



The MaxCyte® STX™ Scalable Electroporation System:

Large Scale Transient Transfection Technology for Cell-based Assay Development & Other Drug Screening Applications

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MaxCyte® STX™

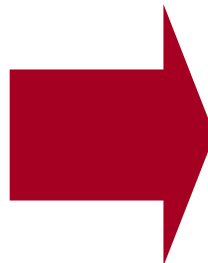
Scalable Transfection System

Proprietary Electroporation Technology



Simple:	Ease & Flexibility of Use
High Yield:	>90% viability & recovery
High Efficiency:	>90% cell loading & transfection efficiency
Rapid:	>1x10 ⁸ cells processed per minute
Safe:	Chemically defined buffer (No added 'biologicals')
Rugged:	Reproducible processing
Scalable:	From ~5 x10 ⁵ (~sec) → ~1 x10 ¹⁰ cells (<30 min)
"Quality":	cGMP compliant, sterile closed system Master File on record with FDA (4 clinical studies cross-reference MF)

Small molecules
Antigens (proteins/lysates)
Nucleic acids (DNA, mRNA, siRNA)



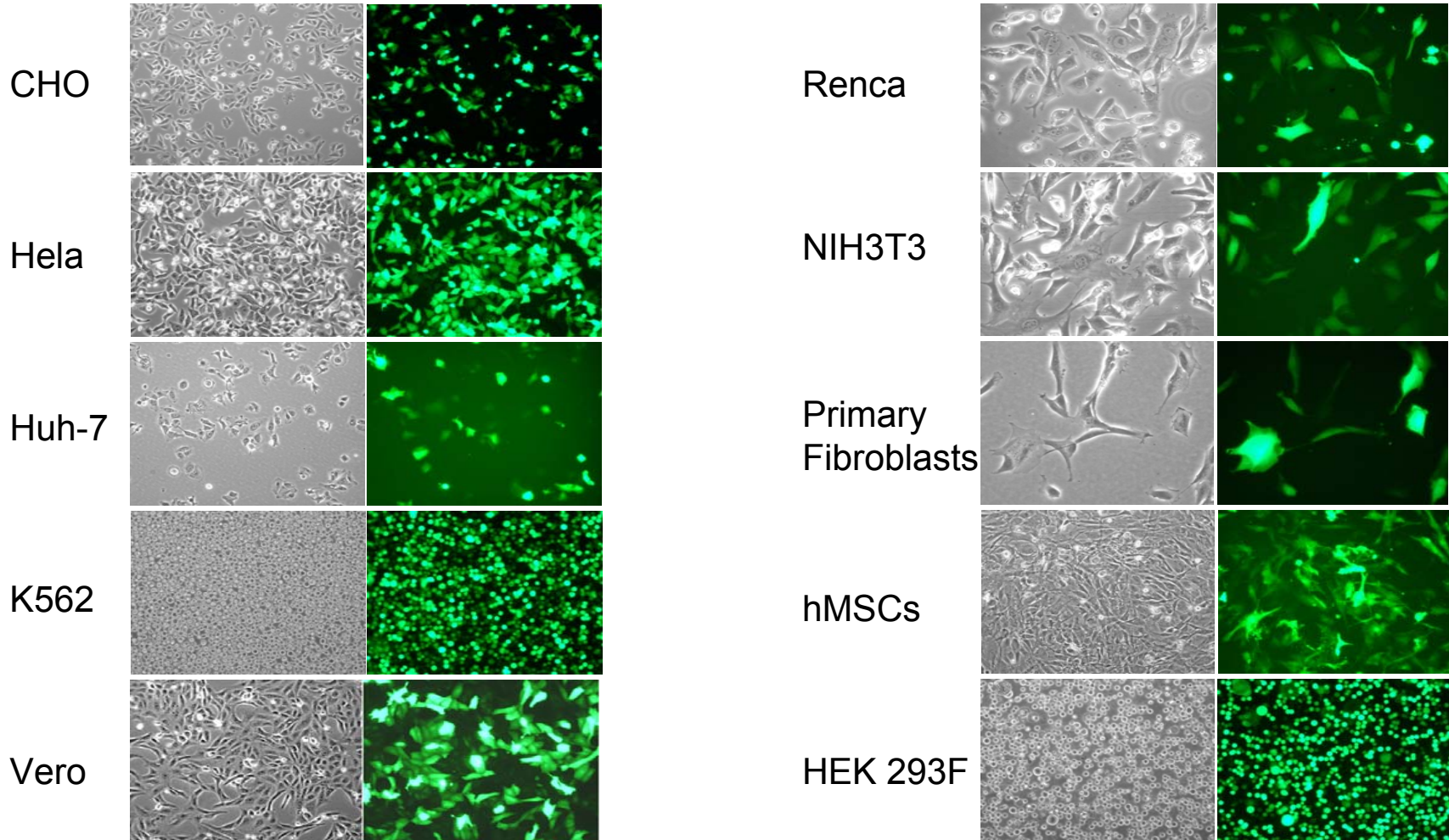
Primary cells
Stem cells
Mammalian cell lines

Sample of STX Transfected Cell Lines & Primary Cells

Cell Type	Efficiency % GFP +	Viability
293T	95%	95%
CHO Cells	90%	90%
VERO	90%	90%
K562	90%	90%
NIH 3T3	90%	90%
Jurkat	90%	90%
Huh-7 Cells	80%	90%
Renca	80%	97%
Human Mesenchymal Stem Cells	80%	80%
Human Myoblasts	90%	90%
Human Lymphocytes – B Cells	85%	90%
Human Lymphocytes – T Cells	50%	70%
Human HSC (CD34 ⁺ cells)	60%	60%
Human Dendritic Cells	50%	80%

