

AlphaLISA[®] *SureFire*[®] *Ultra*[™]

Detection Kits Manual

Assay Points	Catalog #
500	ALSU-XXXX-X500
10 000	ALSU-XXXX-X10K
50 000	ALSU-XXXX-X50K

This Manual is a generic manual for all the AlphaLISA[®] *SureFire*[®] *Ultra*[™] kits.

For assay-specific information, relating to Kit Specificity, Control Lysates and Representative Data, please refer to the Technical Data Sheet of the kit, available from <http://www.perkinelmer.com>

For Research Use Only. Not for use in Diagnostic Procedures.

Note: For kit handling and disposal information see page 4 of this manual

AlphaLISA® SureFire® Ultra™

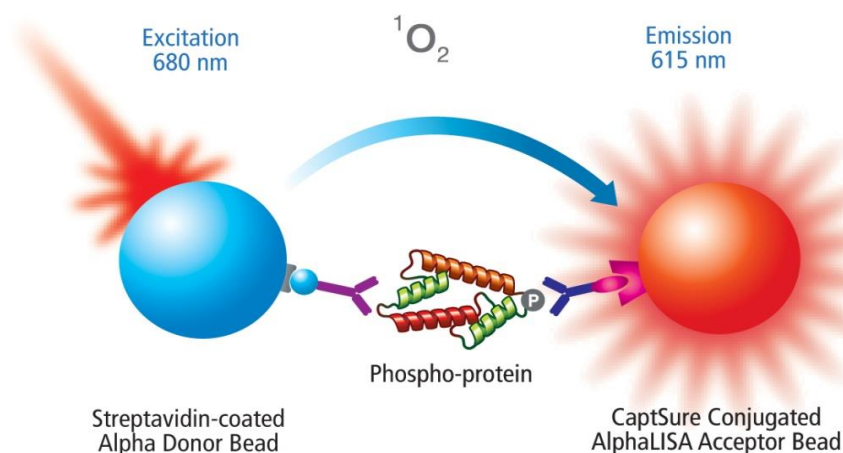
Assay Principle

The AlphaLISA® SureFire® Ultra™ assay kits allow the rapid, sensitive, and quantitative detection of phosphoproteins from cells. The kit utilizes bead-based Alpha Technology. The Acceptor Bead is coated with a proprietary CaptSure™ agent to specifically immobilize the assay specific antibody which is labeled with a CaptSure™ tag. The Donor Bead is coated with streptavidin to capture the biotinylated antibody.

As such, this assay system performs well in the presence of extraneous antibodies, such as antibody biotherapeutics, and can be used to screen such reagents. In the presence of phosphorylated protein, the two antibodies bring the Donor and Acceptor Beads in close proximity. This enables the generation of an Alpha signal upon illumination of Donor Beads by the Alpha-enabled plate reader, such as the EnVision® Multilabel Plate Reader or Enspire® and EnSight™ Multimode Plate Readers. The amount of light emission is directly proportional to the amount of phosphoprotein present in the sample.

The AlphaLISA® SureFire® Ultra™ assay kits are also optimized for enhanced signal-to-noise windows, while using shorter incubation times and larger volumes for pipetting compared to the AlphaScreen® SureFire® kits.

This assay eliminates the need for laborious techniques, such as Western blotting or conventional ELISA. It is a homogeneous assay, in that no sample washing steps are required, which allows for minimal handling, short assay times, better well-to-well reproducibility (lower CV%), and robotic operation if desired.



General Information on the AlphaLISA® SureFire® Ultra™ assay

The AlphaLISA® SureFire® Ultra™ assays are used to measure a phosphorylated or total protein in cellular lysates. The assays are an ideal system for the screening of both modulators of receptor activation (e.g. agonists and antagonists) as well as agents acting intracellularly, such as small molecule inhibitors of upstream events. The assays measure the activation of recombinant or endogenous proteins and can be applied to primary cells.

The kits are formulated to provide improved signal:noise assay windows, and to perform without interference in the presence of extraneous antibodies.

