# Enabling Fast, Reliable, and Accessible Protein Quantification with Redox Electrochemical Detection (RED)

PRECISION MADE PRACTICAL

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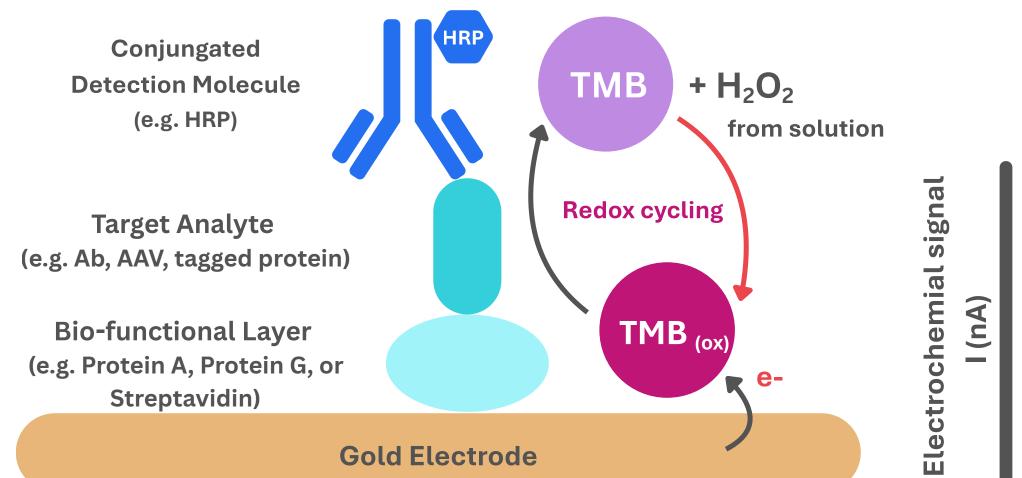
## Background

Protein quantification is essential across biologics research and development – yet current tools like ELISA, BLI, and SPR require complex workflows and may struggle with crude samples or early-stage screening. These limitations increase the demand for platforms that combine speed, simplicity, and robustness.

# Technology overview: what is RED?

Redox Electrochemical Detection (RED) is a sensor-based detection method that uses enzyme-mediated redox reactions to generate an electrical signal, directly measured via gold electrode sensors.

- No optics or fluidics
- Designed to tolerate crude samples
- Signal readout is direct and automated
- Suppors different assay formats tailored to target biology

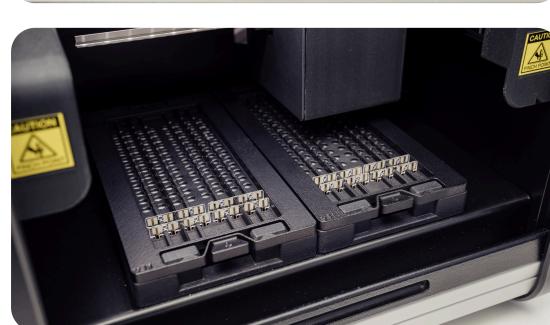


Electrochemial signal

**RED** is implemented in the **Amperia™** platform – a compact benchtop system built on **patented** sensor technology, with disposable dip-style sensors and prefilled assay plates.



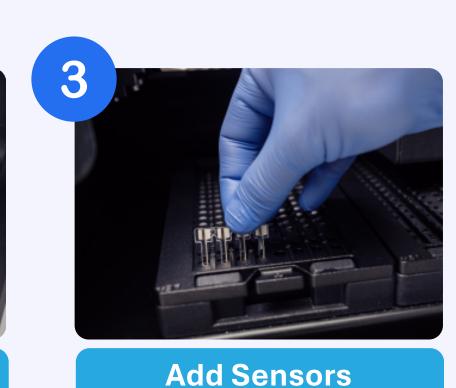




# Workflow summary.







Prepare Assay Plate

Antibody Quantification Experiment Quantification

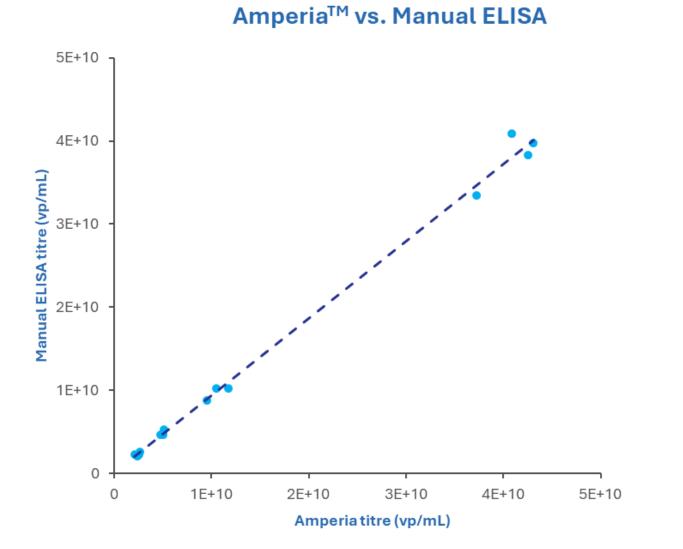
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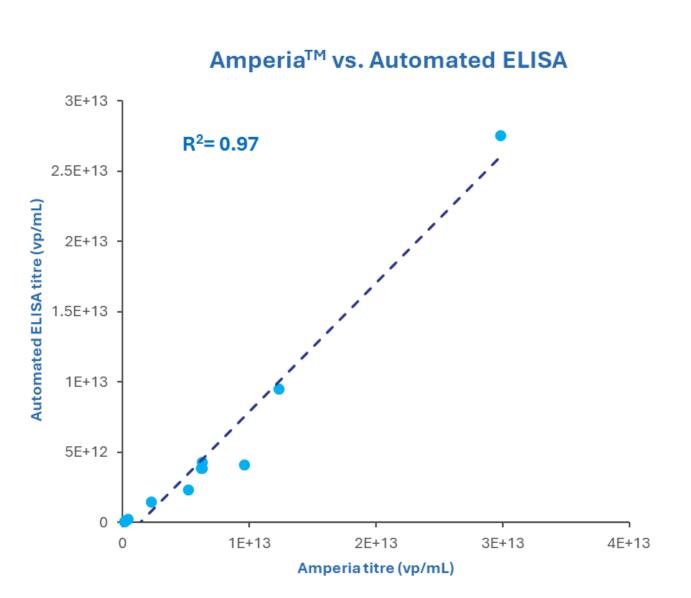
 Simple 5-step dipand-read process

