

iLite® Metabolic Panel: Reporter Gene Assays for Functional Potency Assessment of Metabolic Therapeutics

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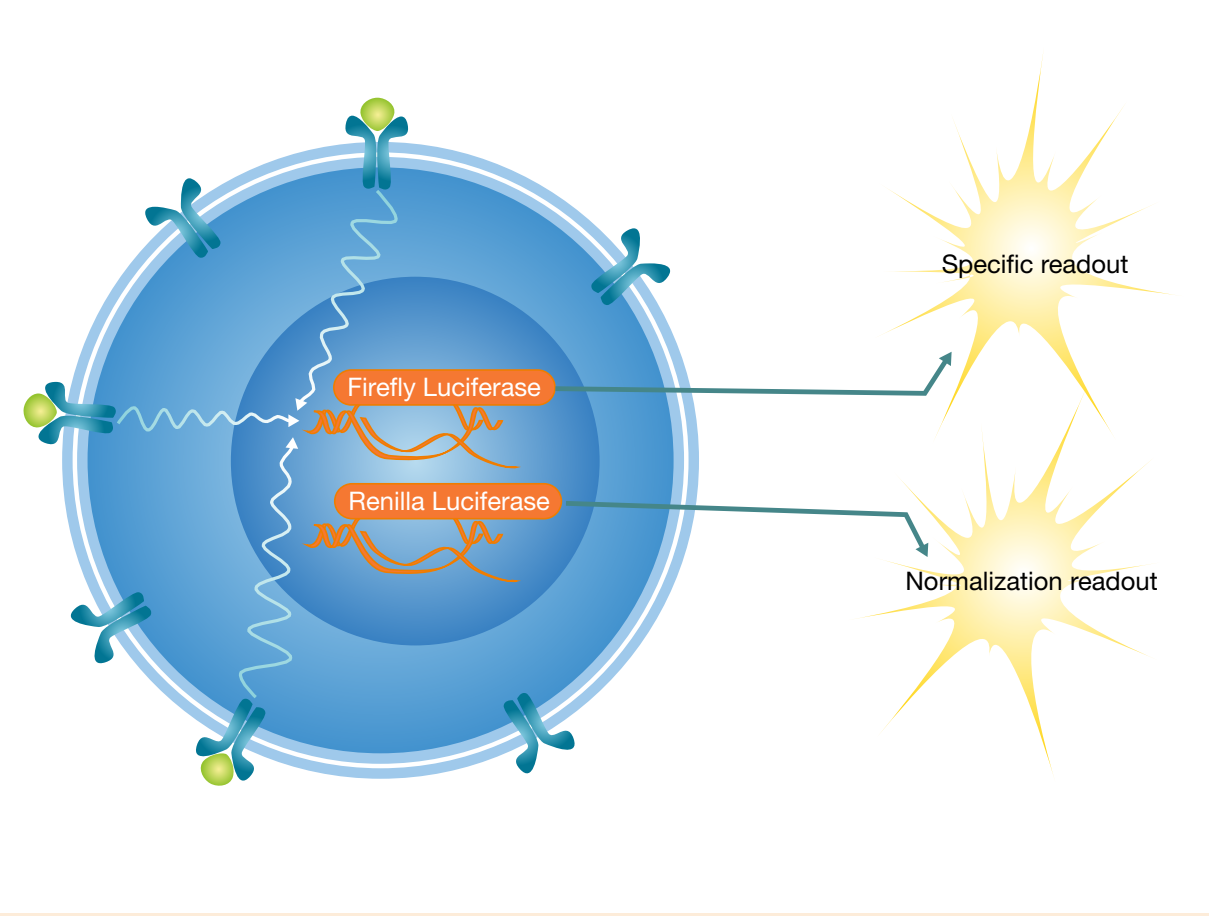
1 INTRODUCTION

The rapidly evolving field of metabolic therapeutics is expanding from single-receptor agonists toward molecules targeting multiple complementary metabolic pathways.

While GLP-1 and GIP are central to many current therapies, insulin and FGF21 signaling represent additional key mechanisms regulating glucose and metabolic homeostasis. This increasing therapeutic complexity creates a need for robust functional assays capable of quantifying mechanism-of-action (MoA)-specific activity.