Kit-Specificity Information / Control Lysate Information / Representative Data

The assay specific Technical Data Sheet and Certificate of Analysis (COA) are available on the website. Search for Lot Specific COA's from <http://www.perkinelmer.com/COA>

Kit Contents

	Kit Size		
	500 points	10,000 points	50,000 points
Lysis Buffer (5X) – <i>Ultra</i> *	1 x 12 mL	4 x 60 mL	3 x 400 mL
Activation Buffer – <i>Ultra</i> **	1 x 0.8 mL	1 x 10 mL	1 x 50 mL
Reaction Buffer 1 - <i>Ultra</i>	1 x 1.5 mL	1 x 28 mL	1 x 140 mL
Reaction Buffer 2 - <i>Ultra</i>	1 x 1.5 mL	1 x 28 mL	1 x 140 mL
Dilution Buffer - <i>Ultra</i>	1 x 3 mL	1 x 60 mL	1 x 300 mL
AlphaLISA® CaptSure™ Acceptor Beads (2 mg/mL in PBS plus 0.05% Proclin-300)	1 x 0.06 mL	1 x 1.1 mL	1 x 5.5 mL
Alpha Streptavidin Donor Beads (2 mg/mL in PBS plus 0.05% Proclin-300)	1 x 0.06 mL	1 x 1.1 mL	1 x 5.5 mL
Positive Control Lysate	1 X Lyophilized tube (to be reconstituted with 250 µL H ₂ O)		

The above volumes supplied are in excess to the actual volume required to perform assay.

* Some kits contain assay specific **Lysis Buffer B (5X)-Ultra** or **Lysis Buffer C (5X)-Ultra**

** Some kits contain assay specific **Activation Buffer B-Ultra** or **Activation Buffer C-Ultra**

Kit Content Handling Conditions

WARNING! Read the Safety Data Sheets (SDSs) and follow the handling instructions. Wear appropriate protective eyewear, clothing, and gloves. Safety Data Sheets (SDSs) are generic for all kits and available from <http://www.perkinelmer.com>

Lysis Buffer (5X) - *Ultra*

Lysis Buffer (5X) - *Ultra* is a proprietary mixture of buffers, detergents and generic phosphatase inhibitors (Orthovanadate, Pyrophosphate and sodium fluoride), optimized for lysis of a broad range of cells without the excessive release of nuclear DNA. It does not contain protease inhibitors. Additives can be supplemented to the Lysis Buffer as required for particular cell types and may include excipients such as protease inhibitors or extra detergents. These will need to be tested on a case-by-case basis.

Lysis Buffer B (5X) and Lysis Buffer C (5X) are assay specific and should not be inter-changed.

All Lysis Buffers contain Triton X-100, otherwise known as p-tert-octylphenol ethoxylate, which must be disposed of as Controlled Waste in accordance with Local Regulations.

Activation Buffer

Activation Buffer precipitates at 4°C. To re-dissolve, warm to 37°C and mix before each use. Activation Buffer B and Activation Buffer C are assay specific and should not be interchanged.

Alpha Streptavidin Donor Beads

Alpha Streptavidin Donor Beads are light-sensitive. All Alpha assays using the Donor Beads should be performed under subdued laboratory lighting (< 100 lux). Green filters (LEE 090 filters (preferred) or Roscolux filters #389 from Rosco, or the equivalent) can be applied to light fixtures. The Donor Beads should NOT be used under red/orange light as can be found in photographic work darkrooms because red light (680 nm) excites the beads. All other assay reagents can be used under normal light conditions.

Positive Control Lysate

The Positive Control lysates are prepared from various cell types, which have been cultured and prepared to optimize the activation of the intracellular pathway of interest. The Lysate is intended for use as an assay positive control only and should not be used for the absolute quantification of a particular protein or phosphorylated target. The Lysate can be further diluted with Lysis buffer (1X) and used to give an indication of the expected signal range for a given assay. See the Certificate of Analysis for the recommended dilution in the linear range of the assay.

Storage Conditions

Expiry date indicated on kit box.

