

Gyrolab vs ELISA: what are the pros and cons?

Immunoassays, based on antibody–antigen interactions, were first developed as a radioimmunoassay to measure insulin in plasma. Today, plate-based enzyme-linked immunosorbent assays (ELISAs) are widely used due to their advantages of technical simplicity, and high specificity and sensitivity, but are accompanied with inherent drawbacks being manually intensive and time-consuming, requiring large sample volumes and providing limited assay dynamic ranges. Gyrolab technology simplifies and automates immunoassay workflows with the use of proprietary compact disk based microfluidic labware, a flow-through 15nL affinity column, and highly reproducible nanoliter microfluidics.

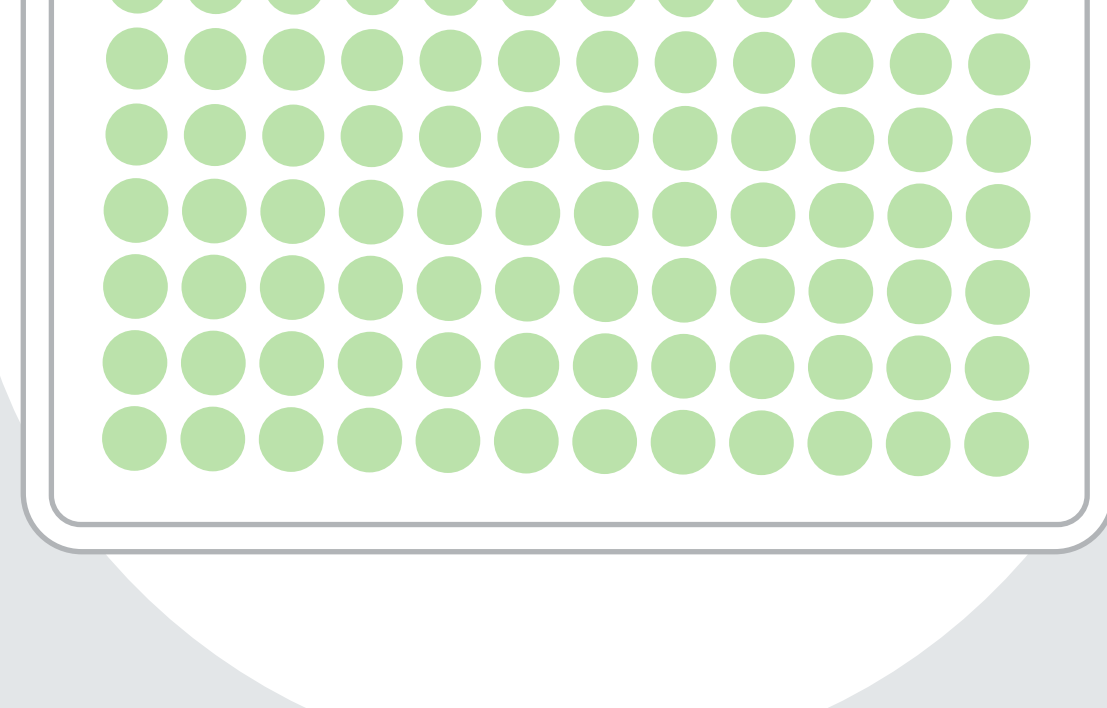
ELISA

Gyrolab

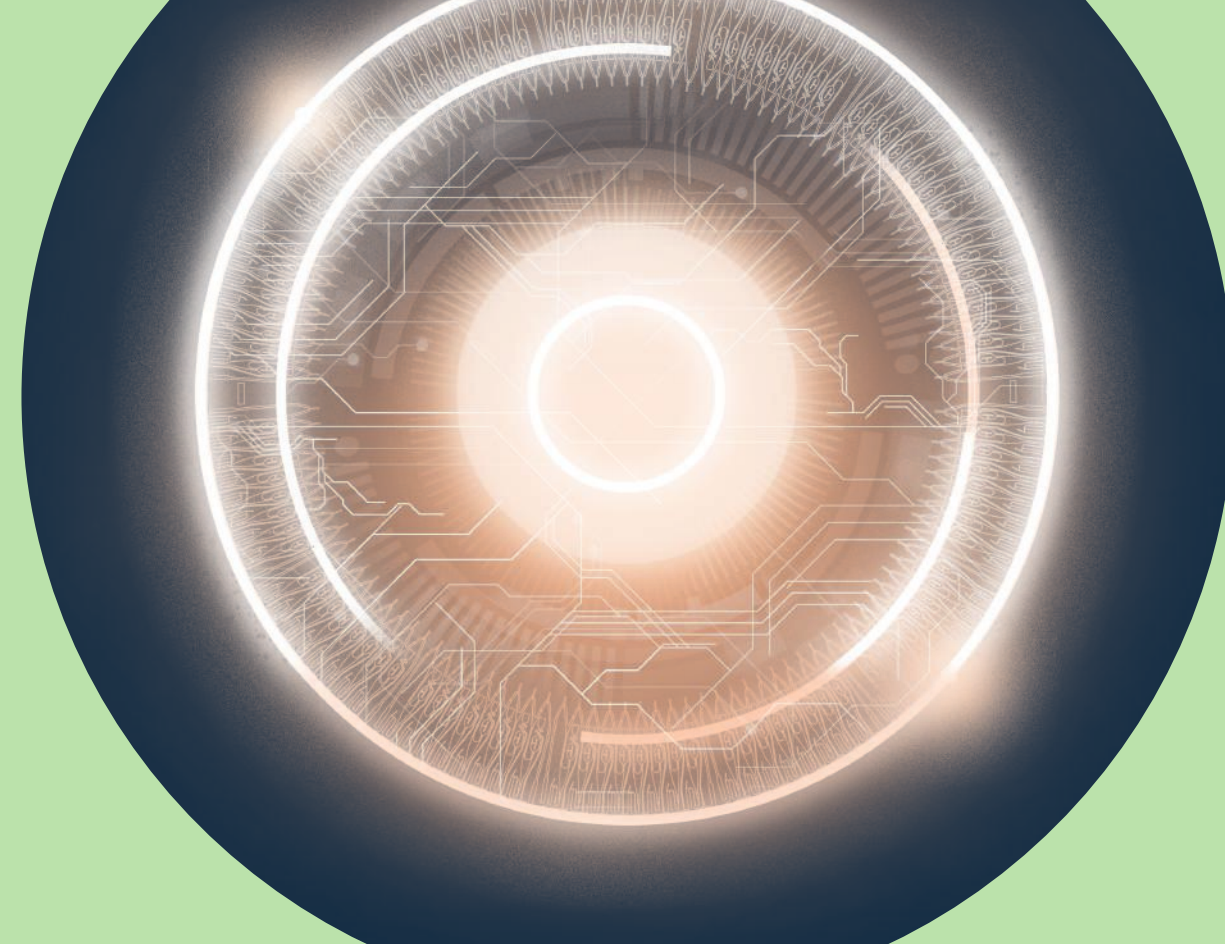
1

SAMPLE VOLUME

50–100 μ l



5–10 μ l



2

MANUAL PIPETTING STEPS

Plate-Based ELISA Workflow

6–15 steps

Prepare samples and assay components, added to microtiter plate

Incubate 1–2 hrs

Wash steps

Add detection reagent

