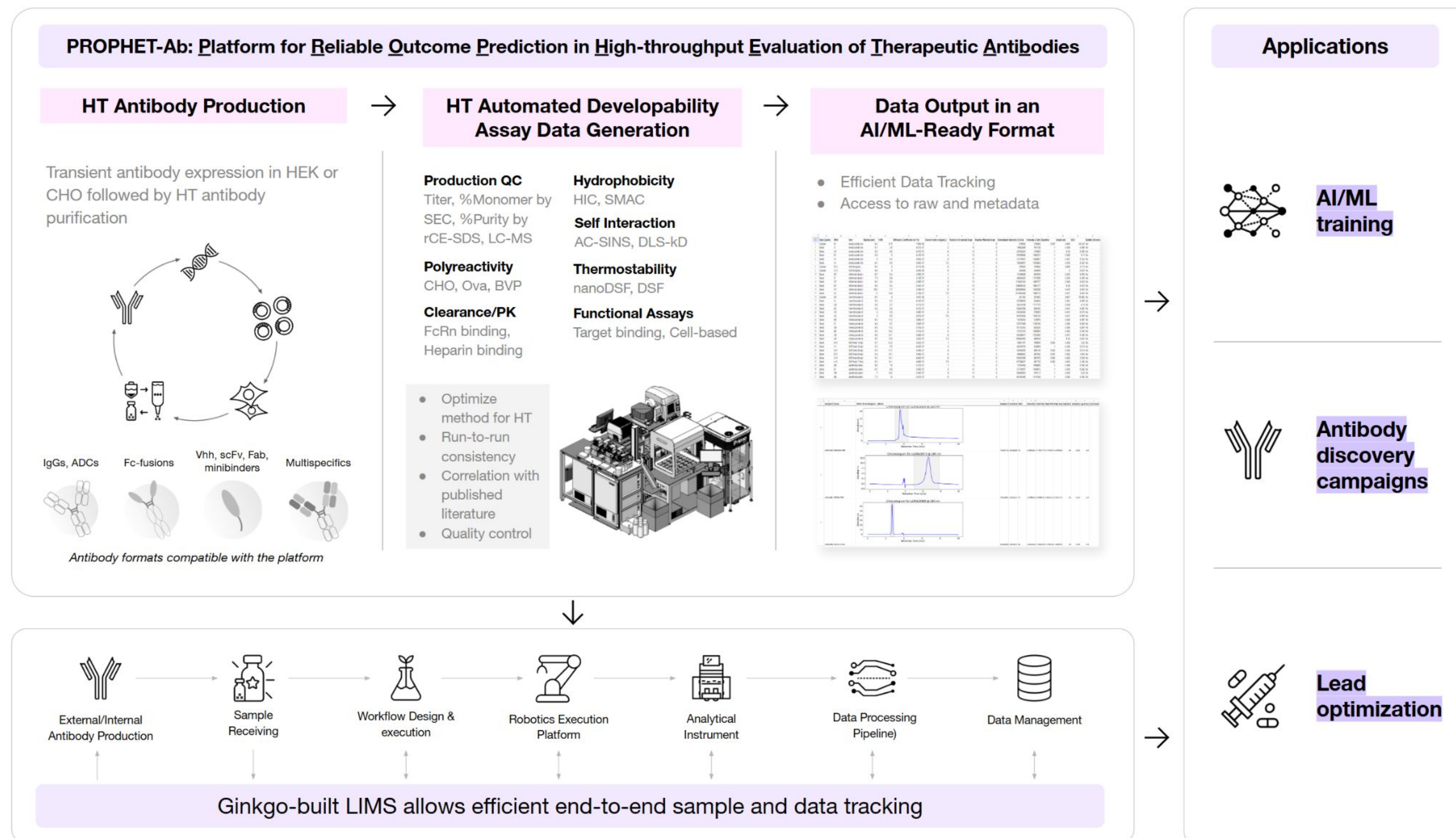


Bridging the “Data-Gap”: A High-Throughput Antibody Developability Assessment Platform For Predictive and Generative AI/ML Modeling

