

# Nunclon<sup>™</sup> Supra Cell Culture Surface

An enhanced culture surface for MSCs and primary cells



The world leader in serving science

# **Thermo Scientific™ Nunclon™ Supra surface**

UNCLON SUPRA

#### Features

- Enhanced tissue culture surface treatment
- Wide variety of formats and sizes for ease of scaling up and down
- 5 year shelf-life
- Sterilized to SAL 10<sup>-6</sup> per ISO 11137
- Non-pyrogenic, Non-cytotoxic
- Biocompatible per USP Class VI



#### **Highlights**

- Developed to enable better cell culture with difficult-to-culture cells
- Demonstrated compatibility with >40 cell lines and cell types, including those used in cell therapy research applications.
- Increases ease-of-use for many types of finnicky cell lines and primary cells by enhancing cell yield, confluency, or morphology as compared to other cell culture surfaces.
- Enables coating-free and serum-free culture of hMSCs (patent pending)

Flasks and multi-dishes have a 'Nunclon Supra' sticker to distinguish from 'Nunclon Delta' products

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# **Primary Cells on Supra**

#### Primary cell performance:



**Reduced time for adherence,** allowing for cells to start proliferating faster.



**Improved morphology,** indicating healthier growing cells.



**Improved cell yield and confluency**, providing more cells in the same amount of culture time.





Human Dermal Fibroblats on Nunclon Supra









#### HUVEC on Nunclon Supra







# **MSCs on the Supra cell culture surface**

#### Mesenchymal stromal cells (MSCs) performance:



Supra allows for **xeno-free cell culture**, ideal for clinical research applications with MSCs.



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Supra does not need a coating to grow MSCs allowing for **easier and faster workflows**.

Supra grows MSCs without serum which can **improve reproducibility**, by limiting the need for this animal-derived component.



#### Morphology Over Multiple Passages



# Adipose tissue-derived mesenchymal stromal cells (ADSCs) on the Supra Surface



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The Nunclon Supra cell culture surface supports ADSC growth under serum-free and coating-free conditions

ADSCs cultured on uncoated Nunclon Supra performed equivalently to those grown on Nunclon Delta surface coated with Gibco<sup>™</sup> CELLstart<sup>™</sup> substrate with respect to morphology, cell growth, phenotype, and trilineage differentiation potential. CD90, CD73, and CD105 are positive markers for ADSCs. CD34, CD45, CD14, and CD79α are negative markers for ADSCs.

# **Competitive advantages – cell culture performance**

The Nunclon Supra surface demonstrated exceptional performance as compared to existing cell culture-treated surfaces for the following cells:

Primary cells	Cell lines		
Human Dermal Fibroblast, adult	LNCaP		
Human Dermal Fibroblast, neonatal	F9		
Human Aortic Endothelial Cells			
Human Umbilical Vein Endothelial Cell			
Human Aortic Smooth Muscle Cells			
Human Coronary Artery Smooth Muscle Cells			
Human Pulmonary Artery Smooth Muscle Cells			
Adipose-tissue Derived Mesenchymal Stromal Cells			
Bone Marrow Derived Mesenchymal Stromal Cells			
Wharton's Jelly Derived Mesenchymal Stromal Cells			

# Success with a wide range of cell types

The Nunclon Supra surface has undergone extensive testing to demonstrate compatibility with a variety of cell types, providing researchers with more flexibility and options for their experiments.

