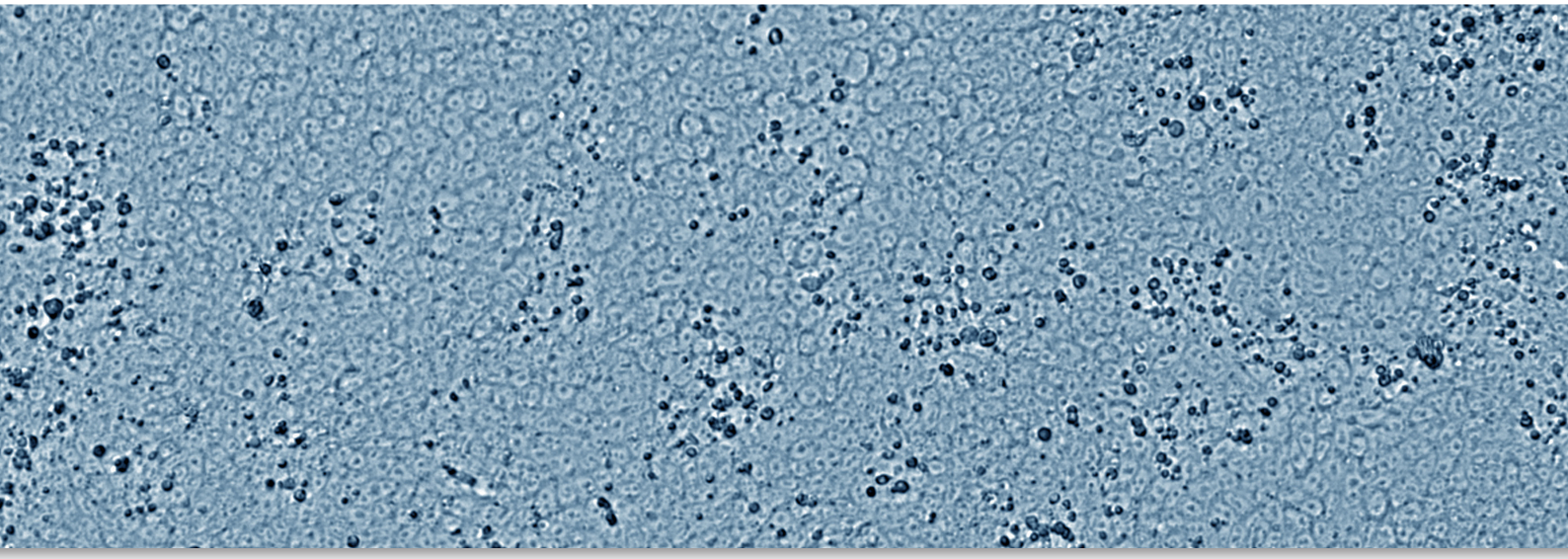
APPLICATION NOTE 004

BioLamina
REVOLUTIONIZING CELL CULTURE

BIOLAMININ 521 STEM CELL MATRIX

DERIVATION AND EXPANSION OF PLURIPOTENT STEM CELLS

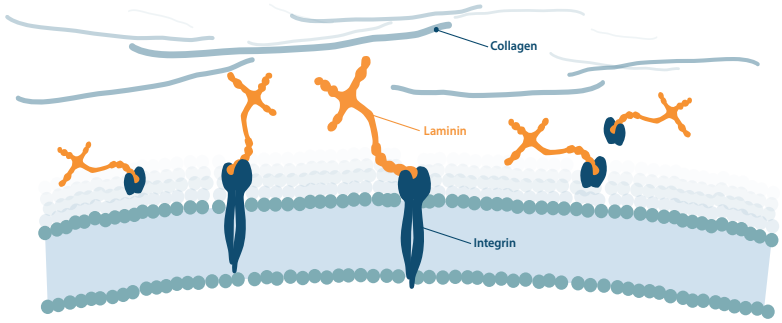


EASY SINGLE-CELL PASSAGE OF HUMAN ES AND iPS CELLS WITHOUT ROCK INHIBITORS

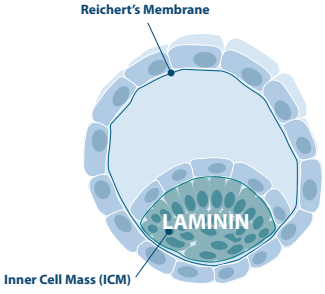
Biolaminin 521 LN (LN521) is a full-length, human, recombinant laminin 521 cell culture substrate. It provides an optimal environment for feeder-free culture of human PSCs, MSCs and most anchorage-dependent progenitor cell types under chemically defined, animal component-free conditions. LN521 renders a single-cell passage hPSC culture system that is medium independent and offers a weekend-free protocol. Importantly, the cells behave predictably, are homogenously pluripotent and karyotypically stable.

BIOLOGICAL RELEVANT FOR STEM CELLS

Laminins are glycoproteins in the basement membranes surrounding virtually all cells. Laminins bind to cell surface receptors activating cell signaling cascades, leading to more functional and authentic cells.