Ammar Arsiwala, Rich Cohen, Joshua Moller, Phil Merksamer, John Androsavich
Ginkgo Bioworks Inc., Boston

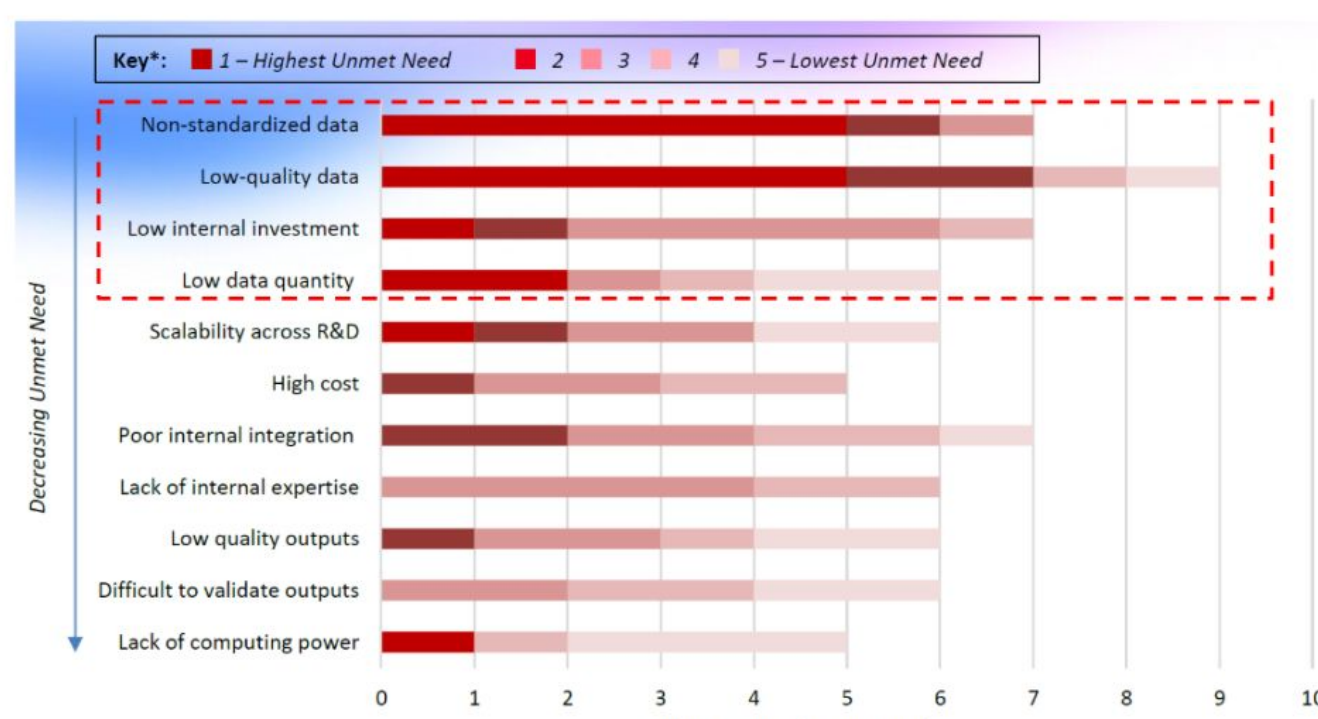


PROPHET-Ab is purpose built to address the “Data Gap” in Biopharma’s adoption of AI/ML



While there have been significant advances in computational modeling and high-throughput screening for binding, the **prediction of developability properties remains a challenge**. This gap is largely due to the scarcity of large-scale, high-quality datasets required to train robust machine learning (ML) models.