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Primary cells	Cell lines		
Human Mammary Epithelial Cells	COS7	BeWo	SKBR3
Human Astrocytes	SH-SY5Y	COLO 205	THP1
Human Skeletal Myoblasts	NIH3T3	MDCK	HaCaT
Normal Human Bronchial Epithelial Cells	hTERT-RPE	A-431	MEF
Human Epidermal Melanocytes, neonatal, light pigmentation	T98G	SCC-15	MCF10A
Induced Pluripotent Stem Cells	MIA PaCa-2	NTERA2	HMEC-1
Neural Stem Cells	HeLa	RAW 264.7	MCF7
iPSC-derived Cardiomyocytes	BJ	Neuro-2A	MDAMB231

# **Cell compatibility data**

# Human umbilical vein endothelial cells (HUVECs)



# Morphology Prigrating Nunclon Delta Nunclon Supra Supplier Image: Price Price

# HUVECs grow exceptionally well on the Nunclon Supra cell culture surface.

HUVECs were cultured on Nunclon Delta, Supra, and another supplier's surfaces. Culture on the Nunclon Supra surface resulted in improved cell confluency compared to on the Nunclon Delta or another supplier's surface (N = 2). Also, the cells grown on the Nunclon Supra surface retained their tube-forming capability in angiogenesis.



# Human dermal fibroblasts, adult (HDFa)







#### **Scratch assay** 0 hr 17 hr 100-Nunclon Delta Nunclon Delta Scratch closure (%) Nuncion Supra 80· 60· 17063 120 mm. 21Enn Mich Rallinson 2015 **40** Nunclon 20 Supra ont 7 m Mailmon 21 1700 17000 215

#### HDFa thrive on the Nunclon Supra cell culture surface.

HDFa cells were cultured on Thermo Scientific<sup>™</sup> Nunclon<sup>™</sup> Delta<sup>™</sup>, Supra<sup>™</sup>, and another supplier's surfaces. Culture on the Nunclon Supra surface resulted in higher confluency and cell yield than on the Nunclon Delta or another supplier's surface (N = 2 vessels, per bar). HDFa also demonstrated normal morphology via actin (green) organization on Nunclon Supra surfaces, while achieving higher confluency. A scratch assay resulted in faster closure for HDFa cells cultured on the Nunclon Supra surface (N = 3 wells, per bar, with 3–4 measurements per well).

## Human dermal fibroblasts, neonatal (HDFn)





#### HDFn thrive on the Nunclon Supra cell culture surface.

HDFn cells were cultured on Nunclon Delta, Supra, and other supplier's surfaces. Culture on the Nunclon Supra surface resulted in higher confluency and cell yield than on the Nunclon Delta or another supplier's surface (N = 2 vessels, per bar). The cells also demonstrated normal morphology via actin (green) organization on the Nunclon Supra surface, while achieving higher confluency. A scratch assay resulted in faster closure for HDFn cells cultured on the Nunclon Supra surface (N = 3–4 wells, per bar, with 1–3 measurements per well).



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# Human aortic endothelial cells (HAECs)



#### HAECs thrive on the Nunclon Supra cell culture surface.

HAECs were cultured on Nunclon Delta, Supra, and other supplier's surfaces. Culture on the Nunclon Supra surface resulted in higher confluency and cell yield than on the Nunclon Delta or another supplier's surface (N = 2 vessels, per bar). The cells also demonstrated normal morphology via actin (green) organization on the Nunclon Supra surfaces while achieving higher confluency.

#### Human aortic smooth muscle cells



#### Human aortic smooth muscle cells grow exceptionally well on the Nunclon Supra cell culture surface.

Human aortic smooth muscle cells were cultured on Nunclon Delta and Supra surfaces. Culture on the Nunclon Supra surface resulted in enhanced cell yield (N = 2 T-75 vessels, per bar) compared to on the Nunclon Delta and another supplier's surfaces. The cells also demonstrated normal morphology on the Nunclon Supra surface compared to on the Nunclon Delta and another supplier's surfaces.

#### Human coronary artery smooth muscle cells



#### Human coronary artery smooth muscle cells are exceptional on the Nunclon Supra cell culture surface.

Human coronary artery smooth muscle cells were cultured on Nunclon Delta and Supra surfaces.

Culture on the Nunclon Supra surface resulted in enhanced cell yield (N = 2 T-75 vessels, per bar) compared to on the Nunclon Delta and another supplier's surfaces. The cells also demonstrated normal morphology on the Nunclon Supra surface compared to on the Nunclon Delta and another supplier's surfaces.

