

## FREQUENTLY ASKED QUESTIONS

### WHAT IS REGENERATIVE MEDICINE?

Regenerative medicine is an interdisciplinary field that applies engineering and life science principles to promote human tissue regeneration. Regenerative medicine is defined as the process of replacing or “regenerating” human cells, tissues or organs to restore or establish normal function. This field holds the promise of regenerating damaged tissues and organs in the body by replacing damaged tissue or by stimulating the body’s own repair mechanisms to heal tissues or organs.

Regenerative medicine has grown over the last two decades to encompass a host of treatment options including:

- **Tissue Engineering.** Tissue engineering is a strategy where biologically compatible scaffolds are implanted in the body at the site where new tissue will form to repair or replace damaged, diseased, or dysfunctional cells, tissues, and organs.
- **Cellular Therapies.** The human body uses stem cells as one way of repairing itself. This is a strategy whereby adult stem cells are harvested and then injected at the site of diseased or damaged tissue to facilitate reconstruction.
- **Gene Therapies.** There are three ways a genetic material can be introduced to a patient’s cell or organ. First, replacing a mutated gene that causes disease with a healthy copy of the gene. Second, inactivating a mutated gene that is functioning improperly. Third, introducing a new gene into the body to help fight a disease.

### WHAT ARE BIO-TISSUE PRODUCTS USED FOR?

The Bio-Tissue product portfolio is comprised of four products:

- PROKERA® biologic corneal bandages have been cleared by the FDA as 510(k) devices for use in eyes in which the ocular surface cells have been damaged, or underlying stroma is inflamed and scarred.
- AmnioGraft® cryopreserved amniotic membrane matrix is a biologic ocular transplantation graft used by eye surgeons around the world as an adjunct therapy to treat ocular surface indications such as corneal ulcers, pterygium, Mechanical Dry Eye (MDE, also known as conjunctivochalasis), excision of tumors, chemical burns, and Stevens-Johnson syndrome.
- AmnioGuard® is for use as tectonic support (e.g. protection of a glaucoma drainage device tube) to strengthen the cornea, conjunctiva, tenon’s capsule, or sclera due to its thickness and tensile strength.
- Cliradex® is available as a towelette or foam cleanser for lid, lash, and facial cleansing to provide symptomatic relief from Demodex, blepharitis, dry eye disease, and rosacea. It is made with 4-terpineol – the ingredient found in tea tree oil.

The cryopreserved amniotic membrane used in PROKERA and AmnioGraft has also been designated by the FDA as having anti-inflammatory, anti-scarring, and anti-angiogenic properties when used on the ocular surface. Bio-Tissue products have been shown to support epithelial adhesion and differentiation on the ocular surface. Bio-Tissue products are also used to treat chemical or thermal burns that have affected the ocular surface or to provide tectonic support (e.g. protection of a glaucoma drainage device tube) following oculoplastic surgery.

## WHAT CAUSES OCULAR SURFACE DISEASE?

Ocular surface disease can result from age or systemic diseases (autoimmune disorders, diabetes, Sjögren's syndrome), and ocular diseases (Mechanical Dry Eye (MDE), glaucoma, blepharitis, lid margin irregularities, corneal ulcers, and pterygium). They can also result from menopause or conditions resulting from taking toxic drugs or preservatives.

## WHAT MAKES BIO-TISSUE'S PRODUCTS UNIQUE?

Although there are many tissue processing methods available in the marketplace, each produces different clinical results depending on the tissue source, the processing method applied, the product's storage and delivery, and the manufacturer. A study has shown that the cornerstone of Bio-Tissue's platform technology, the HC-HA/PTX3 matrix inherent in human birth tissue, is a key component responsible for the tissue's therapeutic mode of action. Furthermore, based on scientific research and according to the same study, cryopreservation using parent company TissueTech's proprietary CryoTek® process has been shown to preserve the HC-HA/PTX3 matrix component significantly better than dehydration preservation processes.<sup>1</sup>

## WHY IS HUMAN BIRTH TISSUE USED TO MANUFACTURE BIO-TISSUE PRODUCTS?

Research has shown that human birth tissues, particularly the umbilical cord and amniotic membrane, have innate healing properties in the fetal environment. When used in adult wound healing, these tissues can help support an environment that allows the patient's own stem cells to help repair and regenerate the eye.

## HOW ARE BIO-TISSUE PRODUCTS ADMINISTERED?

Bio-Tissue amniotic membrane and umbilical cord products are available in three forms.

- PROKERA® is designed specifically to apply to the corneal surface. It is an Amniotic Membrane (AM) graft self-retained in an ophthalmic conformer ring that is inserted without sutures. The graft is absorbed into the host tissue, while the ophthalmic conformer remains until removed.
- AmnioGraft® can be applied anywhere on the ocular surface. It is an AM available in sheet form that is laid into place and then sutured and/or glued. This graft is absorbed in a similar fashion.
- AmnioGuard® is for use as tectonic support (e.g. protection of a glaucoma drainage device tube) to strengthen is an AM and Umbilical Cord (UC) tissue graft, much thicker than AM, also available in sheet form that is laid into place and then sutured and/or glued. It is not intended to be used for the ocular surface unless there is a perforation/ deep wound. It is mostly used for ocular surface reconstruction or as a protective covering in case of a shunt tube.

## HOW WERE BIO-TISSUE PRODUCTS INVENTED?

TissueTech was co-founded by Scheffer C.G. Tseng, MD, PhD, a Johns Hopkins Hospital and Massachusetts Eye & Ear Infirmary, Harvard Medical School-trained ophthalmologist and University of California PhD, to solve an unmet patient need he identified while serving as Charlotte Breyer Rodgers Chair Professor at Bascom Palmer Eye Institute University of Miami Miller School of Medicine. Dr. Tseng would often see patients with chemical eye burns and other severe ocular surface diseases and set out to find something that would help promote regenerative healing while minimizing scarring and inflammation for these patients. He experimented with and was impressed by how human birth tissue seemed to help promote an improved healing environment for his patients. Dr. Tseng and his wife, Amy Tseng, established Bio-Tissue and in March 1977, Bio-Tissue became the first company to commercialize human birth tissue-based products through its ophthalmic platform technology using its proprietary CryoTek cryopreservation process.

1. Moss SE, Klein R, Klein BE, Prevalence of and risk factors for dry eye syndrome, Arch Ophthalmol, 2000;118:1264-8