pluristyx®
PluriCon 2026

Hydralese®Tx: A New Polymeric Transfection Reagent for iPSC Applications



Jeremy Harris, Ph.D.
Sr. Director, Research
secant group
Part of the SOLESIS Family of Companies



Raluca Marcu, Ph.D.
VP of Scientific Operations
pluristyx®

pluristyx®

secant group
Part of the SOLESIS Family of Companies

Thank you for joining us and welcome

1. Secant Group Introduction
2. Hydralese® Platform Overview
3. Cationic PGE and Delivery to Cells
4. Applications: Delivery to Ocular Cells and iPSCs
5. Wrap-Up

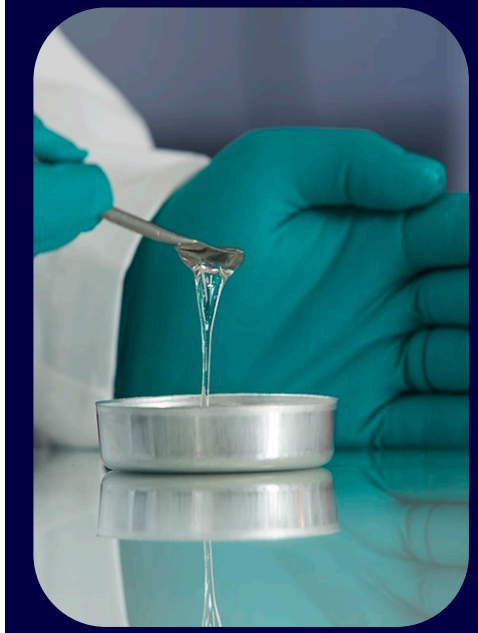
COPYRIGHT ©2026 SECANT GROUP. ALL RIGHTS RESERVED.

Secant Group
Overview

Perkasie, Quakertown & Telford, Pennsylvania, USA

Secant Group focuses on polymer development for next-generation solutions for the medical device and pharmaceutical industries by engineering technologies that enable repair, recovery, and regeneration of the human body.

- Decades of biomaterial research & development
- Proprietary and patent-protected polymer platforms
- Fiber and textile development & manufacturing
- Analytical testing & method development
- ISO 13485:2016 certified QMS
- ISO 14644:2013 Class 7 & 8 cleanrooms

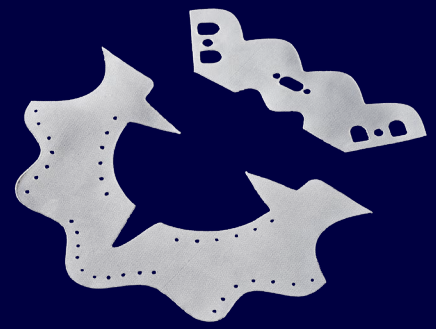








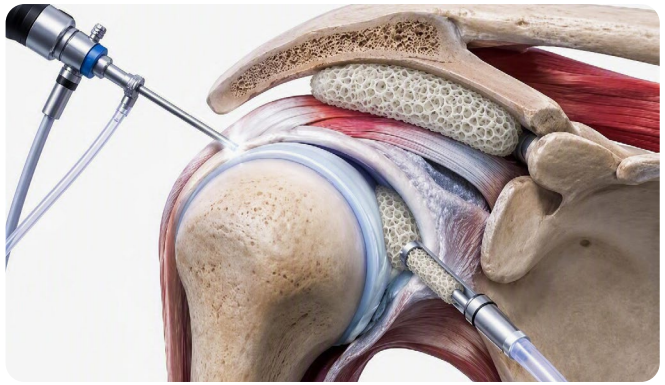




COPYRIGHT ©2026 SECANT GROUP. ALL RIGHTS RESERVED.

One material science base, three paths to market

Hydralese®**MT**, **Rx**, and **Tx**

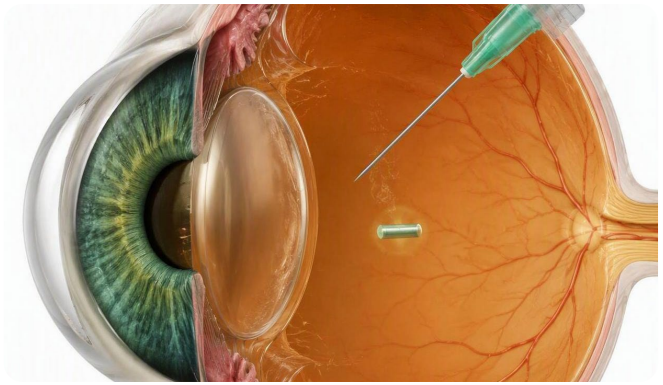


Hydralese® **MT**

One polymer platform, various implantable device form factors.

Shoulder Spacer / Patch Subacromial insert for cuff tears
Stage = EFS Clinical
Surgical Heart Valve Durable replacement for diseased valves
Stage = Feasibility
LAA Closure Clip Epicardial closure to cut stroke risk
Stage = Feasibility

ORTHOPEDICS · VASCULAR

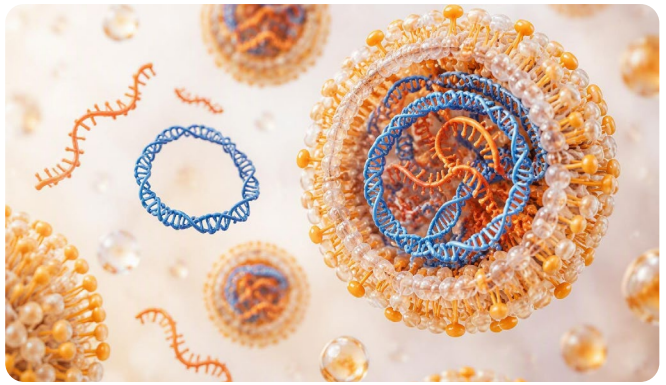


Hydralese® **Rx**

One material, many long-acting therapeutic delivery routes.

Ophthalmic implants Sustained release replaces monthly injections ; Stage = Feasibility
Women's health Discreet multi-month intravaginal delivery
Stage = Feasibility
Metabolic disease Fewer injections via long-acting depot
Stage = Idea

OCULAR · WOMEN'S HEALTH · METABOLIC



Hydralese® **Tx**

PGE+ polymer engines for non-viral payload delivery.

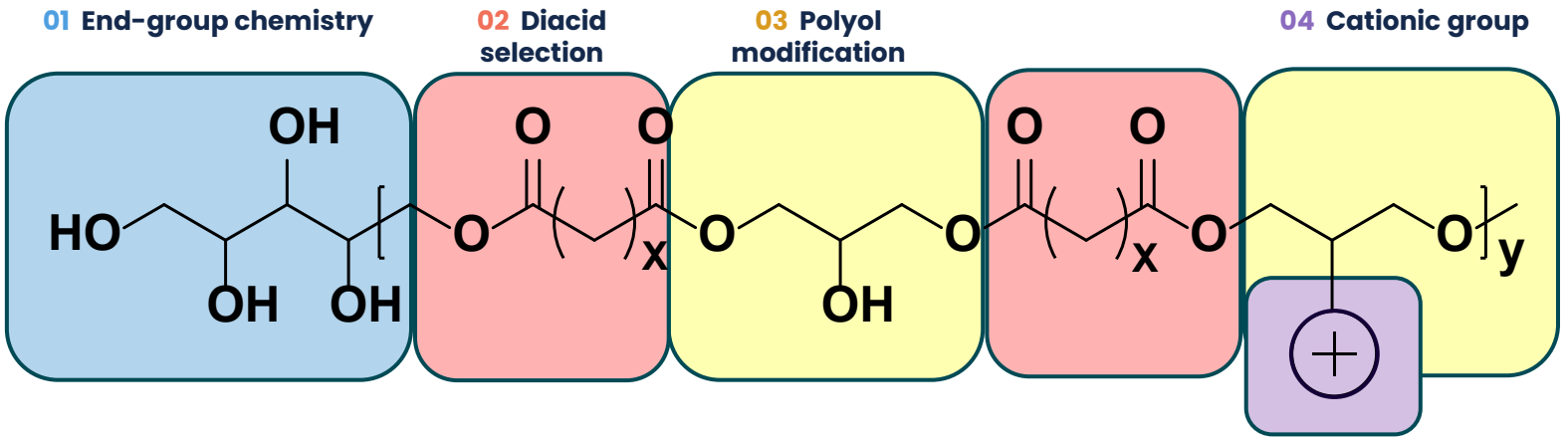
iPSC reprogramming kit Pre-complexed PGE-mRNA;
Stage = Pre-Launch
Mucoadhesive delivery Cationic charge grips moist mucosa for local release; Stage = Feasibility
Non-viral transfection DNA, mRNA & other nucleic acid payloads at high efficiency; Stage = Feasibility

