

COMPANION DIAGNOSTICS DURING THERAPY

Among the concerns caused by the demographic change in industrialized countries is the growing care gap between the rising number of elderly dependents vis-à-vis the declining availability of potential caregivers.

This effect is further intensified by the fact that costly diseases such as cardiovascular diseases, diabetes, cancer, dementia and chronic wounds, increase with age. A dramatic situation can only be prevented with improved predictive diagnostics, a significant reduction in treatment costs, more effective treatments and the promotion of patient self care.

For their development and evaluation of an economic treatment of chronic skin diseases which enables patients to self-monitor whether their wounds are healing or not, a consortium of five Fraunhofer institutes who had joined forces in the SkinHeal project won second place in the EARTO Innovation Awards 2015 in the impact expected category.

One of the major elements of the SkinHeal project regarded the modification of a bioresorbable silica gel fiber fleece which serves as a scaffold for cell regeneration, accelerates healing and allows companion diagnostics during the healing process:

Companion diagnostics alongside therapy

Over the course of the therapy, the healing progress of a wound can be easily monitored owing to the integration of fluorescent nanoparticles enabling a targeted, hence intelligent, imaging of biomarkers or inflammatory cells in the wound exudate.

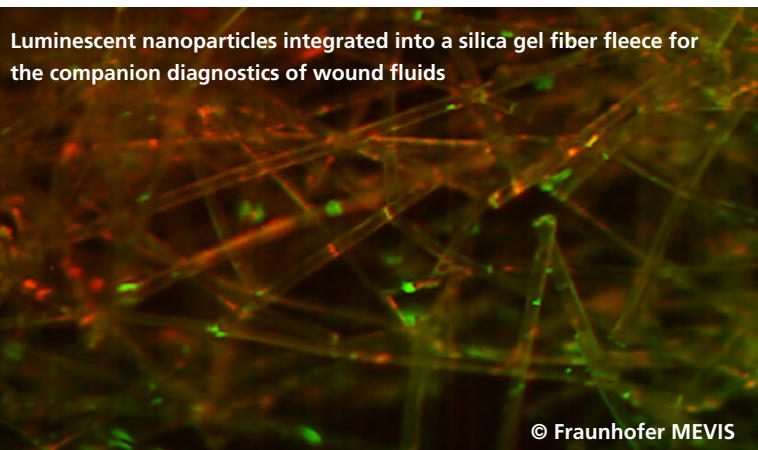
Accelerated healing upon integration of active substances

The silica-gel fiber fleece itself has a beneficial effect on cell regeneration in chronic skin wounds.

The healing process can be further promoted by the integration of immunotherapeutic agents in the fiber matrix. Active substances can either be incorporated in their pure form or as encapsulated particles, both is possible as part of the fiber spinning process. Since the fibers undergo bioresorption during the wound healing process, sufficient quantities of respective therapeutic agents will continue to be released at all times.



From left: EARTO president (2015) Maria Khorsand, award winner Dr. Jörn Probst (Fraunhofer ISC), EU-Commissioner for Research, Innovation and Science Carlos Moedas.



Luminescent nanoparticles integrated into a silica gel fiber fleece for the companion diagnostics of wound fluids

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