

Genes involved in wound healing identified

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Scottish scientists say they have identified two of the genes essential for wound healing mediated by endogenous electrical currents.

The University of Aberdeen researchers have visualized wound healing guided by an electric field and identified the genes governing the process as PI(3)Kgamma and PTEN.

Previous research has shown damage to epithelial tissue such as skin results in strong, directional ion flow and generates an internal electrical field. Such fields are thought to guide moving cells by a process known as electrotaxis, in order to heal the wound. However, direct evidence of such electrically guided cell movement has been lacking until now.

A team of university researchers led by Min Zhao and Josef Penninger used time-lapse photography to visualize electrotaxis in animal cell and tissue cultures. They found wounds may close faster or be driven open, depending on the direction of externally applied electrical signals similar in strength to those occurring naturally.

The researchers also identified the genes that control electrotaxis as PI(3)Kgamma and PTEN, and propose electrical signals may be used in the future to direct cell growth during wound healing in cell and tissue engineering.

The study appears in the journal Nature.

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