Incubate 30 mins

Wash steps

Add substrate

Incubate 4 mins

Add stop solution

Read plate



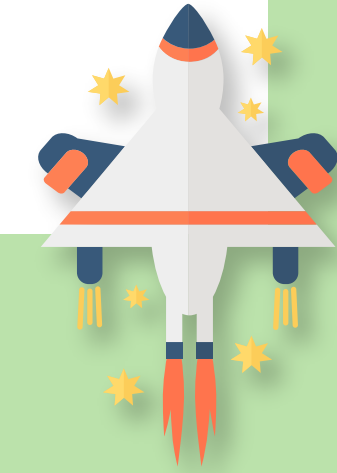
Analyze data

Gyrolab Workflow

1 step

Prepare samples and assay components, added to microtiter plate

Load microplates & CD(s) in Gyrolab instrument and start



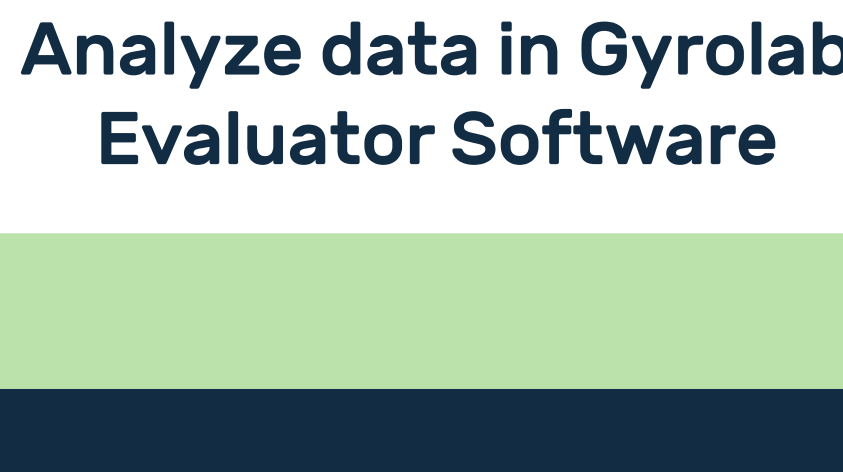
Automated in CD:

• Reagent addition

• Sample addition

• Washing

• Detection

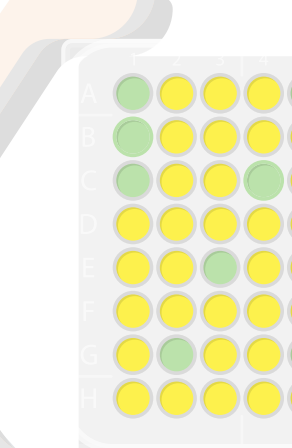


Analyze data in Gyrolab Evaluator Software

3

AUTOMATED ASSAY?

