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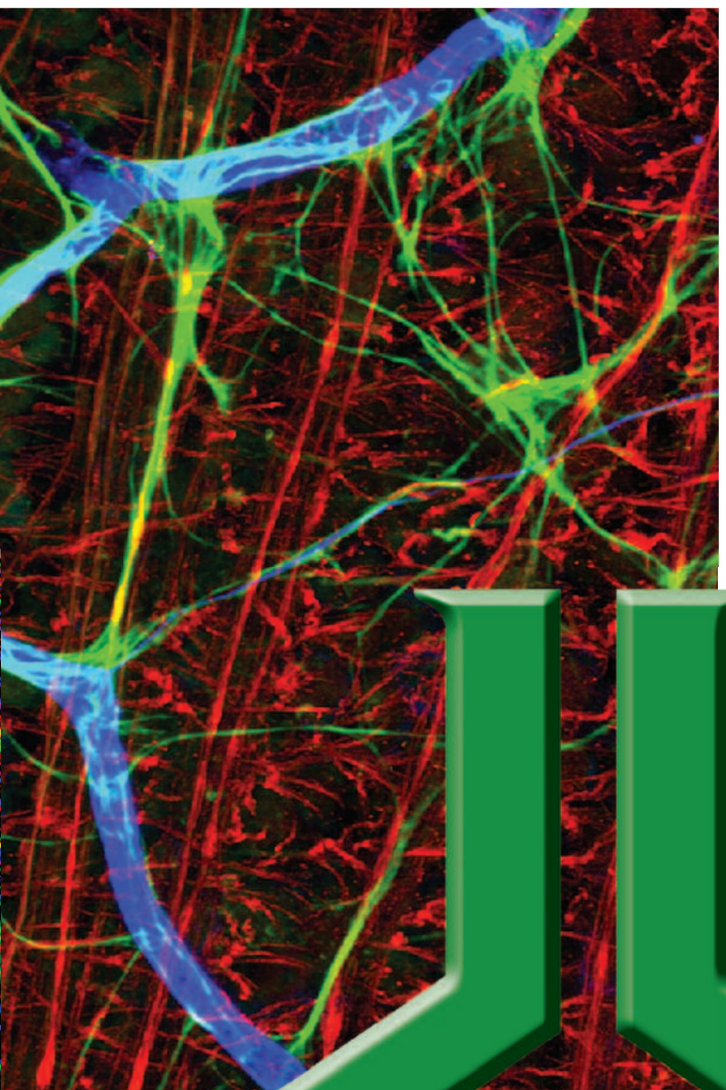

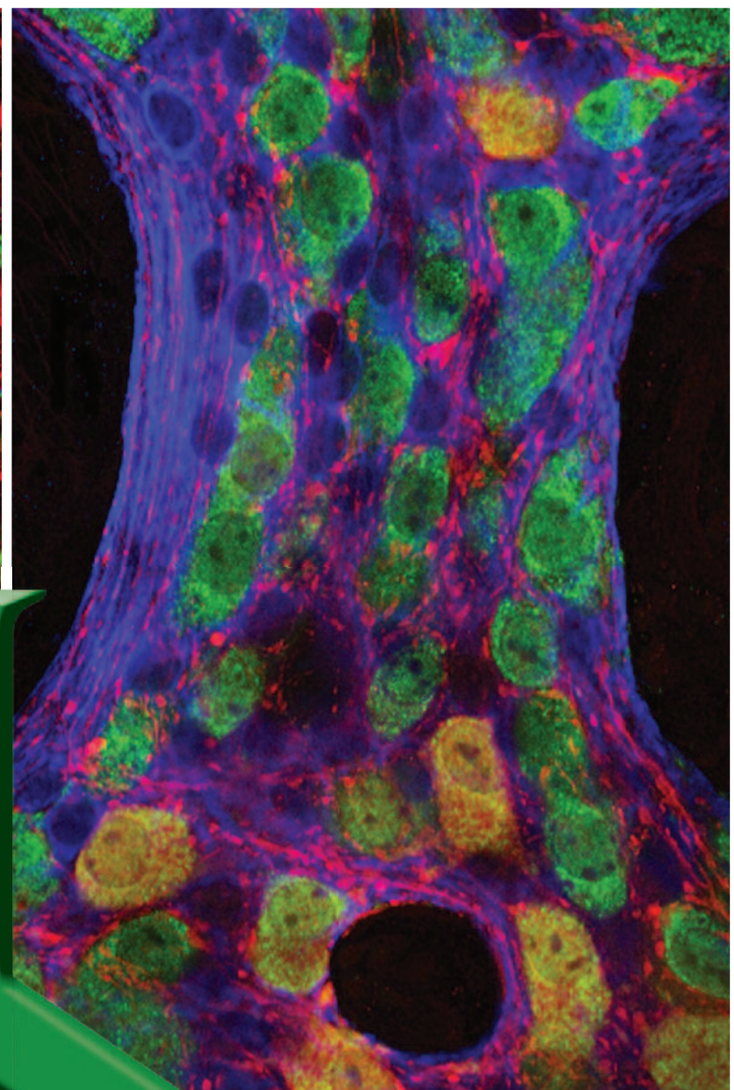

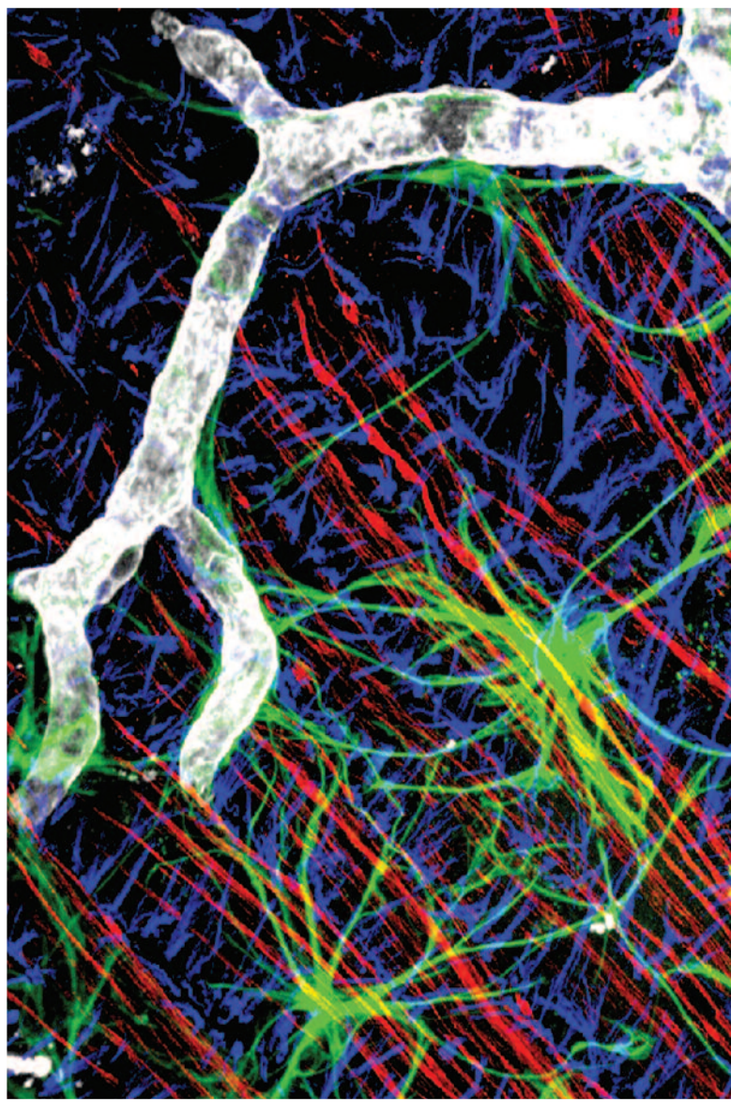

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Technical Information - Affinity-Purified Secondary Antibodies

Affinity-purified antibodies are isolated from antisera by immunoaffinity chromatography using antigens coupled to agarose beads. A proprietary elution process is used to dissociate antibodies from the antigen. Unconjugated affinity-purified antibodies are supplied sterile-filtered in phosphate buffer without stabilizers or preservatives. Conjugated affinity-purified antibodies are freeze-dried in phosphate buffer with stabilizers and sodium azide, with the exception of horseradish peroxidase conjugates, which do not contain a preservative.

Selection and Location of Affinity-Purified Secondary Antibodies

Step 1. Select from Whole IgG (pages 9-18), F(ab')$_2$ fragment (pages 19-23), or Fab fragment (pages 24-27) antibodies.

Affinity-purified antibodies are offered in three different forms: whole IgG, F(ab')$_2$ fragments, and Fab fragments.

Whole IgG (pages 9-18) antibodies are isolated as intact molecules from antisera by affinity chromatography. They have an Fc portion and two antigen binding Fab portions joined together by disulfide bonds (Figure 1), and therefore are divalent. The average molecular weight is reported to be about 160 kDa. The whole IgG form of antibodies is suitable for the majority of immunodetection procedures and is the most cost effective.

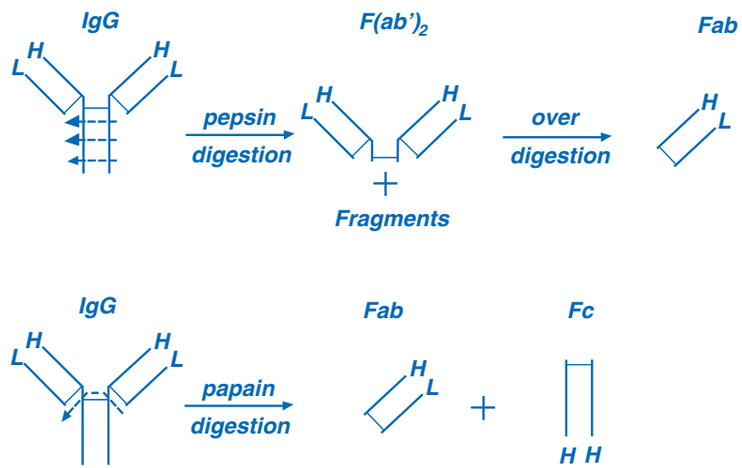

Figure 1: Schematic representation of IgG fragments generated by enzymatic digestions.

F(ab')$_2$ fragment (pages 19-23) antibodies are generated by pepsin digestion of whole IgG antibodies to remove most of the Fc region while leaving intact some of the hinge region. F(ab')$_2$ fragments have two antigen-binding Fab portions linked together by disulfide bonds, and therefore are divalent (Figure 1). The average molecular weight is about 110 kDa. They are used for specific applications, such as to avoid binding of antibodies to live cells with Fc receptors or to Protein A or Protein G.

However, binding of *primary* antibodies to Fc receptors also may occur if they are whole IgG antibodies, creating background regardless of the form of the *secondary* antibody. To block whole IgG primary and secondary antibodies from binding to Fc receptors, incubate cells in buffer containing 5% normal serum from the host species of the labeled secondary antibody. To prevent capping, endocytosis, and regeneration of Fc receptors on *living* cells, incubate at 4°C in buffer containing 5% normal serum with sodium azide added to inhibit metabolism.

Caution: *Never block with normal serum or IgG from the host species of the primary antibody when using a labeled secondary antibody. If immunoglobulins in the normal serum bind to the specimen of interest, they will be recognized by the labeled secondary antibody, resulting in higher background.*

Bovine serum albumin (BSA) and dry milk, both commonly used for blocking, may contain bovine IgG. With the exception of Bovine anti-Goat IgG, many secondary antibodies such as anti-bovine, anti-goat, and anti-sheep will react strongly with bovine IgG. Therefore, use of BSA or dry milk for blocking or diluting these antibodies may significantly increase background and/or reduce antibody titer. For blocking, use normal serum (5% v/v) from the host species of the labeled secondary antibody.

Fab fragment (pages 24-27) antibodies are generated by papain digestion of whole IgG antibodies to remove the entire Fc portion, including the hinge region (Figure 1). These antibodies are monovalent, containing only a single antigen binding site. The molecular weight of Fab fragments is about 50 kDa. They can be used to block endogenous immunoglobulins on cells, tissues, or other surfaces, and to block the exposed immunoglobulins in multiple labeling experiments using primary antibodies from the same species.

In contrast, divalent (whole IgG or F(ab')$_2$ fragment) antibodies should not be used for blocking since they have two binding sites. After blocking, some of the binding sites would be available to capture the primary antibody introduced in a subsequent step, resulting in higher background and/or coincidental labeling.

Step 2. Select the host species of the primary antibody.

The antibodies are listed alphabetically according to the host species of the primary antibody. For example, if the primary antibody is made in mouse, go to the "Anti-Mouse" section.

Note: Both anti-Syrian and anti-Armenian hamster secondary antibodies are listed under "Anti-Hamster". It is important to know in which strain of hamster the primary antibody was produced since cross-reaction between the strains is not complete.

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Step 3. Select the host species of the secondary antibody.

Selection of the host species for a secondary antibody involves many considerations, including but not limited to: 1) Antibodies from some host species may not be adsorbed against cross-reacting species of interest. Chose a host species with the required adsorptions. 2) Host species compatibility. Some host species may not be compatible with other species in multiple-labeling experiments. In general, all secondary antibodies for multiple labeling should come from the same host species. 3) Binding to Protein A and Protein G. Rabbit antibodies bind well to Protein A and Protein G, but goat and donkey antibodies bind better to Protein G. 4) Personal preference or experience. In our experience there appears to be no species-specific difference in the quality of secondary antibodies.

Step 4. Select the secondary antibody specificity under "Antibody Description".

The following explanations of terms may assist in selecting the most appropriate antibody specificity.

Note: Immunoglobulins from different species share similar structures, with similarities being related to closeness in phylogeny. Antibodies against immunoglobulins from one species may cross-react with a number of other species unless they have been specifically adsorbed against the cross-reacting species. Antibodies that have been adsorbed against other species will contain "(min X...Sr Prot)" in the antibody description.

Anti-IgG (H+L)

These antibodies react with both the heavy and light chains of the IgG molecule, i.e. with both the Fc and $F(ab')_2$ / Fab portions of IgG (Figure 1). Anti-IgG (H+L) antibodies also react with other immunoglobulin classes (IgM, IgA, IgD, IgE) and subclasses since they all share the same light chains (either kappa or lambda). Anti-IgG (H+L) antibodies have broader epitope recognition than anti-fragment specific antibodies. They are suggested for all general immunodetection procedures.

Anti-IgG, Fc/Fcγ fragment specific

These antibodies react with the Fc portion of the IgG heavy chain. They have been tested by ELISA and/or absorbed against Fab fragments. In some cases, they are additionally tested and/or adsorbed to minimize cross-reactivity to IgM and/or IgA. In such cases (anti-human, anti-mouse, and anti-rat), they are labeled "Anti-IgG, Fcγ".

Caution: *Anti-IgG, Fcγ fragment specific antibodies may not react equally with all monoclonal IgGs. For an anti-mouse IgG, Fcγ fragment specific antibody with balanced reactivity to four subclasses of IgG, select goat anti-mouse IgG (subclasses 1+2a+2b+3), Fcγ fragment specific (min X Hu, Bov, Rb Sr Prot).*

Anti-Mouse IgG, Fcγ subclass specific

These antibodies react with the Fc portion of the heavy chain of individual subclasses of mouse IgG. They have been tested by ELISA and/or adsorbed to minimize cross-reactivity to other subclasses, Fab fragments, IgA, IgM, and a few other species of IgG.

Caution: *Anti-Mouse IgG, Fcγ subclass specific antibodies react with individual subclasses of mouse IgG. The extreme specificity of these antibodies may result in reduced epitope recognition. They are not intended for general labeling of mouse IgG primary antibodies. For general labeling, select goat anti-mouse IgG (H+L). For heavy chain specific, use goat anti-mouse IgG (subclasses 1+2a+2b+3), Fcγ fragment specific (min X Hu, Bov, Rb Sr Prot) or goat anti-mouse IgG, Fcγ fragment specific.*

Anti-IgG, $F(ab')_2$ fragment specific

These antibodies react with the $F(ab')_2$ / Fab portion of IgG. They have been tested by ELISA and/or adsorbed against Fc fragments. They are not specific for IgG since they react with light chains, and therefore also react with other immunoglobulin classes (IgA, IgM, IgD, and IgE) and subclasses sharing the same light chains.

(min X ... Sr Prot)

Secondary antibodies against one species may cross-react with other species unless they have been specifically adsorbed against the other species. Antibodies with "(min X ... Sr Prot)" in the description have been tested and/or adsorbed against IgG and/or serum proteins of those species indicated in the parentheses. They are recommended when the presence of immunoglobulins from other species may lead to interfering cross-reactivities. However, caution should be exercised when considering antibodies that have been adsorbed against closely related species since they have greatly reduced epitope recognition and may recognize some monoclonals poorly. For example, only use anti-mouse IgG adsorbed against rat IgG to detect a mouse primary antibody in rat tissue which contains endogenous rat immunoglobulins, or in a multiple labeling application which includes a rat primary antibody. Use anti-mouse IgG *not* adsorbed against rat IgG to detect a mouse primary antibody in the absence of rat immunoglobulins. Two other examples of antibodies which have diminished epitope recognition after adsorption with closely related species are Anti-Rat IgG (min X ... Mouse ... Sr Prot) and Anti-Armenian Hamster IgG (min X ... Mouse, Rat ... Sr Prot). Refer to "ML (Multiple Labeling)" for further information.

Technical Information - Affinity-Purified Secondary Antibodies

The following abbreviations are used in the parentheses: **min x** = minimal cross-reaction, **Bov** = Bovine, **Ck** = Chicken, **Gt** = Goat, **GP** = Guinea Pig, **Ar Hms** = Armenian Hamster, **Sy Hms** = Syrian Hamster, **Hrs** = Horse, **Hu** = Human, **Ms** = Mouse, **Rb** = Rabbit, **Shp** = Sheep, **Sw** = Swine, **Sr** = Serum, **Prot** = Protein.

ML (multiple labeling) Some antibodies are designated "ML" to emphasize their usefulness in multiple labeling in addition to single labeling. For further information see "Multiple Labeling (ML) Using Labeled Secondary Antibodies" below.

Anti-Armenian Hamster IgG vs. Anti-Syrian Hamster IgG

Most hamster *monoclonal* antibodies are derived from Armenian hamster spleen cell-mouse myeloma hybridomas. The IgG produced by these hybridomas is Armenian (not Syrian) hamster IgG. Most commercially available *polyclonal* anti-hamster IgG antibodies have been anti-Syrian hamster IgG, which are not as effective as anti-Armenian hamster IgG in detecting Armenian hamster IgG monoclonal antibodies.

Caution: *Anti-Armenian Hamster IgG (H+L) (min X Bov, Hu, **Ms**, Rb, **Rat** Sr Prot) may not recognize all Armenian hamster monoclonal antibodies, since it has been adsorbed against closely related species (in bold). Therefore, it is better to use an anti-body adsorbed against fewer species, such as Anti-Armenian Hamster IgG (H+L) (min X Bov Sr Prot), except in those cases where Armenian hamster monoclonals need to be detected in the presence of mouse and/or rat immunoglobulins.*

Step 5. Select the desired probe from those listed at the top of the table.

For technical information about probes, see "Technical Information on Probes Conjugated to Affinity-Purified Antibodies and to Other Proteins" (page 5).

Step 6. Find the price, size, and code number of the selected antibody by following the row until it intersects the column of the desired probe.

The top numbers in each cell refer to the price per unit size, and the bottom nine-digit number is the catalog code number.

Step 7. Complete product description for ordering purposes.

For a complete description of the product, please use the following format to avoid mistakes when placing an order. For example, a product with the code number 115-096-072 should be described as follows:

FITC-conjugated (A) AffiniPure (B) $F(ab')_2$ fragment (C) Goat (D) Anti-Mouse (E) IgG, $F(ab')_2$ fragment specific (F) (min X Hu, Bov, Hrs Sr Prot) (G)

A. Description of the probe, if it is conjugated. If unconjugated, nothing is required here.
B. AffiniPure is our trade name for antibodies which have been isolated from antisera by immunoaffinity chromatography using antigens coupled to agarose beads.
C. Form of the antibody – whole IgG, $F(ab')_2$ fragment, or Fab fragment antibodies.
D. Name of the host species of the secondary antibody.
E. Name of the species with which the antibody reacts.
F. Description of the antibody specificity.
G. List of species against which the antibody has been adsorbed to minimize cross-reactivity.

Multiple Labeling (ML) Using Labeled Secondary Antibodies

Selection of antibodies for simultaneous detection of more than one antigen depends on at least two important criteria: 1. Availability of secondary antibodies that do not recognize (a) one another (are derived from the same host species), (b) other primary antibodies used in the assay system, (c) immunoglobulins from other species present in the assay system, or (d) endogenous immunoglobulins present in the tissues or cells under investigation. 2. Use of probes (enzyme-reaction products, fluorophores, or electron-dense particles) that are well resolved.

The affinity-purified antibodies marked ML (multiple labeling) have been specifically prepared to meet these criteria. One of many possible multiple-labeling protocols using these reagents is shown in the following example.

Mouse Tissue Antigen A	Mouse Tissue Antigen B	Mouse Tissue Antigen C
Step 1: 5% N. Donkey Serum to Block	**Step 4:** 5% N. Donkey Serum to Block (if needed)	**Step 7:** 5% N. Donkey Serum to Block (if needed)
Step 2: Goat Anti-Antigen A	**Step 5:** Rabbit Anti-Antigen B	**Step 8:** Rat Anti-Antigen C
Step 3: Probe I-conjugated Donkey Anti-Goat IgG (H+L)(min X Ck, GP, Sy Hms, Hrs, Hu, Ms, Rb, Rat Sr Prot)	**Step 6:** Probe II-conjugated Donkey Anti-Rabbit IgG (H+L) (min X Bov, Ck, Gt, GP, Sy Hms, Hrs, Hu, Ms, Rat, Shp Sr Prot)	**Step 9:** Probe III-conjugated Donkey Anti-Rat IgG (H+L)(min X Bov, Ck, Gt, GP, Sy Hms, Hrs, Hu, Ms, Rb, Shp Sr Prot)

Note: Wash thoroughly after each step, including after blocking at step 1. With heavy or persistent background further blocking may be required at Steps 4 and 7. Do not dilute any antibody with normal serum or mix antibodies together to save time.

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In this example, the secondary antibodies used in Steps 3, 6, and 9 do not recognize each other since they are all made in donkey. They have been solid-phase adsorbed so that they do not recognize the other primary antibodies used in Steps 2, 5, and 8. Also, they do not react with endogenous mouse Ig, which may be present in the mouse tissue. For a review of multi-color immunofluorescence labeling with confocal microscopy see Brelje, Wessendorf, and Sorenson, "Multi-color laser scanning confocal immunofluorescence microscopy: Practical application and limitations." In Cell Biological Applications of Confocal Microscopy (Methods in Cell Biology. vol. 38). Ed. B. Matsumoto. Orlando, FL: Academic Press, Inc. 1993, pp. 98-181.

Technical Information on Probes Conjugated to Affinity-Purified Antibodies and to Other Proteins.

Fluorophores (for Phycoerythrin, PerCP, and Allophycocyanin, see page 28)

Selection of fluorophores depends on:

A. Instrument set-up. Examples include availability of light sources, filter sets, and detection systems.

B. Degree of color separation desired for multiple labeling. For example, to achieve good color separation from DyLight 488, choose a longer wavelength-emitting fluorophore such as RRX, DyLight 594, or DyLight 649, rather than DyLight 549.

C. Sensitivity required. For example, DyLight 488 is brighter than FITC.

DyLight Fluorescent Dyes

DyLight fluorescent dyes are a new family of dyes with improved brightness and photostability. They are better than or comparable to the best fluorescent dyes from other companies. The detection level of any fluorophore-antibody conjugate depends on brightness and photostability of the dye; antibody activity, specificity, and cross-reactivity; and the optimal moles of dye per antibody. These parameters have been considered for each dye to optimize the level of antibody detection and minimize background. DyLight fluorescent dyes are highly water soluble and remain fluorescent from pH 4 to pH 9.

The following five DyLight fluorescent dyes (Figure 2) are currently available from JIR. They cover the most commonly used excitation sources and filter sets from blue to far-red emissions.

DyLight 405-conjugated antibodies absorb light maximally around 400 nm and fluoresce with a peak around 421 nm (Figure 2 and Table 1). They are very bright and photostable, but their use is limited to confocal microscopes equipped with a 405 nm laser and appropriate emission filter.

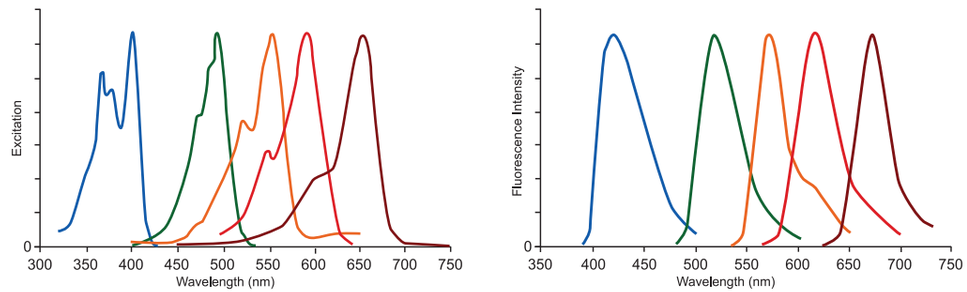
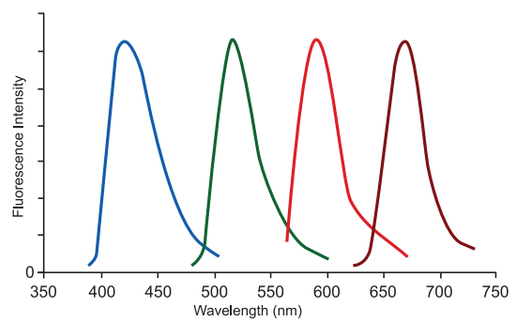


Figure 2. Excitation (left) and emission (right) spectra of DyLight fluorescent dyes conjugated to affinity-purified secondary antibodies. The dyes are DyLight 405 (blue), DyLight 488 (green), DyLight 549 (orange), DyLight 594 (red), and DyLight 649 (brown). This figure illustrates the relative shape and position of each fluorophore in the peak region of its excitation and emission following conjugation to antibodies. Quantitative comparisons should not be made since peak heights have been normalized. All spectra were obtained with an M-Series spectrofluorometer system from Photon Technology International, Inc.

Using appropriate instrumentation, it is possible to perform effective 4-color imaging with good color separation, good photostability, and high sensitivity in both aqueous and permanent mounting media. The combination of DyLight 405, DyLight 488, Rhodamine Red-X, and DyLight 649 provides for maximum color separation (Figure 3).

Figure 3. Emission spectra of DyLight 405 (blue), DyLight 488 (green), Rhodamine Red-X (RRX) (red), and DyLight 649 (brown). This figure illustrates the relative shape and position of each fluorophore emission peak following conjugation to antibodies. It shows that effective 4-color imaging can be performed with maximum color separation using these dyes. Quantitative comparisons should not be made since peak heights have been normalized. All spectra were obtained with an M-Series spectrofluorometer system from Photon Technology International, Inc.



Other 4-color dye combinations, which may be equally effective but have less color separation, include DyLight 405, DyLight 488, DyLight 549 (or Cy3), and DyLight 649.

DyLight 405 is not recommended for use in epifluorescence microscopes, nor is it recommended for flow cytometry, because emission filters generally used in flow cytometers are not optimal for DyLight 405.

DyLight 488-conjugated antibodies absorb light maximally around 493 nm and fluoresce with a peak around 518 nm (Figure 2 and Table 1). They are brighter than Cy2 and FITC conjugates and similar in brightness to Alexa Fluor 488 conjugates and may give

less background. DyLight 488 conjugates fade less than FITC and Cy2 conjugates in mounting media without anti-fading agents, indicating that the DyLight 488 molecule is inherently more photostable in epifluorescence microscopes. Anti-fading agents added to mounting media do not increase its photostability.

DyLight 488 conjugated to secondary antibodies is recommended for maximum sensitivity for all immunofluorescence procedures requiring a green-fluorescing dye.

DyLight 549-conjugated antibodies absorb light maximally around 555 nm and fluoresce with a peak around 568 nm (Figure 2). They are brighter than TRITC conjugates, and they are about equal in brightness to Cy3 and Alexa Fluor 555. DyLight 549 conjugates are about as photostable as Alexa Fluor 555 conjugates and slightly more photostable than Cy3 conjugates when mounted in PBS-90% glycerol without anti-fading agents. Increased photostability may be achieved for all three conjugates by mounting in anti-fading media such as ProLong Gold, VECTASHIELD, or PBS-glycerol containing n-propyl gallate.

DyLight 549- and Cy3-conjugated secondary antibodies are recommended for maximum sensitivity in all immunofluorescence detection procedures within the orange-red portion of the visible spectrum.

DyLight 594-conjugated antibodies absorb light maximally around 591 nm and fluoresce with a peak around 616 nm (Figure 2). They are noticeably brighter than Alexa Fluor 594 conjugates, and they are much brighter and more water soluble than Texas Red conjugates.

