



## CONTROLLING GROWTH

Ruud Das, PhD  
CSO  
Scinus Cell Expansion NL





## **OUR VISION:**

MAKING CELL THERAPY AND REGENERATIVE MEDICINE ACCESSIBLE AND AVAILABLE TO EVERYONE, STRIVING TO POSITIVELY CHANGE HEALTH CARE.

## **OUR MISSION:**

TO PROVIDE TECHNOLOGY AND PROCESSES TO ENABLE AND IMPROVE CELL THERAPY AND REGENERATIVE MEDICINE.

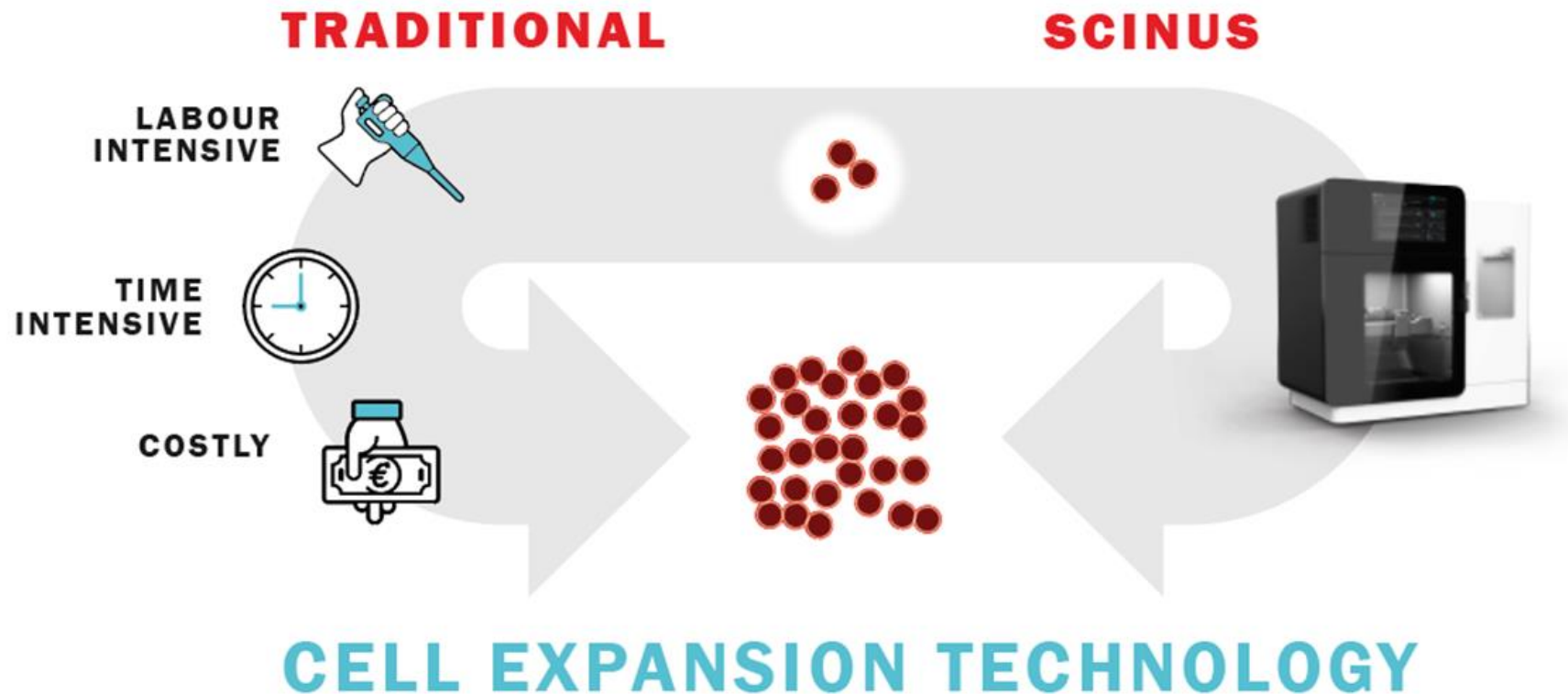
# Scinus Cell Expansion Netherlands B.V.

Controlable upscaling, affordable costs



# Scinus Cell Expansion Netherlands B.V.

Controlable upscaling, affordable costs



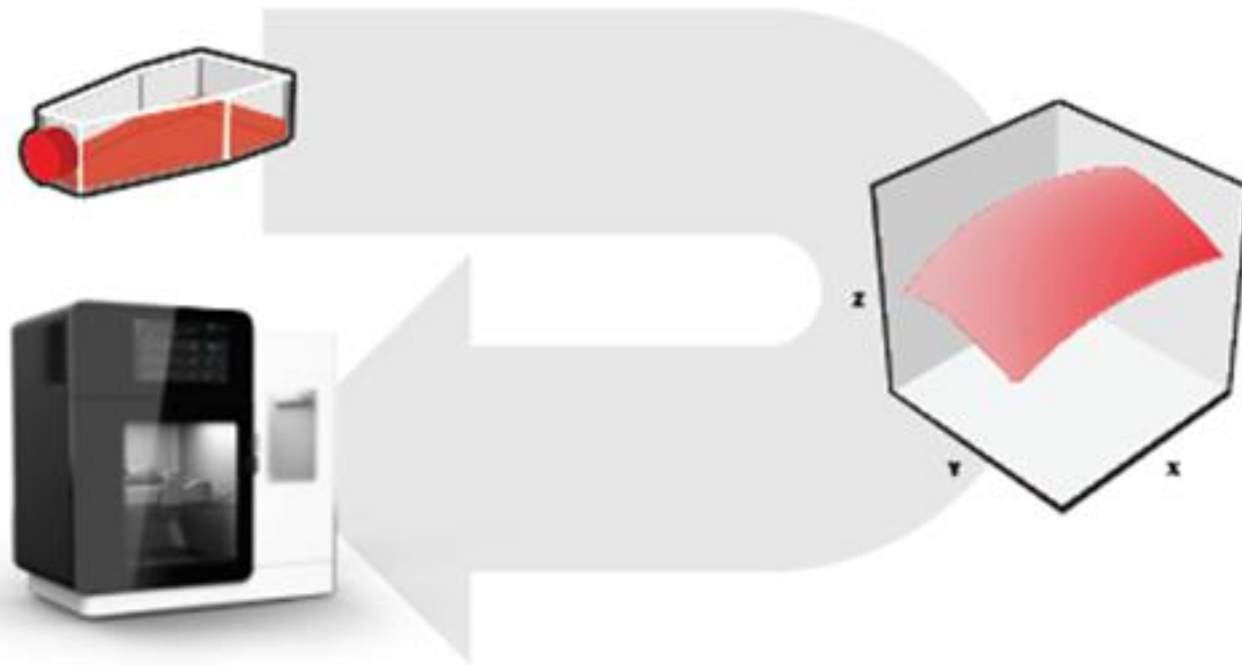
# Scinus Cell Expansion Netherlands B.V.

