IN THE ZONE

Old vs new technology

TOP 5 TECHNIQUES AND TIPS

New technology continues to advance large molecule bioanalysis, but with all the new technologies in the marketplace, how do you choose? Striking a balance between newer technologies, program needs and overall budget can become overwhelming if you do not have all the information at hand. KCAS (KS, USA) will help compile all of the variables to assist you in choosing the right platform for your particular bioanalytical project.

01

Considering large molecule analysis, how do you decide between different technologies?

Detailed discussion with the customer to identify critical needs of the resultant data...

A. Do you have an assay already developed, what are the current challenges, if any?
B. How is data being used?
C. What is the expected C_{max} (or what are the doses being administered)?
D. What is the anticipated route of administration?
E. Is the target soluble, and if so, at what concentrations?
F. Is there a sample volume limitation?
G. Reagent availability.

02

Describe how KCAS is involved in these decisions and the technologies that you utilize?

A. KCAS will make recommendations based on how the questions in part 01 were answered.

B. Dig into the developed assay to understand how well that assay is characterized and if it will fit the purpose being proposed (i.e. qualification, fit-for-purpose validation, validation, etc).

C. By understanding some of the PK parameters that are expected, we can steer toward a technology that has the best balance of dynamic range, sensitivity, specificity and cost.

D. Sample volume limitation is a big point that can potentially eliminate or immediately point to one technology over the other.

03

What are the key advantages and challenges you face with the different technologies? How do you address and overcome these issues when choosing the right technology?

Technology/Platform	Pros	Cons
Colorimetric ELISA	Large number of kits/commercial reagents available	Quality of available reagents
	Inexpensive consumables	Tend to have smaller dynamic ranges
	Ability to monitor signal generation and stop at ideal time	Time dependent enzyme reaction required to generate signal
Meso-Scale Diagnostics (ECL)	High binding capacity plates	Expensive consumables
	Typically wider dynamic range (including ability to improve sensitivity)	Critical supplies only available from one source
	Large number of kits/ commercial reagents available	Single read per plate
	Multiplexing capabilities	
Time Resolved Fluorescence (TRF)	Typically wider dynamic range (including ability to improve sensitivity)	Reagents not as readily available as other technologies/platforms
	Signal generation stable for hours	More expensive reagents
	Multiplex capabilities	
Quanterix Simoa	Small sample volume	Comparatively low throughput
	High sensitivity	High cost of materials
		Single supplier of materials

04

How far do regulations impact decisions to utilize these technologies?

A. Regulations play an important role as the technology must meet certain regulatory requirements as outlined in 21CFR Part 11.

B. In addition to that, an assay must be able to be validated on the method following the concepts outlined in FDA guidances (such as the 2001 BMV guidance [1]) and industry white papers.

The above table outlines some of the pros/cons of the different LBA platforms available at KCAS. Discussion on how some of these cons are mitigated are discussed in our latest podcast with Franklin Spriggs (KCAS).

05

How would this apply to anti-drug antibody studies?

A. The default for ADA tends to be the Meso-Scale Diagnostics technology as this is the industry standard.

B. Certain cases where other technologies are useful, such as a direct ADA assay using a colorimetric platform.

C. Technology for improvement of detecting the ADA in the presence of the dosed biologic tend to not be based on the final instrument read, but more on the techniques to improve the assay's tolerance to interfering proteins.

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