DyLight 594 conjugates are more photostable than Texas Red and about the same as Alexa Fluor 594 when mounted in ProLong Gold mounting medium. DyLight 594 and Alexa Fluor 594 conjugates were less photostable than Texas Red in VECTASHIELD, whereas DyLight 594 conjugates were slightly more photostable than the others in PBS-90% glycerol containing n-propyl gallate.

DyLight 594-conjugated secondary antibodies are brighter than other red-fluorescing dye conjugates, and they provide more color separation from green-fluorescing dyes than DyLight 549, Cy3, or TRITC conjugates. They are the best choice for immunofluorescence detection in the deep red region of the visible spectrum.

DyLight 649-conjugated antibodies absorb light maximally around 652 nm and fluoresce maximally around 670 nm (Figure 2). They are brighter than Cy5 and Alexa Fluor 647 conjugates. DyLight 649- and APC-conjugated secondary antibodies are the best choice for flow cytometry when secondary antibodies fluorescing at these wavelengths are desired. DyLight 649 conjugates are the best choice for far red-emitting dyes for multiple-labeling detection with a confocal microscope.

A significant advantage of using DyLight 649 over lower wavelength-emitting fluorophores is the low autofluorescence of biological specimens in this region of the spectrum. However, because of its emission at 670 nm, DyLight 649 cannot be seen well by eye, and it cannot be excited optimally with a mercury lamp. Therefore, DyLight 649 is not recommended for use with conventional epifluorescent microscopes. It is most commonly visualized with a confocal microscope equipped with an appropriate laser for excitation and a far-red detector. DyLight 649 conjugates are a less expensive and equally bright alternative to allophycocyanin conjugates for flow cytometry.

Aminomethylcoumarin Acetate (AMCA)

AMCA conjugates absorb light maximally around 350 nm and fluoresce maximally around 450 nm (Table 1 and Figure 4). For fluorescence microscopy, AMCA can be excited with a mercury lamp and observed using a UV filter set. Since blue fluorescence is not well detected by the human eye, AMCA-conjugated secondary antibodies should be used only with the most abundant antigens in multiple-labeling experiments. Ways of improving the visibility of AMCA include dark adapting the eyes, using fluorite instead of glass objectives, avoiding mounting media that absorb UV light (such as plastic-based media), and capturing photographic images with blue-sensitive film or CCD cameras. AMCA fades rapidly in conventional epifluorescence and confocal microscopy, and therefore it should be used with mounting media containing an anti-fading agent such as n-propyl gallate.

For flow cytometry, AMCA can be excited with a mercury lamp, or with a water-cooled argon ion laser which emits some lines in the UV. AMCA has been used mostly for multiple labeling since there is minimal fluorescence overlap with green-fluorescing dyes and little or no overlap with longer wavelength-emitting fluorophores. Applications for multiple labeling with this probe include both immunofluorescence microscopy and flow cytometry. AMCA is not suggested for single labeling in one-photon microscopy because of its relatively weak signal and rapid fading. However, AMCA has been found to be a bright and photostable dye for 2-photon microscopy.

Fluorescein Isothiocyanate (FITC)

FITC is the form of fluorescein used for conjugation to all of our antibodies and purified proteins, with the exception of streptavidin. Fluorescein conjugates absorb light maximally at 492 nm and fluoresce maximally at 520 nm (Table 1 and Figure 4). FITC is still a widely used fluorophore due to its long history. The major disadvantage of fluorescein is its rapid photobleaching (fading), which can be mitigated by the use of an anti-fading agent in the mounting medium.

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DTAF (Dichlorotriazinylamino fluorescein) is another form of fluorescein, with excitation and emission peaks identical to those of FITC. JIR uses DTAF (instead of FITC) only for conjugation with streptavidin, since fluorescence from FITC is greatly quenched after conjugation with streptavidin. This phenomenon is unique to streptavidin, and is not observed with antibodies.

Cyanine dyes (Cy2, Cy3, and Cy5)

Cy2 conjugates are available while inventory lasts, but they are no longer listed in this catalog. Please visit www.jacksonimmuno.com for availability. Cy2 conjugates have maximum absorption/excitation at 492 nm and fluoresce at 510 nm in the green region of the visible spectrum (Table 1 and Figure 4) like FITC (520 nm), but they are more photostable, less sensitive to pH changes, and more fluorescent in organic mounting media than FITC. However, we now recommend DyLight 488 as the preferred green-fluorescing dye because it is brighter and more photostable than Cy2 and FITC. The same filters used for Cy2 and FITC are appropriate for use with DyLight 488. A further disadvantage of Cy2 is its sensitivity to p-phenylenediamine, an anti-fading agent found in some commercial mounting media, which results in weak and diffused fluorescence after storage of stained slides.

Fluorophore	Absorption Peak (nm)	Emission Peak (nm)
DyLight 405	**400**	**421**
Aminomethylcoumarin, AMCA	350	450
Cyanine, Cy2	492	510
DyLight 488	**493**	**518**
Fluorescein, FITC/DTAF	492	520
DyLight 549	**555**	**568**
Indocarbocyanine, Cy3	550	570
Tetramethyl Rhodamine, TRITC	550	570
Rhodamine Red-X, RRX	570	590
DyLight 594	**591**	**616**
Texas Red, TR	596	620
Indodicarbocyanine, Cy5	650	670
DyLight 649	**652**	**670**

Table 1. Approximate peak wavelengths of absorption and emission for different fluorophore-conjugated, affinity-purified antibodies. Approximate values are given for purposes of comparing one fluorophore with another. Actual values may vary depending on the spectrofluorometer used in each laboratory.

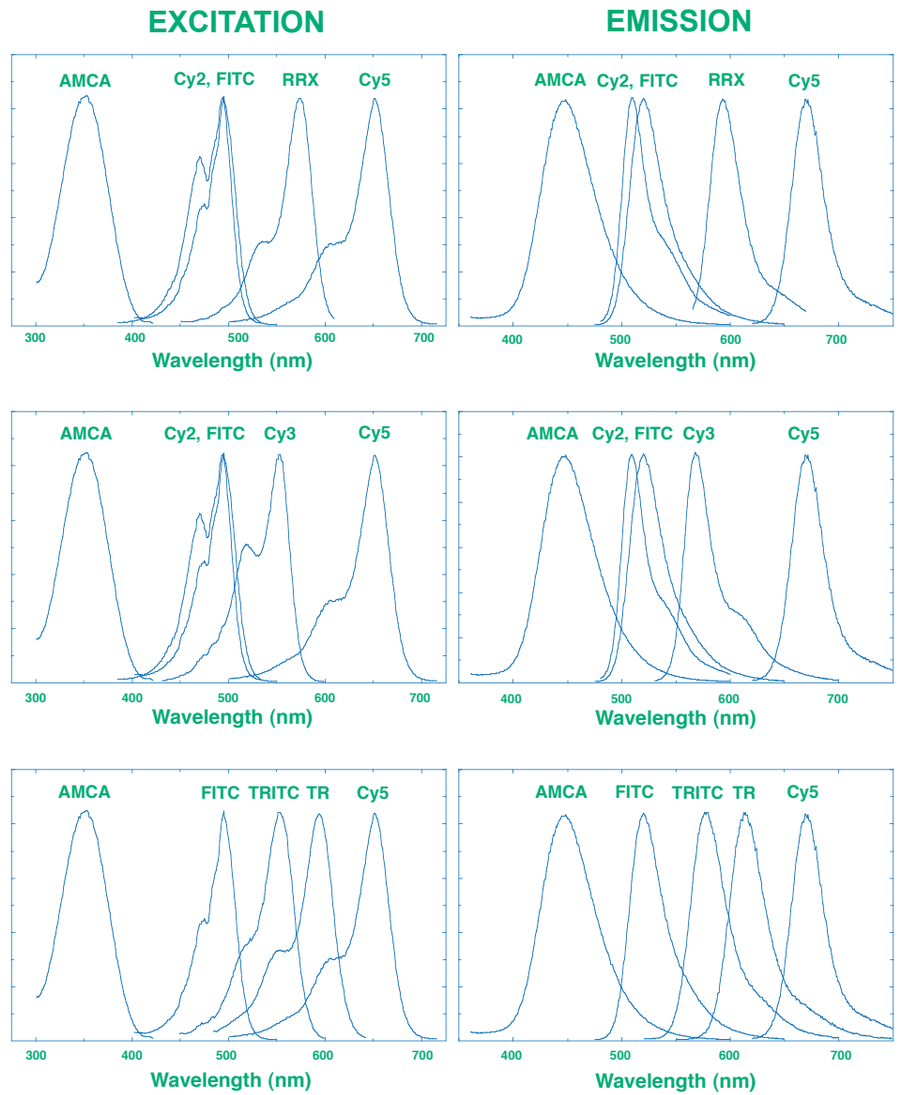

Figure 4. Excitation and emission spectra of different fluorophore conjugated, affinity-purified antibodies. This figure illustrates only the relative shape and position of each fluorophore excitation or emission peak following conjugation to antibodies. Quantitative comparisons should not be made since peak heights have been normalized. For comparison, see DyLight-antibody spectra in Figure 2. All spectra were obtained with an M-Series spectrofluorometer system from Photon Technology International, Inc.

Cy3 is brighter, more photostable, and gives less background than TRITC and most other fluorophores, with the exception of DyLight 549, which is as bright and somewhat more photostable. Cy3 conjugates can be excited maximally at 550 nm, with peak emission at 570 nm (Table 1 and Figure 4). For fluorescence microscopy, Cy3 can be visualized with traditional tetramethyl rhodamine (TRITC) filter sets since the excitation and emission spectra (Figure 4) are nearly identical to those of TRITC. Cy3 can be excited to about 50% of maximum with an argon laser (514 nm or 528 nm lines), or to about 75% of maximum with a helium/neon laser (543 nm line) or mercury lamp (546 nm line). Cy3 has been used with fluorescein for double labeling. However, the use of a narrow band-pass emission filter for fluorescein is recommended to minimize Cy3 fluorescence in the FITC filter set. Cy3 can also be paired with Cy5 for multiple labeling when using a confocal microscope.

Cy5 conjugates are not listed in this catalog but are available while inventory lasts at www.jacksonimmuno.com. Cy5 conjugates are excited maximally at 650 nm and fluoresce maximally at 670 nm (Table 1 and Figure 4). They can be excited to about 98% of maximum with a krypton/argon laser (647 nm line) or to about 63% of maximum with a helium/neon laser (633 nm line). Cy5 can be used with a variety of other fluorophores for multiple labeling due to a wide separation of its emission from that of shorter wavelength-emitting fluorophores. However, we now recommend DyLight 649 as the preferred far-red-fluorescing dye because it is brighter than Cy5.

Although anti-fading agents usually are not required when visualizing cyanine dye conjugates in an epifluorescence microscope, anti-fading agents should be added to aqueous mounting media for confocal laser scanning microscopy. For specimens labeled with Cy2, avoid the use of mounting media containing p-phenylenediamine, since this anti-fading agent reacts with Cy2, resulting in weak and diffused fluorescence after storage of stained slides. Other anti-fading agents, such as n-propyl gallate, may be used for mounting cyanine dye-stained sections in aqueous media. Organic based mounting media, such as DPX or methyl salicylate, also may be used with cyanine dyes.

Tetramethyl Rhodamine Isothiocyanate (TRITC), Rhodamine Red-X (RRX), and Texas Red (TR)

TRITC and Texas Red conjugates are not listed in this catalog, but are available at www.jacksonimmuno.com. However, Texas Red conjugates will be discontinued after current inventory is sold out. Conjugates of these rhodamine derivatives have different excitation (550, 570, and 596 nm) and emission (570, 590, and 620 nm) maxima, respectively (Table 1 and Figure 4). Although TRITC has been used traditionally with FITC for double labeling, better color separation is achieved by using RRX or Texas Red. However, it has been reported that use of Texas Red may lead to higher background staining (Wessendorf and Brelje, Histochemistry. 1992. 98, 81). We now recommend DyLight 594 instead of Texas Red because it is brighter, more photostable, and more hydophilic than Texas Red. We also recommend DyLight 549 as a brighter alternative to TRITC.

Rhodamine Red-X is particularly useful for 3- and 4-color labeling with DyLight 405, DyLight 488, and DyLight 649 by using a confocal microscope equipped with a 405 nm laser and a krypton/argon laser. Fluorescence from RRX lies about midway between that of DyLight 488 and DyLight 649, and it shows little overlap with either dye (Figure 3). The krypton-argon laser emits lines at 488 nm, 568 nm, and 647 nm, which are optimal for exciting DyLight 488, RRX, and DyLight 649, respectively. By adding a 405 nm laser, four-color labeling is possible using DyLight 405-conjugated secondary antibodies from JIR (Figure 3).

Biotin-SP (long-spacer)

Biotin-SP is our trade name for biotin with a 6-atom spacer positioned between biotin and the protein to which it is conjugated. When Biotin-SP-conjugated antibodies are used in enzyme immunoassays, there is an increase in sensitivity compared to biotin-conjugated antibodies without a spacer. This is especially notable when Biotin-SP-conjugated antibodies are used with alkaline phosphatase-conjugated streptavidin. Apparently, the long spacer extends the biotin moiety away from the antibody surface, making it more accessible to binding sites on streptavidin.

Biotinylated antibodies require an additional reagent for visualization. We offer streptavidin and Mouse Anti-Biotin conjugated to fluorophores and enzymes.

Enzymes

Two different enzyme conjugates are offered: horseradish peroxidase (HRP) and alkaline phosphatase.

Horseradish peroxidase (HRP) conjugates are prepared by a modified Nakane and Kawaoi procedure (J. Histochem. Cytochem. 1974. 22, 1084). Peroxidase conjugates are commonly used for immunohistochemistry, Western blotting, and ELISA.

Affinity-purified anti-horseradish peroxidase and conjugates are available for detection of horseradish peroxidase antigen, or for signal amplification of HRP-containing reagents. For immunostaining of mammalian cells, an advantage of using anti-horseradish peroxidase is reduced background, since the antibody does not recognize the endogenous peroxidase-like enzymes found in those cells.

Alkaline phosphatase (from calf intestine) conjugates are prepared by a modified method of Avremeas et al., Scand. J. Immunol. 1978. 8 (Supple. 7), 7. Resulting conjugates contain heterogeneous, high molecular weight complexes. They are sensitive reagents for solid-phase immunoassays such as ELISA and Western blotting. Although alkaline phosphatase conjugates are sometimes used for immunohistochemistry, penetration into whole mount tissues may be limited by their large sizes.

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Whole IgG Affinity-Purified Antibodies

Antibody Description	Unconjugated	DyLight 405 A=400, E=421	DyLight 488 A=493, E=518	Fluorescein FITC A=492, E=520	DyLight 549 A=555, E=568	Cyanine Cy3 A=550, E=570	Rhodamine Red-X RRX A=570, E=590	DyLight 594 A=591, E=616	DyLight 649 A=652, E=670	Biotin-SP (long spacer)	Horseradish Peroxidase	Alkaline Phosphatase
Whole IgG ANTI-BOVINE* **												
Goat Anti-Bovine IgG (H+L)	2.0 mg 101-005-003	2.0 mg 101-475-003	2.0 mg 101-485-003	2.0 mg 101-095-003	2.0 mg 101-505-003	2.0 mg 101-165-003	2.0 mg 101-295-003	2.0 mg 101-515-003	2.0 mg 101-495-003	2.0 ml 101-065-003	2.0 ml 101-035-003	1.0 ml 101-055-003
Goat Anti-Bovine IgG (H+L) (min X Ar Hms, Hu, Ms, Rat Sr Prot) ML*	1.5 101-005-165	1.5 101-475-165	1.5 101-485-165	1.5 101-095-165	1.5 101-505-165	1.5 101-165-165	1.5 101-295-165	1.5 101-515-165	1.5 101-495-165	1.5 101-065-165	1.5 101-035-165	1.0 101-055-165
Rabbit Anti-Bovine IgG (H+L)	2.0 301-005-003	1.5 301-475-003	1.5 301-485-003	1.5 301-095-003	1.5 301-505-003	1.5 301-165-003	1.5 301-295-003	1.5 301-515-003	1.5 301-495-003	1.5 301-065-003	1.5 301-035-003	1.0 301-055-003
Whole IgG ANTI-CAT												
Goat Anti-Cat IgG (H+L)	2.0 mg 102-005-003	2.0 mg 102-475-003	2.0 mg 102-485-003	2.0 mg 102-095-003	2.0 mg 102-505-003	2.0 mg 102-165-003	2.0 mg 102-295-003	2.0 mg 102-515-003	2.0 mg 102-495-003	2.0 ml 102-065-003	2.0 ml 102-035-003	1.0 ml 102-055-003
Goat Anti-Cat IgG, Fc fragment specific	2.0 102-005-008	2.0 102-475-008	2.0 102-485-008	2.0 102-095-008	2.0 102-505-008	2.0 102-165-008	2.0 102-295-008	2.0 102-515-008	2.0 102-495-008	2.0 102-065-008	2.0 102-035-008	1.0 102-055-008
Goat Anti-Cat IgG, $F(ab')_2$ fragment specific	2.0 102-005-006	2.0 102-475-006	2.0 102-485-006	2.0 102-095-006	2.0 102-505-006	2.0 102-165-006	2.0 102-295-006	2.0 102-515-006	2.0 102-495-006	2.0 102-065-006	2.0 102-035-006	1.0 102-055-006
Whole IgG ANTI-CHICKEN												
Donkey Anti-Chicken IgY† (IgG) (H+L) (min X Bov, Gt, GP, Sy Hms, Hrs, Hu, Ms, Rb, Rat, Shp Sr Prot) ML*	1.0 mg 703-005-155	0.5 mg 703-475-155	0.5 mg 703-485-155	0.5 mg 703-095-155	0.5 mg 703-505-155	0.5 mg 703-165-155	0.5 mg 703-295-155	0.5 mg 703-515-155	0.5 mg 703-495-155	0.5 ml 703-065-155	0.5 ml 703-035-155	0.5 ml 703-055-155
Goat Anti-Chicken IgY† (IgG) (H+L) (min X Bov, Gt, GP, Sy Hms, Hrs, Hu, Ms, Rb, Rat, Shp Sr Prot) ML*	1.0 103-005-155	0.5 103-475-155	0.5 103-485-155	0.5 103-095-155	0.5 103-505-155	0.5 103-165-155	0.5 103-295-155	0.5 103-515-155	0.5 103-495-155	0.5 103-065-155	0.5 103-035-155	0.5 103-055-155
Rabbit Anti-Chicken IgY† (IgG) (H+L)	2.0 303-005-003	1.5 303-475-003	1.5 303-485-003	1.5 303-095-003	1.5 303-505-003	1.5 303-165-003	1.5 303-295-003	1.5 303-515-003	1.5 303-495-003	1.5 303-065-003	1.5 303-035-003	1.0 303-055-003
Rabbit Anti-Chicken IgY† (IgG), Fc fragment specific	2.0 303-005-008	1.5 303-475-008	1.5 303-485-008	1.5 303-095-008	1.5 303-505-008	1.5 303-165-008	1.5 303-295-008	1.5 303-515-008	1.5 303-495-008	1.5 303-065-008	1.5 303-035-008	1.0 303-055-008
Rabbit Anti-Chicken IgY† (IgG), $F(ab')_2$ fragment specific	2.0 303-005-006	1.5 303-475-006	1.5 303-485-006	1.5 303-095-006	1.5 303-505-006	1.5 303-165-006	1.5 303-295-006	1.5 303-515-006	1.5 303-495-006	1.5 303-065-006	1.5 303-035-006	1.0 303-055-006
Whole IgG ANTI-DOG												
Rabbit Anti-Dog IgG (H+L)	2.0 mg 304-005-003	1.5 mg 304-475-003	1.5 mg 304-485-003	1.5 mg 304-095-003	1.5 mg 304-505-003	1.5 mg 304-165-003	1.5 mg 304-295-003	1.5 mg 304-515-003	1.5 mg 304-495-003	1.5 ml 304-065-003	1.5 ml 304-035-003	1.0 ml 304-055-003

*** Warning: BSA and dry milk may contain IgG which will be recognized by this antibody. Use of BSA or dry milk to block or dilute this antibody may increase background and/or reduce secondary antibody titer.

* ML = Multiple Labeling (see Multiple Labeling on pages 4-5 for an explanation).

† IgY is the original designation for the IgG-like protein found in both serum and egg yolk.

Whole IgG Affinity-Purified Antibodies

Antibody Description	Unconjugated	DyLight 405 A=400, E=421	DyLight 488 A=493, E=518	Fluorescein FITC A=492, E=520	DyLight 549 A=555, E=568	Cyanine Cy3 A=550, E=570	Rhodamine Red-X RRX A=570, E=590	DyLight 594 A=591, E=616	DyLight 649 A=652, E=670	Biotin-SP (long spacer)	Horseradish Peroxidase	Alkaline Phosphatase
Whole IgG ANTI-DOG												
Rabbit Anti-Dog IgG, Fc fragment specific	2.0 mg 304-005-008	1.5 mg 304-475-008	1.5 mg 304-485-008	1.5 mg 304-095-008	1.5 mg 304-505-008	1.5 mg 304-165-008	1.5 mg 304-295-008	1.5 mg 304-515-008	1.5 mg 304-495-008	1.5 ml 304-065-008	1.5 ml 304-035-008	1.0 ml 304-055-008
Whole IgG ANTI-GOAT* **												
Bovine Anti-Goat IgG (H+L) ML* (min X Bov, Ck, GP, Sy Hms, Hrs, Hu, Ms, Rb, Rat Sr Prot)	1.0 mg 805-005-180	0.5 mg 805-475-180	0.5 mg 805-485-180	0.5 mg 805-095-180	0.5 mg 805-505-180	0.5 mg 805-165-180	0.5 mg 805-295-180	0.5 mg 805-515-180	0.5 mg 805-495-180	0.5 ml 805-065-180	0.5 ml 805-035-180	0.5 ml 805-055-180
Donkey Anti-Goat IgG (H+L)	1.0 705-005-003	1.0 705-475-003	1.0 705-485-003	1.0 705-095-003	1.0 705-505-003	1.0 705-165-003	1.0 705-295-003	1.0 705-515-003	1.0 705-495-003	1.0 705-065-003	1.0 705-035-003	1.0 705-055-003
Donkey Anti-Goat IgG (H+L) ML* (min X Ck, GP, Sy Hms, Hrs, Hu, Ms, Rb, Rat Sr Prot)	1.0 705-005-147	0.5 705-475-147	0.5 705-485-147	0.5 705-095-147	0.5 705-505-147	0.5 705-165-147	0.5 705-295-147	0.5 705-515-147	0.5 705-495-147	0.5 705-065-147	0.5 705-035-147	0.5 705-055-147
Mouse Anti-Goat IgG (H+L) ML* (min X Ms, Hu, Rb Sr Prot)	1.5 205-005-108	1.0 205-475-108	1.0 205-485-108	1.0 205-095-108	1.0 205-505-108	1.0 205-165-108	1.0 205-295-108	1.0 205-515-108	1.0 205-495-108	1.0 205-065-108	1.0 205-035-108	0.5 205-055-108
Rabbit Anti-Goat IgG (H+L)	2.0 305-005-003	1.5 305-475-003	1.5 305-485-003	1.5 305-095-003	1.5 305-505-003	1.5 305-165-003	1.5 305-295-003	1.5 305-515-003	1.5 305-495-003	1.5 305-065-003	1.5 305-035-003	1.0 305-055-003
Rabbit Anti-Goat IgG (H+L) (min X Hu Sr Prot)	1.5 305-005-045	1.0 305-475-045	1.0 305-485-045	1.0 305-095-045	1.0 305-505-045	1.0 305-165-045	1.0 305-295-045	1.0 305-515-045	1.0 305-495-045	1.0 305-065-045	1.0 305-035-045	0.5 305-055-045
Rabbit Anti-Goat IgG, Fc fragment specific	2.0 305-005-008	1.5 305-475-008	1.5 305-485-008	1.5 305-095-008	1.5 305-505-008	1.5 305-165-008	1.5 305-295-008	1.5 305-515-008	1.5 305-495-008	1.5 305-065-008	1.5 305-035-008	1.0 305-055-008
Rabbit Anti-Goat IgG, Fc fragment specific (min X Hu Sr Prot)	1.5 305-005-046	1.0 305-475-046	1.0 305-485-046	1.0 305-095-046	1.0 305-505-046	1.0 305-165-046	1.0 305-295-046	1.0 305-515-046	1.0 305-495-046	1.0 305-065-046	1.0 305-035-046	0.5 305-055-046
Rabbit Anti-Goat IgG, $F(ab')_2$ fragment specific	2.0 305-005-006	1.5 305-475-006	1.5 305-485-006	1.5 305-095-006	1.5 305-505-006	1.5 305-165-006	1.5 305-295-006	1.5 305-515-006	1.5 305-495-006	1.5 305-065-006	1.5 305-035-006	1.0 305-055-006
Rabbit Anti-Goat IgG, $F(ab')_2$ fragment specific (min X Hu Sr Prot)	1.5 305-005-047	1.0 305-475-047	1.0 305-485-047	1.0 305-095-047	1.0 305-505-047	1.0 305-165-047	1.0 305-295-047	1.0 305-515-047	1.0 305-495-047	1.0 305-065-047	1.0 305-035-047	0.5 305-055-047
Whole IgG ANTI-GUINEA PIG												
Donkey Anti-Guinea Pig IgG (H+L) ML* (min X Bov, Ck, Gt, Sy Hms, Hrs, Hu, Ms, Rb, Rat, Shp Sr Prot)	1.0 mg 706-005-148	0.5 mg 706-475-148	0.5 mg 706-485-148	0.5 mg 706-095-148	0.5 mg 706-505-148	0.5 mg 706-165-148	0.5 mg 706-295-148	0.5 mg 706-515-148	0.5 mg 706-495-148	0.5 ml 706-065-148	0.5 ml 706-035-148	0.5 ml 706-055-148
Goat Anti-Guinea Pig IgG (H+L)	2.0 106-005-003	2.0 106-475-003	2.0 106-485-003	2.0 106-095-003	2.0 106-505-003	2.0 106-165-003	2.0 106-295-003	2.0 106-515-003	2.0 106-495-003	2.0 106-065-003	2.0 106-035-003	1.0 106-055-003
Goat Anti-Guinea Pig IgG, Fc fragment specific	2.0 106-005-008	2.0 106-475-008	2.0 106-485-008	2.0 106-095-008	2.0 106-505-008	2.0 106-165-008	2.0 106-295-008	2.0 106-515-008	2.0 106-495-008	2.0 106-065-008	2.0 106-035-008	1.0 106-055-008
Goat Anti-Guinea Pig IgG, $F(ab')_2$ fragment specific	2.0 106-005-006	2.0 106-475-006	2.0 106-485-006	2.0 106-095-006	2.0 106-505-006	2.0 106-165-006	2.0 106-295-006	2.0 106-515-006	2.0 106-495-006	2.0 106-065-006	2.0 106-035-006	1.0 106-055-006

*** Warning: BSA and dry milk may contain IgG which will be recognized by this antibody. Use of BSA or dry milk to block or dilute this antibody may increase background and/or reduce secondary antibody titer.

* ML = Multiple Labeling (see Multiple Labeling on pages 4-5 for an explanation).

