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Technical Support

Rowny Systems offers free technical support and advice for Antigen Plus for one year from the date of purchase, Monday-Friday between 9 am and 5 pm U.S. Eastern Time at (301) 761-3106. International callers please call 001 301 761-3106. Rowny Systems also offers technical support via Email at help@antigenplus.com. All support is continued with renewal of the annual license.

Data Entry Support

Rowny Systems offers automated red cell panels for Antigen Plus. The panels provided are electronically verified to match with the specification sheets provided by the supplier. Antigen Plus assumes no responsibility for errors by the suppliers, but will correct any such errors as soon as possible when they are discovered.

Liability

Rowny Systems, Inc. dba Antigen Plus and its distributors assume no responsibility for the use of the ANTIGEN PLUS program. The licensee assumes all responsibility for the proper use of the program including establishing appropriate protocols and validation procedures to ensure accurate data entry. ANTIGEN PLUS makes no decision or final recommendation on the meaning of test results or on patient care.

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Introduction

Antigen Plus is a red blood cell inventory and antigen search program that allows the user to enter test results that are automatically evaluated to assist with the interpretation of those results. It is designed to permit fast and easy data entry of test panels, and to search the data for any combination of antigens you choose. It is intended to quickly select donor cells with particular phenotypes for antibody identification studies and to speed up the interpretation process for the blood bank technologist.

The data stored for each donor are:

- Donor ID
- Optional Donor Note
- Lot Number
- Vial Number
- Expiration Date
- Optional Retesting Information on expired cells
- Supplier Name
- Location (optional)
- Phenotype Designation
- Sex
- Blood Group
- 28 Principal Antigens Phenotype
- Additional Antigens - user-defined special typings
- Frozen flag
- Out-of-Stock flag

Data that can be stored for a patient are:

- ID number *
- Name (First*, Middle, Last*)
- Date of birth
- Short note to appear on the screen or on saved panels
- Description on a saved panel

*required fields

Data that can be stored on a saved panel are:

- All the data described above
- Test results (negative or positive reactions to donor cells and check cells (optional for self-defined columns) recorded on a Results Worksheet
- Test results evaluations
- Name of technologist and dates of test for each Results column
- Name of up to two panel reviewers

The user may specify any combination of antigens to search for, search the data and select any cells desired, enter test results, and print a selected panel or results panel worksheet, and save a panel if a patient is selected. The user may store and retrieve the selected panels with any test results as desired. Antigen Plus Version 7.5 must be run from inside Microsoft Windows Vista or later. It requires a printer that can print in Landscape format (11 x 8½).

Validation

Antigen Plus provides a template for validation of the software based on the NCAALS format on its website www.antigenplus.com. It is intended to be modified to meet the protocols and standards of the individual institution, but may be reliably used as is to validate the software. Antigen Plus provides technical support for this process.

The panels provided are electronically verified to match with the specification sheets provided by the supplier. The phenotypic information printed on a selected or results panel can be validated by assuring that its data exactly match the data from the suppliers. Part of a laboratory's validation procedure should be to print several lot panels and have the responsible technologist compare them with the supplier's data sheets.

Antigen Plus makes no decision or final recommendation on the meaning of test results or on patient care - this is the user's responsibility. Antigen Plus uses the logic recommended by the American Association of Blood Banks to evaluate initial test results in the same way a technologist would do.

Installation

If you are Upgrading from a Version Earlier than AP7.5

Please email your current database (AP6.mdb or AP7.mdb) to customerservice@antigenplus.com. We will convert those data to the new version and populate the new database when you install the program for production.

Install .NET Framework 4.5

.NET Framework 4.5 is required. The latest version is actually 4.5.1, and this is the version we recommend. The general download page is:

[http://msdn.microsoft.com/en-us/library/5a4x27ek\(v=vs.110\).aspx](http://msdn.microsoft.com/en-us/library/5a4x27ek(v=vs.110).aspx)

This page links to an offline installer which can be placed on CD or USB key and installed without an internet connection.

Run Windows Update

If .NET Framework was installed, we recommend immediately running Windows Update to upgrade these products to the latest versions.

In the Cloud—you will be prompted for a log-in and password to use Antigen Plus stored for you on our cloud server when you are using the on-line version of the software.

To install Antigen Plus on your desktop, you must download the program from <http://clickonce.antigenplus.com/clickonce/AntigenPlus.application> Register, and then wait for us to create a database and notify you that the program is ready to go. The first person to use Antigen Plus once you are set up will have administrator privileges and should accomplish a few tasks before other users are given their log-ins and passwords.

Firewall Issues

In order to communicate with the Antigen Plus servers, the Antigen Plus Cloud application needs access to the following outgoing network port:
gateway.antigenplus.com port 443

Encryption of Patient Data

Encrypted data cannot be read by us on our server where your database is stored. The patient information key that the program creates on your end ensures that the data will be readable to anyone who logs in with the appropriate user name and password. Saving that key to a secure location ensures that your data will be recoverable in its unencrypted form in the event of a computer failure on your end. It is therefore VERY IMPORTANT that the first user open the File menu and click on the Save patient information key tab to save the key to a secure location. You should be aware that anyone with administrator privileges will be able to save that key again at any time in the future.

To Run the Program

Double click the Antigen Plus icon to start the program. When the program loads, select the Options menu at the top of the screen. Type in the name and address of your facility as you want it to appear on all the printouts generated by the program.

As the first person to use the program, you will be logged in with your current Windows login and have administrator rights. If others share your log in, you should assign yourself a username and password, and, in any case, give yourself initials for use in the program. To do this, open the Users menu and open Account Settings and enter name, password, and initials (if you are the only one who uses this Windows login, a password is not necessary as long as you keep Login automatically from Windows account checked).

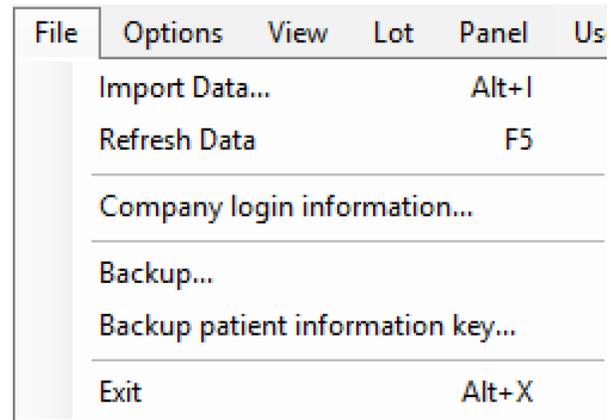
Logging Others In

In a network environment, you may automate the log in to Antigen Plus to match the Windows log in of each user. This will maintain a record of each individual user as long as everyone has a separate login to Windows. If users are sharing a Windows login, individual user accounts should be set up. Open the Users Menu | Maintain Accounts and enter information for each user. Users can change their passwords after logging in. Once the password protocol is established, each user and/or pc should download the program from <http://clickonce.antigenplus.com/clickonce/AntigenPlus.application> and go to the login screen and put in the company name and password (and their own if that applies).

Menus

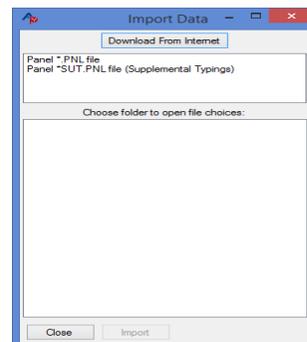
File Menu

The File menu accesses six functions, **Import Data**, **Refresh Data**, **Company login information Backup**, **Backup patient information key**, and **Exit**.



Import Data allows the importation of commercial lots from the internet, the importation of panels in Antigen Plus format from other sources.

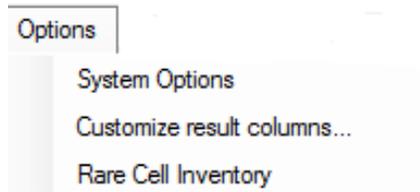
Refresh Data If you are doing a search and another user is downloading or entering cell data at the same time, Refresh Data will ensure that the new data are available to you search.



Backup prompts you to select a location to back up all of your Antigen Plus data. This feature was designed for a local network installation and is only useful in the Cloud Version as a fail-safe back up in the highly unlikely case of a massive multiple system failure both in our backup facilities and in Microsoft Azure. Should such a catastrophic failure occur, we could use this back up to restore your data on our server for you to use if you are running on a local database (only one computer is accessing Antigen Plus).

Backup patient information key is available only to an administrator and allows the storage of the key that is vital to accessing your patient information in the database. We recommend that this back-up is kept in multiple secure locations.

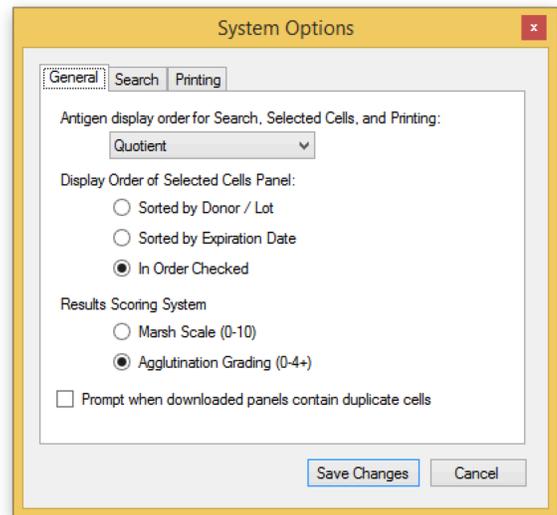
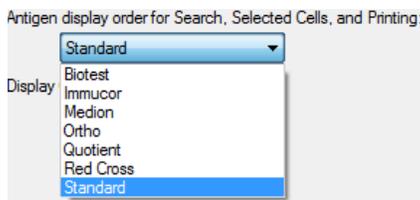
Options Menu



System Options

The System Options menu allows you to set and/or change general default parameters for using Antigen Plus in your lab. There are three tabs on this menu—one each for General, Search, and Printing options.

In the General tab, the first option sets the display order for cells on the Search Screen. The antigen array of whichever manufacturer (or alternative) will be the one you use for searching, selecting, and entering your test results.

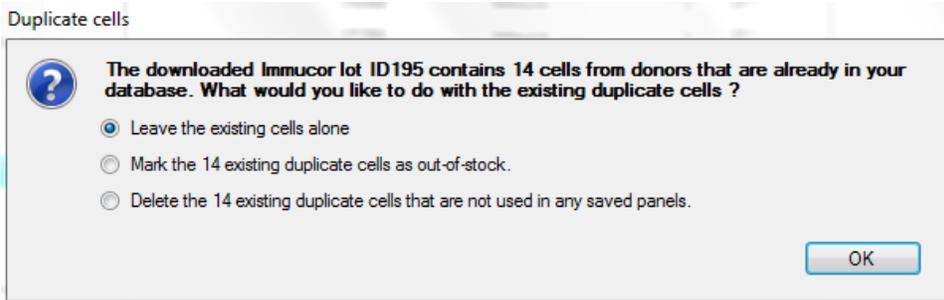


The second option allows you to view your selected cells in one of three sorted orders.

The third option allows you to select one of two scoring systems for entering your test results.

The fourth option activates an automatic check for duplicate cells when you are downloading commercial red cell panels. If you chose this option, when you download a panel, you will be alerted to the existence of duplicate donor cells in your database and be given the option to ignore them, mark them out-of-stock, or delete them (as long as they are not in any worksheet that you have saved).

Please note: If you are importing two identical panels (e.g. Quotient panels that are the same except that one is enzyme treated), both panels will be marked out-of-stock if you have this feature turned on and choose the out-of-stock option



In the Search tab, the first option allows you to include out-of-stock cells in your searches.

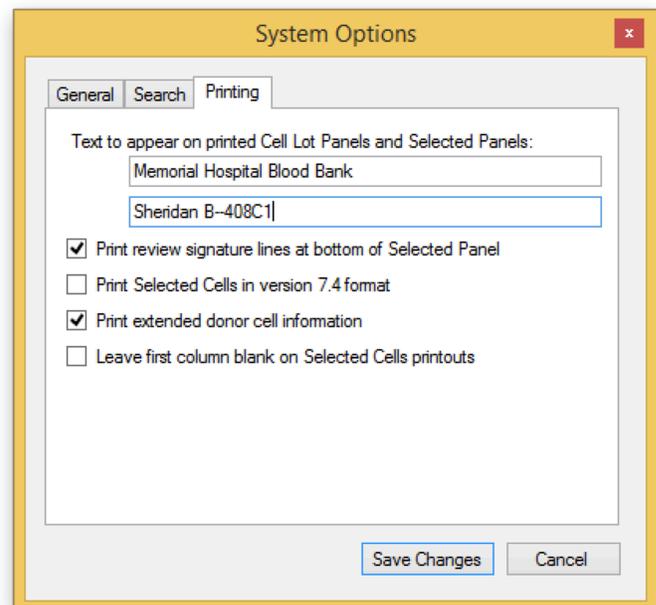
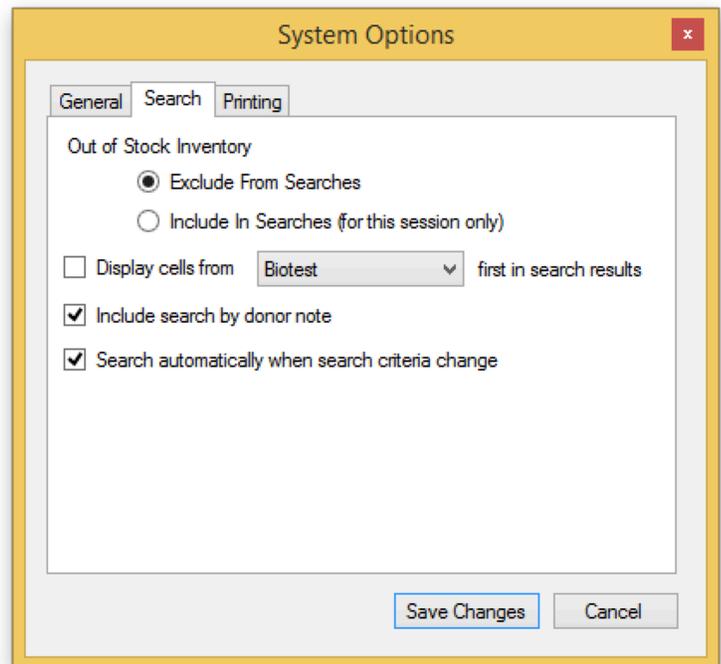
The second option allows you to prioritize your search by a single supplier. Normally, when cells are searched, the search order is freshest to oldest to frozen. This option allows you to find all the cells from one supplier in that order before other cells are found. This feature is designed to make cell selection easier for those labs that rely most heavily on a single supplier or test system and would prefer to test those cells unless none are available with the required characteristics.

