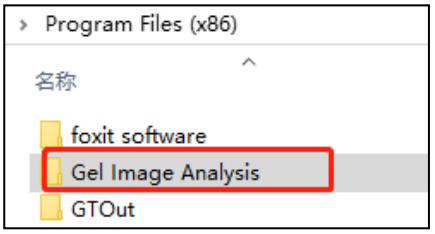


Figure8-9

CHAPTER 9 NOTE FOR USE

9.1 NOTE FOR HIGH VOLTAGE

The input voltage of the instrument is AC 220V voltage, and the power switch and leakage protection are configured. Users can use it with confidence. Users should not randomly change the circuit and electrical layout of the instrument. If smoke, leakage or other phenomena are found, the power should be cut off without delay. Biological after-sales service call. Call Baygene Biotechnology after-sales service in time.

9.2 NOTE FOR LABOUR SAFETY

According to the experimental conditions, try to avoid exposing unprotected skin and eyes to UV light, and strictly follow the experimental process specifications during the experiment.

9.3 DAILY MAINTENANCE

- Built-in camera, fragile valuables (no warranty), please protect it carefully.
- Never disassemble the instrument at will, otherwise no warranty will be provided
- Please power off and clean the sample stage after use.
- The instrument should be placed in a place that is ventilated, dry, and dusty. When not in use, turn off the main power switch on the back of the instrument.
- The instrument should be placed in the package when it is stored and transported, with shockproof materials on the upper and lower sides, and the accessories are placed in the accessory box. The outer packaging shall be fastened with an outer tie and shall have the specific tag. Each instrument must have a product certificate and instructions for use. Carton should be handled with care during transportation, and the stored warehouse should be well ventilated and free of corrosive gases.

9.4 RELATED REAGENTS（CFDA RECORDS）（IF ANY））

- The following reagents are recommended only by Beijing Baygene Biotechnology Co., Ltd., and these reagents can be used to achieve good results.

Reagents	Specification (or Part number)	Comments

CHAPTER 10 COMMON USE Q&A

Q1、Click on the software, a prompt window show " Camera is not connected".	A1、 (1) Check the device manager to confirm the camera driver installation. (2) Please contact the after-sale engineer to check whether the camera is connected to the built-in computer.
Q2、Click on the software, a prompt window show "Communication Connection Error".	A2、 (1) Check COM port； (2) Please check the connected cable between the instrument and the computer
Q3、Click on the light button. The light is not on.	A3、 (1) Same as A2 (2) Check power switch and confirm whether it is on. (3) Check whether the light is damaged or not.
Q4、Image is not clear.	A4、 Please contact the after-sale engineer to confirm if the lens focus is OK.
Q5、The instrument is on, but the screen is not displayed.	A5、Please contact the after-sale engineer to confirm: (1) Whether the built-in computer is normal; (2) Whether the built-in screen is normal; (3) Whether the connected cable is OK.
Q6、Other problems	A6、Please contact the after-sale engineer.

CHAPTER 11 AFTER-SALES SERVICE

11.1 PRODUCT WARRANTY

In order to enable the majority of consumers to use our products with confidence and satisfaction, our company will strictly stipulate the company's after-sales service system in strict accordance with the relevant laws and regulations issued by the state.

1. When purchasing the products of our company, consumers should fill in the contents of the complete warranty card and stamp the seal of the dealer.

2. Service period: If the company's products fail during normal use within 7 days from the date of sale, consumers can choose refund, exchange, warranty and other services. After the consumer purchases our company's products, if there is a failure caused by non-human damage within one year, the warranty is free. For consumers who do not meet the terms of free replacement or free warranty service, our company still provides technical services, only charge for materials when repairs need to replace parts.

3. The purchase time is based on the invoice or receipt date issued by the dealer.

4. One of the following conditions cannot be used for the “Three Guarantees” service:

1) All artificially damaged conditions and always used in an abnormal working environment, failure or damage caused by not following instructions or not in the environment complianced with the instructions;

2) The user disassembles, repairs, or modifies the product without the permission of the company;

3) Damage caused by bad transportation after purchasing our products;

4) Damage caused by other irresistible forces (such as floods, lightning strikes, earthquakes, abnormal voltages);

5) Became old, worn, Cracked and Dip-dyed after normal use;

6) Products that are not part of the company (such as fakes);

7) Cannot present valid shopping credentials, no warranty card, etc.;

8) The instrument barcode is damaged.

11.2 AFTER-SALES SERVICE PROCEDURES

When the instrument fails during use, the customer should bring the invoice or relevant receipt to the dealer for repair. If the problem has not been solved properly, please call or email to our customer service department, we will help you solve the problem as quickly as possible.

Product warranty card（Customer page）

Product information

Product name&model：_____

Serial number：_____

Installation date：_____

Installation engineer：_____

Invoice number：_____

Customer information

Institutions：_____

Contacts：_____

Address：_____

Tel：_____

E-mail：_____

(Customer page is kept by the client)

Address: Building7, No.28 Yuhua Road, Airport Industrial Zone,
Area B, Beijing 101300, PR China.
Tel: 010-80483100 80483200 Fax: 010-80482859
web：www.baygenebiotech.com E-mail：info@baygenebiotech.com

Product warranty card（Corporation page）

Product information

Product name&model：_____

Serial number：_____

Installation date：_____

Installation engineer：_____

Invoice number：_____

Customer information

Institutions：_____

Contacts：_____

Address：_____

Tel：_____

E-mail：_____

(Corporation page will be filled out by the client and handed over to the company)

Address: Building7, No.28 Yuhua Road, Airport Industrial Zone,
Area B, Beijing 101300, PR China.
Tel: 010-80483100 80483200 Fax: 010-80482859
web：www.baygenebiotech.com.cn E-mail：info@baygenebiotech.com