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Whole IgG Affinity-Purified Antibodies

Antibody Description	Unconjugated	DyLight 405 A=400, E=421	DyLight 488 A=493, E=518	Fluorescein FITC A=492, E=520	DyLight 549 A=555, E=568	Cyanine Cy3 A=550, E=570	Rhodamine Red-X RRX A=570, E=590	DyLight 594 A=591, E=616	DyLight 649 A=652, E=670	Biotin-SP (long spacer)	Horseradish Peroxidase	Alkaline Phosphatase
Whole IgG ANTI-HAMSTER (Armenian Hamster)												
Goat Anti-Armenian Hamster IgG (H+L) (min X Bov Sr Prot)	1.5 mg 127-005-099	1.5 mg 127-475-099	1.5 mg 127-485-099	1.5 mg 127-095-099	1.5 mg 127-505-099	1.5 mg 127-165-099	1.5 mg 127-295-099	1.5 mg 127-515-099	1.5 mg 127-495-099	1.5 ml 127-065-099	1.5 ml 127-035-099	1.0 ml 127-055-099
Goat Anti-Armenian Hamster IgG (H+L) (min X Bov, Hu, **Ms**, Rb, **Rat** Sr Prot)**	1.0 127-005-160	0.5 127-475-160	0.5 127-485-160	0.5 127-095-160	0.5 127-505-160	0.5 127-165-160	0.5 127-295-160	0.5 127-515-160	0.5 127-495-160	0.5 127-065-160	0.5 127-035-160	0.5 127-055-160
Whole IgG ANTI-HAMSTER (Syrian Hamster)												
Goat Anti-Syrian Hamster IgG (H+L) (min X Bov, Hrs, Hu, Ms, Rb, Rat Sr Prot)	1.0 mg 107-005-142	1.0 mg 107-475-142	1.0 mg 107-485-142	1.0 mg 107-095-142	1.0 mg 107-505-142	1.0 mg 107-165-142	1.0 mg 107-295-142	1.0 mg 107-515-142	1.0 mg 107-495-142	1.0 ml 107-065-142	1.0 ml 107-035-142	0.5 ml 107-055-142
Rabbit Anti-Syrian Hamster IgG (H+L)	2.0 307-005-003	1.5 307-475-003	1.5 307-485-003	1.5 307-095-003	1.5 307-505-003	1.5 307-165-003	1.5 307-295-003	1.5 307-515-003	1.5 307-495-003	1.5 307-065-003	1.5 307-035-003	1.0 307-055-003
Whole IgG ANTI-HORSE												
Goat Anti-Horse IgG (H+L)	2.0 mg 108-005-003	2.0 mg 108-475-003	2.0 mg 108-485-003	2.0 mg 108-095-003	2.0 mg 108-505-003	2.0 mg 108-165-003	2.0 mg 108-295-003	2.0 mg 108-515-003	2.0 mg 108-495-003	2.0 ml 108-065-003	2.0 ml 108-035-003	1.0 ml 108-055-003
Goat Anti-Horse IgG, Fc fragment specific	2.0 108-005-008	2.0 108-475-008	2.0 108-485-008	2.0 108-095-008	2.0 108-505-008	2.0 108-165-008	2.0 108-295-008	2.0 108-515-008	2.0 108-495-008	2.0 108-065-008	2.0 108-035-008	1.0 108-055-008
Rabbit Anti-Horse IgG (H+L)***	2.0 308-005-003	1.5 308-475-003	1.5 308-485-003	1.5 308-095-003	1.5 308-505-003	1.5 308-165-003	1.5 308-295-003	1.5 308-515-003	1.5 308-495-003	1.5 308-065-003	1.5 308-035-003	1.0 308-055-003
Whole IgG ANTI-HUMAN												
Donkey Anti-Human IgG (H+L) ML* (min X Bov, Ck, Gt, GP, Sy Hms, Hrs, Ms, Rb, Rat, Shp Sr Prot)	1.0 mg 709-005-149	0.5 mg 709-475-149	0.5 mg 709-485-149	0.5 mg 709-095-149	0.5 mg 709-505-149	0.5 mg 709-165-149	0.5 mg 709-295-149	0.5 mg 709-515-149	0.5 mg 709-495-149	0.5 ml 709-065-149	0.5 ml 709-035-149	0.5 ml 709-055-149
Donkey Anti-Human IgG, Fcγ fragment specific (min X Bov, Hrs, Ms Sr Prot)	1.0 709-005-098	1.0 709-475-098	1.0 709-485-098	1.0 709-095-098	1.0 709-505-098	1.0 709-165-098	1.0 709-295-098	1.0 709-515-098	1.0 709-495-098	1.0 709-065-098	1.0 709-035-098	1.0 709-055-098
Donkey Anti-Human IgM, $Fc_{5\mu}$ fragment specific (min X Bov, Hrs Sr Prot)	1.5 709-005-073	1.5 709-475-073	1.5 709-485-073	1.5 709-095-073	1.5 709-505-073	1.5 709-165-073	1.5 709-295-073	1.5 709-515-073	1.5 709-495-073	1.5 709-065-073	1.5 709-035-073	1.0 709-055-073
Goat Anti-Human IgG (H+L)	2.0 109-005-003	2.0 109-475-003	2.0 109-485-003	2.0 109-095-003	2.0 109-505-003	2.0 109-165-003	2.0 109-295-003	2.0 109-515-003	2.0 109-495-003	2.0 109-065-003	2.0 109-035-003	1.0 109-055-003

*** Warning: BSA and dry milk may contain IgG which will be recognized by this antibody. Use of BSA or dry milk to block or dilute this antibody may increase background and/or reduce secondary anitbody titer.
** Caution: See page 3 (min X … Sr Prot) before selecting an antibody adsorbed against closely related species.
* ML = Multiple Labeling (see Multiple Labeling on pages 4-5 for an explanation).

Whole IgG Affinity-Purified Antibodies

Antibody Description	Unconjugated	DyLight 405 A=400, E=421	DyLight 488 A=493, E=518	Fluorescein FITC A=492, E=520	DyLight 549 A=555, E=568	Cyanine Cy3 A=550, E=570	Rhodamine Red-X RRX A=570, E=590	DyLight 594 A=591, E=616	DyLight 649 A=652, E=670	Biotin-SP (long spacer)	Horseradish Peroxidase	Alkaline Phosphatase
***Whole IgG* ANTI-HUMAN**												
Goat Anti-Human IgG (H+L) (min X Bov, Hrs, Ms Sr Prot)	1.5 mg 109-005-088	1.5 mg 109-475-088	1.5 mg 109-485-088	1.5 mg 109-095-088	1.5 mg 109-505-088	1.5 mg 109-165-088	1.5 mg 109-295-088	1.5 mg 109-515-088	1.5 mg 109-495-088	1.5 ml 109-065-088	1.5 ml 109-035-088	1.0 ml 109-055-088
Goat Anti-Human IgG, Fcγ fragment specific	2.0 109-005-008	2.0 109-475-008	2.0 109-485-008	2.0 109-095-008	2.0 109-505-008	2.0 109-165-008	2.0 109-295-008	2.0 109-515-008	2.0 109-495-008	2.0 109-065-008	2.0 109-035-008	1.0 109-055-008
Goat Anti-Human IgG, Fcγ fragment specific (min X Bov, Hrs, Ms Sr Prot)	1.0 109-005-098	1.0 109-475-098	1.0 109-485-098	1.0 109-095-098	1.0 109-505-098	1.0 109-165-098	1.0 109-295-098	1.0 109-515-098	1.0 109-495-098	1.0 109-065-098	1.0 109-035-098	1.0 109-055-098
Goat Anti-Human IgG, $F(ab')_2$ fragment specific	2.0 109-005-006	2.0 109-475-006	2.0 109-485-006	2.0 109-095-006	2.0 109-505-006	2.0 109-165-006	2.0 109-295-006	2.0 109-515-006	2.0 109-495-006	2.0 109-065-006	2.0 109-035-006	1.0 109-055-006
Goat Anti-Human IgG, $F(ab')_2$ fragment specific (min X Bov, Hrs, Ms Sr Prot)	1.5 109-005-097	1.5 109-475-097	1.5 109-485-097	1.5 109-095-097	1.5 109-505-097	1.5 109-165-097	1.5 109-295-097	1.5 109-515-097	1.5 109-495-097	1.5 109-065-097	1.5 109-035-097	1.0 109-055-097
Goat Anti-Human IgG + IgM (H+L)	2.0 109-005-044	2.0 109-475-044	2.0 109-485-044	2.0 109-095-044	2.0 109-505-044	2.0 109-165-044	2.0 109-295-044	2.0 109-515-044	2.0 109-495-044	2.0 109-065-044	2.0 109-035-044	1.0 109-055-044
Goat Anti-Human IgG + IgM (H+L) (min X Bov Sr Prot)	1.5 109-005-127	1.5 109-475-127	1.5 109-485-127	1.5 109-095-127	1.5 109-505-127	1.5 109-165-127	1.5 109-295-127	1.5 109-515-127	1.5 109-495-127	1.5 109-065-127	1.5 109-035-127	1.0 109-055-127
Goat Anti-Human IgA + IgG + IgM (H+L)	2.0 109-005-064	2.0 109-475-064	2.0 109-485-064	2.0 109-095-064	2.0 109-505-064	2.0 109-165-064	2.0 109-295-064	2.0 109-515-064	2.0 109-495-064	2.0 109-065-064	2.0 109-035-064	1.0 109-055-064
Goat Anti-Human IgM, $Fc_{5\mu}$ fragment specific	2.0 109-005-043	2.0 109-475-043	2.0 109-485-043	2.0 109-095-043	2.0 109-505-043	2.0 109-165-043	2.0 109-295-043	2.0 109-515-043	2.0 109-495-043	2.0 109-065-043	2.0 109-035-043	1.0 109-055-043
Goat Anti-Human IgM, $Fc_{5\mu}$ fragment specific (min X Bov Sr Prot)	1.5 109-005-129	1.5 109-475-129	1.5 109-485-129	1.5 109-095-129	1.5 109-505-129	1.5 109-165-129	1.5 109-295-129	1.5 109-515-129	1.5 109-495-129	1.5 109-065-129	1.5 109-035-129	1.0 109-055-129
Goat Anti-Human Serum IgA, α chain specific	2.0 109-005-011	2.0 109-475-011	2.0 109-485-011	2.0 109-095-011	2.0 109-505-011	2.0 109-165-011	2.0 109-295-011	2.0 109-515-011	2.0 109-495-011	2.0 109-065-011	2.0 109-035-011	1.0 109-055-011
Mouse Anti-Human IgG (H+L) (min X Ms Sr Prot)	2.0 209-005-082	1.5 209-475-082	1.5 209-485-082	1.5 209-095-082	1.5 209-505-082	1.5 209-165-082	1.5 209-295-082	1.5 209-515-082	1.5 209-495-082	1.5 209-065-082	1.5 209-035-082	1.0 209-055-082
Mouse Anti-Human IgG (H+L) (min X Bov, Hrs, Ms Sr Prot)	1.5 209-005-088	1.0 209-475-088	1.0 209-485-088	1.0 209-095-088	1.0 209-505-088	1.0 209-165-088	1.0 209-295-088	1.0 209-515-088	1.0 209-495-088	1.0 209-065-088	1.0 209-035-088	0.5 209-055-088
Mouse Anti-Human IgG, Fcγ fragment specific (min X Bov, Hrs, Ms Sr Prot)	1.5 209-005-098	1.0 209-475-098	1.0 209-485-098	1.0 209-095-098	1.0 209-505-098	1.0 209-165-098	1.0 209-295-098	1.0 209-515-098	1.0 209-495-098	1.0 209-065-098	1.0 209-035-098	0.5 209-055-098
Mouse Anti-Human IgG, $F(ab')_2$ fragment specific (min X Bov, Hrs, Ms Sr Prot)	1.5 209-005-097	1.0 209-475-097	1.0 209-485-097	1.0 209-095-097	1.0 209-505-097	1.0 209-165-097	1.0 209-295-097	1.0 209-515-097	1.0 209-495-097	1.0 209-065-097	1.0 209-035-097	0.5 209-055-097

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Whole IgG Affinity-Purified Antibodies

Antibody Description	Unconjugated	DyLight 405 A=400, E=421	DyLight 488 A=493, E=518	Fluorescein FITC A=492, E=520	DyLight 549 A=555, E=568	Cyanine Cy3 A=550, E=570	Rhodamine Red-X RRX A=570, E=590	DyLight 594 A=591, E=616	DyLight 649 A=652, E=670	Biotin-SP (long spacer)	Horseradish Peroxidase	Alkaline Phosphatase
Whole IgG ANTI-HUMAN												
Rabbit Anti-Human IgG (H+L)	2.0 mg 309-005-003	1.5 mg 309-475-003	1.5 mg 309-485-003	1.5 mg 309-095-003	1.5 mg 309-505-003	1.5 mg 309-165-003	1.5 mg 309-295-003	1.5 mg 309-515-003	1.5 mg 309-495-003	1.5 ml 309-065-003	1.5 ml 309-035-003	1.0 ml 309-055-003
Rabbit Anti-Human IgG (H+L) (min X Ms Sr Prot)	1.5 309-005-082	1.0 309-475-082	1.0 309-485-082	1.0 309-095-082	1.0 309-505-082	1.0 309-165-082	1.0 309-295-082	1.0 309-515-082	1.0 309-495-082	1.0 309-065-082	1.0 309-035-082	0.5 309-055-082
Rabbit Anti-Human IgG, Fcγ fragment specific	2.0 309-005-008	1.5 309-475-008	1.5 309-485-008	1.5 309-095-008	1.5 309-505-008	1.5 309-165-008	1.5 309-295-008	1.5 309-515-008	1.5 309-495-008	1.5 309-065-008	1.5 309-035-008	1.0 309-055-008
Rabbit Anti-Human IgG, $F(ab')_2$ fragment specific	2.0 309-005-006	1.5 309-475-006	1.5 309-485-006	1.5 309-095-006	1.5 309-505-006	1.5 309-165-006	1.5 309-295-006	1.5 309-515-006	1.5 309-495-006	1.5 309-065-006	1.5 309-035-006	1.0 309-055-006
Rabbit Anti-Human IgG + IgM (H+L) (min X Ms Sr Prot)	1.5 309-005-107	1.0 309-475-107	1.0 309-485-107	1.0 309-095-107	1.0 309-505-107	1.0 309-165-107	1.0 309-295-107	1.0 309-515-107	1.0 309-495-107	1.0 309-065-107	1.0 309-035-107	0.5 309-055-107
Rabbit Anti-Human IgA + IgG + IgM (H+L)	2.0 309-005-064	1.5 309-475-064	1.5 309-485-064	1.5 309-095-064	1.5 309-505-064	1.5 309-165-064	1.5 309-295-064	1.5 309-515-064	1.5 309-495-064	1.5 309-065-064	1.5 309-035-064	1.0 309-055-064
Rabbit Anti-Human IgM, $Fc_{5\mu}$ fragment specific (min X Ms Sr Prot)	1.5 309-005-095	1.0 309-475-095	1.0 309-485-095	1.0 309-095-095	1.0 309-505-095	1.0 309-165-095	1.0 309-295-095	1.0 309-515-095	1.0 309-495-095	1.0 309-065-095	1.0 309-035-095	0.5 309-055-095
Rabbit Anti-Human Serum IgA, α chain specific	2.0 309-005-011	1.5 309-475-011	1.5 309-485-011	1.5 309-095-011	1.5 309-505-011	1.5 309-165-011	1.5 309-295-011	1.5 309-515-011	1.5 309-495-011	1.5 309-065-011	1.5 309-035-011	1.0 309-055-011
Rabbit Anti-Human Lactoferrin	2.0 309-005-015	1.5 309-475-015	1.5 309-485-015	1.5 309-095-015	1.5 309-505-015	1.5 309-165-015	1.5 309-295-015	1.5 309-515-015	1.5 309-495-015	1.5 309-065-015	1.5 309-035-015	1.0 309-055-015
Whole IgG ANTI-MOUSE												
Donkey Anti-Mouse IgG (H+L) ML* (min X Bov, Ck, Gt, GP, Sy Hms, Hrs, Hu, Rb, Shp Sr Prot)	1.0 mg 715-005-150	0.5 mg 715-475-150	0.5 mg 715-485-150	0.5 mg 715-095-150	0.5 mg 715-505-150	0.5 mg 715-165-150	0.5 mg 715-295-150	0.5mg 715-515-150	0.5 mg 715-495-150	0.5 ml 715-065-150	0.5 ml 715-035-150	0.5 ml 715-055-150
Donkey Anti-Mouse IgG (H+L) ML* (min X Bov, Ck, Gt, GP, Sy Hms, Hrs, Hu, Rb, **Rat**, Shp Sr Prot)**	1.0 715-005-151	0.5 715-475-151	0.5 715-485-151	0.5 715-095-151	0.5 715-505-151	0.5 715-165-151	0.5 715-295-151	0.5 715-515-151	0.5 715-495-151	0.5 715-065-151	0.5 715-035-151	0.5 715-055-151
Donkey Anti-Mouse IgM, μ chain specific	2.0 715-005-020	2.0 715-475-020	2.0 715-485-020	2.0 715-095-020	2.0 715-505-020	2.0 715-165-020	2.0 715-295-020	2.0 715-515-020	2.0 715-495-020	2.0 715-065-020	2.0 715-035-020	1.0 715-055-020
Donkey Anti-Mouse IgM, μ chain specific (min X Hu, Bov, Hrs, **Rat** Sr Prot)**	1.0 715-005-140	0.5 715-475-140	0.5 715-485-140	0.5 715-095-140	0.5 715-505-140	0.5 715-165-140	0.5 715-295-140	0.5 715-515-140	0.5 715-495-140	0.5 715-065-140	0.5 715-035-140	0.5 715-055-140
Goat Anti-Mouse IgG (H+L)	2.0 115-005-003	2.0 115-475-003	2.0 115-485-003	2.0 115-095-003	2.0 115-505-003	2.0 115-165-003	2.0 115-295-003	2.0 115-515-003	2.0 115-495-003	2.0 115-065-003	2.0 115-035-003	1.0 115-055-003

** Caution: See page 3 (min X … Sr Prot) before selecting an antibody adsorbed against closely related species.

* ML = Multiple Labeling (see Multiple Labeling on pages 4-5 for an explanation).

Whole IgG Affinity-Purified Antibodies

Antibody Description	Unconjugated	DyLight 405 A=400, E=421	DyLight 488 A=493, E=518	Fluorescein FITC A=492, E=520	DyLight 549 A=555, E=568	Cyanine Cy3 A=550, E=570	Rhodamine Red-X RRX A=570, E=590	DyLight 594 A=591, E=616	DyLight 649 A=652, E=670	Biotin-SP (long spacer)	Horseradish Peroxidase	Alkaline Phosphatase
***Whole IgG* ANTI-MOUSE**												
Goat Anti-Mouse IgG (H+L) (min X Hu, Bov, Hrs Sr Prot)	1.5 mg 115-005-062	1.5 mg 115-475-062	1.5 mg 115-485-062	1.5 mg 115-095-062	1.5 mg 115-505-062	1.5 mg 115-165-062	1.5 mg 115-295-062	1.5 mg 115-515-062	1.5 mg 115-495-062	1.5 ml 115-065-062	1.5 ml 115-035-062	1.0 ml 115-055-062
Goat Anti-Mouse IgG (H+L) ML* (min X Hu, Bov, Hrs, Rb, Sw Sr Prot)	1.5 115-005-146	1.5 115-475-146	1.5 115-485-146	1.5 115-095-146	1.5 115-505-146	1.5 115-165-146	1.5 115-295-146	1.5 115-515-146	1.5 115-495-146	1.5 115-065-146	1.5 115-035-146	1.0 115-055-146
Goat Anti-Mouse IgG (H+L) ML* (min X **Rat**, Hu, Bov, Hrs, Rb Sr Prot)**	1.0 115-005-166	0.5 115-475-166	0.5 115-485-166	0.5 115-095-166	0.5 115-505-166	0.5 115-165-166	0.5 115-295-166	0.5 115-515-166	0.5 115-495-166	0.5 115-065-166	0.5 115-035-166	0.5 115-055-166
Goat Anti-Mouse IgG, Fcγ fragment specific ML*	2.0 115-005-008	2.0 115-475-008	2.0 115-485-008	2.0 115-095-008	2.0 115-505-008	2.0 115-165-008	2.0 115-295-008	2.0 115-515-008	2.0 115-495-008	2.0 115-065-008	2.0 115-035-008	1.0 115-055-008
Goat Anti-Mouse IgG, Fcγ fragment specific (min X Hu, Bov, Hrs Sr Prot) ML*	1.5 115-005-071	1.5 115-475-071	1.5 115-485-071	1.5 115-095-071	1.5 115-505-071	1.5 115-165-071	1.5 115-295-071	1.5 115-515-071	1.5 115-495-071	1.5 115-065-071	1.5 115-035-071	1.0 115-055-071
Goat Anti-Mouse IgG, Fcγ Subclass 1 specific (min X Hu, Bov, Rb Sr Prot) ML*	1.0 115-005-205	0.5 115-475-205	0.5 115-485-205	0.5 115-095-205	0.5 115-505-205	0.5 115-165-205	0.5 115-295-205	0.5 115-515-205	0.5 115-495-205	0.5 115-065-205	0.5 115-035-205	0.5 115-055-205
Goat Anti-Mouse IgG, Fcγ Subclass 2a specific (min X Hu, Bov, Rb Sr Prot) ML*	1.0 115-005-206	0.5 115-475-206	0.5 115-485-206	0.5 115-095-206	0.5 115-505-206	0.5 115-165-206	0.5 115-295-206	0.5 115-515-206	0.5 115-495-206	0.5 115-065-206	0.5 115-035-206	0.5 115-055-206
Goat Anti-Mouse IgG, Fcγ Subclass 2b specific (min X Hu, Bov, Rb Sr Prot) ML*	1.0 115-005-207	0.5 115-475-207	0.5 115-485-207	0.5 115-095-207	0.5 115-505-207	0.5 115-165-207	0.5 115-295-207	0.5 115-515-207	0.5 115-495-207	0.5 115-065-207	0.5 115-035-207	0.5 115-055-207
Goat Anti-Mouse IgG, Fcγ Subclass 2c specific (min X Hu, Bov, Rb Sr Prot) ML*	1.0 115-005-208	0.5 115-475-208	0.5 115-485-208	0.5 115-095-208	0.5 115-505-208	0.5 115-165-208	0.5 115-295-208	0.5 115-515-208	0.5 115-495-208	0.5 115-065-208	0.5 115-035-208	0.5 115-055-208
Goat Anti-Mouse IgG, Fcγ Subclass 3 specific (min X Hu, Bov, Rb Sr Prot) ML*	1.0 115-005-209	0.5 115-475-209	0.5 115-485-209	0.5 115-095-209	0.5 115-505-209	0.5 115-165-209	0.5 115-295-209	0.5 115-515-209	0.5 115-495-209	0.5 115-065-209	0.5 115-035-209	0.5 115-055-209
Goat Anti-Mouse IgG (subclasses 1+2a+ 2b+3) Fcγ fragment specific (min X Hu, Bov, Rb Sr Prot) ML*	1.0 115-005-164	1.0 115-475-164	1.0 115-485-164	1.0 115-095-164	1.0 115-505-164	1.0 115-165-164	1.0 115-295-164	1.0 115-515-164	1.0 115-495-164	1.0 115-065-164	1.0 115-035-164	0.5 115-055-164
Goat Anti-Mouse IgG, $F(ab')_2$ fragment specific	2.0 115-005-006	2.0 115-475-006	2.0 115-485-006	2.0 115-095-006	2.0 115-505-006	2.0 115-165-006	2.0 115-295-006	2.0 115-515-006	2.0 115-495-006	2.0 115-065-006	2.0 115-035-006	1.0 115-055-006
Goat Anti-Mouse IgG, $F(ab')_2$ fragment specific (min X Hu, Bov, Hrs Sr Prot)	1.5 115-005-072	1.5 115-475-072	1.5 115-485-072	1.5 115-095-072	1.5 115-505-072	1.5 115-165-072	1.5 115-295-072	1.5 115-515-072	1.5 115-495-072	1.5 115-065-072	1.5 115-035-072	1.0 115-055-072
Goat Anti-Mouse IgG + IgM (H+L)	2.0 115-005-044	2.0 115-475-044	2.0 115-485-044	2.0 115-095-044	2.0 115-505-044	2.0 115-165-044	2.0 115-295-044	2.0 115-515-044	2.0 115-495-044	2.0 115-065-044	2.0 115-035-044	1.0 115-055-044
Goat Anti-Mouse IgG + IgM (H+L) (min X Hu, Bov, Hrs Sr Prot)	1.5 115-005-068	1.5 115-475-068	1.5 115-485-068	1.5 115-095-068	1.5 115-505-068	1.5 115-165-068	1.5 115-295-068	1.5 115-515-068	1.5 115-495-068	1.5 115-065-068	1.5 115-035-068	1.0 115-055-068
Goat Anti-Mouse IgM, μ chain specific ML*	2.0 115-005-020	2.0 115-475-020	2.0 115-485-020	2.0 115-095-020	2.0 115-505-020	2.0 115-165-020	2.0 115-295-020	2.0 115-515-020	2.0 115-495-020	2.0 115-065-020	2.0 115-035-020	1.0 115-055-020

** Caution: See page 3 (min X … Sr Prot) before selecting an antibody adsorbed against closely related species.
* ML = Multiple Labeling (see Multiple Labeling on pages 4-5 for an explanation).

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Whole IgG Affinity-Purified Antibodies

Antibody Description	Unconjugated	DyLight 405 A=400, E=421	DyLight 488 A=493, E=518	Fluorescein FITC A=492, E=520	DyLight 549 A=555, E=568	Cyanine Cy3 A=550, E=570	Rhodamine Red-X RRX A=570, E=590	DyLight 594 A=591, E=616	DyLight 649 A=652, E=670	Biotin-SP (long spacer)	Horseradish Peroxidase	Alkaline Phosphatase
***Whole IgG* ANTI-MOUSE**												
Goat Anti-Mouse IgM, µ chain specific ML* (min X Hu, Bov, Hrs Sr Prot)	1.0 mg 115-005-075	1.0 mg 115-475-075	1.0 mg 115-485-075	1.0 mg 115-095-075	1.0 mg 115-505-075	1.0 mg 115-165-075	1.0 mg 115-295-075	1.0 mg 115-515-075	1.0 mg 115-495-075	1.0 ml 115-065-075	1.0 ml 115-035-075	1.0 ml 115-055-075
Rabbit Anti-Mouse IgG (H+L)	2.0 315-005-003	1.5 315-475-003	1.5 315-485-003	1.5 315-095-003	1.5 315-505-003	1.5 315-165-003	1.5 315-295-003	1.5 315-515-003	1.5 315-495-003	1.5 315-065-003	1.5 315-035-003	1.0 315-055-003
Rabbit Anti-Mouse IgG (H+L) (min X Hu Sr Prot)	1.5 315-005-045	1.0 315-475-045	1.0 315-485-045	1.0 315-095-045	1.0 315-505-045	1.0 315-165-045	1.0 315-295-045	1.0 315-515-045	1.0 315-495-045	1.0 315-065-045	1.0 315-035-045	0.5 315-055-045
Rabbit Anti-Mouse IgG, Fcγ fragment specific	2.0 315-005-008	1.5 315-475-008	1.5 315-485-008	1.5 315-095-008	1.5 315-505-008	1.5 315-165-008	1.5 315-295-008	1.5 315-515-008	1.5 315-495-008	1.5 315-065-008	1.5 315-035-008	1.0 315-055-008
Rabbit Anti-Mouse IgG, Fcγ fragment specific (min X Hu Sr Prot)	1.5 315-005-046	1.0 315-475-046	1.0 315-485-046	1.0 315-095-046	1.0 315-505-046	1.0 315-165-046	1.0 315-295-046	1.0 315-515-046	1.0 315-495-046	1.0 315-065-046	1.0 315-035-046	0.5 315-055-046
Rabbit Anti-Mouse IgG, $F(ab')_2$ fragment specific	2.0 315-005-006	1.5 315-475-006	1.5 315-485-006	1.5 315-095-006	1.5 315-505-006	1.5 315-165-006	1.5 315-295-006	1.5 315-515-006	1.5 315-495-006	1.5 315-065-006	1.5 315-035-006	1.0 315-055-006
Rabbit Anti-Mouse IgG, $F(ab')_2$ fragment specific (min X Hu Sr Prot)	1.5 315-005-047	1.0 315-475-047	1.0 315-485-047	1.0 315-095-047	1.0 315-505-047	1.0 315-165-047	1.0 315-295-047	1.0 315-515-047	1.0 315-495-047	1.0 315-065-047	1.0 315-035-047	0.5 315-055-047
Rabbit Anti-Mouse IgG + IgM (H+L)	2.0 315-005-044	1.5 315-475-044	1.5 315-485-044	1.5 315-095-044	1.5 315-505-044	1.5 315-165-044	1.5 315-295-044	1.5 315-515-044	1.5 315-495-044	1.5 315-065-044	1.5 315-035-044	1.0 315-055-044
Rabbit Anti-Mouse IgG + IgM (H+L) (min X Hu Sr Prot)	1.5 315-005-048	1.0 315-475-048	1.0 315-485-048	1.0 315-095-048	1.0 315-505-048	1.0 315-165-048	1.0 315-295-048	1.0 315-515-048	1.0 315-495-048	1.0 315-065-048	1.0 315-035-048	0.5 315-055-048
Rabbit Anti-Mouse IgM, µ chain specific	2.0 315-005-020	1.5 315-475-020	1.5 315-485-020	1.5 315-095-020	1.5 315-505-020	1.5 315-165-020	1.5 315-295-020	1.5 315-515-020	1.5 315-495-020	1.5 315-065-020	1.5 315-035-020	1.0 315-055-020
Rabbit Anti-Mouse IgM, µ chain specific (min X Hu Sr Prot)	1.5 315-005-049	1.0 315-475-049	1.0 315-485-049	1.0 315-095-049	1.0 315-505-049	1.0 315-165-049	1.0 315-295-049	1.0 315-515-049	1.0 315-495-049	1.0 315-065-049	1.0 315-035-049	0.5 315-055-049
Rat Anti-Mouse IgG (H+L) (min X Hu, Bov, Hrs, **Rat**, Rb Sr Prot)**	1.0 415-005-166	1.0 415-475-166	1.0 415-485-166	1.0 415-095-166	1.0 415-505-166	1.0 415-165-166	1.0 415-295-166	1.0 415-515-166	1.0 415-495-166	1.0 415-065-166	1.0 415-035-166	0.5 415-055-166
Sheep Anti-Mouse IgG (H+L)	2.0 515-005-003	2.0 515-475-003	2.0 515-485-003	2.0 515-095-003	2.0 515-505-003	2.0 515-165-003	2.0 515-295-003	2.0 515-515-003	2.0 515-495-003	2.0 515-065-003	2.0 515-035-003	1.0 515-055-003
Sheep Anti-Mouse IgG (H+L) (min X Hu, Bov, Hrs Sr Prot)	1.5 515-005-062	1.5 515-475-062	1.5 515-485-062	1.5 515-095-062	1.5 515-505-062	1.5 515-165-062	1.5 515-295-062	1.5 515-515-062	1.5 515-495-062	1.5 515-065-062	1.5 515-035-062	1.0 515-055-062
Sheep Anti-Mouse IgG, Fcγ fragment specific (min X Hu, Bov, Hrs Sr Prot)	1.5 515-005-071	1.5 515-475-071	1.5 515-485-071	1.5 515-095-071	1.5 515-505-071	1.5 515-165-071	1.5 515-295-071	1.5 515-515-071	1.5 515-495-071	1.5 515-065-071	1.5 515-035-071	1.0 515-055-071
Sheep Anti-Mouse IgG, $F(ab')_2$ fragment specific (min X Hu, Bov, Hrs Sr Prot)	1.5 515-005-072	1.5 515-475-072	1.5 515-485-072	1.5 515-095-072	1.5 515-505-072	1.5 515-165-072	1.5 515-295-072	1.5 515-515-072	1.5 515-495-072	1.5 515-065-072	1.5 515-035-072	1.0 515-055-072

** Caution: See page 3 (min X … Sr Prot) before selecting an antibody adsorbed against closely related species.

* ML = Multiple Labeling (see Multiple Labeling on pages 4-5 for an explanation).

