

MATRIXOME

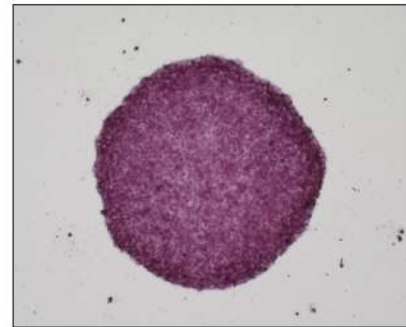
iMatrix Portfolio

Human Recombinant Laminin-E8 Fragment Substrates for Your Cells

Introducing Matrixome's iMatrix Series

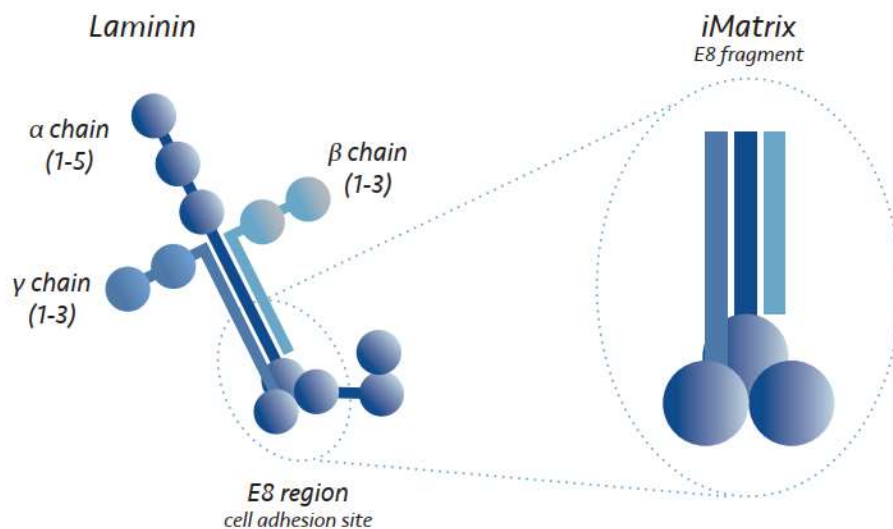
Scientists looking for better support for their cells turn to iMatrix, a cell culture substrate made of human recombinant Laminin E8 protein fragments.

- feeder-free cell culture
- superior adhesion to human ES and iPS cells
- enables the passaging of single cells
- eliminates the need to pre-coat plates
- makes it easy to achieve extended cultures of hES/hiPS cells



ALP staining of 201B7 hiPS cell colony cultured on iMatrix-511.

The Biology behind the Technology

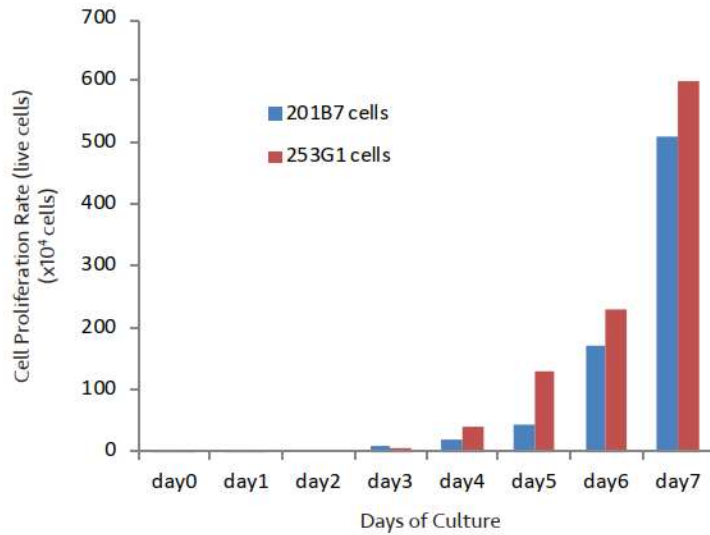


Laminins are an essential component of the extracellular matrix and make up a large portion of the basement membrane. They support and regulate cell growth, motility and differentiation.

Laminins are trimeric proteins made up of α , β and γ chains and the nomenclature of the different isoforms is based on the type of chain that it contains.