No



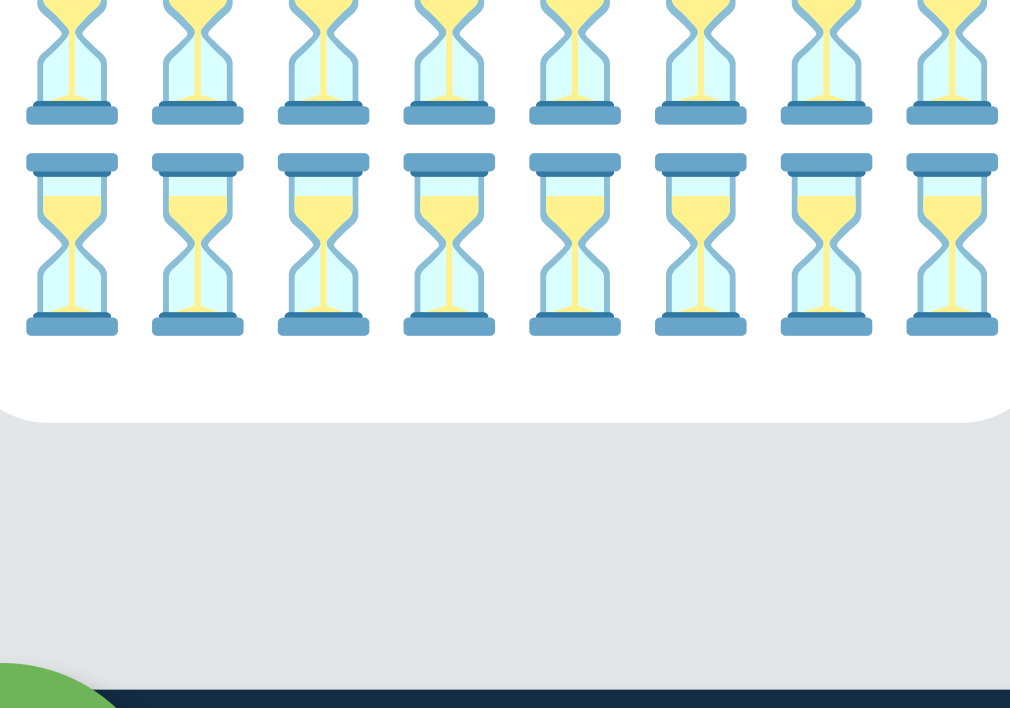
Yes



4

ASSAY TIME

4–20 hrs



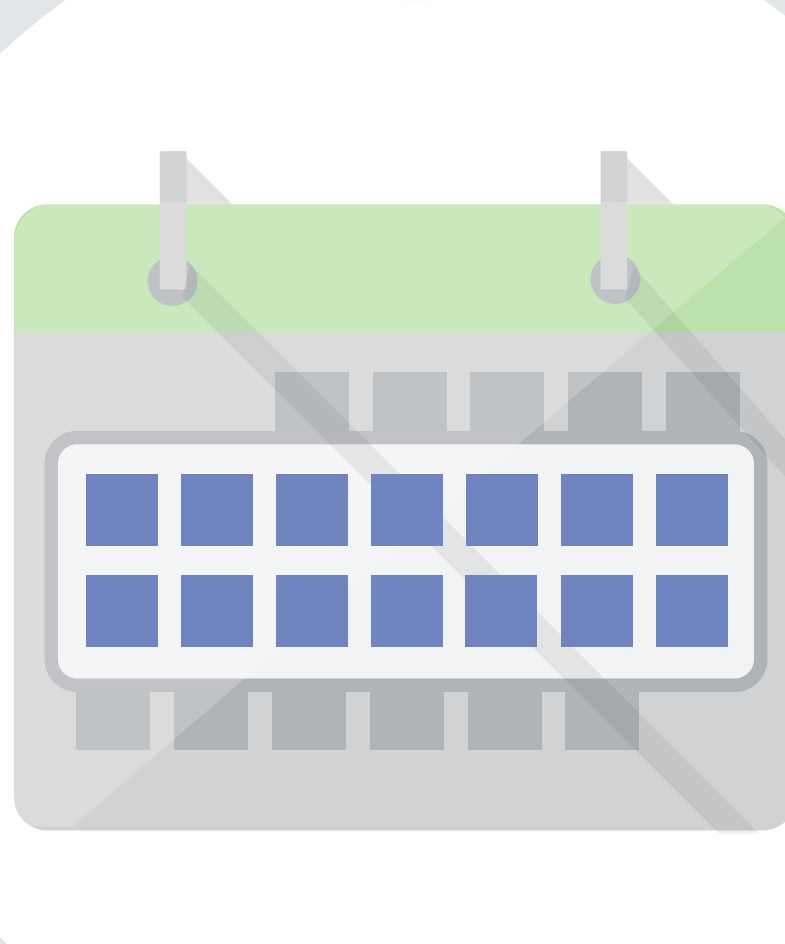
~1 hr



5

ASSAY DEVELOPMENT TIME

1–2 weeks



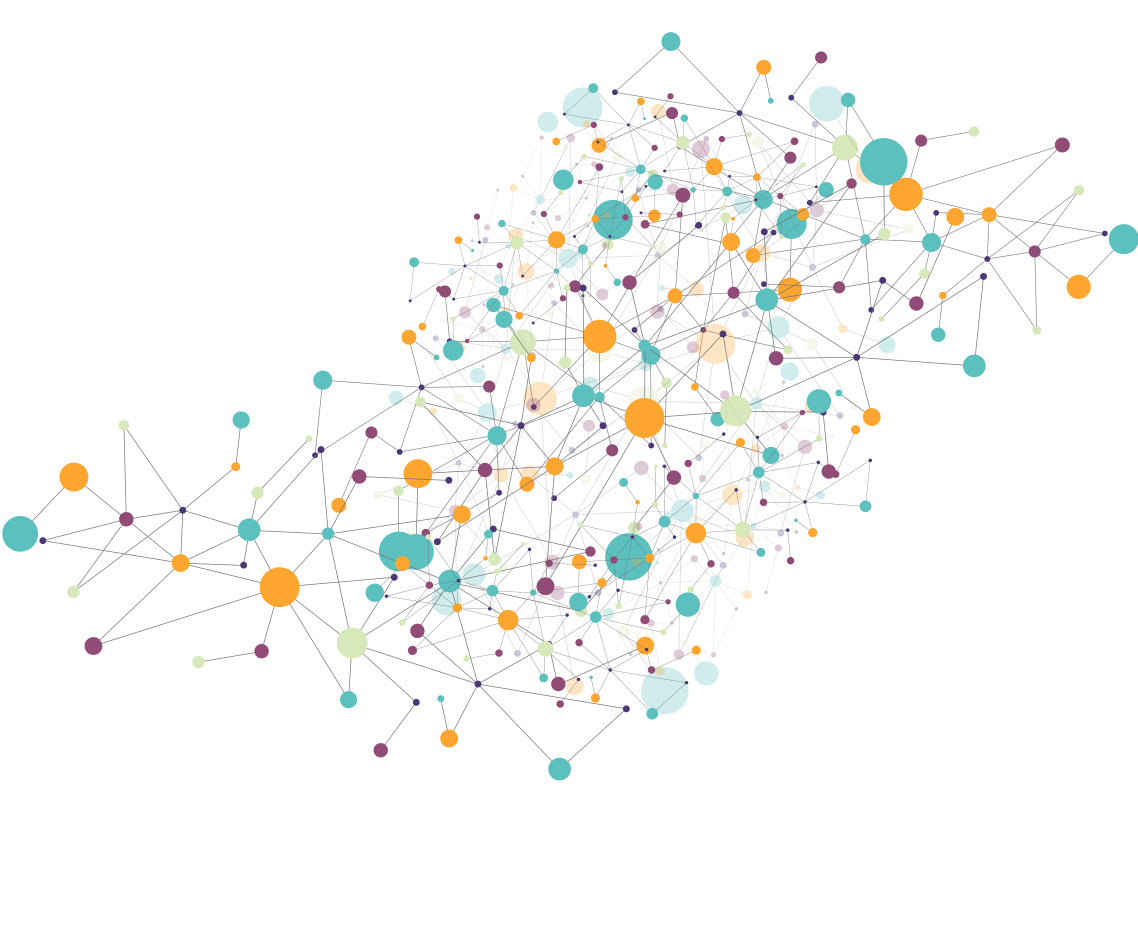
3 days



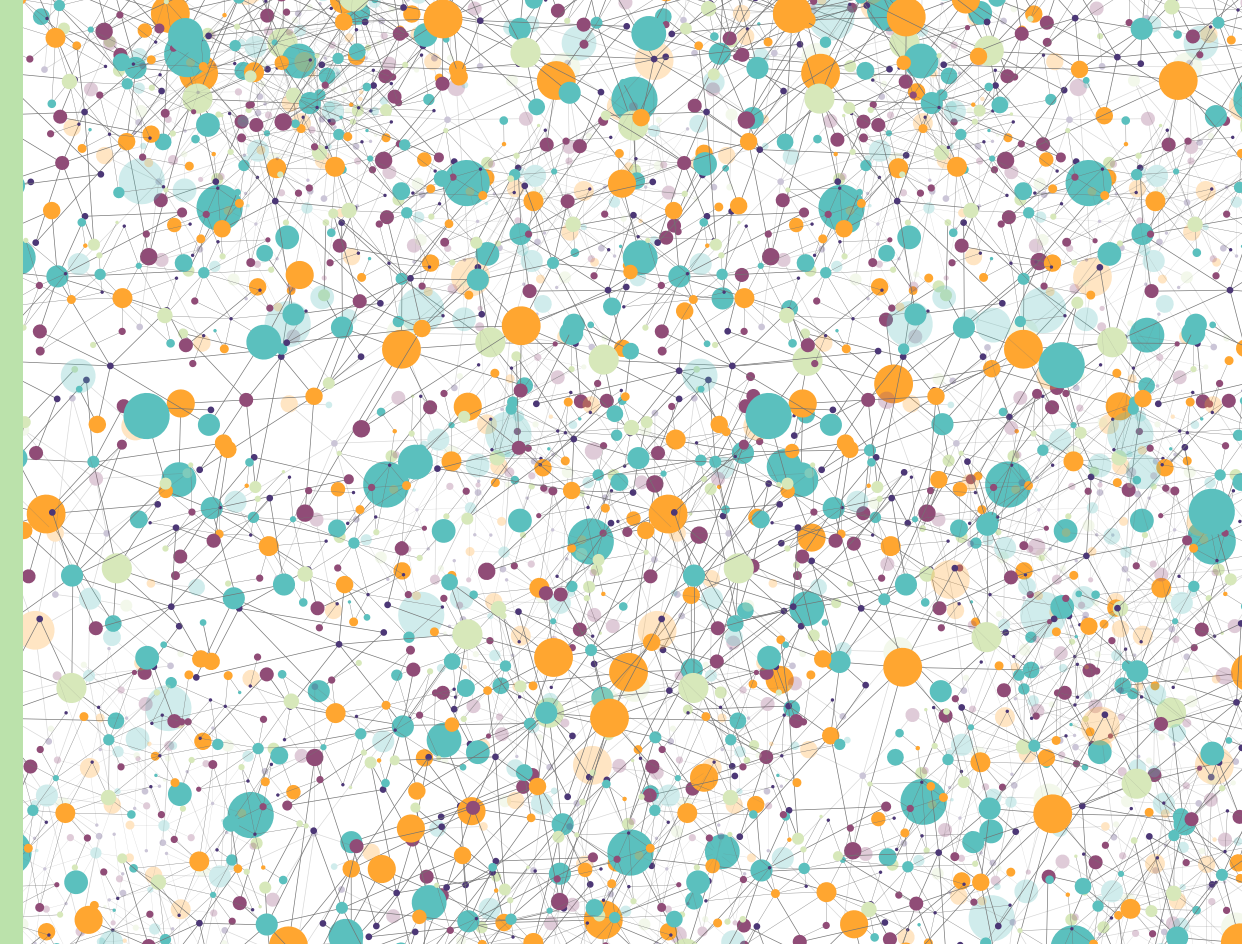
6

DATAPPOINTS PER DAY

192