Here, we present the *iLite*® Metabolic Panel, comprising reporter gene assays for GLP-1, GIP, Insulin and FGF21 signaling. Representative datasets for each assay highlight selected performance characteristics supporting MoA-driven functional characterization and potency assessment.

UNDERLYING ILITE® REPORTER GENE ASSAY PRINCIPLE



Ligand binding and receptor activation trigger pathway-specific Firefly luciferase expression, while constitutively expressed Renilla luciferase provides an internal normalization control.

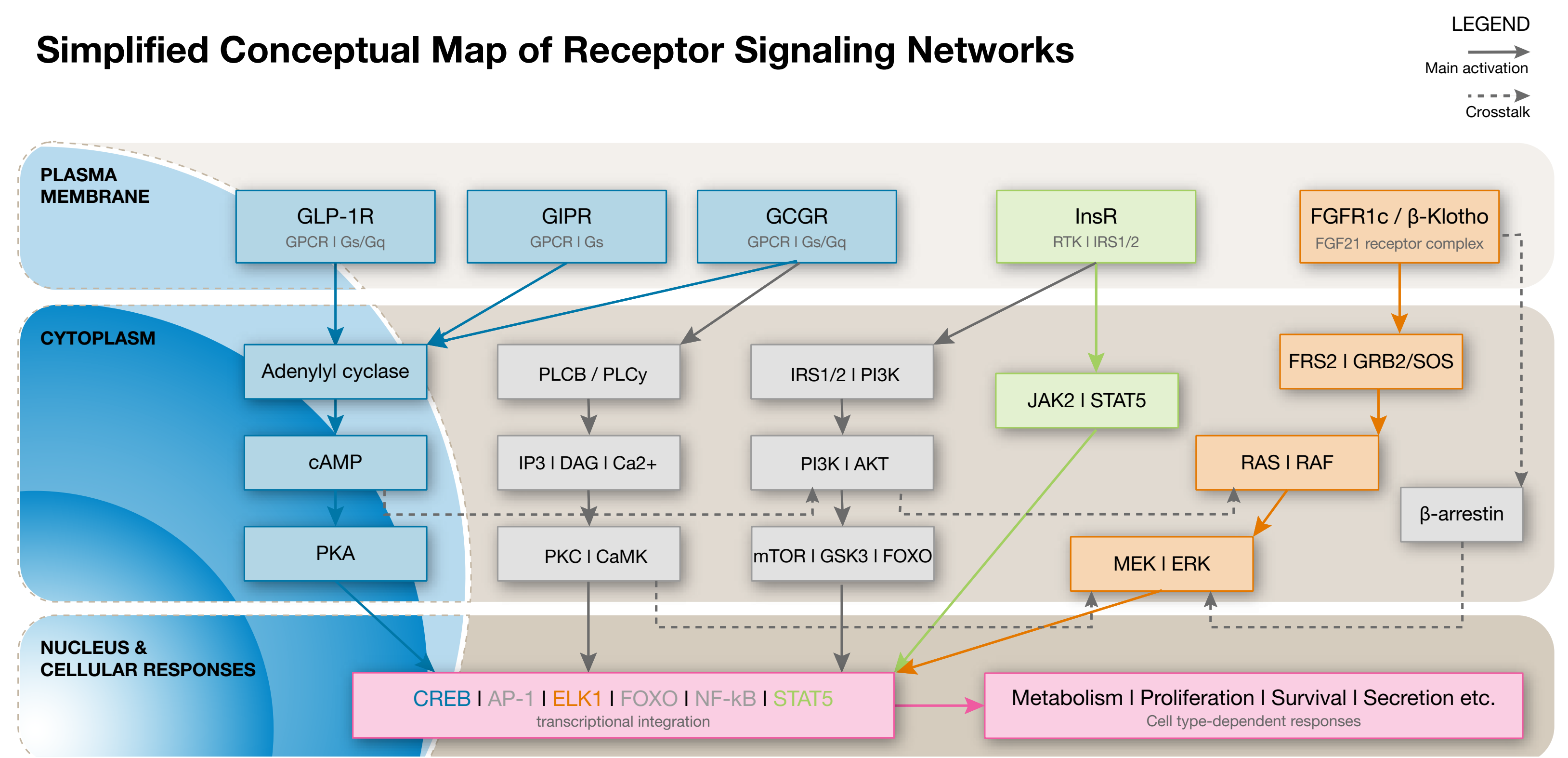
iLite® Assay Ready Cells provide a standardized thaw-and-use format, enabling functional assessment typically within 5 hours from thawing to readout.

