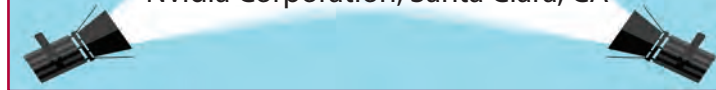


NEWSLETTER

We are pleased to present the 16th edition of the Sapidyne Newsletter. In this issue, our *Publication Spotlight* examines pioneering research from A-Alpha Bio, highlighting their application of KinExA technology in measuring tight binders that are beyond the limit of detection for other technologies. The *Future of Solid Phase* addresses the transition from microplastic-based beads to glass beads, outlining the environmental and regulatory imperatives driving this shift. For researchers seeking actionable insights, the *Solid Phase Selection Guide* provides expert recommendations to identify the optimal solid phase for your experiments. Additionally, we invite you to explore *Touring Idaho*, where we share notable experiences from the Gem State, and introduce the beloved companions in *Sapidyne Office Dogs*, who bring joy to our workplace. Enjoy the read!

Publication Spotlight

A-Alpha Bio, Seattle, WA
Nvidia Corporation, Santa Clara, CA



AlphaBind, a Domain-Specific Model to Predict & Optimize Antibody-Antigen Binding Affinity

Aditya A. Agarwal, James Harrang, David Noble, Kerry L. McGowan, Adrian W. Lange, Emily Engelhart, Miranda C. Lahman, Jeffrey Adamo, Xin Yu, Oliver Serang, Kyle J. Minch, Kimberly Y. Wellman, David A. Younger, Randolph M. Lopez, Ryan O. Emerson

In 2024, A-Alpha Bio released a study showing their use of KinExA to measure tight binders that were beyond the limit of detection for BLI.

“Several AAB-PP489 candidates had binding affinities outside the accurate range of BLI and failed to generate a reliable off-rate (i.e., reported as $< 1.0E-4/s$).”

The sensitivity of KinExA played an important role in characterizing candidates with superior binding affinity.

“KinExA was used to confirm affinities for the top candidate from each optimization strategy...”

The range of affinities measured by KinExA was 310 fM to 56.5 pM whereas the range of BLI measurements was from 211 pM to 54.5 nM.

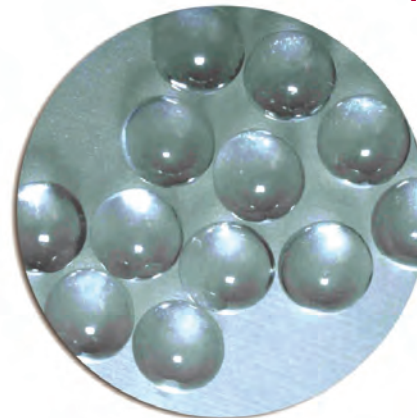
A-Alpha’s use of AlphaBind, an artificial intelligence (AI) model, helped determine the specific sequences responsible for producing the antibodies. The model uses protein language model embeddings and pre-training on large antibody-antigen binding data sets to optimize antibody affinity with high accuracy.

[Full Article](#)

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The Future of Solid Phase

For years, Sapidyne has supported a plastic bead solid phase for use in adsorption coating. While they have worked well for a long time, they will no longer be available once our current stock has run out.



Why switch from plastic? In a word – Microplastics. Microplastics are coming under increasing regulations and bans. New in 2025, sales of plastic beads will have to be accompanied by the EU statement:

"The synthetic polymer microparticles supplied is subject to conditions laid down by entry 78 of Annex XVII to Regulation (EC) No 1907/2006 of the European Parliament and of the Council".

The US, and especially California, are also working on tighter regulations and some bans. Because of the tightening regulations, sourcing plastic beads is getting more difficult and expensive. We have had to switch sources twice already, and when our current supply of Polystyrene beads are gone, we will be discontinuing plastic beads completely.

The benefits of switching to glass beads include:

- Not an environmental concern for our customers.
- No concern of future supply chain difficulties or bans.
- Easier to work with, both for us in manufacturing and for users when coating.

Glass Adsorption beads are currently available for purchase in 10 pack aliquots ready for coating (440425), or in 25 gram quantities (440428). Ideal coating concentrations fall between 20-30 ug/ml. Increasing the coating concentration can lead to a stronger signal, but there will be diminishing returns so the signal boost achieved may not justify the additional material used.

Glass Beads will only work with a KinExA 4000 instrument and will need to be used with Red Propellers (483816), a Bead Retriever (880350), Modified Wash Station (830580), and software version 4.7.6 or newer. If you do not have these parts or are unsure if you can use Glass Beads, please contact Sapidyne.

Join us at **December 14-17, 2025**
Antibody Engineering & Therapeutics San Diego
The #1 Antibody & Protein Conference:
Your Path to Commercial Success

Solid Phase Selection Guide

Selection of an optimal solid phase can increase measurement sensitivity and decrease background noise. Choosing which one will depend on the characteristics of the coating molecule that captures the constant partner in solution. Use the information below to decide what type of solid phase to try; There are a variety that can be used on the KinExA[®] instrument.

See *Table 1* for more information on common solid phases and their requirements.

Solid Phase Considerations

The size of the coating molecule is the first thing to consider for bead selection.

- Large molecules (>~20 kDa) and small molecules conjugated to larger proteins, such as BSA, typically adsorption coat well to hard beads (e.g. Glass and Polystyrene).
- Small, unconjugated, molecules (<~20 kDa) work best covalently coupled to soft beads (e.g. Azlactone and Sepharose).
- Another consideration is if the molecule has been coupled to a plate or beads using another platform.
- Often a molecule can be coupled to the appropriate solid phase using the same immobilization chemistry as an ELISA plate or SPR surface.
- If pre-coated beads for an affinity column are at hand, they can be used for a KinExA experiment. Bead requirements can be read in the self-titled section on Page 5.