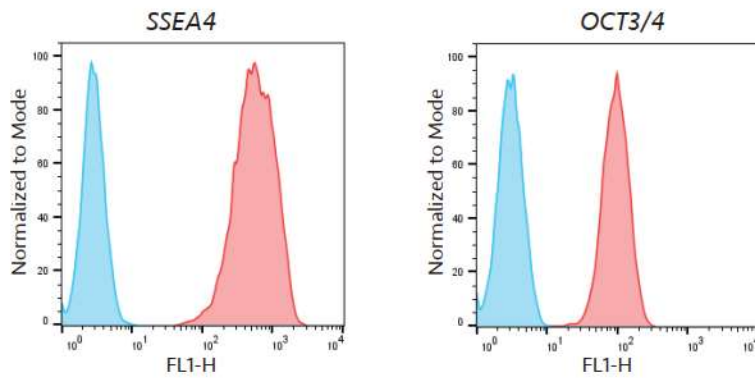
Of note, laminin 511 is expressed during embryogenesis and research by Professor Kiyotoshi Sekiguchi at Osaka University in Japan has unveiled that the cellular adhesion site is located in what is named the E8 region. Through his work, it was also found that the laminin E8 fragment provided superior performance as a substrate compared to full-length laminin.

Superior Cell Proliferation & Viability



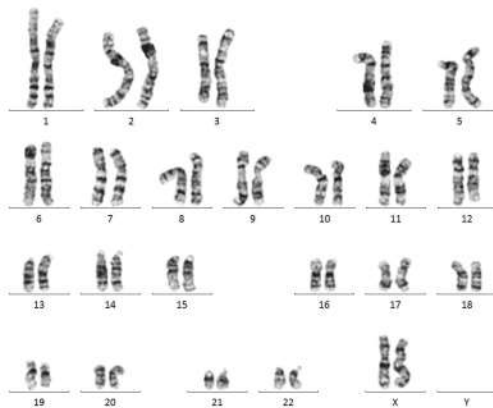
Cell proliferation of two cell lines, 201B7 and 253G1 hiPSCs over 7 days of culturing on iMatrix-511 at a concentration of 0.5 $\mu\text{g}/\text{cm}^2$. Cells were seeded at 2.0×10^4 cells/well and cultured in Ajinomoto's StemFit medium.

Retention of Stem Cell Markers



Flow cytometry showing expression of SSEA4 and Oct3/4 in 253G1 hiPSCs after ten passages on iMatrix-511.