INTERCONNECTED SIGNALING PATHWAYS REGULATE METABOLIC RESPONSES

Metabolic therapeutics engage distinct receptor systems that signal through interconnected intracellular pathways. Despite different proximal signaling mechanisms, these pathways converge on transcriptional programs controlling metabolism, secretion and other cellular responses.

Pathway-specific reporter gene assays translate receptor activation into a sensitive and quantitative functional readout, providing a direct link between drug mechanism of action and biological activity. Here, we demonstrate *iLite*® reporter assays for GLP-1, GIP, insulin and FGF21 signaling.

Simplified Conceptual Map of Receptor Signaling Networks

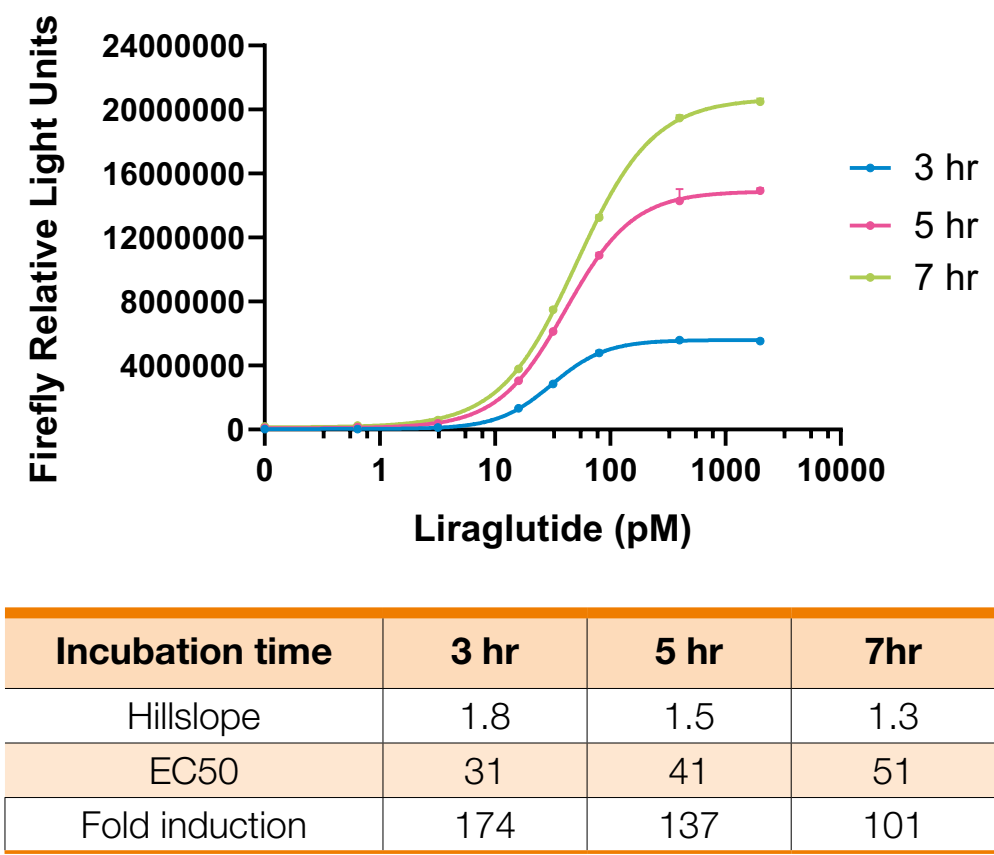
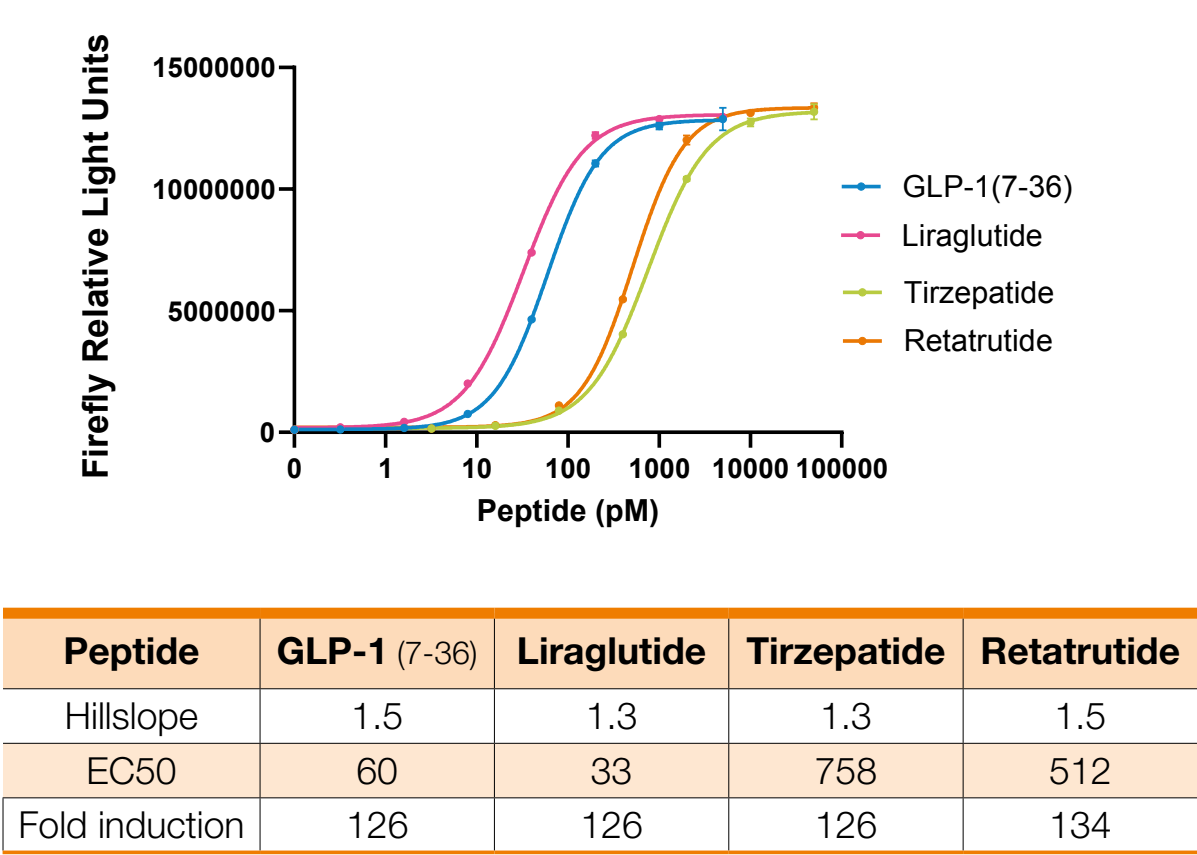