DNA · mRNA · Nucleic Acids

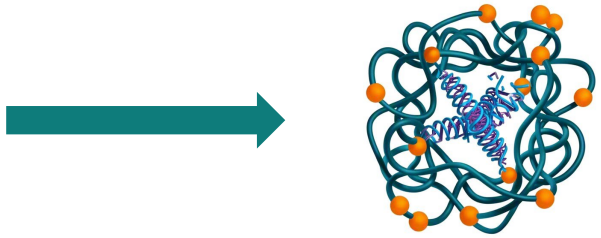
COPYRIGHT ©2026 SECANT GROUP. ALL RIGHTS RESERVED.

A Modular Polymer Architecture for Nucleic Acid Delivery

Four addressable chemistry levers enable application-specific optimization.



Poly(glycerol ester) | PGE



Designed to support payload complexation and delivery

01 End-group chemistry

Controls interfacial behavior

- Tunes hydrophilicity
- Enables ligand attachment

02 Diacid selection

Modulates core material behavior

- Tunes hydrophobicity
- Influences particle assembly and stability

03 Polyol modification

Controls polymer architecture

- Adjusts branching
- Provides bioconjugation sites

04 Cationic Functionalization

Enables payload interaction

- Influences nucleic-acid complexation
- Affects compatibility and release

One polymer family. Multiple chemistry levers. Tunable delivery-system performance.

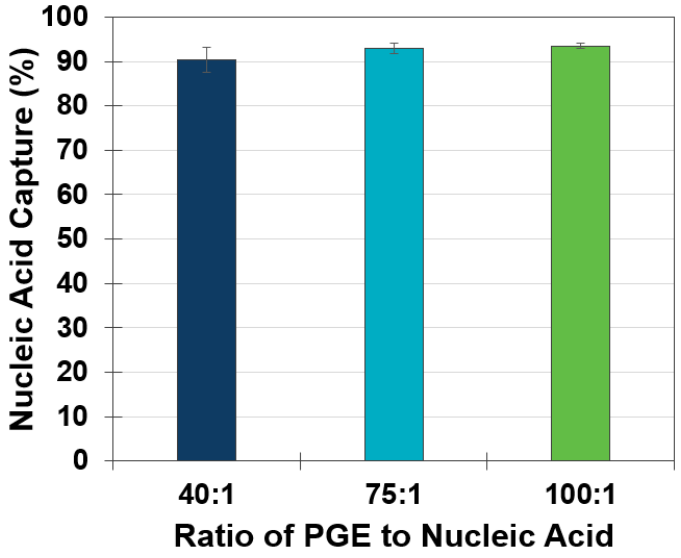
Harris, J.J. et. al. Polymeric Delivery Systems. US Patent 12,440,446. | Harris, J.J. et. al. Polymeric Delivery Systems. US Patent 12,521,347.

COPYRIGHT ©2026 SECANT GROUP. ALL RIGHTS RESERVED.

Hydralese®Tx Readily Complexes with Nucleic Acids

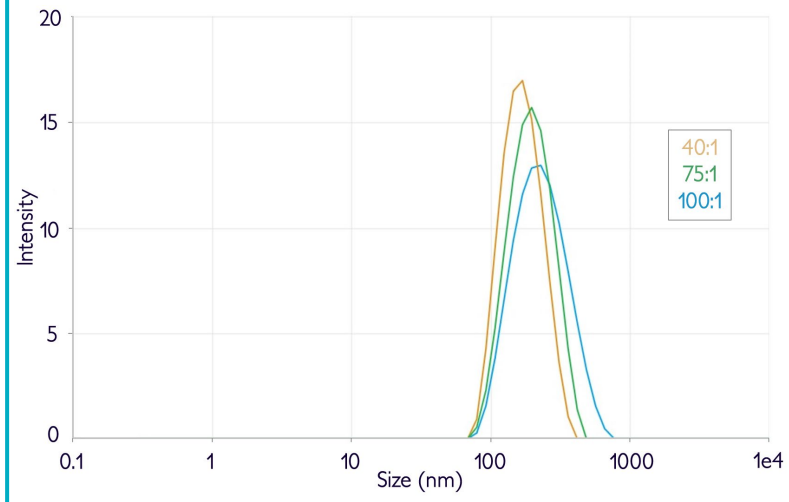
secant group
Part of the SOLESIS Family of Companies

PGE Can Efficiently Capture Nucleic Acid Payloads



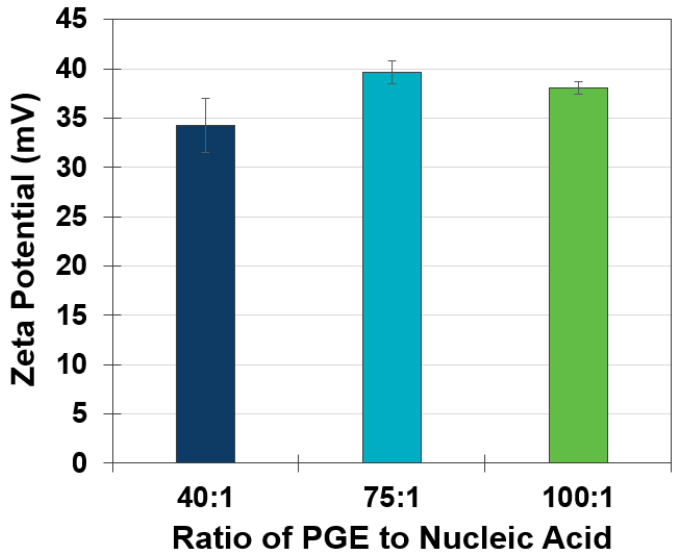
Nucleic acid capture with Hydralese®**Tx** is above 90% (PicoGreen Assay)

PGE Nanoparticles Are Sized Well for Cellular Uptake



Polyplex size when complexed with 1 µg pDNA is between 150 to 250 nm at PGE:pDNA mass ratios ranging from 40:1 to 100:1