Controlable upscaling, affordable costs



# Scinus Cell Expansion Netherlands B.V.

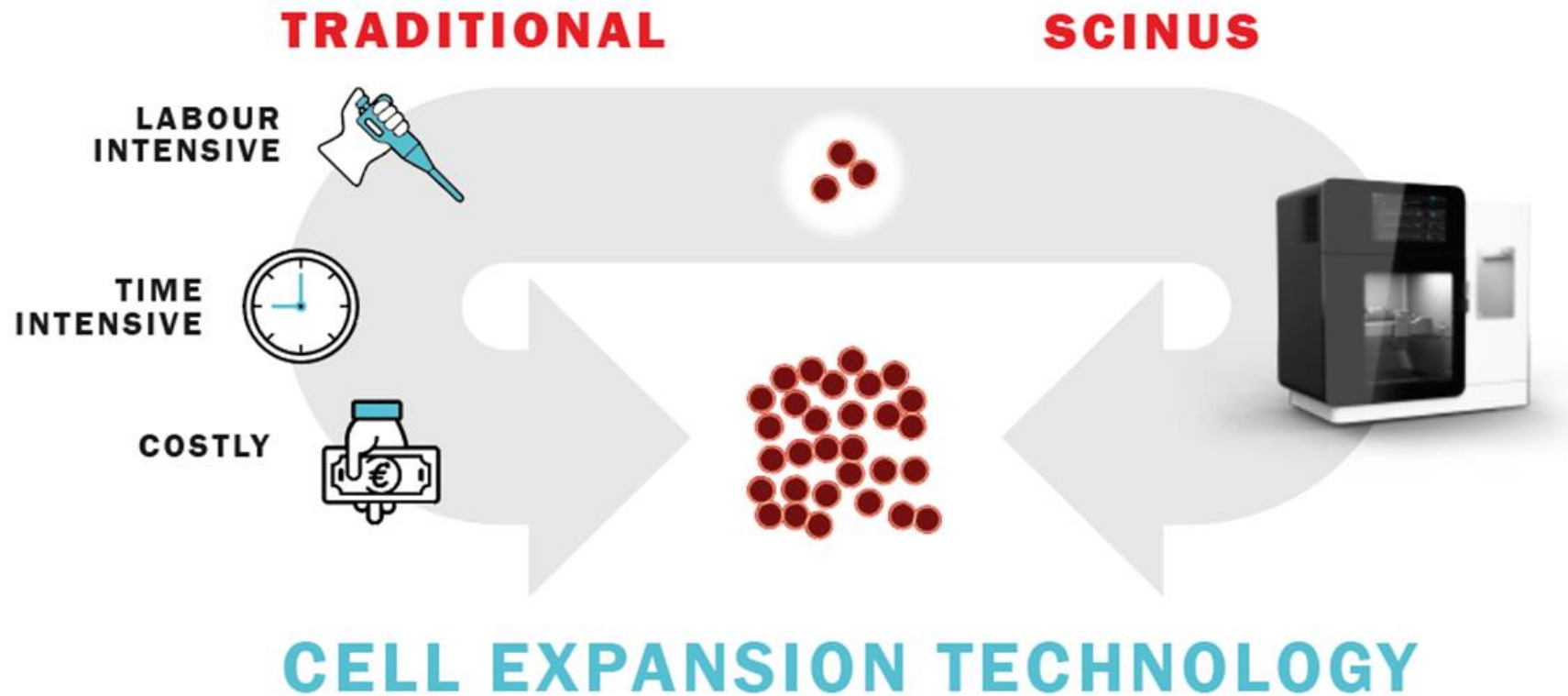
Controlable upscaling, affordable costs



**PROCESS DEVELOPMENT**

# Scinus Cell Expansion Netherlands B.V.

Controlable upscaling, affordable costs



# THE SCINUS BIOREACTOR NG

Easy to use GUI

Closed-loop culture environment



Unique, volume expandable technology

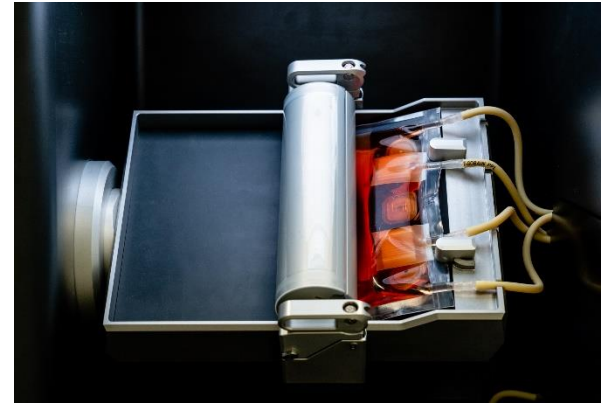
Continuous perfusion,  
Extremely flexible