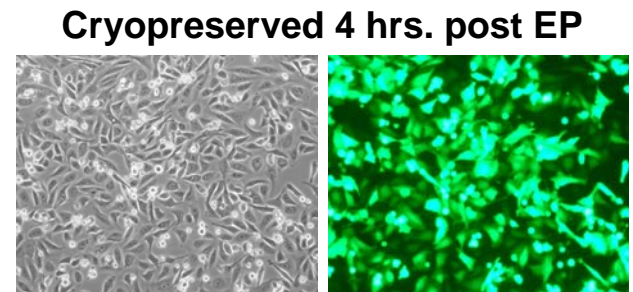
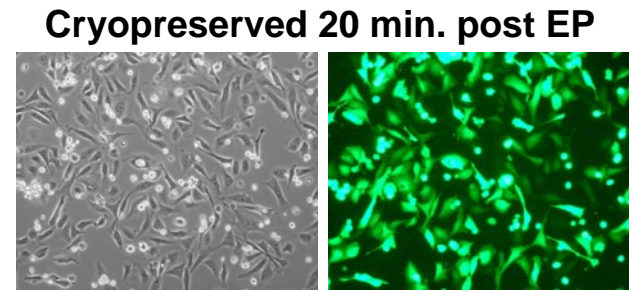
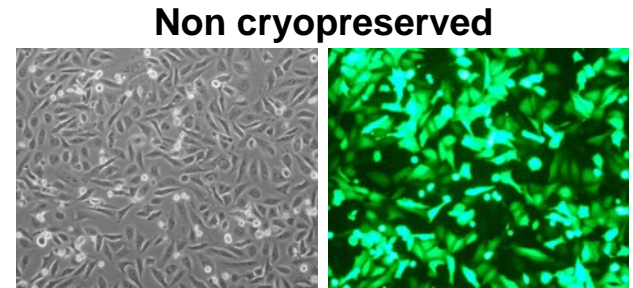
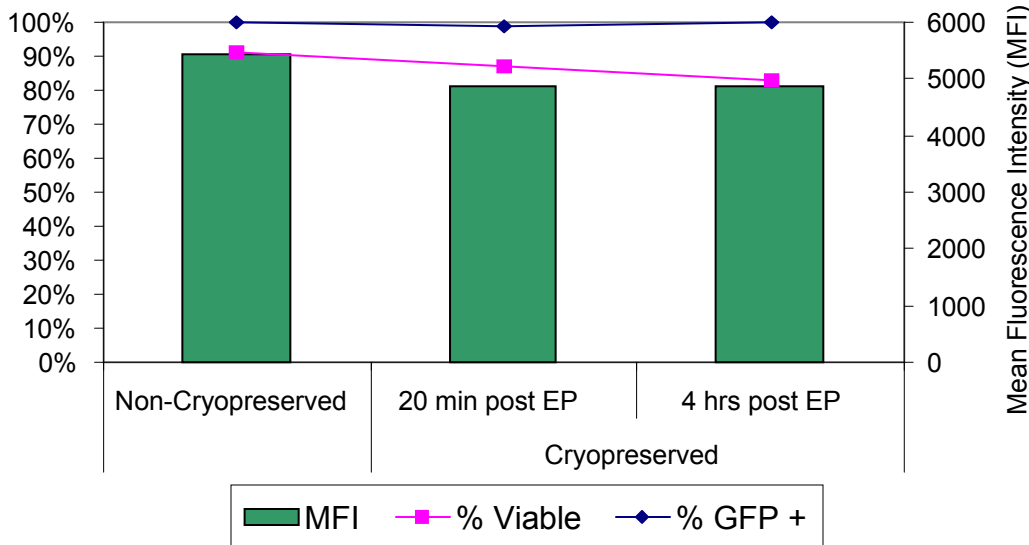
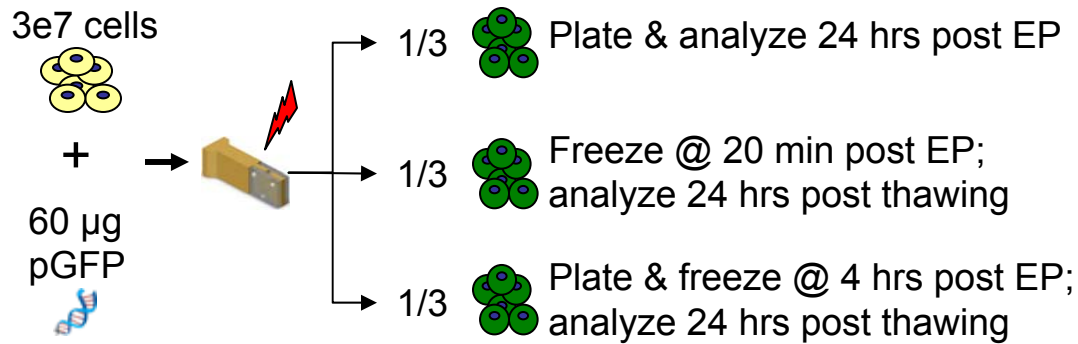
Results of processing cell lines with DNA plasmid encoding for Green Fluorescent Protein (GFP). Efficiency expressed as % cells GFP+ at 24 to 48 hrs post process; viability as % cells excluding propidium iodide (PI).