PGE Charge Enables Binding to Cell Membrane

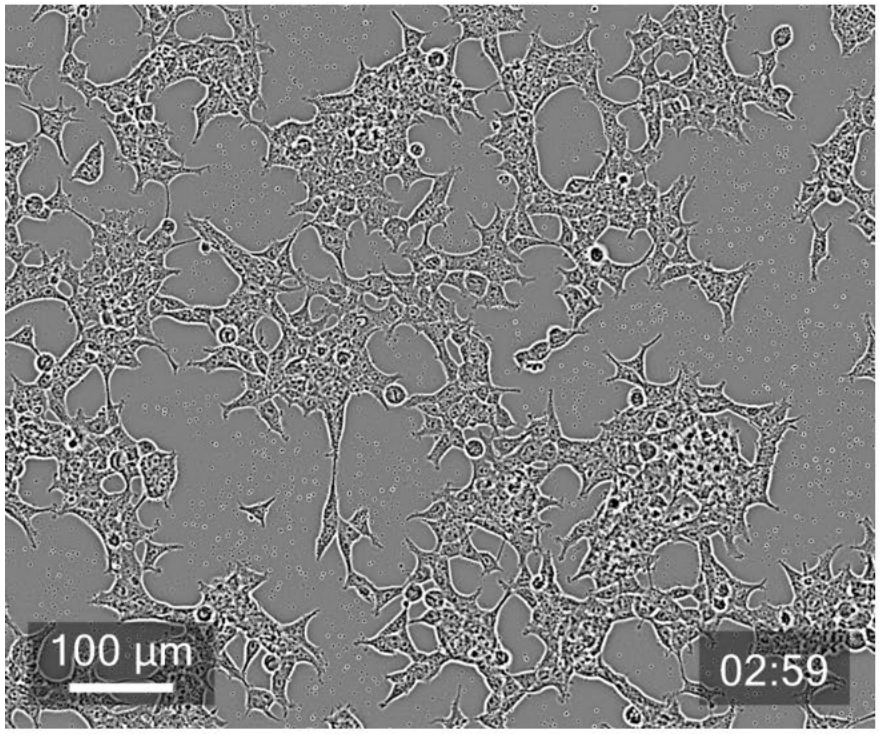


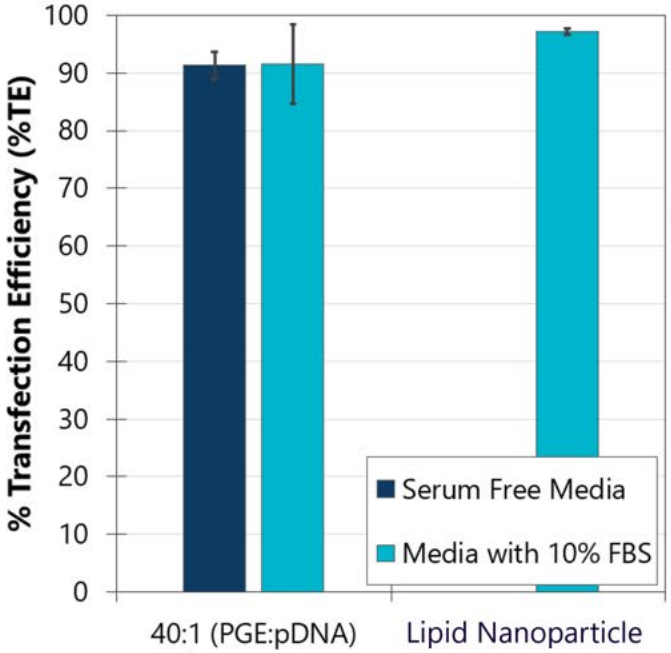
Positive zeta potential of Hydralese®**Tx** nanoparticles

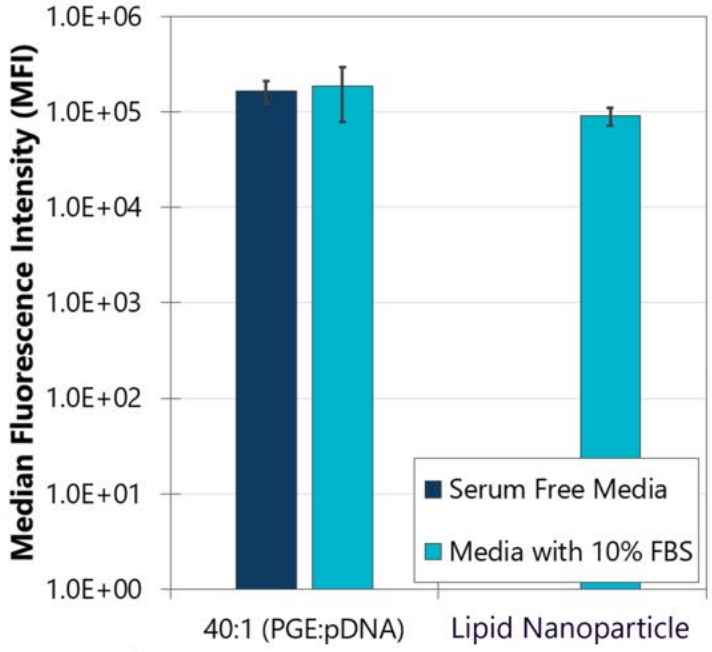
- Enhanced particle stability
- Minimize particle aggregation

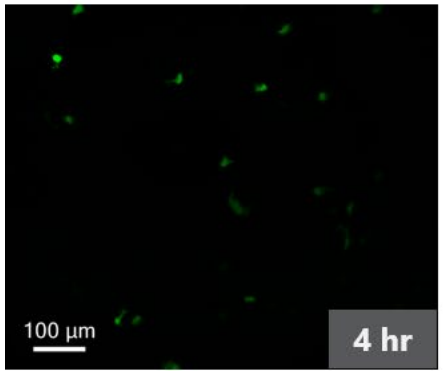
COPYRIGHT ©2026 SECANT GROUP. ALL RIGHTS RESERVED.

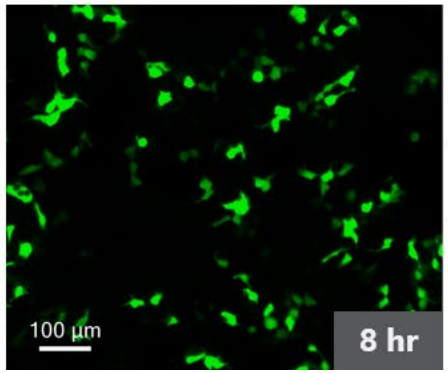
Hydralese®Tx Polyplex Successfully Transfects HEK293T Cells

