

Electric fields exist naturally in the skin, creating surface energy potential (voltage) known as transepithelial potential (TEP)

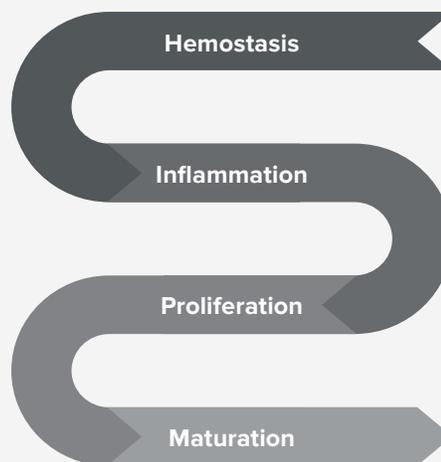
Electricity is Essential to Wound-Healing

- TEP is disrupted when the skin is wounded¹⁻³
- TEP disruption induces an electric field directed toward the middle of a wound³
- This initiates cell migration and re-epithelialization¹⁻³
- Microcurrents are created at the edges of healthy skin (called the “current of injury”) and extend ~1 mm into a wound, healing the wound from the outside edges^{1,2}
- TEP is restored once skin regeneration is complete⁴

	Voltage	Microcurrents
Intact skin ¹⁻³	0.010 V – 0.060 V	–
Wounded skin ^{3,5}	0.1 V – 0.2 V mm ⁻¹	10 µA cm ⁻² - 100 µA cm ⁻²
JumpStart [®] antimicrobial dressing powered by V.Dox™ technology ^{5,6}	0.2 V – 1.0 V	10 µA - 50 µA

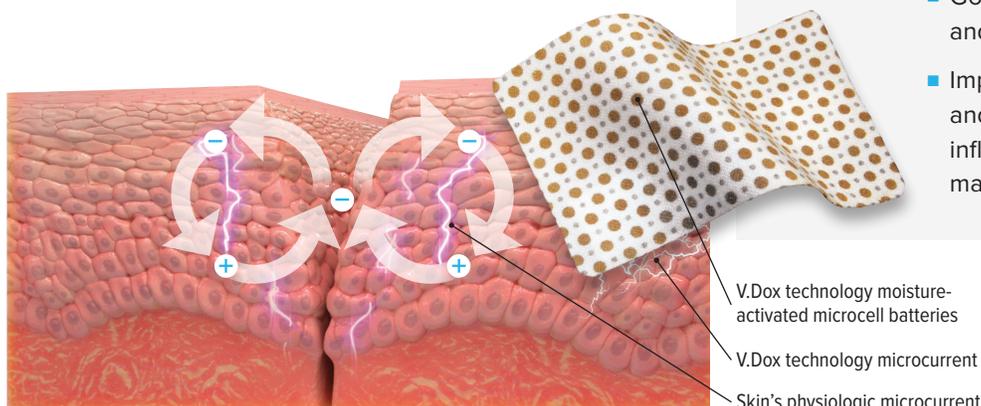
Electrical fields regulate fundamental cell behavior throughout the human body^{7,8}

Wound-Healing Cascade



Electrical fields:

- Govern cell proliferation, migration, and differentiation
- Impact wound healing at the cellular and systemic levels during hemostasis, inflammation, proliferation, and maturation



V.Dox technology powers the **ONLY antimicrobial wound dressing designed to mimic skin's electrical energy, and which works within the same physiologic range as skin's current of injury.**

References

1. Zhao M. Electrical fields in wound healing - an overriding signal that directs cell migration. *Semin Cell Dev Biol.* 2009;20(6):674-682. doi:10.1016/j.semcdb.2008.12.009 2. Foulds IS, Barker AT. Human skin battery potentials and their possible role in wound healing. *Br J Dermatol.* 1983;109(5):515-522. doi:10.1111/j.1365-2133.1983.tb07673.x 3. Dubé J, Rochette-Drouin O, Lévesque P, et al. Restoration of the transepithelial potential within tissue-engineered human skin in vitro and during the wound healing process in vivo. *Tissue Eng Part A.* 2010;16(10):3055-3063. doi:10.1089/ten.TEA.2010.0030 4. Moulin VJ, Dubé J, Rochette-Drouin O, et al. Electric potential across epidermis and its role during wound healing can be studied by using an in vitro reconstructed human skin. *Adv Wound Care (New Rochelle).* 2012;1(2):81-87. doi:10.1089/wound.2011.0318 5. Farboud B, Nuccitelli R, Schwab IR, Isseroff RR. DC electric fields induce rapid directional migration in cultured human corneal epithelial cells. *Exp Eye Res.* 2000;70(5):667-673. doi:10.1006/exer.2000.0830 6. Whitcomb E, Monroe N, Hope-Higman J, Campbell P. Demonstration of a microcurrent-generating wound care device for wound healing within a rehabilitation center patient population. *J Am Coll Clin Wound Spec.* 2013;4(2):32-39. Published 2013 Jul 12. doi:10.1016/j.jccw.2013.07.001 7. McCaig CD, Rajnicek AM, Song B, Zhao M. Controlling cell behavior electrically: current views and future potential. *Physiol Rev.* 2005;85(3):943-978. doi:10.1152/physrev.00020.2004 8. Banerjee J, Das Ghatik P, Roy S, et al. Improvement of human keratinocyte migration by a redox active bioelectric dressing. *PLoS One.* 2014;9(3):e89239. Published 2014 Mar 3. doi:10.1371/journal.pone.0089239