Whole IgG Affinity-Purified Antibodies

Antibody Description	Unconjugated	DyLight 405 A=400, E=421	DyLight 488 A=493, E=518	Fluorescein FITC A=492, E=520	DyLight 549 A=555, E=568	Cyanine Cy3 A=550, E=570	Rhodamine Red-X RRX A=570, E=590	DyLight 594 A=591, E=616	DyLight 649 A=652, E=670	Biotin-SP (long spacer)	Horseradish Peroxidase	Alkaline Phosphatase
Whole IgG ANTI-RABBIT												
Donkey Anti-Rabbit IgG (H+L) ML* (min X Bov, Ck, Gt, GP, Sy Hms, Hrs, Hu, Ms, Rat, Shp Sr Prot)	1.0 mg 711-005-152	0.5 mg 711-475-152	0.5 mg 711-485-152	0.5 mg 711-095-152	0.5 mg 711-505-152	0.5 mg 711-165-152	0.5 mg 711-295-152	0.5 mg 711-515-152	0.5 mg 711-495-152	0.5 ml 711-065-152	0.5 ml 711-035-152	0.5 ml 711-055-152
Goat Anti-Rabbit IgG (H+L)	2.0 111-005-003	2.0 111-475-003	2.0 111-485-003	2.0 111-095-003	2.0 111-505-003	2.0 111-165-003	2.0 111-295-003	2.0 111-515-003	2.0 111-495-003	2.0 111-065-003	2.0 111-035-003	1.0 111-055-003
Goat Anti-Rabbit IgG (H+L) (min X Hu Sr Prot)	1.5 111-005-045	1.5 111-475-045	1.5 111-485-045	1.5 111-095-045	1.5 111-505-045	1.5 111-165-045	1.5 111-295-045	1.5 111-515-045	1.5 111-495-045	1.5 111-065-045	1.5 111-035-045	1.0 111-055-045
Goat Anti-Rabbit IgG (H+L) ML* (min X Hu, Ms, Rat Sr Prot)	1.5 111-005-144	1.5 111-475-144	1.5 111-485-144	1.5 111-095-144	1.5 111-505-144	1.5 111-165-144	1.5 111-295-144	1.5 111-515-144	1.5 111-495-144	1.5 111-065-144	1.5 111-035-144	1.0 111-055-144
Goat Anti-Rabbit IgG, Fc fragment specific	2.0 111-005-008	2.0 111-475-008	2.0 111-485-008	2.0 111-095-008	2.0 111-505-008	2.0 111-165-008	2.0 111-295-008	2.0 111-515-008	2.0 111-495-008	2.0 111-065-008	2.0 111-035-008	1.0 111-055-008
Goat Anti-Rabbit IgG, Fc fragment specific (min X Hu Sr Prot)	1.5 111-005-046	1.5 111-475-046	1.5 111-485-046	1.5 111-095-046	1.5 111-505-046	1.5 111-165-046	1.5 111-295-046	1.5 111-515-046	1.5 111-495-046	1.5 111-065-046	1.5 111-035-046	1.0 111-055-046
Goat Anti-Rabbit IgG, $F(ab')_2$ fragment specific	2.0 111-005-006	2.0 111-475-006	2.0 111-485-006	2.0 111-095-006	2.0 111-505-006	2.0 111-165-006	2.0 111-295-006	2.0 111-515-006	2.0 111-495-006	2.0 111-065-006	2.0 111-035-006	1.0 111-055-006
Goat Anti-Rabbit IgG, $F(ab')_2$ fragment specific (min X Hu Sr Prot)	1.5 111-005-047	1.5 111-475-047	1.5 111-485-047	1.5 111-095-047	1.5 111-505-047	1.5 111-165-047	1.5 111-295-047	1.5 111-515-047	1.5 111-495-047	1.5 111-065-047	1.5 111-035-047	1.0 111-055-047
Mouse Anti-Rabbit IgG (H+L) ML* (min X Hu, Gt, Ms, Shp Sr Prot)	1.5 211-005-109	1.0 211-475-109	1.0 211-485-109	1.0 211-095-109	1.0 211-505-109	1.0 211-165-109	1.0 211-295-109	1.0 211-515-109	1.0 211-495-109	1.0 211-065-109	1.0 211-035-109	0.5 211-055-109
Whole IgG ANTI-RAT												
Donkey Anti-Rat IgG (H+L) ML* (min X Bov, Ck, Gt, GP, Sy Hms, Hrs, Hu, Rb, Shp Sr Prot)	1.0 mg 712-005-150	0.5 mg 712-475-150	0.5 mg 712-485-150	0.5 mg 712-095-150	0.5 mg 712-505-150	0.5 mg 712-165-150	0.5 mg 712-295-150	0.5 mg 712-515-150	0.5 mg 712-495-150	0.5 ml 712-065-150	0.5 ml 712-035-150	0.5 ml 712-055-150
Donkey Anti-Rat IgG (H+L) ML* (min X Bov, Ck, Gt, GP, Sy Hms, Hrs, Hu, **Ms**, Rb, Shp Sr Prot)**	1.0 712-005-153	0.5 712-475-153	0.5 712-485-153	0.5 712-095-153	0.5 712-505-153	0.5 712-165-153	0.5 712-295-153	0.5 712-515-153	0.5 712-495-153	0.5 712-065-153	0.5 712-035-153	0.5 712-055-153
Goat Anti-Rat IgG (H+L)	2.0 112-005-003	2.0 112-475-003	2.0 112-485-003	2.0 112-095-003	2.0 112-505-003	2.0 112-165-003	2.0 112-295-003	2.0 112-515-003	2.0 112-495-003	2.0 112-065-003	2.0 112-035-003	1.0 112-055-003
Goat Anti-Rat IgG (H+L) (min X Hu, Bov, Hrs Sr Prot)	1.5 112-005-062	1.5 112-475-062	1.5 112-485-062	1.5 112-095-062	1.5 112-505-062	1.5 112-165-062	1.5 112-295-062	1.5 112-515-062	1.5 112-495-062	1.5 112-065-062	1.5 112-035-062	1.0 112-055-062

** Caution: See page 3 (min X … Sr Prot) before selecting an antibody adsorbed against closely related species.
* ML = Multiple Labeling (see Multiple Labeling on pages 4-5 for an explanation).

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Whole IgG Affinity-Purified Antibodies

Antibody Description	Unconjugated	DyLight 405 A=400, E=421	DyLight 488 A=493, E=518	Fluorescein FITC A=492, E=520	DyLight 549 A=555, E=568	Cyanine Cy3 A=550, E=570	Rhodamine Red-X RRX A=570, E=590	DyLight 594 A=591, E=616	DyLight 649 A=652, E=670	Biotin-SP (long spacer)	Horseradish Peroxidase	Alkaline Phosphatase
***Whole IgG* ANTI-RAT**												
Goat Anti-Rat IgG (H+L) ML* (min X Hu, Bov, Hrs, Rb Sr Prot)	1.5 mg 112-005-143	1.5 mg 112-475-143	1.5 mg 112-485-143	1.5 mg 112-095-143	1.5 mg 112-505-143	1.5 mg 112-165-143	1.5 mg 112-295-143	1.5 mg 112-515-143	1.5 mg 112-495-143	1.5 ml 112-065-143	1.5 ml 112-035-143	1.0 ml 112-055-143
Goat Anti-Rat IgG (H+L) ML* (min X **Ms**, Hu, Bov, Hrs, Rb Sr Prot)**	1.0 112-005-167	0.5 112-475-167	0.5 112-485-167	0.5 112-095-167	0.5 112-505-167	0.5 112-165-167	0.5 112-295-167	0.5 112-515-167	0.5 112-495-167	0.5 112-065-167	0.5 112-035-167	0.5 112-055-167
Goat Anti-Rat IgG, Fcγ fragment specific ML*	2.0 112-005-008	2.0 112-475-008	2.0 112-485-008	2.0 112-095-008	2.0 112-505-008	2.0 112-165-008	2.0 112-295-008	2.0 112-515-008	2.0 112-495-008	2.0 112-065-008	2.0 112-035-008	1.0 112-055-008
Goat Anti-Rat IgG, Fcγ fragment specific ML* (min X Hu, Bov, Hrs Sr Prot)	1.5 112-005-071	1.5 112-475-071	1.5 112-485-071	1.5 112-095-071	1.5 112-505-071	1.5 112-165-071	1.5 112-295-071	1.5 112-515-071	1.5 112-495-071	1.5 112-065-071	1.5 112-035-071	1.0 112-055-071
Goat Anti-Rat IgG, $F(ab')_2$ fragment specific	2.0 112-005-006	2.0 112-475-006	2.0 112-485-006	2.0 112-095-006	2.0 112-505-006	2.0 112-165-006	2.0 112-295-006	2.0 112-515-006	2.0 112-495-006	2.0 112-065-006	2.0 112-035-006	1.0 112-055-006
Goat Anti-Rat IgG, $F(ab')_2$ fragment specific (min X Hu, Bov, Hrs Sr Prot)	1.5 112-005-072	1.5 112-475-072	1.5 112-485-072	1.5 112-095-072	1.5 112-505-072	1.5 112-165-072	1.5 112-295-072	1.5 112-515-072	1.5 112-495-072	1.5 112-065-072	1.5 112-035-072	1.0 112-055-072
Goat Anti-Rat IgG + IgM (H+L)	2.0 112-005-044	2.0 112-475-044	2.0 112-485-044	2.0 112-095-044	2.0 112-505-044	2.0 112-165-044	2.0 112-295-044	2.0 112-515-044	2.0 112-495-044	2.0 112-065-044	2.0 112-035-044	1.0 112-055-044
Goat Anti-Rat IgG + IgM (H+L) (min X Hu, Bov, Hrs Sr Prot)	1.5 112-005-068	1.5 112-475-068	1.5 112-485-068	1.5 112-095-068	1.5 112-505-068	1.5 112-165-068	1.5 112-295-068	1.5 112-515-068	1.5 112-495-068	1.5 112-065-068	1.5 112-035-068	1.0 112-055-068
Goat Anti-Rat IgM, μ chain specific ML*	2.0 112-005-020	2.0 112-475-020	2.0 112-485-020	2.0 112-095-020	2.0 112-505-020	2.0 112-165-020	2.0 112-295-020	2.0 112-515-020	2.0 112-495-020	2.0 112-065-020	2.0 112-035-020	1.0 112-055-020
Goat Anti-Rat IgM, μ chain specific ML* (min X Hu, Bov, Hrs Sr Prot)	1.0 112-005-075	1.0 112-475-075	1.0 112-485-075	1.0 112-095-075	1.0 112-505-075	1.0 112-165-075	1.0 112-295-075	1.0 112-515-075	1.0 112-495-075	1.0 112-065-075	1.0 112-035-075	1.0 112-055-075
Mouse Anti-Rat IgG (H+L) (min X Ms Sr Prot)**	2.0 212-005-082	1.5 212-475-082	1.5 212-485-082	1.5 212-095-082	1.5 212-505-082	1.5 212-165-082	1.5 212-295-082	1.5 212-515-082	1.5 212-495-082	1.5 212-065-082	1.5 212-035-082	1.0 212-055-082
Mouse Anti-Rat IgG (H+L) ML* (min X Hu, Bov, Hrs, **Ms**, Gt, Rb Sr Prot)**	1.5 212-005-168	1.0 212-475-168	1.0 212-485-168	1.0 212-095-168	1.0 212-505-168	1.0 212-165-168	1.0 212-295-168	1.0 212-515-168	1.0 212-495-168	1.0 212-065-168	1.0 212-035-168	0.5 212-055-168
Mouse Anti-Rat IgG, Fcγ fragment specific (min X Hu, Bov, Hrs, Ms Sr Prot)**	1.5 212-005-104	1.0 212-475-104	1.0 212-485-104	1.0 212-095-104	1.0 212-505-104	1.0 212-165-104	1.0 212-295-104	1.0 212-515-104	1.0 212-495-104	1.0 212-065-104	1.0 212-035-104	0.5 212-055-104
Mouse Anti-Rat IgG, $F(ab')_2$ fragment specific (min X Hu, Bov, Hrs, Ms Sr Prot)**	1.5 212-005-106	1.0 212-475-106	1.0 212-485-106	1.0 212-095-106	1.0 212-505-106	1.0 212-165-106	1.0 212-295-106	1.0 212-515-106	1.0 212-495-106	1.0 212-065-106	1.0 212-035-106	0.5 212-055-106
Rabbit Anti-Rat IgG (H+L)	2.0 312-005-003	1.5 312-475-003	1.5 312-485-003	1.5 312-095-003	1.5 312-505-003	1.5 312-165-003	1.5 312-295-003	1.5 312-515-003	1.5 312-495-003	1.5 312-065-003	1.5 312-035-003	1.0 312-055-003
Rabbit Anti-Rat IgG (H+L) (min X Hu Sr Prot)	1.5 312-005-045	1.0 312-475-045	1.0 312-485-045	1.0 312-095-045	1.0 312-505-045	1.0 312-165-045	1.0 312-295-045	1.0 312-515-045	1.0 312-495-045	1.0 312-065-045	1.0 312-035-045	0.5 312-055-045

** Caution: See page 3 (min X … Sr Prot) before selecting an antibody adsorbed against closely related species.
* ML = Multiple Labeling (see Multiple Labeling on pages 4-5 for an explanation).

Whole IgG Affinity-Purified Antibodies

Antibody Description	Unconjugated	DyLight 405 A=400, E=421	DyLight 488 A=493, E=518	Fluorescein FITC A=492, E=520	DyLight 549 A=555, E=568	Cyanine Cy3 A=550, E=570	Rhodamine Red-X RRX A=570, E=590	DyLight 594 A=591, E=616	DyLight 649 A=652, E=670	Biotin-SP (long spacer)	Horseradish Peroxidase	Alkaline Phosphatase
Whole IgG ANTI-RAT												
Rabbit Anti-Rat IgG, Fcγ fragment specific (min X Hu Sr Prot)	1.5 mg 312-005-046	1.0 mg 312-475-046	1.0 mg 312-485-046	1.0 mg 312-095-046	1.0 mg 312-505-046	1.0 mg 312-165-046	1.0 mg 312-295-046	1.0 mg 312-515-046	1.0 mg 312-495-046	1.0 ml 312-065-046	1.0 ml 312-035-046	0.5 ml 312-055-046
Rabbit Anti-Rat IgG, F(ab')$_2$ fragment specific (min X Hu Sr Prot)	1.5 312-005-047	1.0 312-475-047	1.0 312-485-047	1.0 312-095-047	1.0 312-505-047	1.0 312-165-047	1.0 312-295-047	1.0 312-515-047	1.0 312-495-047	1.0 312-065-047	1.0 312-035-047	0.5 312-055-047
Rabbit Anti-Rat IgG + IgM (H+L)	2.0 312-005-044	1.5 312-475-044	1.5 312-485-044	1.5 312-095-044	1.5 312-505-044	1.5 312-165-044	1.5 312-295-044	1.5 312-515-044	1.5 312-495-044	1.5 312-065-044	1.5 312-035-044	1.0 312-055-044
Rabbit Anti-Rat IgG + IgM (H+L) (min X Hu Sr Prot)	1.5 312-005-048	1.0 312-475-048	1.0 312-485-048	1.0 312-095-048	1.0 312-505-048	1.0 312-165-048	1.0 312-295-048	1.0 312-515-048	1.0 312-495-048	1.0 312-065-048	1.0 312-035-048	0.5 312-055-048
Rabbit Anti-Rat IgM, μ chain specific	2.0 312-005-020	1.5 312-475-020	1.5 312-485-020	1.5 312-095-020	1.5 312-505-020	1.5 312-165-020	1.5 312-295-020	1.5 312-515-020	1.5 312-495-020	1.5 312-065-020	1.5 312-035-020	1.0 312-055-020
Rabbit Anti-Rat IgM, μ chain specific (min X Hu Sr Prot)	1.5 312-005-049	1.0 312-475-049	1.0 312-485-049	1.0 312-095-049	1.0 312-505-049	1.0 312-165-049	1.0 312-295-049	1.0 312-515-049	1.0 312-495-049	1.0 312-065-049	1.0 312-035-049	0.5 312-055-049
Whole IgG ANTI-SHEEP* **												
Donkey Anti-Sheep IgG (H+L)	1.0 mg 713-005-003	1.0 mg 713-475-003	1.0 mg 713-485-003	1.0 mg 713-095-003	1.0 mg 713-505-003	1.0 mg 713-165-003	1.0 mg 713-295-003	1.0 mg 713-515-003	1.0 mg 713-495-003	1.0 ml 713-065-003	1.0 ml 713-035-003	1.0 ml 713-055-003
Donkey Anti-Sheep IgG (H+L) ML* (min X Ck, GP, Sy Hms, Hrs, Hu, Ms, Rb, Rat Sr Prot)	1.0 713-005-147	0.5 713-475-147	0.5 713-485-147	0.5 713-095-147	0.5 713-505-147	0.5 713-165-147	0.5 713-295-147	0.5 713-515-147	0.5 713-495-147	0.5 713-065-147	0.5 713-035-147	0.5 713-055-147
Rabbit Anti-Sheep IgG (H+L)	2.0 313-005-003	1.5 313-475-003	1.5 313-485-003	1.5 313-095-003	1.5 313-505-003	1.5 313-165-003	1.5 313-295-003	1.5 313-515-003	1.5 313-495-003	1.5 313-065-003	1.5 313-035-003	1.0 313-055-003
Rabbit Anti-Sheep IgG (H+L) (min X Hu Sr Prot)	1.5 313-005-045	1.0 313-475-045	1.0 313-485-045	1.0 313-095-045	1.0 313-505-045	1.0 313-165-045	1.0 313-295-045	1.0 313-515-045	1.0 313-495-045	1.0 313-065-045	1.0 313-035-045	0.5 313-055-045
Rabbit Anti-Sheep IgG, Fc fragment specific (min X Hu Sr Prot)	1.5 313-005-046	1.0 313-475-046	1.0 313-485-046	1.0 313-095-046	1.0 313-505-046	1.0 313-165-046	1.0 313-295-046	1.0 313-515-046	1.0 313-495-046	1.0 313-065-046	1.0 313-035-046	0.5 313-055-046
Rabbit Anti-Sheep IgG, F(ab')$_2$ fragment specific (min X Hu Sr Prot)	1.5 313-005-047	1.0 313-475-047	1.0 313-485-047	1.0 313-095-047	1.0 313-505-047	1.0 313-165-047	1.0 313-295-047	1.0 313-515-047	1.0 313-495-047	1.0 313-065-047	1.0 313-035-047	0.5 313-055-047
Whole IgG ANTI-SWINE												
Goat Anti-Swine IgG (H+L)	2.0 mg 114-005-003	2.0 mg 114-475-003	2.0 mg 114-485-003	2.0 mg 114-095-003	2.0 mg 114-505-003	2.0 mg 114-165-003	2.0 mg 114-295-003	2.0 mg 114-515-003	2.0 mg 114-495-003	2.0 ml 114-065-003	2.0 ml 114-035-003	1.0 ml 114-055-003

*** Warning: BSA and dry milk may contain IgG which will be recognized by this antibody. Use of BSA or dry milk to block or dilute this antibody may increase background and/or reduce secondary antibody titer.

* ML = Multiple Labeling (see Multiple Labeling on pages 4-5 for an explanation).

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F(ab')$_2$ Fragment Affinity-Purified Antibodies

Antibody Description	Unconjugated	Coumarin AMCA A=350, E=450	DyLight 488 A=493, E=518	Fluorescein FITC A=492, E=520	DyLight 549 A=555, E=568	Cyanine Cy3 A=550, E=570	Rhodamine Red-X RRX A=570, E=590	DyLight 594 A=591, E=616	DyLight 649 A=652, E=670	Biotin-SP (long spacer)	Horseradish Peroxidase	Alkaline Phosphatase
F(ab')$_2$ Fragment* ANTI-BOVINE												
Goat Anti-Bovine IgG (H+L)	1.0 mg 101-006-003	1.0 mg 101-156-003	1.0 mg 101-486-003	1.0 mg 101-096-003	1.0 mg 101-506-003	1.0 mg 101-166-003	1.0 mg 101-296-003	1.0 mg 101-516-003	1.0 mg 101-496-003	0.5 ml 101-066-003	0.5 ml 101-036-003	0.5 ml 101-056-003
***F(ab')$_2$ Fragment* ANTI-CHICKEN**												
Donkey Anti-Chicken IgY† (IgG) (H+L) ML* (min X Bov, Gt, GP, Sy Hms, Hrs, Hu, Ms, Rb, Rat, Shp Sr Prot)	0.5 mg 703-006-155	0.3 mg 703-156-155	0.3 mg 703-486-155	0.3 mg 703-096-155	0.3 mg 703-506-155	0.3 mg 703-166-155	0.3 mg 703-296-155	0.3 mg 703-516-155	0.3 mg 703-496-155	0.3 ml 703-066-155	0.3 ml 703-036-155	0.3 ml 703-056-155
Rabbit Anti-Chicken IgY† (IgG) (H+L)	1.0 303-006-003	0.5 303-156-003	0.5 303-486-003	0.5 303-096-003	0.5 303-506-003	0.5 303-166-003	0.5 303-296-003	0.5 303-516-003	0.5 303-496-003	0.5 303-066-003	0.5 303-036-003	0.5 303-056-003
F(ab')$_2$ Fragment* ANTI-GOAT**												
Donkey Anti-Goat IgG (H+L) ML* (min X Ck, GP, Sy Hms, Hrs, Hu, Ms, Rb, Rat Sr Prot)	0.5 mg 705-006-147	0.3 mg 705-156-147	0.3 mg 705-486-147	0.3 mg 705-096-147	0.3 mg 705-506-147	0.3 mg 705-166-147	0.3 mg 705-296-147	0.3 mg 705-516-147	0.3 mg 705-496-147	0.3 ml 705-066-147	0.3 ml 705-036-147	0.3 ml 705-056-147
Rabbit Anti-Goat IgG (H+L)	1.0 305-006-003	0.5 305-156-003	0.5 305-486-003	0.5 305-096-003	0.5 305-506-003	0.5 305-166-003	0.5 305-296-003	0.5 305-516-003	0.5 305-496-003	0.5 305-066-003	0.5 305-036-003	0.5 305-056-003
Rabbit Anti-Goat IgG (H+L) (min X Hu Sr Prot)	0.5 305-006-045	0.5 305-156-045	0.5 305-486-045	0.5 305-096-045	0.5 305-506-045	0.5 305-166-045	0.5 305-296-045	0.5 305-516-045	0.5 305-496-045	0.5 305-066-045	0.5 305-036-045	0.5 305-056-045
Rabbit Anti-Goat IgG, Fc fragment specific	1.0 305-006-008	0.5 305-156-008	0.5 305-486-008	0.5 305-096-008	0.5 305-506-008	0.5 305-166-008	0.5 305-296-008	0.5 305-516-008	0.5 305-496-008	0.5 305-066-008	0.5 305-036-008	0.5 305-056-008
Rabbit Anti-Goat IgG, Fc fragment specific (min X Hu Sr Prot)	0.5 305-006-046	0.5 305-156-046	0.5 305-486-046	0.5 305-096-046	0.5 305-506-046	0.5 305-166-046	0.5 305-296-046	0.5 305-516-046	0.5 305-496-046	0.5 305-066-046	0.5 305-036-046	0.5 305-056-046
Rabbit Anti-Goat IgG, F(ab')$_2$ fragment specific	1.0 305-006-006	0.5 305-156-006	0.5 305-486-006	0.5 305-096-006	0.5 305-506-006	0.5 305-166-006	0.5 305-296-006	0.5 305-516-006	0.5 305-496-006	0.5 305-066-006	0.5 305-036-006	0.5 305-056-006
Rabbit Anti-Goat IgG, F(ab')$_2$ fragment specific (min X Hu Sr Prot)	0.5 305-006-047	0.5 305-156-047	0.5 305-486-047	0.5 305-096-047	0.5 305-506-047	0.5 305-166-047	0.5 305-296-047	0.5 305-516-047	0.5 305-496-047	0.5 305-066-047	0.5 305-036-047	0.5 305-056-047
***F(ab')$_2$ Fragment* ANTI-GUINEA PIG**												
Donkey Anti-Guinea Pig IgG (H+L) ML* (min X Bov, Ck, Gt, Sy Hms, Hrs, Hu, Ms, Rb, Rat, Shp Sr Prot)	0.5 mg 706-006-148	0.3 mg 706-156-148	0.3 mg 706-486-148	0.3 mg 706-096-148	0.3 mg 706-506-148	0.3 mg 706-166-148	0.3 mg 706-296-148	0.3 mg 706-516-148	0.3 mg 706-496-148	0.3 ml 706-066-148	0.3 ml 706-036-148	0.3 ml 706-056-148

*** Warning: BSA and dry milk may contain IgG which will be recognized by this antibody. Use of BSA or dry milk to block or dilute this antibody may increase background and/or reduce secondary antibody titer.

* ML = Multiple Labeling (see Multiple Labeling on pages 4-5 for an explanation).

† IgY is the original designation for the IgG-like protein found in both serum and egg yolk.

F(ab')$_2$ Fragment Affinity-Purified Antibodies

Antibody Description	Unconjugated	Coumarin AMCA A=350, E=450	DyLight 488 A=493, E=518	Fluorescein FITC A=492, E=520	DyLight 549 A=555, E=568	Cyanine Cy3 A=550, E=570	Rhodamine Red-X RRX A=570, E=590	DyLight 594 A=591, E=616	DyLight 649 A=652, E=670	Biotin-SP (long spacer)	Horseradish Peroxidase	Alkaline Phosphatase
F(ab')$_2$ Fragment ANTI-GUINEA PIG												
Goat Anti-Guinea Pig IgG (H+L)	1.0 mg 106-006-003	1.0 mg 106-156-003	1.0 mg 106-486-003	1.0 mg 106-096-003	1.0 mg 106-506-003	1.0 mg 106-166-003	1.0 mg 106-296-003	1.0 mg 106-516-003	1.0 mg 106-496-003	0.5 ml 106-066-003	0.5 ml 106-036-003	0.5 ml 106-056-003
F(ab')$_2$ Fragment ANTI-HAMSTER (Syrian Hamster)												
Goat Anti-Syrian Hamster IgG (H+L) ML* (min X Bov, Hrs, Hu, Ms, Rb, Rat Sr Prot)	0.5 mg 107-006-142	0.5 mg 107-156-142	0.5 mg 107-486-142	0.5 mg 107-096-142	0.5 mg 107-506-142	0.5 mg 107-166-142	0.5 mg 107-296-142	0.5 mg 107-516-142	0.5 mg 107-496-142	0.5 ml 107-066-142	0.5 ml 107-036-142	0.5 ml 107-056-142
Rabbit Anti-Syrian Hamster IgG (H+L)	1.0 307-006-003	0.5 307-156-003	0.5 307-486-003	0.5 307-096-003	0.5 307-506-003	0.5 307-166-003	0.5 307-296-003	0.5 307-516-003	0.5 307-496-003	0.5 307-066-003	0.5 307-036-003	0.5 307-056-003
F(ab')$_2$ Fragment ANTI-HORSE												
Goat Anti-Horse IgG (H+L)	1.0 mg 108-006-003	1.0 mg 108-156-003	1.0 mg 108-486-003	1.0 mg 108-096-003	1.0 mg 108-506-003	1.0 mg 108-166-003	1.0 mg 108-296-003	1.0 mg 108-516-003	1.0 mg 108-496-003	0.5 ml 108-066-003	0.5 ml 108-036-003	0.5 ml 108-056-003
F(ab')$_2$ Fragment ANTI-HUMAN												
Donkey Anti-Human IgG (H+L) (min X Bov, Ck, Gt, GP, Sy Hms, Hrs, Ms, Rb, Rat, Shp Sr Prot)	0.5 mg 709-006-149	0.3 mg 709-156-149	0.3 mg 709-486-149	0.3 mg 709-096-149	0.3 mg 709-506-149	0.3 mg 709-166-149	0.3 mg 709-296-149	0.3 mg 709-516-149	0.3 mg 709-496-149	0.3 ml 709-066-149	0.3 ml 709-036-149	0.3 ml 709-056-149
Donkey Anti-Human IgG, Fcγ fragment specific (min X Bov, Hrs, Ms Sr Prot)	1.0 709-006-098	1.0 709-156-098	1.0 709-486-098	1.0 709-096-098	1.0 709-506-098	1.0 709-166-098	1.0 709-296-098	1.0 709-516-098	1.0 709-496-098	0.5 709-066-098	0.5 709-036-098	0.5 709-056-098
Donkey Anti-Human IgM, $Fc_{5\mu}$ fragment specific (min X Bov, Hrs Sr Prot)	1.0 709-006-073	1.0 709-156-073	1.0 709-486-073	1.0 709-096-073	1.0 709-506-073	1.0 709-166-073	1.0 709-296-073	1.0 709-516-073	1.0 709-496-073	0.5 709-066-073	0.5 709-036-073	0.5 709-056-073
Goat Anti-Human IgG (H+L)	1.0 109-006-003	1.0 109-156-003	1.0 109-486-003	1.0 109-096-003	1.0 109-506-003	1.0 109-166-003	1.0 109-296-003	1.0 109-516-003	1.0 109-496-003	0.5 109-066-003	0.5 109-036-003	0.5 109-056-003
Goat Anti-Human IgG (H+L) (min X Bov, Hrs, Ms Sr Prot)	1.0 109-006-088	1.0 109-156-088	1.0 109-486-088	1.0 109-096-088	1.0 109-506-088	1.0 109-166-088	1.0 109-296-088	1.0 109-516-088	1.0 109-496-088	0.5 109-066-088	0.5 109-036-088	0.5 109-056-088
Goat Anti-Human IgG, Fcγ fragment specific	1.0 109-006-008	1.0 109-156-008	1.0 109-486-008	1.0 109-096-008	1.0 109-506-008	1.0 109-166-008	1.0 109-296-008	1.0 109-516-008	1.0 109-496-008	0.5 109-066-008	0.5 109-036-008	0.5 109-056-008
Goat Anti-Human IgG, Fcγ fragment specific (min X Bov, Hrs, Ms Sr Prot)	1.0 109-006-098	1.0 109-156-098	1.0 109-486-098	1.0 109-096-098	1.0 109-506-098	1.0 109-166-098	1.0 109-296-098	1.0 109-516-098	1.0 109-496-098	0.5 109-066-098	0.5 109-036-098	0.5 109-056-098
Goat Anti-Human IgG, F(ab')$_2$ fragment specific	1.0 109-006-006	1.0 109-156-006	1.0 109-486-006	1.0 109-096-006	1.0 109-506-006	1.0 109-166-006	1.0 109-296-006	1.0 109-516-006	1.0 109-496-006	0.5 109-066-006	0.5 109-036-006	0.5 109-056-006

* ML = Multiple Labeling (see Multiple Labeling on pages 4-5 for an explanation).