The third option activates the search by donor note function on the Search screen. The text box on the screen will search donors by whatever text is in an associated note. This is primarily useful for reference labs with frozen inventories of rare cells and cells they have typed and frozen themselves

The fifth option--Search automatically when search criteria change--removes the Search button from the Search Pattern screen. When this is done, cells matching each criterion entered are found and displayed. As more criteria are added, the cells change to match the cumulative pattern. Hospitals and blood banks with an inventory of fewer than 200 cells may find it more convenient to search in this manner as it eliminates the necessity of hitting the search button to initiate a search.

In the Printing tab, the first option allows you to enter text that will be printed on any printed output to identify your facility. There are no limits to the amount of text you can enter, but filling more than the space available will result in overprinting issues. Limiting the second line even more will ensure that the patient name and date of birth will not be truncated on the printed panel

The second option allows you to print signature review lines on the bottom of the printed selected panel if you are doing manual rule-outs.



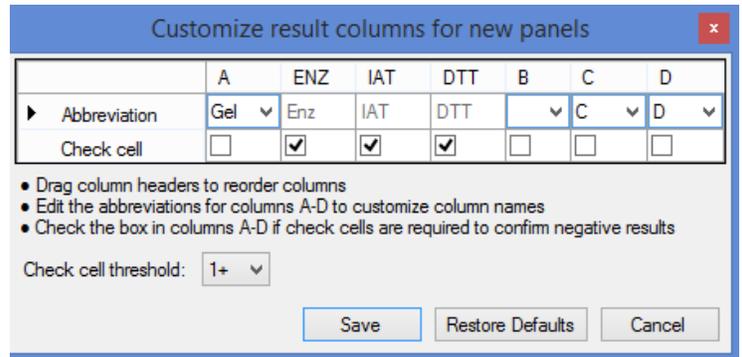
The third option allows the Selected Cell Panel to print in the format used in Version 7.4. This is to satisfy SOP requirements of reference labs that have been accustomed to this format.

The fourth option enables the printing of extended information about each donor cell on panel at the end of a selected panel or worksheet.

The final system option eliminates the text in the first column of a printed Selected Panel –the selection order number and any out of date or frozen designation will appear on the screen but not on the printout to allow space for manual notes.

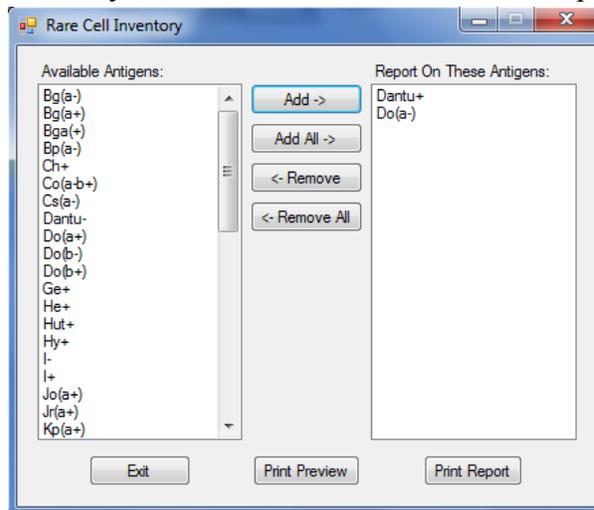
Customize Results Columns

The Results columns default to IAT, ENZ, DTT, and A, B, C, and D respectively. A,B,C, and D columns exclude by the same rules as IAT, and those columns may be renamed and all the columns may be repositioned from the Options Menu as default settings. Names are suggested for the columns but you may type any text in the column header box that you choose. Check cell status may be selected for any of the columns and the check cell threshold for all columns may be set.



Rare Cell Inventory

This option calls up a list of all the special typings (additional antigens) in your database. You may search for all or some of them and print out a report.



RARE CELL INVENTORY			
Antigen Plus Testing Lab			
304 Dogwood Drive, Gaithersburg MD 20877			
Antigen	Donor	Lot	Vial Location
Dantu+	N1860	20367	TC U3-P1
Dantu+	N1860	30890	TC
Do(a-)	B4582	DP068	5

View Menu

View	Lot	Panel	User
Donor Note			Alt+N
Patients			Alt+P
Suppliers			Alt+S

Since BioTest has added Coltons and Diegos to their standard array and Quotient has added Wr^a, these additional antigens will not appear on the rare cell inventory list but can be enumerated by searching for them on the Search screen.

Donor Note

When a donor is selected on the Add/Edit screen, the donor note option allows a note to be inserted that will stay with that donor number (regardless of lot number) until it is removed.

The donor note will be displayed with the cell on the Add/Edit or Search screens.

Rh-Hr	Kell	Duffy	Luth	Kidd	MN	Lewis	P	Sex	Co	Di	Additional Antigens
D C E c e C ^w	K k Kp ^a Kp ^b Js ^a Js ^b	Fy ^a Fy ^b	Lu ^a Lu ^b	Jk ^a Jk ^b	M N S s	Le ^a Le ^b	P1	Xg ^a	Co ^a Co ^b	Di ^a Di ^b	
+ + 0 0 + + 0 + 0 + 0 +	+ 0 + 0 + 0 +	0 0 + + 0 0 + + 0 0 + + 0 0 + 0 +	0 0 + + 0 0 + + 0 0 + 0 + 0 + 0 0 + 0 0 + 0 0								

Patients

The patients menu opens the Maintain Patients screen where patient information may be entered or edited.

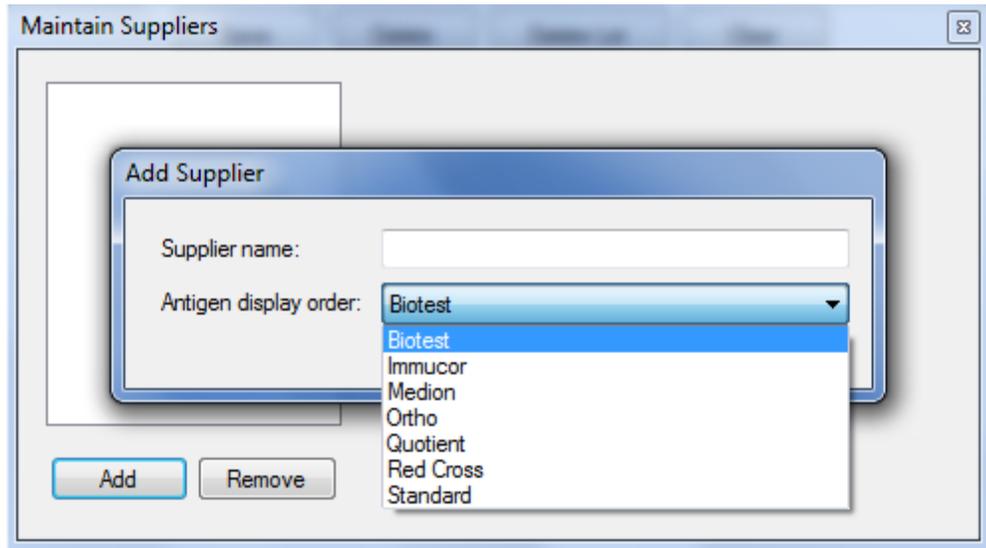
The search feature on this screen enables a search by any of the criteria in any of the columns. Clicking in any cell opens it for editing.

Patient ID	Patient Name	Short Note
111	Griffin, Robert	Quarterback
12345	Doe, Jane	New Admission
23456	Jones, John	Confirmed Anti-E
54321	Short, Maury	

A short note accompanies the Patient ID on screens and printouts. Maximum 64 characters.

Suppliers

This option allows entry of a supplier other than the currently licensed commercial red cell manufacturers. This is primarily for reference laboratories who are typing their own cells or receiving cells from other sources. Any of the available antigen arrays may be associated with the new supplier.



Lot Menu

Lot	Panel	User	Help
	Download Lots from Internet		Alt+D
	Preview Print Lot Profile		Alt+V
	Print Lot Profile		Alt+P
	Maintain Lots		Alt+M

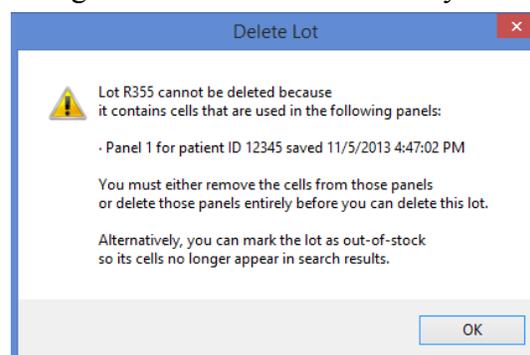
The Lot menu connects you with the Antigen Plus server for download of commercial red cell panels (see Downloading Lots on p. 28), and allows for preview or printing of any lot that is selected on the Add/Edit screen.

Selecting Maintain Lots opens the Maintain Lots table. On this table you can delete one or more lots (as long as they have not been used in any saved work in the last ten years) by highlighting a row (or highlighting several rows by holding down the CTRL key) and clicking on Delete Selected Lots. You may also mark any lot as out-of-stock or enzyme treated. A lot that is in-stock but has one or more cells that are out-of-stock will be marked with a square rather than a check mark in the box. Lots can be sorted in forwards or backwards Lot Number or Expiration Date order by clicking at the top of the column.

Lot Number	Supplier	Expiration Date	Out of Stock	Enzyme Treated
3SS769	Ortho-Clinical Diag.	12/10/2013	<input type="checkbox"/>	<input type="checkbox"/>
3SS798	Ortho-Clinical Diag.	2/11/2014	<input type="checkbox"/>	<input type="checkbox"/>
3SS799	Ortho-Clinical Diag.	2/11/2014	<input type="checkbox"/>	<input type="checkbox"/>
3SS801	Ortho-Clinical Diag.	2/18/2014	<input type="checkbox"/>	<input type="checkbox"/>
3SS802	Ortho-Clinical Diag.	2/18/2014	<input type="checkbox"/>	<input type="checkbox"/>
40004	Immucor	12/13/2013	<input checked="" type="checkbox"/>	<input type="checkbox"/>
40005	Immucor	12/13/2013	<input type="checkbox"/>	<input checked="" type="checkbox"/>
40006	Immucor	12/13/2013	<input type="checkbox"/>	<input type="checkbox"/>
40007	Immucor	12/13/2013	<input type="checkbox"/>	<input type="checkbox"/>
40008	Immucor	12/13/2013	<input type="checkbox"/>	<input type="checkbox"/>

Buttons: Delete Selected Lots, Save Changes, Cancel

If you attempt to delete a lot that has been used in a saved workup, you will be notified that the saved work must be deleted before the lot can be deleted. Deletion of saved work-ups may only be done after ten years have passed since the panel was saved. If it is too early or you do not wish to delete the work and the lot, you may mark the lot as out-of-stock thus removing it from searchable inventory while saving any work that has been done with it.



Panel Menu

Panel	User	Help
Load Saved Panel...		Alt+L
Save the Selected Cells Panel...		Alt+S
Clear Selected Cells Panel		Alt+C
Selected Cells Worksheet		
Results Worksheet		Alt+R

The Panel Menu brings up a variety of options that are the most frequently used in Antigen Plus. If those options are unavailable (i.e. there are no cells selected), they will be greyed out on the screen.