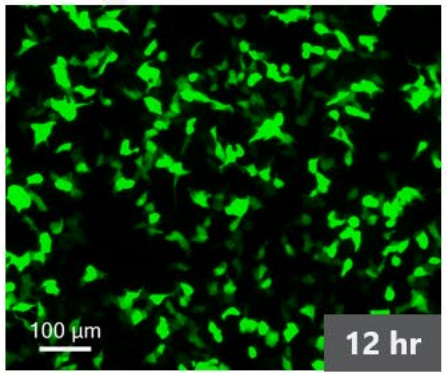


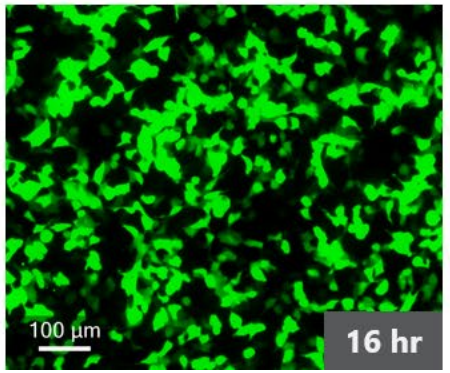


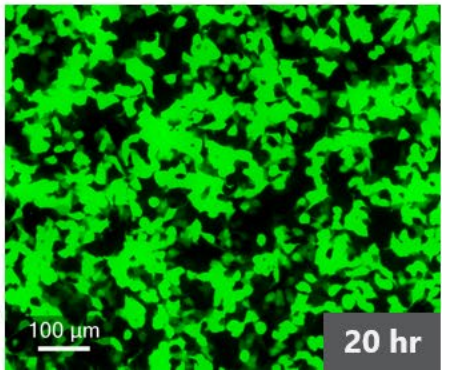






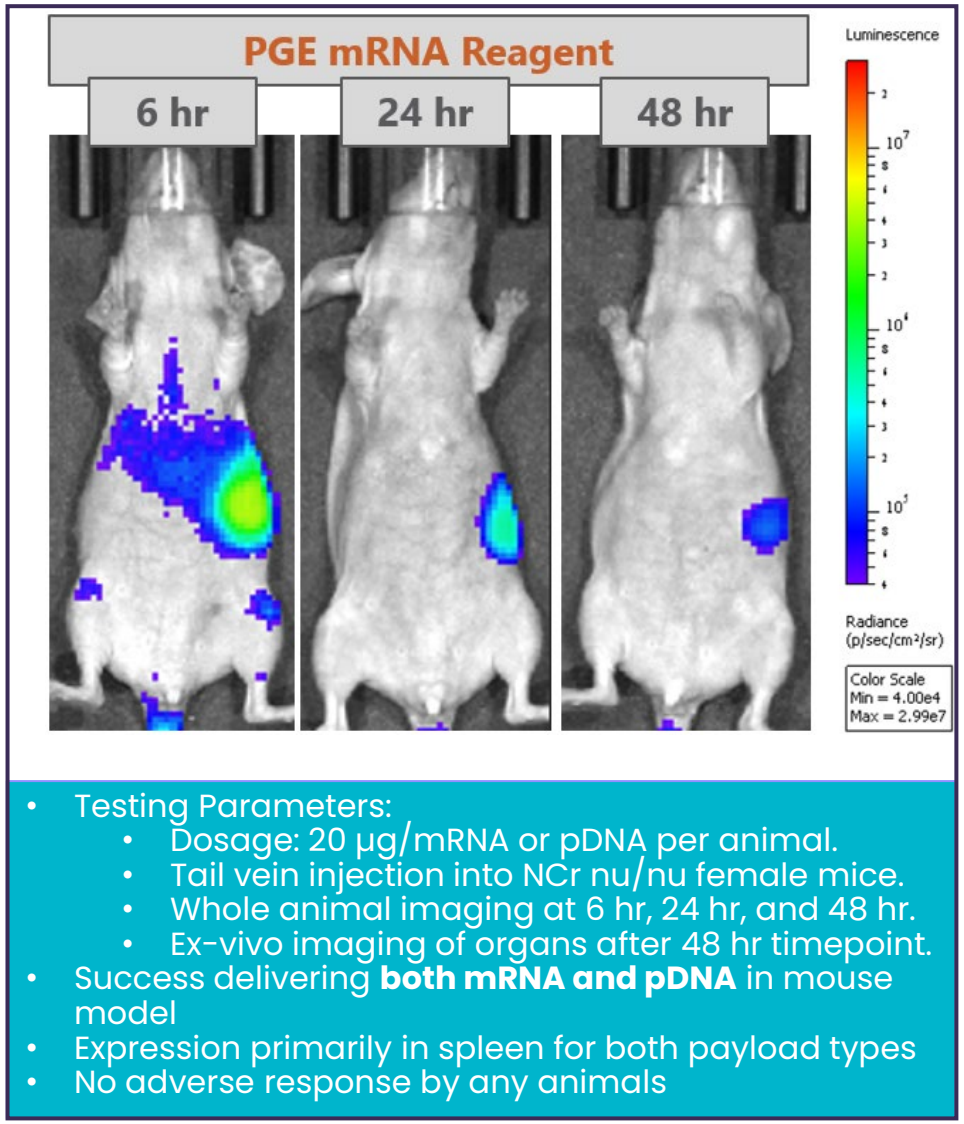




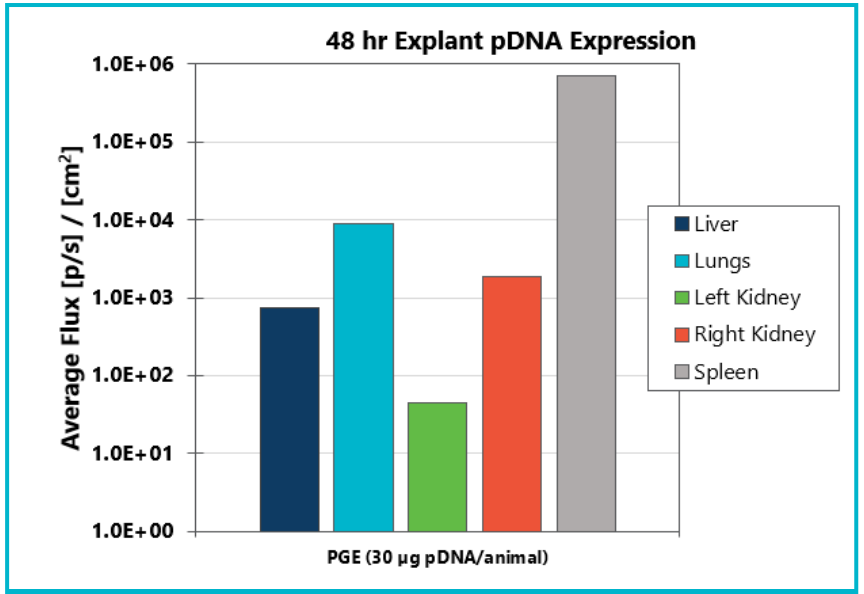


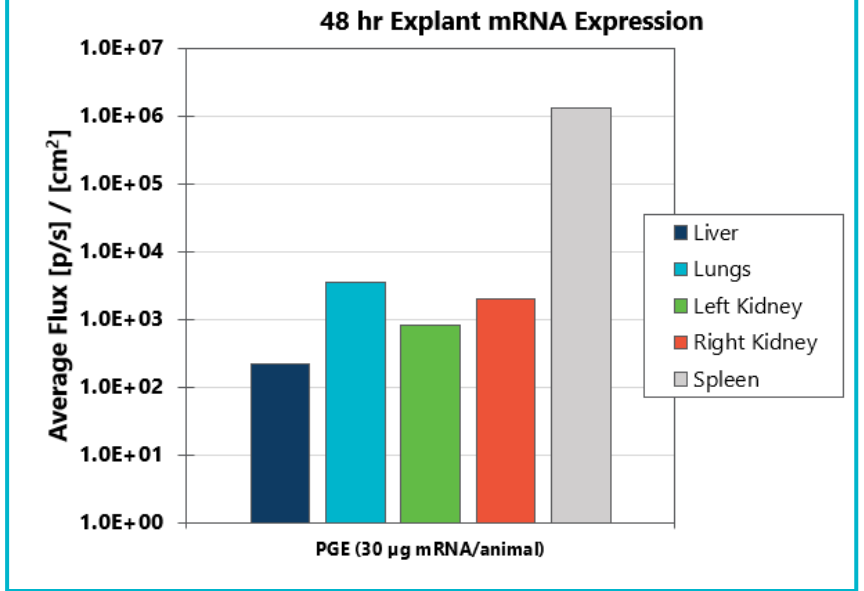
COPYRIGHT ©2026 SECANT GROUP. ALL RIGHTS RESERVED.

Hydralese®Tx Polyplex Can Deliver *In Vivo*



- Testing Parameters:
  - Dosage: 20 µg/mRNA or pDNA per animal.
  - Tail vein injection into NCr nu/nu female mice.
  - Whole animal imaging at 6 hr, 24 hr, and 48 hr.
  - Ex-vivo imaging of organs after 48 hr timepoint.
- Success delivering **both mRNA and pDNA** in mouse model
- Expression primarily in spleen for both payload types
- No adverse response by any animals