If the coating material is expensive or limiting, try reversing the assay first. If it cannot be reversed, search for a biotinylated version of the molecule.

- Biotinylated molecules can be coated onto “hard” beads that have first been coated with Streptavidin.
- For more information on this coating procedure see *How to Guide 208 Biotinylated Coating*.

In some cases, adsorption coating and/or covalent coupling through primary amines can mask the binding site of interest. In that case, check if there are different functional groups available on the molecule.

- If there are free functional groups available for coupling, that won't interfere with the binding site/epitope, they can be used to covalently couple the molecule to soft beads or biotin.
- There are various types of soft beads that can bind different functional groups. For example, CM Sepharose couples via carboxymethyl group.
- There are a wide range of biotinylation reagents available to target specific functional groups. For more information on biotinylation reagents go to LifeTechnologies.com and search “Thermo Scientific Avidin-Biotin Technical Handbook”.

Continued on page 4

This article is also available on our website as *Technology Note 222: Solid Phase Selection Guide*.

Solid Phase Selection Guide

Bead Requirements

Beads other than the ones listed in *Table 1* can be used. Consider the following:

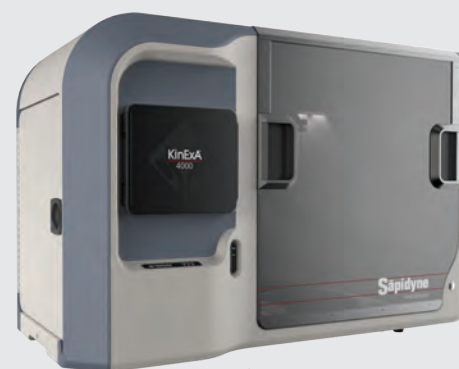
- The beads must be >20 micron or they will not be retained in the flow cell.
- Avoid fluorescent beads as they will affect the measurement.
- Avoid magnetic beads as they absorb light and affect the measurement.

Solid phase	Type	Particle Size	Coating Method	Molecule Quantity	Molecule Requirements	Instrument Sample Limits	Coating Procedure
Polystyrene	Hard	98 µm	Adsorption	30 µg	>20 kDa	≤3 mL/min sample flow rate; ≤5 mL sample volume	HG207
Glass	Hard	53-63 µm	Adsorption	30 µg	>20 kDa	≤3 mL/min sample flow rate; ≤5 mL sample volume	HG207
Streptavidin Coated Polystyrene	Hard	98 µm	Adsorption	15-30 µg	Biotinylation	≤3 mL/min sample flow rate; ≤5 mL sample volume	HG208
Azlactone	Soft	50-80 µm	Covalent	10-20 µg	Primary Amine (-NH ₂)	≤1 mL/min sample flow rate; ≤4 mL sample volume	HG209
Sepharose	Soft	45-165 µm	Covalent	10-20 µg	Primary Amine (-NH ₂)	≤1 mL/min sample flow rate; ≤4 mL sample volume	HG210
CNBr-activated Sepharose	Soft	45-165 µm	Covalent	10-20 µg	Primary Amine (-NH ₂)	≤1 mL/min sample flow rate; ≤4 mL sample volume	Manufacturers Instructions
CM Sepharose	Soft	45-165 µm	Covalent	10-20 µg	Carboxymethyl (-CH ₂ -COOH)	≤1 mL/min sample flow rate; ≤4 mL sample volume	Manufacturers Instructions
SulfoLink	Soft	45-165 µm	Covalent	10-20 µg	Sulfhydryl (-SH)	≤1 mL/min sample flow rate; ≤4 mL sample volume	Manufacturers Instructions

Table 1: Commonly used solid phases and their requirements for KinExA instruments

Important KinExA Instrument Notice

We wish to inform you that, due to component obsolescence, Sapidyne will no longer be servicing the KinExA 3200 and Autosampler instruments. We take pride in the exceptional longevity, reliability, and high-quality therapeutic advancements these instruments have facilitated for labs worldwide. If your laboratory currently operates one of these instruments, we invite you to contact us to explore the attractive trade-in options we have available.



Time to Upgrade!

Touring Idaho: Shoshone Falls

Tucked away in Twin Falls, Idaho, Shoshone Falls—often called the "Niagara of the West"—is a breathtaking natural wonder. Towering at 212 feet and stretching 900 feet wide, it surpasses Niagara Falls in height, making it one of the largest natural waterfalls in the U.S. The falls, carved by the mighty Snake River through a striking basalt canyon on its journey to the Columbia River, offer a mesmerizing display of nature's power. Plan your visit at 4155 Shoshone Falls Grade Road, Twin Falls, ID 83301, and prepare to be awestruck.



The falls' flow shifts dramatically with the seasons. Winter can bring a roaring 20,000 CFS (cubic feet per second) during heavy snowfall years, while spring—the ideal time to visit—delivers a steady 10,000 to 12,000 CFS as snowmelt surges

through. In summer and fall, flows often decrease as water is diverted for irrigation, nourishing over 500,000 acres of farmland upstream. This vital water supports crops valued at \$62 million annually, underscoring the Snake River's role as a lifeline for the region's economy. Whether you catch the falls at their thunderous peak or in quieter moments, Shoshone Falls promises an unforgettable experience. Add this gem to your travel list!

Sapidyne Office Dogs Scooby

Meet Scooby, this playful corgi bounds into the office daily, wagging his tail and sparking joy. With zoomies down the hall and a love for naps, he's a bundle of fun. His lovable charm shines through soulful eyes, making him the ultimate stress-buster. Scooby is a little dog with a big dog personality and he is happiest when he is doted on by his many fans.