2 FINDINGS

GLP-1 — FUNCTIONAL PROFILING OF INCRETIN BASED THERAPEUTICS

The *iLite*® GLP-1 reporter gene assay enables sensitive functional characterization of GLP-1R agonists. Dose-dependent responses to Liraglutide (GLP-1R agonist), Tirzepatide (dual GIPR/GLP-1R agonist), Retatrutide (triple GCGR/GIPR/GLP-1R agonist) and human GLP-1(7–36) demonstrate its applicability for MoA-specific profiling of current and next-generation metabolic therapeutics.

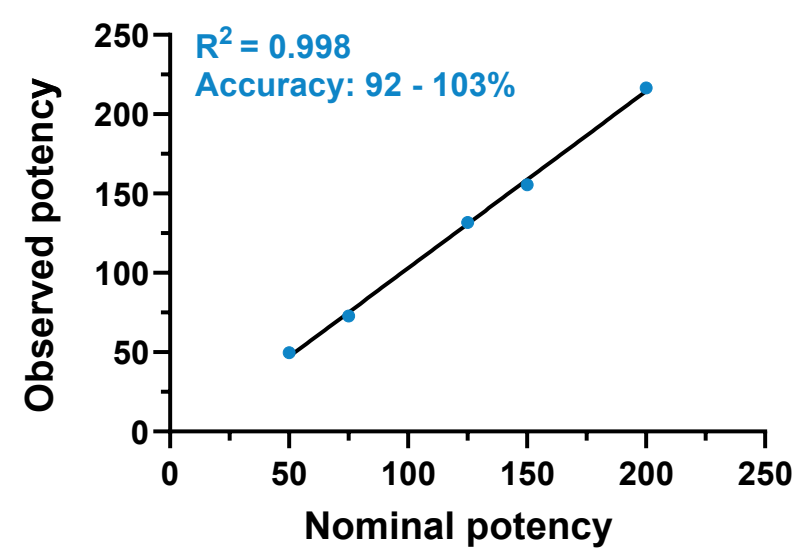
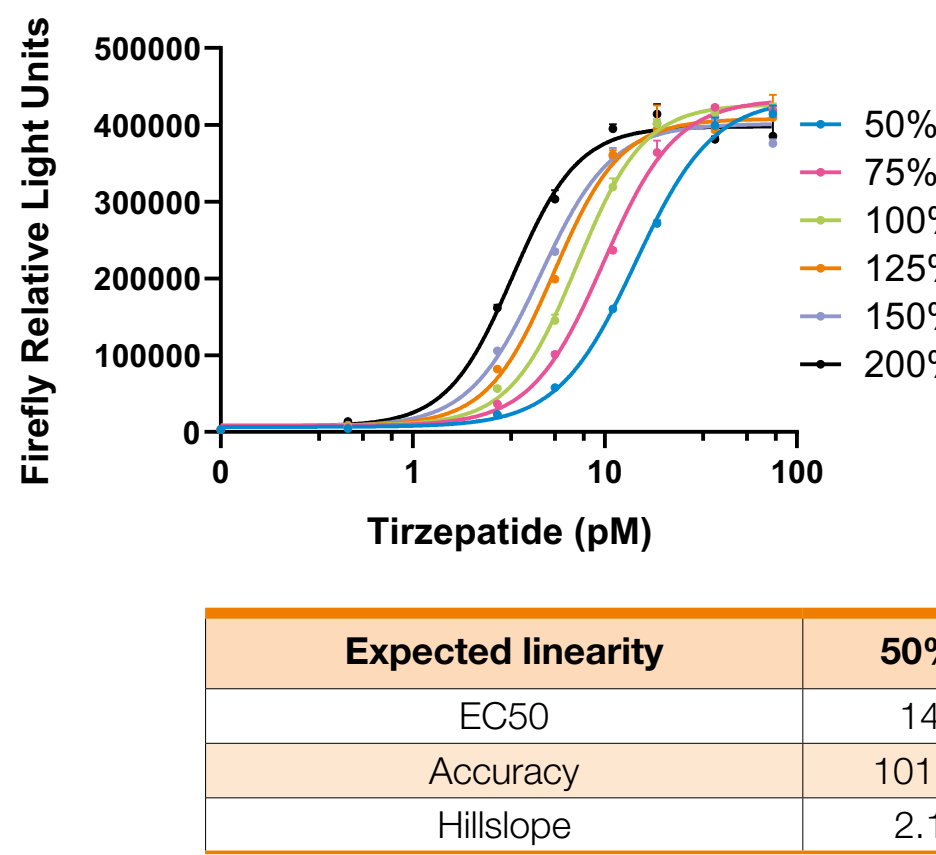
Increasing incubation time enhanced the GLP-1-dependent reporter response, while Renilla luciferase activity remained stable, supporting robust normalization across assay conditions. The assay ready cells were incubated for 3 hr, 5 hr or 7 hr at 37°C and 5% CO₂ before measurement using Dual-Glo®.