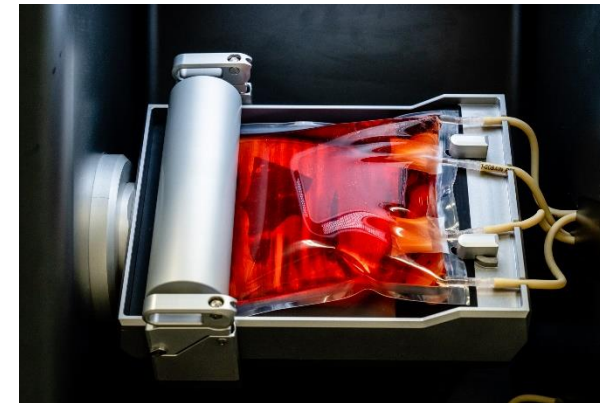


# THE SCINUS BIOREACTOR NG

Unique, volume expandable  
technology



100 mL



1400 mL



# THE SCINUS BIOREACTOR NG

Easy to use GUI

Closed-loop culture environment



Unique, volume expandable technology

Continuous perfusion,  
Extremely flexible



# THE SCINUS BIOREACTOR NG

Continuous perfusion,  
Extremely flexible



# THE SCINUS BIOREACTOR NG

Easy to use GUI

Closed-loop culture environment



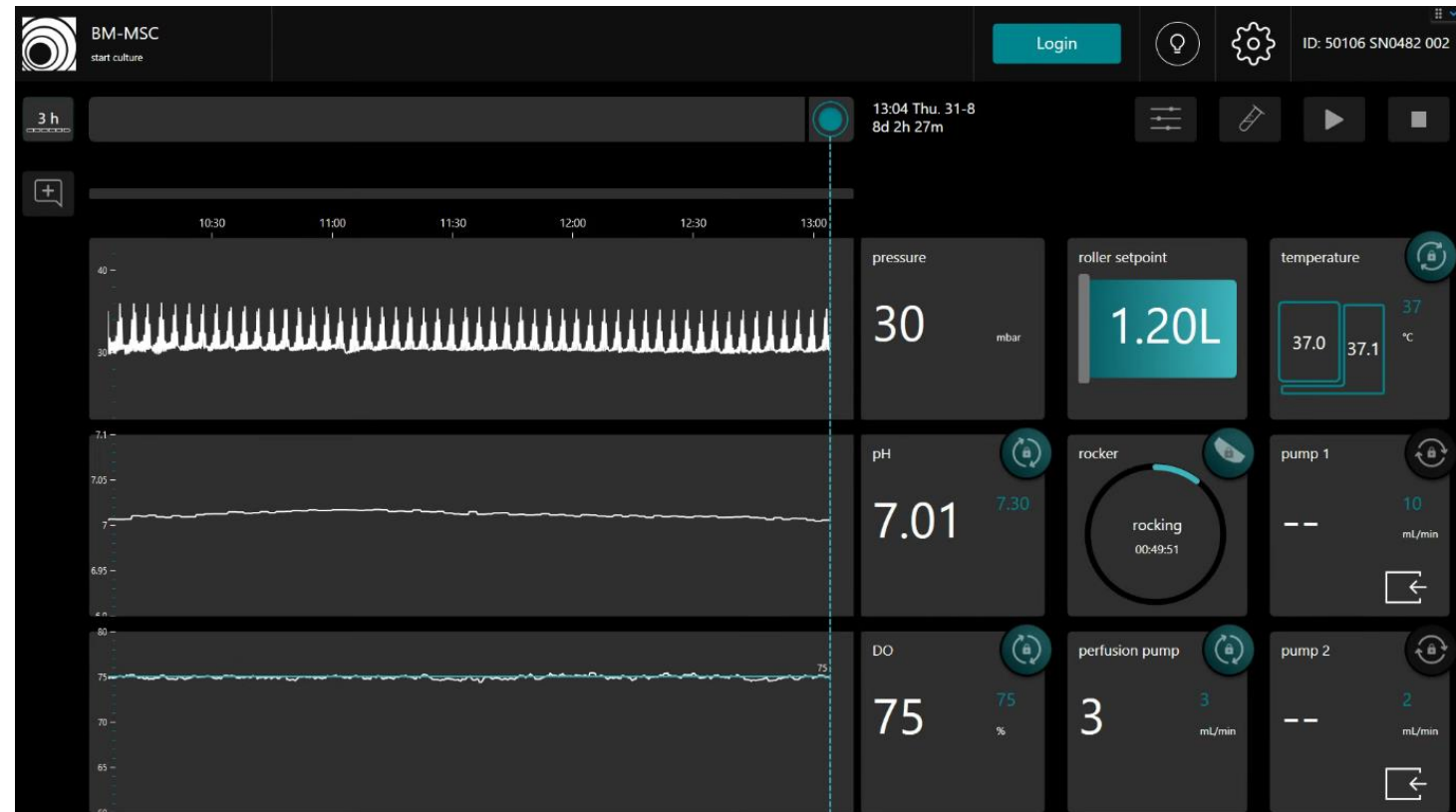
Unique, volume expandable technology

Continuous perfusion,  
Extremely flexible



# THE SCINUS BIOREACTOR NG

Easy to use GUI



# THE SCINUS BIOREACTOR NG

Easy to use GUI

Closed-loop culture environment



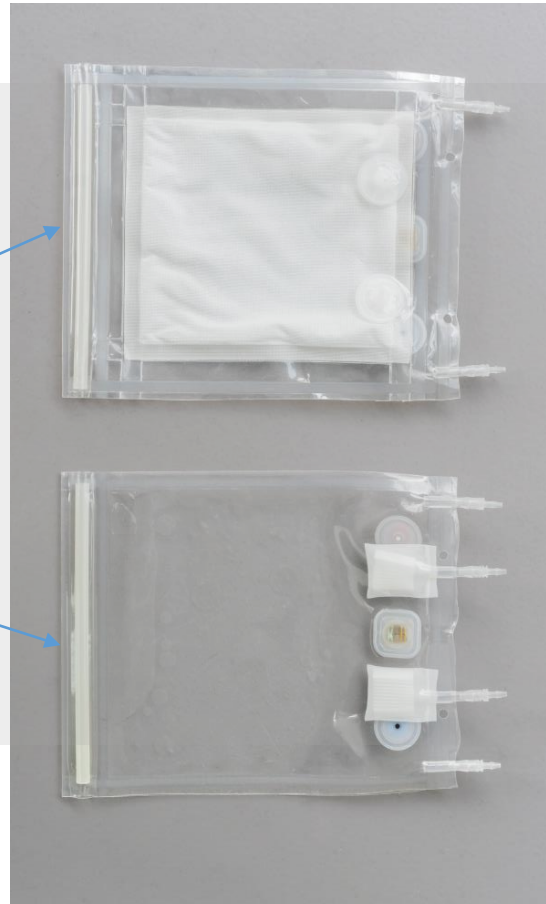
Unique, volume expandable technology

Continuous perfusion,  
Extremely flexible



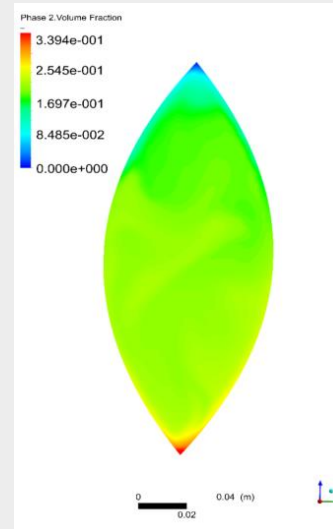
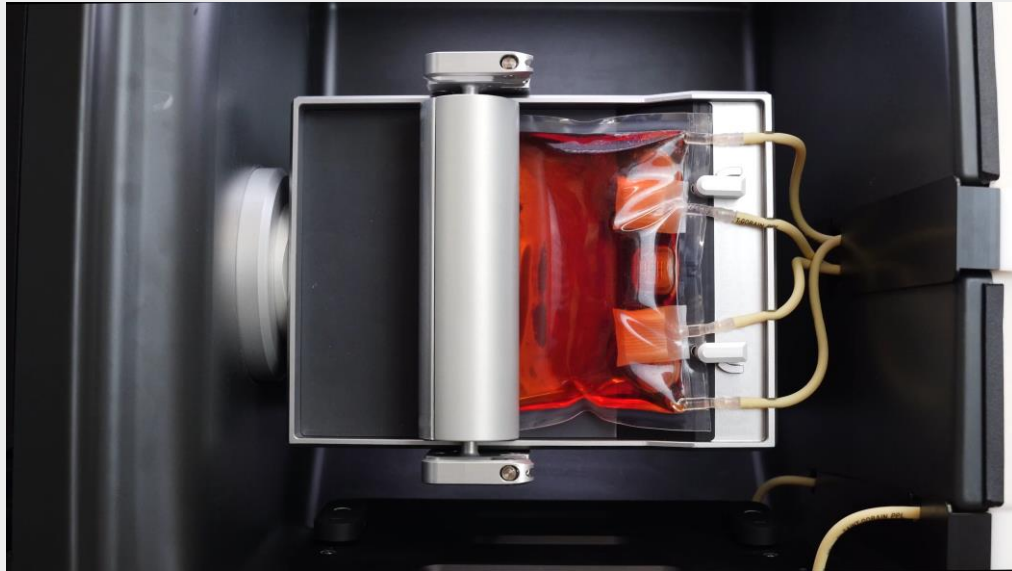
# Single-use culture bag

one SCINUS cabinet for ADHERENT as well as SUSPENSION cell types



# Dynamic culture

**Homogenous and low shear environment; Customizable**

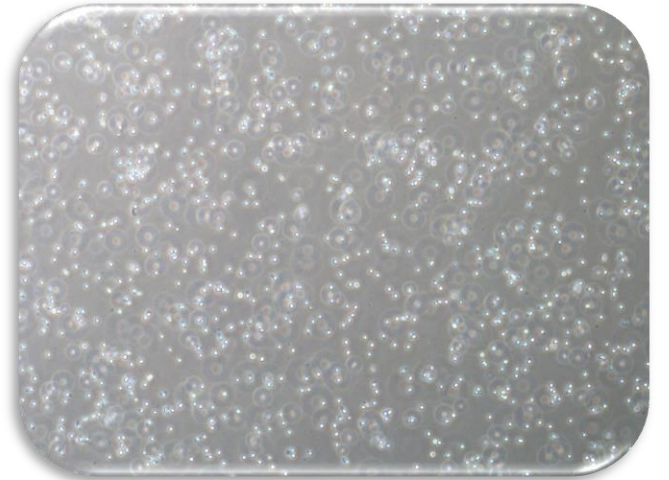
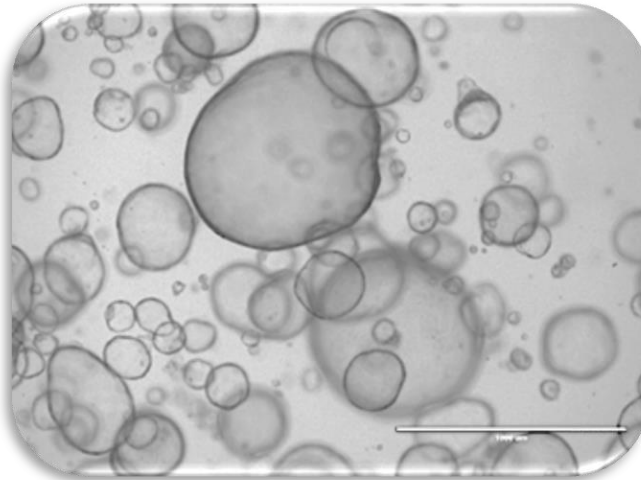
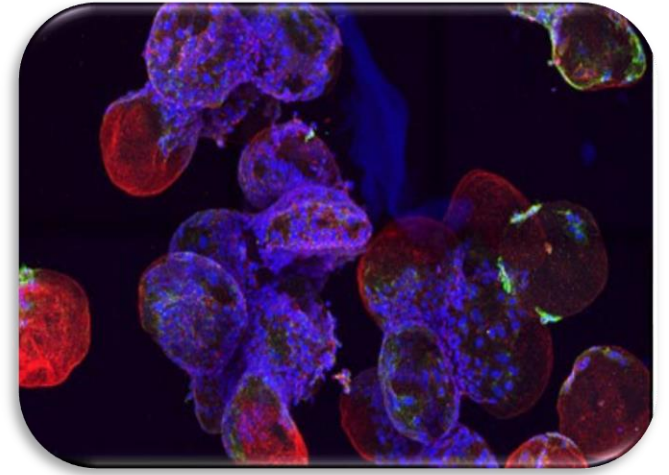
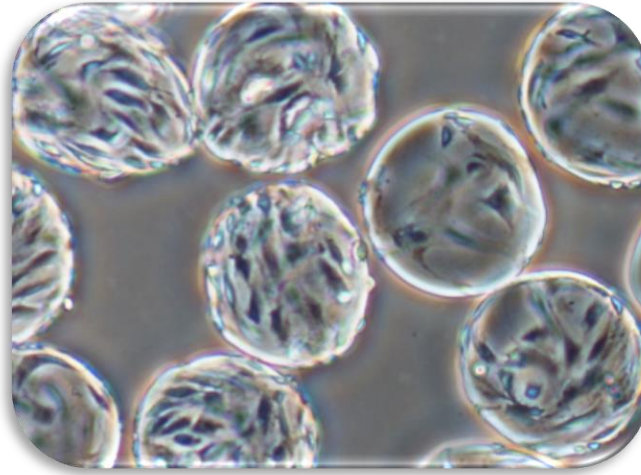


PARAMETER	RANGE
Rocking angle	+/- 100 °
Rocking velocity	0 - 500 °/s
Static interval	0 to 100 hours



