

**Luna Innovations is developing a variety of unique technologies for use in advanced wound care and regenerative medicine.**

## WOUND HEALING AND DRESSINGS

LUNA is committed to providing unique and advanced solutions across a range of wound healing needs. We develop technologies for preventing postoperative adhesions, advanced dressings for ocular surface repair, and more. Our core competencies and areas of research focus include:

- **Postoperative Adhesion Barriers:** Films and sprayable gels to prevent fibrous postoperative adhesions that are an expected occurrence in all abdominal surgeries.
- **Nanofiber Dressings:** Ocular surface repair, advanced wound dressings, therapeutic and analgesic delivery

### Post-Operative Adhesion Prevention

Postoperative adhesions are an “expected outcome” in abdominal surgeries. They are the leading cause of small-bowel obstruction in the western world, cause chronic debilitating pain, and lead to female infertility.

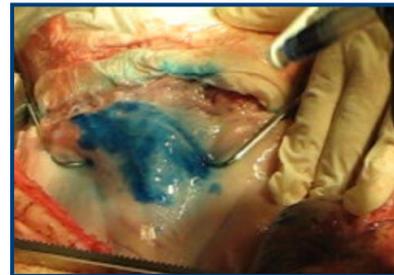
#### Barrier Film

- **Low cost** and simple fabrication processes
- **Hydrolytically stable and robust** with good mechanical properties.
- **Film is adhesive** to tissue and repositionable.
- **Enzymatically degradable** and will resorb *in vivo*. The degradation rate can be tailored
- **Biocompatible** and non-toxic



#### Sprayable Hydrogel

- **Colored** and flowable for easy application
- **Low cost**, basic materials and applicator system
- **Robust** to form a contiguous barrier over the susceptible tissue surface and maintain the barrier
- **Biodegradable** and cleared quickly after healing
- **Adhesive to tissue** to maintain barrier for 4-7 days
- **Biocompatible** and does not impede wound healing



## Nanofiber Dressings

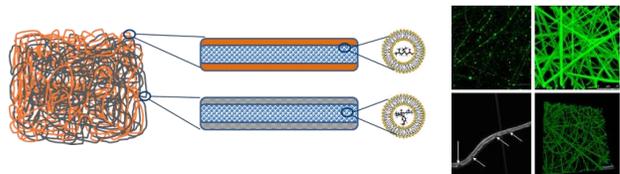
#### Ocular Repair

- **Dressings mimic the native ECM** of the cornea and will serve as an alternative to the standard human amniotic membrane.
- Nanofiber-reinforced hydrogels create a **stimulating environment for ocular surface**.
- **PTB eliminates need for sutures**



#### TuneCoat™ Burn Dressings

- **Thin, flexible, conformable, and breathable** dressings with high mechanical strength.
- **Control over analgesic and therapeutic release rate.**
- **Good exudate draining** with bacterial invasion prevention.
- Use alone or in conjunction with other dressings.



## REGENERATIVE MEDICINE APPLICATIONS

LUNA is positioning itself at the forefront of the regenerative medicine and tissue engineering field, developing technologies for use in burn treatment, postoperative adhesion prevention, tissue repair, therapeutic delivery, and cell-based therapies. Our core competencies and areas of research focus include:

- **Biofunctionalized scaffolds:** tissue regeneration, vascularization, cellular attachment
- **Injectable hydrogels:** cartilage regeneration, delivery of proteins and growth factors
- **Spatially organized scaffolds:** vascularized tissue, controlled tissue innervation
- **Electrospinning:** ocular dressings, peripheral nerve repair, wound healing, transdermal delivery
- **Cell selection and delivery:** vascularized tissue, proangiogenic effect
- **Delipidated adipose grafts:** tissue processing and plastic surgery

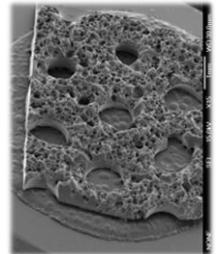
### Injectable Cartilage

- LUNA is exploring injectable hydrogels for repair of craniofacial cartilage and osteoarthritic defects.
- Hydrogels are biocompatible, biodegradable, and stimulate cartilage regeneration with an open porous structure.



### Bioactive Hydrogels

- Large volume tissue loss results in functional and cosmetic defects.
- LUNA is developing 3D, bioactive scaffolds with spatially controlled vascularization and degradation.
- Scaffolds are being designed to fit within current prefabricated flap techniques.



## THE TEAM

LUNA's biomaterials and wound healing teams possess significant interdisciplinary expertise that enables us to think outside traditional paradigms to find innovative solutions for complex medical problems. We have a diverse range of degrees ranging from Materials Science to Synthetic Biology, and therefore are able to create unique solutions in a multidisciplinary setting.

## THE COLLABORATORS

LUNA works closely with collaborators in academia, industry, and the government. Recent collaborators include the University of Virginia, James Madison University, University of Florida, Massachusetts General Hospital, The Wellman Center for Photomedicine, Harvard University, and more.

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