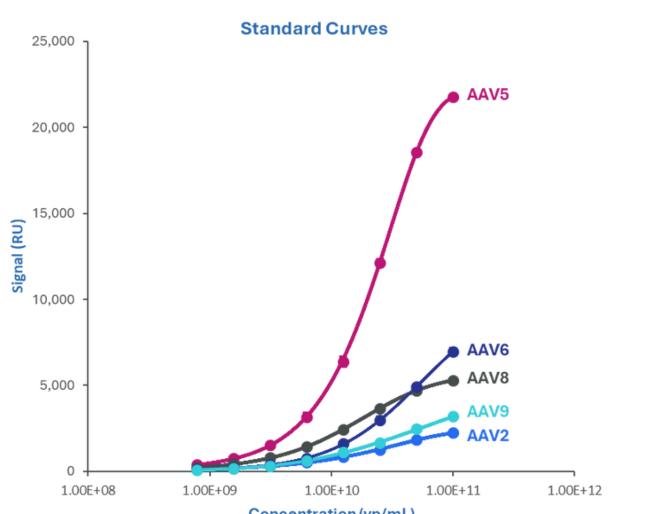
- Easy sample loading into standard plates
- Automated sensor handling
- Built-in analysis

# Applications & results.

#### **AAV Capsid Quantification**

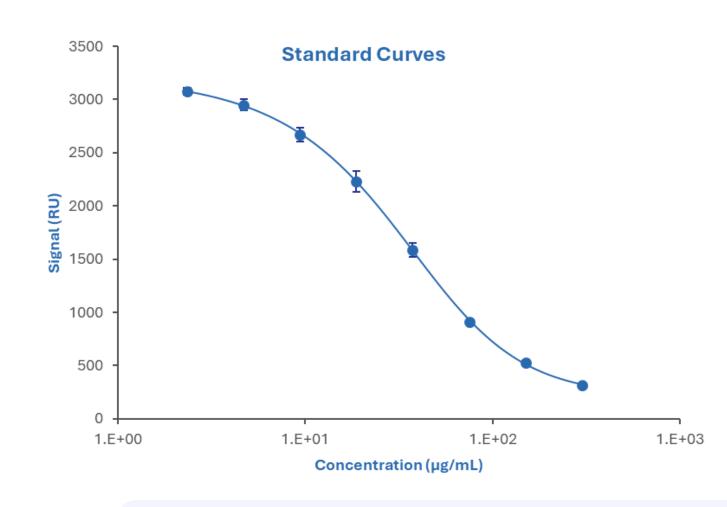






- Strong correlation with both manual and automated ELISA ( $R^2 = 1.00, 0.97$ )
- Quantitative curves across serotypes (AAV2, AAV5, AAV6, AAV8, AAV9)
- Robust performance across serotypes and assay runs
- Suitable for early-stage, minimally processed samples

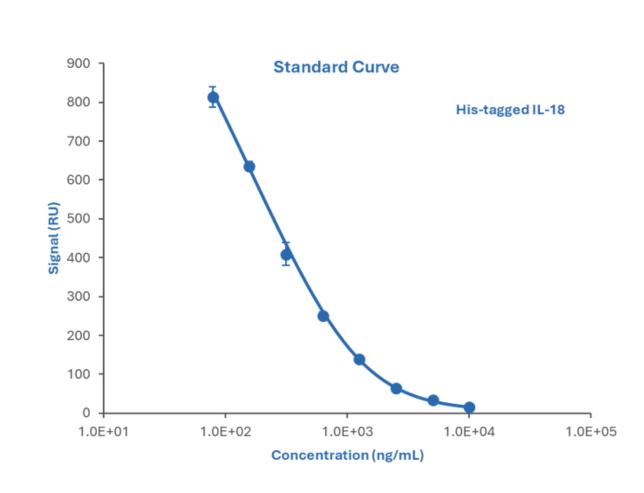
### Monoclonal Antibodies (mAbs) Quantification





- Reproducible standard curves across a relevant concentration range
- Demonstrated agreement with BLI in clone-ranking applications (8/10 top clones matched)
- Results consistent across replicates and assay runs
- Applicable to titer monitoring in early development workflows

## **His-Tagged Protein Quantification**



- Standard curves generated for Histagged IL-18
- Reliable quantification from lysatebased samples
- Reproducible results across replicates
- Supports assessment of protein expression levels

## Discussion & future directions.

**Amperia™** uses Redox Electrochemical Detection (**RED**) to simplify protein quantification – eliminating the need for optics or fluidics. It delivers consistent results across targets such as AAV, mAbs, and His-tagged proteins, even in crude samples.

With a compact design, low training requirement, and targetspecific assay formats, it supports early screening and upstream workflows. Ongoing work aims to expand assay offerings and enable integration with automated systems.





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