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F(ab')$_2$ Fragment Affinity-Purified Antibodies

Antibody Description	Unconjugated	Coumarin AMCA A=350, E=450	DyLight 488 A=493, E=518	Fluorescein FITC A=492, E=520	DyLight 549 A=555, E=568	Cyanine Cy3 A=550, E=570	Rhodamine Red-X RRX A=570, E=590	DyLight 594 A=591, E=616	DyLight 649 A=652, E=670	Biotin-SP (long spacer)	Horseradish Peroxidase	Alkaline Phosphatase
F(ab')$_2$ Fragment ANTI-HUMAN												
Goat Anti-Human IgG, F(ab')$_2$ fragment specific (min X Bov, Hrs, Ms Sr Prot)	1.0 mg 109-006-097	1.0 mg 109-156-097	1.0 mg 109-486-097	1.0 mg 109-096-097	1.0 mg 109-506-097	1.0 mg 109-166-097	1.0 mg 109-296-097	1.0 mg 109-516-097	1.0 mg 109-496-097	0.5 ml 109-066-097	0.5 ml 109-036-097	0.5 ml 109-056-097
Goat Anti-Human IgG + IgM (H+L) (min X Bov Sr Prot)	1.0 109-006-127	1.0 109-156-127	1.0 109-486-127	1.0 109-096-127	1.0 109-506-127	1.0 109-166-127	1.0 109-296-127	1.0 109-516-127	1.0 109-496-127	0.5 109-066-127	0.5 109-036-127	0.5 109-056-127
Goat Anti-Human IgA + IgG + IgM (H+L)	1.0 109-006-064	1.0 109-156-064	1.0 109-486-064	1.0 109-096-064	1.0 109-506-064	1.0 109-166-064	1.0 109-296-064	1.0 109-516-064	1.0 109-496-064	0.5 109-066-064	0.5 109-036-064	0.5 109-056-064
Goat Anti-Human IgM, Fc$_{5\mu}$ fragment specific (min X Bov Sr Prot)	1.0 109-006-129	1.0 109-156-129	1.0 109-486-129	1.0 109-096-129	1.0 109-506-129	1.0 109-166-129	1.0 109-296-129	1.0 109-516-129	1.0 109-496-129	0.5 109-066-129	0.5 109-036-129	0.5 109-056-129
Goat Anti-Human Serum IgA, α chain specific	1.0 109-006-011	1.0 109-156-011	1.0 109-486-011	1.0 109-096-011	1.0 109-506-011	1.0 109-166-011	1.0 109-296-011	1.0 109-516-011	1.0 109-496-011	0.5 109-066-011	0.5 109-036-011	0.5 109-056-011
Rabbit Anti-Human IgG (H+L)	1.0 309-006-003	0.5 309-156-003	0.5 309-486-003	0.5 309-096-003	0.5 309-506-003	0.5 309-166-003	0.5 309-296-003	0.5 309-516-003	0.5 309-496-003	0.5 309-066-003	0.5 309-036-003	0.5 309-056-003
Rabbit Anti-Human IgG, Fcγ fragment specific	1.0 309-006-008	0.5 309-156-008	0.5 309-486-008	0.5 309-096-008	0.5 309-506-008	0.5 309-166-008	0.5 309-296-008	0.5 309-516-008	0.5 309-496-008	0.5 309-066-008	0.5 309-036-008	0.5 309-056-008
Rabbit Anti-Human IgM, Fc$_{5\mu}$ fragment specific	1.0 309-006-043	0.5 309-156-043	0.5 309-486-043	0.5 309-096-043	0.5 309-506-043	0.5 309-166-043	0.5 309-296-043	0.5 309-516-043	0.5 309-496-043	0.5 309-066-043	0.5 309-036-043	0.5 309-056-043
F(ab')$_2$ Fragment ANTI-MOUSE												
Donkey Anti-Mouse IgG (H+L) ML* (min X Bov, Ck, Gt, GP, Sy Hms, Hrs, Hu, Rb, Shp Sr Prot)	0.5 mg 715-006-150	0.3 mg 715-156-150	0.3 mg 715-486-150	0.3 mg 715-096-150	0.3 mg 715-506-150	0.3 mg 715-166-150	0.3 mg 715-296-150	0.3 mg 715-516-150	0.3 mg 715-496-150	0.3 ml 715-066-150	0.3 ml 715-036-150	0.3 ml 715-056-150
Donkey Anti-Mouse IgG (H+L) ML* (min X Bov, Ck, Gt, GP, Sy Hms, Hrs, Hu, Rb, **Rat**, Shp Sr Prot)**	0.5 715-006-151	0.3 715-156-151	0.3 715-486-151	0.3 715-096-151	0.3 715-506-151	0.3 715-166-151	0.3 715-296-151	0.3 715-516-151	0.3 715-496-151	0.3 715-066-151	0.3 715-036-151	0.3 715-056-151
Donkey Anti-Mouse IgM, μ chain specific	1.0 715-006-020	1.0 715-156-020	1.0 715-486-020	1.0 715-096-020	1.0 715-506-020	1.0 715-166-020	1.0 715-296-020	1.0 715-516-020	1.0 715-496-020	0.5 715-066-020	0.5 715-036-020	0.5 715-056-020
Goat Anti-Mouse IgG (H+L)	1.0 115-006-003	1.0 115-156-003	1.0 115-486-003	1.0 115-096-003	1.0 115-506-003	1.0 115-166-003	1.0 115-296-003	1.0 115-516-003	1.0 115-496-003	0.5 115-066-003	0.5 115-036-003	0.5 115-056-003
Goat Anti-Mouse IgG (H+L) (min X Hu, Bov, Hrs Sr Prot)	1.0 115-006-062	1.0 115-156-062	1.0 115-486-062	1.0 115-096-062	1.0 115-506-062	1.0 115-166-062	1.0 115-296-062	1.0 115-516-062	1.0 115-496-062	0.5 115-066-062	0.5 115-036-062	0.5 115-056-062
Goat Anti-Mouse IgG, Fcγ fragment specific ML*	1.0 115-006-008	1.0 115-156-008	1.0 115-486-008	1.0 115-096-008	1.0 115-506-008	1.0 115-166-008	1.0 115-296-008	1.0 115-516-008	1.0 115-496-008	0.5 115-066-008	0.5 115-036-008	0.5 115-056-008

** Caution: See page 3 (min X … Sr Prot) before selecting an antibody adsorbed against closely related species.
* ML = Multiple Labeling (see Multiple Labeling on pages 4-5 for an explanation).

F(ab')$_2$ Fragment Affinity-Purified Antibodies

Antibody Description	Unconjugated	Coumarin AMCA A=350, E=450	DyLight 488 A=493, E=518	Fluorescein FITC A=492, E=520	DyLight 549 A=555, E=568	Cyanine Cy3 A=550, E=570	Rhodamine Red-X RRX A=570, E=590	DyLight 594 A=591, E=616	DyLight 649 A=652, E=670	Biotin-SP (long spacer)	Horseradish Peroxidase	Alkaline Phosphatase
F(ab')$_2$ Fragment ANTI-MOUSE												
Goat Anti-Mouse IgG, Fcγ fragment specific (min X Hu, Bov, Hrs Sr Prot) ML*	1.0 mg 115-006-071	1.0 mg 115-156-071	1.0 mg 115-486-071	1.0 mg 115-096-071	1.0 mg 115-506-071	1.0 mg 115-166-071	1.0 mg 115-296-071	1.0 mg 115-516-071	1.0 mg 115-496-071	0.5 ml 115-066-071	0.5 ml 115-036-071	0.5 ml 115-056-071
Goat Anti-Mouse IgG, F(ab')$_2$ fragment specific	1.0 115-006-006	1.0 115-156-006	1.0 115-486-006	1.0 115-096-006	1.0 115-506-006	1.0 115-166-006	1.0 115-296-006	1.0 115-516-006	1.0 115-496-006	0.5 115-066-006	0.5 115-036-006	0.5 115-056-006
Goat Anti-Mouse IgG, F(ab')$_2$ fragment specific (min X Hu, Bov, Hrs Sr Prot)	1.0 115-006-072	1.0 115-156-072	1.0 115-486-072	1.0 115-096-072	1.0 115-506-072	1.0 115-166-072	1.0 115-296-072	1.0 115-516-072	1.0 115-496-072	0.5 115-066-072	0.5 115-036-072	0.5 115-056-072
Goat Anti-Mouse IgG + IgM (H+L) (min X Hu, Bov, Hrs Sr Prot)	1.0 115-006-068	1.0 115-156-068	1.0 115-486-068	1.0 115-096-068	1.0 115-506-068	1.0 115-166-068	1.0 115-296-068	1.0 115-516-068	1.0 115-496-068	0.5 115-066-068	0.5 115-036-068	0.5 115-056-068
Goat Anti-Mouse IgM, µ chain specific ML*	1.0 115-006-020	1.0 115-156-020	1.0 115-486-020	1.0 115-096-020	1.0 115-506-020	1.0 115-166-020	1.0 115-296-020	1.0 115-516-020	1.0 115-496-020	0.5 115-066-020	0.5 115-036-020	0.5 115-056-020
Goat Anti-Mouse IgM, µ chain specific ML* (min X Hu, Bov, Hrs Sr Prot)	1.0 115-006-075	1.0 115-156-075	1.0 115-486-075	1.0 115-096-075	1.0 115-506-075	1.0 115-166-075	1.0 115-296-075	1.0 115-516-075	1.0 115-496-075	0.5 115-066-075	0.5 115-036-075	0.5 115-056-075
Rabbit Anti-Mouse IgG (H+L)	1.0 315-006-003	0.5 315-156-003	0.5 315-486-003	0.5 315-096-003	0.5 315-506-003	0.5 315-166-003	0.5 315-296-003	0.5 315-516-003	0.5 315-496-003	0.5 315-066-003	0.5 315-036-003	0.5 315-056-003
Rabbit Anti-Mouse IgG (H+L) (min X Hu Sr Prot)	0.5 315-006-045	0.5 315-156-045	0.5 315-486-045	0.5 315-096-045	0.5 315-506-045	0.5 315-166-045	0.5 315-296-045	0.5 315-516-045	0.5 315-496-045	0.5 315-066-045	0.5 315-036-045	0.5 315-056-045
Rabbit Anti-Mouse IgG, Fcγ fragment specific (min X Hu Sr Prot)	0.5 315-006-046	0.5 315-156-046	0.5 315-486-046	0.5 315-096-046	0.5 315-506-046	0.5 315-166-046	0.5 315-296-046	0.5 315-516-046	0.5 315-496-046	0.5 315-066-046	0.5 315-036-046	0.5 315-056-046
Rabbit Anti-Mouse IgG, F(ab')$_2$ fragment specific (min X Hu Sr Prot)	0.5 315-006-047	0.5 315-156-047	0.5 315-486-047	0.5 315-096-047	0.5 315-506-047	0.5 315-166-047	0.5 315-296-047	0.5 315-516-047	0.5 315-496-047	0.5 315-066-047	0.5 315-036-047	0.5 315-056-047
F(ab')$_2$ Fragment ANTI-RABBIT												
Donkey Anti-Rabbit IgG (H+L) ML* (min X Bov, Ck, Gt, GP, Sy Hms, Hrs, Hu, Ms, Rat, Shp Sr Prot)	0.5 mg 711-006-152	0.3 mg 711-156-152	0.3 mg 711-486-152	0.3 mg 711-096-152	0.3 mg 711-506-152	0.3 mg 711-166-152	0.3 mg 711-296-152	0.3 mg 711-516-152	0.3 mg 711-496-152	0.3 ml 711-066-152	0.3 ml 711-036-152	0.3 ml 711-056-152
Goat Anti-Rabbit IgG (H+L)	1.0 111-006-003	1.0 111-156-003	1.0 111-486-003	1.0 111-096-003	1.0 111-506-003	1.0 111-166-003	1.0 111-296-003	1.0 111-516-003	1.0 111-496-003	0.5 111-066-003	0.5 111-036-003	0.5 111-056-003
Goat Anti-Rabbit IgG (H+L) (min X Hu Sr Prot)	1.0 111-006-045	1.0 111-156-045	1.0 111-486-045	1.0 111-096-045	1.0 111-506-045	1.0 111-166-045	1.0 111-296-045	1.0 111-516-045	1.0 111-496-045	0.5 111-066-045	0.5 111-036-045	0.5 111-056-045
Goat Anti-Rabbit IgG, Fc fragment specific (min X Hu Sr Prot)	1.0 111-006-046	1.0 111-156-046	1.0 111-486-046	1.0 111-096-046	1.0 111-506-046	1.0 111-166-046	1.0 111-296-046	1.0 111-516-046	1.0 111-496-046	0.5 111-066-046	0.5 111-036-046	0.5 111-056-046

* ML = Multiple Labeling (see Multiple Labeling on pages 4-5 for an explanation).

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F(ab')$_2$ Fragment Affinity-Purified Antibodies

Antibody Description	Unconjugated	Coumarin AMCA A=350, E=450	DyLight 488 A=493, E=518	Fluorescein FITC A=492, E=520	DyLight 549 A=555, E=568	Cyanine Cy3 A=550, E=570	Rhodamine Red-X RRX A=570, E=590	DyLight 594 A=591, E=616	DyLight 649 A=652, E=670	Biotin-SP (long spacer)	Horseradish Peroxidase	Alkaline Phosphatase
F(ab')$_2$ Fragment ANTI-RABBIT												
Goat Anti-Rabbit IgG, F(ab')$_2$ fragment specific (min X Hu Sr Prot)	1.0 mg 111-006-047	1.0 mg 111-156-047	1.0 mg 111-486-047	1.0 mg 111-096-047	1.0 mg 111-506-047	1.0 mg 111-166-047	1.0 mg 111-296-047	1.0 mg 111-516-047	1.0 mg 111-496-047	0.5 ml 111-066-047	0.5 ml 111-036-047	0.5 ml 111-056-047
F(ab')$_2$ Fragment ANTI-RAT												
Donkey Anti-Rat IgG (H+L) ML* (min X Bov, Ck, Gt, GP, Sy Hms, Hrs, Hu, Rb, Shp Sr Prot)	0.5 mg 712-006-150	0.3 mg 712-156-150	0.3 mg 712-486-150	0.3 mg 712-096-150	0.3 mg 712-506-150	0.3 mg 712-166-150	0.3 mg 712-296-150	0.3 mg 712-516-150	0.3 mg 712-496-150	0.3 ml 712-066-150	0.3 ml 712-036-150	0.3 ml 712-056-150
Donkey Anti-Rat IgG (H+L) ML* (min X Bov, Ck, Gt, GP, Sy Hms, Hrs, Hu, **Ms**, Rb, Shp Sr Prot)**	0.5 712-006-153	0.3 712-156-153	0.3 712-486-153	0.3 712-096-153	0.3 712-506-153	0.3 712-166-153	0.3 712-296-153	0.3 712-516-153	0.3 712-496-153	0.3 712-066-153	0.3 712-036-153	0.3 712-056-153
Goat Anti-Rat IgG (H+L)	1.0 112-006-003	1.0 112-156-003	1.0 112-486-003	1.0 112-096-003	1.0 112-506-003	1.0 112-166-003	1.0 112-296-003	1.0 112-516-003	1.0 112-496-003	0.5 112-066-003	0.5 112-036-003	0.5 112-056-003
Goat Anti-Rat IgG (H+L) (min X Hu, Bov, Hrs Sr Prot)	1.0 112-006-062	1.0 112-156-062	1.0 112-486-062	1.0 112-096-062	1.0 112-506-062	1.0 112-166-062	1.0 112-296-062	1.0 112-516-062	1.0 112-496-062	0.5 112-066-062	0.5 112-036-062	0.5 112-056-062
Goat Anti-Rat IgG, Fcγ fragment specific ML* (min X Hu, Bov, Hrs Sr Prot)	1.0 112-006-071	1.0 112-156-071	1.0 112-486-071	1.0 112-096-071	1.0 112-506-071	1.0 112-166-071	1.0 112-296-071	1.0 112-516-071	1.0 112-496-071	0.5 112-066-071	0.5 112-036-071	0.5 112-056-071
Goat Anti-Rat IgG, F(ab')$_2$ fragment specific (min X Hu, Bov, Hrs Sr Prot)	1.0 112-006-072	1.0 112-156-072	1.0 112-486-072	1.0 112-096-072	1.0 112-506-072	1.0 112-166-072	1.0 112-296-072	1.0 112-516-072	1.0 112-496-072	0.5 112-066-072	0.5 112-036-072	0.5 112-056-072
Goat Anti-Rat IgG + IgM (H+L) (min X Hu, Bov, Hrs Sr Prot)	1.0 112-006-068	1.0 112-156-068	1.0 112-486-068	1.0 112-096-068	1.0 112-506-068	1.0 112-166-068	1.0 112-296-068	1.0 112-516-068	1.0 112-496-068	0.5 112-066-068	0.5 112-036-068	0.5 112-056-068
Goat Anti-Rat IgM, μ chain specific ML* (min X Hu, Bov, Hrs Sr Prot)	1.0 112-006-075	1.0 112-156-075	1.0 112-486-075	1.0 112-096-075	1.0 112-506-075	1.0 112-166-075	1.0 112-296-075	1.0 112-516-075	1.0 112-496-075	0.5 112-066-075	0.5 112-036-075	0.5 112-056-075
Mouse Anti-Rat IgG (H+L) (min X Hu, Bov, Hrs, **Ms**, Gt, Rb Sr Prot)**	0.5 212-006-168	0.5 212-156-168	0.5 212-486-168	0.5 212-096-168	0.5 212-506-168	0.5 212-166-168	0.5 212-296-168	0.5 212-516-168	0.5 212-496-168	0.5 212-066-168	0.5 212-036-168	0.5 212-056-168
Rabbit Anti-Rat IgG (H+L) (min X Hu Sr Prot)	0.5 312-006-045	0.5 312-156-045	0.5 312-486-045	0.5 312-096-045	0.5 312-506-045	0.5 312-166-045	0.5 312-296-045	0.5 312-516-045	0.5 312-496-045	0.5 312-066-045	0.5 312-036-045	0.5 312-056-045
F(ab')$_2$ Fragment ANTI-SHEEP* **												
Donkey Anti-Sheep IgG (H+L) ML* (min X Ck, GP, Sy Hms, Hrs, Hu, Ms, Rb, Rat Sr Prot)	0.5 mg 713-006-147	0.3 mg 713-156-147	0.3 mg 713-486-147	0.3 mg 713-096-147	0.3 mg 713-506-147	0.3 mg 713-166-147	0.3 mg 713-296-147	0.3 mg 713-516-147	0.3 mg 713-496-147	0.3 ml 713-066-147	0.3 ml 713-036-147	0.3 ml 713-056-147
Rabbit Anti-Sheep IgG (H+L)	1.0 313-006-003	0.5 313-156-003	0.5 313-486-003	0.5 313-096-003	0.5 313-506-003	0.5 313-166-003	0.5 313-296-003	0.5 313-516-003	0.5 313-496-003	0.5 313-066-003	0.5 313-036-003	0.5 313-056-003

*** Warning: BSA and dry milk may contain IgG which will be recognized by this antibody. Use of BSA or dry milk to block or dilute this antibody may increase background and/or reduce secondary antibody titer.

** Caution: See page 3 (min X … Sr Prot) before selecting an antibody adsorbed against closely related species.

* ML = Multiple Labeling (see Multiple Labeling on pages 4-5 for an explanation.).

Monovalent Fab Fragment Affinity-Purified Antibodies
for Blocking and for Double Labeling Primary Antibodies from the Same Host Species

Monovalent Fab fragments of affinity-purified secondary antibodies are offered to cover (block) the surface of immunoglobulins for double labeling primary antibodies from the same host species, or to block endogenous immunoglobulins in tissue sections or on cell surfaces. They can be used for these purposes because Fab fragments have a single antigen binding site (i.e. they are monovalent).

In contrast, divalent antibodies (whole IgG and $F(ab')_2$ fragments) have two antigen binding sites. After labeling the first primary antibody, some antigen binding sites on the first secondary antibody may remain open which could capture the second primary antibody introduced in a subsequent step. Consequently, it will appear as overlapping labeling, even though there may not be overlapping antigens. Therefore, divalent antibodies should not be used for blocking or for double labeling two primary antibodies from the same species. For selected literature references see Wessel and McClay, J. Histochem. Cytochem. 1986. 34, 703; Franzusoff et al., J. Cell Biology 1991. 112, 27; Lewis Carl et al., J. Histochem. Cytochem. 1993. 41, 1273; and Negoescu et al., J. Histochem. Cytochem. 1994. 42, 433.

Monovalent Fab secondary antibodies are not necessary when primary antibodies from the same host species are different classes of immunoglobulins, such as IgG and IgM; or different subclasses of IgG, such as Mouse IgG1 and Mouse IgG2a. In these cases, it is much easier and more effective to use class-specific or subclass-specific antibodies, respectively, to distinguish between the two primary antibodies.

To block endogenous immunoglobulins on cells or tissue sections, incubate with an excess (10-20 µg/ml) of unconjugated Fab antibody just after blocking with normal serum. To avoid a possible displacement of the Fab antibody by the labeled secondary antibody, a light post-fixation may be necessary, provided that it does not affect antigenicity of the target proteins. Fab antibodies are not effective for blocking immunoglobulins in Western blotting or ELISA applications.

Important note: These monovalent Fab fragments have not been adsorbed to remove cross-reactivities to other species. If the cells/tissues under study have endogenous immunoglobulins, using Example A or B may create background. In this case Example C should be used.

Antibody Description	Unconjugated	DyLight 488 A=493, E=518	Fluorescein FITC A=492, E=520	DyLight 549 A=555, E=568	Cyanine Cy3 A=550, E=570	Rhodamine Red-X RRX A=570, E=590	DyLight 594 A=591, E=616	DyLight 649 A=652, E=670	Biotin-SP (long spacer)
Rabbit Anti-Goat IgG (H+L)***	1.0 mg 305-007-003	0.5 mg 305-487-003	0.5 mg 305-097-003	0.5 mg 305-507-003	0.5 mg 305-167-003	0.5 mg 305-297-003	0.5 mg 305-517-003	0.5 mg 305-497-003	0.5 ml 305-067-003
Goat Anti-Human IgG (H+L)	1.0 109-007-003	1.0 109-487-003	1.0 109-097-003	1.0 109-507-003	1.0 109-167-003	1.0 109-297-003	1.0 109-517-003	1.0 109-497-003	0.5 109-067-003
Goat Anti-Human IgM, $Fc_{5\mu}$ fragment specific	1.0 109-007-043	1.0 109-487-043	1.0 109-097-043	1.0 109-507-043	1.0 109-167-043	1.0 109-297-043	1.0 109-517-043	1.0 109-497-043	0.5 109-067-043
Donkey Anti-Mouse IgG (H+L)	1.0 715-007-003	1.0 715-487-003	1.0 715-097-003	1.0 715-507-003	1.0 715-167-003	1.0 715-297-003	1.0 715-517-003	1.0 715-497-003	0.5 715-067-003
Goat Anti-Mouse IgG (H+L)	1.0 115-007-003	1.0 115-487-003	1.0 115-097-003	1.0 115-507-003	1.0 115-167-003	1.0 115-297-003	1.0 115-517-003	1.0 115-497-003	0.5 115-067-003
Rabbit Anti-Mouse IgG (H+L)	1.0 315-007-003	0.5 315-487-003	0.5 315-097-003	0.5 315-507-003	0.5 315-167-003	0.5 315-297-003	0.5 315-517-003	0.5 315-497-003	0.5 315-067-003
Goat Anti-Mouse IgM, µ chain specific	1.0 115-007-020	1.0 115-487-020	1.0 115-097-020	1.0 115-507-020	1.0 115-167-020	1.0 115-297-020	1.0 115-517-020	1.0 115-497-020	0.5 115-067-020
Donkey Anti-Rabbit IgG (H+L)	1.0 711-007-003	1.0 711-487-003	1.0 711-097-003	1.0 711-507-003	1.0 711-167-003	1.0 711-297-003	1.0 711-517-003	1.0 711-497-003	0.5 711-067-003
Goat Anti-Rabbit IgG (H+L)	1.0 111-007-003	1.0 111-487-003	1.0 111-097-003	1.0 111-507-003	1.0 111-167-003	1.0 111-297-003	1.0 111-517-003	1.0 111-497-003	0.5 111-067-003
Donkey Anti-Rat IgG (H+L)	1.0 712-007-003	1.0 712-487-003	1.0 712-097-003	1.0 712-507-003	1.0 712-167-003	1.0 712-297-003	1.0 712-517-003	1.0 712-497-003	0.5 712-067-003
Goat Anti-Rat IgG (H+L)	1.0 112-007-003	1.0 112-487-003	1.0 112-097-003	1.0 112-507-003	1.0 112-167-003	1.0 112-297-003	1.0 112-517-003	1.0 112-497-003	0.5 112-067-003
Rabbit Anti-Sheep IgG (H+L)***	1.0 313-007-003	0.5 313-487-003	0.5 313-097-003	0.5 313-507-003	0.5 313-167-003	0.5 313-297-003	0.5 313-517-003	0.5 313-497-003	0.5 313-067-003

*** Warning: BSA and dry milk may contain IgG which will be recognized by this antibody. Use of BSA or dry milk to block or dilute this antibody may increase background and/or reduce secondary antibody titer.

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Monovalent Fab Fragment Affinity-Purified Antibodies
for Blocking and for Double Labeling Primary Antibodies from the Same Host Species

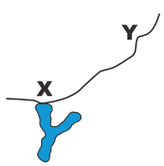
Fab Fragments for Blocking and Double Labeling of Primary Antibodies from the Same Host Species

The following examples show some of the possible protocols used for double labeling two unconjugated primary antibodies from the same host species. The success of these experimental designs will require some empirical manipulations. In each case it is important to label the less abundant primary antibody first. Trying different concentrations of reagents in each step or switching the labeling sequence of the two antigens may influence the outcome. Blocking with an appropriate normal serum between certain steps may also help to reduce background. To avoid a possible displacement of the Fab antibody by the labeled secondary antibody, a light post-fixation may be necessary, provided that it does not affect antigenicity of the target proteins.

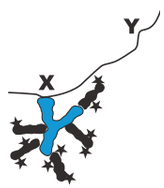
Example A. Use of conjugated Fab fragments for labeling and blocking.