Data-related challenges dominate three of the top four barriers to BioPharma’s AI/ML adoption



Problem is particularly acute for antibody developability where public training data is limited and historic data is fragmented yet the ROI for performative models is high

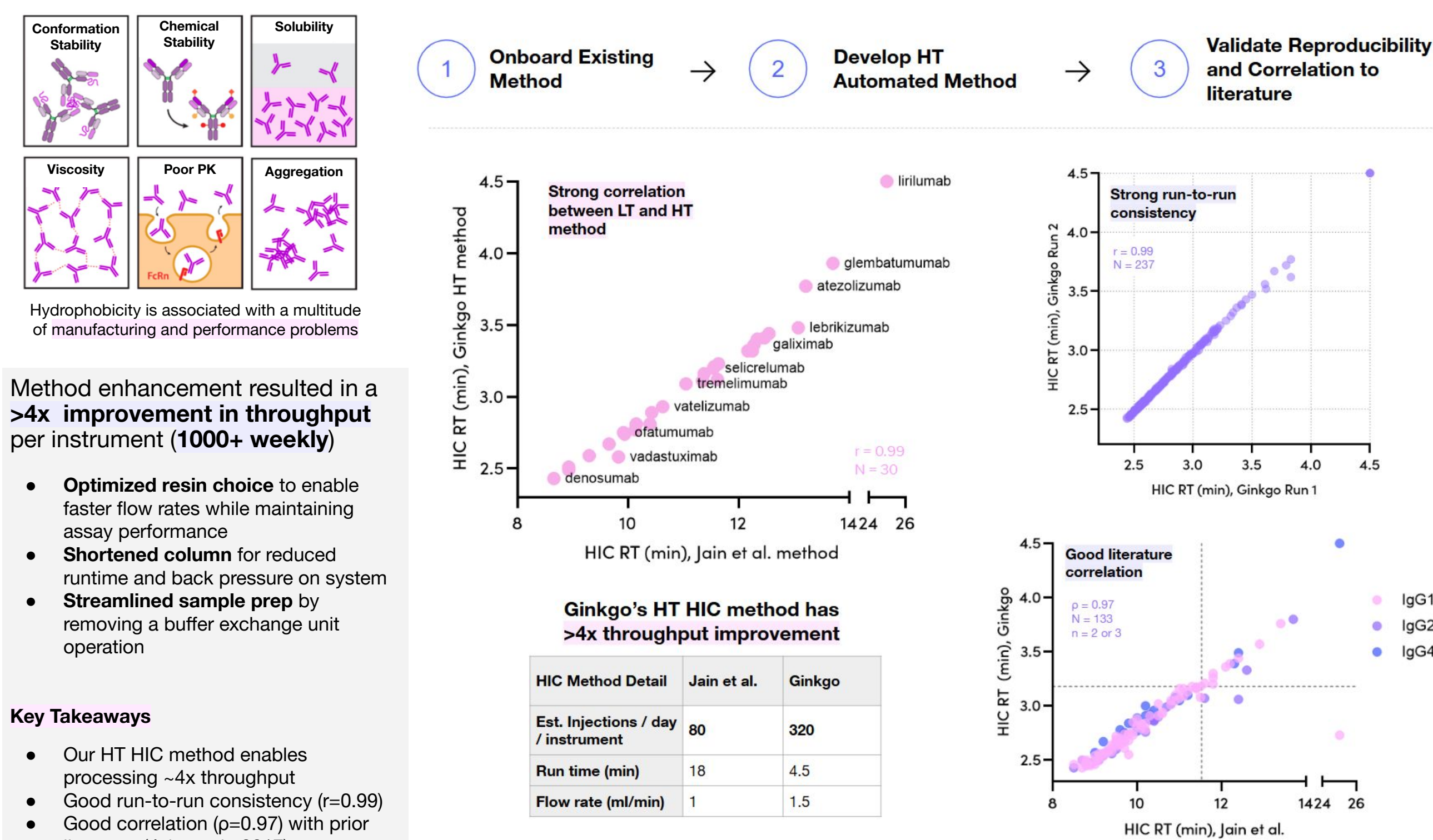
1400 Ab Tx in clinical trials

~\$7M Preclinical CMC activities cost per program