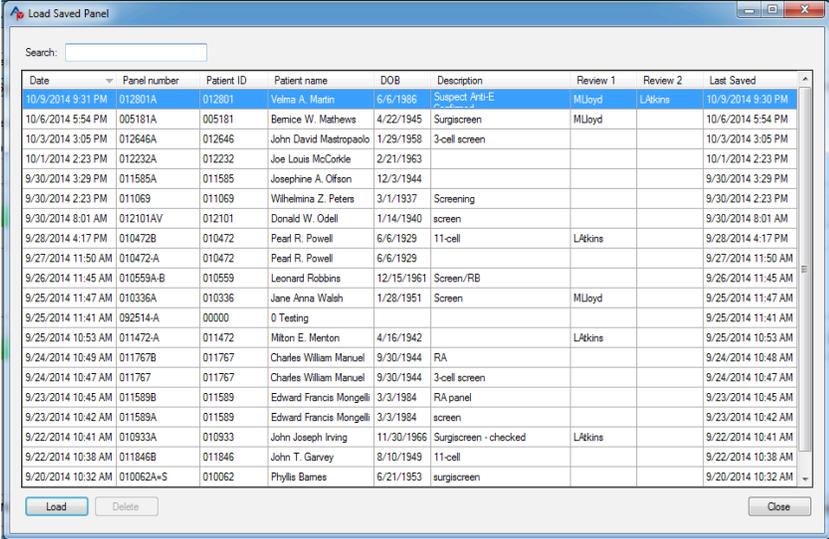
Load Saved Panel

This option opens up a table of all saved work-ups (any selected panel that has been saved with or without test results)

A saved panel may be retrieved for further work or review by selecting its row and pressing Load or by double-clicking on the row. Once the saved panel is retrieved, all of the information it was saved with will populate the appropriate screens (Search, Selected Cells Worksheet, and Results Worksheet).

A saved panel may also be deleted from this table if it is ten years old—a confirmatory warning will appear after Delete is selected.

You may save a Selected Panel (with any results included) from this screen.



The screenshot shows a window titled "Load Saved Panel" with a search bar and a table of saved work-ups. The table has columns for Date, Panel number, Patient ID, Patient name, DOB, Description, Review 1, Review 2, and Last Saved. The first row is highlighted in blue.

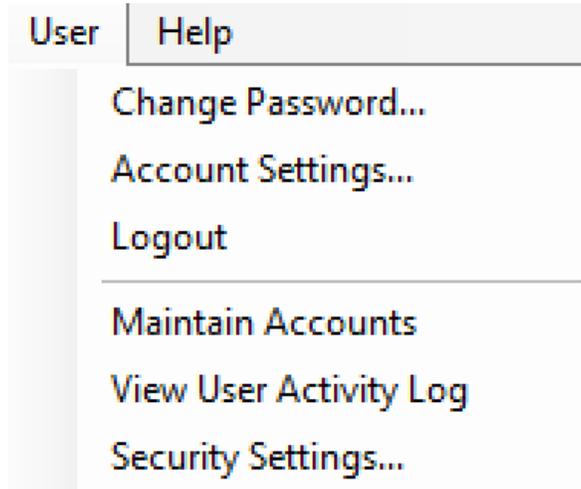
Date	Panel number	Patient ID	Patient name	DOB	Description	Review 1	Review 2	Last Saved
10/9/2014 9:31 PM	012801A	012801	Velma A. Martin	6/6/1996	Suspect Anti-E			10/9/2014 9:30 PM
10/6/2014 5:54 PM	005181A	005181	Bernice W. Mathews	4/22/1945	Surgiscreen	MUloyd		10/6/2014 5:54 PM
10/3/2014 3:05 PM	012646A	012646	John David Mastropalo	1/29/1958	3-cell screen			10/3/2014 3:05 PM
10/1/2014 2:23 PM	012232A	012232	Joe Louis McCorkle	2/21/1963				10/1/2014 2:23 PM
9/30/2014 3:29 PM	011585A	011585	Josephine A. Ofson	12/3/1944				9/30/2014 3:29 PM
9/30/2014 2:23 PM	011069	011069	Wilhelmina Z. Peters	3/1/1937	Screening			9/30/2014 2:23 PM
9/30/2014 8:01 AM	012101AV	012101	Donald W. Odell	1/14/1940	screen			9/30/2014 8:01 AM
9/28/2014 4:17 PM	010472B	010472	Pearl R. Powell	6/6/1929	11-cell	LAtkins		9/28/2014 4:17 PM
9/27/2014 11:50 AM	010472-A	010472	Pearl R. Powell	6/6/1929				9/27/2014 11:50 AM
9/26/2014 11:45 AM	010559A-B	010559	Leonard Robbins	12/15/1961	Screen/RB			9/26/2014 11:45 AM
9/25/2014 11:47 AM	010336A	010336	Jane Anna Walsh	1/28/1951	Screen	MUloyd		9/25/2014 11:47 AM
9/25/2014 11:41 AM	092514-A	00000	0 Testing					9/25/2014 11:41 AM
9/25/2014 10:53 AM	011472-A	011472	Milton E. Merton	4/16/1942		LAtkins		9/25/2014 10:53 AM
9/24/2014 10:49 AM	011767B	011767	Charles William Manuel	9/30/1944	RA			9/24/2014 10:48 AM
9/24/2014 10:47 AM	011767	011767	Charles William Manuel	9/30/1944	3-cell screen			9/24/2014 10:47 AM
9/23/2014 10:45 AM	011589B	011589	Edward Francis Mongelli	3/3/1984	RA panel			9/23/2014 10:45 AM
9/23/2014 10:42 AM	011589A	011589	Edward Francis Mongelli	3/3/1984	screen			9/23/2014 10:42 AM
9/22/2014 10:41 AM	010933A	010933	John Joseph Irving	11/30/1966	Surgiscreen - checked	LAtkins		9/22/2014 10:41 AM
9/22/2014 10:38 AM	011846B	011846	John T. Garvey	8/10/1949	11-cell			9/22/2014 10:38 AM
9/20/2014 10:32 AM	010062A+S	010062	Phyllis Barnes	6/21/1953	surgiscreen			9/20/2014 10:32 AM

As this can be done more directly from the Selected Cells Worksheet or Results Worksheet, the function is here so that you may remember to save current work when you are loading another panel (there will also be a warning when you are loading a new panel that one is already in use).

Selecting Clear Selected Cells Panel will clear all selected cells from the screens. Current work will not be saved. But if the panel was previously saved it will remain in the database.

Selecting Selected Cells Worksheet or Results Worksheet will call up the current work and open those screens.

User Menu



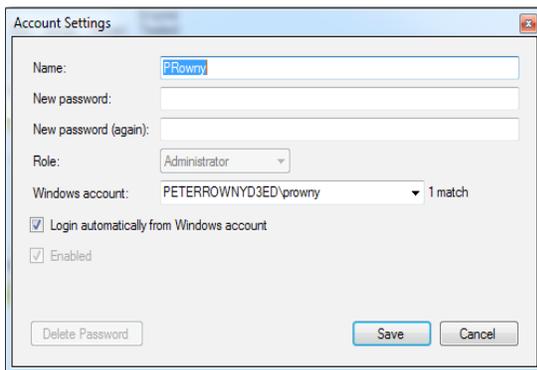
Any user can change his or her own password. That change can be overridden by an administrator changing that user's password.

Account Settings

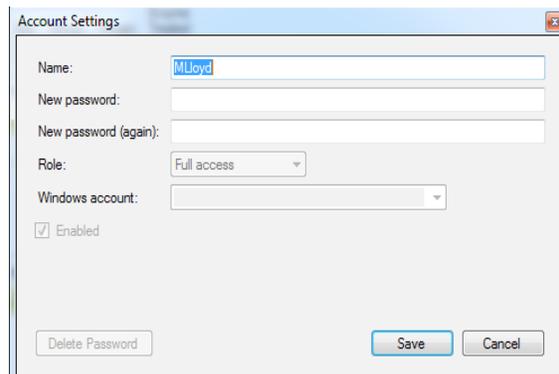
This window allows a user to change name, initials and password. Administrators can also assign administration rights from this window. A new user may not log in until an administrator has added him or her in the Maintain Accounts table.

Administrator with Automated Windows Log in Account Settings—see p.19

Administrator Account Settings



User Account Settings



[Logout](#) Logs the current user out and asks for a username and password to continue.

Maintain Accounts

This menu is available only to administrators and is used for managing user access to Antigen Plus. If **Automatically create accounts from Windows Login** is checked, Antigen Plus will recognize the user from that user's log in to Windows and require a password if the Windows login also requires it.

Name	Initials	Password	Windows Account	Enabled	Auto login	Admin
Alan	AKM	No	Alan-PC\Alan	Yes	No	Yes
Fred	FF	Yes		Yes	No	No
Lukas	LTM	Yes		Yes	No	No

Automatically create accounts from Windows logins

Add Remove Save Cancel

The possible roles an Administrator can grant another user are:

Administrator: Can maintain users, can save panels, can review panels tested by self or another technologist, can edit cells, and can edit patient information.

Full access: Can save panels, can review panels tested by another technologist, and can edit cells.

Save panels: Can save panels.

Read only: Cannot make changes.

Each user can change their own password.

Authenticating Users

User access

After database access is granted, Antigen Plus authenticates and authorizes the user within the software itself. Antigen Plus provides two different methods for authenticating users of the software: 1) Windows Active Directory authentication, and 2) usernames and passwords. You can use one of these methods exclusively, or use them in combination.

Most sites will find it easiest to use Windows Active Directory authentication, and that is the default. In this mode users are identified by their Windows login, and no additional authorization is required. If **Automatically create accounts from Windows logins** is checked in the **Maintain Accounts** window, then new Antigen Plus accounts will be

created automatically whenever a new Windows user launches the software. Windows Active Directory authorization can be enabled or disabled for a particular user using the **Login automatically from Windows account** checkbox in the **Account Settings** window.

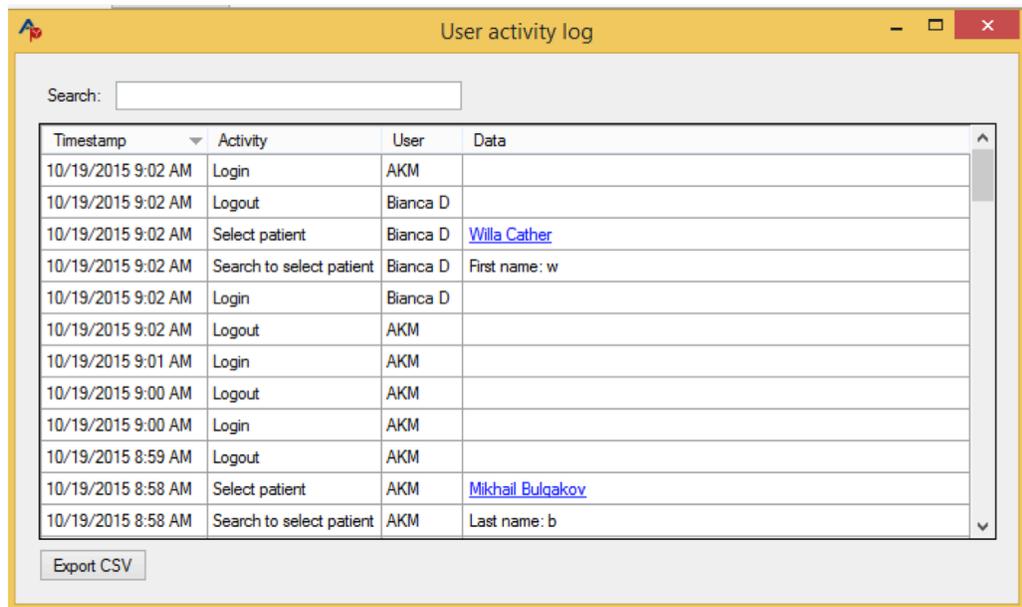
If Windows Active Directory authorization fails, is disabled, or the user logs out of the software, then the user will be presented with a username/password dialog box to login. This password is maintained within Antigen Plus itself, and is distinct from the user's Windows account password.

If your site wants to require a separate username/password login each time Antigen Plus is launched, this can be accomplished by:

1. Unchecking the **Automatically create accounts from Windows logins** box in the **Maintain Accounts** window.
2. Unchecking the **Login automatically from Windows account** box or deleting the user's **Windows account** from the Account Settings window.

View User Activity Log

An administrator will have this feature enabled and selecting it will call up a log of all user log-ins and all activity involving patient information. This log is exportable in a csv format.



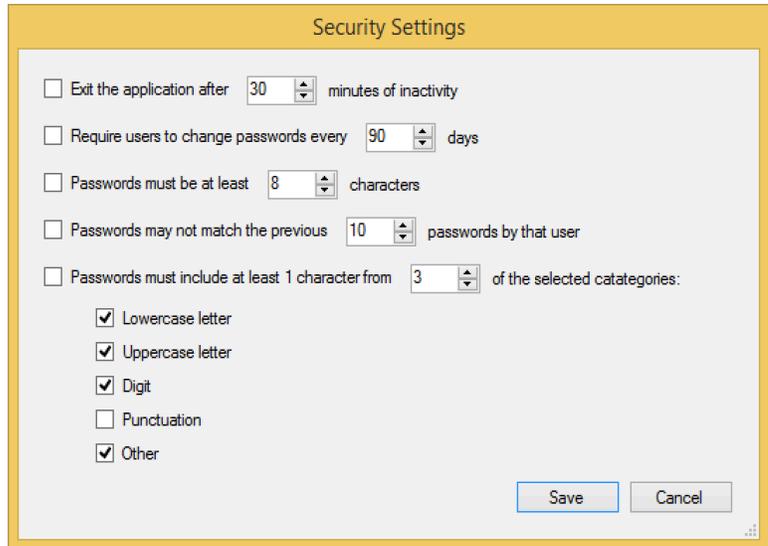
The screenshot shows a window titled "User activity log" with a search bar and a table of activity records. The table has four columns: Timestamp, Activity, User, and Data. The records show various login, logout, and patient selection activities for users AKM and Bianca D.