MaxCyte STX Results

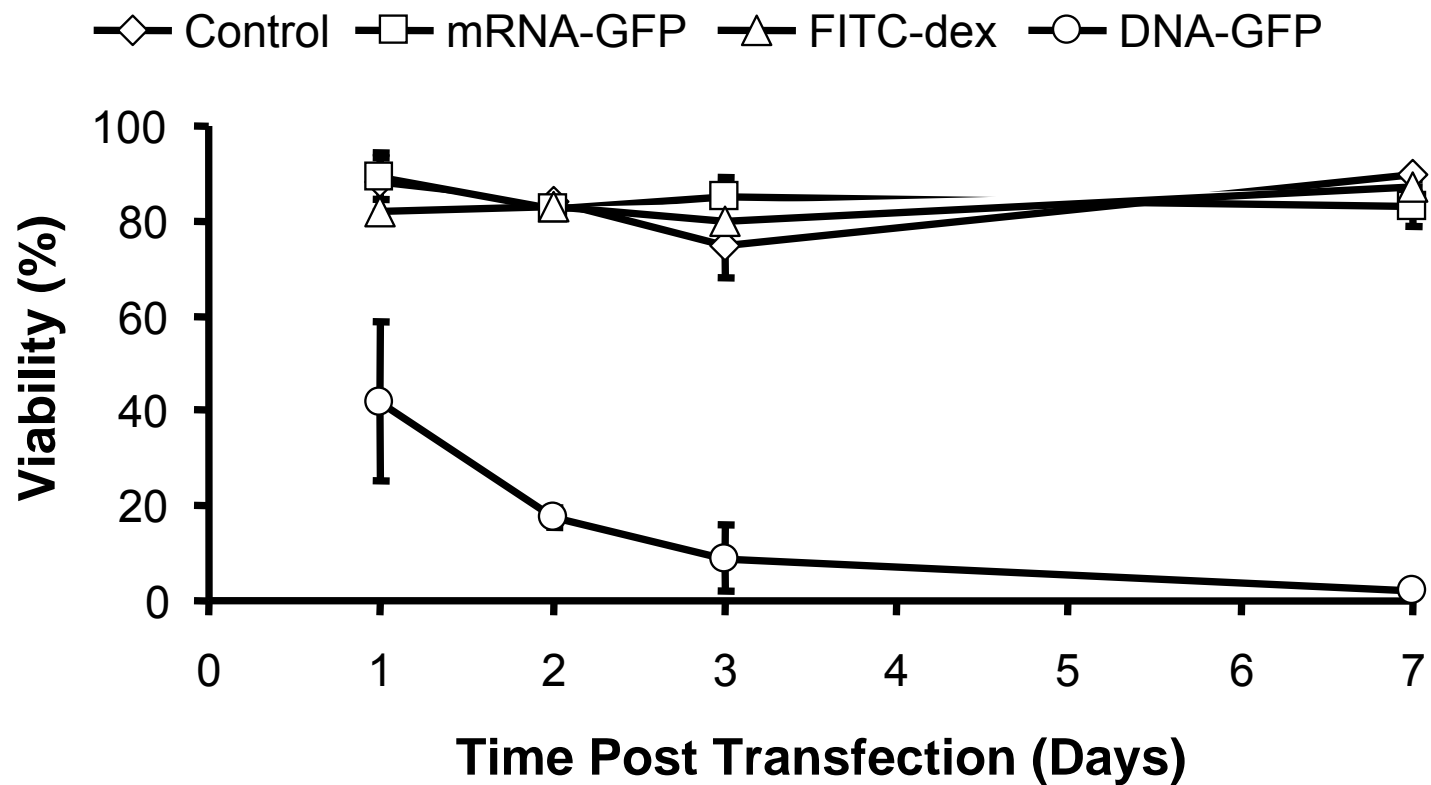


24 hrs post transfection with 200 $\mu\text{g}/\text{mL}$ pGFP DNA

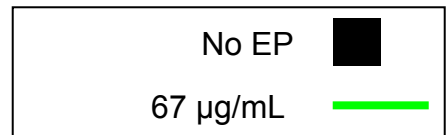
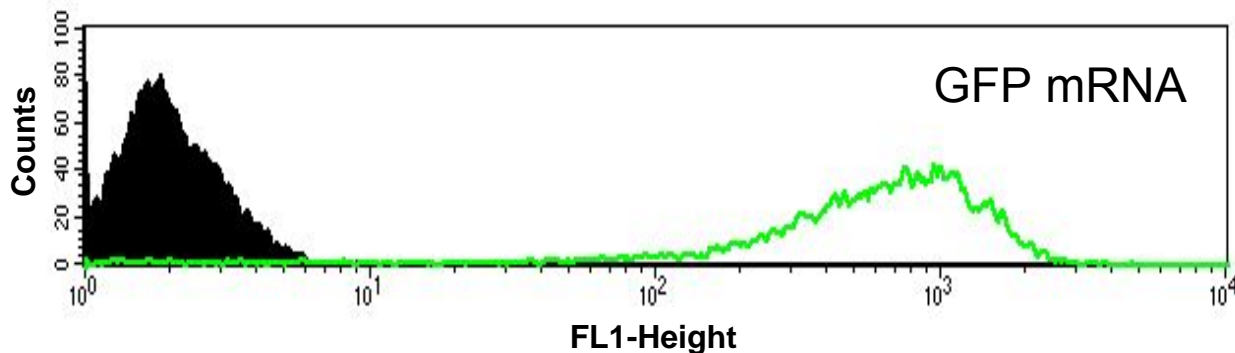
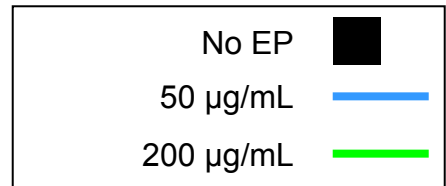
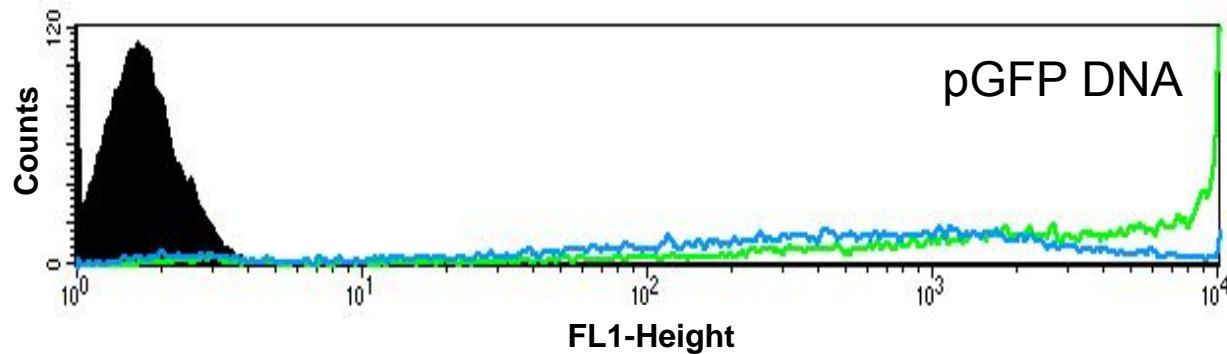
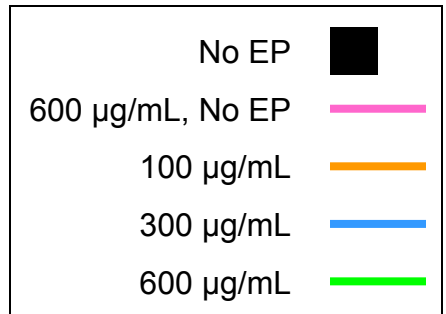
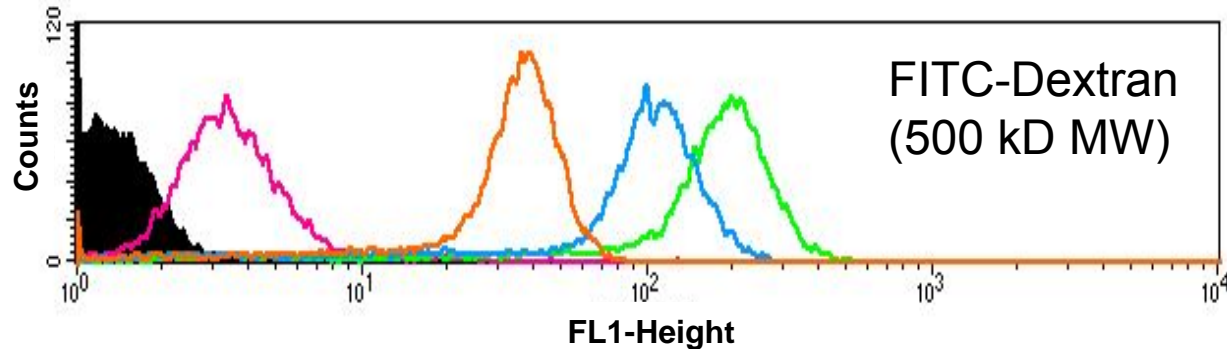
Cryopreservation of Transfected U2OS Cells has Little Effect on GFP Expression or Viability