KEY:

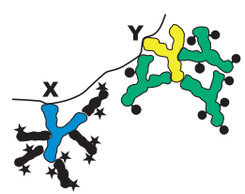
- Rabbit anti-Antigen X
- Rabbit anti-Antigen Y
- Fab fragment Goat anti-Rabbit IgG (H+L)
- Goat anti-Rabbit IgG (H+L)
- DyLight 488
- Rhodamine Red-X



1. Incubate with the first primary antibody, in this example rabbit anti-antigen X. Wash.



2. Incubate with excess Probe I-conjugated secondary antibody, in this example DyLight 488-Fab fragment goat anti-rabbit IgG (H+L). Wash.



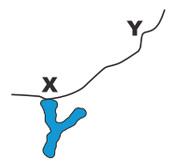
3. Incubate with the second primary antibody, rabbit anti-antigen Y, followed by Probe II-conjugated secondary antibody, in this example Rhodamine Red-X-goat anti-rabbit IgG (H+L). Wash.

Caution: *This protocol may be subject to the following problems: (1) Example A may require a high concentration of conjugated Fab to achieve effective blocking of the first primary antibody. If this results in unacceptable background, try a lower concentration of the conjugated Fab, followed by further blocking with unconjugated Fab. (2) If small aggregates of conjugated Fab are bound to the first primary antibody, they may act as divalent or polyvalent antibodies and capture some of the second primary antibodies, which would result in overlapping detection of antigens.*

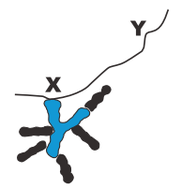
Example B. Use of unconjugated Fab fragments to cover the first primary antibody, presenting it as a different species.

KEY:

- Rabbit anti-Antigen X
- Rabbit anti-Antigen Y
- Fab fragment Goat anti-Rabbit IgG (H+L)
- Mouse anti-Goat IgG (H+L) (min X Ms, Hu, Rb Sr Prot)
- Mouse anti-Rabbit IgG (H+L) (min X Hu, Gt, Ms, Shp Sr Prot)
- DyLight 488
- Rhodamine Red-X



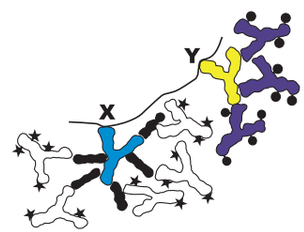
1. Incubate with the first primary antibody, in this example rabbit anti-antigen X. Wash.



2. Incubate with an excess of unconjugated Fab antibody against the host species of the primary antibody, in this example unconjugated Fab fragment goat anti-rabbit IgG (H+L). This presents the rabbit IgG as goat Fab. Wash.

3. Incubate with Probe 1-conjugated tertiary antibody directed against the host species of the Fab antibody. The tertiary antibody must not recognize the host species of either the primary antibodies or the second secondary antibody. This example used DyLight 488-mouse anti-goat IgG (H+L) (min X **Ms**, Hu, **Rb** Sr Prot). Wash.

4. Incubate with the second primary antibody, in this example rabbit anti-antigen Y. Wash.



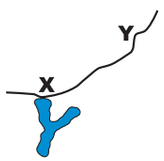
5. Incubate with Probe II-conjugated to the second secondary antibody, that does not recognize the host species of either the Fab antibody used in step 2 or the tertiary antibody used in step 3. In this example, Rhodamine Red-X-mouse anti-rabbit IgG (H+L) (min X Hu, **Gt**, **Ms**, and Shp Sr Prot) was used. Wash.

Fab Fragments for Blocking and Double Labeling of Primary Antibodies from the Same Host Species (con't)

Example C. Use of unconjugated Fab fragments for blocking after the first secondary antibody step.

KEY:

- Rabbit anti-Antigen X
- Rabbit anti-Antigen Y
- Fab fragment Goat anti-Rabbit IgG (H+L)
- Goat anti-Rabbit IgG (H+L) (min X Hu, Ms, Rat Sr Prot)
- ★ DyLight 488
- ● Rhodamine Red-X
- Rabbit IgG from normal rabbit serum



1. Incubate with the first primary antibody, in this example rabbit anti-antigen X. Wash.

2. Incubate with Probe I-conjugated secondary antibody, in this example DyLight 488-goat anti-rabbit IgG (H+L) (min X Hu, Ms, Rat Sr Prot). Wash.

3. Incubate with normal serum from the same host species as the primary antibodies, in this example normal rabbit serum. The purpose of this step is to saturate open binding sites on the first secondary antibody with IgG so that they cannot capture the second primary antibody. Wash.

4. Incubate with an excess of unconjugated Fab antibody against the host species of the primary antibodies, in this example Fab goat anti-rabbit IgG (H+L).The host species of the Fab antibody should be the same as the host species of the conjugated secondary antibody. This step covers the rabbit IgG so that the second secondary antibody will not bind to it. Wash.

5. Incubate with the second primary antibody, in this example rabbit anti-antigen Y. Wash.

6. Incubate with Probe II conjugated to the same secondary antibody as used in step 2, in this example Rhodamine Red-X-goat anti-rabbit IgG (H+L)(min X Hu, Ms, Rat Sr Prot). Wash.

Fab Fragments for Blocking and Double Labeling of Primary Antibodies from the Same Host Species (con't)

If it is necessary to incubate with the labeled primary antibody first (Example D), blocking with a monovalent Fab antibody is required to prevent the secondary antibody used in a subsequent step from binding to the labeled primary antibody. Incubating with the unlabeled primary antibody first (Example E) will obviate the need for blocking with a monovalent Fab antibody.

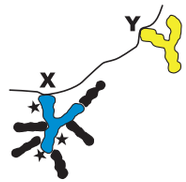
Example D. Use of unconjugated Fab fragments for detection of one unlabeled and one or more labeled primary antibodies.

KEY:

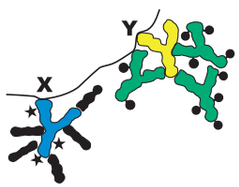
- Rabbit anti-Antigen X
- Rabbit anti-Antigen Y
- Fab fragment Goat anti-Rabbit IgG (H+L)
- Goat anti-Rabbit IgG (H+L)
- DyLight 488
- Rhodamine Red-X

1. Incubate with Probe I-conjugated to the first primary antibody, in this example DyLight 488-rabbit anti-antigen X. Wash.

2. Incubate with an excess of unconjugated Fab goat anti-rabbit IgG (H+L). Wash.



3. Incubate with the unconjugated primary antibody, in this example rabbit anti-antigen Y. Wash.



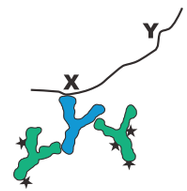
4. Incubate with Probe II-conjugated secondary antibody, in this example Rhodamine Red-X-goat anti-rabbit IgG (H+L). Wash.

Example E. Detection of one unlabeled and one or more labeled primary antibodies without the use of Fab fragments.

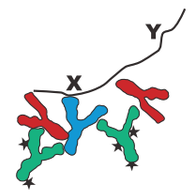
KEY:

- Rabbit anti-Antigen X
- Rabbit anti-Antigen Y
- Goat anti-Rabbit IgG (H+L)
- DyLight 488
- Rhodamine Red-X
- Rabbit IgG from normal rabbit serum

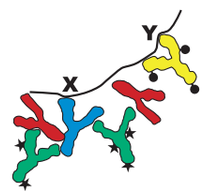
1. Incubate with the first primary antibody, in this example rabbit anti-antigen X. Wash.



2. Incubate with Probe I-conjugated secondary antibody, in this example DyLight 488-goat anti-rabbit IgG (H+L). Wash.



3. Incubate with normal serum from the host species of the primary antibody, in this example normal rabbit serum. Wash.



4. Incubate with Probe II-conjugated primary antibody, in this example Rhodamine Red-X-rabbit anti-antigen Y. Wash.

Secondary Antibodies for Flow Cytometry

For flow cytometry we offer three fluorescent proteins (R-PE, APC, and PerCP) conjugated to our highly adsorbed secondary antibodies, streptavidin, and purified immunoglobulin controls. The table of Flow Cytometry Products lists all of the antibodies, purified immunoglobulins, and streptavidin to which we conjugate these proteins. Also shown in this table are the same highly adsorbed antibodies and purified immunoglobulins conjugated to Biotin-SP and fluorescent dyes appropriate for flow cytometry (DyLight 488, FITC, and DyLight 649). Note that many antibodies listed elsewhere in tables of Whole IgG and $F(ab')_2$ Fragments also can be used for flow cytometry.

Phycoerythrin (R-PE) and allophycocyanin (APC) are among several kinds of light-harvesting phycobiliproteins found in red, blue-green, and cryptomonad algae. We offer R-PE, the form found in red macrophytic algae (seaweed). APC is isolated from the blue-green alga Spirulina, and is chemically cross-linked for stability. After phycobiliproteins are conjugated to highly adsorbed secondary antibodies, there is little fluorescence quenching, which results in conjugates of high specific fluorescence compared with conventional fluorophore-antibody conjugates. R-PE and APC can be excited by light over a wide range of the visible spectrum (Figures 5A, C), are highly water soluble, have relatively low isoelectric points, and lack potentially sticky carbohydrates.

PerCP is a fluorescent peridinin-chlorophyll-protein complex isolated from dinoflagellates. We offer the form found in Dinophyceae sp. with a molecular weight of about 35.5 kDa. It has a broad spectrum of excitation with a main peak at 472 nm, and a long Stokes shift to an emission peak at 677 nm (Figure 5A, B).

PerCP, DyLight 488 (or FITC), and R-PE are excited at 488 nm with an argon laser (Figure 5A), and thus can be used for one-, two-, and three-color analyses with single-laser flow cytometers. APC and DyLight 649 are excited at 633 or 635 nm (Figure 5C) to give a fourth color with dual-laser flow cytometers.

It should be noted that the relatively high molecular weights of PerCP, R-PE, and APC may preclude their use in procedures requiring good penetration into cells and tissues. They are predominantly intended for surface labeling of cells for flow cytometry.

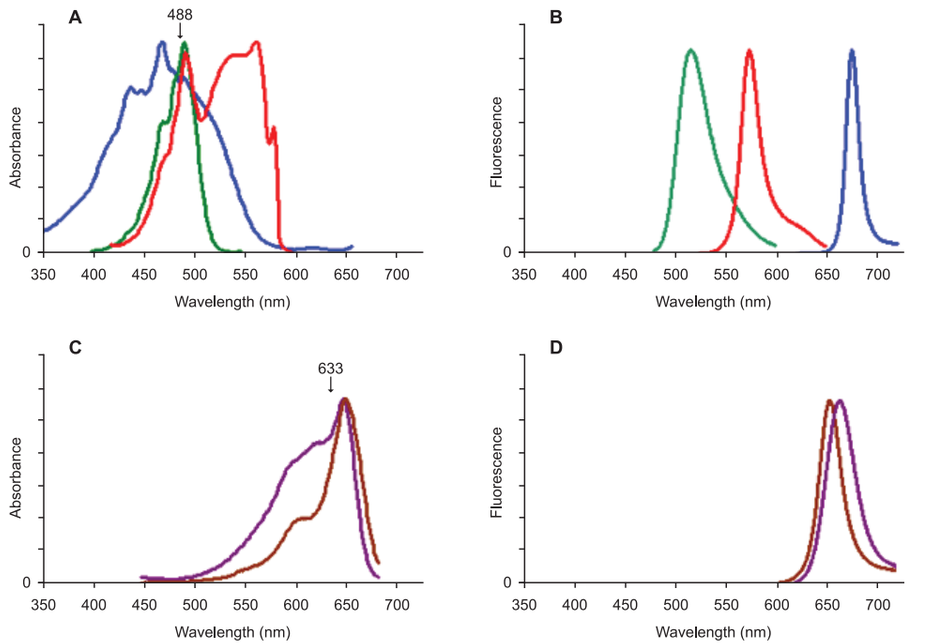


Figure 5. Excitation (A) and emission (B) spectra of DyLight 488/FITC (green), R-PE (red), and PerCP (blue); and excitation (C) and emission (D) spectra of DyLight 649 (brown) and APC (purple). Peak heights were normalized after the spectra were obtained with an M-series spectrofluorometer system from Photon Technology International, Inc.

Antibody Description	Unconjugated	DyLight 488 A=493, E=518	Fluorescein FITC A=488, E=520	Phycoerythrin R-PE A=488, E=580	Allophycocyanin APC A=635, E=660	DyLight 649 A=652, E=670	PerCP A=650, E=670	Biotin-SP (long spacer)
$F(ab')_2$ Fragment Donkey Anti-Chicken IgY† (IgG) (H+L) ML* (min X Bov, Gt, GP, Sy Hms, Hrs, Hu, Ms, Rb, Rat, Shp Sr Prot)	0.5 mg 703-006-155	0.3 mg 703-486-155	0.3 mg 703-096-155	1.0 ml 703-116-155	0.5 ml 703-136-155	0.3 mg 703-496-155	0.5 ml 703-126-155	0.3 ml 703-066-155
$F(ab')_2$ Fragment Donkey Anti-Goat IgG (H+L)*** ML* (min X Ck, GP, Sy Hms, Hrs, Hu, Ms, Rb, Rat Sr Prot)	0.5 705-006-147	0.3 705-486-147	0.3 705-096-147	1.0 705-116-147	0.5 705-136-147	0.3 705-496-147	0.5 705-126-147	0.3 705-066-147
$F(ab')_2$ Fragment Donkey Anti-Guinea Pig IgG (H+L) ML* (min X Bov, Ck, Gt, Sy Hms, Hrs, Hu, Ms, Rb, Rat, Shp Sr Prot)	0.5 706-006-148	0.3 706-486-148	0.3 706-096-148	1.0 706-116-148	0.5 706-136-148	0.3 706-496-148	0.5 706-126-148	0.3 706-066-148

*** Warning: BSA and dry milk may contain IgG which will be recognized by this antibody. Use of BSA or dry milk to block or dilute this antibody may increase background and/or reduce secondary antibody titer.

* ML = Multiple Labeling (see Multiple Labeling on pages 4-5 for an explanation).

† IgY is the original designation for the IgG-like protein found in both serum and egg yolk.

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Secondary Antibodies for Flow Cytometry

Antibody Description	Unconjugated	DyLight 488 A=493, E=518	Fluorescein FITC A=488, E=520	Phycoerythrin R-PE A=488, E=580	Allophycocyanin APC A=635, E=660	DyLight 649 A=652, E=670	PerCP A=650, E=670	Biotin-SP (long spacer)
Whole IgG Goat Anti-Armenian Hamster IgG (H+L) (min X Bov, Hu, **Ms**, Rb, **Rat** Sr Prot)**	1.0 mg 127-005-160	0.5 mg 127-485-160	0.5 mg 127-095-160	1.0 ml 127-115-160	0.5 ml 127-135-160	0.5 mg 127-495-160	0.5 ml 127-125-160	0.5 ml 127-065-160
$F(ab')_2$ Fragment Donkey Anti-Human IgG (H+L) (min X Bov, Ck, Gt, GP, Sy Hms, Hrs, Ms, Rb, Rat, Shp Sr Prot)	0.5 709-006-149	0.3 709-486-149	0.3 709-096-149	1.0 709-116-149	0.5 709-136-149	0.3 709-496-149	0.5 709-126-149	0.3 709-066-149
$F(ab')_2$ Fragment Donkey Anti-Human IgG, Fcγ fragment specific (min X Bov, Hrs, Ms Sr Prot)	1.0 709-006-098	1.0 709-486-098	1.0 709-096-098	1.0 709-116-098	0.5 709-136-098	1.0 709-496-098	0.5 709-126-098	0.5 709-066-098
$F(ab')_2$ Fragment Donkey Anti-Human IgM, $Fc_{5\mu}$ fragment specific (min X Bov, Hrs Sr Prot)	1.0 709-006-073	1.0 709-486-073	1.0 709-096-073	1.0 709-116-073	0.5 709-136-073	1.0 709-496-073	0.5 709-126-073	0.5 709-066-073
$F(ab')_2$ Fragment Goat Anti-Human IgG (H+L) (min X Bov, Hrs, Ms Sr Prot)	1.0 109-006-088	1.0 109-486-088	1.0 109-096-088	1.0 109-116-088	0.5 109-136-088	1.0 109-496-088	0.5 109-126-088	0.5 109-066-088
$F(ab')_2$ Fragment Goat Anti-Human IgG, Fcγ fragment specific (min X Bov, Hrs, Ms Sr Prot)	1.0 109-006-098	1.0 109-486-098	1.0 109-096-098	1.0 109-116-098	0.5 109-136-098	1.0 109-496-098	0.5 109-126-098	0.5 109-066-098
Whole IgG Goat Anti-Human IgG, Fcγ fragment specific (min X Bov, Hrs, Ms Sr Prot)	1.0 109-005-098	1.0 109-485-098	1.0 109-095-098	1.0 109-115-098	0.5 109-135-098	1.0 109-495-098	0.5 109-125-098	1.0 109-065-098
$F(ab')_2$ Fragment Goat Anti-Human IgG, Fcγ fragment specific (min X Bov, Ms, Rb Sr Prot)	1.0 109-006-170	1.0 109-486-170	1.0 109-096-170	1.0 109-116-170	0.5 109-136-170	1.0 109-496-170	0.5 109-126-170	0.5 109-066-170
$F(ab')_2$ Fragment Goat Anti-Human IgG, $F(ab')_2$ fragment specific (min X Bov, Hrs, Ms Sr Prot)	1.0 109-006-097	1.0 109-486-097	1.0 109-096-097	1.0 109-116-097	0.5 109-136-097	1.0 109-496-097	0.5 109-126-097	0.5 109-066-097
$F(ab')_2$ Fragment Goat Anti-Human IgG + IgM (H+L) (min X Bov Sr Prot)	1.0 109-006-127	1.0 109-486-127	1.0 109-096-127	1.0 109-116-127	0.5 109-136-127	1.0 109-496-127	0.5 109-126-127	0.5 109-066-127
Whole IgG Goat Anti-Human Serum IgA, α chain specific	2.0 109-005-011	2.0 109-485-011	2.0 109-095-011	1.0 109-115-011	0.5 109-135-011	2.0 109-495-011	0.5 109-125-011	2.0 109-065-011
$F(ab')_2$ Fragment Donkey Anti-Mouse IgG (H+L) ML* (min X Bov, Ck, Gt, GP, Sy Hms, Hrs, Hu, Rb, Shp Sr Prot)	0.5 715-006-150	0.3 715-486-150	0.3 715-096-150	1.0 715-116-150	0.5 715-136-150	0.3 715-496-150	0.5 715-126-150	0.3 715-066-150
$F(ab')_2$ Fragment Donkey Anti-Mouse IgG (H+L) ML* (min X Bov, Ck, Gt, GP, Sy Hms, Hrs, Hu, Rb, **Rat**, Shp Sr Prot)**	0.5 715-006-151	0.3 715-486-151	0.3 715-096-151	1.0 715-116-151	0.5 715-136-151	0.3 715-496-151	0.5 715-126-151	0.3 715-066-151
$F(ab')_2$ Fragment Goat Anti-Mouse IgG (H+L) ML* (min X Hu, Bov, Hrs, Rb, Sw Sr Prot)	1.0 115-006-146	1.0 115-486-146	1.0 115-096-146	1.0 115-116-146	0.5 115-136-146	1.0 115-496-146	0.5 115-126-146	0.5 115-066-146
$F(ab')_2$ Fragment Goat Anti-Mouse IgG Fcγ fragment specific ML* (min X Hu, Bov, Hrs Sr Prot)	1.0 115-006-071	1.0 115-486-071	1.0 115-096-071	1.0 115-116-071	0.5 115-136-071	1.0 115-496-071	0.5 115-126-071	0.5 115-066-071
Whole IgG Goat Anti-Mouse IgG (subclasses 1+2a+2b+3) ML* Fcγ fragment specific (min X Hu, Bov, Rb Sr Prot)	1.0 115-005-164	1.0 115-485-164	1.0 115-095-164	1.0 115-115-164	0.5 115-135-164	0.5 115-495-164	0.5 115-125-164	1.0 115-065-164
Whole IgG Goat Anti-Mouse IgG, Fcγ Subclass 1 specific ML* (min X Hu, Bov, Rb Sr Prot)	1.0 115-005-205	0.5 115-485-205	0.5 115-095-205	0.5 115-115-205	0.3 115-135-205	0.5 115-495-205	0.3 115-125-205	0.5 115-065-205

** Caution: See page 3 (min X … Sr Prot) before selecting an antibody adsorbed against closely related species.

* ML = Multiple Labeling (see Multiple Labeling on pages 4-5 for an explanation).

Secondary Antibodies for Flow Cytometry

Antibody Description	Unconjugated	DyLight 488 A=493, E=518	Fluorescein FITC A=488, E=520	Phycoerythrin R-PE A=488, E=580	Allophycocyanin APC A=635, E=660	DyLight 649 A=652, E=670	PerCP A=650, E=670	Biotin-SP (long spacer)
Whole IgG Goat Anti-Mouse IgG, Fcγ Subclass 2a specific ML* (min X Hu, Bov, Rb Sr Prot)	1.0 mg 115-005-206	0.5 mg 115-485-206	0.5 mg 115-095-206	0.5 ml 115-115-206	0.3 ml 115-135-206	0.5 mg 115-495-206	0.3 ml 115-125-206	0.5 ml 115-065-206
Whole IgG Goat Anti-Mouse IgG, Fcγ Subclass 2b specific ML* (min X Hu, Bov, Rb Sr Prot)	1.0 115-005-207	0.5 115-485-207	0.5 115-095-207	0.5 115-115-207	0.3 115-135-207	0.5 115-495-207	0.3 115-125-207	0.5 115-065-207
Whole IgG Goat Anti-Mouse IgG, Fcγ Subclass 2c specific ML* (min X Hu, Bov, Rb Sr Prot)	1.0 115-005-208	0.5 115-485-208	0.5 115-095-208	0.5 115-115-208	0.3 115-135-208	0.5 115-495-208	0.3 115-125-208	0.5 115-065-208
Whole IgG Goat Anti-Mouse IgG, Fcγ Subclass 3 specific ML* (min X Hu, Bov, Rb Sr Prot)	1.0 115-005-209	0.5 115-485-209	0.5 115-095-209	0.5 115-115-209	0.3 115-135-209	0.5 115-495-209	0.3 115-125-209	0.5 115-065-209
$F(ab')_2$ Fragment Goat Anti-Mouse IgG, $F(ab')_2$ fragment specific (min X Hu, Bov, Hrs Sr Prot)	1.0 115-006-072	1.0 115-486-072	1.0 115-096-072	1.0 115-116-072	0.5 115-136-072	1.0 115-96-072	0.5 115-126-072	0.5 115-066-072
$F(ab')_2$ Fragment Goat Anti-Mouse IgG + IgM (H+L) (min X Hu, Bov, Hrs Sr Prot)	1.0 115-006-068	1.0 115-486-068	1.0 115-096-068	1.0 115-116-068	0.5 115-136-068	1.0 115-496-068	0.5 115-126-068	0.5 115-066-068
$F(ab')_2$ Fragment Goat Anti-Mouse IgM, μ chain specific ML* (min X Hu, Bov, Hrs Sr Prot)	1.0 115-006-075	1.0 115-486-075	1.0 115-096-075	1.0 115-116-075	0.5 115-136-075	1.0 115-496-075	0.5 115-126-075	0.5 115-066-075
$F(ab')_2$ Fragment Donkey Anti-Rabbit IgG (H+L) ML* (min X Bov, Ck, Gt, GP, Sy Hms, Hrs, Hu, Ms, Rat, Shp Sr Prot)	0.5 711-006-152	0.3 711-486-152	0.3 711-096-152	1.0 711-116-152	0.5 711-136-152	0.3 711-496-152	0.5 711-126-152	0.3 711-066-152
$F(ab')_2$ Fragment Goat Anti-Rabbit IgG (H+L) ML* (min X Hu, Ms, Rat Sr Prot)	1.0 111-006-144	1.0 111-486-144	1.0 111-096-144	1.0 111-116-144	0.5 111-136-144	1.0 111-496-144	0.5 111-126-144	0.5 111-066-144
$F(ab')_2$ Fragment Donkey Anti-Rat IgG (H+L) ML* (min X Bov, Ck, Gt, GP, Sy Hms, Hrs, Hu, Rb, Shp Sr Prot)	0.5 712-006-150	0.3 712-486-150	0.3 712-096-150	1.0 712-116-150	0.5 712-136-150	0.3 712-496-150	0.5 712-126-150	0.3 712-066-150
$F(ab')_2$ Fragment Donkey Anti-Rat IgG (H+L) ML* (min X Bov, Ck, Gt, GP, Sy Hms, Hrs, Hu, **Ms**, Rb, Shp Sr Prot)**	0.5 712-006-153	0.3 712-486-153	0.3 712-096-153	1.0 712-116-153	0.5 712-136-153	0.3 712-496-153	0.5 712-126-153	0.3 712-066-153
$F(ab')_2$ Fragment Goat Anti-Rat IgG (H+L) ML* (min X Hu, Bov, Hrs, Rb Sr Prot)	1.0 112-006-143	1.0 112-486-143	1.0 112-096-143	1.0 112-116-143	0.5 112-136-143	1.0 112-496-143	0.5 112-126-143	0.5 112-066-143
$F(ab')_2$ Fragment Goat Anti-Rat IgG, Fcγ fragment specific ML* (min X Hu, Bov, Hrs Sr Prot)	1.0 112-006-071	1.0 112-486-071	1.0 112-096-071	1.0 112-116-071	0.5 112-136-071	1.0 112-496-071	0.5 112-126-071	0.5 112-066-071
$F(ab')_2$ Fragment Goat Anti-Rat IgG, $F(ab')_2$ fragment specific (min X Hu, Bov, Hrs Sr Prot)	1.0 112-006-072	1.0 112-486-072	1.0 112-096-072	1.0 112-116-072	0.5 112-136-072	1.0 112-496-072	0.5 112-126-072	0.5 112-066-072
$F(ab')_2$ Fragment Goat Anti-Rat IgM, μ chain specific ML* (min X Hu, Bov, Hrs Sr Prot)	1.0 112-006-075	1.0 112-486-075	1.0 112-096-075	1.0 112-116-075	0.5 112-136-075	1.0 112-496-075	0.5 112-126-075	0.5 112-066-075
$F(ab')_2$ Fragment Donkey Anti-Sheep IgG (H+L)*** ML* (min X Ck, GP, Sy Hms, Hrs, Hu, Ms, Rb, Rat Sr Prot)	0.5 713-006-147	0.3 713-486-147	0.3 713-096-147	1.0 713-116-147	0.5 713-136-147	0.3 713-496-147	0.5 713-126-147	0.3 713-066-147

*** Warning: BSA and dry milk may contain IgG which will be recognized by this antibody. Use of BSA or dry milk to block or dilute this antibody may increase background and/or reduce secondary antibody titer.

** Caution: See page 3 (min X … Sr Prot) before selecting an antibody adsorbed against closely related species.

* ML = Multiple Labeling (see Multiple Labeling on pages 4-5 for an explanation).

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Controls and Streptavidin for Flow Cytometry

Controls and Streptavidin	Unconjugated	DyLight 488 A=493, E=518	Fluorescein FITC/DTAF A=488, E=520	Phycoerythrin R-PE A=488, E=580	Allophycocyanin APC A=635, E=660	DyLight 649 A=652, E=670	PerCP A=650, E=670	Biotin-SP (long spacer)
Streptavidin	1.0 mg 016-000-084	1.0 mg 016-480-084	1.0 mg 016-010-084	1.0 ml 016-110-084	0.5 ml 016-130-084	1.0 mg 016-490-084	0.5 ml 016-120-084	NA
ChromPure Goat IgG, $F(ab')_2$ fragment	2.0 005-000-006	1.0 005-480-006	1.0 005-090-006	1.0 005-110-006	0.5 005-130-006	1.0 005-490-006	0.5 005-120-006	1.0 mg 005-060-006
ChromPure Goat IgG, whole molecule	10.0 005-000-003	1.0 005-480-003	1.0 005-090-003	1.0 005-110-003	0.5 005-130-003	1.0 005-490-003	0.5 005-120-003	1.0 005-060-003
ChromPure Donkey IgG, $F(ab')_2$ fragment	2.0 017-000-006	1.0 017-480-006	1.0 017-090-006	1.0 017-110-006	0.5 017-130-006	1.0 017-490-006	0.5 017-120-006	1.0 017-060-006

DyLight 405 Conjugates for 4-Color Imaging

Our new DyLight 405-conjugated secondary antibodies are excited maximally at about 400 nm and fluoresce with a peak at about 421 nm (Figure 6). They are very bright and photostable, but their optimal use is limited to confocal microscopes equipped with a 405 nm laser and appropriate emission filter. Under these conditions, it is possible to perform effective 4-color imaging with good color separation, good photostability, and high sensitivity in both aqueous and permanent mounting media. The combination of DyLight 405, DyLight 488, Rhodamine Red-X, and DyLight 649 provides for maximum color separation (Figure 7). Other 4-color dye combinations, which may be equally effective but have slightly less color separation, include DyLight 405, DyLight 488, DyLight 549 (or Cy3), and DyLight 649. DyLight 405 is not recommended for use in epifluorescence microscopes, nor is it recommended for flow cytometry, because emission filters generally used in flow cytometers are not optimal for DyLight 405.

The following table lists highly adsorbed affinity-purified secondary antibodies, streptavidin, and immunoglobulin controls conjugated with DyLight 405 suggested by JIR for use in 4-color labeling protocols. For a complete listing of DyLight 405 conjugates, see other tables in this catalog and in www.jacksonimmuno.com.