Stable Karyotype



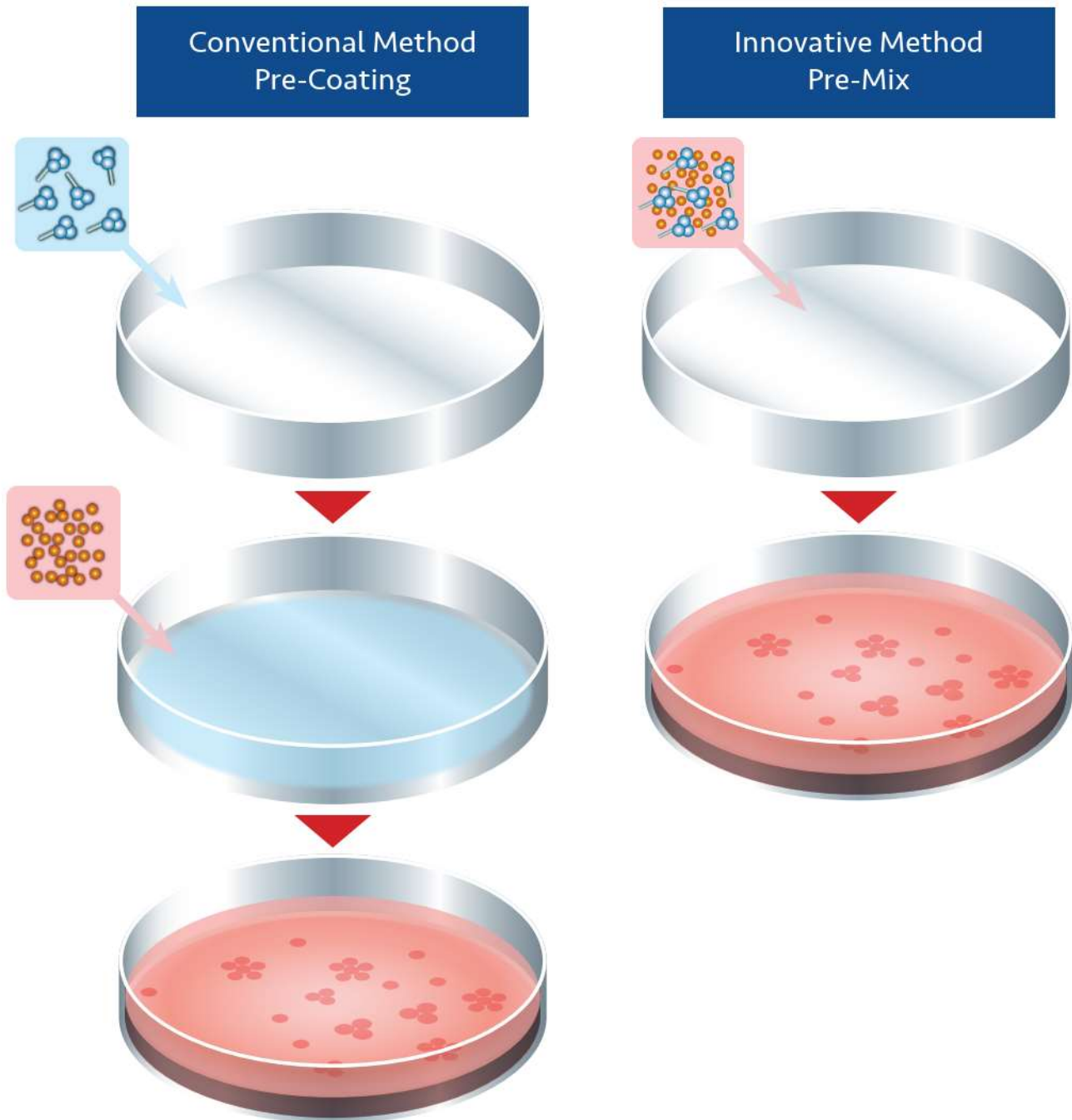
Normal karyotype (46, XX) found in 253G1 hiPSCs after ten passages.

Eliminate Pre-Coating with the Pre-Mix Method

At Matrixome, we believe in progress and innovation. This means embracing new technology and finding better ways to do things. With the pre-mix method, cell culturing is a breeze. Only with iMatrix can you eliminate the time-consuming process of pre-coating.

Simply add iMatrix to the cell suspension at passaging and plate.

- No need to prepare unnecessary spare pre-coated wells
- No incubation
- Less proteins needed



Reference

Miyazaki, T, et al. Efficient adhesion culture of human pluripotent stem cells using laminin fragments in an uncoated manner. *Scientific Reports*, 7:41165, (2017)

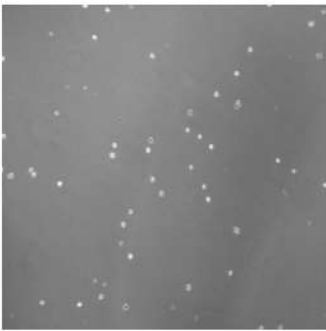
iMatrix-511



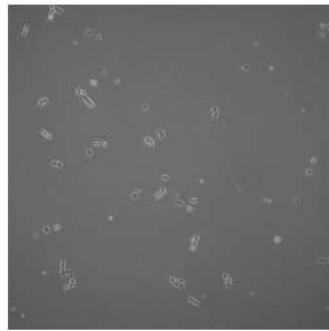
For maintenance and expansion of pluripotent stem cells

In the human body, the laminin 511 isoform is instrumental to the growth and maintenance of hPSCs through its binding to cell receptors $\alpha 6 \beta 1$ integrin. iMatrix-511 allows for single-cell seeding at low density, and the cells show high motility allowing clonal survival. The cells become tighter, are arranged in a monolayer, and can grow near confluence. iMatrix-511 easily enables extended culture of human pluripotent stem cells.