Timestamp	Activity	User	Data
10/19/2015 9:02 AM	Login	AKM	
10/19/2015 9:02 AM	Logout	Bianca D	
10/19/2015 9:02 AM	Select patient	Bianca D	Willa Cather
10/19/2015 9:02 AM	Search to select patient	Bianca D	First name: w
10/19/2015 9:02 AM	Login	Bianca D	
10/19/2015 9:02 AM	Logout	AKM	
10/19/2015 9:01 AM	Login	AKM	
10/19/2015 9:00 AM	Logout	AKM	
10/19/2015 9:00 AM	Login	AKM	
10/19/2015 8:59 AM	Logout	AKM	
10/19/2015 8:58 AM	Select patient	AKM	Mikhail Bulgakov
10/19/2015 8:58 AM	Search to select patient	AKM	Last name: b

Export CSV

Security Settings for Time Outs and Username/Password Mode

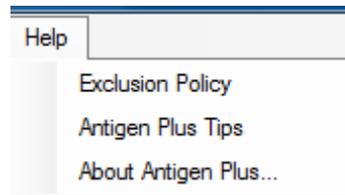
Timing out: if you would like to have the program shut down if left unattended, check the box next to “Exit the Application...” and set your time parameter. If a user leaves the program unattended for that length of time, the program will shut down and that work will reappear only when that user logs back in. This option is available for both automated and manual password access.



The other options are for manual password configurations and are activated by checking the boxes on the right of the options and setting the desired parameters to the left.

Help

The Help Menu makes text regarding the use of Antigen Plus available to the user. That text is reproduced in this manual in the appropriately named sections.



Operation

Downloading Lots from the Internet

Initially, you must have entered some text identifying your laboratory in menu Options|Text to appear on printed Cell Lot panels and Selected Panels. You should ensure that your workstation has a working connection to the internet. The first time you press Lot/Download Lots from Internet, Antigen Plus will automatically be notified, and will contact you when the subscription is activated. Once the subscription is established, you will see the following screen:

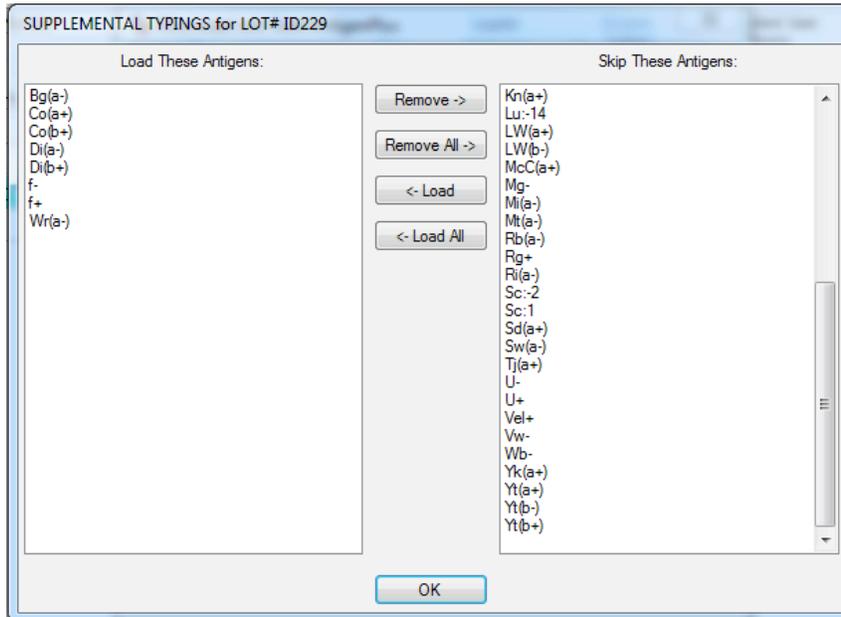
Select	SUTs	Lot	Supplier	Expiration Date
<input type="checkbox"/>		8440011-00-P3	Biotest	11/24/2014
<input type="checkbox"/>		8440021-00-P1P2	Biotest	11/24/2014
<input type="checkbox"/>		8440021-00-P3	Biotest	11/24/2014
<input type="checkbox"/>		8440031-00-P3	Biotest	11/24/2014
<input type="checkbox"/>	<input type="checkbox"/>	37663	Immucor	11/21/2014
<input type="checkbox"/>		37664	Immucor	11/21/2014
<input type="checkbox"/>		37665	Immucor	11/21/2014
<input type="checkbox"/>		37666	Immucor	11/21/2014
<input type="checkbox"/>		37667	Immucor	11/21/2014
<input type="checkbox"/>		37668	Immucor	11/21/2014
<input type="checkbox"/>		37670	Immucor	11/21/2014
<input type="checkbox"/>		37671	Immucor	11/21/2014
<input type="checkbox"/>		37672	Immucor	11/21/2014
<input type="checkbox"/>		3SS932	Ortho-Clinical Diag.	11/18/2014
<input type="checkbox"/>	<input type="checkbox"/>	DN076	Immucor	11/18/2014
<input type="checkbox"/>	<input type="checkbox"/>	DP075	Immucor	11/18/2014
<input type="checkbox"/>		E133	Immucor	11/18/2014
<input type="checkbox"/>		E134	Immucor	11/18/2014

Download Selected Lots Close

Available panels are listed in descending order of Expiration Date. They may also be sorted in ascending order or by Supplier or Lot Number by clicking on the column title. You may select as many as you wish, the number selected is displayed at the bottom of the screen as each panel is added to your database when you click Download Selected Lot(s).

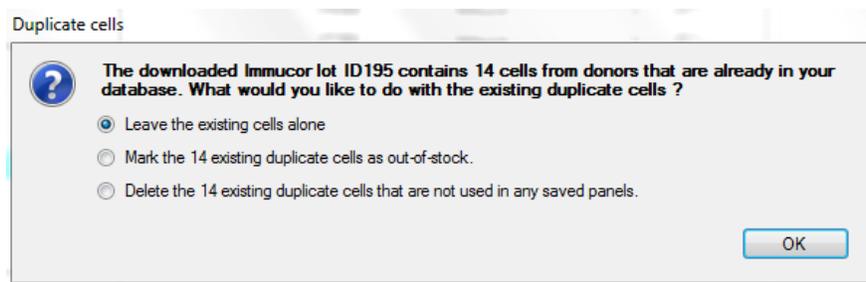
Downloading Lots with Supplemental Typings

Immucor provides supplemental unconfirmed typings with some of their panels. You may download some or all of these by selecting the SUT box next to the lot number when you are downloading. You will be given a choice of which typings you wish to see on your downloaded cells in a dialog box. Your choices will remain and may be changed or not the next time you download.



Download Prompt Option

If you have selected Prompt when downloading duplicate cells in the System options menu, you will be notified whenever donors on the downloading panel exist in your database. You can ignore the notification, mark the duplicate cells as out of stock, or delete them. If you attempt to delete a cell that has been stored as part of a saved panel, you will be advised to mark it out of stock instead.

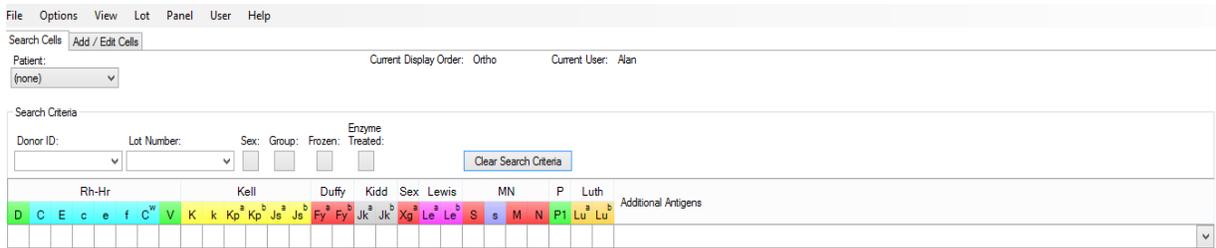


Please note: If you are importing two identical panels (e.g. Quotient panels that are the same except that one is enzyme treated), both panels will be marked out-of-stock if you have this feature turned on and choose the out-of-stock option.

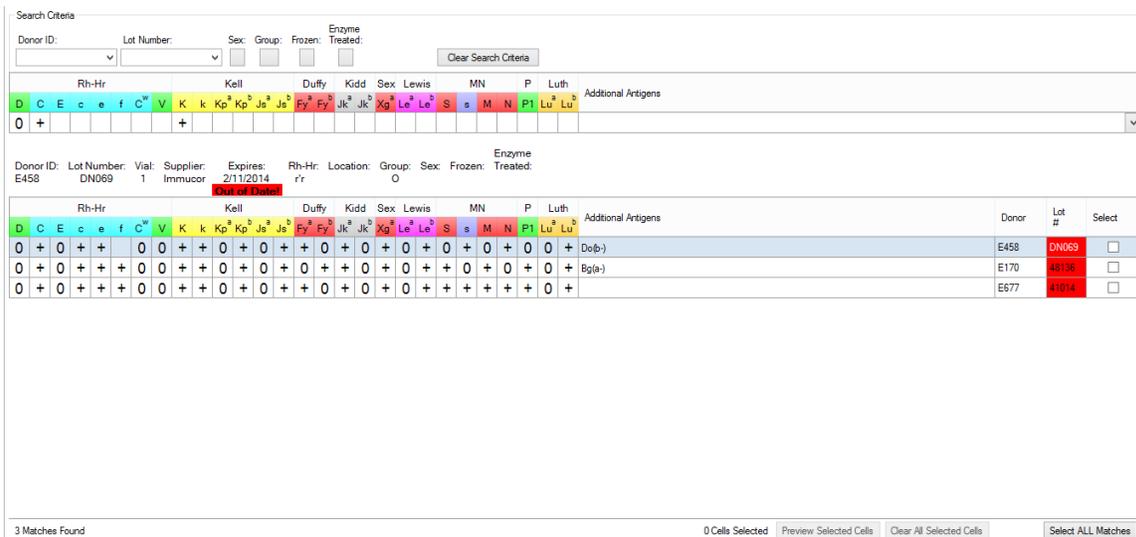
Principal Modes of Operation

There are two principal modes of operation: **Search** and **Add/Edit Cells**. You can switch between the two modes by clicking the tab in the upper left of the screen. A menu option is selected by highlighting it with the mouse, scrolling to the desired option with the Up and Down Arrow keys and pressing enter, or by pressing a letter key matching an underlined letter in the menu option.

When the program starts, the **Search screen** will automatically be displayed. A search pattern box allows you to enter a search pattern of the 28 principal antigens and/or any additional antigens, search the inventory for matches, and mark cells or lots for inclusion in a selected panel. (Some red cell suppliers include additional antigens on their array and some leave off principal antigens; those arrays are displayed that way in Antigen Plus if that supplier is chosen.)



The search panel will immediately display how many cells are found in your database that are matches for your current search pattern, and continuously displays how many cells have been selected. Note that the search pattern defaults to blood group O cells.



The **Results Worksheet** screen can only be activated when at least one cell or lot has been selected. All selected cells will be displayed in the Results Worksheet screen grid. Next to each cell phenotype, seven results columns are provided.

Selected Panel Test Results

File View Help

Unsaved panel Review 1 Review 2 Current User: Alan

Patient 11111, John B Smith, 5/1/1987

Click in Results Box to indicate test outcome.

Supplier/Lot #	Donor/RhHr-Val	Rh-Hr	Kell	Duffy	Kidd	Sex	Lewis	MN	P	Luth	Additional Antigens	Gel	Enz	IAT	DTT	C	D	
1	Otho-CI RA970 312932 R1wR1 #1	D C E c e f C ^w V K k Kp ^a Kp ^b Js ^a Js ^b	Fy ^a Fy ^b Jk ^a Jk ^b Xg ^a Xg ^b Le ^a Le ^b S s M N P1 Lu ^a Lu ^b	+	+	0	0	+	0	0	+	0	0	+	0	0	+	
2	Otho-CI RA970 311489 R1R1 #2	D C E c e f C ^w V K k Kp ^a Kp ^b Js ^a Js ^b	Fy ^a Fy ^b Jk ^a Jk ^b Xg ^a Xg ^b Le ^a Le ^b S s M N P1 Lu ^a Lu ^b	+	+	0	0	+	0	0	+	0	0	+	0	0	+	
3	Otho-CI RA970 117898 R2R2 #3	D C E c e f C ^w V K k Kp ^a Kp ^b Js ^a Js ^b	Fy ^a Fy ^b Jk ^a Jk ^b Xg ^a Xg ^b Le ^a Le ^b S s M N P1 Lu ^a Lu ^b	+	0	+	0	0	0	+	+	0	0	0	0	+		
4	Otho-CI RA970 304619 Ror #4	D C E c e f C ^w V K k Kp ^a Kp ^b Js ^a Js ^b	Fy ^a Fy ^b Jk ^a Jk ^b Xg ^a Xg ^b Le ^a Le ^b S s M N P1 Lu ^a Lu ^b	+	0	0	+	+	0	0	+	0	0	+	0	0	+	
5	Otho-CI RA970 118157 r.r.#5	D C E c e f C ^w V K k Kp ^a Kp ^b Js ^a Js ^b	Fy ^a Fy ^b Jk ^a Jk ^b Xg ^a Xg ^b Le ^a Le ^b S s M N P1 Lu ^a Lu ^b	0	0	+	+	0	0	+	+	0	0	+	0	0	+	
6	Otho-CI RA970 312192 r.r.#6	D C E c e f C ^w V K k Kp ^a Kp ^b Js ^a Js ^b	Fy ^a Fy ^b Jk ^a Jk ^b Xg ^a Xg ^b Le ^a Le ^b S s M N P1 Lu ^a Lu ^b	0	0	+	+	0	0	+	+	0	0	+	0	0	+	
7	Otho-CI RA970 102872 r.r.#7	D C E c e f C ^w V K k Kp ^a Kp ^b Js ^a Js ^b	Fy ^a Fy ^b Jk ^a Jk ^b Xg ^a Xg ^b Le ^a Le ^b S s M N P1 Lu ^a Lu ^b	0	0	0	+	+	0	0	+	+	0	0	+	0	0	+
8	Otho-CI RA970 313073 r.r.#8	D C E c e f C ^w V K k Kp ^a Kp ^b Js ^a Js ^b	Fy ^a Fy ^b Jk ^a Jk ^b Xg ^a Xg ^b Le ^a Le ^b S s M N P1 Lu ^a Lu ^b	0	0	0	+	+	0	0	+	+	0	0	+	0	0	+
9	Otho-CI RA970 84063 r.r.#9	D C E c e f C ^w V K k Kp ^a Kp ^b Js ^a Js ^b	Fy ^a Fy ^b Jk ^a Jk ^b Xg ^a Xg ^b Le ^a Le ^b S s M N P1 Lu ^a Lu ^b	0	0	0	+	+	0	0	+	+	0	0	+	0	0	+
10	Otho-CI RA970 310726 r.r.#10	D C E c e f C ^w V K k Kp ^a Kp ^b Js ^a Js ^b	Fy ^a Fy ^b Jk ^a Jk ^b Xg ^a Xg ^b Le ^a Le ^b S s M N P1 Lu ^a Lu ^b	0	0	0	+	+	0	0	+	+	0	0	+	0	0	+
11	Otho-CI RA970 311158 R1R1 #11	D C E c e f C ^w V K k Kp ^a Kp ^b Js ^a Js ^b	Fy ^a Fy ^b Jk ^a Jk ^b Xg ^a Xg ^b Le ^a Le ^b S s M N P1 Lu ^a Lu ^b	+	+	0	0	+	0	0	+	0	0	+	0	0	+	
Auto Control																		