GIP — PARALLELISM AND LINEARITY OF RELATIVE POTENCY

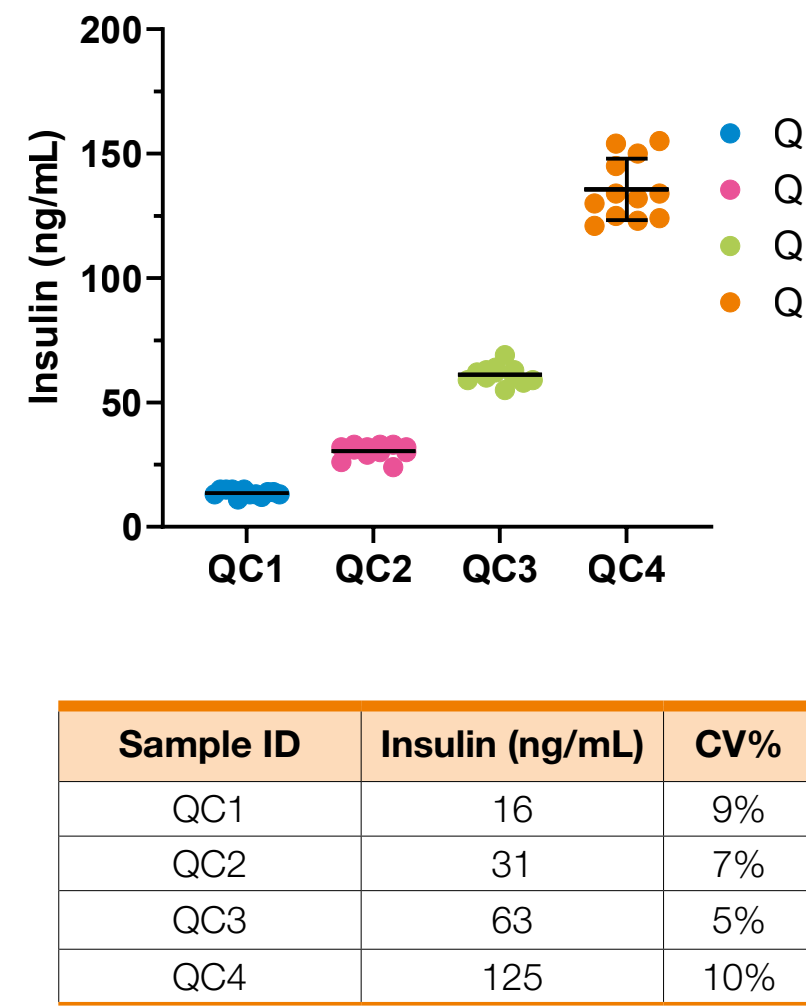
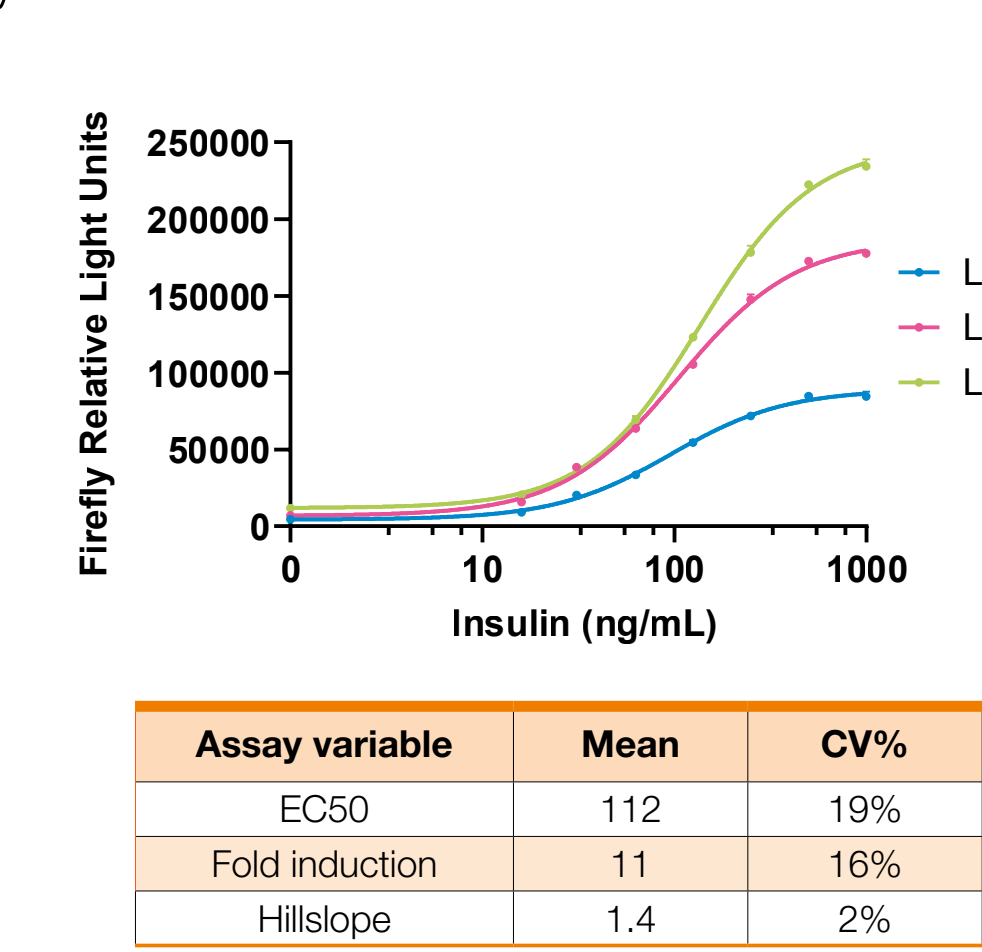
Serially prepared potency levels of tirzepatide generated parallel concentration-response curves and a linear relationship between expected and measured relative potency, supporting quantitative potency assessment across the tested range.