Unopened kit		Store at 4°C. DO NOT freeze the kit. The Reaction Buffer contains antibodies and freeze/thaw cycles can lead to a loss of activity.
Opened kit	Lysis Buffer (5X) - <i>Ultra</i>	Store at 4°C
	Reaction Buffer 1 - <i>Ultra</i>	
	Reaction Buffer 2 - <i>Ultra</i>	
	Dilution Buffer - <i>Ultra</i>	
	Activation Buffer - <i>Ultra</i>	Precipitates at 4°C. To re-dissolve, warm to 37°C and mix before each use. Alternatively, can be stored at room temperature with no loss in activity.
	Acceptor/Donor Beads	Store at 4°C, in the dark zip lock bag or box provided.
	Positive Control Lysate	Store at 4°C or for long term storage at -20°C.

Materials Required But Not Provided

Item	Suggested source	Catalog #	Size
Optiplate-384, White Opaque assay plate ⁽¹⁾	PerkinElmer Inc.	6007290	50/box
AlphaPlate-384, Light Gray Opaque assay plate ⁽²⁾	PerkinElmer Inc.	6005350	50/box
CulturPlate-384, White Opaque, Sterile, TC-Treated ⁽³⁾	PerkinElmer Inc.	6007680	50/box
ViewPlate-384, White with clear bottom, Sterile, TC-Treated ⁽⁴⁾	PerkinElmer Inc.	6007480	40/box
White adhesive seal for the bottom of microplates ⁽⁵⁾ .	PerkinElmer Inc.	6005199	1X55
Spectraplate-96, Clear, sterile TC-treated plate ⁽⁶⁾	PerkinElmer Inc.	6005650	50/box
TopSeal-A 384, clear adhesive sealing film	PerkinElmer Inc.	6050185	100/box
Envision® or Enight™ Alpha-reader	PerkinElmer Inc.	-	-

(1) Plates used for the immunoassay or for the one-plate protocol (from cell seeding to immunoassay) using suspension cells; (2) Same as (1) but optimal if cross-talk needs to be reduced; (3) Plates for assays run in a 1-plate protocol (from cell seeding to immunoassay) using adherent cells; (4) Same as (3) but with the possibility to check cells by microscopy, in this case a white adhesive seal should be stuck to the bottom of the plate before plate reading; (5) This seal can be used to turn the clear bottom of microplates opaque; (6) Plates used to seed and stimulate cells before Lysis and transfer of lysate in an immunoassay plate. For more assay plates options, please go to www.perkinelmer.com/microplates.

Buffer Preparation and Subsequent Storage Conditions

1X Lysis Buffer	<p>Dilute 5X Lysis Buffer in deionised water to a final concentration of 1X.</p> <p>For example: for 10 mL of 1X Lysis Buffer, add 2 mL of 5X Lysis Buffer to 8 mL deionised water. Excess 1X Lysis Buffer should be discarded.</p>
Acceptor Mix (Reaction Buffer 1 + Reaction Buffer 2 + Activation Buffer + AlphaLISA® CaptSure™ Acceptor Beads)	<p>Dilute Activation Buffer 25-fold in combined Reaction Buffer 1 and Reaction Buffer 2.</p> <p>Dilute Acceptor Beads 50-fold in combined Reaction Buffers.</p> <p>For example: for 300 µL of Acceptor Mix: Combine 141 µL of Reaction Buffer 1 and 141 µL of Reaction Buffer 2 before adding 12 µL Activation Buffer and 6 µL Acceptor Beads.</p> <p>The Acceptor Mix should be made up and used within 30 minutes for best results. Excess Acceptor Mix should be discarded.</p>
Donor Mix (Dilution Buffer + Alpha Streptavidin Donor Beads)	<p>Dilute Donor Beads 50-fold in Dilution Buffer.</p> <p>For example: for 300 µL of Donor Mix, add: 6 µL Donor Beads to 294 µL of Dilution Buffer.</p> <p>The Donor Mix should be made up and used within 30 minutes for best results. Prepare and use under low light conditions. Excess Donor Mix should be discarded.</p>
Positive Control Lysate	<p>Reconstitute with 250 µL deionised water. Store at -20°C in single use aliquots and use within 3 months. Dilute as required.</p>

AlphaLISA® SureFire® Ultra™ Assay Protocols

A. 2-Plate Assay - assay protocol for adherent cells

Cell Seeding

1. Seed cells (200 µL of cells for 96 well plates, 50 µL for 384 well plates) in tissue culture plates. Incubate at 37°C overnight in serum-containing media.

