

Polymer Coating for Cell Culture Substrates

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WARF: P150079US01

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The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing a chemically defined culture surface with long-term stability.

Overview

A stem cell's microenvironment plays a key role in regulating its behavior (e.g., adhesion, migration, proliferation and differentiation). A variety of templates have been used to study stem cell behavior *in vitro* including self-assembled monolayers (SAMs), hydrogels and thin films.

Polymer coatings are one of the few good templates that are compatible with a wide range of substrates and have good physical stability. However, the coating must remain insoluble and not split away from the underlying substrate for the duration of the cell culture. This limits the kinds of polymers that can be used.

The Invention

UW-Madison researchers have developed a new crosslinkable polymer coating for cell culture substrates. The nanometer-thin coating is made of glycidyl groups and azlactone groups distributed randomly along the copolymer backbone.

The coating is substrate independent and can be applied to a wide variety of organic and inorganic materials including plastic, silicon, glass and gold.

Applications

- Cell culture substrates
- Cell expansion, manufacturing and differentiation studies
- Particularly useful for stem cells

Key Benefits

- Provides chemically defined surface
- Long-term stability under culture conditions
- Does not degrade in solution for 30 days or more
- Coating is substrate independent.

Stage of Development

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The coating has been deposited, and has been applied to large areas for growth of cells in well-defined conditions. Moreover, researchers have shown adhesion of human mesenchymal stem



cells and embryonic stem cells to the coating, which remains effective down to five nanometers.

Additional Information

For More Information About the Inventors

- [Padma Gopalan](#)
- [William Murphy](#)

Related Technologies

- [WARF reference number P07188US describes an improved coating for biological microarrays.](#)

Related Intellectual Property

- [View Divisional Patent in PDF format.](#)

Publications

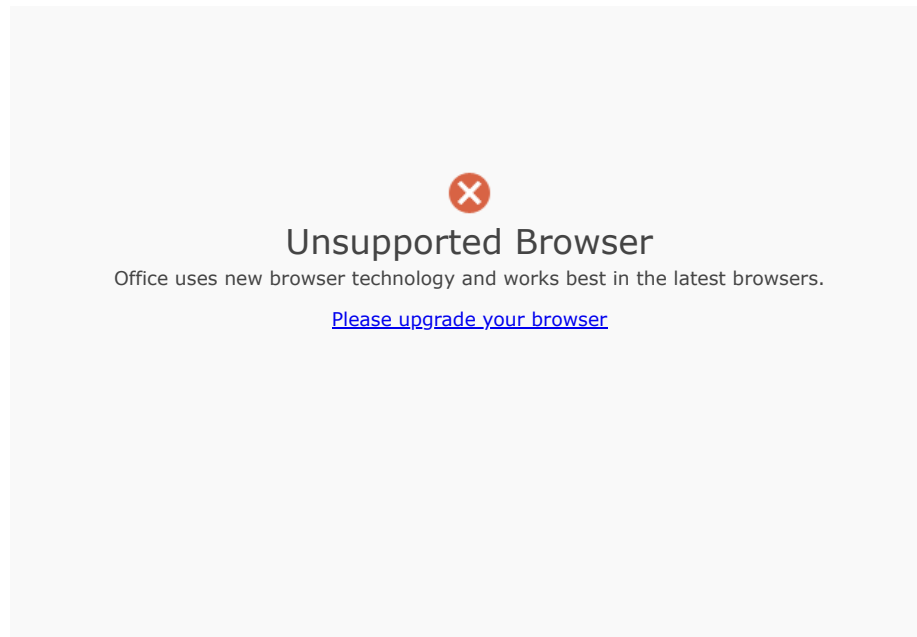
- Schmitt S.K., Xie A.W., Ghassemi R.M., Trebatoski D.J., Murphy W.L and Gopalan P. 2015. Polyethylene Glycol Coatings on Plastic Substrates for Chemically Defined Stem Cell Culture. Adv. Healthcare Mater. 4, 1555-1564.

Tech Fields

- [Materials & Chemicals : Polymers](#)
- [Pluripotent Stem Cells : Culture](#)

For current licensing status, please contact Rafael Diaz at rdiaz@warf.org or 608-960-9847

Presentations



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