Laminin 521 is a key basement membrane protein of the natural stem cell niche and is expressed and secreted by hPSCs in the inner cell mass of the embryo. LN521 therefore supports reliable expansion of hESCs and hiPSCs and subsequent cell lineage specification. It also has a positive effect on stabilizing and homogenizing the pluripotent gene expression profiles between different hESC lines.



* ISCT guidance document "ISCT Animal-Free Origin Survey Results-Summary"

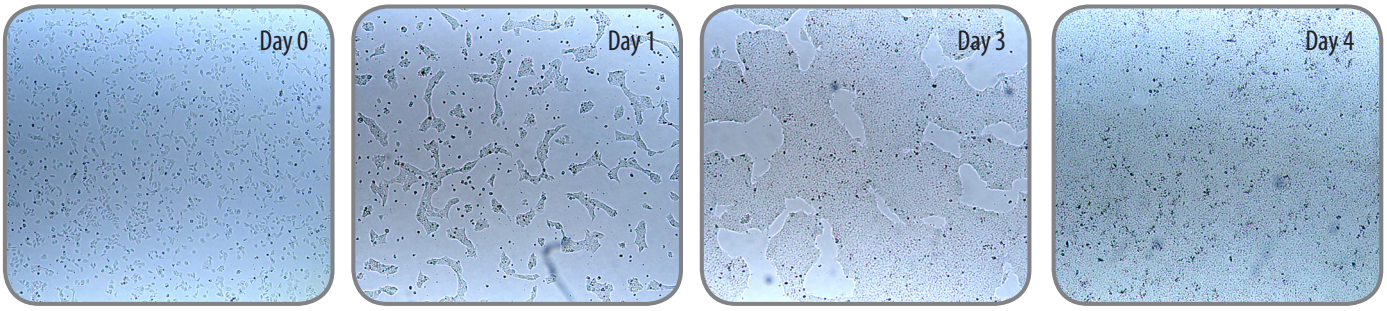
FEATURES AND SPECIFICATIONS:

- **Defined and animal component-free to the primary level***
- **Biologically relevant hPSC culture environment**
- **Homogenous and genetically stable hPSC cultures**
- **Easy and flexible culture system**
- **Consistent and reliable performance**
- **Rapid scale-up**
- **Supports a weekend-free feeding regime**
- **More efficient differentiation and enhanced cell maturation, polarization and organization**
- **Scientifically proven**
- **For research use only**