Viability of PBLs STX-Transfected with Various Molecules



FACS Analysis of HEK 293 Cells 24 hrs Post Electroporation



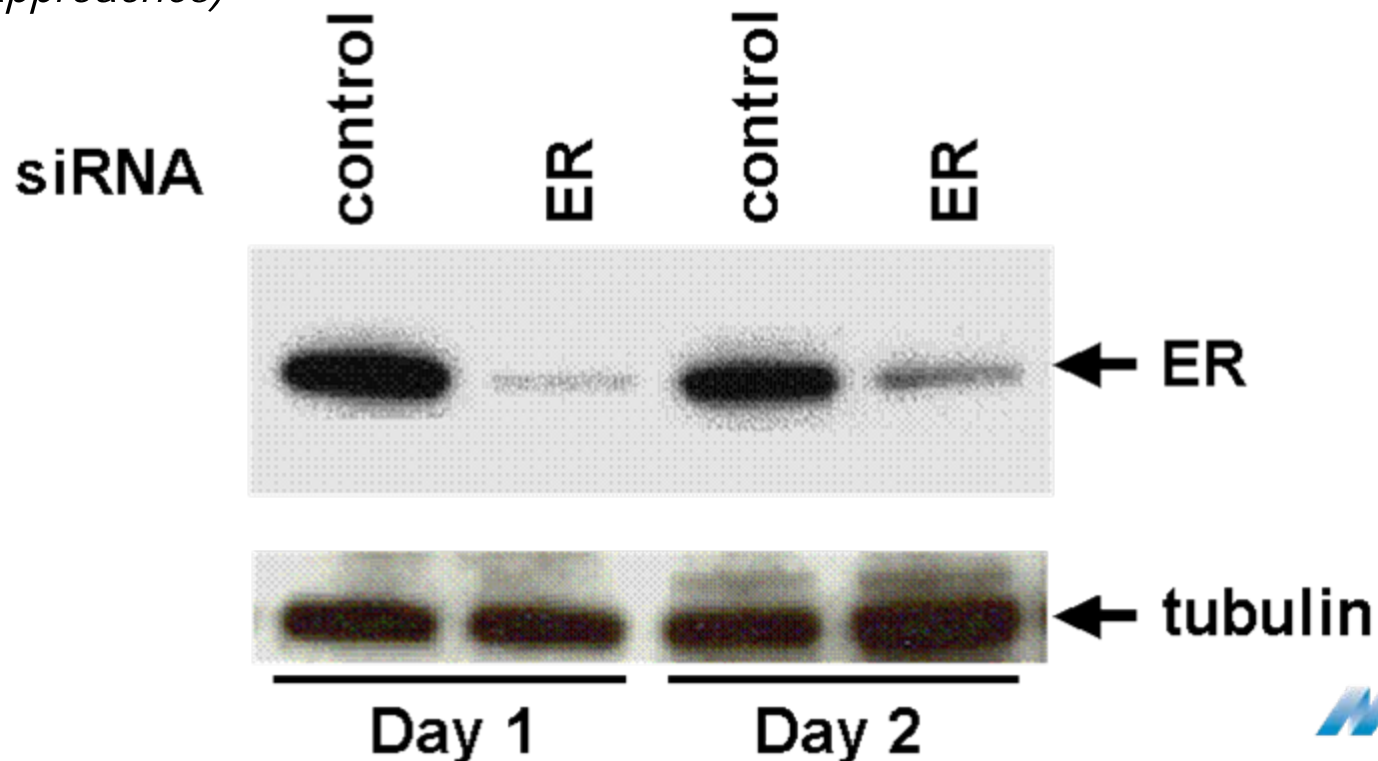
MaxCyte STX technology can effectively load siRNA

Loading of siRNA results in effective gene product knock down

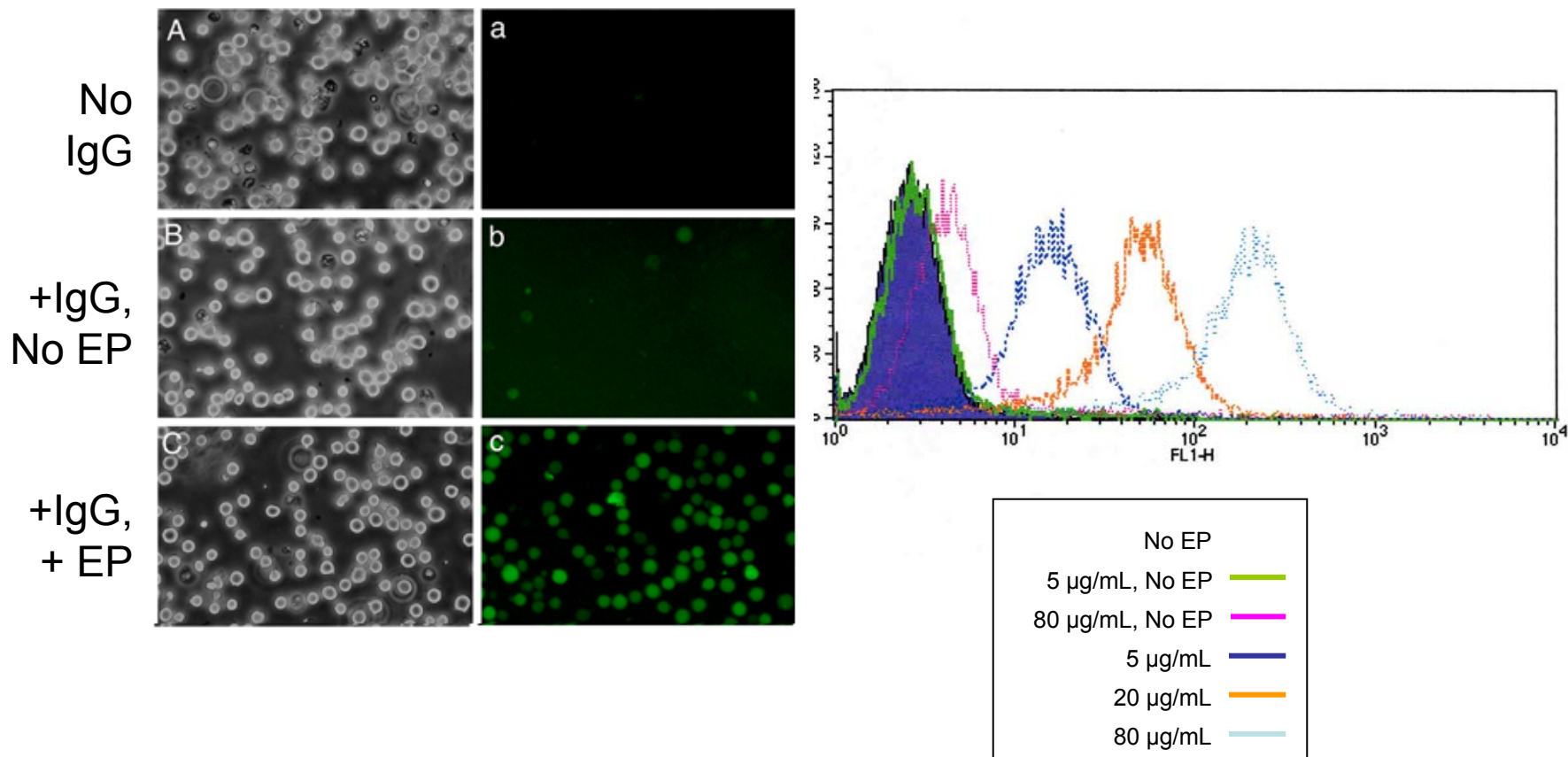
Level & Duration of gene product knock down can be engineered to set-point

Biological effect of siRNA delivery is specific, robust and scalable

- No non-specific off-target effects detected (as with other chemical transfection approaches)*