1120



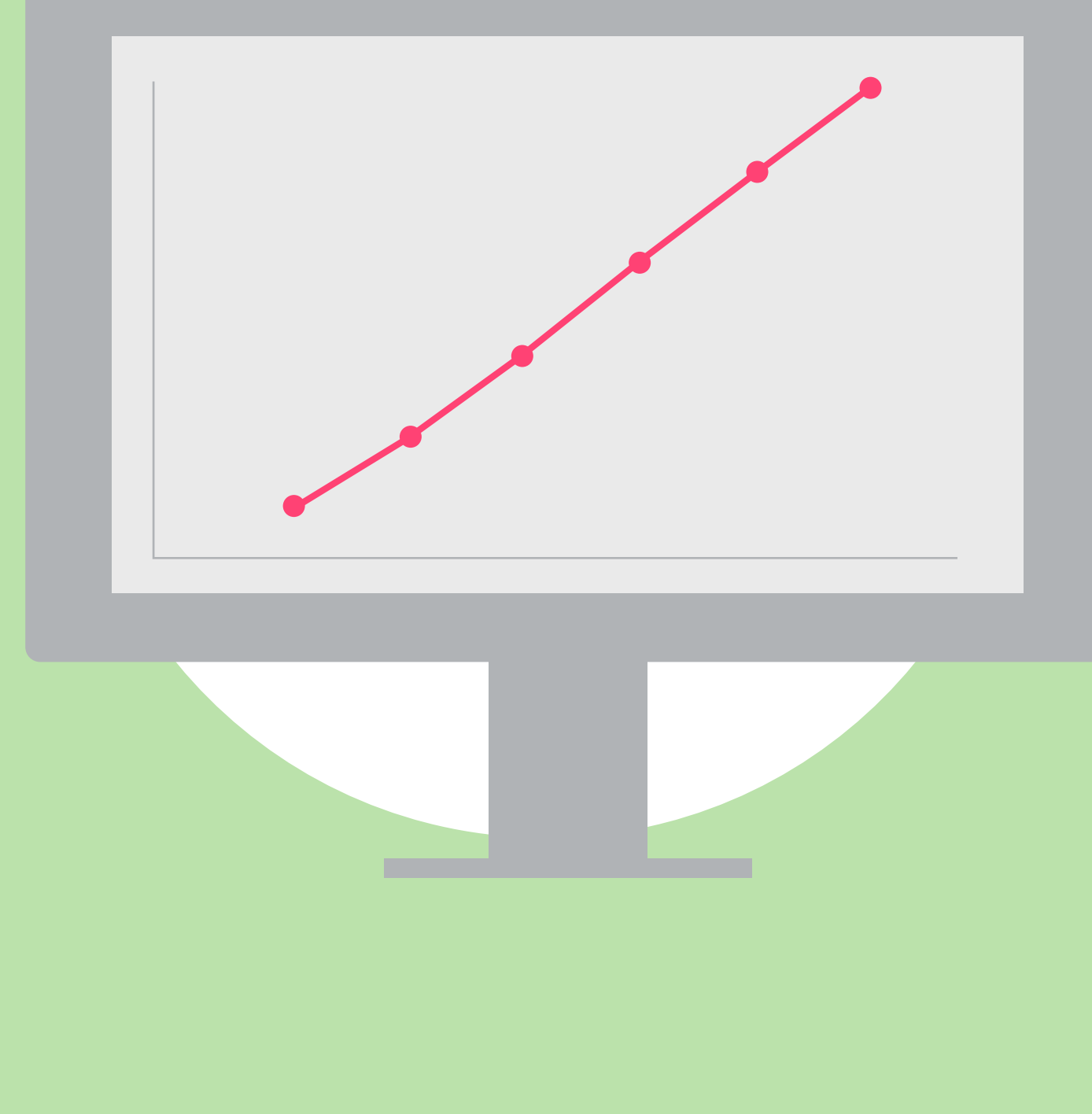
7

ASSAY DYNAMIC RANGE

2–3 logs



3–4 logs



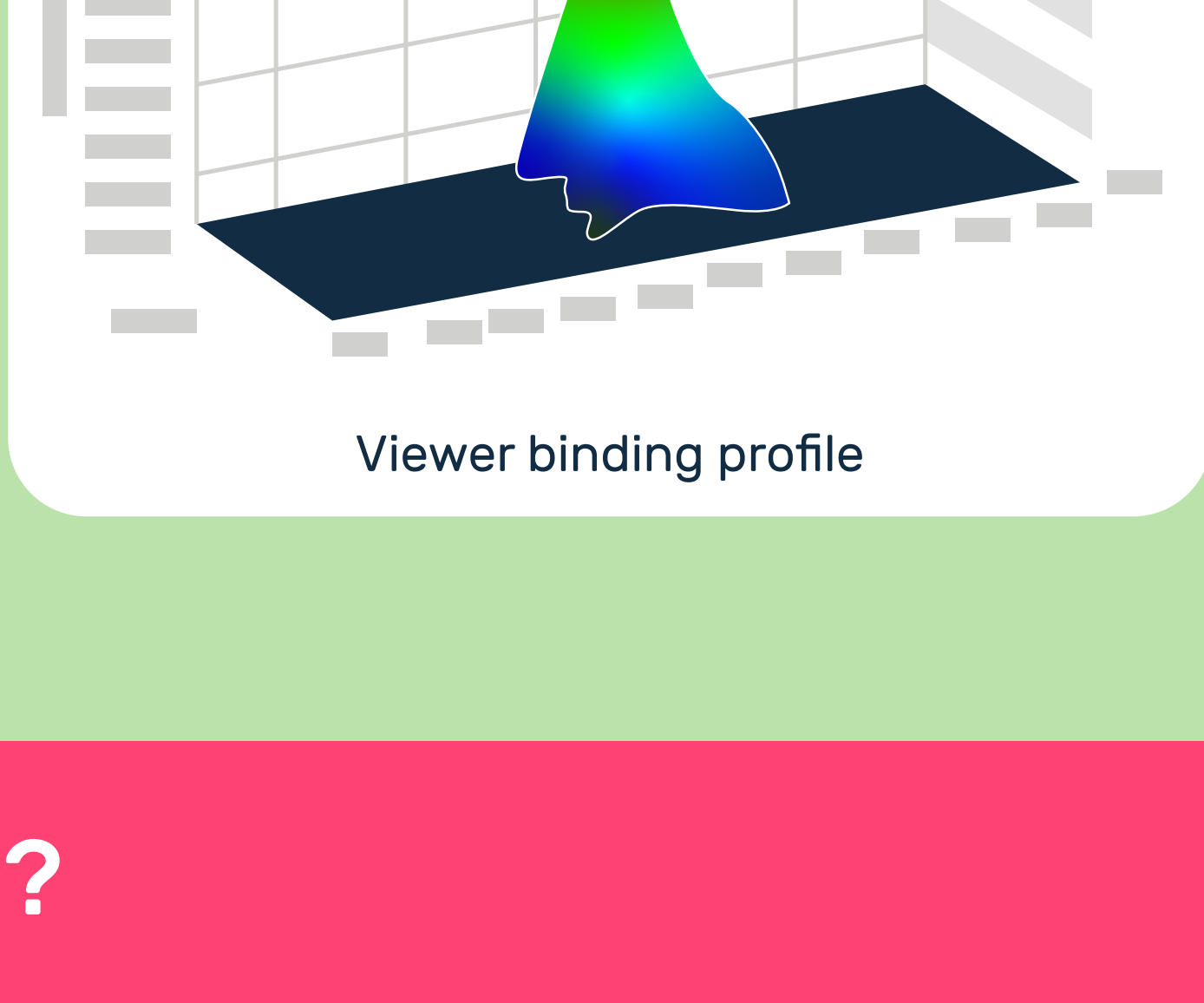
8

DATA OUTPUT

Absorbance values

	Concentration (pg/ml)	OD1	OD2	Average	Corrected
Blank					
Standard 1					
Standard 2					
Standard 3					
Standard 4					
Standard 5					
Standard 6					
Standard 7					
Sample 1					
Sample 2					
Sample 3					

Column fluorescence



What does the future hold?

Gyrolab immunoassays are gaining in popularity, especially in biopharma, due to increased throughput and precision, reduced sample and reagent volume, reduced matrix interference and fully automated assays. While initial Gyrolab immunoassay applications were in preclinical rodent PK studies, Gyrolab kits and customer applications have broadened to antibody-based therapeutic bioprocess immunoassays and cell and gene therapy bioprocess assays. The menu for bioanalysis has also expanded to include automated microfluidic anti-drug antibody assays and generic PK/TK assays for antibody-based therapeutics.



This infographic has been created as part of a Bioanalysis Zone feature in association with Gyros Protein Technologies.