Cell Treatment

2. Remove culture media and replace with 45 µL of antagonists/inhibitors prepared 1X in serum-free media (22.5 µL for 384-well plates).

Note: Peptidic agonists and antagonists can often stick to plastic surfaces. To minimize this effect, dilute in serum-free media containing a suitable carrier protein (e.g. 0.1% protease-free BSA).

3. Return cells to incubator at 37°C for 5 min to 2 hours.

Note: 1 hour is often sufficient for signal transduction inhibitors and 5 - 20 minutes for receptor antagonists. For short incubation times, the plate can stay at room temperature.

4. Stimulate the cells by the addition of 5 µL of 10X agonist prepared in serum-free media (2.5 µL for 384-well plates). *If not testing antagonists, directly add 50 µL of 1X agonists prepared in serum-free media (25 µL for 384-well plates).*

Note: Optimal agonist stimulation time is often between 5 and 20 minutes.

Lysate Preparation

5. To lyse cells, remove medium from wells and add freshly prepared 1X Lysis Buffer (50-100 µL for a 96 well plate, 25 µL for a 384 well plate). Agitate on a plate shaker (~350 rpm) for 10 minutes at room temperature.

6. Take 10 µL of the lysate and transfer to a 384-well Optiplate™ for assay. Add 10 µL of Control lysates to separate wells. *We recommend testing a serial dilution of Control lysate in 1X Lysis Buffer. See the COA for recommended dilution in the linear range of assay.*

SureFire Ultra Assay

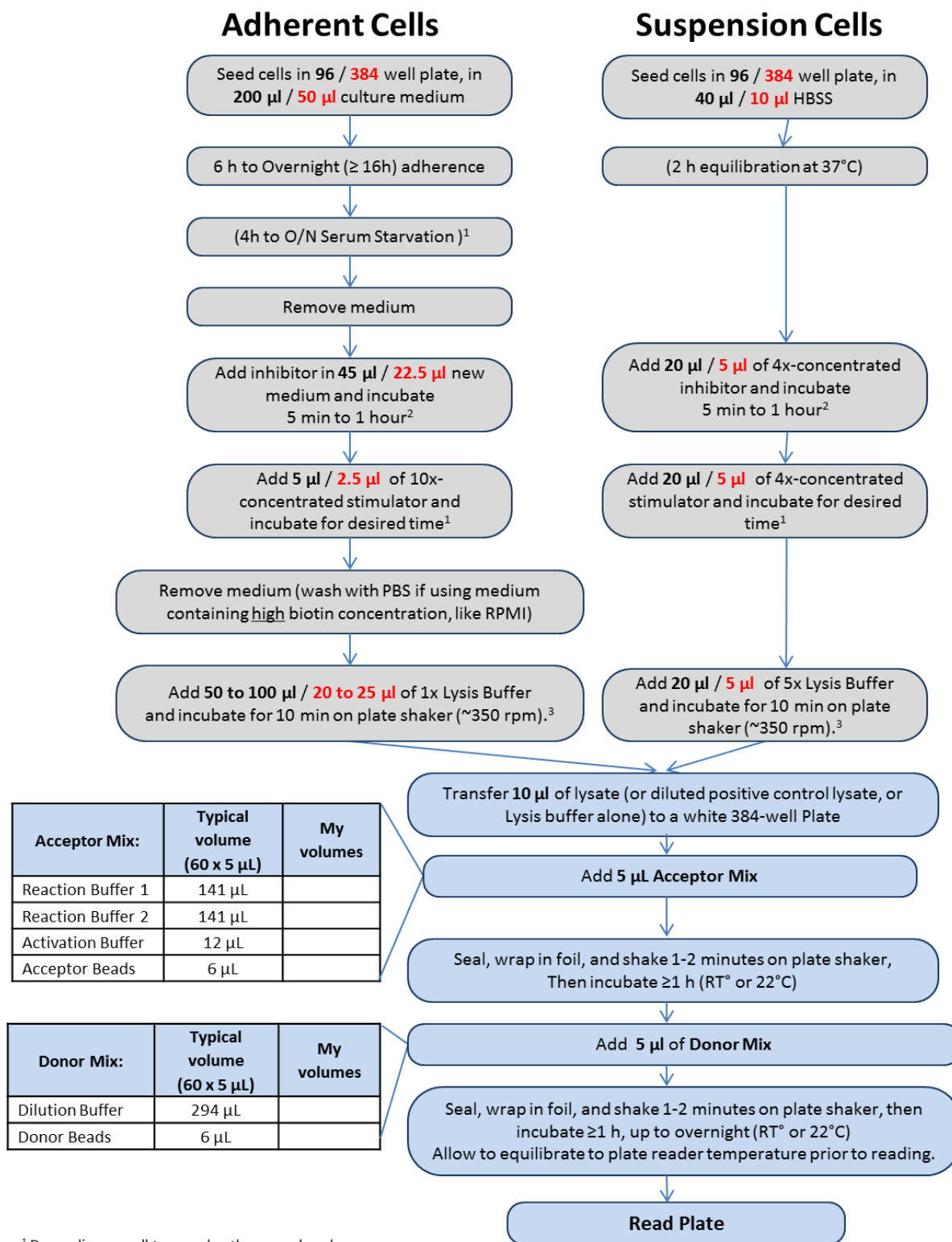
7. Add 5 µL of Acceptor Mix to wells. Seal plate with Topseal-A adhesive film, and cover plate with foil. Incubate for 1 hour at room temperature.