		Rh-Hr	Kell	Duffy	Kidd	Sex	Lewis	MN	P	Luth
Homozygous Rule Outs	Double Dose	4 3 0 6 9 7 1 1 0 8	0 10 0 10 2 3 4 3 *	3 5 2 5 1 6 *	0 9					
Heterozygous Rule Outs	Single Dose	0 0	2 0 0 0 0 0 0 0	0 0 0 0 0 0 0 1						

Evaluation: There is no exclusion in this panel for these antigens

Enz: Can Not Exclude E, Kpa, Jsa, Fya, Fyb, M, N, S, s
 Column Gel: Can Not Exclude E, Kpa, Jsa
 These are tentative rule-outs
 Additional confirmatory data based on your own criteria are recommended.
 *P1 rule-outs: 6 (need at least 3 negative reactions (8 found) for P1+)
 *Xga rule-outs: 5 (need at least 3 negative reactions (7 found) for Xga+)

The default columns are IAT (indirect anti-globulin test), Enz for Enzyme treated cells, and DTT for DTT/AET treated cells. These columns have obligatory check cell results. The remaining columns labeled A through D follow the same exclusion rules as IAT, may be renamed to match the particular tests you use, and may be given check cell status if desired.

You may use the headings suggested or enter your own and display the columns in any order you wish (see the example on the Results Worksheet above) by dragging them across the screen.

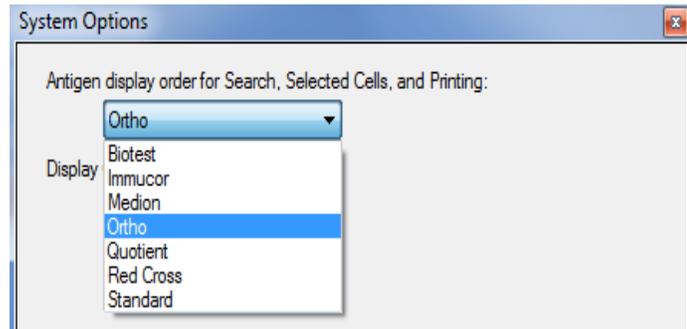
Adjustment of results columns is done in **Options/Customize Results Columns...** see page 21. The cells displayed on the Results Panel Worksheet will be those currently selected either in the Search mode or by using the Add Lot to Selected Cells function on the Utilities menu. An autocell row will always display at the end of each Results Panel.

The Results Panel screen cannot be minimized, but clicking on the Exit button at the top of the screen will not erase the current results. All results will be maintained until the Clear Selected Cells button on the Search screen or Panel Menu is selected, and its results, with comments, can be saved for future reference by going to Panel Menu | Save Selected Panel or the File Menu on the Results Panel Worksheet. Individual cells (and their associated results) can be removed by exiting the Results Panel screen and unchecking the cell from the Selected Cells Panel screen.

Instructions for entering test results and an explanation of their interpretation may be found in this manual in the section on Evaluating Test Results. Whenever a reaction is entered into a results box (the columns under IAT, Enz, DTT and A-D), those antigens that are ruled out by a negative reaction will be shaded, and the number of times an antigen has been ruled out is displayed on the bottom line. The rule-out counts for P1 and Xga are given an asterisk, with an explanation in the Evaluation box below. Positive P1 and Xga antigens require three negative reactions to verify their exclusion.

Antigen Order for Selected Cells

The antigen buttons are displayed in a common default order of blood groups: Rh-Hr, Kell, Duffy, Kidd, Lewis, P, MN, Lutheran, and Sex-Linked. Some suppliers' data sheets list them in a different order, so in order to simplify searching, selecting, and entering data there are 7 display options selectable with the 7 option buttons in the Options/ System Options menu. These choices stay with any donor displayed in the Search mode (if more than one

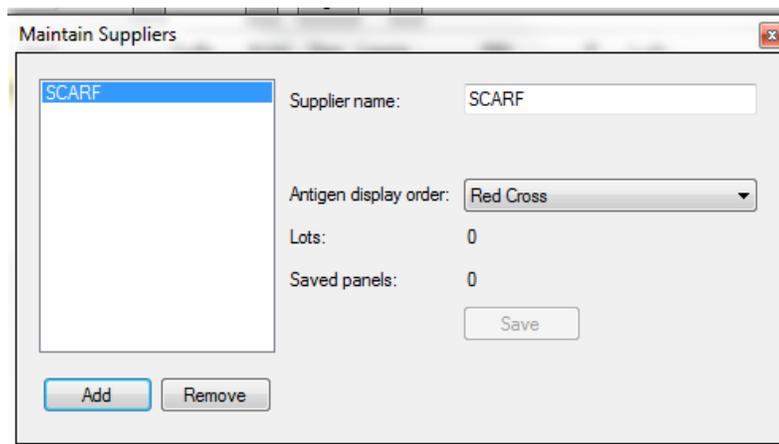


supplier is represented, the Additional Antigens box will accommodate any typings missing from an array; e.g. if you are using the Immucor order that omits the "f" typing and select an additional cell that has this typing, the "f-" or "f+" will appear in the Additional Antigens box (exclusion rules will consider the 28 common typings regardless of where they appear on the screen).

Automated Antigen Order on the Add/Edit Screen

On the Add/Edit screen, the array will match the supplier currently selected and appearing in the Supplier Box and will change automatically as the supplier is changed.

You may add a supplier with any one of these arrays from the **View** Menu.



Available Arrays

Option 1: BioTest

Rh-Hr						Kell				Duffy		Luth		Kidd		MN			Lewis		P	Sex	Co		Di				
D	C	E	c	e	C ^w	K	k	Kp ^a	Kp ^b	Js ^a	Js ^b	Fy ^a	Fy ^b	Lu ^a	Lu ^b	Jk ^a	Jk ^b	M	N	S	s	Le ^a	Le ^b	P1	Xg ^a	Co ^a	Co ^b	Di ^a	Di ^b

Option 2: Immucor

Rh-Hr						Kell				Duffy		Kidd	Lewis		P	MN			Luth		Sex				
D	C	E	e	V	C ^w	K	k	Kp ^a	Kp ^b	Js ^a	Js ^b	Fy ^a	Fy ^b	Jk ^a	Jk ^b	Le ^a	Le ^b	P1	M	N	S	s	Lu ^a	Lu ^b	Xg ^a

Option 3: Medion

Rh-Hr						MN			P	Lewis		Luth		Kell				Duffy		Kidd	Sex						
D	C	E	c	e	f	C ^w	V	M	N	S	s	P1	Le ^a	Le ^b	Lu ^a	Lu ^b	K	k	Kp ^a	Kp ^b	Js ^a	Js ^b	Fy ^a	Fy ^b	Jk ^a	Jk ^b	Xg ^a

Option 4: Ortho

Rh-Hr						Kell				Duffy		Kidd	Sex	Lewis		MN			P	Luth									
D	C	E	c	e	f	C ^w	V	K	k	Kp ^a	Kp ^b	Js ^a	Js ^b	Fy ^a	Fy ^b	Jk ^a	Jk ^b	Xg ^a	Le ^a	Le ^b	S	s	M	N	S	s	P1	Lu ^a	Lu ^b

Option 5: Quotient

Rh-Hr						Kell				Duffy		Kidd	Lewis		MN			P	Luth	Sex	Wr							
D	C	E	c	e	f	V	C ^w	K	k	Kp ^a	Kp ^b	Js ^a	Js ^b	Fy ^a	Fy ^b	Jk ^a	Jk ^b	Le ^a	Le ^b	M	N	S	s	P1	Lu ^a	Lu ^b	Xg ^a	Wr ^a

Option 6: Red Cross Preferred

Rh-Hr						MN			Lewis		P	Kell				Duffy		Kidd	Luth	Sex							
D	C	E	c	e	f	V	C ^w	M	N	S	s	Le ^a	Le ^b	P1	K	k	Kp ^a	Kp ^b	Js ^a	Js ^b	Fy ^a	Fy ^b	Jk ^a	Jk ^b	Lu ^a	Lu ^b	Xg ^a

Option 7: Standard Hopkins Option

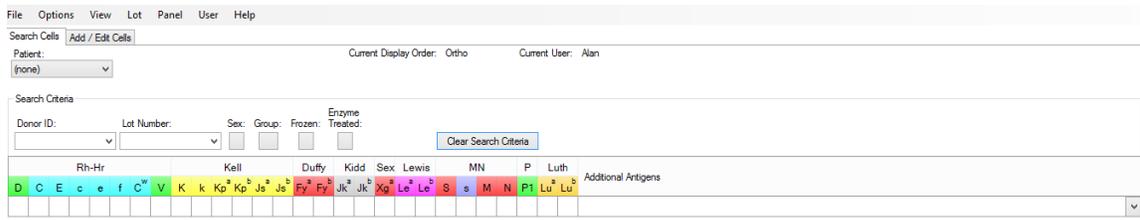
Rh-Hr						Kell				Duffy		Kidd	Lewis		P	MN			Luth	Sex							
D	C	E	c	e	C ^w	f	V	K	k	Kp ^a	Kp ^b	Js ^a	Js ^b	Fy ^a	Fy ^b	Jk ^a	Jk ^b	Le ^a	Le ^b	P1	M	N	S	s	Lu ^a	Lu ^b	Xg ^a

Searching and Selecting

Search for Match

On the Search screen, the Search Pattern box allows you to search and select lots or individual cells.

The pattern box contains a Donor ID list box, a Lot Number list box, Sex, Group, Frozen and Enzyme Treated buttons, Search and Clear Search Criteria buttons, a row of 28 to 32 Antigen buttons and an Additional Antigens box:



Search Pattern

You may search by any of the criteria appearing on the Search Pattern box. To find a donor, select the donor number (and click the Search button if you are using that feature); to find a lot, select the lot number (and click the Search button if you are using that feature)—the donor phenotype or phenotypes will appear below the Search pattern box and may be selected individually or all at once for inclusion in a Selected Cell and Results Worksheet Panel. To enter a search pattern, click the desired antigen buttons in the search pattern box. You may set the buttons to 0, +, or blank. A 0 or + setting means that a matching cell must have a 0 or + in the same place (s or w designations will be read as + during a search). A blank setting means “don’t care”, and during a search those antigens will be ignored. To search for frozen cells only, click the Frozen button. To search for enzyme treated cells only, click the Enzyme Treated button. To search for a particular blood group, click the Group button until the appropriate group designation appears. To add additional antigens to the search pattern, check those desired in the Additional Antigens box by selecting the arrow on the right of the box to drop down a list of all the additional antigens in your database. You may select as many additional antigens as you like, but only the first 8 to 10 (depending upon their length) will display on the screen and an ellipsis will indicate that more are selected. If you mouse over any of the selected antigens or the ellipsis, a box containing all of your selected antigens and their associated ISBT numbers will appear.

A table of ISBT numbers used in Antigen Plus can be found in the Appendix.

Bga(+)	
Co(a+)	015-001
Cs(a-)	
Dantu+	002-025
Di(a+)	010-001
Di(b-)	010-002
He+	002-006
Hut+	002-019
I-	027-001

To remove Additional Antigens from the search display box, uncheck the item(s) in the Additional Antigens drop down list.