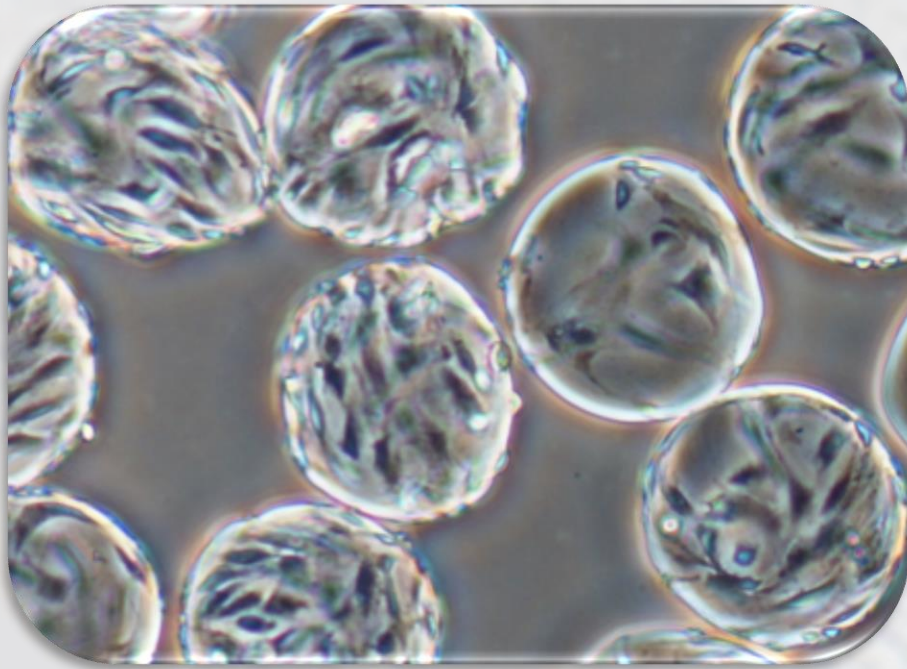
# APPLICATIONS

SCINUS CELL EXPANSION

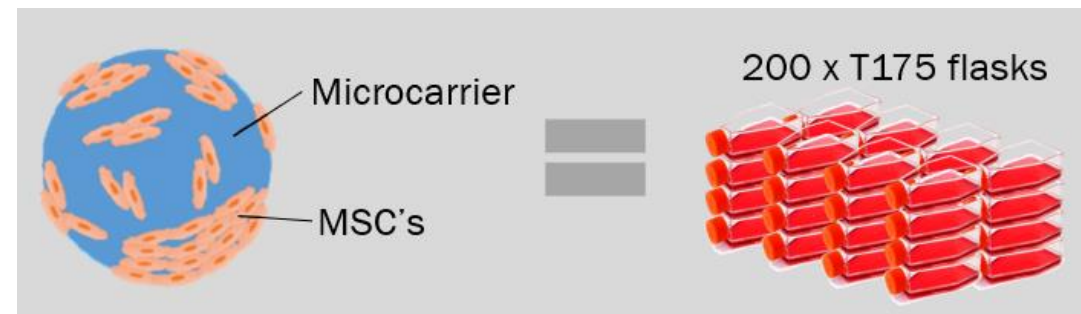
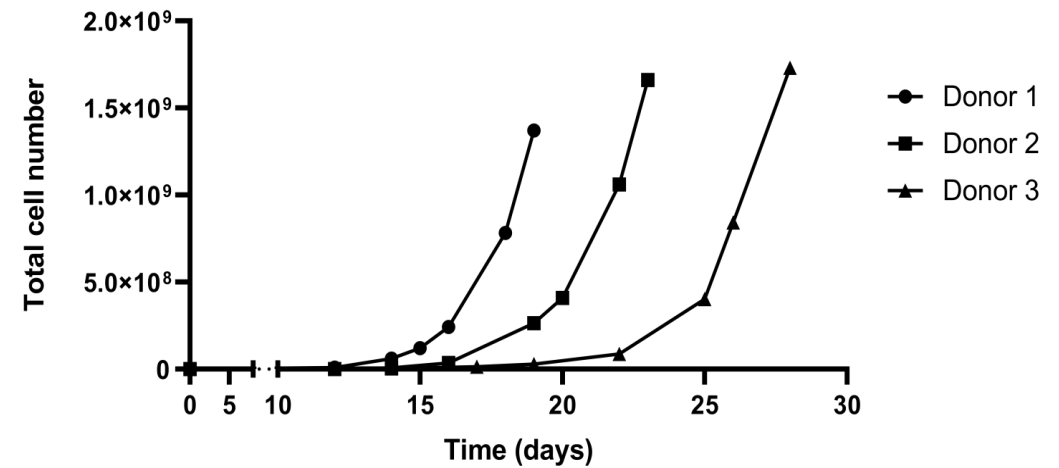


# APPLICATIONS

## SCINUS CELL EXPANSION

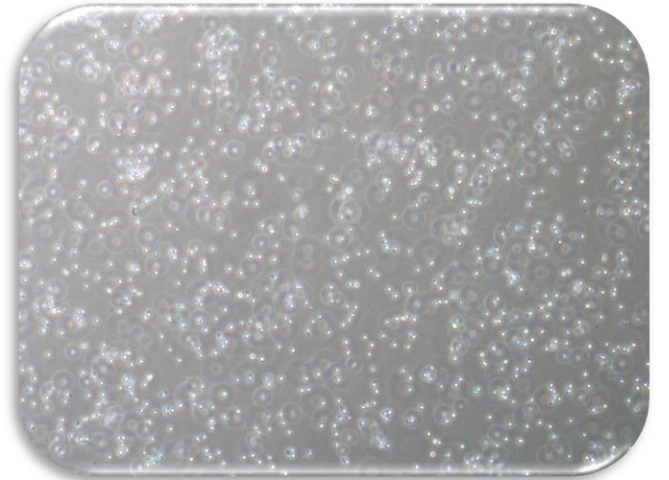
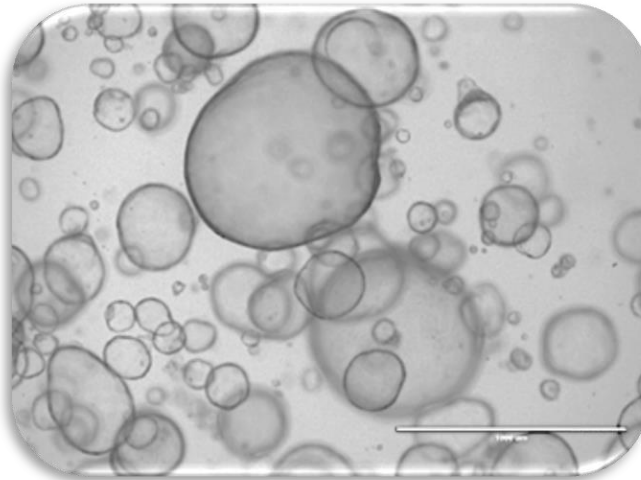
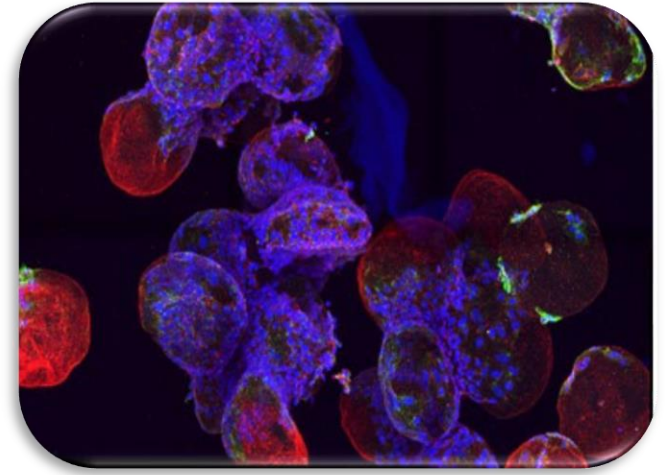
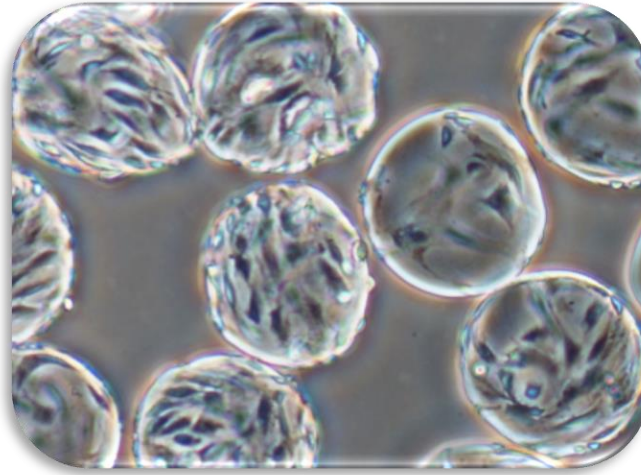


- Direct culture of bone marrow-derived stromal cells (BMSCs)
- Direct culture of adipose-derived stem cells (ASCs)
- Muscle Progenitor Cells, UC, WJ, Periosteum derived cells
- Exosome / EV production