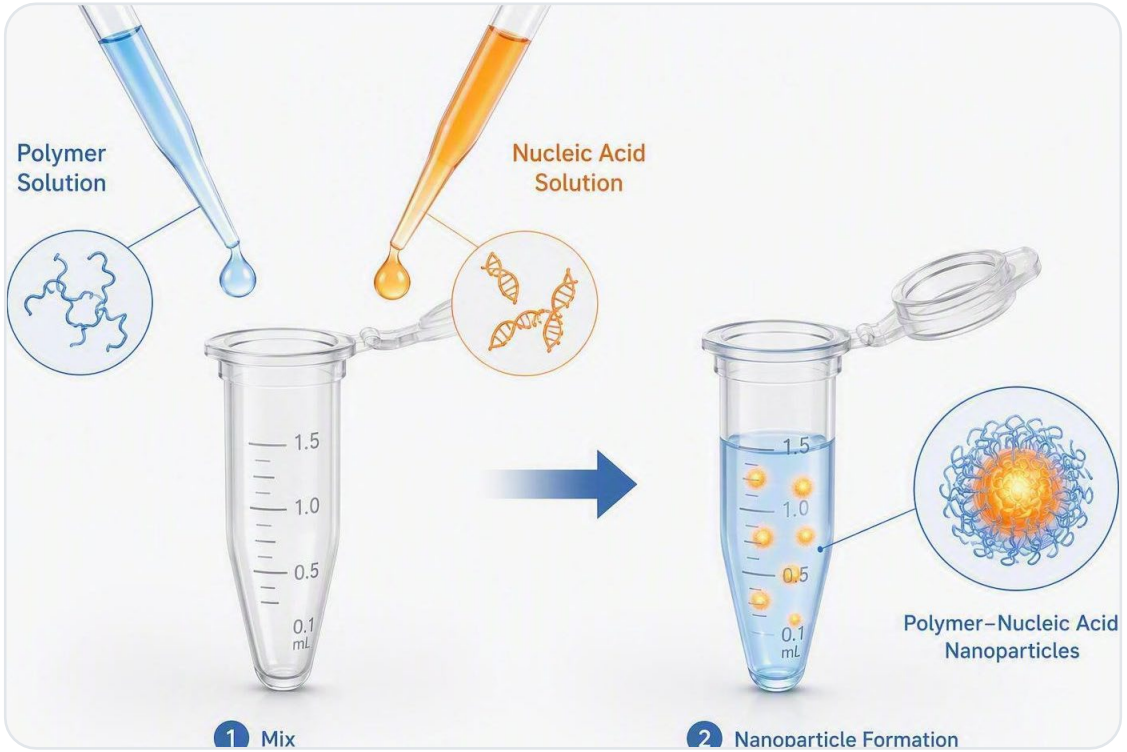




COPYRIGHT ©2026 SECANT GROUP. ALL RIGHTS RESERVED.

Mix & Go: A Single-component Polyplex

Hydralese®**Tx** poly(glycerol ester) reagents are single component. No additives or enhancers required.



1 PGE + payload = polyplex
The polymer and the nucleic acid are combined directly.

2 Add polyplex to cells
No additives, enhancers or multi-lipid formulation step.

3 Cells express protein in 6-24 hours
Reporter expression confirmed across this window.

4 Tunable complexation
The PGE-to-nucleic-acid ratio can be tuned to control particle stability.

Fewer process steps at the bench is fewer process steps to transfer and validate later.

COPYRIGHT ©2026 SECANT GROUP. ALL RIGHTS RESERVED.

Up Next – Tunability for a Library of Reagents

Hydralese®

Polymer Levers

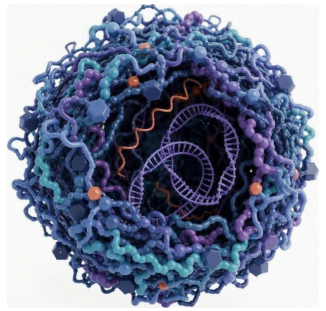
- Molecular weight
- Charge density
- Hydrophilicity
- Monomer composition
- Branching
- End-group chemistry
- Cationic moiety

Particle Characteristics

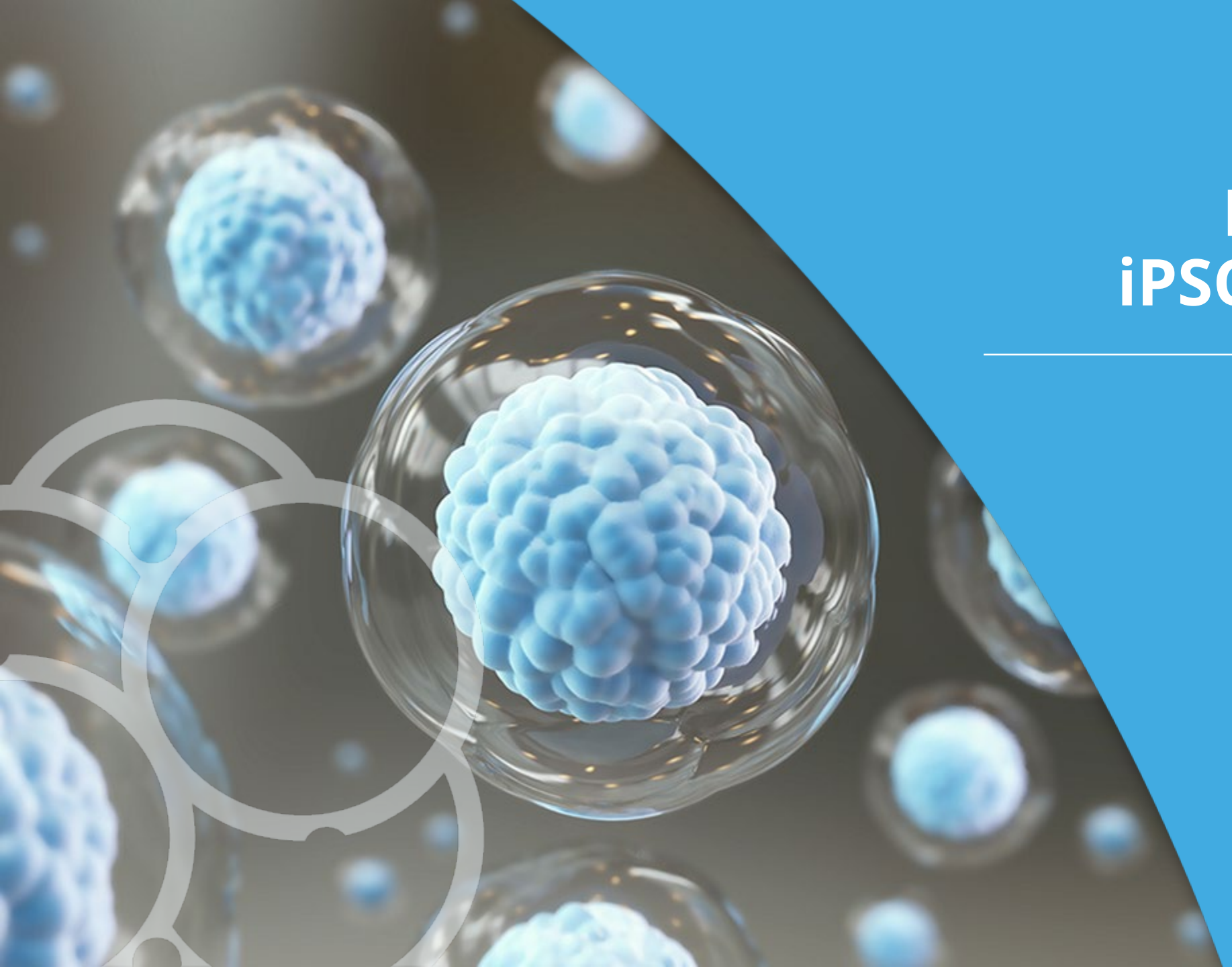
- Payload capacity
- Degradation kinetics
- Particle size
- Particle charge
- Cytotoxicity

Applications

- Suspension v. Adherent
- *in vivo*
- Inhalation administration
- CRISPR
- Organoids
- Cell Types



COPYRIGHT ©2026 SECANT GROUP. ALL RIGHTS RESERVED.