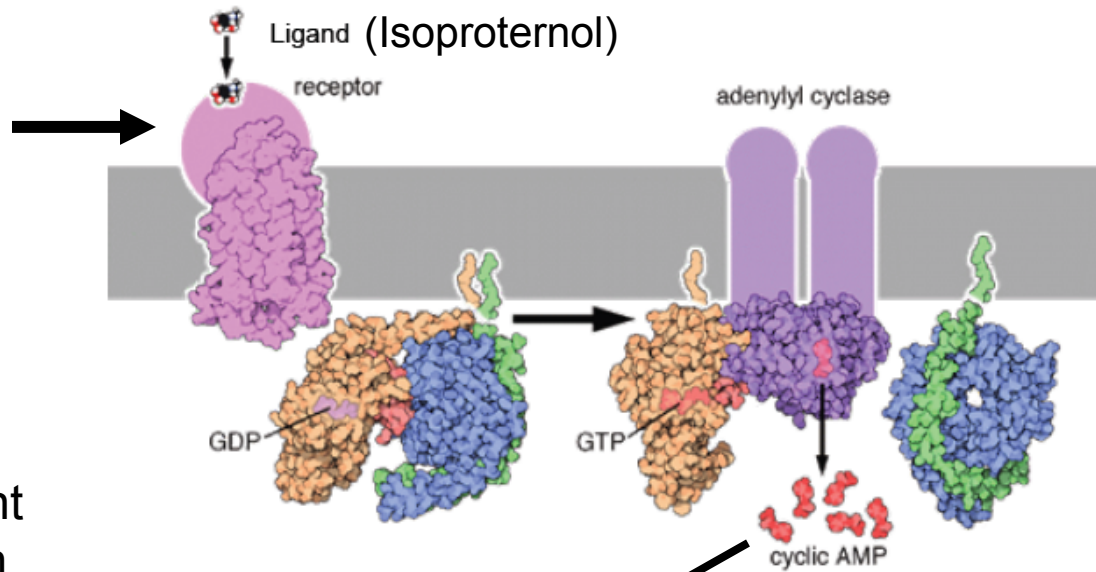


Jurkat Cells 1.5 Hrs post Electroloading with Alexa-488 Labeled Rabbit IgG

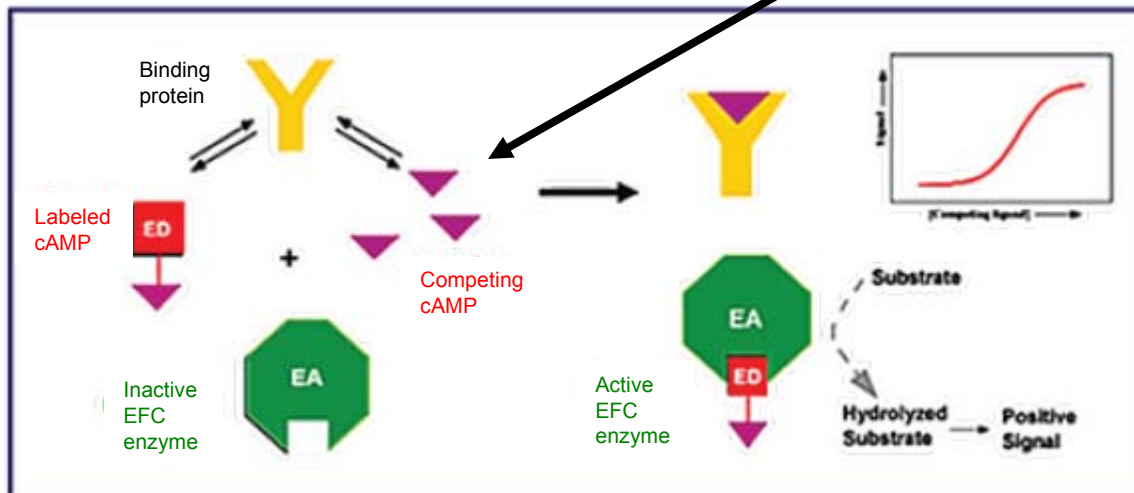


β_2 Adrenergic Receptor Assay in CHO Cells

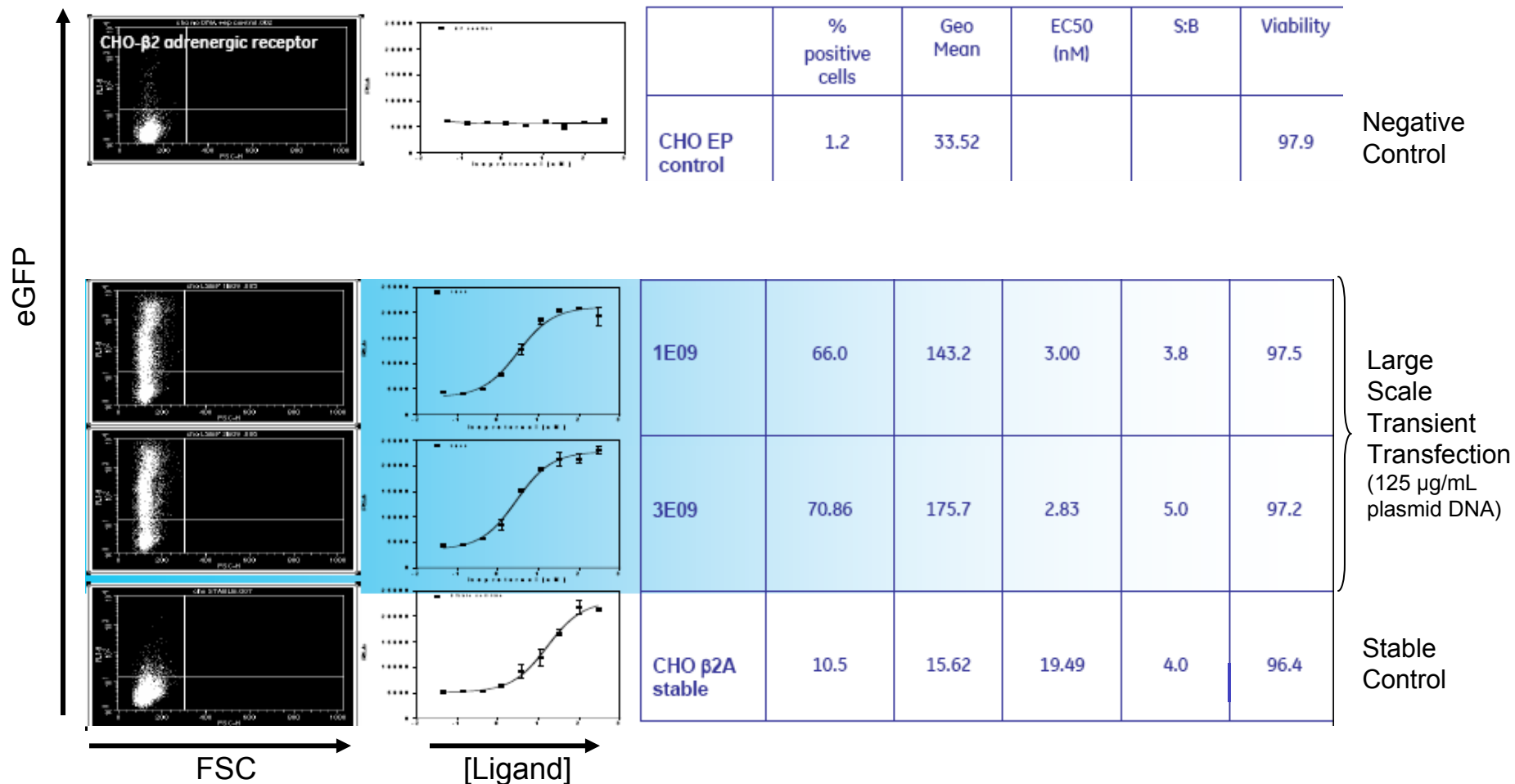
β_2 adrenergic receptor-eGFP fusion protein