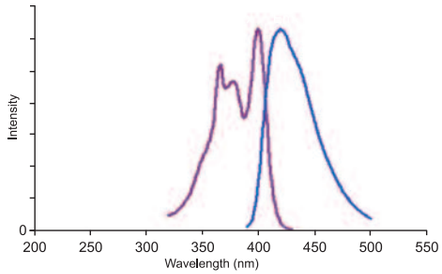

Figure 6. Excitation (violet) and emission (blue) spectra for DyLight 405 conjugated to an affinity-purified secondary antibody from Jackson ImmunoResearch. Quantitative comparisons should not be made since peak heights have been normalized. Spectra were obtained with an M-Series spectrofluorometer system from Photon Technology International, Inc.

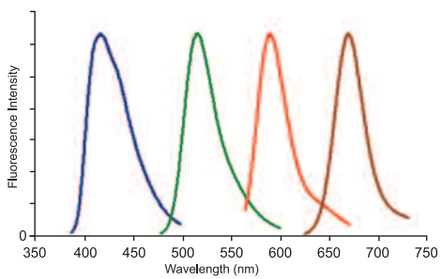

Figure 7. Emission spectra of DyLight 405 (blue), DyLight 488 (green), Rhodamine Red-X (red), and DyLight 649 (brown). This figure illustrates the relative shape and position of each fluorophore emission peak following conjugation to antibodies. It shows that effective 4-color imaging can be performed with maximum color separation using these dyes. Quantitative comparisons should not be made since peak heights have been normalized. All spectra were obtained with an M-Series spectrofluorometer system from Photon Technology International, Inc.

Product Description	DyLight 405 A=400, E=421
Streptavidin	1.0 mg 016-470-084
Donkey Anti-Chicken IgY†(IgG)(H+L) ML* (min X Bov, Gt, GP, Sy Hms, Hrs, Hu, Ms, Rb, Rat, Shp Sr Prot)	0.5 703-475-155
Donkey Anti-Goat IgG (H+L)*** ML* (min X Ck, GP, Sy Hms, Hrs, Hu, Ms, Rb, Rat Sr Prot)	0.5 mg 705-475-147
Donkey Anti-Guinea Pig IgG (H+L) ML* (min X Bov, Ck, Gt, Sy Hms, Hrs, Hu, Ms, Rb, Rat, Shp Sr Prot)	0.5 706-475-148
Donkey Anti-Human IgG (H+L) ML* (min X Bov, Ck, Gt, GP, Sy Hms, Hrs, Ms, Rb, Rat, Shp Sr Prot)	0.5 709-475-149
Donkey Anti-Mouse IgG (H+L) ML* (min X Bov, Ck, Gt, GP, Sy Hms, Hrs, Hu, Rb, Shp Sr Prot)	0.5 715-475-150
Donkey Anti-Mouse IgG (H+L) ML* (min X Bov, Ck, Gt, GP, Sy Hms, Hrs, Hu, Rb, **Rat** Shp Sr Prot)**	0.5 715-475-151
Goat Anti-Mouse IgG, Fcγ Subclass 1 Specific ML* (min X Hu, Bov, Rb Sr Prot)	0.5 115-475-205
Goat Anti-Mouse IgG, Fcγ Subclass 2a Specific ML* (min X Hu, Bov, Rb Sr Prot)	0.5 115-475-206
Goat Anti-Mouse IgG, Fcγ Subclass 2b Specific ML* (min X Hu, Bov, Rb Sr Prot)	0.5 115-475-207
Goat Anti-Mouse IgG, Fcγ Subclass 2c Specific ML* (min X Hu, Bov, Rb Sr Prot)	0.5 115-475-208
Goat Anti-Mouse IgG, Fcγ Subclass 3 Specific ML* (min X Hu, Bov, Rb Sr Prot)	0.5 115-475-209
Donkey Anti-Rabbit IgG (H+L) ML* (min X Bov, Ck, Gt, GP, Sy Hms, Hrs, Hu, Ms, Rat, Shp Sr Prot)	0.5 711-475-152
Donkey Anti-Rat IgG (H+L) ML* (min X Bov, Ck, Gt, GP, Sy Hms, Hrs, Hu, Rb, Shp Sr Prot)	0.5 712-475-150
Donkey Anti-Rat IgG (H+L)** ML* (min X Bov, Ck, Gt, GP, Sy Hms, Hrs, Hu, **Ms**, Rb, Shp Sr Prot)	0.5 712-475-153
Donkey Anti-Sheep IgG (H+L)*** ML* (min X Ck, GP, Sy Hms, Hrs, Hu, Ms, Rb, Rat Sr Prot)	0.5 713-475-147
ChromPure Donkey IgG, whole molecule	1.0 017-470-003
ChromPure Goat IgG, whole molecule	1.0 005-470-003

*** Warning: BSA and dry milk may contain IgG which will be recognized by this antibody.
** Caution: See page 3 (min X … Sr Prot) before selecting an antibody adsorbed against closely related species.
* ML = Multiple Labeling (see Multiple Labeling on pages 4-5 for an explanation).
† IgY is the original designation for the IgG-like protein found in both serum and egg yolk.

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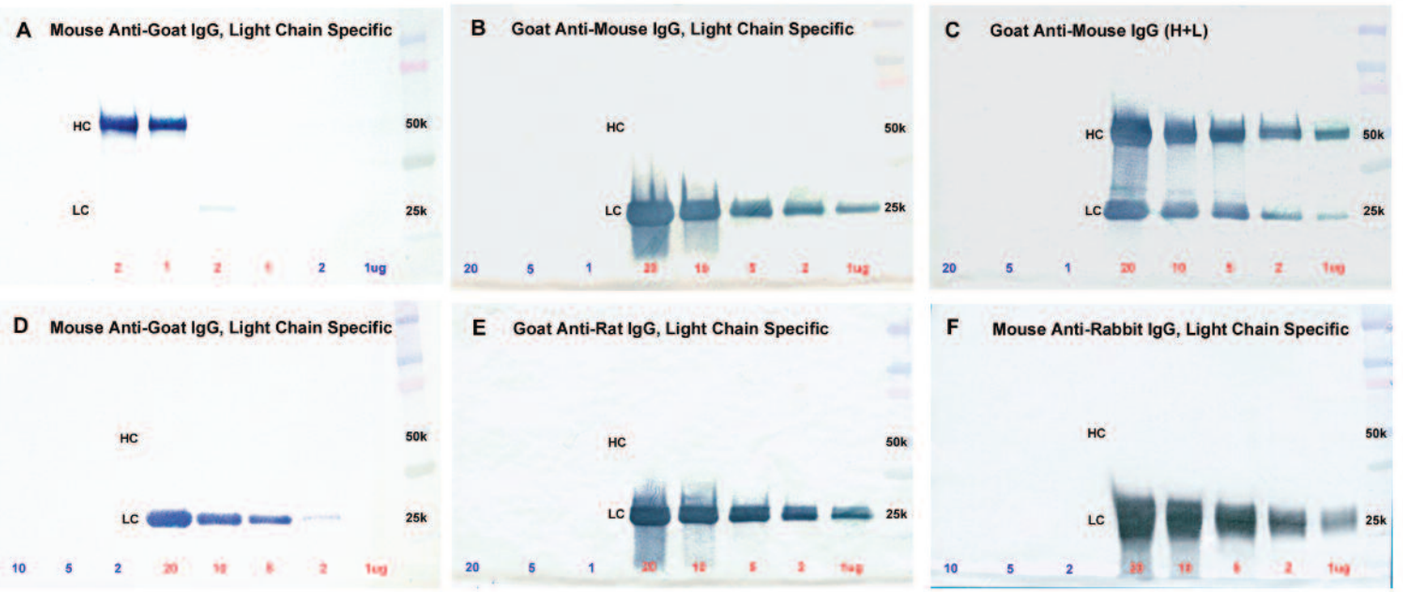
Anti-IgG, Light Chain Specific for Western Blotting

Anti-IgG, Light Chain Specific antibodies react with native primary antibodies used for detecting specific protein bands on Western blots (Figure 8 A). If diluted properly anti-light chain specific antibodies do not bind to the reduced and denatured IgG heavy chain band (50 kDa) on blots (Figure 8 B, D, E, and F). Therefore, by using anti-light chain specific antibodies, detection of antigens with molecular weights near 50 kDa is not obscured by large amounts of reduced and denatured IgG heavy chains from primary antibodies used for immunoprecipitation (IP). Although the antibodies react strongly with native IgG light chains, some do not react as strongly with reduced and denatured light chains on blots (see for example 8A and D). Therefore, they are not recommended for sensitive and quantitative detection of reduced and denatured light chains.

Figure 8. Detection of primary antibodies made in goat (against a 50 kDa protein) by mouse anti-goat IgG, Light Chain (LC) specific (A). Heavy (50 kDa) and light (25 kDa) chains of reduced and SDS-denatured mouse IgG (B, C), goat IgG (D), rat IgG (E), and rabbit IgG (F) were separated by SDS-PAGE and detected on Western blots using HRP-goat anti-mouse IgG, LC specific (B), HRP-goat anti-mouse IgG (H+L) (C), HRP-Mouse anti-goat IgG, LC specific (D), HRP-Goat anti-rat IgG, LC specific (E), and HRP-mouse anti-rabbit IgG, LC specific (F). No heavy chain band was detected even on lanes heavily overloaded with IgG when anti-IgG, LC specific antibodies were used for detection (B, D, E, and F). However, both heavy and light chain bands were detected with anti-IgG (H+L) (C). The three left-hand lanes had reduced and SDS-denatured goat IgG (B, C, and E) or mouse IgG (D and F), and the two right lanes in A had reduced and SDS-denatured mouse IgG, all of which served as background controls. The two middle lanes in A and the five right lanes in D demonstrate the relatively weak reactivity this antibody has with reduced and SDS-denatured light chains.



The antibodies have been thoroughly adsorbed to minimize cross-reactivity with immunoglobulins from many other species, which also may be present on blots.

If the protein of interest has a reduced and denatured molecular weight near 25 kDa, anti-IgG, Fc fragment specific antibodies may be used to detect native IgG primary antibodies without binding to the 25 kDa band of reduced and denatured IgG light chains on Western blots.

Antibody Description	Unconjugated	DyLight 488 A=493, E=518	DyLight 549 A=555, E=568	Cyanine Cy3 A=550, E=570	DyLight 594 A=591, E=616	DyLight 649 A=652, E=670	Biotin-SP (long spacer)	Horseradish Peroxidase	Alkaline Phosphatase
IgG Fraction Monoclonal Mouse Anti-Goat IgG, Light Chain Specific (min X Hrs, Hu, Ms, Rb, Rat Ig)	1.0 mg 205-002-176	0.5 mg 205-482-176	0.5 mg 205-502-176	0.5 mg 205-162-176	0.5 mg 205-512-176	0.5 mg 205-492-176	0.5 ml 205-062-176	0.5 ml 205-032-176	0.5 ml 205-052-176
AffiniPure Goat Anti-Mouse IgG, Light Chain* Specific (min X Bov, Gt, Hrs, Hu, Rb, Rat, Shp Ig)	1.0 115-005-174	0.5 115-485-174	0.5 115-505-174	0.5 115-165-174	0.5 115-515-174	0.5 115-495-174	0.5 115-065-174	0.5 115-035-174	0.5 115-055-174
IgG Fraction Monoclonal Mouse Anti-Rabbit IgG, Light Chain Specific (min X Bov, Gt, Ar Hms, Hrs, Hu, Ms, Rat, Shp Ig)	0.5 211-002-171	0.5 211-482-171	0.5 211-502-171	0.5 211-162-171	0.5 211-512-171	0.5 211-492-171	0.5 211-062-171	0.5 211-032-171	0.5 211-052-171
AffiniPure Goat Anti-Rat IgG, Light Chain* Specific (min X Bov, Gt, Hrs, Hu, Ms, Rb, Shp Ig)	0.5 112-005-175	0.5 112-485-175	0.5 112-505-175	0.5 112-165-175	0.5 112-515-175	0.5 112-495-175	0.5 112-065-175	0.5 112-035-175	0.5 112-055-175

* This antibody reacts primarily with kappa light chains. It is not suitable for detection of primary antibodies with lambda light chains.

Anti-Mouse IgG Subclass Specific Antibodies

These antibodies have been extensively adsorbed against other mouse IgG subclasses. They are intended for distinguishing between two or more different subclasses of mouse IgG in multiple labeling experiments, or for mouse IgG subclass determination. Due to the reduction in epitope recognition after extensive adsorption, they are not recommended for general detection of mouse monoclonal antibodies in a single labeling experiment, or in multiple labeling experiments involving one mouse monoclonal and primary antibodies from other species.

They also have been adsorbed against human, bovine, and rabbit serum proteins to minimize interfering cross-reactivities with tissue immunoglobulins, adherent bovine IgG on cultured cells, or rabbit primary antibodies.

Antibody Description	Unconjugated	DyLight 405 A=400, E=421	DyLight 488 A=493, E=518	Fluorescein FITC A=492, E=520	DyLight 549 A=555, E=568	Cyanine Cy3 A=550, E=570	Rhodamine Red-X RRX A=570, E=590	DyLight 594 A=591, E=616	DyLight 649 A=652, E=670	Biotin-SP (long spacer)	Horseradish Peroxidase	Alkaline Phosphatase
Whole IgG Goat Anti-Mouse IgG, Fcγ Subclass 1 specific ML* (min X Hu, Bov, Rb Sr Prot)	1.0 mg 115-005-205	0.5 mg 115-475-205	0.5 mg 115-485-205	0.5 mg 115-095-205	0.5 mg 115-505-205	0.5 mg 115-165-205	0.5 mg 115-295-205	0.5 mg 115-515-205	0.5 mg 115-495-205	0.5 ml 115-065-205	0.5 ml 115-035-205	0.5 ml 115-055-205
Whole IgG Goat Anti-Mouse IgG, Fcγ Subclass 2a specific ML* (min X Hu, Bov, Rb Sr Prot)	1.0 115-005-206	0.5 115-475-206	0.5 115-485-206	0.5 115-095-206	0.5 115-505-206	0.5 115-165-206	0.5 115-295-206	0.5 115-515-206	0.5 115-495-206	0.5 115-065-206	0.5 115-035-206	0.5 115-055-206
Whole IgG Goat Anti-Mouse IgG, Fcγ Subclass 2b specific ML* (min X Hu, Bov, Rb Sr Prot)	1.0 115-005-207	0.5 115-475-207	0.5 115-485-207	0.5 115-095-207	0.5 115-505-207	0.5 115-165-207	0.5 115-295-207	0.5 115-515-207	0.5 115-495-207	0.5 115-065-207	0.5 115-035-207	0.5 115-055-207
Whole IgG Goat Anti-Mouse IgG, Fcγ Subclass 2c specific ML* (min X Hu, Bov, Rb Sr Prot)	1.0 115-005-208	0.5 115-475-208	0.5 115-485-208	0.5 115-095-208	0.5 115-505-208	0.5 115-165-208	0.5 115-295-208	0.5 115-515-208	0.5 115-495-208	0.5 115-065-208	0.5 115-035-208	0.5 115-055-208
Whole IgG Goat Anti-Mouse IgG, Fcγ Subclass 3 specific ML* (min X Hu, Bov, Rb Sr Prot)	1.0 115-005-209	0.5 115-475-209	0.5 115-485-209	0.5 115-095-209	0.5 115-505-209	0.5 115-165-209	0.5 115-295-209	0.5 115-515-209	0.5 115-495-209	0.5 115-065-209	0.5 115-035-209	0.5 115-055-209

* ML = Multiple Labeling (see Multiple Labeling on pages 4-5 for an explanation).

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Purified IgG Fraction Monoclonal Mouse Anti-Digoxin

Monoclonal Mouse Anti-Digoxin reacts with digoxigenin and can be used either as a direct conjugate or, for more sensitivity, unconjugated followed by a conjugated anti-mouse IgG.

Probe	Code Number	Size
Unconjugated	200-002-156	1.0 mg
Aminomethylcoumarin, AMCA	200-152-156	0.5 mg
DyLight 405	200-472-156	0.5 mg
DyLight 488	200-482-156	0.5 mg
Fluorescein, FITC	200-092-156	0.5 mg
DyLight 549	200-502-156	0.5 mg
Indocarbocyanine, Cy3	200-162-156	0.5 mg
Rhodamine Red-X, RRX	200-292-156	0.5 mg
DyLight 594	200-512-156	0.5 mg
DyLight 649	200-492-156	0.5 mg
Biotin-SP (long spacer)	200-062-156	0.5 ml
Horseradish Peroxidase	200-032-156	0.5 ml
Alkaline Phosphatase	200-052-156	0.5 ml

Purified IgG Fraction Monoclonal Mouse Anti-Biotin

Monoclonal Mouse Anti-Biotin can be used either as a direct conjugate or, for more sensitivity, unconjugated followed by a conjugated anti-mouse IgG. Two examples of use for *in situ* hybridization, immunohistochemistry, and flow cytometry are shown below.

Example 1. DNA, RNA, or Tissue Antigen

↓

Biotin-conjugated Nucleic Acid Probe or Biotin-conjugated Antibody

↓

Fluorophore- or Enzyme-conjugated
Monoclonal Mouse Anti-Biotin

Example 2. DNA, RNA, or Tissue Antigen

↓

Biotin-conjugated Nucleic Acid Probe or Biotin-conjugated Antibody

↓

Unconjugated Monoclonal Mouse Anti-Biotin

↓

Fluorophore-, Colloidal Gold-, or Enzyme-conjugated Anti-Mouse IgG (H+L)

Probe	Code Number	Size
Unconjugated	200-002-211	1.0 mg
Aminomethylcoumarin, AMCA	200-152-211	0.5 mg
DyLight 405	200-472-211	0.5 mg
DyLight 488	200-482-211	0.5 mg
Fluorescein, FITC	200-092-211	0.5 mg
DyLight 549	200-502-211	0.5 mg
Indocarbocyanine, Cy3	200-162-211	0.5 mg
Rhodamine Red-X, RRX	200-292-211	0.5 mg
DyLight 594	200-512-211	0.5 mg
DyLight 649	200-492-211	0.5 mg
Horseradish Peroxidase	200-032-211	0.5 ml
Alkaline Phosphatase	200-052-211	0.5 ml

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Purified IgG Fraction Monoclonal Mouse Anti-Fluorescein

Monoclonal Mouse Anti-Fluorescein reacts with the fluorescein moiety of FITC and can be used either as a direct conjugate or, for more sensitivity, unconjugated followed by a conjugated anti-mouse IgG. Two examples of use for *in situ* hybridization, immunohistochemistry, and flow cytometry are shown below.

Example 1. DNA, RNA, or Tissue Antigen
↓
FITC-conjugated Nucleic Acid Probe or FITC-conjugated Antibody
↓
Fluorophore- or Enzyme-conjugated
Monoclonal Mouse Anti-Fluorescein (FITC)

Example 2. DNA, RNA, or Tissue Antigen
↓
FITC-conjugated Nucleic Acid Probe or FITC-conjugated Antibody
↓
Unconjugated Monoclonal Mouse Anti-Fluorescein (FITC)
↓
Fluorophore-, Colloidal Gold-, or Enzyme-conjugated Anti-Mouse IgG (H+L)

Probe	Code Number	Size
Unconjugated	200-002-037	1.0 mg
Aminomethylcoumarin, AMCA	200-152-037	0.5 mg
DyLight 405	200-472-037	0.5 mg
DyLight 488	200-482-037	0.5 mg
DyLight 549	200-502-037	0.5 mg
Indocarbocyanine, Cy3	200-162-037	0.5 mg
Rhodamine Red-X, RRX	200-292-037	0.5 mg
DyLight 594	200-512-037	0.5 mg
DyLight 649	200-492-037	0.5 mg
Biotin-SP (long spacer)	200-062-037	0.5 ml
Horseradish Peroxidase	200-032-037	0.5 ml
Alkaline Phosphatase	200-052-037	0.5 ml

ImmunoGold Reagents

Colloidal gold reagents are available either for transmission and scanning electron microscopy (EM Grade) or for light microscopy and immunoblotting (LM Grade). The EM Grade is distinguished from other commercial preparations by careful separation of monomeric particles from small aggregates using ultracentrifugation in density gradients. The resulting monomeric colloidal gold-protein complexes are suspended in sterile buffer containing stabilizers and preservative. All particle sizes in the EM Grade category may also be used for light microscopy and immunoblotting by those who prefer to use particles larger than 4 nm.

Since signal intensity is relatively independent of particle size when silver enhancement is used, we offer 4 nm particles (LM Grade) because this size may penetrate tissues better than larger particles. The 4 nm size also may be used for electron microscopy in studies that require smaller particles since they are relatively uniform in size (coefficient of variation less than or equal to 15%). However, small aggregates are not removed from this grade. Therefore, our 4 nm particles should only be used for electron microscopy with the understanding that the presence of small aggregates may give misleading results.

A detailed protocol for silver enhancement is provided with all orders for LM Grade products. All reagents involved in the light-insensitive silver enhancement reaction can be easily prepared in the laboratory. However, those who wish to use commercially available silver enhancement kits can continue to do so. All LM Grade colloidal gold-protein complexes are freeze-dried in buffer with stabilizers and preservative. After reconstitution, they may be frozen in aliquots for extended storage.

4 nm LM Grade Colloidal Gold - Antibody Complexes

Antibody Description		Size Code Number
Rabbit Anti-Bovine IgG (H+L)***		0.5 ml 301-185-003
Donkey Anti-Chicken IgY† (IgG) (H+L) (min X Bov, Gt, GP, Sy Hms, Hrs, Hu, Ms, Rb, Rat, Shp Sr Prot)	ML*	0.5 703-185-155
Rabbit Anti-Dog IgG (H+L)		0.5 304-185-003
Donkey Anti-Goat IgG (H+L)*** (min X Ck, GP, Sy Hms, Hrs, Hu, Ms, Rb, Rat Sr Prot)	ML*	0.5 705-185-147
Donkey Anti-Guinea Pig IgG (H+L) (min X Bov, Ck, Gt, Sy Hms, Hrs, Hu, Ms, Rb, Rat, Shp Sr Prot)	ML*	0.5 706-185-148
Rabbit Anti-Horse IgG (H+L)		0.5 308-185-003
Goat Anti-Human IgG (H+L) (min X Bov, Hrs, Ms Sr Prot)		1.0 109-185-088
Goat Anti-Human IgG, Fcγ fragment specific (min X Bov, Hrs, Ms Sr Prot)		1.0 109-185-098
Goat Anti-Human IgM, $Fc_{5\mu}$ fragment specific		1.0 109-185-043
Goat Anti-Human Serum IgA, α chain specific		1.0 109-185-011
Goat Anti-Mouse IgG (H+L) (min X Hu, Bov, Hrs, Rb, Sw Sr Prot)	ML*	1.0 115-185-146

Antibody Description		Size Code Number
Goat Anti-Mouse IgG (H+L) (min X **Rat**, Hu, Bov, Hrs, Rb Sr Prot)**	ML*	0.5 ml 115-185-166
Goat Anti-Mouse IgG, Fcγ fragment specific (min X Hu, Bov, Hrs Sr Prot)	ML*	1.0 115-185-071
Goat Anti-Mouse IgG + IgM (H+L) (min X Hu, Bov, Hrs Sr Prot)		1.0 115-185-068
Goat Anti-Mouse IgM, μ chain specific (min X Hu, Bov, Hrs Sr Prot)	ML*	1.0 115-185-075
Donkey Anti-Rabbit IgG (H+L) (min X Bov, Ck, Gt, GP, Sy Hms, Hrs, Hu, Ms, Rat, Shp Sr Prot)	ML*	0.5 711-185-152
Goat Anti-Rabbit IgG (H+L) (min X Hu, Ms, Rat Sr Prot)	ML*	1.0 111-185-144
Goat Anti-Rat IgG (H+L) (min X Hu, Bov, Hrs, Rb Sr Prot)	ML*	1.0 112-185-143
Goat Anti-Rat IgG (H+L) (min X **Ms**, Hu, Bov, Hrs, Rb Sr Prot)**	ML*	0.5 112-185-167
Goat Anti-Rat IgM, μ chain specific (min X Hu, Bov, Hrs Sr Prot)	ML*	1.0 112-185-075
Donkey Anti-Sheep IgG (H+L)*** (min X Ck, GP, Sy Hms, Hrs, Hu, Ms, Rb, Rat Sr Prot)	ML*	0.5 713-185-147
Goat Anti-Horseradish Peroxidase		1.0 123-185-021

*** Warning: BSA and dry milk may contain IgG which will be recognized by this antibody. Use of BSA or dry milk to block or dilute this antibody may increase background and/or reduce secondary antibody titer.
** Caution: See page 3 (min X … Sr Prot) before selecting an antibody adsorbed against closely related species.
* ML = Multiple Labeling (see Multiple Labeling on pages 4-5 for an explanation).
† IgY is the original designation for the IgG-like protein found in both serum and egg yolk.

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EM Grade Colloidal Gold - Antibody Complexes

Antibody Description		6 nm	12 nm	18 nm
Donkey Anti-Chicken IgY† (IgG) (H+L) (min X Bov, Gt, GP, Sy Hms, Hrs, Hu, Ms, Rb, Rat, Shp Sr Prot)	ML*	0.3 ml 703-195-155	0.3 ml 703-205-155	0.3 ml 703-215-155
Donkey Anti-Goat IgG (H+L)*** (min X Ck, GP, Sy Hms, Hrs, Hu, Ms, Rb, Rat Sr Prot)	ML*	0.3 705-195-147	0.3 705-205-147	0.3 705-215-147
Donkey Anti-Guinea Pig IgG (H+L) (min X Bov, Ck, Gt, Sy Hms, Hrs, Hu, Ms, Rb, Rat, Shp Sr Prot)	ML*	0.3 706-195-148	0.3 706-205-148	0.3 706-215-148
Goat Anti-Human IgG (H+L) (min X Bov, Hrs, Ms Sr Prot)		0.5 109-195-088	0.5 109-205-088	0.5 109-215-088
Donkey Anti-Mouse IgG (H+L) (min X Bov, Ck, Gt, GP, Sy Hms, Hrs, Hu, Rb, Shp Sr Prot)	ML*	0.3 715-195-150	0.3 715-205-150	0.3 715-215-150
Goat Anti-Mouse IgG (H+L) (min X Hu, Bov, Hrs, Rb, Sw Sr Prot)	ML*	0.5 115-195-146	0.5 115-205-146	0.5 115-215-146
Goat Anti-Mouse IgG (H+L)** (min X **Rat**, Hu, Bov, Hrs, Rb Sr Prot)	ML*	0.3 115-195-166	0.3 115-205-166	0.3 115-215-166
Goat Anti-Mouse IgG, Fcγ fragment specific (min X Hu, Bov, Hrs Sr Prot)	ML*	0.5 115-195-071	0.5 115-205-071	0.5 115-215-071

Antibody Description		6 nm	12 nm	18 nm
Goat Anti-Mouse IgG + IgM (H+L) (min X Hu, Bov, Hrs Sr Prot)		0.5 ml 115-195-068	0.5 ml 115-205-068	0.5 ml 115-215-068
Goat Anti-Mouse IgM, µ chain specific (min X Hu, Bov, Hrs Sr Prot)	ML*	0.5 115-195-075	0.5 115-205-075	0.5 115-215-075
Donkey Anti-Rabbit IgG (H+L) (min X Bov, Ck, Gt, GP, Sy Hms, Hrs, Hu, Ms, Rat, Shp Sr Prot)	ML*	0.3 711-195-152	0.3 711-205-152	0.3 711-215-152
Goat Anti-Rabbit IgG (H+L) (min X Hu, Ms, Rat Sr Prot)	ML*	0.5 111-195-144	0.5 111-205-144	0.5 111-215-144
Goat Anti-Rat IgG (H+L) (min X Hu, Bov, Hrs, Rb Sr Prot)	ML*	0.5 112-195-143	0.5 112-205-143	0.5 112-215-143
Goat Anti-Rat IgG (H+L)** (min X **Ms**, Hu, Bov, Hrs, Rb Sr Prot)	ML*	0.3 112-195-167	0.3 112-205-167	0.3 112-215-167
Goat Anti-Rat IgM, µ chain specific (min X Hu, Bov, Hrs Sr Prot)	ML*	NA	0.5 112-205-075	NA
Donkey Anti-Sheep IgG (H+L)*** (min X Ck, GP, Sy Hms, Hrs, Hu, Ms, Rb, Rat Sr Prot)	ML*	0.3 713-195-147	0.3 713-205-147	0.3 713-215-147
Goat Anti-Horseradish Peroxidase		0.5 123-195-021	0.5 123-205-021	0.5 123-215-021

******* Warning: BSA and dry milk may contain IgG which will be recognized by this antibody. Use of BSA or dry milk to block or dilute this antibody may increase background and/or reduce secondary antibody titer.