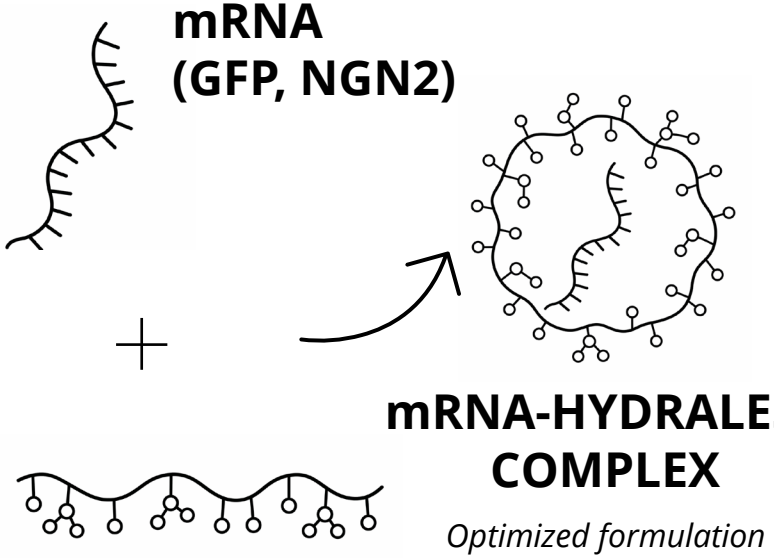


Hydralese®Tx iPSC Applications

pluristyx®

Hydralese® *Tx* Enables Simple and Flexible mRNA Delivery Across iPSC Culture Formats

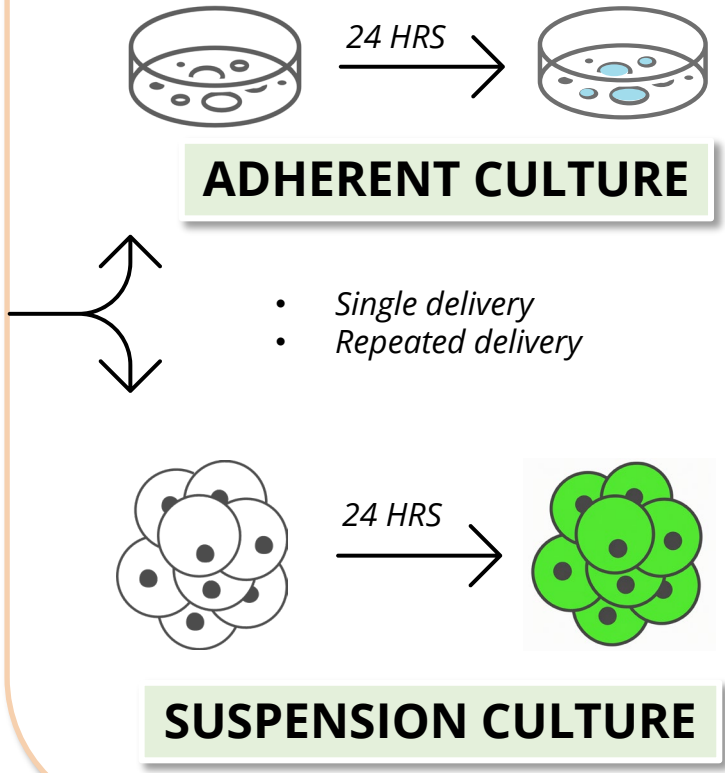
FORMULATION



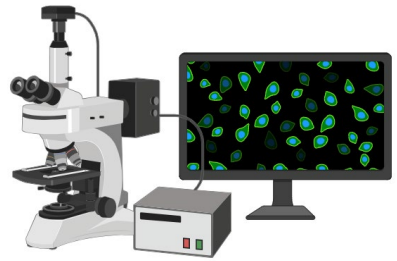
Optimized formulation
- *Ratio*
- *Format*

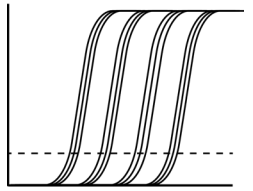
(ToU, Pre-complexed)

DELIVERY

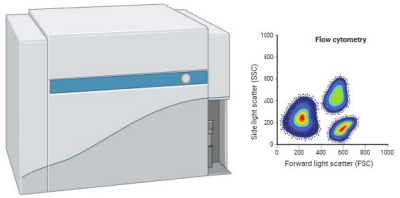


READOUT





DELIVERY & EXPRESSION ASSESSMENT



©2026 Pluristyx

Ready-to-Differentiate® iPSCs Provide a Consistent, Ready-to-Use Starting Point for mRNA Delivery

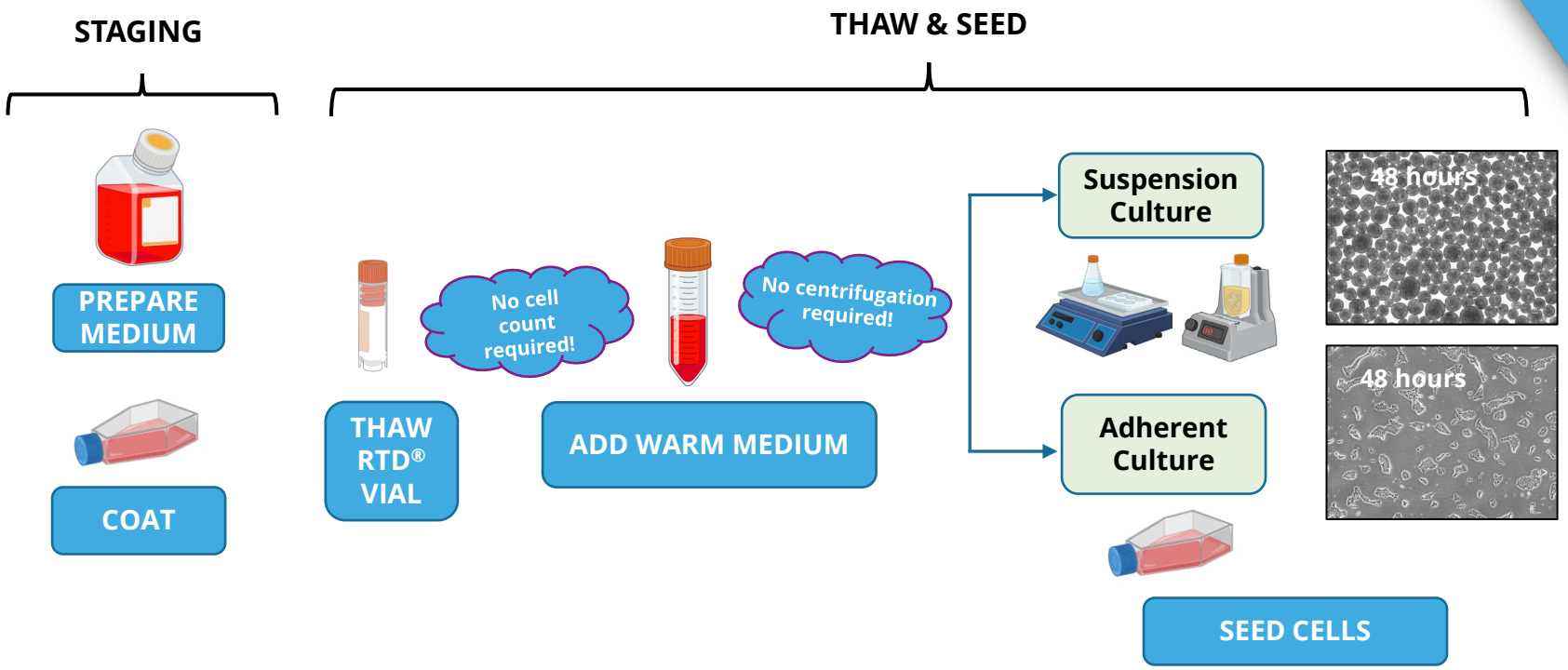
RTD® iPSCs:
Ready-to-Differentiate cryopreserved iPSCs
(≥25 million cells/vial)

- Pre-expanded iPSCs
- Rigorous quality control and characterization
- Consistent lot-to-lot quality
- Low passage number
- Ready for immediate differentiation at thaw