Searching

To perform a search, enter your search criteria (and click the Search button if you have not checked Search automatically when search criteria change in System Options--see p.21). The system will search your inventory for a cell which matches ALL the +, 0, and Additional Antigens in your search pattern; s or w are recognized as positive during a search. When you search, the inventory will be searched starting with the NEWEST cells first, that is, in reverse expiration date order. All frozen cells have no expiration date and will be gathered at the END of the search order unless you have specified a preferred supplier (see System Options) in which case all cells from that supplier will be found first in reverse expiration order and be followed by all other suppliers in reverse expiration order.

A search for an unspecified blood group (blank) will match ANY blood type, specified or unspecified.

A search for Frozen will return any frozen cell with any other criteria you have entered.

A search for Enzyme Treated will return any enzyme treated cell with any other criteria you have entered.

If you have activated the Search by Donor note function, you may enter any text in the donor note search box and only cells with donor notes containing that text will be selected.

If you have a donor number displayed in those boxes, only that cell will be found. Clicking on any other search criterion will remove that donor number from the box. If you have a lot number displayed, a cell or cells with that lot number with any other criteria you have entered will be found.

As soon as you enter search criteria (or click on the Search button), all cells matching the criteria you have entered will be displayed beneath the Search Pattern box. The full phenotype of each cell with the donor and lot numbers will be arrayed. Clicking on any of these cells will display the full information for that cell above the array. Out-of-date cells will have the lot number highlighted in red and frozen cells will have the lot number highlighted in blue.

If an antigen pattern or additional antigen shows "0 Matches Found" and you are sure that the pattern or antigen exists, it may be because the cell's blood group does not match, or the cell is marked Out of Stock and the System Options|Exclude From Searches box is checked.

Each time a match is found, the cell is displayed below. Any change to the search criteria (changing any search antigen button or changing the search additional antigens box) will reset the search procedure, and the data will be searched starting at the beginning.

Selecting

Whenever you are in the Search mode (the search pattern box is present) and a cell is displayed below, you may click the Select box to tag this cell with a checkmark or to erase an existing checkmark. If you click Select All Matches, all the cells displayed will be selected. Cells with a checkmark are included on Selected Cell and Results Worksheet panels. When duplicate cells are selected, they will be highlighted in yellow so that they may be easily de-selected... There is no limit to how many cells you may select, however the search preview screen can only display up to 13 cells at a time (6 if the screen is minimized) and a printed selected panel can only print up to 16 cells on a page. The results worksheet screen can only display up to 15 cells at a time. You may scroll to subsequent preview screens and all cells selected will print on consecutive pages. To empty the Selected and Results panels without exiting the program, remove ALL checkmarks by selecting the Clear Selected Cells button.

The screenshot shows the 'Antigen Plus 7.5.0.82' application window. At the top, there is a menu bar (File, Options, View, Lot, Panel, User, Help) and a search bar with 'Patient: (none)'. Below the search bar are search criteria fields for Donor ID, Lot Number, Sex, Group, Frozen, and Enzyme Treated. A 'Clear Search Criteria' button is also present.

The main area displays a table of antigen results. The table has columns for various antigens: Rh-Hr (D, C, E, c, e, f, C^w, V), Kell (K, k, K^a, K^b, J^s, J^b), Duffy (Fy^a, Fy^b), Kidd (Jk^a, Jk^b), Sex (Xg^a, Xg^b), Lewis (Le^a, Le^b), MN (S, s), P (M, N, P1), Luth (Lu^a, Lu^b), and Additional Antigens. The table shows results for Donor B7704 (DP069) and several other donors. The 'Select' column contains checkboxes for each row. At the bottom, there are buttons for '0 Cells Selected', 'Preview Selected Cells', 'Clear All Selected Cells', and 'Select ALL Matches'.

Donor ID	Lot Number	Vial	Supplier	Expires	Rh-Hr	Location	Group	Sex	Frozen	Enzyme Treated	Additional Antigens	Donor	Lot #	Select
B7704	DP069	3	Immucor	2/11/2014	R1R1							B7704	DP069	<input type="checkbox"/>
												C4623	R354	<input type="checkbox"/>
												C4623	R357	<input type="checkbox"/>
												B1258	41014	<input type="checkbox"/>
												A3386	41015	<input type="checkbox"/>
												C5384	DP068	<input type="checkbox"/>
												B2600	DP068	<input type="checkbox"/>
												B7140	40009	<input type="checkbox"/>
												23287	RA965	<input type="checkbox"/>
												B1364	32903	<input checked="" type="checkbox"/>
												101063	8335011-00-111	<input type="checkbox"/>
												309593	RA550	<input type="checkbox"/>

Selecting Expired Cells

Whenever you select a cell (or cells) with an expiration date that has passed, a dialog box will appear allowing you to select that cell (or cells) to enter the results of testing to ensure that cell is still reactive for the specific antigens in question. You may enter the result for any or all of the positive antigens on that cell and those results will be maintained with the date of the test and the name of the tester. You may opt out of this process by selecting Close and the cell will still be selected.

The screenshot shows a 'Review Selected Cells' dialog box. The dialog contains a table with the following columns: Donor, Lot, Vial, Expiration Date, Last Tested, Antigens Retested, and Select. The data in the dialog is as follows:

Donor	Lot	Vial	Expiration Date	Last Tested	Antigens Retested	Select
A511	35941	1	11/8/2013	12/23/2013 11:29 AM	D+	<input checked="" type="checkbox"/> Review
B2085	35941	2	11/8/2013	12/23/2013 11:55 AM	Xg(a+)	<input checked="" type="checkbox"/> Review
C5382	35941	3	11/8/2013			<input checked="" type="checkbox"/> Review
D787	35941	4	11/8/2013			<input checked="" type="checkbox"/> Review
E870	35941	5	11/8/2013			<input checked="" type="checkbox"/> Review
F715	35941	6	11/8/2013			<input checked="" type="checkbox"/> Review
G483	35941	7	11/8/2013			<input checked="" type="checkbox"/> Review
H554	35941	8	11/8/2013			<input checked="" type="checkbox"/> Review

The dialog also includes a 'Close' button at the bottom right. The background interface shows a grid of cell data with columns for Rh-Hr, Kell, Duffy, Kidd, Lewis, P, MN, Luth, Sex, and various antigens. A status bar at the bottom indicates '16 Cells Selected' and provides buttons for 'Preview Selected Cells', 'Clear All Selected Cells', and 'Select ALL Matches'.

The screenshot shows a 'Cell Testing History' dialog box. The dialog displays the following information:

- Donor: C5382
- Donor Note: (empty)
- Lot: 35941
- Vial: 3
- Location: (empty)
- Supplier: Immucor
- Sex: (empty)
- Enzyme Treated: (empty)

The dialog also shows a table of antigens tested, with columns for Rh-Hr, Kell, Duffy, Kidd, Lewis, P, MN, Luth, Sex, and Additional Antigens. The data in the table is as follows:

Rh-Hr	Kell	Duffy	Kidd	Lewis	P	MN	Luth	Sex	Additional Antigens
D C c E e V C ^w	K k Kp ^a Kp ^b Js ^a Js ^b	Fy ^a Fy ^b	Jk	Le ^a Le ^b P1	M N S s	Lu ^a Lu ^b Xg			
+ 0 + + 0 0 0 0	0 + 0 + 0 + 0 + 0	0 0	+ 0	0 0 + 0	+ + + +	0 + +			

The dialog also shows a table of testing history with columns for Technician, Testing Date, and Retested Antigens. The data in the table is as follows:

Technician	Testing Date	Retested Antigens
Alan	2/7/2014	Kp(b+)

The dialog also includes a list of checkboxes for various antigens, including D+, c+, E+, k+, Kp(b+), Js(b+), Jk(a+), Le(b+), M+, N+, S+, and s+.

Previewing a Selected Panel

You may preview your selected panel on the screen by selecting the Preview Selected Cells Panel button. Before previewing your panel, however, you should choose the order in which you want them previewed and printed. This is done from the System Options menu. If you choose Sorted by Expiration Date, the cells will start with the most recent and end with the frozen cells selected. The frozen cells themselves will be displayed in Donor ID/Lot number order. If you choose In Order Checked, the cells will appear in the order in which you selected them during the search. If you choose Sorted by Donor/Lot, the cells will be displayed by Donor ID/Lot number order. The same order choice will govern your printed worksheet and will remain in effect until you change it from the Options menu. The selected cells will be displayed 15 at a time. The 28 principal antigens are displayed in the Display Option order you have selected on the search/entry screen.

Patient Information

Information about patients that will display on the Search screen and remain with saved work-ups is entered either on the Search Screen or in the View menu. On the Search screen, open the **Select Patient** drop down menu and select a patient to modify, or fill in a new ID, name, and optional date of birth and short note and press **Add**.

You must enter an ID for the patient that will uniquely identify that patient. The nomenclature or protocol is up to you. The patient ID will display on the screen whenever you call that patient up from the Search screen. If you enter a patient name and information in the Short Note, that will also appear on the screen. Saving any work-up with a particular patient on the Search screen will attach that information to the printed worksheet as well as the saved lot table. Patient information can be also entered or edited in the Maintain Patients table that is found in the View menu.

ID	Name	DOB	Short note
010336	Jane Anna Walsh	1/28/1951	
010559	Leonard Robbins	12/15/1961	
010472	Pearl R. Powell	6/6/1929	
011069	Wilhelmina Z. Peters	3/1/1937	

Clear All Selected Cells

This button option on the Search screen will clear all the cells currently selected and there will be zero cells selected. Unless the Selected Cells or Results Worksheet has been saved, no results will be retained. A warning will appear confirming the intention to discard the current work.

Save Selected Panel

As soon as any test result is entered, the Save Selected Panel option is disabled unless a patient has been selected, or the user has loaded a saved panel.

To save the currently selected panel:

Open the Panel menu and select the Save the Selected Cells Panel option or from the File menu on Selected Cells or Results Worksheet select Save Panel. A new screen will appear showing current data to be saved with the worksheet:

You may add a description of unlimited length to the saved panel in the Full Panel Description text box. When you are ready to save the panel with or without an extended description, press Save.

Save Selected Panel

Panel Number: 005181A

Patient: Patient 005181, Bernice W. Mathews, 4/22/1945

Date: 10/17/2014

Reviewed by: MLloyd

Review Date: 10/6/2014

Full Panel Description:
Surgiscreen

Save Cancel

A previously saved panel may be revised and saved again using the same panel number. The older iteration(s) of the panel will remain associated with this panel and may be recalled (but not altered) from the View/Panel history screen on the Results Worksheet. Save dates, technologists and reviewers will be listed on the history.

For a list of which technologists entered which results go to View | Technologists screen on the Results Worksheet

Panel history

Panel number: 1-E
Patient: 11111, John B Smith, 5/1/1987

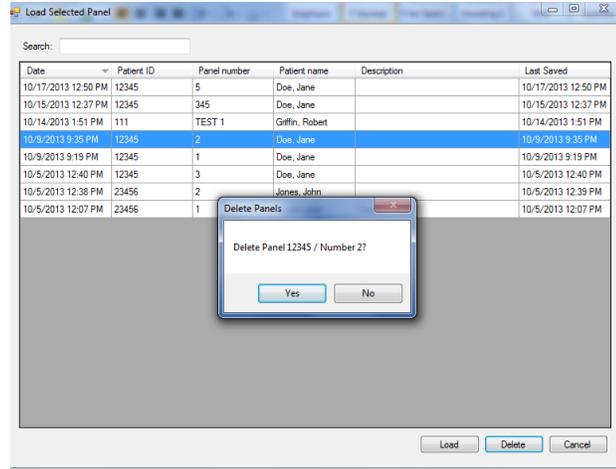
Date	Technologist	Review 1	Review 2	Description	Saved
2/15/2014 9:18 PM	Alan	Linda	Alan		2/15/2014 9:18 PM
2/15/2014 9:06 PM	Alan	Linda			2/15/2014 9:06 PM
11/29/2013 2:05 PM	Alan				11/29/2013 2:05 PM

The most recent revision of the panel is listed in bold.

Load Close

To delete a saved panel:

Select a panel in the Load Saved Panel menu and click Delete. The delete button will not be active until ten years have passed since the saving date.

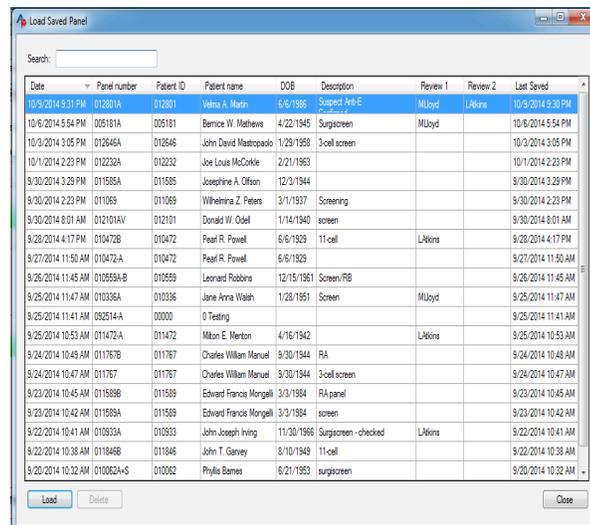


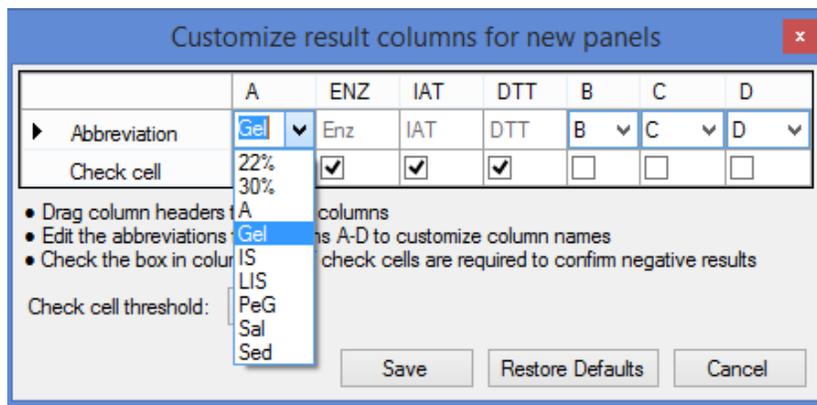
Load Selected Data

To load a saved panel:

Open the Panel menu and select the Load Saved panel option. The Load option is disabled unless there is at least one saved panel. A new screen will appear:

Click on a row and click the Load button. This will add the panel you have selected to the Selected Cells and Results worksheets. Loading a saved panel will empty the Selected Cells and Results screens of any previously entered data. Once a saved panel is loaded, additional cells may be added to the Selected Cells and Results screens by using the Search function.