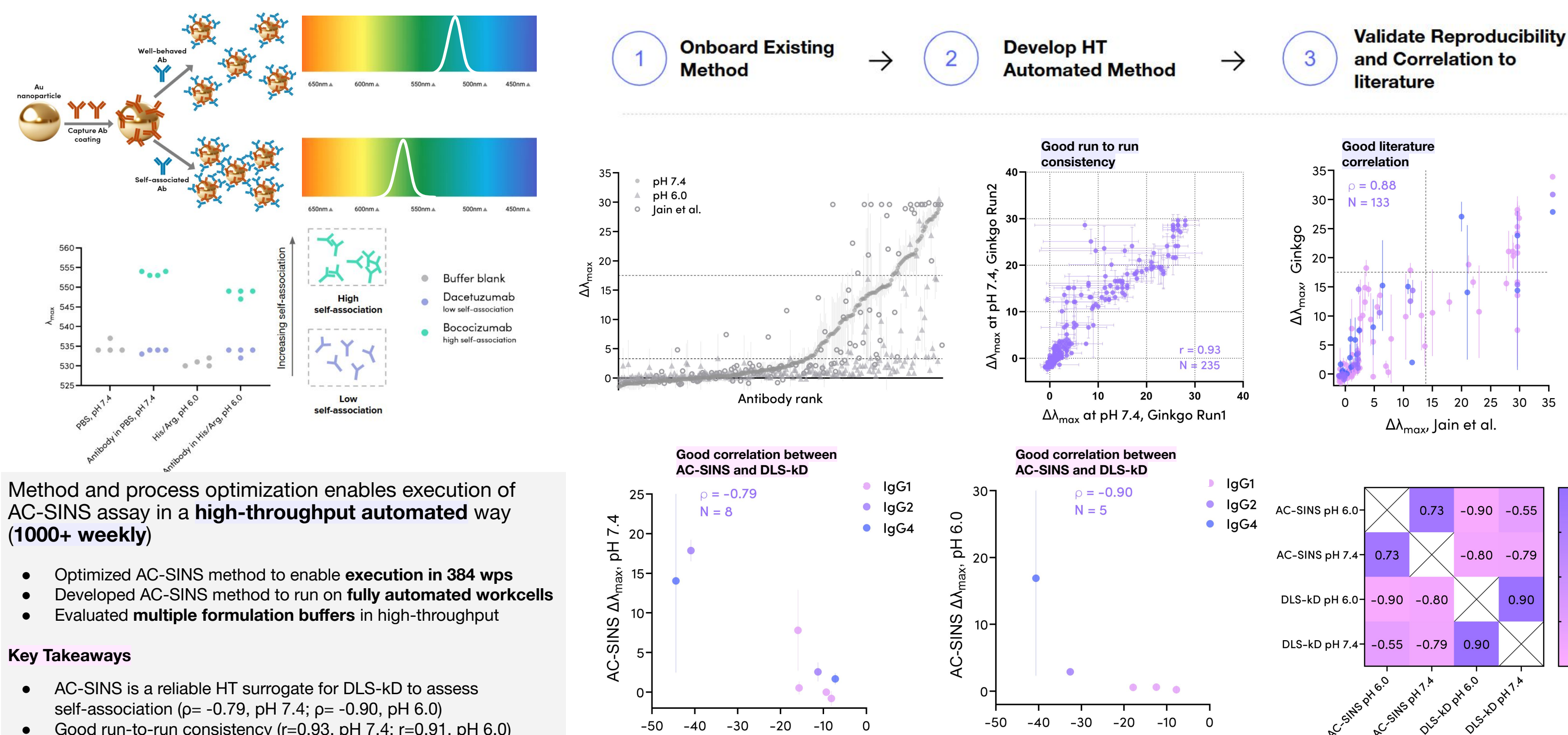
246 #mabs in largest public developability dataset

Crescioli, S. et al. Antibodies to watch in 2025. *MAbs* 17, 2443538 (2025).
Farid, S. S., Barton, M., Stamatis, C., Nie, W. & Coffman, J. Benchmarking biopharmaceutical process development and manufacturing cost contributions to R&D. *MAbs* 12, 1754999 (2020).