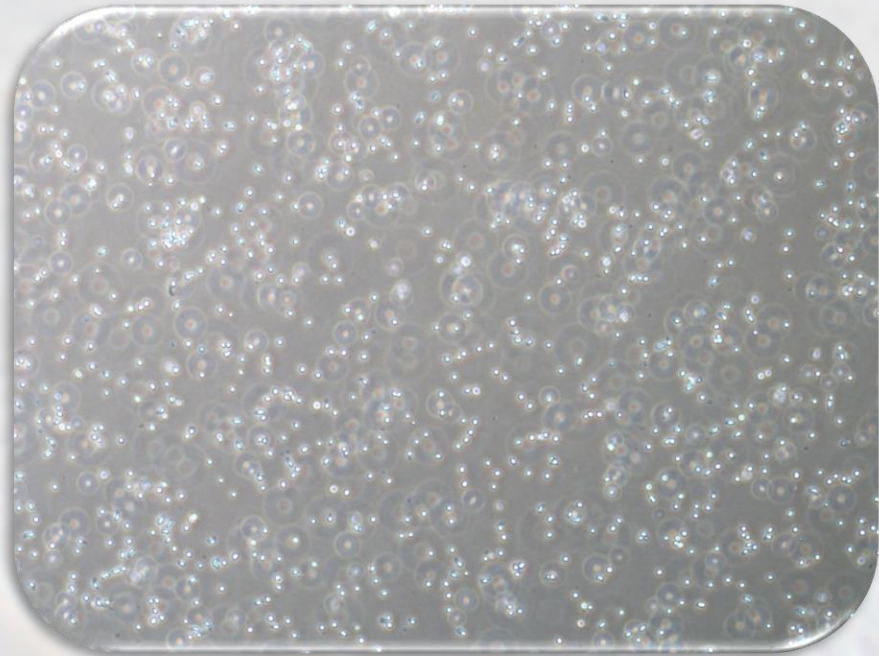
# APPLICATIONS

SCINUS CELL EXPANSION

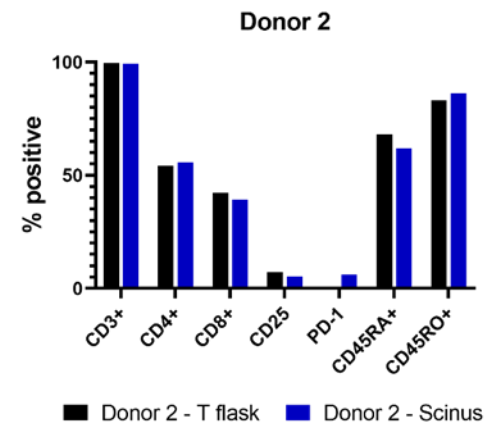
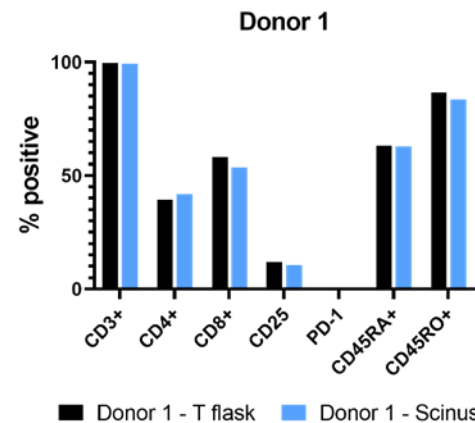
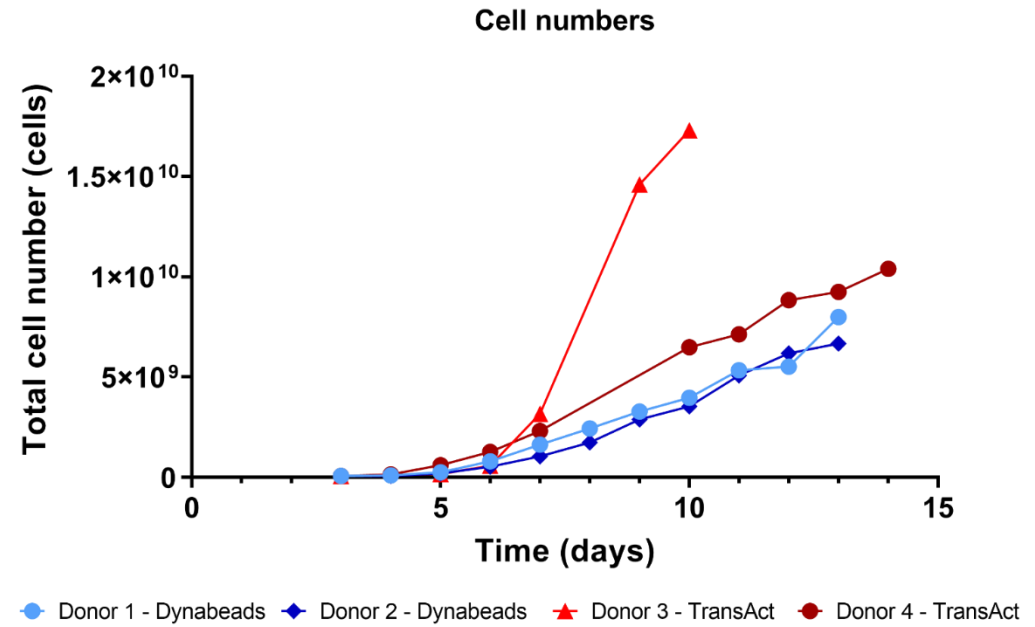


# APPLICATIONS

## SCINUS CELL EXPANSION

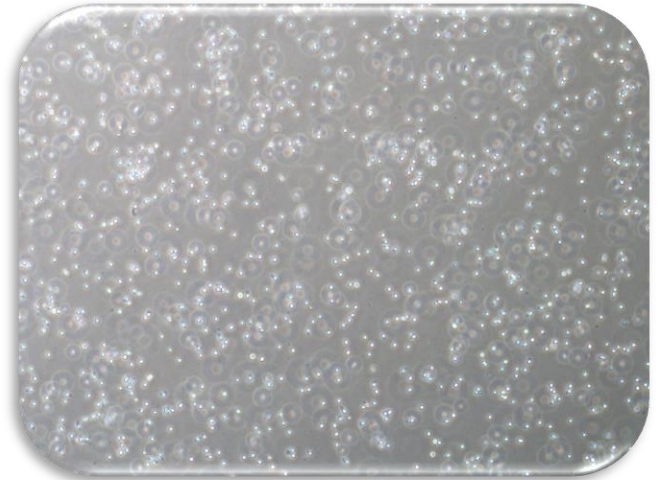
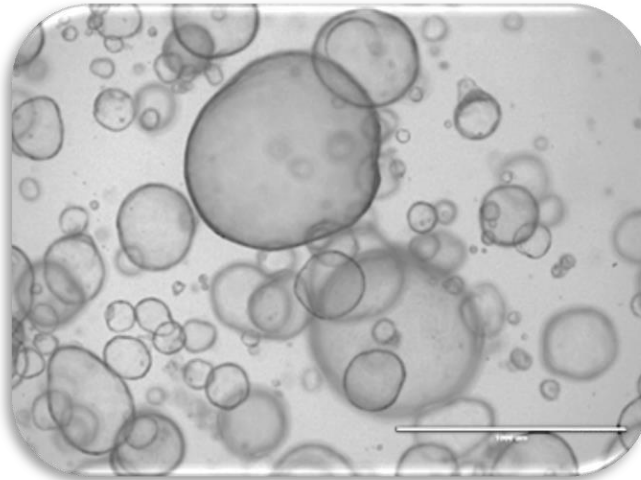
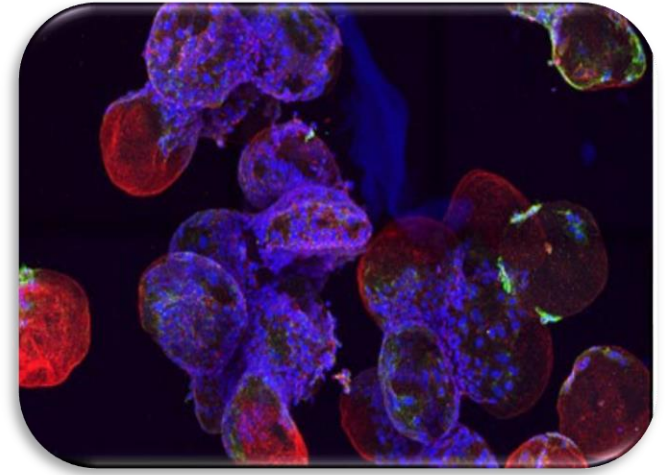
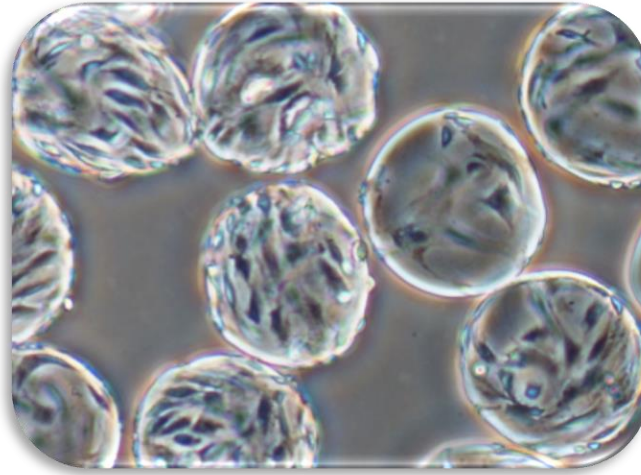