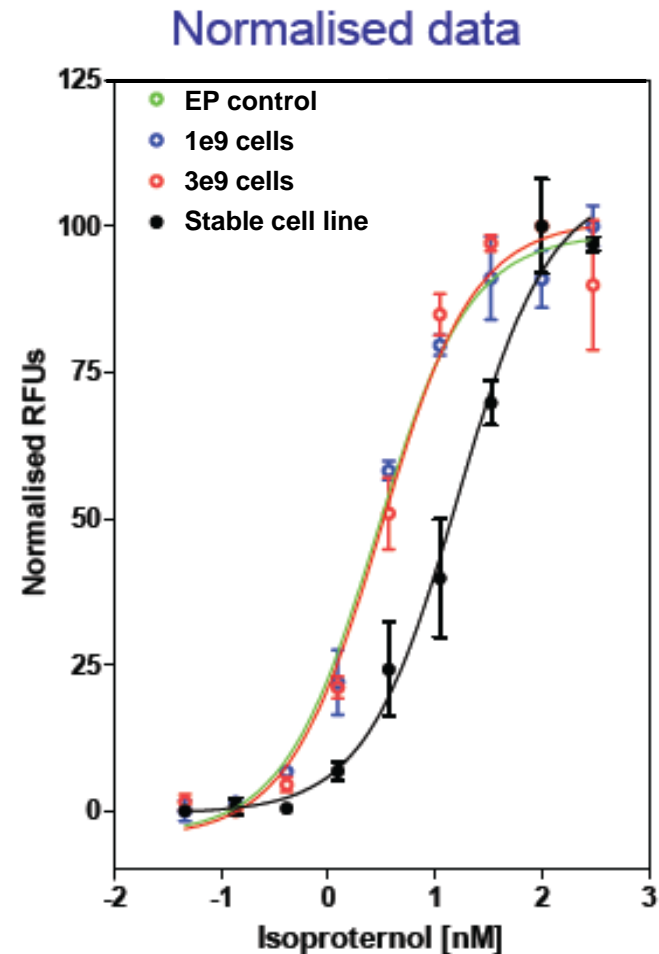
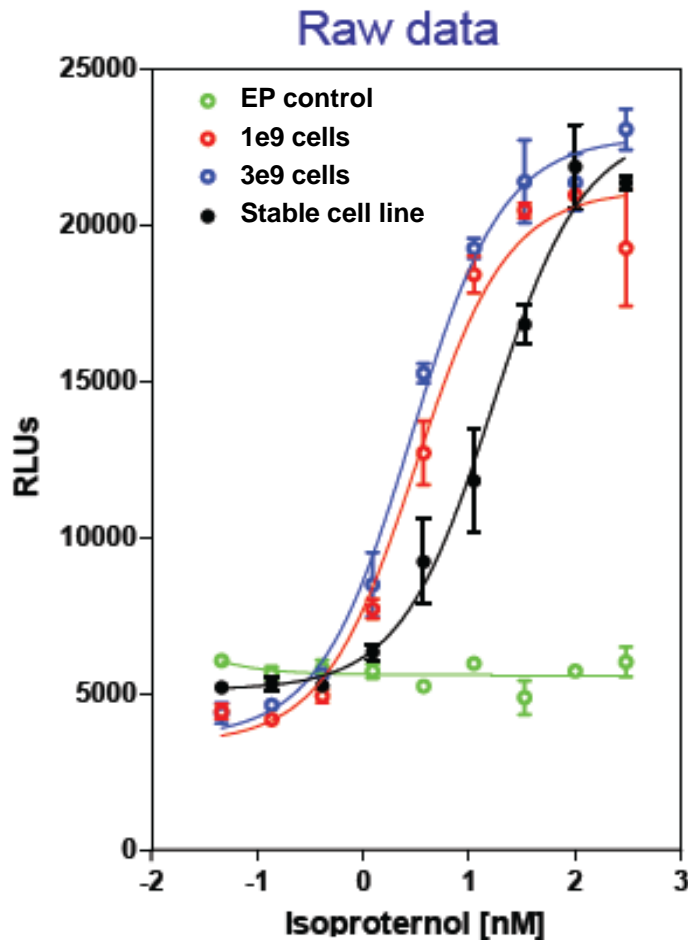
Enzyme Fragment Complementation Assay:
96 Well Format



Expression & Functional Characterization of β 2 Adrenergic Receptor eGFP Fusion Protein in Transfected Cells

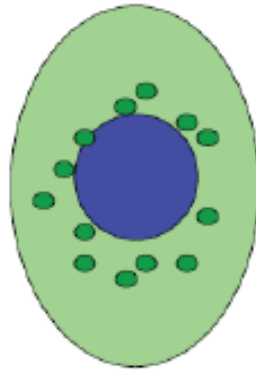


Transiently and Stably Transfected CHO Cells Exhibit Comparable Levels of Assay Performance