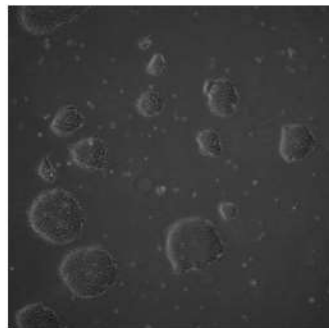
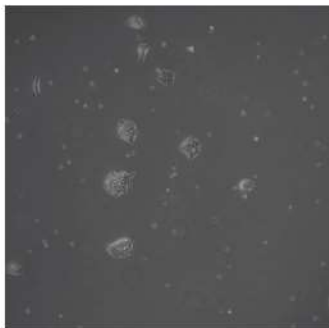
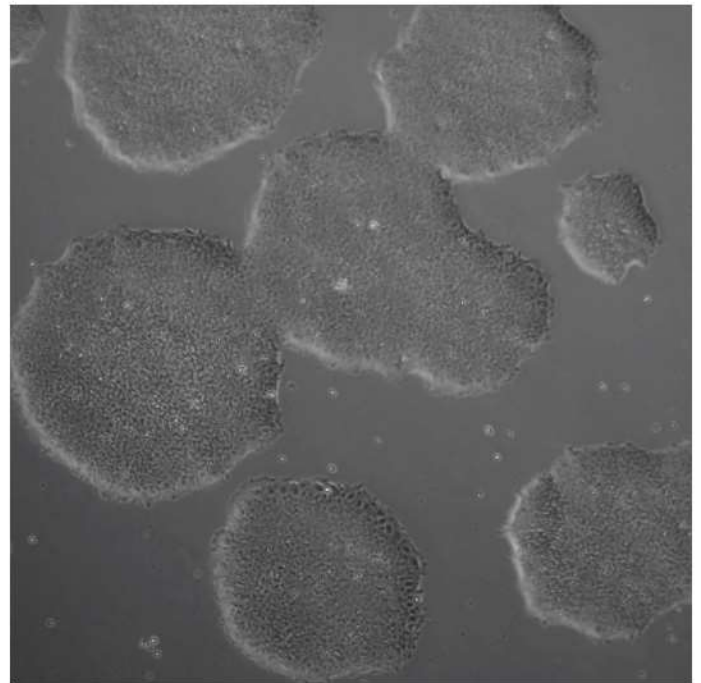
Day 0



Day 1



Day 7



Day 3

Day 5

Colony Morphology of human iPS cells 201B7 over 7 days of culturing.

References

Kikuchi, T. et al., Human iPS cell-derived dopaminergic neurons function in a primate Parkinson's disease model. *Nature*, 548, 592-596, (2017)

Camp, J. G. et al., Multilineage communication regulates human liver bud development from pluripotency. *Nature*, 546, 533-538, (2017)

Hayashi, R. et al., Co-ordinated ocular development from human iPS cells and recovery of corneal function. *Nature*, 531(7594), 376-380, (2016)

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**CHECK OUT OUR WEBSITE
FOR MORE REFERENCES**

iMatrix-511 MG



For pluripotent stem cells meant for clinical research & applications

iMatrix-511 MG meets the Standards for Biological Ingredients set by the Japanese Authority, Pharmaceuticals and Medical Devices Agency (PMDA). The regulation is one of the strictest in the world and iMatrix-511 MG not only fulfills regulatory requirements, it has since been used for a number of high-profile clinical applications in Japan:

- Center for iPS Cell Research & Application (CiRA)
Clinical iPSC Stock Project
- Kyoto University
Institute for Frontier Life & Medical Sciences
Embryonic Stem Cell Banking Project

iMatrix-511 MG is not intended to diagnose, treat, cure, or prevent any disease. This product is not a medical device.

This product is exclusively sold direct from Matrixome, Inc. For sales outside of Japan, please email us at info@matrixome.co.jp for more information.

