

## Product Description:

Basement membranes are continuous sheets of specialized extracellular matrix that form an interface between endothelial, epithelial, muscle, or neuronal cells and their adjacent stroma. Basement membranes are degraded and regenerated during development and wound healing. They not only support cells and cell layers, but also play an essential role in tissue organization that affects cell adhesion, migration, proliferation, and differentiation. Basement membranes provide major barriers to invasion by metastatic tumor cells.

**Vivogel Matrix** is a solubilized basement membrane extracted from the Engelbreth-Holm-Swarm (EHS) mouse tumor that comprises extracellular matrix proteins including laminin (glycoprotein), collagen IV, nidogen (glycoprotein), perlecan (heparan sulfate proteoglycan), and many other essential growth factors. **Vivogel Matrix** has empowered applications such as stem cell culture, angiogenesis assays, and tissue engineering.

**Vivogel StemCoat Matrix** has been shown to provide an effective feeder-free surface for the attachment and maintenance of undifferentiated human embryonic stem cells (hESCs) and induced pluripotent stem cells (iPSCs). It is useful for promoting the expansion of pluripotent stem cells or for the study of stem cell differentiation.

## Product Specifications:

Concentration: 8 - 12 mg/mL.

Source: Murine Engelbreth-Holm-Swarm (EHS) tumor.

Buffer: DMEM (with phenol red), with 10 µg/mL gentamicin.

Stability: Product is stable for two years from date of manufacture. See lot specific Certificate of Analysis for expiration date.

Storage: -80 °C for long-term storage. Do not use **Vivogel StemCoat Matrix** that has been stored at 4 °C for more than 24 h. Please aliquot upon receipt of the product. Avoid multiple freeze-thaw cycles.

## Precaution:

When handling biohazardous materials such as human cells, safe laboratory procedures should be followed, and protective clothing should be worn.

## Limitations:

- FOR LABORATORY RESEARCH USE ONLY. NOT FOR USE IN DIAGNOSTIC PROCEDURES.
- The safety and efficacy of this product in diagnostic or other clinical uses has not been established.
- Results may vary due to variations among tissue/cells derived from different donors or sources.

## Material Qualifications:

### A. STERILITY TESTING

- Tested negative by PCR test for 31 organisms and viruses, including: mycoplasma, 17 bacterial and
- virus strains typically included in mouse antibody production (MAP) testing, and 13 additional murine infectious agents including LDEV.
- Tested following USP sterility guidelines.
- Endotoxin concentration  $\leq$  8 EU/mL by LAL assay.

### B. FUNCTIONAL ASSAYS

- **Vivogel StemCoat Matrix** promotes the attachment of human iPSCs.
- **Vivogel StemCoat Matrix** Effectively maintains human iPSCs in a pluripotent state in a feeder-free culture.



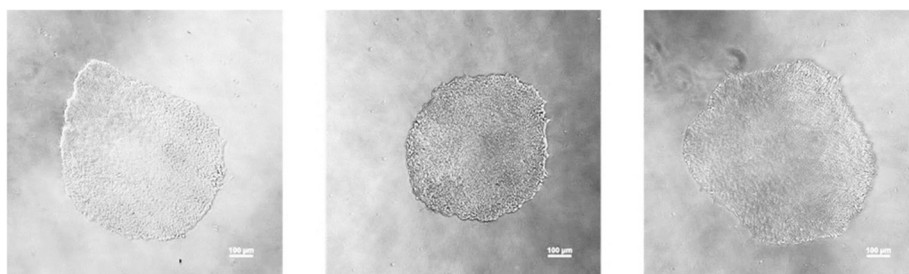
## Coating Procedures:

Thaw **Vivogel StemCoat Matrix** overnight at 2 - 8 °C. Refrigerator temperatures may vary; therefore, it is recommended to keep **Vivogel StemCoat Matrix** on ice in a refrigerator during the thawing process. Thawed **Vivogel StemCoat Matrix** solidifies quickly at temperatures above 10 °C; when working with **Vivogel StemCoat Matrix**, keep it on ice to prevent untimely gelling.

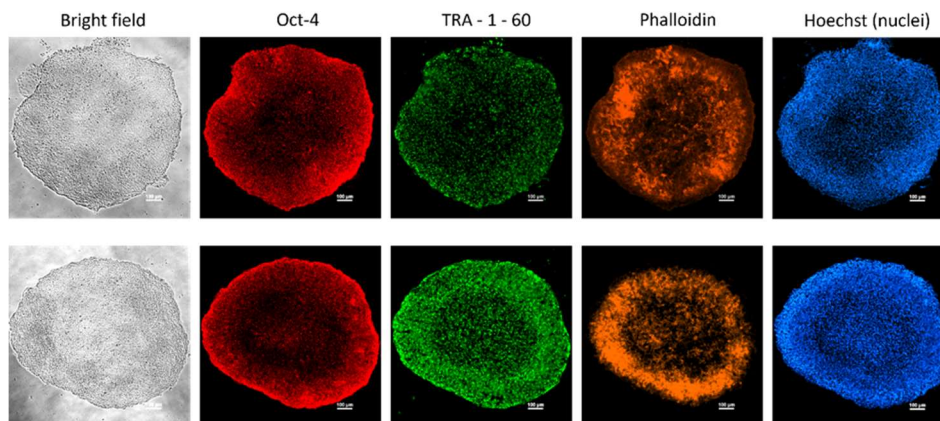
There are many applications for **Vivogel StemCoat Matrix** which require different thicknesses and concentrations. Some applications, such as propagation of hESCs and iPSCs in feeder-free culture, require a thin layer coating and not a thick gel; therefore, the thin layer method should be used.

1. Thaw **Vivogel StemCoat Matrix** as stated above.
  2. Homogenize **Vivogel StemCoat Matrix** by slowly pipetting solution up and down; be careful not to introduce air bubbles.
  3. Dilute **Vivogel StemCoat Matrix** to a desired concentration in cold serum-free medium. A 1:100 dilution is recommended for the propagation of primary cells. Empirical determination of the optimal coating concentration for your application may be required.
  4. Add a sufficient amount of solution to cover the entire growth surface area. A volume of 100  $\mu\text{L}$  per  $\text{cm}^2$  is recommended
  5. Place coated object at 37 °C for 30 minutes.
  6. Aspirate coating solution and immediately plate cells. **DO NOT ALLOW COATED SURFACE TO DRY OUT.**
- NOTE: The coated plates can be prepared in advance. Follow the procedures below:
7. Follow Step 1 to 4; then seal the plates with Parafilm® and store for up to two weeks in a refrigerator at 2 -8 °C.
  8. Prior to use, incubate coated plates at room temperature for one hour.
  9. Continue with Step 6.

## Data Example:



**Figure 1.** Undifferentiated human induced pluripotent stem cells (iPSCs) culture on **Vivogel StemCoat Matrix** coated plate.



**Figure 2.** Immunostaining of human iPSCs cultured on **Vivogel StemCoat Matrix**. iPSCs maintain expression of pluripotency markers Oct-4 and TRA-1-60 after six passages on **Vivogel StemCoat Matrix**.