- T-Cell cultivation for CAR-t
- CD34<sup>+</sup> cell culture



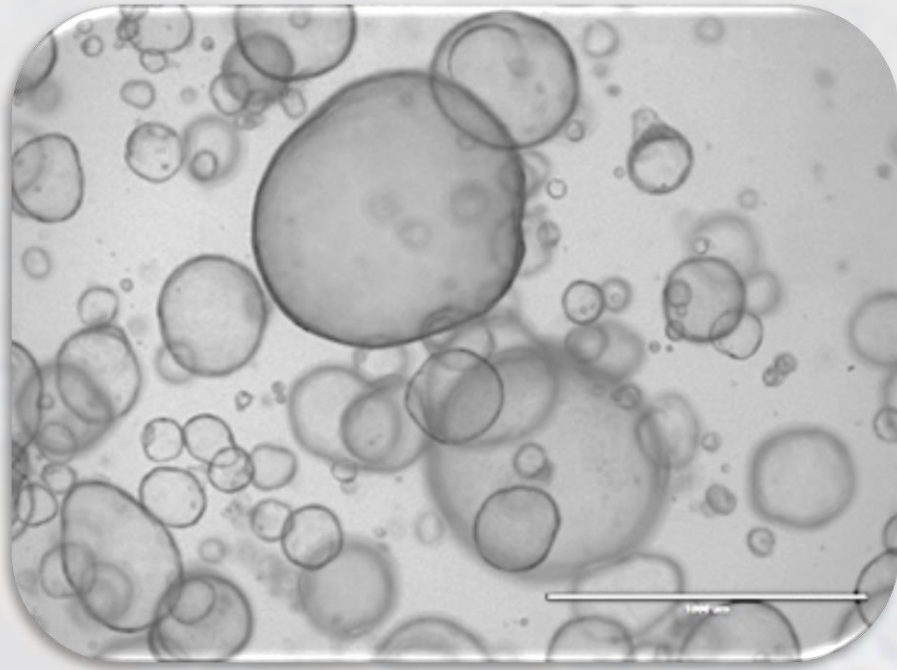
# APPLICATIONS

SCINUS CELL EXPANSION

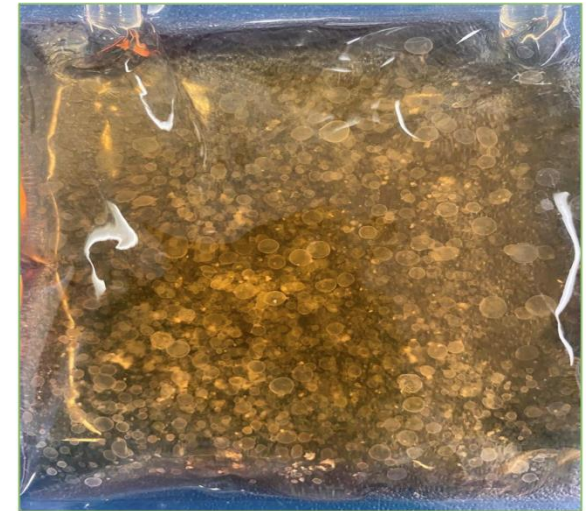
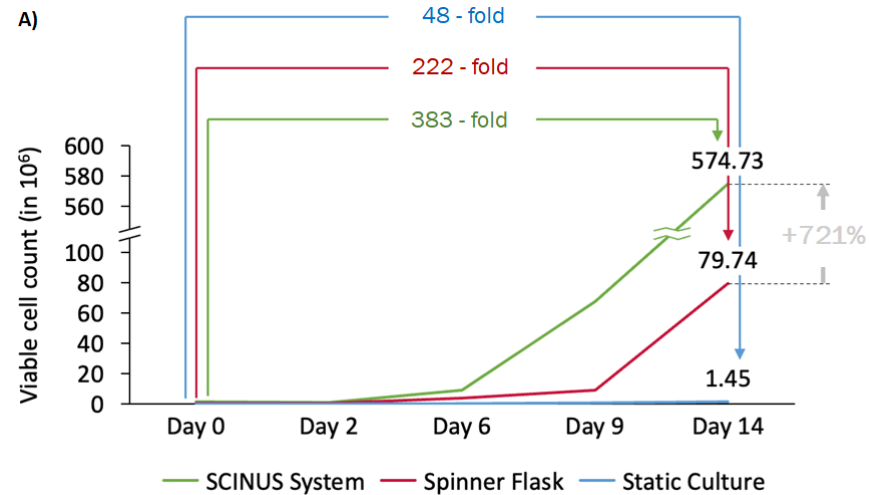