# Human pulmonary artery smooth muscle cells



#### Human pulmonary artery smooth muscle cells are exceptional on the Nunclon Supra cell culture surface.

Human pulmonary artery smooth muscle cells were cultured on Nunclon Delta and Nunclon Supra surfaces. Culture on the Nunclon Supra surface resulted in enhanced cell yield (N = 2 T-75 vessels, per bar) compared to on the Nunclon Delta and another supplier's surfaces. The cells also demonstrated normal morphology on the Nunclon Supra surface compared to on the Nunclon Delta and another supplier's surfaces.

# Lymph node carcinoma of the prostate (LNCaP)



#### LNCaP cells have better morphology on the Nunclon Supra cell culture surface.

LNCaP cells were seeded onto 6-well Nunclon Delta, Supra, and another supplier's dishes. Cells showed better confluency and morphology (less clumping) on the Nunclon Supra surface compared to on the Nunclon Delta and another supplier's surfaces. N = 2.

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#### F9 cells



#### F9 cells attach better on the Nunclon Supra cell culture surface than on the Nunclon Delta surface.

The Nunclon Supra surface supports better attachment of F9 cells even with the gelatin coating at 1/10 of the recommended amount, as indicated by (A) more defined cell boundaries and (B) better confluency on the Nunclon Supra surface compared to on the Nunclon Delta surface. (C) There was no significant difference in cell yields between the two surface types.

## **Supra Surface Information**

Application Note: <u>Nunclon Supra surface treatment enables</u> <u>serum- and coating-free culturing of</u> <u>mesenchymal stromal cells</u>

#### Flyer: Nunclon Supra surfaces for xeno-free hMSC culture

Supra Webpage: thermofisher.com/supra



thermo scientific

Cell viability (CV) was determined by the trypan blue exclusion

method, and CV on the two surfaces was comparable (data

surface supports good hMSC attachment and proliferation

without an ECM protein coating in serum-free conditions.

not shown). These results demonstrate that the Nunclon Supra

able to attach to the hydrophilic surface and become confluent.

Three types of hMSCs were tested on the Nunclon Supra

surface: adipose tissue-derived stem cells (ADSCs), bone

MSCs (WJMSCs). All MSCs grown on the Nunclon Supra

marrow-derived MSCs (BMMSCs), and umbilical cord-derived

# **Ordering information**

	Catalog #	Name	Pack size	Case size
<b>Plates</b>	140680	Nunc™ 6 Well Plate, Nunclon™ Supra	1	75
	140681	Nunc™ 12 Well Plate, Nunclon™ Supra	1	75
	140682	Nunc™ 24 Well Plate, Nunclon™ Supra	1	75
	140683	Nunc™ 48 Well Plate, Nunclon™ Supra	1	75
	167013	Nunc™ 96 (F) Well Plate, Nunclon™ Supra	1	50
O Dishes	150470	35mm EasYDish™, Nunclon™ Supra	10	500
	150472	60mm EasYDish™, Nunclon™ Supra	10	280
	150474	100x15mm EasYDish™, Nunclon™ Supra	10	150
	150476	100x20mm EasYDish™, Nunclon™ Supra	10	240
	150478	150mm EasYDish™, Nunclon™ Supra	10	80
<b>Flasks</b>	156372	T25 EasYFlask™, Nunclon™ Supra, Filter Cap	10	200
	156374	T25 EasYFlask™, Nunclon™ Supra, Vent/Close Cap	10	200
	156376	T75 EasYFlask™, Nunclon™ Supra, Filter Cap	5	100
	156378	T75 EasYFlask™, Nunclon™ Supra, Vent/Close Cap	5	100
	156380	T175 EasYFlask™, Nunclon™ Supra, Filter Cap	5	30
	156382	T175 EasYFlask™, Nunclon™ Supra, Vent/Close Cap	5	30

# Thank you

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