Click in Results Box to Indicate Test Outcome						
IAT	Enz	DTT	A	B	C	D

Click in Results Box to Indicate Test Outcome						
LIS	IAT	PeG	Enz	DTT	C	D

To remove a result from a box, click once on the box, then click on the blank space above the zero in the choices box. As the results are entered, the excluded antigens are shaded and the exclusions obtained will appear in the Evaluation box at the bottom of the screen. The bottom line of the Results Panel, “Rule Outs”, keeps a running tally of the number of times an antigen has been excluded either by homozygous or heterozygous results.

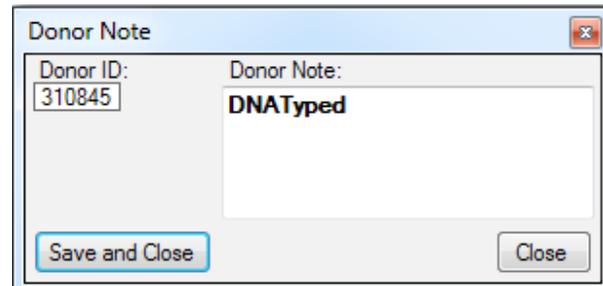
Exclusions are specific to the results column in which they are entered and are so marked. The basis for those exclusions is documented below in the Exclusion Policy section. Results and exclusions are maintained as long as the selected cells are not cleared. If the Selected Cell Worksheet or Results Worksheet is saved, any results entered against those cells will be saved with the panel and will appear on the Results Worksheet screen when the Saved Panel is loaded. If more cells are required for testing than appear on the Results Worksheet screen, simply select the Search screen from the task bar by clicking on the Antigen Plus icon (or exit the Results screen by clicking the X button in the upper right corner of the screen) and add cells to the Selected Cell Panel by the Search methods. The current Evaluation box will appear at the bottom of the Search screen. Any new cells selected will be present on the Results Worksheet screen when it is called up again.

A Results worksheet may be printed at any time by clicking on the Print button. If any cell has a long list of additional antigens obscuring the test columns, the Additional Antigen column may be compressed by moving the cursor on top of the left hand border of the shaded title bar of the Additional Antigens column—the cursor will change to a two-headed horizontal arrow—holding the mouse clicker down and dragging the border to the right. The additional antigens will be hidden and the test columns will be visible without scrolling to the right of the screen. An Auto Cell row will appear as the last cell of any Results panel. The Auto Cell will have blank boxes in each column. If typings are known for the Auto Cell, they may be entered on the Results screen and will be saved and may be recalled if the Selected Cells Panel is saved. Test results may be

screen, entering the changes (reactions, special typings etc.), and clicking the Save button. These changes will not be maintained for the donor in any subsequent lot, so it is strongly recommended that you note the change in the Donor Note, which will remain with the donor regardless of lot.

Donor Note

An optional note may be stored with each Donor ID by selecting Donor Note from the View menu when the donor is displayed in the Donor ID box. Type your note in the Donor Note text box and then select Save and Close.



A Donor Note is associated with the Donor ID only, not the Lot, so it will appear with every Lot that a donor ID is in. When a Donor ID has a note on file, that information will be displayed whenever that donor is on the Add/Edit or Search screens.

Search Cells	Add / Edit Cells					
Donor ID:	Lot Number:	Vial:	Expires:	Supplier:	Enzyme:	Donor Note:
310845	RA989	1	11/11/2014	Ortho-Clinical	Treated:	DNATyped

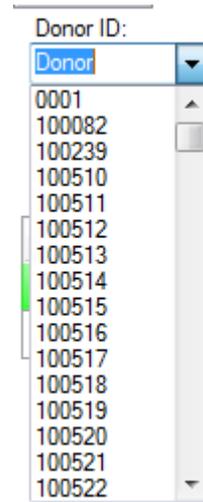
Data Entry of Individual Cells

Data may be entered or changed in a box whenever the cursor is positioned over that box. The cursor can be moved to another box by pointing to it with the mouse and clicking the left mouse button. The cursor also moves to the next box by pressing the Tab key, or to the previous box by pressing the Shift + Tab keys. Previously saved data can be viewed and selected by clicking the little down-arrow to the right of the box, or by pressing the Ctrl + Down Arrow keys while the cursor is in the box. The box will be “opened”, and the data will be displayed in numerical and alphabetical order. Any item in the list can be selected with a mouse click, or by highlighting it with the Up or Down Arrow keys and pressing Enter. Alternatively, items can be scrolled without opening the box by pressing the Down Arrow key. A list box may be opened at a particular spot in the list by first entering a character or characters in the box and then opening it. A button may be activated or “pushed” by clicking it with the left mouse button, or by moving the cursor to the button and pressing any key. You can tell when the cursor is on a button because its outline becomes darker, and if it has writing on it, the writing is surrounded by a dotted line. As with boxes, the cursor can be moved from button to button by using the Tab or Shift + Tab keys, or by clicking directly with the mouse. In general, the cursor moves from left to right and top to bottom on the screen. A donor cell is identified by its Donor ID and Lot Number. A donor number or lot number may appear any number of times, but the Donor ID - Lot Number combination must be unique. In order to save a cell in the database, it must have a non-blank Donor ID and a non-blank Lot Number. When you are entering several cells from a single antigram or lot panel, the data boxes are blanked after you Save, but remain indexed at the last item entered. Therefore, when you enter one cell and save it, then enter a new Donor ID number, you can Tab to the Lot

Number box and press the Down Arrow to recall the previous Lot. Its expiration date and supplier will also appear, saving you from having to re-enter the data.

Donor Number

The Donor No. box will accept up to 16 characters and may be any combination of capital letters and characters except apostrophes. Enter a donor ID and press the Tab key to move on to the Lot Number box. If the donor is already on file, the cell data will be retrieved and displayed.

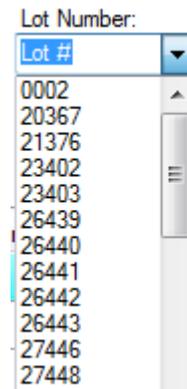


Drop-down (or list) boxes have a scroll bar. One donor may be present on several different panels. If a donor has more than one cell on file, and her previously existing ID is entered, the most recent one found will be displayed. This is to facilitate entering duplicate donors - when you wish to enter a donor who is already on file into a new lot number, the old phenotype will automatically appear, and you then need to enter only the new lot number, check the expiration date, and click the Save button. It is assumed that the phenotype will not have changed from a previous panel.

Lot Number

The Lot Number is used to show the supplier's unique lot number for this cell's panel. All cells with a given Lot Number will have the same supplier and expiration date.

The Lot Number box will accept up to 16 characters and may be any combination of numbers and capital letters. Enter a lot number and press the Tab key to move on to the Vial box. If the lot number was already on file, the expiration date and supplier will be retrieved and displayed.



Vial

The Vial box will accept any number from 0 through 99. It will also accept a TC (tech cell) vial.

Enter a vial number or TC and press the Tab key to move on to the Expires box. Pressing the Up and Down Arrow keys or clicking the little up and down arrows to the right of the box will automatically raise or lower the displayed vial number. TC is located below the 0.

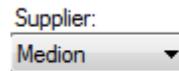
Expiration Date

The Expires box is for the expiration date of all cells in the lot number displayed. You may enter a date in any format that is comfortable for you, such as “20 Dec 10” or “12-20-11”, then press the Tab key to move on to the Supplier box. The date will be re-displayed in the format set in the Windows Control Panel/Regional Settings/Date function. If the date is before the present system date, a bright red **Out of Date!** will appear under the Expires box. The expiration date is stored with the lot number, so if you change the expiration date of a lot number, then ALL cells with that lot number will have the new expiration date.

Supplier

The Supplier box is populated with default commercial suppliers and any that you have added in the Suppliers table found in the View menu.

When a supplier is changed in the Supplier box, the antigen array below will change to match that Supplier’s array.



The supplier is stored with the lot number, so if you change the supplier of a lot number, then ALL cells with that lot number will have the new supplier.

Location

Enter a storage drawer location for a frozen cell. The location is stored independently and will not affect other cells with the same lot number--should there be any. The Location box will accept up to 64 characters in any combination of letters and numbers.

Rh-Hr

Antigen Plus comes with the standard Rh-Hr phenotype designations loaded in the drop down box that is activated by clicking on the down arrow adjacent to the Rh-Hr entry box. Choosing one of these designations by clicking on it will place it in the entry box and will mark the appropriate pluses and negatives in the Rh-Hr antigen group. If changes are made to that antigen group, the RhHR phenotype will be cleared when the cell is saved. A user may save the cell again with the proper phenotype or leave it blank.

Note: Antigen Plus no longer specifies the Cw antigen in Rh-Hr designations since we cannot predict 100% when C will be on the same gene complex as Cw.

Additional Antigens

The Additional Antigens box consists of an entry box, check boxes, and a display box directly above them containing this cell's additional antigen phenotype. You may enter an additional antigen in the Add New entry box, or select one from the list by clicking the box. To add what is in the entry box to this cell, check the box. To remove an antigen from a cell uncheck the appropriate box.

The screenshot shows a window titled "Additional Antigens" with a scrollable list of antigen names, each preceded by a checkbox. The list is organized into five columns. The first column includes an "Add New..." button. The antigens listed are: Bg(a-), Bg(a+), Bga(+), Bp(a-), Ch+, Co(a-), Co(a+), Co(a-b+), Co(b-), Co(b+), Cs(a-), Dantu-, Dantu+, Di(a-), Di(a+), Di(b-), Di(b+), Do(a-), Do(a+), Do(b-), Do(b+), Ge+, He+, Hut+, Hy+, I-, I+, Jo(a+), Jr(a+), Kp(a+), Lu:14, Lu:-14, LW(a+), LW(b-), Mg-, Mi(a-), Mi(a+), Mo(a-), and Mt(a-).

There is no limit on how many additional antigens you may enter. However, once the screen space is used up, further antigens will be stored but not displayed. When there are more additional antigens than can be displayed on a Lot Panel print out, an ellipsis (“...”) at the end of the additional antigen list (displayed alphabetically) will indicate the presence of the additional typings. Mousing over the display all of the antigens present along with their associated ISBT numbers.

This screenshot shows the "Additional Antigens" window with a dropdown menu open. The dropdown menu lists the following antigens and their ISBT numbers: Bg(a-), Bp(a-) 010-010, Co(b-) 015-002, Dantu+ 002-025, Di(a-) 010-001, Hut+ 002-019, Jo(a+) 014-005, Mi(a+) 002-007, Sc:1 013-001, and Wr(a-) 010-003.

A table of ISBT numbers used in Antigen Plus can be found in the Appendix.

The reason for the entry-box method of adding additional antigens is to ensure consistency: you must be consistent in your notation in order for a search to work properly. For example, to indicate a Colton b antigen (Co_b) as positive, you may enter Co(b+), CoBPos, or any other notation that is 8 characters or fewer, but you should use the exact same notation for all cells with this antigen. The entry box will contain a list of all the additional antigens previously saved in your inventory, and you should check for an antigen's presence before entering a new one. The ISBT numbers can be consulted for more precision in nomenclature. A table of ISBT numbers used in Antigen Plus can be found in the Appendix.

Out Of Stock

To mark a cell as exhausted, click the Out Of Stock button, click OK in response to the pop-up query, and then click the Save button. The data will remain on file so that you can recall the phenotype in case the cell shows up in a new lot, and will remain in any saved panels. The cell will not be available in the search process unless you mark the Include in Searches feature in the Out of Stock Inventory box in the System Options menu. When you click the Save button, you will be given the option of marking the entire lot as out of stock. Click Yes or No in the popup window, or type y or n, to indicate your choice. Please note: If you do not click the Save button after marking the cell as out of stock, the cell will remain in stock and the out of stock flag will not reappear on the screen when that cell is recalled.

Sex

Clicking the Sex button will change the button from blank to M to F. This is optional information, and not normally of significance in the selection of panel cells.

Group

The Group button allows you to enter the blood group of the donor cell. Since most commercial panel cells are group O, that is the default setting. To change the blood group to A, B, or AB, click the Group button until one of those characters appears. To leave the blood group unspecified, click the Group button until a blank appears.

Frozen

Click the Frozen box to mark a cell as frozen. The expiration date will be blanked. Frozen cells will be found last in the search process, since searching is done starting with newest cells first.