The *iLite*® GIP reporter gene assay were incubated with tirzepatide for 5 h at 37°C and 5% CO₂. Renilla luciferase activity remained stable across all tested concentrations (data not shown).



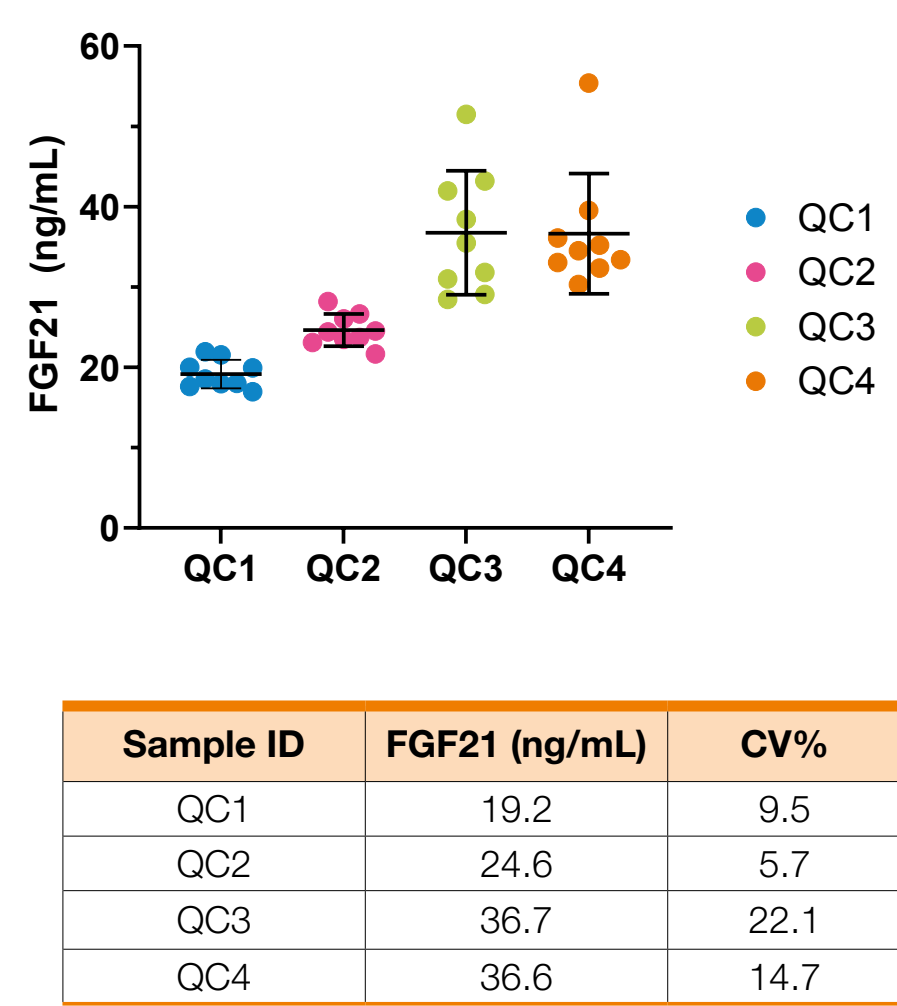
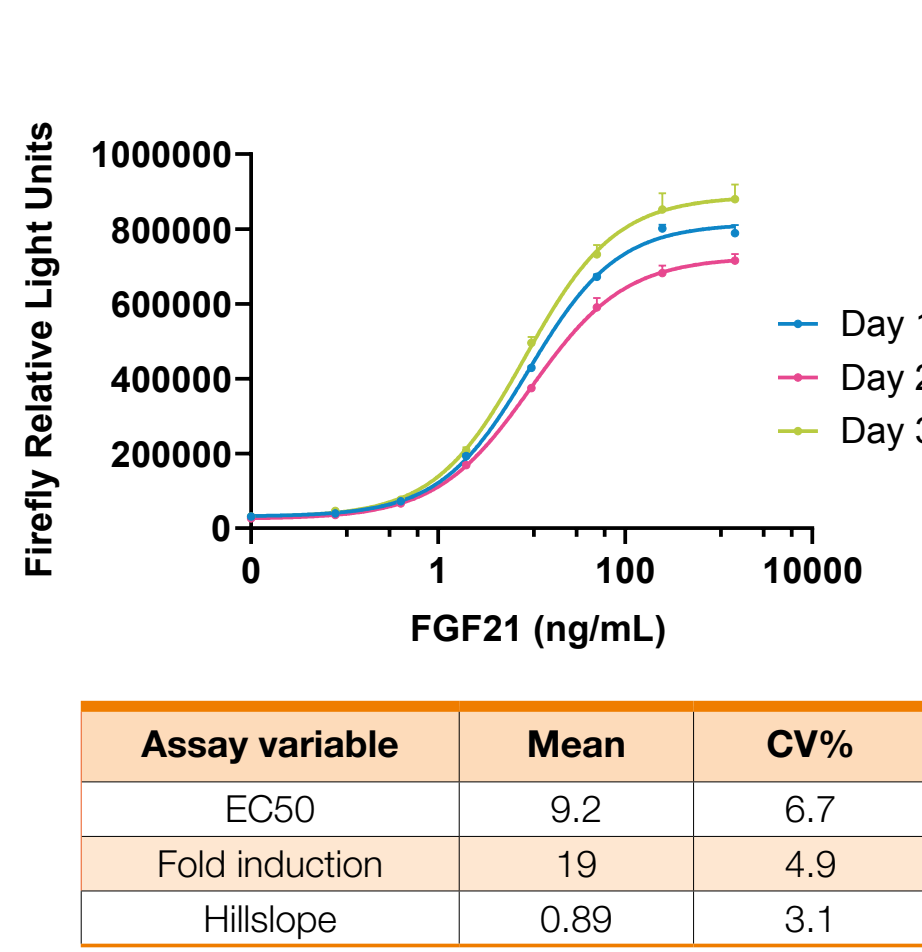
INSULIN — LOT-TO-LOT CONSISTENCY

Independent *iLite*® Insulin reporter gene assay cell lots generated highly comparable concentration-response curves, demonstrating consistent functional performance across production lots and supporting long-term assay standardization.



FGF21 — INTER-DAY PRECISION

Independent *iLite*® FGF21 reporter gene assays performed on different days generated highly comparable concentration-response curves and potency-related parameters, demonstrating robust inter-day precision.



3 CONCLUSION

The *iLite*® Metabolic Panel provides a versatile set of pathway-specific reporter gene assays for functional characterization and potency assessment of metabolic therapeutics, addressing the growing need for MoA-driven evaluation of emerging single- and multi-agonist therapies.

Representative datasets across GLP-1, GIP, Insulin and FGF21 demonstrate robust assay characteristics across functional profiling, parallelism and relative potency linearity, inter-day precision, and consistent performance across assay ready cell lots.

Combined with the standardized thaw-and-use Assay Ready Cell (ARC) format, the platform provides a robust and scalable toolbox supporting MoA-driven biological characterization of metabolic therapeutics across all stages of therapeutic development, from early discovery to late-stage applications.

For additional information about the *iLite*® Metabolic Panel, scan the QR code or visit our website.