2XFYVE-eGFP Redistribution Assay in Tumor Cells: Measuring PI3K Activity

FYVE=
PI3P
binding
domain

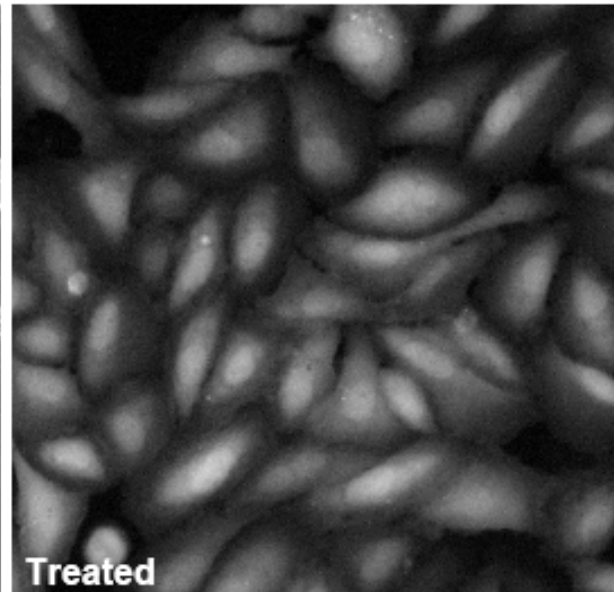
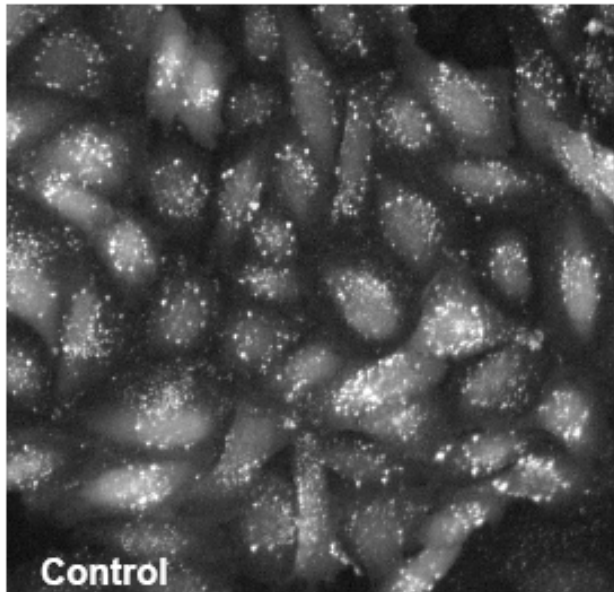


Untreated cell: eGFP-2XFYVE is concentrated in endosomes

PI3K Inhibitor
(wortmannin),
30 min.