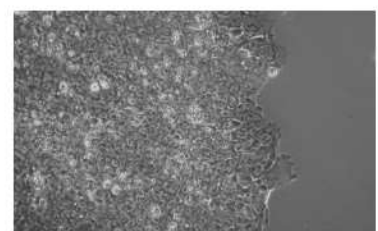
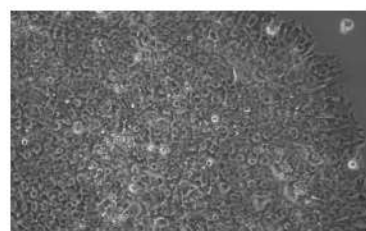
iMatrix-511 silk



For maintenance and expansion of pluripotent stem cells

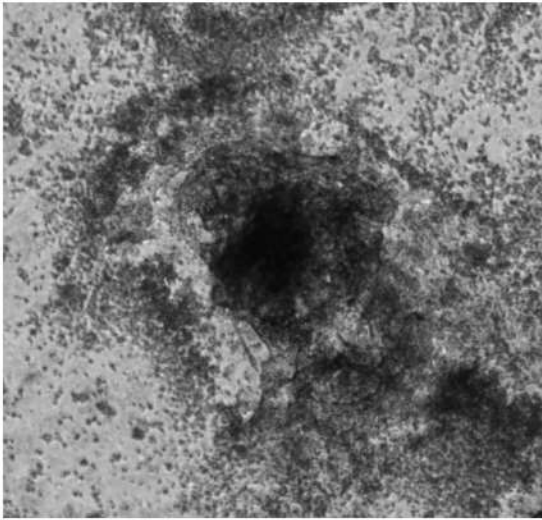
iMatrix-511 silk is made from silkworm cocoon and offers comparable performance. For Research Use Only.

	iMatrix-511	iMatrix-511 silk
Total Cell #	3.9x10 ⁶	3.6x10 ⁶
Seeding Cell #	2.0x10 ⁴	2.0x10 ⁴
Expansion Rate	185	165



Comparison of 253G1 hiPSCs after 7 days in culture on iMatrix-511 (left) and iMatrix-511 silk (right).

iMatrix-221



Watch the beating cardiomyocyte cultured on iMatrix-221 on our website.

For enrichment and maintenance of cardiomyocytes

Laminin 221 is abundantly present in the basement membrane of muscle tissues such as cardiac muscle and skeletal muscles and is thought to be involved in muscle cell differentiation and functional maintenance.

Laminin 221 and laminin 211 are known to bind to integrin $\alpha7\beta1$ protein, which is selectively expressed in muscle tissue, in particular, in cardiac muscle cells and skeletal muscle cells.

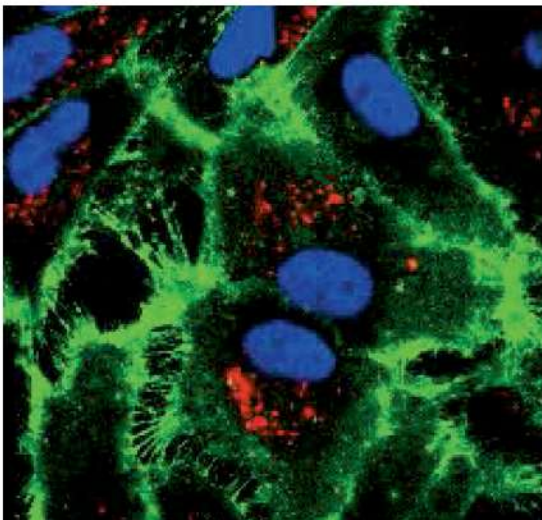


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Method for producing cardiomyocyte population
from pluripotent stem cells. Patent Publication
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*Molecular mechanisms of the laminin-integrin interaction for myocardiocytes
Israeli-Rosenberg et al, Circ. Res. 114: 572-586, 2014
Taniguchi et al, J. Biol. Chem. 284(12): 7820-31, 2009
Nishiuchi et al, Matrix Biol. 25(3): 189-97, 2006*

iMatrix-411



Phenotypes of endothelial cells induced from PSCs on iMatrix-411 coated plates. The presence of endothelial cells is marked by the red acetyl-LDL uptake and the green CD31 expression while the blue DAPI staining indicates its nucleus.

Ohta R. et al., Scientific Reports, 6(35680) 1-12, 2016.