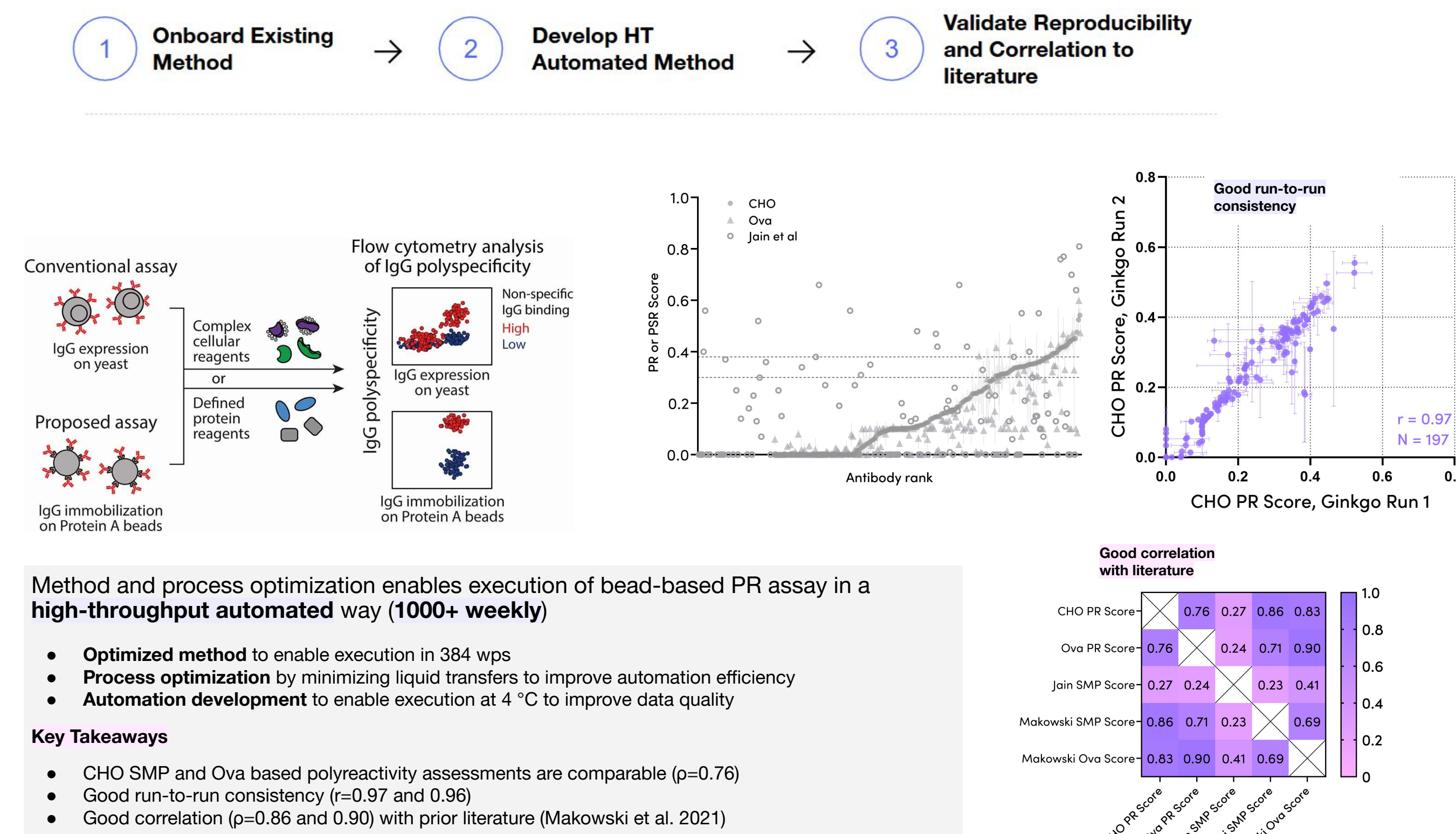
Hydrophobicity (HIC)