# APPLICATIONS

## SCINUS CELL EXPANSION

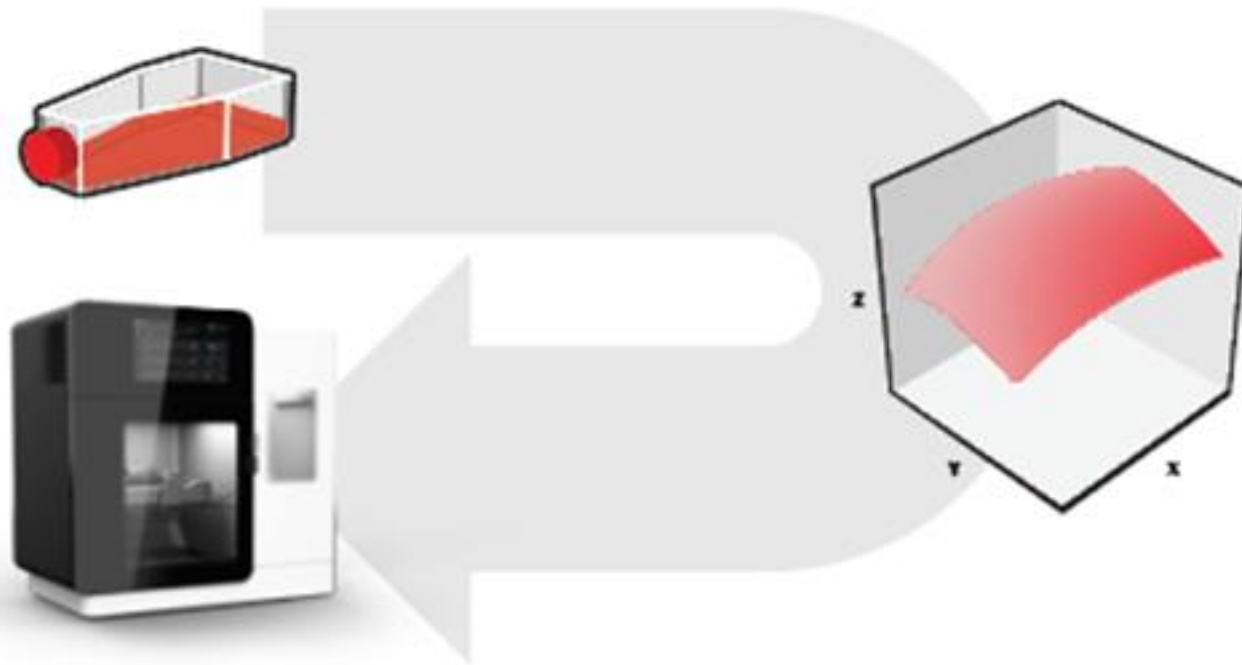


- Large scale spheroids culture (e.g. iPSC)
- Organoid culture



# Scinus Cell Expansion Netherlands B.V.

Controlable upscaling, affordable costs



**PROCESS DEVELOPMENT**

# Process development for dynamic systems

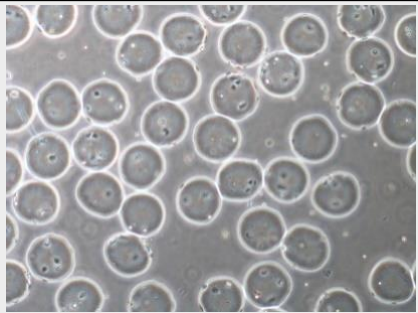
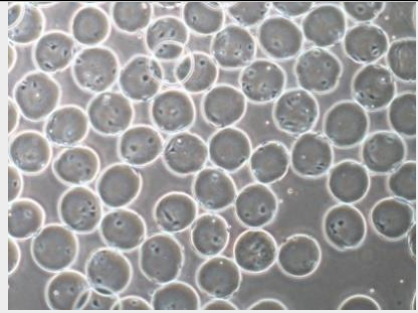
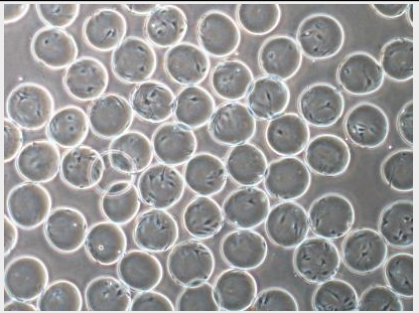
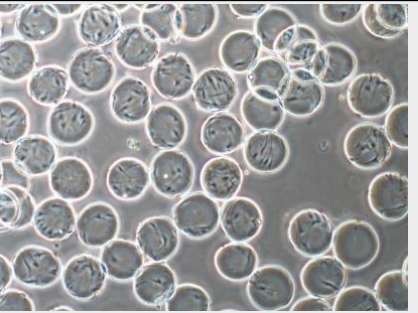
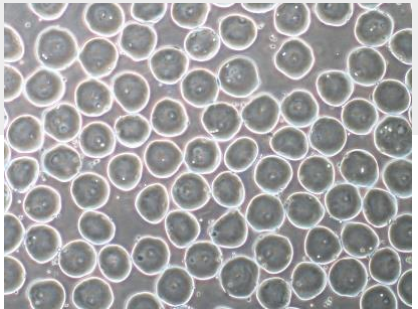
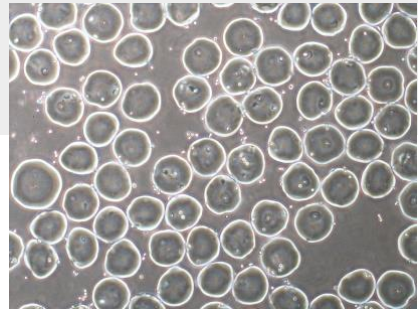
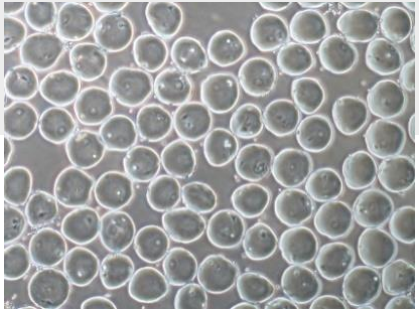
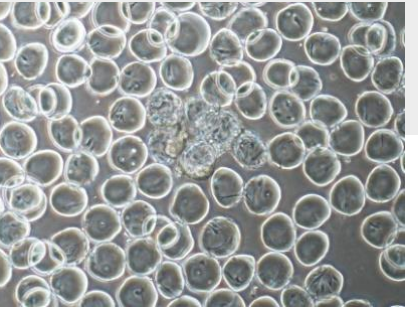
- Microcarrier process considerations
  - Seeding efficiency
  - Cell motility
  - Minimize aggregation
  - Harvest efficiency
- Microcarrier process parameters
  - Seeding density
  - Agitation regime
  - Expansion timing
  - Microcarrier concentration





# Process development for dynamic systems

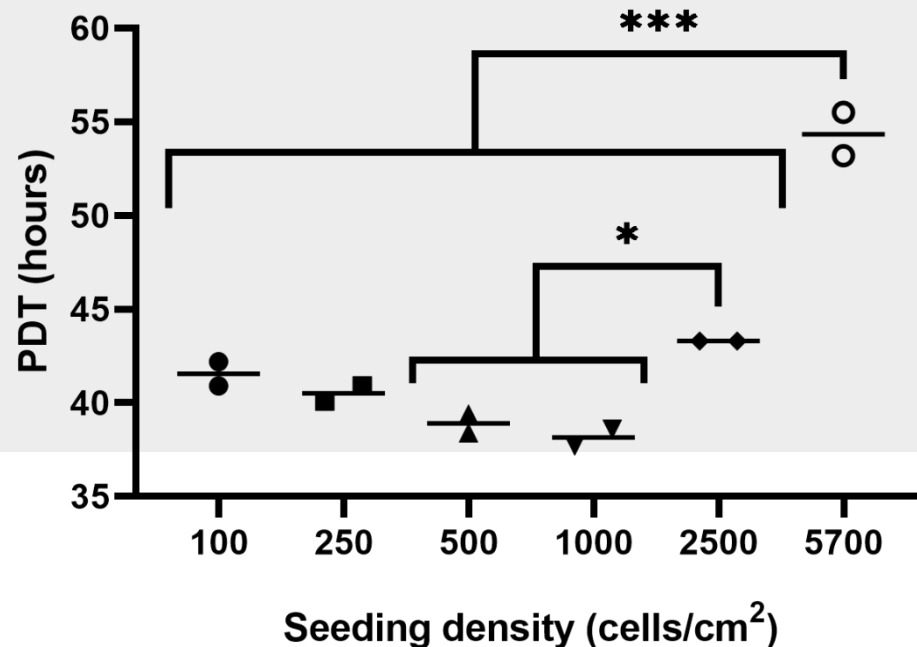
- Investigate efficiency in multiple microcarriers
- Investigate attachment kinetics

Microcarrier coating	1h	2h	4h	24h
Collagen				
Vitronectin				



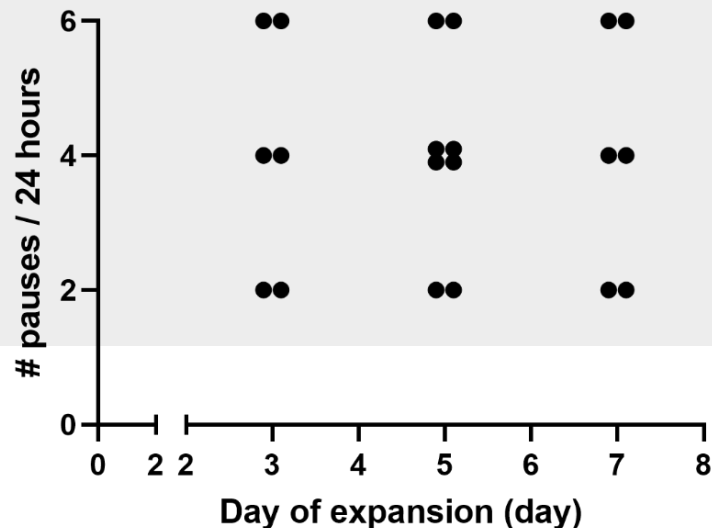
# Process development for dynamic systems

- Investigate efficiency in multiple microcarriers
- Investigate attachment kinetics
- Investigate allowable seeding densities