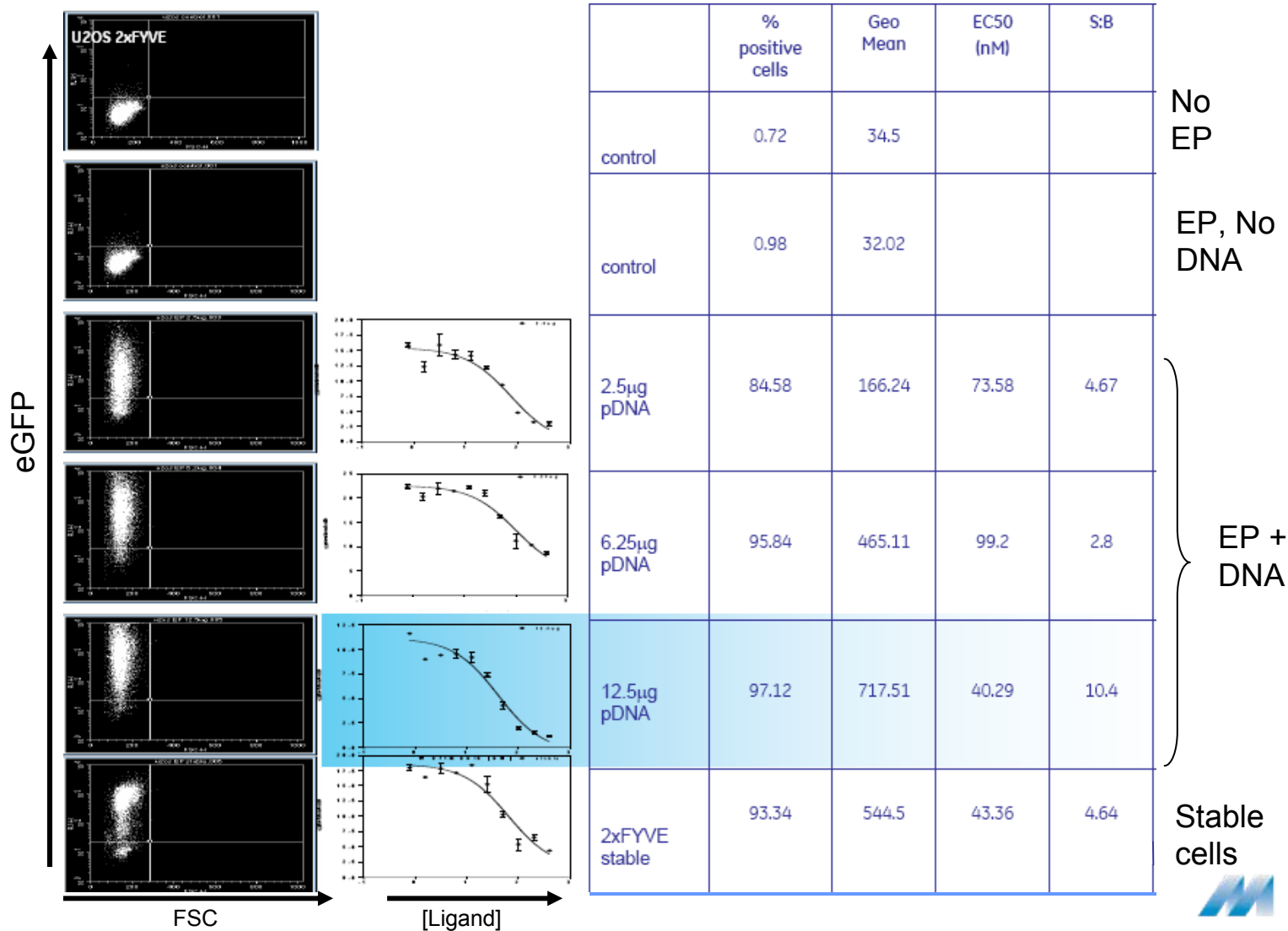


Treated cell: eGFP-2XFYVE is redistributed to the cytoplasm

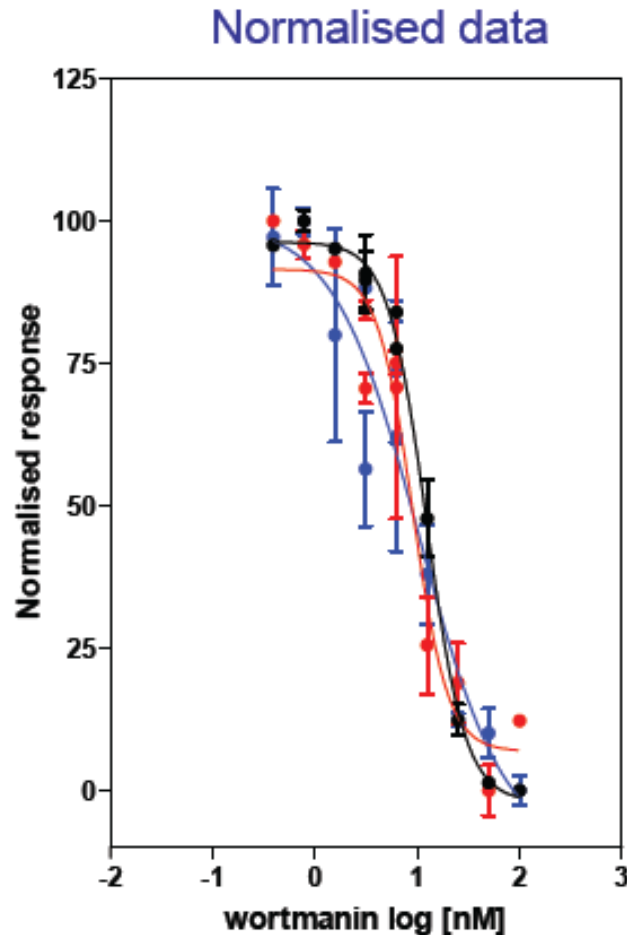
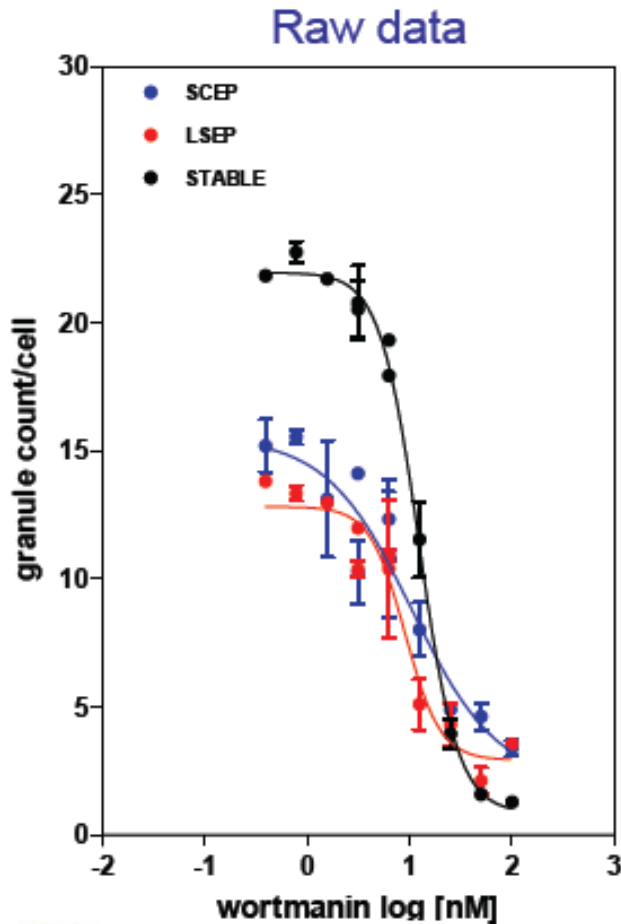


96 Well
Assay
Format

Optimizing Plasmid DNA Concentrations in Small Scale Transfections

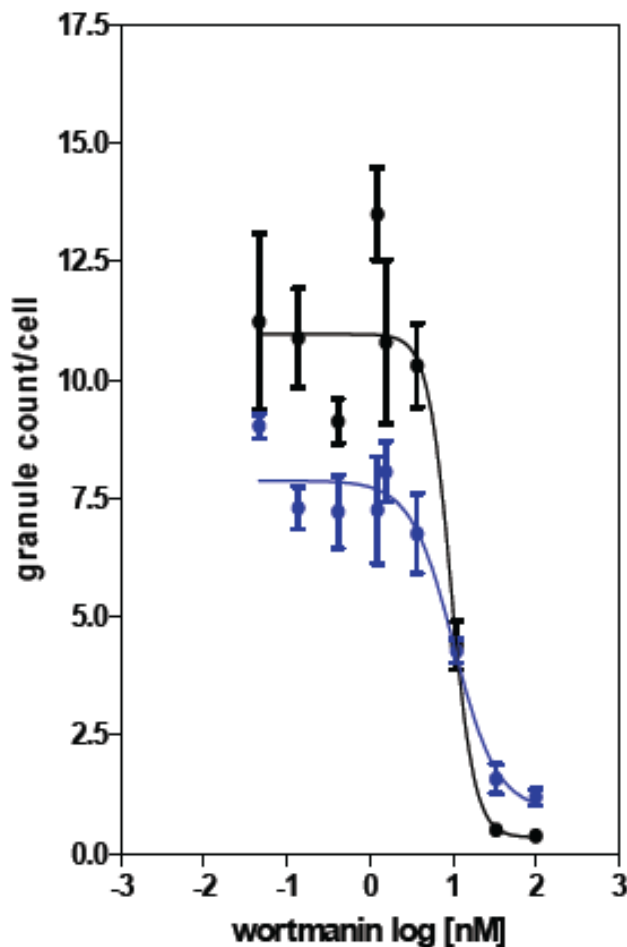


Transiently Transfected Cells Perform Comparably to Stable Cells in 2XFYVE-eGFP Assay



Sample	EC50 (nM)
Stable cell line	12.52
S CEP	10.60
L SEP	9.0

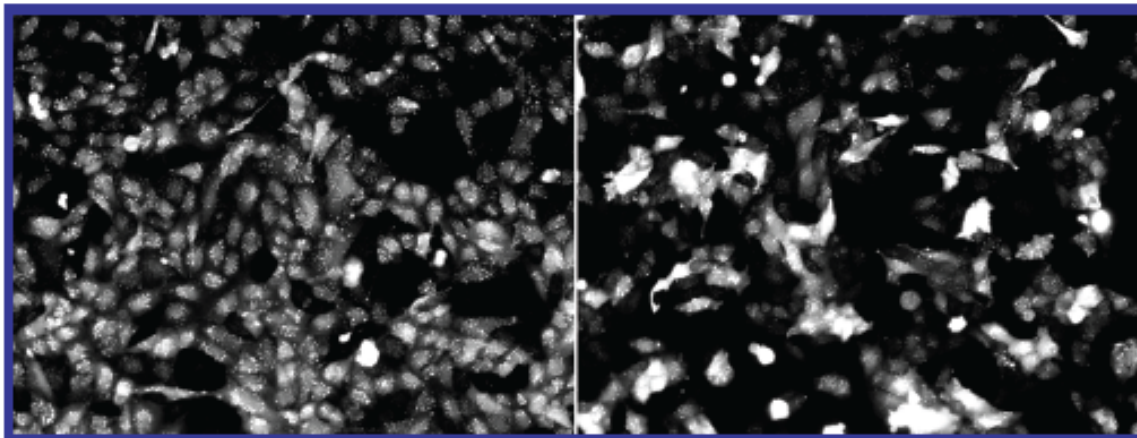
2XFYVE-eGFP Assay Conducted with Transiently Transfected Cells Following Cryopreservation



EP'ed cells seeded into 4xT162 for 24h
Cells harvested and 12 x vials cryopreserved @ 2E06/ml in Medium/FBS/DMSO

T=1 week at -140°C

Sample	EC50 (nM)
Stable cell line	10.29
SCEP	9.50



Stable

Control

MaxCyte STX Advantages

- Small to large volume scalability, 1×10^{10} cells in < 30 minutes
- Consistent and reproducible transfections
- High cell viability and transfection efficiency
- Transfection of multiple agents simultaneously
- Minimal off-target effects



- More relevant assays
- Faster experimental turnaround
- Greater productivity

Better Drug Candidates



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