8. Add 5 µL of Donor Mix to wells under subdued light. Seal plate with Topseal-A adhesive film, and cover plate with foil. Incubate for 1 hour at room temperature in the dark.

Note: Longer incubation may give greater sensitivity. Plates can be incubated overnight if required.

9. Read plate on an Alpha Technology-compatible plate reader, using standard AlphaLISA settings.

AlphaLISA® SureFire® Ultra™: 2-plates / 2-incubation assay flowchart



¹ Depending on cell type and pathway analyzed.

² Depending on type of inhibitor used: 5 min is generally enough for receptor antagonists; more time is needed to block intracellular targets.

³ May stop and freeze lysates at -20°C if desired. If doing this, re-shake after thawing to ensure homogeneity of lysate before pipetting.

AlphaLISA® SureFire® Ultra™ Assay Protocols

B. 1 Plate Assay - assay protocol for non-adherent cells, and for high-throughput applications.

Cell Seeding

1. Harvest cells by centrifugation and re-suspend cells in HBSS at a suitable cell density. We recommend 10^7 cells/mL as a starting point. Seed 4 μ L of cells/well into a 384-well white opaque culture plate (e.g. PerkinElmer Cat # 6007680).

Note: As engaging less cells per well can result in increased signal to background ratios, it is important to optimize this factor.

Cell Treatment

2. If using test agents/inhibitors, add 2 μ L/well of 4X inhibitors prepared in HBSS.

Note: Peptidic agonists and antagonists can often stick to plastic surfaces. To minimize this effect, dilute in HBSS containing a suitable carrier protein (e.g. 0.1% protease-free BSA).

3. Return cells to incubator at 37°C for 5 min to 2 hours.

Note: 1 hour is often sufficient for signal transduction inhibitors and 5-20 minutes for receptor antagonists. For short incubation times, the plate can stay at room temperature.

4. Stimulate cells with agonists by addition of 2 μ L/well of 4X agonist stock in HBSS containing 0.1% BSA. The final volume in the wells should be 8 μ L. (If no antagonists were used in step 2, stimulate the cells with 4 μ L/well of 2X agonist, to give a final volume in the wells of 8 μ L).

Note: Optimal agonist stimulation time is often between 5 - 20 minutes.