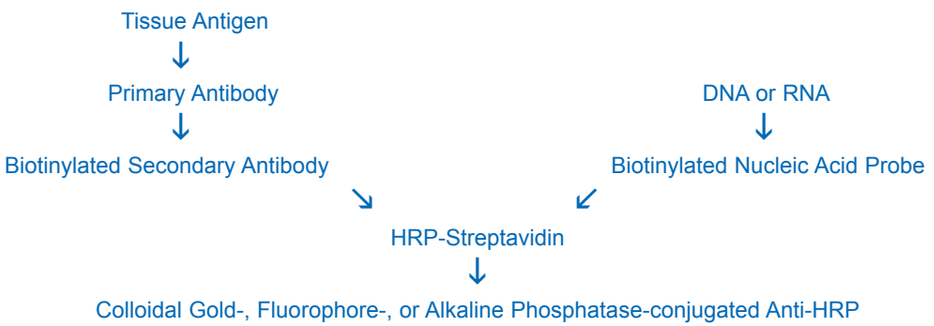
** Caution: See page 3 (min X … Sr Prot) before selecting an antibody adsorbed against closely related species.

* ML = Multiple Labeling (see Multiple Labeling on pages 4-5 for an explanation).

† IgY is the original designation for the IgG-like protein found in both serum and egg yolk.

Affinity-Purified Anti-Horseradish Peroxidase

Affinity-purified anti-horseradish peroxidase (HRP) may be used to detect HRP or to enhance signal by binding to HRP-conjugated molecules (such as HRP-conjugated antibodies or HRP-conjugated streptavidin) or HRP-containing complexes (such as PAP or HRP-ABC). Anti-HRP also may be used to convert an HRP conjugate into a different signal. For example, our anti-HRP complexed with colloidal gold particles has been used with silver enhancement in place of diaminobenzidine (DAB) to create less diffused images following labeling of tissue sections with HRP reagents (Gee et al., J. Histochem. Cytochem. 1991. 39, 863; Roth et al., Methods in Lab. Invest. 1992. 67, 263; and Roth et al., Histochemistry. 1992. 98, 229). A further advantage of the technique was a reduction in background staining from endogenous peroxidase-like enzyme activity in animal tissues. Endogenous enzyme activity, typically detected with DAB, was not detected by anti-HRP (a plant enzyme). The procedure may also be used with fluorophore- or alkaline phosphatase-conjugated anti-HRP to amplify and/or convert signals as shown in the examples below.



Probe	Host	Code Number	Size
Unconjugated	Goat	123-005-021	2.0 mg
	Rabbit	323-005-021	2.0 mg
Aminomethylcoumarin, AMCA	Goat	123-155-021	2.0 mg
	Rabbit	323-155-021	1.5 mg
DyLight 488	Goat	123-485-021	2.0 mg
	Rabbit	323-485-021	1.5 mg
Fluorescein, FITC	Goat	123-095-021	2.0 mg
	Rabbit	323-095-021	1.5 mg
DyLight 549	Goat	123-505-021	2.0 mg
	Rabbit	323-505-021	1.5 mg
Indocarbocyanine, Cy3	Goat	123-165-021	2.0 mg
	Rabbit	323-165-021	1.5 mg
Tetramethyl Rhodamine, TRITC	Goat	123-025-021	2.0 mg
	Rabbit	323-025-021	1.5 mg
DyLight 594	Goat	123-515-021	2.0 mg
	Rabbit	323-515-021	1.5 mg
DyLight 649	Goat	123-495-021	2.0 mg
	Rabbit	323-495-021	1.5 mg
Biotin-SP (long spacer)	Goat	123-065-021	2.0 ml
	Rabbit	323-065-021	1.5 ml
Alkaline Phosphatase	Goat	123-055-021	1.0 ml
	Rabbit	323-055-021	1.0 ml
4 nm Colloidal Gold (LM Grade)	Goat	123-185-021	1.0 ml
6 nm Colloidal Gold (EM Grade)	Goat	123-195-021	0.5 ml
12 nm Colloidal Gold (EM Grade)	Goat	123-205-021	0.5 ml
18 nm Colloidal Gold (EM Grade)	Goat	123-215-021	0.5 ml

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Antisera to Immunoglobulins, Whole Serums, and Enzymes

Polyclonal antisera from immunized hosts are lipid extracted to improve clarity, salt fractionated, dialyzed against phosphate buffered saline containing sodium azide, and freeze-dried. Antisera against whole serums are obtained by immunizing host animals with whole serum. Antisera against whole IgG molecules [i.e. Anti-IgG (H+L)] are recommended for bridging PAP (page 49) to primary antibodies. The vial size is 2 ml for all items.

Antiserum	Host	Code Number
Anti-Bovine IgG (H+L)*** Anti-Bovine Whole Serum***	Rabbit Rabbit	301-001-003 301-001-001
Anti-Chicken IgY† (IgG) (H+L)	Donkey	703-001-003
Anti-Dog IgG (H+L)	Rabbit	304-001-003
Anti-Goat IgG (H+L)***	Donkey	705-001-003
Anti-Goat Whole Serum***	Rabbit	305-001-001
Anti-Guinea Pig IgG (H+L)	Donkey	706-001-003
Anti-Guinea Pig IgG (H+L)	Goat	106-001-003
Anti-Horse Whole Serum***	Rabbit	308-001-001
Anti-Human IgG (H+L) Anti-Human IgG, Fc fragment specific Anti-Human IgG, F(ab')$_2$ fragment specific Anti-Human IgM, Fc$_{5\mu}$ fragment specific Anti-Human Whole Serum	Goat Goat Goat Goat Goat	109-001-003 109-001-008 109-001-006 109-001-043 109-001-001
Anti-Human IgG (H+L) Anti-Human IgG, Fc fragment specific	Rabbit Rabbit	309-001-003 309-001-008
Anti-Mouse IgG (H+L)	Donkey	715-001-003

Antiserum	Host	Code Number
Anti-Mouse IgG (H+L) Anti-Mouse IgG, Fc fragment specific Anti-Mouse IgM, µ chain specific Anti-Mouse Whole Serum	Goat Goat Goat Goat	115-001-003 115-001-008 115-001-020 115-001-001
Anti-Mouse IgG (H+L) Anti-Mouse IgG, Fc fragment specific	Rabbit Rabbit	315-001-003 315-001-008
Anti-Horseradish Peroxidase	Goat	123-001-021
Anti-Rabbit IgG (H+L)	Donkey	711-001-003
Anti-Rabbit IgG (H+L) Anti-Rabbit IgG, Fc fragment specific Anti-Rabbit Whole Serum	Goat Goat Goat	111-001-003 111-001-008 111-001-001
Anti-Rat IgG (H+L) Anti-Rat IgG, Fc fragment specific Anti-Rat Whole Serum	Goat Goat Goat	112-001-003 112-001-008 112-001-001
Anti-Sheep IgG (H+L)*** Anti-Sheep Whole Serum***	Rabbit Rabbit	313-001-003 313-001-001

*** Warning: BSA and dry milk may contain IgG which will be recognized by this antibody. Use of BSA or dry milk to block or dilute this antibody may increase background and/or reduce secondary antibody titer.

† IgY is the original designation for the IgG-like protein found in both serum and egg yolk.

Streptavidin

Streptavidin, a bacterial protein isolated from *Streptomyces avidinii*, is similar to egg-white avidin in its ability to bind biotin, and has been used as a replacement for egg-white avidin because of its more favorable chemical properties. Unlike egg-white avidin which has a net positive charge at neutral pH and contains about 7% carbohydrate, streptavidin has almost no net charge at neutral pH, does not contain carbohydrate, and exhibits lower non-specific binding.

Conjugates of streptavidin are recommended for use with Biotin-SP-conjugated antibodies (pages 9-24, 28-30, 33-35 and 37) and Biotin-SP-conjugated ChromPure proteins (pages 31 and 44-47). Our research indicates that this system of covalently conjugated reagents is more stable, gives less background, and is more sensitive than the avidin-biotin-enzyme complex (ABC) method. This has been independently verified by Shi *et al*. (*J. Histochem. Cytochem.* 1988. **36**, 317) and Milde *et al*. (*J. Histochem. Cytochem.* 1989. **37**, 1609). The increased sensitivity may be due to enhanced tissue penetration and less steric hindrance, since nominal molecular weights for all components of the conjugated streptavidin system are less than 200,000, which are considerably lower than those of ABC.

The following comprehensive list of fluorophores and enzymes conjugated to streptavidin provides options for use in enzyme immunoassays, immunohistochemistry, flow cytometry, *in situ* hybridization, and immunoblotting procedures. Most streptavidin products are freeze-dried in buffer containing stabilizers and a preservative. Exceptions are peroxidase-conjugated streptavidin, freeze-dried without preservative; and alkaline phosphatase-conjugated streptavidin, a sterile-filtered liquid containing stabilizers and a preservative.

Probe	Code Number	Size
Unconjugated	016-000-084	1 mg
Unconjugated	016-000-113	5 mg
Unconjugated	016-000-114	10 mg
DyLight 405	016-470-084	1 mg
Aminomethylcoumarin, AMCA	016-150-084	1 mg
Cyanine, Cy2	016-220-084	1 mg
DyLight 488	016-480-084	1 mg
Fluorescein, DTAF*	016-010-084	1 mg
DyLight 549	016-500-084	1 mg
Indocarbocyanine, Cy3	016-160-084	1 mg
Tetramethyl Rhodamine, TRITC	016-020-084	1 mg
Rhodamine Red-X, RRX	016-290-084	1 mg
DyLight 594	016-510-084	1 mg
DyLight 649	016-490-084	1 mg
Allophycocyanin, APC	016-130-084	0.5 ml
R-Phycoerythrin, R-PE	016-110-084	1 ml
PerCP	016-120-084	0.5 ml
Horseradish Peroxidase	016-030-084	1 mg
Alkaline Phosphatase	016-050-084	1 mg

* DTAF and FITC both contain the same fluorescein molecule with identical peaks of excitation and emission. However, DTAF is brighter than FITC when conjugated to streptavidin. Inquire for availability of FITC-streptavidin.

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Bovine Serum Albumin (IgG-Free, Protease-Free)

Bovine serum albumin (BSA) is used extensively as a carrier protein to dilute antibodies and as a general protein blocking agent in immunoassays and immunodetection protocols. Unfortunately, many commercial preparations of BSA, even some of the highest purity grades, contain IgG that may become an antigen for cross-reacting secondary antibodies. This is particularly common when using anti-bovine IgG, anti-goat IgG (with the exception of bovine anti-goat IgG), rabbit anti-horse IgG, or anti-sheep IgG, but may occur with other antibodies that cross-react with bovine IgG as well. The result of these interactions may be loss of desired antibody activity, loss of antibody stability, and/or increased background. Background may derive from sticky soluble immune complexes or from contaminating bovine IgG sticking non-specifically and attracting cross-reacting labeled secondary antibodies. Even small amounts of contaminating IgG may create these problems, due to the use of high concentrations of BSA in many protocols. This IgG-free BSA should alleviate many of these problems. BSA is supplied as a pure protein, freeze-dried from d. water. Please inquire about availability of larger sizes.

Description	Code Number	Size
IgG-Free, Protease-Free Bovine Serum Albumin	001-000-161	10 g
IgG-Free, Protease-Free Bovine Serum Albumin	001-000-162	50
IgG-Free, Protease-Free Bovine Serum Albumin	001-000-173	250

Purified Proteins from Normal Serums

ChromPure is our trade name for highly purified proteins from the serum of non-immunized animals. The purified immunoglobulins in this section therefore do not represent antibodies directed against any known antigens. ChromPure proteins are prepared by a variety of methods, including ion-exchange, gel-filtration, hydrophobic, dye-ligand, metal-affinity, Protein A, and immunoaffinity chromatographies. $F(ab')_2$ (pepsin) and Fab and Fc (papain) (see page 2, Figure 1) are purified from enzyme digests of highly purified whole molecules. No contaminating whole molecules or undesired fragments are observed at a protein concentration of 20 mg/ml when tested by immunoelectrophoresis against anti-whole serums, anti-immmunoglobulins (class-specific), or anti-fragment specific antisera. However, these proteins are not guaranteed to produce monospecific antibodies when used for immunization. They are used primarily as experimental controls. Unconjugated ChromPure proteins are supplied as sterile-filtered liquids without stabilizers or preservative. Conjugated ChromPure proteins are freeze-dried with stabilizers and a preservative, with the exception of peroxidase conjugates, which do not contain a preservative. For a complete list of ChromPure protein conjugates, see www.jacksonimmuno.com.

ChromPure Protein	Unconjugated	DyLight 405 A=400, E=421	DyLight 488 A=493, E=518	Fluorescein FITC A=492, E=520	DyLight 549 A=555, E=568	Cyanine Cy3 A=550, E=570	DyLight 594 A=591, E=616	DyLight 649 A=652, E=670	Biotin-SP (long spacer)	Horseradish Peroxidase
BOVINE										
IgG, whole molecule	10 mg 001-000-003	1 mg 001-470-003	1 mg 001-480-003	1 mg 001-090-003	1 mg 001-500-003	1 mg 001-160-003	1 mg 001-510-003	1 mg 001-490-003	1 mg 001-060-003	1 mg 001-030-003
IgG, Fc fragment	2 001-000-008									
IgG, Fab fragment	2 001-000-007									
CAT										
IgG, whole molecule	10 mg 002-000-003									
CHICKEN										
IgY† (IgG), whole molecule	5 mg 003-000-003	1 mg 003-470-003	1 mg 003-480-003	1 mg 003-090-003	1 mg 003-500-003	1 mg 003-160-003	1 mg 003-510-003	1 mg 003-490-003	1 mg 003-060-003	1 mg 003-030-003
IgY† (IgG), Fc fragment	1 003-000-008									
IgY† (IgG), Fab fragment	2 003-000-007									
DOG										
IgG, whole molecule	10 mg 004-000-003									
DONKEY										
IgG, whole molecule	10 mg 017-000-003	1 mg 017-470-003	1 mg 017-480-003	1 mg 017-090-003	1 mg 017-500-003	1 mg 017-160-003	1 mg 017-510-003	1 mg 017-490-003	1 mg 017-060-003	1 mg 017-030-003
IgG, $F(ab')_2$ fragment	2 017-000-006		1 017-480-006	1 017-090-006	1 017-500-006	1 017-160-006		1 017-490-006	1 017-060-006	1 017-030-006

† IgY is the original designation for the IgG-like protein found in both serum and egg yolk.

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Purified Proteins from Normal Serums

ChromPure Protein	Unconjugated	DyLight 405 A=400, E=421	DyLight 488 A=493, E=518	Fluorescein FITC A=492, E=520	DyLight 549 A=555, E=568	Cyanine Cy3 A=550, E=570	DyLight 594 A=591, E=616	DyLight 649 A=652, E=670	Biotin-SP (long spacer)	Horseradish Peroxidase
GOAT										
IgG, whole molecule	10 mg 005-000-003	1 mg 005-470-003	1 mg 005-480-003	1 mg 005-090-003	1 mg 005-500-003	1 mg 005-160-003	1 mg 005-510-003	1 mg 005-490-003	1 mg 005-060-003	1 mg 005-030-003
IgG, Fc fragment	1 005-000-008									
IgG, F(ab')$_2$ fragment	2 005-000-006		1 005-480-006	1 005-090-006		1 005-160-006		1 005-490-006	1 005-060-006	1 005-030-006
IgG, Fab fragment	2 005-000-007									
GUINEA PIG										
IgG, whole molecule	10 mg 006-000-003									
HAMSTER (Syrian)										
IgG, whole molecule	5 mg 007-000-003		1 mg 007-480-003	1 mg 007-090-003		1 mg 007-160-003			1 mg 007-060-003	1 mg 007-030-003
HORSE										
IgG, whole molecule	10 mg 008-000-003									
IgG, F(ab')$_2$ fragment	2 008-000-006									
IgG, Fab fragment	2 008-000-007									
HUMAN										
IgG, whole molecule	10 mg 009-000-003	1 mg 009-470-003	1 mg 009-480-003	1 mg 009-090-003	1 mg 009-500-003	1 mg 009-160-003	1 mg 009-510-003	1 mg 009-490-003	1 mg 009-060-003	1 mg 009-030-003
IgG, Fc fragment	1 009-000-008		1 009-480-008	1 009-090-008	1 009-500-008	1 009-160-008		1 009-490-008	1 009-060-008	1 009-030-008
IgG, F(ab')$_2$ fragment	2 009-000-006		1 009-480-006	1 009-090-006	1 009-500-006	1 009-160-006	1 009-510-006	1 009-490-006	1 009-060-006	1 009-030-006
IgG, Fab fragment	2 009-000-007		1 009-480-007	1 009-090-007		1 009-160-007		1 009-490-007	1 009-060-007	1 009-030-007
IgM (myeloma), whole molecule	2 009-000-012		1 009-480-012	1 009-090-012	1 009-500-012	1 009-160-012		1 009-490-012	1 009-060-012	1 009-030-012

Purified Proteins from Normal Serums

ChromPure Protein	Unconjugated	DyLight 405 A=400, E=421	DyLight 488 A=493, E=518	Fluorescein FITC A=492, E=520	DyLight 549 A=555, E=568	Cyanine Cy3 A=550, E=570	DyLight 594 A=591, E=616	DyLight 649 A=652, E=670	Biotin-SP (long spacer)	Horseradish Peroxidase
HUMAN										
Serum IgA, whole molecule	2 mg 009-000-011			1 mg 009-090-011		1 mg 009-160-011			1 mg 009-060-011	1 mg 009-030-011
Albumin	5 009-000-051		1 mg 009-480-051	1 009-090-051		1 009-160-051		1 mg 009-490-051	1 009-060-051	1 009-030-051
Transferrin	5 009-000-050		1 009-480-050	1 009-090-050	1 mg 009-500-050	1 009-160-050		1 009-490-050	1 009-060-050	1 009-030-050
MOUSE										
IgG, whole molecule	5 mg 015-000-003	1 mg 015-470-003	1 mg 015-480-003	1 mg 015-090-003	1 mg 015-500-003	1 mg 015-160-003	1 mg 015-510-003	1 mg 015-490-003	1 mg 015-060-003	1 mg 015-030-003
IgG, Fc fragment	1 015-000-008			1 015-090-008		1 015-160-008			1 015-060-008	1 015-030-008
IgG, F(ab')$_2$ fragment	2 015-000-006		1 015-480-006	1 015-090-006		1 015-160-006			1 015-060-006	1 015-030-006
IgG, Fab fragment	2 015-000-007			1 015-090-007		1 015-160-007			1 015-060-007	1 015-030-007
Transferrin	5 015-000-050		1 015-480-050	1 015-090-050		1 015-160-050		1 015-490-050	1 015-060-050	1 015-030-050
RABBIT										
IgG, whole molecule	10 mg 011-000-003	1 mg 011-470-003	1 mg 011-480-003	1 mg 011-090-003	1 mg 011-500-003	1 mg 011-160-003	1 mg 011-510-003	1 mg 011-490-003	1 mg 011-060-003	1 mg 011-030-003
IgG, Fc fragment	1 011-000-008									
IgG, F(ab')$_2$ fragment	2 011-000-006									
IgG, Fab fragment	2 011-000-007									
RAT										
IgG, whole molecule	10 mg 012-000-003	1 mg 012-470-003	1 mg 012-480-003	1 mg 012-090-003	1 mg 012-500-003	1 mg 012-160-003	1 mg 012-510-003	1 mg 012-490-003	1 mg 012-060-003	1 mg 012-030-003
IgG, Fc fragment	1 012-000-008									
IgG, F(ab')$_2$ fragment	2 012-000-006									
IgG, Fab fragment	2 012-000-007									

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RAT										
Transferrin	5 mg 012-000-050		1 mg 012-480-050	1 mg 012-090-050	1 mg 012-500-050	1 mg 012-160-050		1 mg 012-490-050	1 mg 012-060-050	1 mg 012-030-050
SHEEP										
IgG, whole molecule	10 mg 013-000-003	1 mg 013-470-003	1 mg 013-480-003	1 mg 013-090-003	1 mg 013-500-003	1 mg 013-160-003	1 mg 013-510-003	1 mg 013-490-003	1 mg 013-060-003	1 mg 013-030-003
IgG, Fc fragment	1 013-000-008									
SWINE										
IgG, whole molecule	10 mg 014-000-003									

Normal Serums and Gamma Globulins

Normal serums are lipid extracted to improve clarity, dialyzed against phosphate buffer containing sodium azide, and freeze-dried. Normal serum (5% v/v) diluted in assay buffer is strongly recommended as a blocking agent to reduce background from non-specific, conserved-sequence, and/or Fc-receptor binding. Best results are obtained with diluted normal serum from the same host as the labeled antibody, as a separate incubation step before addition of the primary antibody.

Gamma globulins are further purified from non-immunized animal serums by salt fractionation, ion-exchange chromatography, and gel filtration. Gamma globulins are an inexpensive source of IgG with only trace amounts of other immunoglobulins and/or non-immunoglobulin serum proteins. Gamma globulins are supplied as sterile-filtered liquids without stabilizers or preservative.

Product	Code Number	Size
Normal Bovine Serum	001-000-001	2 ml
Normal Bovine Serum	001-000-121	10 ml
Bovine Gamma Globulin	001-000-002	10 mg
Normal Cat Serum	002-000-001	2 ml
Normal Cat Serum	002-000-120	5 ml
Cat Gamma Globulin	002-000-002	10 mg
Normal Chicken Serum	003-000-001	2 ml
Normal Chicken Serum	003-000-120	5 ml
Chicken Gamma Globulin	003-000-002	10 mg
Normal Dog Serum	004-000-001	2 ml
Normal Dog Serum	004-000-120	5 ml
Dog Gamma Globulin	004-000-002	10 mg
Normal Donkey Serum	017-000-001	2 ml
Normal Donkey Serum	017-000-121	10 ml
Donkey Gamma Globulin	017-000-002	10 mg
Normal Goat Serum	005-000-001	2 ml
Normal Goat Serum	005-000-121	10 ml
Goat Gamma Globulin	005-000-002	10 mg
Normal Guinea Pig Serum	006-000-001	2 ml
Normal Guinea Pig Serum	006-000-120	5 ml
Guinea Pig Gamma Globulin	006-000-002	10 mg
Normal Syrian Hamster Serum	007-000-001	2 ml
Normal Syrian Hamster Serum	007-000-120	5 ml
Syrian Hamster Gamma Globulin	007-000-002	10 mg

Product	Code Number	Size
Normal Horse Serum	008-000-001	2 ml
Normal Horse Serum	008-000-121	10 ml
Horse Gamma Globulin	008-000-002	10 mg
Normal Human Serum	009-000-001	2 ml
Normal Human Serum	009-000-121	10 ml
Human Gamma Globulin	009-000-002	10 mg
Normal Mouse Serum	015-000-001	2 ml
Normal Mouse Serum	015-000-120	5 ml
Mouse Gamma Globulin	015-000-002	10 mg
Normal Rabbit Serum	011-000-001	2 ml
Normal Rabbit Serum	011-000-120	5 ml
Rabbit Gamma Globulin	011-000-002	10 mg
Normal Rat Serum	012-000-001	2 ml
Normal Rat Serum	012-000-120	5 ml
Rat Gamma Globulin	012-000-002	10 mg
Normal Sheep Serum	013-000-001	2 ml
Normal Sheep Serum	013-000-121	10 ml
Sheep Gamma Globulin	013-000-002	10 mg
Normal Swine Serum	014-000-001	2 ml
Normal Swine Serum	014-000-121	10 ml
Swine Gamma Globulin	014-000-002	10 mg

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Peroxidase-Anti-Peroxidase (PAP) Soluble Immune Complexes

PAP soluble immune complexes are prepared by the method of Sternberger *et al*. (*J. Histochem. Cytochem.* 1970. **18**, 315). Theoretically, they consist predominantly of two anti-horseradish peroxidase antibodies in soluble complex with three molecules of horseradish peroxidase. PAP soluble complexes are normally used at 25-50 µg/ml. Whole antisera against IgG (H+L) are recommended for bridging PAP to primary antibodies. Antisera against IgG (H+L) or against the $F(ab')_2$ fragments of IgG will also bridge PAP to IgM primary antibodies (such as IgM monoclonal antibodies) by virtue of common light-chain recognition. Normal serum (5% v/v) from the same host species as the bridging antibody is suggested as a blocking solution to minimize non-specific binding. All PAP soluble complexes are freeze-dried at 20 mg/ml.

PAP soluble complexes, as well as other immunoperoxidase reagents, are not recommended for tissues or cells in which endogenous peroxidase activity is difficult to suppress. In such cases, other immunoenzyme reagents may be used. Alternatively, anti-horseradish peroxidase conjugated with other enzymes or fluorophores (page 40) may be used to enhance signal and reduce background, since the final signal does not depend on the enzyme activity of peroxidase, but on the antigenicity of horseradish peroxidase.

PAP Soluble Immune Complex	Code Number	PAP Concentration	Size
Goat PAP	123-005-024	20 mg / ml	0.25 ml
Mouse PAP	223-005-024	20 mg / ml	0.25
Rabbit PAP	323-005-024	20 mg / ml	0.25

Solid-Phase Immunoadsorbent Gels

Highly purified IgG (pages 45 and 46) from the serum of non-immunized animals are coupled to cyanogen bromide-activated 4% agarose gels for use in preparing affinity-purified antibodies or removing cross-reactive antibodies. Proteins are coupled at a concentration of 1 mg protein per ml of settled gel, and are packaged in phosphate buffered saline with sodium azide.

ChromPure IgG-Agarose	Code Number	Size
Goat IgG, whole molecule	005-000-052	5 ml
Mouse IgG, whole molecule	015-000-052	5
Rabbit IgG, whole molecule	011-000-052	5

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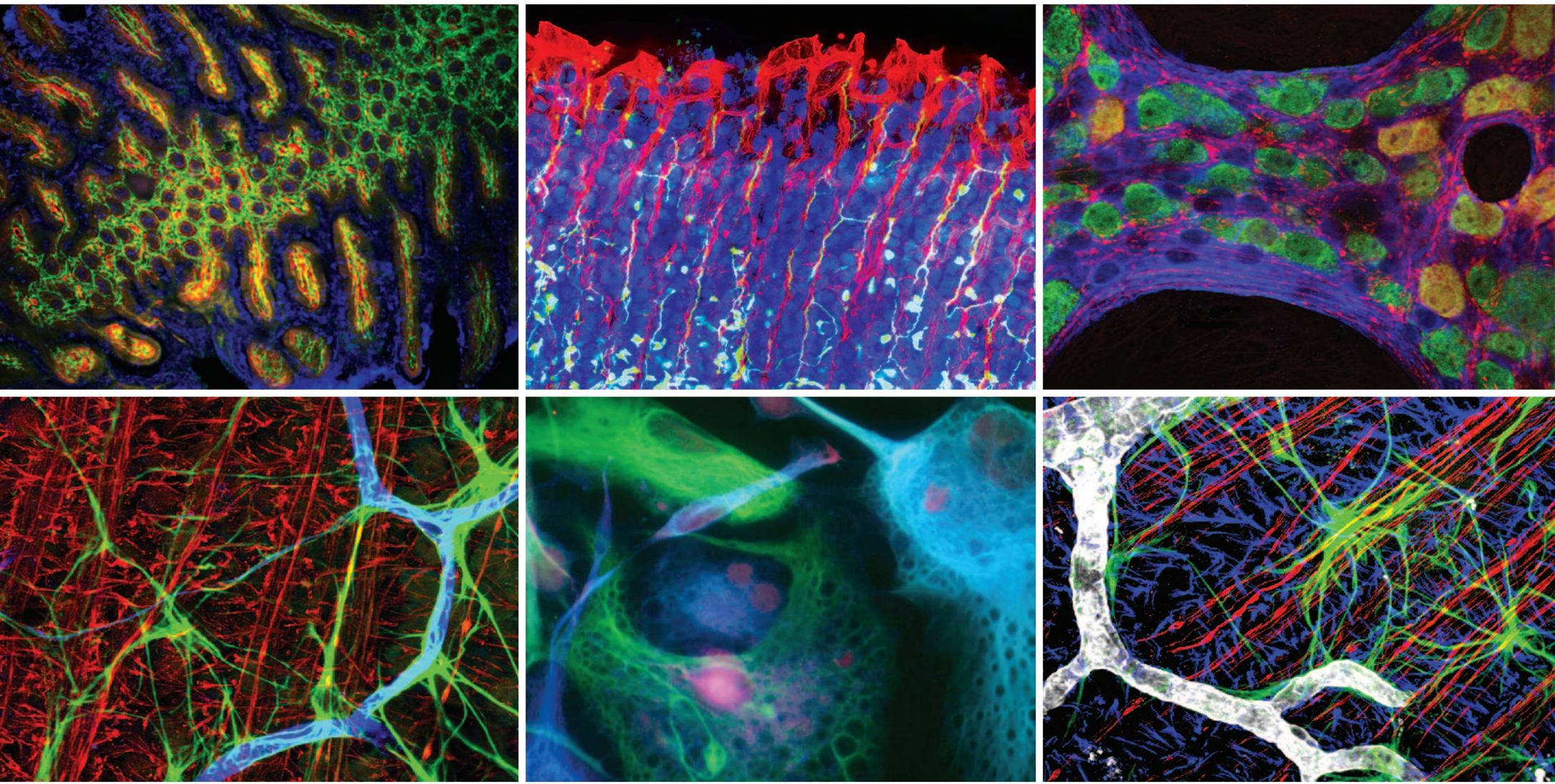

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