

# Artificial Skin

## I. Introduction

Skin is the largest organ in the human body. It helps preserve fluid balance, controls body temperature and helps prevent and fight any diseases encountered in the environment. There are two layers to the skin: epidermal layer and a dermal layer. The epidermal layer is the outer layer that acts as the body's major barrier against hostile conditions. The dermal layer is the layer of skin between the epidermal and the subcutaneous tissues.

## II. Uses

Artificial skin is mainly used for replacing burnt skin with artificial skin in order to maintain a healthy lifestyle. Burnt skin should be quickly removed as it might cause harm to any blood cells because essentially burnt skin is dead and prone to bacteria or other microorganisms. The degree of burn results in more replacement of burnt skin with artificial skin.

## III. Procedure

The procedure may seem to complete but it requires much time and effort. The surgeon that operates on the victim suffering from the burnt begins by removing the burnt skin from the patient. Next, the surgeon drapes a bi-layer membrane system known as the Dermal Regeneration Template on to the remaining tissue that was removed. This layer is biodegradable; it will fuse with the epidermal layer when the skin is completely healed. The epidermal layer (outer layer of skin) is made from silicone polymer and is replaceable. Thus, physicians are able to replace the temporary epidermal with an auto-graft. An auto-graft is a thin sheet of cells taken from the patient in an area where he/she didn't suffer any burns. Researchers in labs are able to grow and expand

the cells into sheets from which they can place it on the burned skins.

## IV. Different Types of Artificial Skin

The first type of Artificial Skin is known as the Integra Dermal Regeneration Template ®. This type of artificial skin was developed by Integra LifeSciences during the 1980s. This type of artificial skin is semi-synthetic; meaning that it composed of living human cells. Also, it was the first and only FDA approved tissue engineering product for burn and reconstructive surgery. The Integra Dermal Regeneration Template ® has two components; the temporary epidermal replacement and the dermal replacement.

The second type of artificial skin is an Epicel skin replacement technology. Doctors in this type of skin replacement take a postage-stamp sized biopsy of skin from a non-infected area of the body and are able to form individual sheets of tissue. This process takes around two to three weeks to complete. However, it will be quite effective once placed on the burnt area of skin.

## V. References:

- [http://www.nigms.nih.gov/Publications/Factsheet\\_ArtificialSkin.htm](http://www.nigms.nih.gov/Publications/Factsheet_ArtificialSkin.htm)
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