For induction of vascular endothelial cells from hPSCs

Laminin 411 is the major isoform that lines the basement membrane of endothelial cells in capillary vessels and binds mainly to the cell surface transmembrane receptors integrin $\alpha6\beta1$. iMatrix-411 contains the essential laminin-411 E8 fragment to efficiently induce vascular endothelial cells from hPSCs.

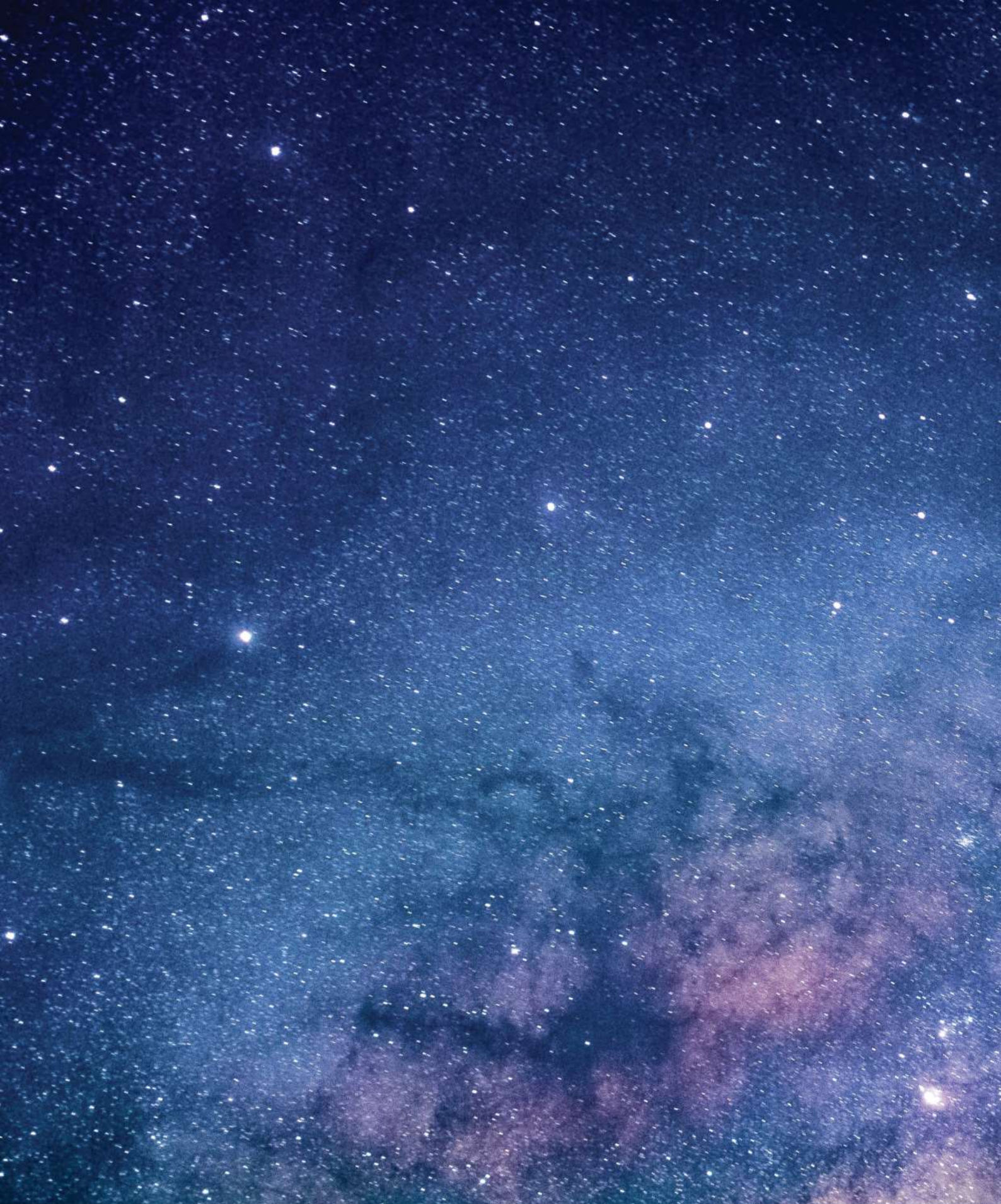
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