Lysate Preparation

5. To lyse the cells add 2 μ L/well of 5X Lysis Buffer. Add 10 μ L of Control lysates to separate wells. *We recommend testing a serial dilution of Control lysate in 1X Lysis Buffer. See the COA for recommended dilution in the linear range of assay.*

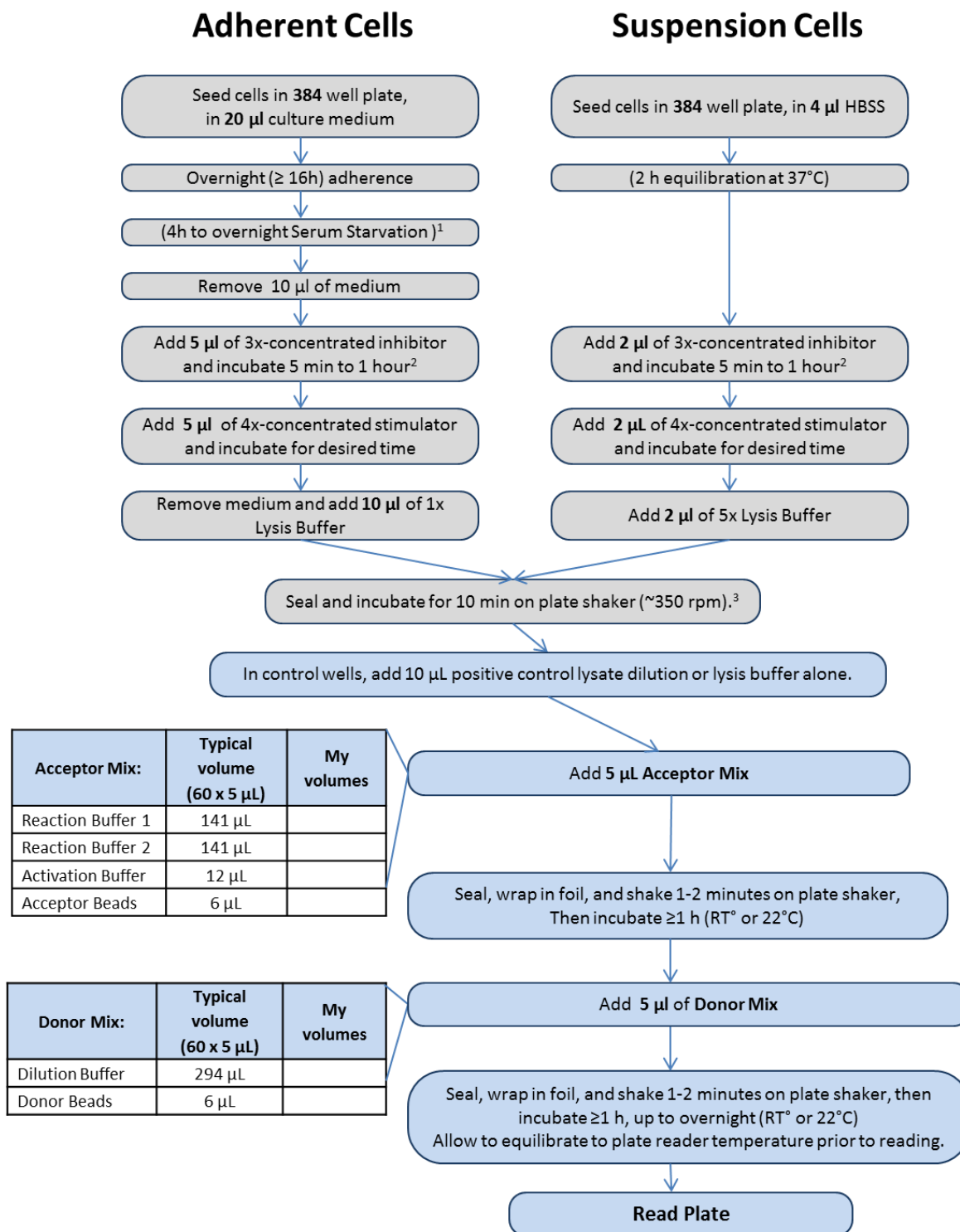
SureFire Ultra Assay

6. Add 5 μ L of Acceptor Mix to wells. Seal plate with Topseal-A adhesive film, and cover plate with foil. Incubate for 1 hour at room temperature.
7. Add 5 μ L of Donor Mix to wells under subdued light. Seal plate with Topseal-A adhesive film, and cover plate with foil. Incubate for 1 hour at room temperature.