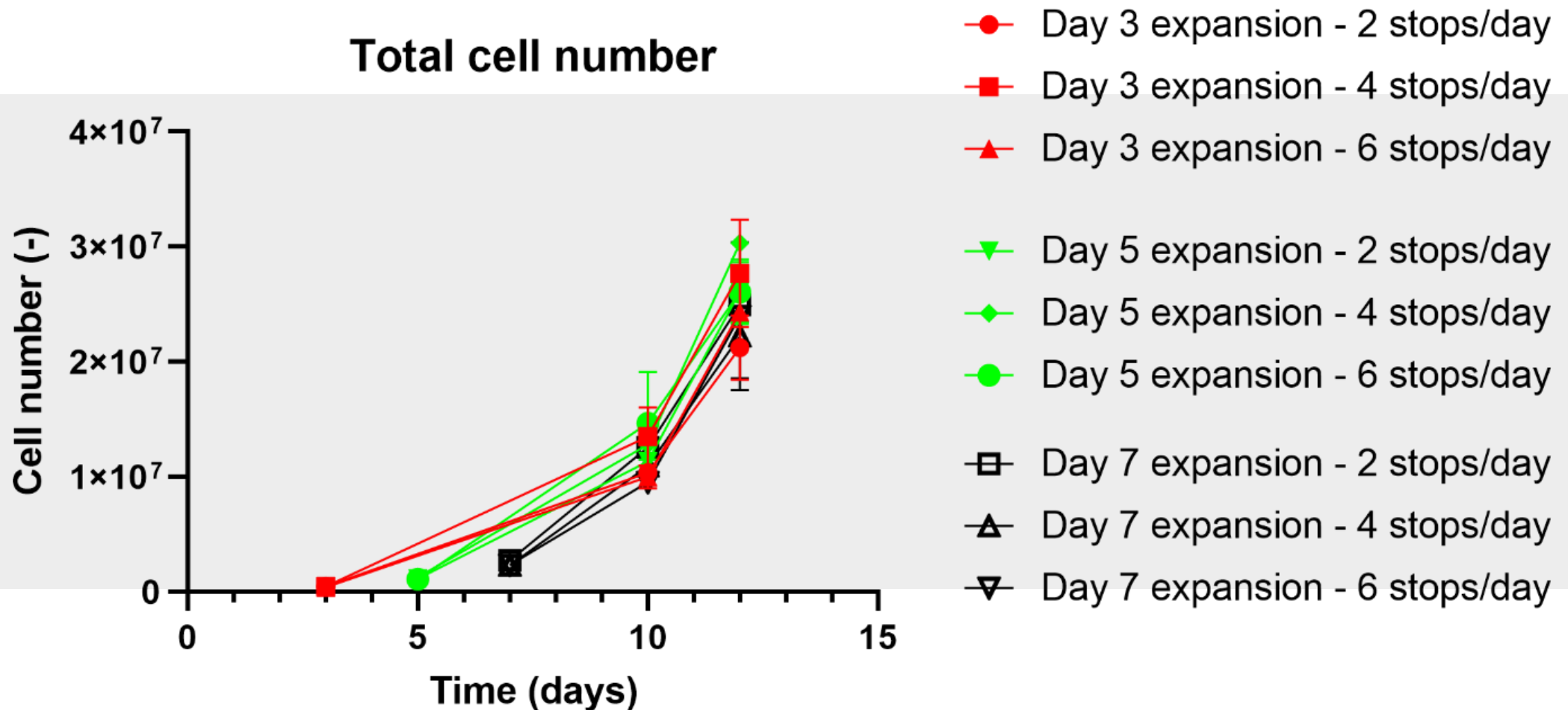


# Process development for dynamic systems

- Use Design-of-Experiments for multi-parameter optimization where appropriate
- Design space for e.g. agitation rate, expansion timing, MC density
- Use quantifiable responses (e.g. PDT, distribution)



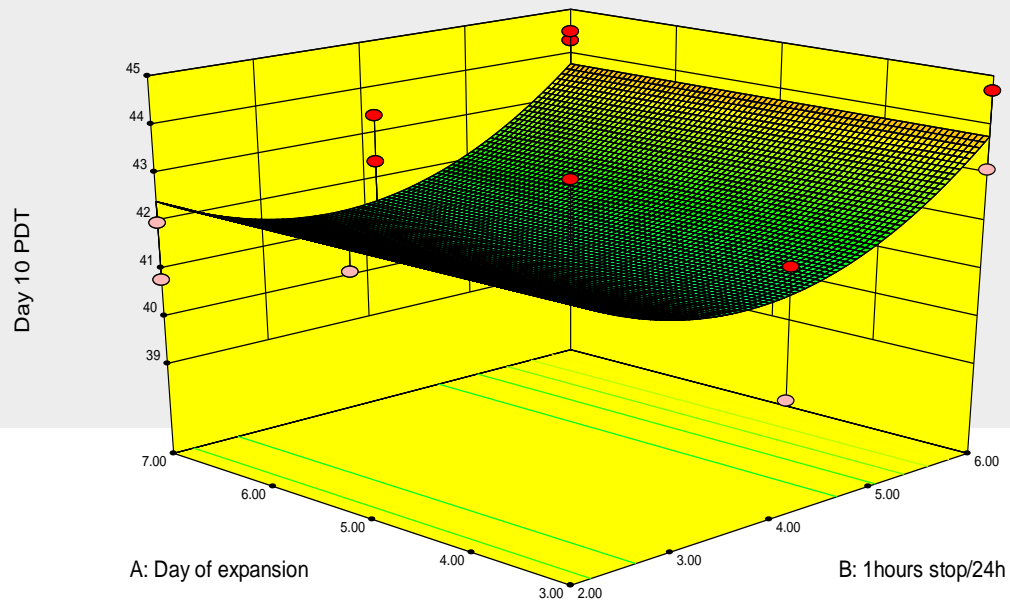
# Process development for dynamic systems



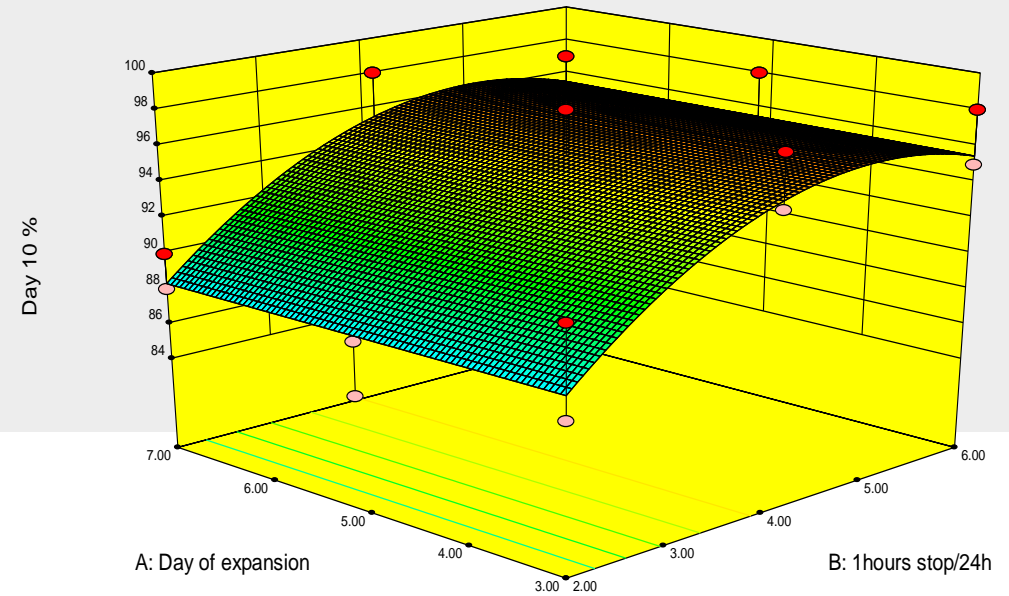
# Process development for dynamic systems

- Day of expansion is not a significant term, agitation regime is

PDT response curve

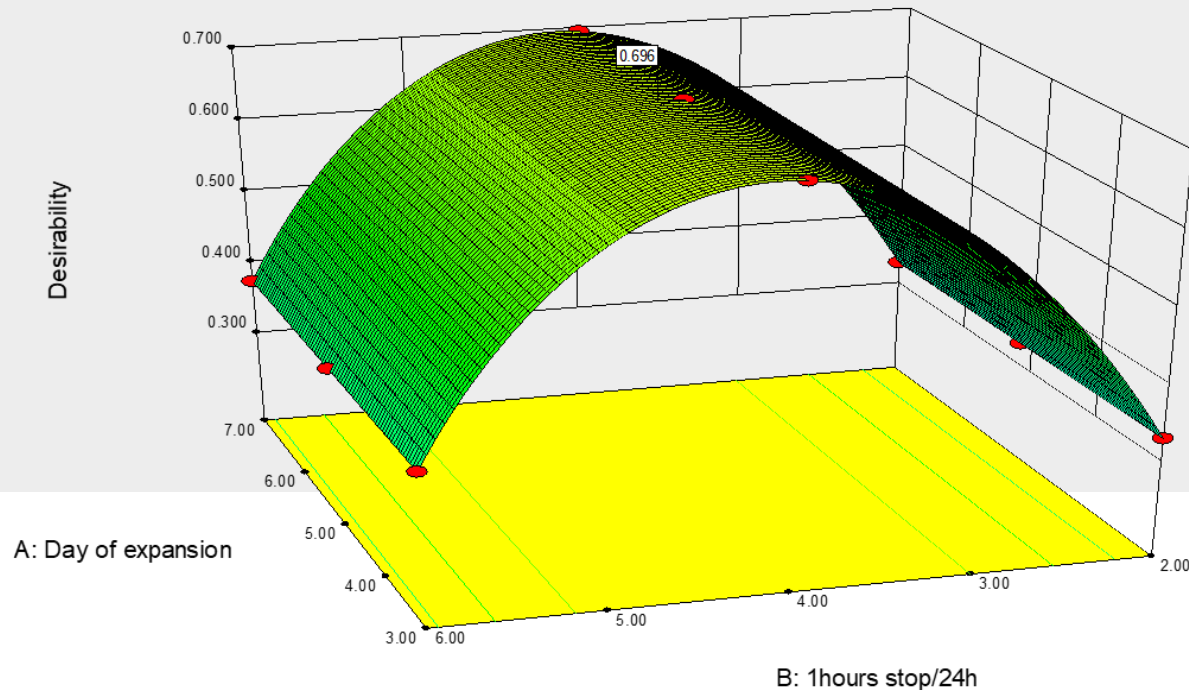


Distribution response curve



# Process development for dynamic systems

- Optimize for model terms (PDT and distribution)
- Optimum at day 5\*, and 4 pauses per 24 hours



\* Not a significant factor



Prof. Bronkhorstlaan 10, bld 48  
3723 MB Bilthoven  
The Netherlands  
[info@scinus.com](mailto:info@scinus.com)