Antigens

The 28 principal antigens are displayed with colored labels for easy identification. When you are entering a new cell, all the antigens will have a 0 setting. You may change a setting to a +, s, w, or blank by clicking the button with the mouse pointer (right and left mouse clicks scroll through the choices in opposite orders), or by moving to a button with the Tab key and pressing any other key. A blank setting indicates that no information is available. For example, some suppliers may not include the Kell system Kp_b and Js_b, so you may blank these antigens' buttons.

Save

Clicking the Save button will save all the cell data displayed for the unique Donor No. - Lot Number combination. Any items not previously present in the data boxes (Donor, Lot, Expiration Date, Supplier, Additional Antigens, and RhHr) will be added to the lists in those boxes. The cell display is cleared and the cursor returns to the Donor No. box. The Lot Number, Expiration Date, and Supplier are saved as a group with the Lot Number. If you have changed the date or supplier of a lot, then ALL cells with that lot number will have the new date and supplier. A Donor Note is saved only with the Donor ID, and stays with the Donor ID regardless of which Lot it is in.

Delete

Clicking the Delete button will prompt you to make sure, then remove the displayed Donor No. – Lot Number combination from your inventory as long as it has not been used in the last ten years in any saved work. When a cell is deleted, any unique lot, additional antigen, or RhHr information it may have had will also be deleted from the lists in those boxes.

Delete Lot

Clicking the Delete Lot button will prompt you to make sure, then remove ALL cells with the displayed lot number (the ten year rule applies).

Multiple User Procedures

There is no restriction on the number of users who can use Antigen Plus and share its data at the same time. There are, however, some default rules of precedence in cases when new data are added to the system by one of the users and where the same data are altered and saved by more than one user in a session. Your SOP should make note of the following rules:

When a user downloads a new lot into the system, the cells within the lot that lot will be available for searches by other users and will appear in the Maintain Lots screen, but will not be available in the Lot drop down list on the Search or Add/Edit screens until the other user clicks the Refresh Data option in the File Menu (or simply presses the F5 key).

If two users have the same saved panel open, the second one to save will be the current panel iteration even if the first user has changed and/or reviewed the panel. The first user's panel will be available as a prior iteration, but will have to be recreated to be a current one (this can be done by opening the current iteration and making the necessary changes using the prior iteration as a guide). However, the first user's saved panel will appear immediately on the Panel History screen, so to ensure that there are no conflicts, a user who suspects that there may be someone else working on the same panel can check the panel history before saving his/her work.

Exclusion Policy

Antigen Plus - Ab ID excludes antigens in the manner described by the *AABB Technical Manual, 15th Edition*, (Ch. 19: pg. 428-9). Homozygosity is required for the exclusion in the following blood group systems: Rh, Duffy, Kidd, MNS. In the presence of anti-D, the program will exclude E and C on heterozygous cells. Blank antigens will cause the known positive antithetical partner to be considered heterozygous for exclusion. The blank antigens themselves are not considered positive or negative and will not be considered for exclusion.

The blood group antigens that can be excluded on heterozygous cells are K, Kpa, Jsa, and Lua. The program will not exclude K, Kpa, or Jsa on heterozygous cells if a homozygous expression of the pair on the same panel is reactive. As the Homozygosity of P1 and Xg_a is not easily determined from most panel sheets, the program requires 3 examples of each antigen to be non-reactive with the patient sample before it will exclude either antigen.

It is always advisable to review *AABB Technical Manual, 15th Edition*, (Ch. 19: pg. 429-36) for more detailed information on Complex Antibody Identification including variability of antigen strength, the effect of storage on RBC antigens and use of autologous cells while considering the antigens excluded or not, by the program. Any final decision made by the technologist must be consistent with their facility SOP for Antibody Identification.

The program does not encompass the knowledge of all blood group systems and their patterns of reactivity. Any technologist using the program to automate the exclusion process must apply serological expertise to interpret the program's lists of antigens excluded versus antigens not excluded. The program evaluates each column of reactivity independently. Exclusions obtained from the results recorded in columns A, B, C, and D will be exactly the same as those obtained from identical results recorded in the Liss indirect antiglobulin test (IAT column). There is too much variability in antibody reactivity to risk excluding an antigen on anything but the reactions obtained by the technologist and recorded in Antigen Plus - Ab ID.

Red cell treatments, when performed correctly, do have a standardized effect that is well documented. Antigen Plus - Ab ID does employ that information when the ENZ column and DTT column have results recorded in them. The ENZ column will not exclude Duffy and MNS blood group system antigens. The DTT column will not exclude Kell or Lutheran blood group system antigens.

High frequency antigens and low incidence antigens, which can be used as a search parameter to select cells for the results panel, cannot be used in the exclusion process or listed in the Evaluation box at the bottom of the results panel. As the antigens listed in the Additional Antigens are entered by the individual user, they are not pre-coded by the program. A list of technical tips to assist any technologist who may have an antibody to a high frequency antigen or to a low incidence antigen is included in the Help utility and is reproduced on the following pages.

The following text always appears with any results in the Evaluation box.

These are tentative rule-outs.

Additional confirmatory data based on your own criteria are recommended.

It is the user's responsibility to record accurate test data and to confirm that data according to established protocols.

Technical Information for Further Testing

1. If all cells in the first panel are reactive and the autocontrol is negative, try chemically treated screen cells and see if this alters the reactivity in any way. Chemical treatment of red cells includes: enzymes, DTT, AET or CDP (chloroquine diphosphate). Methods and information on obtaining any of the products required, can be found in the *American Red Cross Immunohematology Methods and Procedures*, D. Mallory, ed. Selecting 2 or 3 cells from the panel, or using the screen cells, will save time, save plasma and still provide new information. If the information is that nothing changed, go to step 2.

[More information on the actions of specific chemicals is listed in step 2, (iii).]

2. If all cells in the first panel tested are reactive and the auto control is negative, perform a common phenotype on the patient's red cells (patient must not have been transfused in the preceding 90 days). Blood group systems to include Rh, Kell, Duffy, Kidd and MNS. Select a cell from any of the panels or screen cells in your inventory that is negative for the same antigens the patient lacks and test it. This is referred to as running a phenotypically matched cell.

EXAMPLE: PATIENT D+C+E-c+e+, K-, Fy (a+b-), Jk(a-b+), M+N+S-s+.
POSSIBLE MATCHES: D-C-E-c+e+, K-, Fy(a-b-), Jk(a-b+), M-N+S-s+
D+C+E-c-e+, K-, Fy(a+b-), Jk(a-b+), M+N-S-s

i) If the phenotypically matched cell does not react with the patient's plasma, select a panel of red cells based on one example of each antigen to be excluded per cell.

EXAMPLE: FOR THE PATIENT LISTED ABOVE THE SELECTION CRITERIA WOULD BE:

CELL 1 E+, K-, Fy(b-), Jk(a-), S-.

CELL 2 E-, K+, Fy(b-), Jk(a-), S-.

CELL 3 E-, K-, Fy(b+), Jk(a-), S-.

CELL 4 E-, K-, Fy(b-), Jk(a+), S-.

CELL 5 E-, K-, Fy(b-), Jk(a-), S+.

This will confirm or exclude which antibody(ies) to the common antigens the patient has formed and what is left to form in the future.

ii) If the phenotypically matched cell(s) is reactive with the patient's plasma and the autocontrol is negative, the most probable cause is an antibody to a high frequency antigen. Use Antigen Plus to select any examples of high frequency antigen-negative red cells in your cell library. I.e... At(a-), k-, Kp(b-), Js(b-) etc.

iii) If you have a limited rare cell library or failed to obtain a negative reaction with the high frequency antigen-negative red cells available, consider that various red cell treatments which modify or destroy certain antigens on red cells can also be useful. DTT/AET treatment will destroy: Kell (not K_x), Lutheran, Knopps/McCoy, Cartwright, Cromer, Dombrock, Auberger, JMH and Lw_a. Gerbich is destroyed by DTT but not AET. ENZYMES (papain, ficin, trypsin, bromelain) will remove: Duffy, MNS, Chido, Rogers, JMH, Gerbich, Gilfeather, Xg_a, Pr, V_w, Cartwright, Mia, Cla, Je_a, Ny_a and most En_a. Chloroquine diphosphate (CDP) will destroy Bg and class I HLA antigens.

3. If all cells in the first panel tested are reactive and the auto control is positive, do a direct antiglobulin test (DAT) on the patient's cells before doing further serum testing.

i) If the DAT is positive, a warm autoantibody should be suspected and may hide underlying alloantibodies in the patient's plasma. The autoantibody should be removed by autoabsorption before further antibody identification can be achieved. Autoabsorption can only be performed

using pre-transfusion patient red cells. The patient must not have been pregnant or transfused in the preceding 90 days. For further information and testing methods, refer to the *AABB Technical Manual, Current Edition*, or the *American Red Cross Immunohematology Methods And Procedures*, D. Mallory, ed.

ii) If the DAT is negative, a cold autoantibody should be considered. A cold screen tested from room temperature down to 4°C will indicate if an autologous absorption done at 4°C will be useful to remove the autoantibody. Again, the patient must be untransfused in the preceding 90 days.

iii) If autoabsorption, warm or cold, is not possible, there are alternatives. Allogeneic warm absorption is possible using R1R1, R2R2, and rr cells. A prewarm method may be useful to remove any cold reactivity. Prewarm methods must be used with caution preferably after the clinically significant antibodies have been tentatively identified. Prewarm methods have been documented to remove anti-H activity in a Bombay phenotype and an example of anti-Vel. References on request.

4. If all the cells tested are negative, several things must be considered:

i) Repeat the cell that gave the original positive reaction that initiated the panel, i.e. the antibody screen test or one of the units being crossmatched. Note where the antibody reacts - immediate spin or IAT? Was the panel tested at the same phase the reaction occurred in?

ii) How soon after the original testing, was the panel performed? Was the sample stored properly?

iii) Is the reactive cell homozygous for any common antigen and is there another cell homozygous for the same antigen that can be used to repeat the result?

iv) Will enhancement media help reveal a weak reacting alloantibody pattern, i.e. Enz, PEG, LISS with a longer incubation time, or polybrene?

v) If none of this adds any information about antibody specificity, you may have an antibody directed against a low frequency antigen. While the identity of the antibody is a puzzle, it is rarely a significant problem when looking for compatible units of red cells for transfusion. If you have time to play with it, use Antigen Plus to locate as many low incidence antigen positive cells as you have listed under special antigens. If none of them react, and you still wish to resolve the specificity, send the sample to a reference lab for crosstesting. Most reference labs keep their unidentified lows in hopes of finding another example.

5. If your routine test method can detect weak reacting autoantibodies at any phase of testing, positive antibody screen results can lead to a common panel result of several weak reactions with no specificity determined. Antigen Plus will perform exclusions based on its policy and may well exclude all common specificities depending on the number of reactions and phenotype of the cells which do not react. The technologist should follow his or her Blood Bank SOP for antibody identification which should address this type of panel testing outcome. Depending on method used, patient population and number of occurrences, the most common choices are likely to include:

i) Try more sensitive method if an alloantibody may be just forming or was not stimulated in the recent past.

ii) Repeat the original test by a less sensitive method, e.g. from solid phase testing back to tube LISS-IAT (a common approach to dealing with the very sensitive capabilities of solid phase testing.)

iii) Seen only at immediate spin – assess possible clinical significance and drop the IS test if appropriate.
Use the prewarm method only after significant antibodies (anti- Vel , anti- PP_1P_k , anti-H in a Bombay) have been excluded.

Backing Up

Your database is backed up on our Cloud server hosted by Microsoft Azure™. Any problems retrieving data should be immediately brought to our attention at customerservice@antigenplus.com

Additional Information

About Antigen Plus

Antigen Plus is written using Microsoft Visual Studio and SQL Server. It was designed for the reference laboratory by Michael W. Lankiewicz, M.D., a hematologist with an overworked staff, in order to save untold hours of searching and drudgery; and originally programmed by Peter Rowny, a blood donor, with additional improvements for the hospital transfusion service designed by Dawn M. Rumsey, ART (CSMLS) BB(ASCP)^{CM}.

COPYING TEXT FROM THE SCREEN

The text in the Full description box on the Save and Load panel screens and the text in the Help screens can be copied into another application by highlighting the text by placing the mouse cursor at the beginning of the text to be copied, holding down the right mouse button and dragging the cursor across the text to be copied. The text will be highlighted. Release the mouse button and press the "Ctrl" and "C" keys on your keyboard simultaneously. The text will then be copied to the Windows Clipboard and can be copied into any Windows application that has a Paste function.

COPYING TEXT TO THE FULL DESCRIPTION BOX

Text from the Windows clipboard may be copied into the Full description box on the Save screen. When the cursor is flashing in that box press the "Ctrl" and "V" keys on your keyboard simultaneously. The text you have copied from another application will be pasted into the description of the panel and may be saved with the Panel Key name by clicking the Save button on the screen.

Programming Notes

Antigen Plus is written in Visual Basic Studio and uses a SQL Server database. Users familiar with SQL Server may open the databases and produce reports, run queries, and generally explore record layouts and file structure for purposes of importing data held in other databases. Be sure to back up the original database before attempting any of these procedures.

Appendix

Guide to ISBT numbers used in Antigen Plus

(taken from ISBT web site)

http://www.isbtweb.org/fileadmin/user_upload/WP_on_Red_Cell_Immunogenetics_and/Updates/Table_of_blood_group_antigens_within_systems_v3.3_131028.pdf