Rapid & reliable cell recovery at thaw

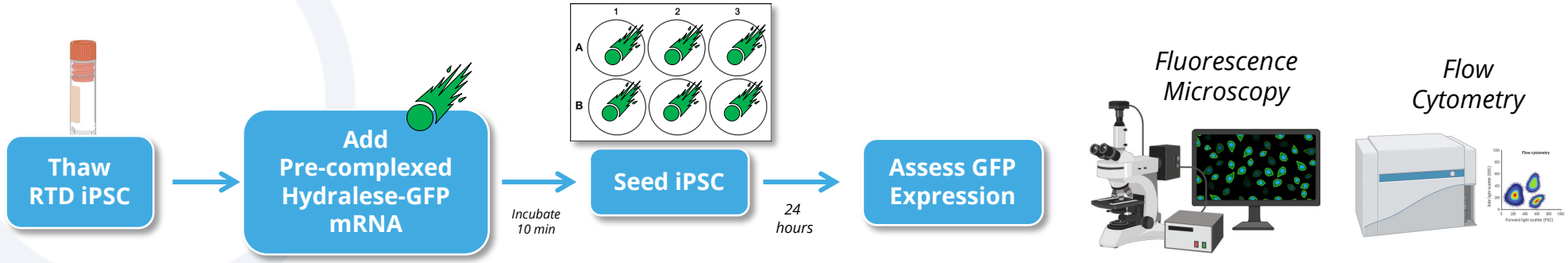
- < 30 min from thaw to completed cell prep
- RTD iPSC suspension cluster formation occurs overnight with gentle mixing

Reproducible adherent and suspension thaw-to-culture process

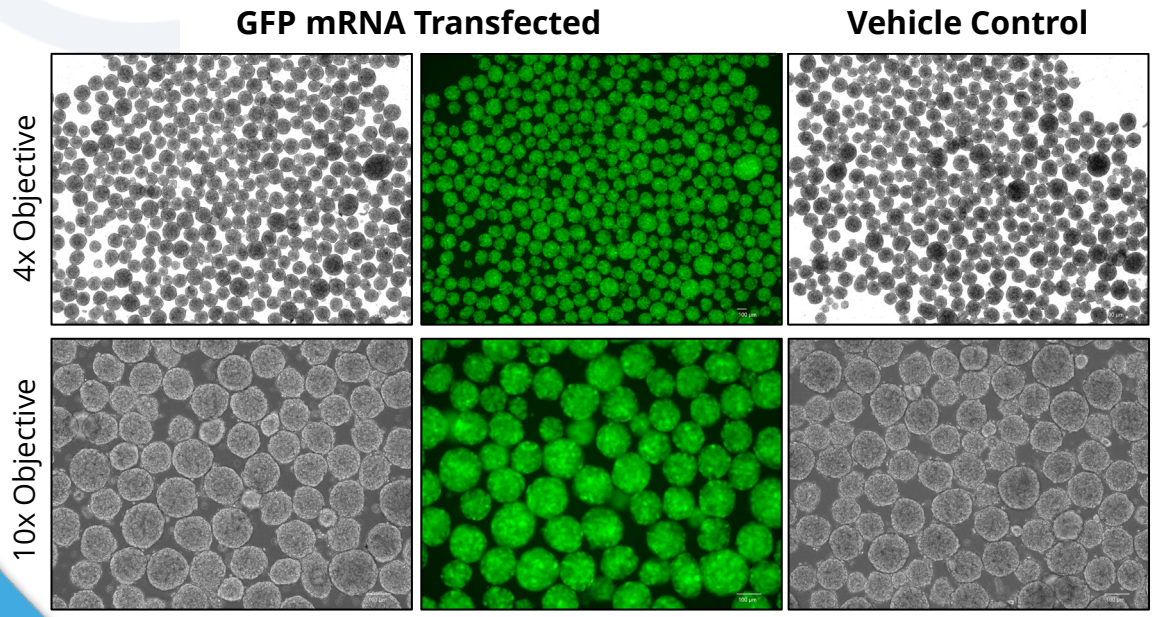


©2026 Pluristyx

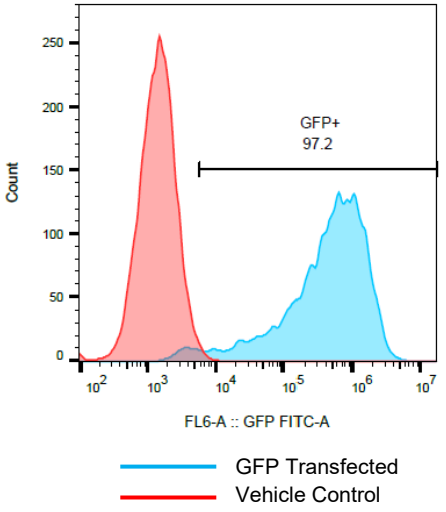
Hydralese®Tx Enables Efficient GFP mRNA Delivery in Suspension iPSC Culture Directly Out-of-Thaw

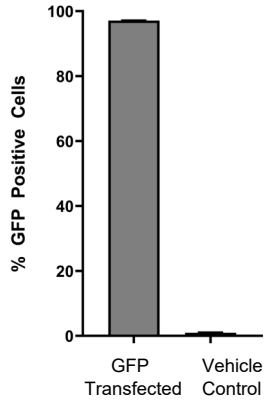


Fluorescence Microscopy



Flow Cytometry

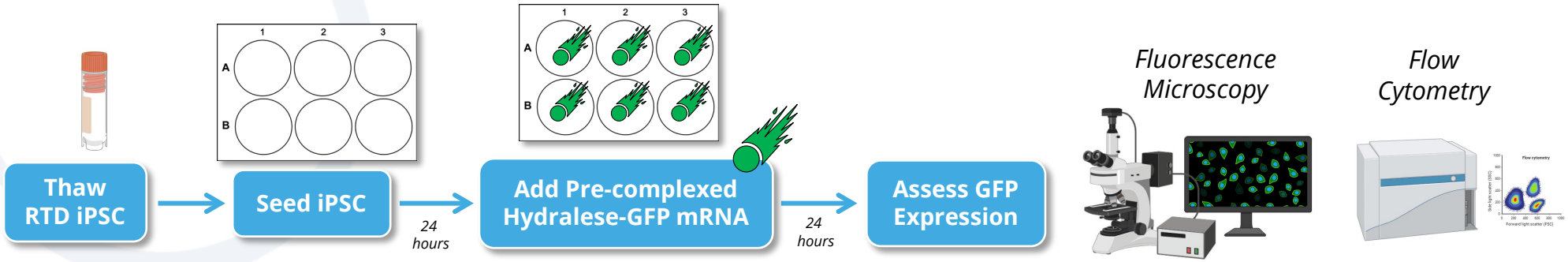




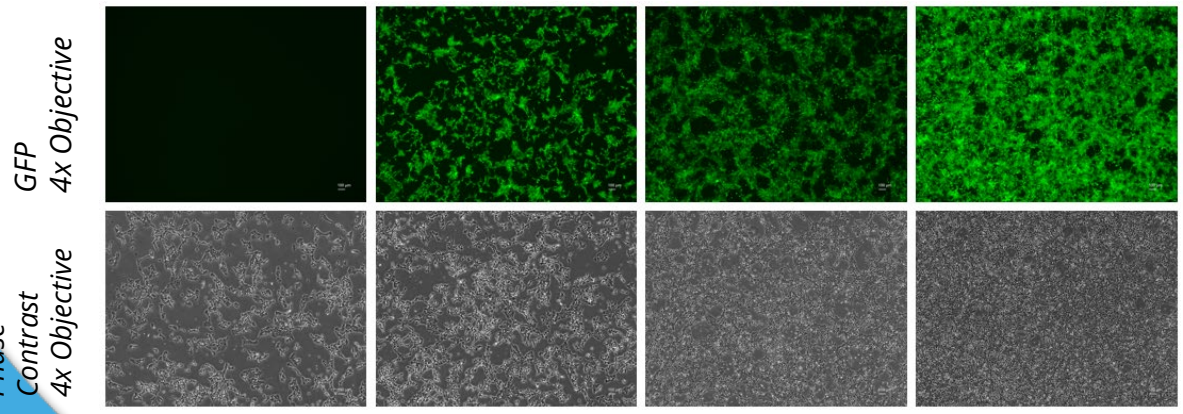
~100% GFP+ RTD® iPSC clusters 24 hours after single transfection at thaw