Note: Longer incubation may give greater sensitivity. Plates can be incubated overnight if required.

8. Read plate on an Alpha Technology-compatible plate reader, using standard AlphaLISA settings.

AlphaLISA® SureFire® Ultra™: 1-plate / 2-incubation assay flowchart



¹ Depending on cell type and pathway analyzed.

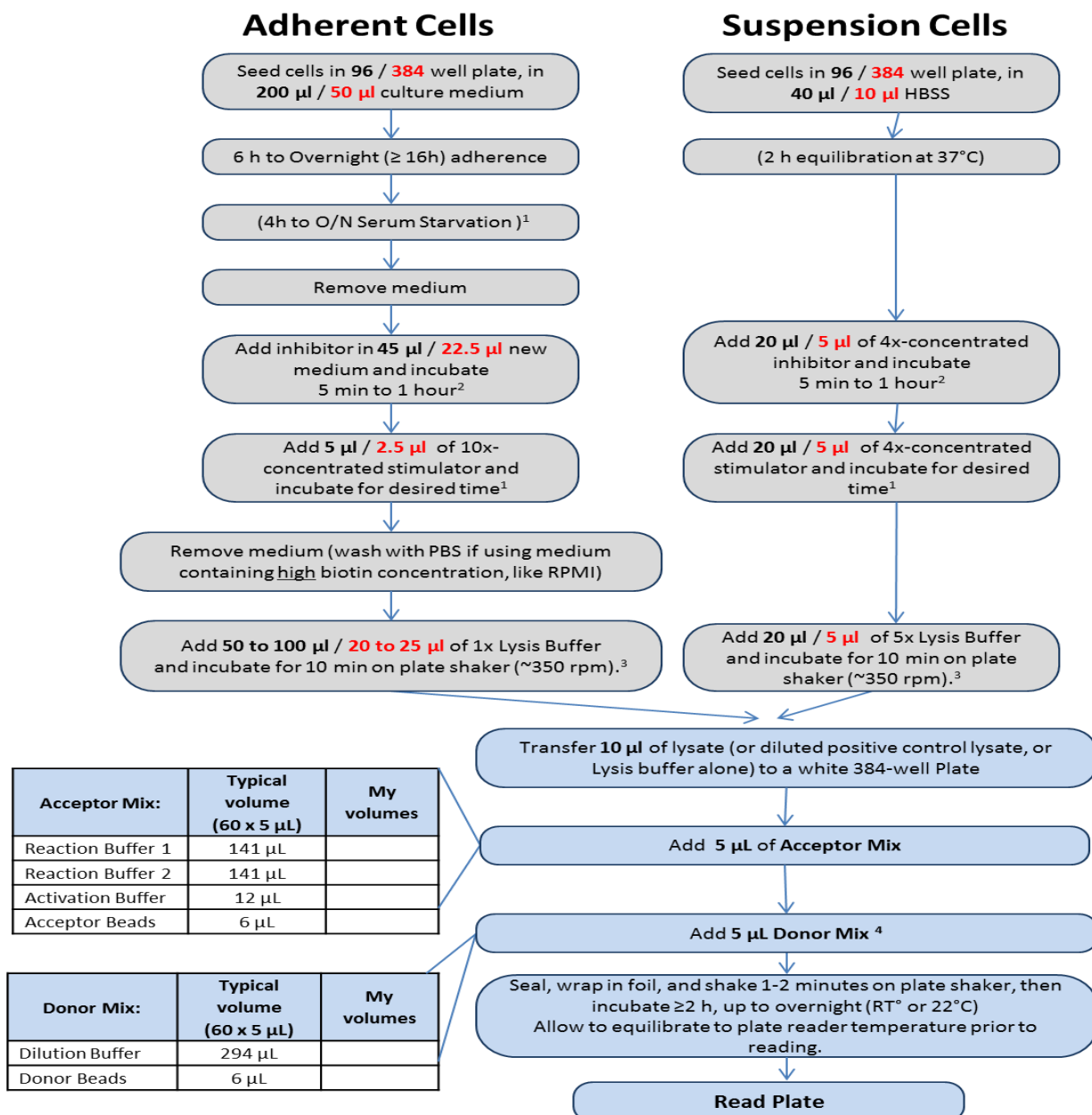
² Depending on type of inhibitor used: 5 min is generally enough for receptor antagonists; more time is needed to block intracellular targets.