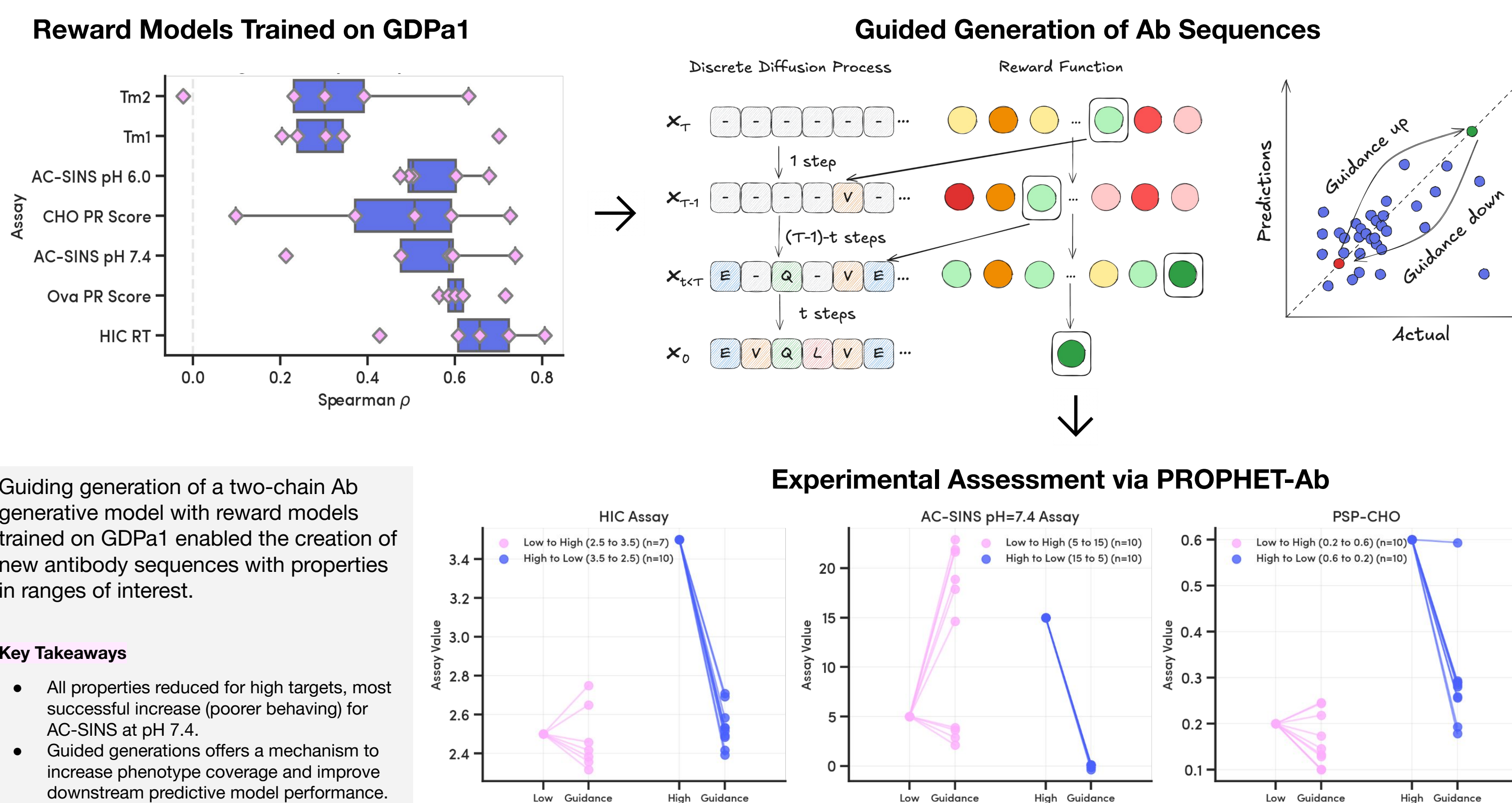
Self Association (AC-SINS and DLS-kD)



Polyreactivity (CHO and Ova)