©2026 Pluristyx

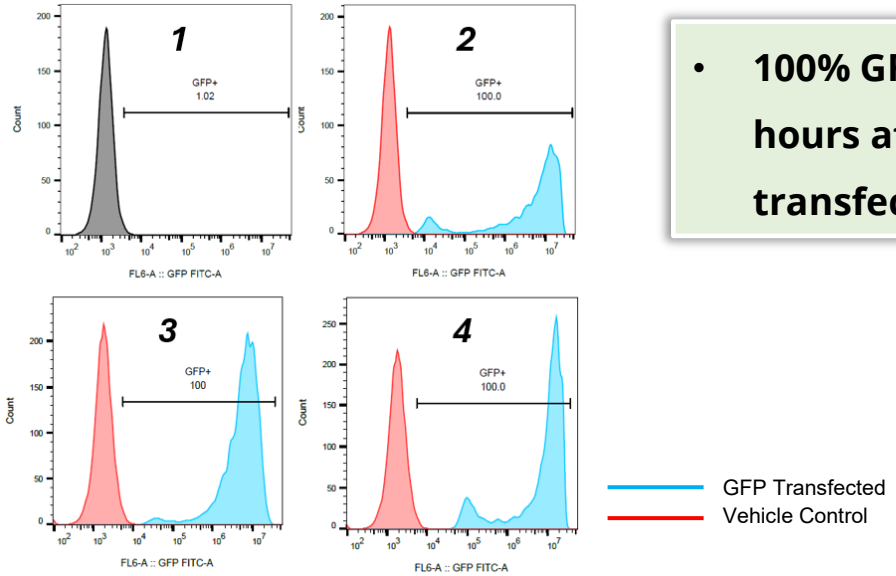
Hydralese®Tx Enables Efficient GFP mRNA Delivery in Adherent iPSC Culture



Fluorescence Microscopy



Flow Cytometry



- **100% GFP+ cells 24 hours after single transfection**

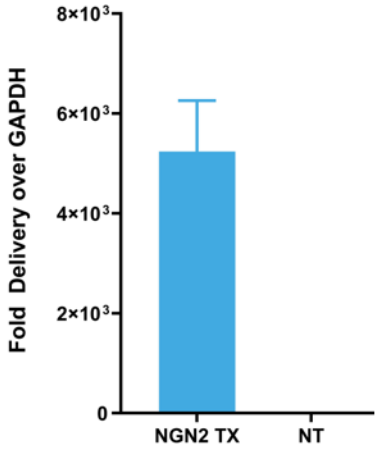
©2026 Pluristyx

Hydralese®Tx Enables NGN2 mRNA Delivery for mRNA-Directed Differentiation

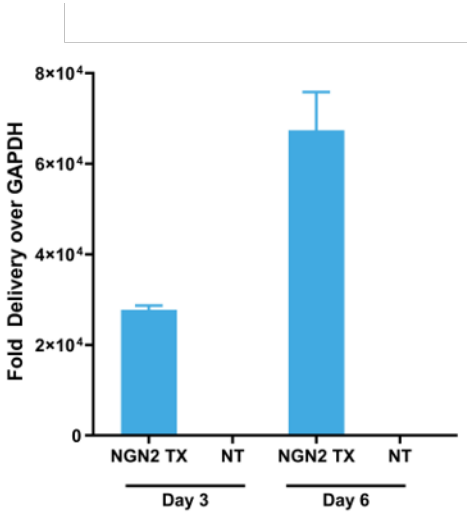
- **Single transfection (adherent, suspension) delivers high level of synthetic NGN2 mRNA detected 24 hours post-transfection**
- **Repeated transfections (adherent, suspension) deliver sustained high level of synthetic NGN2 mRNA over 6 days**

Suspension iPSC Culture

Single transfection

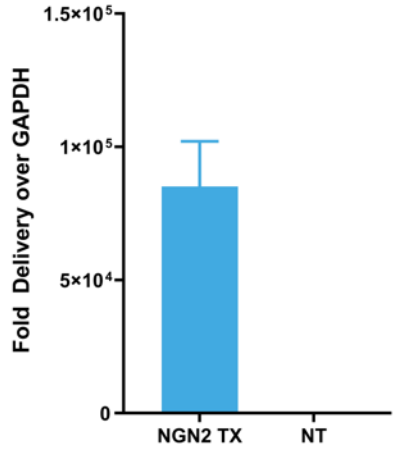


Repeated transfection

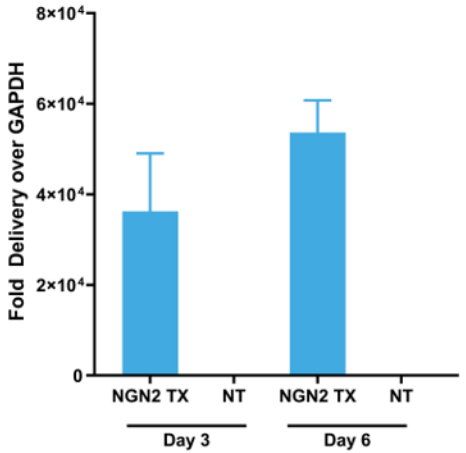


Adherent iPSC Culture

Single transfection



Repeated transfection

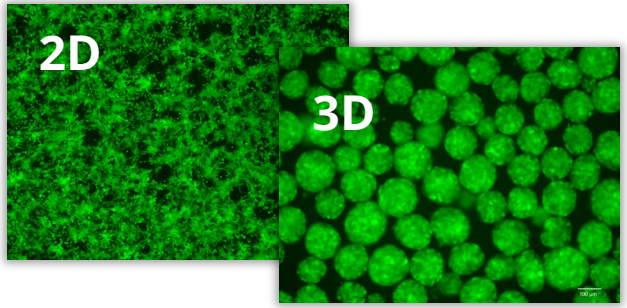


©2026 Pluristyx

Hydralese®Tx Powers PluriForm™ GFP Transfection Kits for Ready-to-Use iPSC Applications

PluriForm™–GFP-2D Kit
PluriForm™–GFP-3D Kit

- Ready-to-Differentiate® iPSC
- Media, supplements, substrates for iPSC culture
- PluriGlow™-GFP transfection reagent (precomplexed mRNA)



Product	Component
PluriForm™-GFP-3D (SPC-0429)	PSXi005-G (RTD® iPSC)
	HiDef B8 Basal Medium
	HiDef B8 400x Supplement
	PluriForm Thaw Supplement
	PluriForm Media supplement
	PluriGlow™-GFP-3D
PluriForm™-GFP-2D (SPC-0430)	PSXi005-G (RTD® iPSC)
	HiDef B8 Basal Medium
	HiDef B8 400x supplement
	PluriForm Thaw Supplement
	BioLaminin 521 LN
	PluriGlow™-GFP-2D

The *PluriGlow-GFP reagent:* pre-complexed, optimized GFP mRNA–Hydralese**Tx** formulation, designed to maximize delivery and protein expression in adherent and suspension iPSC culture.

Hydralese®Tx Transfection Reagent for iPSC Applications

- Cationic PGE can deliver both pDNA and mRNA
- Able to protect mRNA and deliver *in vivo*
- Enables pre-complexing of the mRNA payload with the transfection reagent.
- Enables efficient and uniform mRNA delivery across iPSC culture systems.
- Enables repeated mRNA payload delivery and sustained cargo signal.
- Supports ease-of-use and streamlined workflows for iPSC applications.

©2026 Pluristyx

Partner with Our Teams

- PluriForm™ GFP Transfection Kits

- Hydralese®**Tx**, **Rx** or **MT** enabling polymer technology
- Hydralese library of polymers



Raluca Marcu
VP of Scientific Operations

raluca.marcu@pluristyx.com



Jeremy Harris, Ph.D.
Sr. Director, Research

jeremy.harris@secant.com

©2026 Pluristyx