## SKIN WOUND HEALING

The skin is the biggest organ in the body. It keeps the outside world out, therefore it is important that wound heals quickly.

## Anatomy of the skin Stratum corneum Hair shaft Stratum lucidum Rete ridges Stratum granulosum Dermal papillae Stratum spinosum Stratum hasale Meissner's corpuscle Sebaceous Arrector pili Sweat gland Dermis -Subcutaneous ( Pacinian corpuscle Hair follicle

The basal layer is where the stem cells are. SCs differentiate as they go towards the surface of the epidermis, and are dead by the time they reach the surface, were they are shed.

All cells are joined by junctions:

Adipose tissue

- desmosomes (for strength),
- tight junctions (zip together and stop the loose of fluids),
- gap junctions (allow communication between cells).

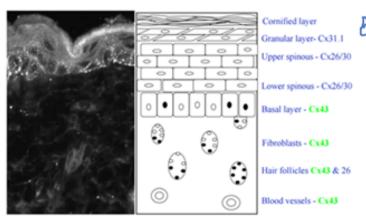
## Wound Healing Process



Time after injury

Gap juntions are between two cell membranes. Each junction is made up of 2 sub units called connexons and these are made up of 6 subunits called connexins. There are 21 connexins in the human genome and they are expressed in every cell type in the body (barskeletal muscle). They cluster in the membrane (look likespots on EM).

Have short half life of 1-2 hrs, so a raid turn over. We can target their expression.



The epidermis made up of skin cells or keratinocytes and is an avascular tissue.

The dermis is connective tissue made up of many cells including fibroblasts, blood vessels, nerves, fat and glands etc.

When you wound the skin all these cells need to communicate rapidly for repair.



Stratum corneum (keratin or horny laver)

Stratum lucidium (clear layer)

Stratum granulosum (granular layer)

Stratum spinosum (prickle cell layer)

Stratum basale (basal cell laver)

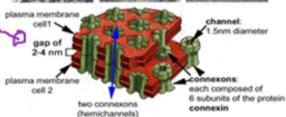
All junctions have to dismant as cells ingrate towards a healing wound. This can be can't part of the healing process

Blood vessel response and neutrophil response are key in word hading, as they set up the inflam response. This effects in the epithelial migration process. Human don't get perfect wound healing—scar.

Gap junction have a specific function in embryonic development and in wound healing.







(hemichannels) in register form an intercellular communication channel

Connex in (Cx) staining in the skin of a mouse shows lots of Cx in the epidermis layer. Down in the dermisthere are far fewer junctions. There are loads of different types of Cx expressed in the skin.

On wounding, both the amount and location of connexin expression in mouse neon at alskin changes.