³ May stop and freeze lysates at -20°C if desired. If doing this, re-shake after thawing to ensure homogeneity of lysate before pipetting.

Note:

The assay can also be carried out as a single 2 hour incubation after separate additions of Acceptor Mix then Donor Mix, as indicated below in the flow chart. This can be applied to either 1-plate or 2- plate assays. Shown below is the 2-plate protocol in this format. This assay format may result in a slightly reduced sensitivity. Do NOT premix the Acceptor and Donor Mixes before adding to the sample lysates as this is expected to result in a significant sensitivity loss.

AlphaLISA® SureFire® Ultra™: 2-plates / 1-incubation assay flowchart



¹ Depending on cell type and pathway analyzed.

² Depending on type of inhibitor used: 5 min is generally enough for receptor antagonists; more time is needed to block intracellular targets.

³ May stop and freeze lysates at -20°C if desired. If doing this, re-shake after thawing to ensure homogeneity of lysate before pipetting.

⁴ We recommend adding Acceptor Mix and Donor Mix in 2 sequential steps to maximize assay performance.

Supplementary Buffers and Beads

If using the standard protocol, sufficient amounts of buffers and beads are provided in the kit. However in case the standard protocol would be modified, more buffers or beads may be needed. In this case, you can order additional buffers and beads using the following catalog numbers:

Item	Suggested source	Catalog #	Size
Lysis Buffer (5X) - <i>Ultra</i>	PerkinElmer Inc.	ALSU-LB-10mL	10 mL
	PerkinElmer Inc.	ALSU-LB-100mL	100 mL
Activation Buffer - <i>Ultra</i>	PerkinElmer Inc.	ALSU-AB-10mL	10 mL
	PerkinElmer Inc.	ALSU-AB-100mL	100 mL
Activation Buffer B – <i>Ultra</i>	PerkinElmer Inc.	ALSU-ABB-10mL	10 mL
	PerkinElmer Inc.	ALSU-ABB-100mL	100 mL
Activation Buffer C – <i>Ultra</i>	PerkinElmer Inc.	ALSU-ABC-10mL	10 mL
	PerkinElmer Inc.	ALSU-ABC-100mL	100 mL
Dilution Buffer - <i>Ultra</i>	PerkinElmer Inc.	ALSU-DB-10mL	10 mL
	PerkinElmer Inc.	ALSU-DB-100mL	100 mL
AlphaScreen® Streptavidin Donor Beads -2 mg/mL	PerkinElmer Inc.	ALSU-ASDB-0.06mL	60 µL
	PerkinElmer Inc.	ALSU-ASDB-1.2mL	1.2 mL
	PerkinElmer Inc.	ALSU-ASDB-6mL	6 mL
AlphaLISA® CaptSure™ Acceptor Beads - 2 mg/mL	PerkinElmer Inc.	ALSU-ACAB-0.06mL	60 µL
	PerkinElmer Inc.	ALSU-ACAB-1.2mL	1.2 mL
	PerkinElmer Inc.	ALSU-ACAB-6mL	6 mL

Useful Links

For FAQ and troubleshooting, please go to:

www.perkinelmer.com/SureFireFAQ

For a complete list of AlphaLISA® *SureFire® Ultra™*, please go to:

www.perkinelmer.com/category/alpha-surefire-kits

For technical support please go to:

www.perkinelmer.com/ASK

This product is not for resale or distribution except by authorized distributors.

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