Direct link to Biolaminin 521 LN information online

ID: AN-004-07. Valid from 2019-06-11

ROBUST, HOMOGENOUS, MONOLAYER EXPANSION OF hPSCs ON LN521



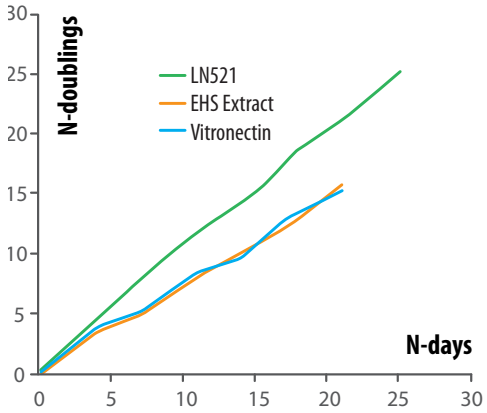
- Single-cells seeding at low density
- No apoptosis inhibitors (ROCKi) needed
- Good for derivation and gene editing

- Cells show high motility
- Allows clonal survival

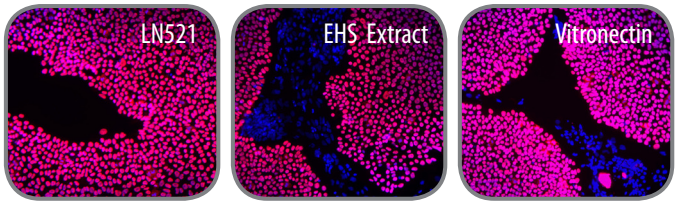
- Monolayer growth
- Cells getting tighter and smaller
- No spontaneous differentiation

- Can grow near confluence
- Passage with enzyme or EDTA
- Compliant with any serum-free medium

FASTER EXPANSION OF CELLS ON LN521



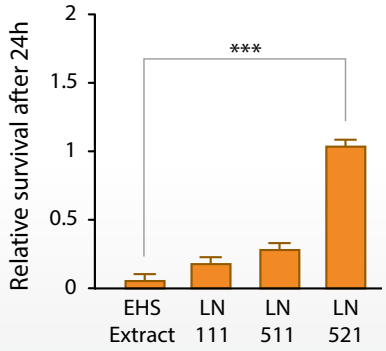
NO SPONTANEOUS hPSC DIFFERENTIATION



When cells are cultured on LN521, the cells remain pluripotent (Oct4+; pink) and no areas of differentiation (only DAPI; blue) are visible as compared to cells cultured on other substrates.

ID: AN-004-07. Valid from 2019-06-11

HIGHER CELL SURVIVAL ON LN521



EASY & RELIABLE PROTOCOL

1. Coat plates with LN521
2. Wash confluent cells with PBS and add dissociation enzyme or EDTA - incubate
3. Dissociate into a single-cell suspension, centrifuge and resuspend pellet in fresh medium of choice
4. Seed the cells on fresh LN521 coated plates

REFERENCES

- Clonal culturing of human embryonic stem cells on laminin-521/E-cadherin matrix in defined and xeno-free environment. Rodin et al. Nat Commun. 2014
- Monolayer culturing and cloning of human pluripotent stem cells on laminin-521 based matrices under xeno-free and chemically defined conditions. Rodin et al. Nature Protocols. 2014
- a-5 Laminin Synthesized by Human Pluripotent Stem Cells Promotes Self-Renewal. Laperle et al. Stem Cell Reports, 2015
- Higher-Density Culture in Human Embryonic Stem Cells Results in DNA Damage and Genome Instability. Jacobs et al. Stem Cell Reports, 2016
- Laminin 521 stabilizes the pluripotency expression pattern of human embryonic stem cells initially derived on feeder cells. Albalushi et al. Stem Cell International, 2017

KEEP IN TOUCH
TEL: +46-8-5888 5180
EMAIL: SALES@BIOLAMINA.COM

BIOLAMINA AB
LÖFSTRÖMS ALLÉ 5A
STOCKHOLM, SWEDEN

www.biolamina.com

BIOLAMINA - REVOLUTIONIZING CELL CULTURE