Guided Discrete Diffusion via Soft Value Decoding Diffusion



Multiple Developability Assays at 1000s/week

Fee for service, you own the data

Assays	Method	Key Data Output
Titer	Valita	mg/L
Target Binding	BLI, SPR	K _D
Functional Cell-Based Assay	Assay Dependent	Assay Dependent
Aggregation (SE-HPLC)	HPLC	%HMW, %Monomer
FcRn Binding	HPLC, BLI	RT, K _d *
Heparin Binding (HAC)	HPLC	RT
Polyreactivity (CHO or Ova)	Bead-based	PR score
Polyreactivity (BVP)	ELISA	PR Score
Thermostability	nanoDSF, DSF, DLS/SLS	T _m , T _{onset} , T _{agg}
Self-Association (AC-SINS)	AuNP-based	$\Delta\lambda_{max}$
Self-Association (DLS-kD)	DynaPro III	kD
Hydrophobicity (HI-HPLC)	HPLC	RT
Colloidal Stability (SMAC-HPLC)	HPLC	RT

We offer scale, flexibility, and volume discounts

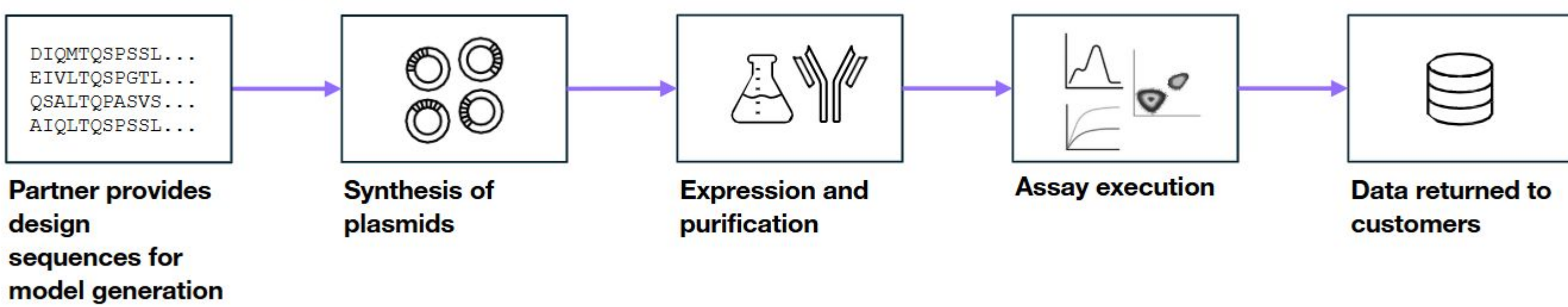
Data generation scale 80 to 2,400+ antibodies per batch

Assay breadth 1 to 10+

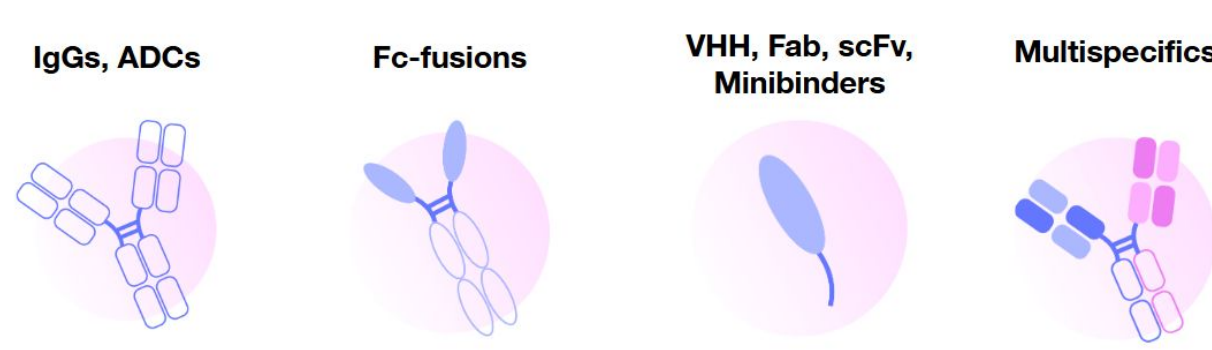
1 assay to full panel of 10+ assays

As the number of antibodies and assays increase, volume discounts kick in.

How to work with us



We work with a wide range of antibody formats, and growing



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Come see us at Booth 214

Download our mAbs manuscript and companion dataset for 246 IgGs across 10 developability assays here

