

Novel platform technology for transcutaneous immunization

Project Status

- Validated in vivo in mouse models, including induction of durable T-cell memory and protective efficacy in a viral challenge model

Benefits

- Transcutaneous immunization with robust T cell response
- Single local treatment with strong CD8/CD4 T-cell priming and memory response
- Reduced treatment area supports clinical translatio.
- Prophylactic or therapeutic treatment of infections or cancer
- Topical (non –invasive) application
- Suitable for humans and animals

Patents

- [EP3646882A1](#)
- [WO2020094496 A1](#)

Pending patent applications in Europe, USA, Canada, and Japan ensure broad protection in major markets.

Offer

- The technology can be licensed or assigned
- Collaborations regarding further development welcome

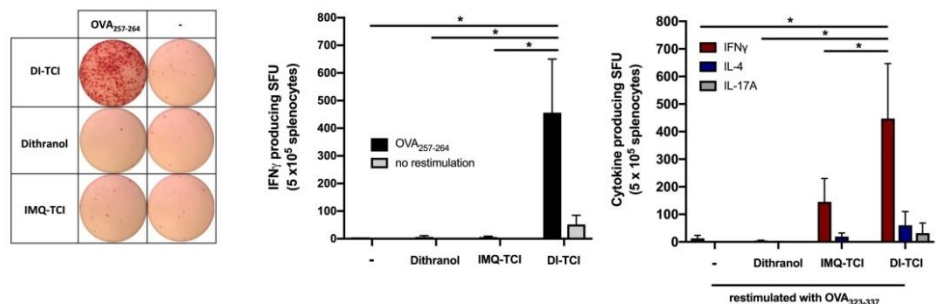
Scientists from University Medical Center Mainz (Germany) have successfully developed a novel vaccine formulation which can be used as a platform technology for transcutaneous immunization. The new vaccine formulation is able to induce a strong T cell response.

The novel vaccine is for topical application to the skin and relates to a combination vaccine comprising the toll-like receptor antagonist imiquimod and dithranol (also anthralin) as an adjuvant which can be combined with any suitable antigen epitope.

In a mouse experiment, the inventors surprisingly show that a single, transdermal administration of the three components can trigger both a therapeutic immune response and a sustained memory immune response. While the administration of imiquimod and a peptide antigen alone only triggered a weak immune response, a synergistic activation of cytotoxic T cells can be produced if dithranol is administered together with imiquimod and a peptide antigen.

On the basis of mechanistic investigations, it was shown that dithranol stimulates the activation of antigen presenting cells and the release of antigen presenting cell-derived cytokines. The effect can be blocked by free radical scavengers or antioxidants. By selecting a specific peptide epitope, vaccination against the corresponding infectious or tumor diseases can be carried out.

The particular advantage of non-invasive administration results in a wide range of possible uses for prophylactic and therapeutic immunizations in humans and in the veterinary field.



As shown in the above figure combined dithranol (anthralin) and imiquimod based transcutaneous immunization induces CD8 and CD4 T cell immune responses as well as memory T cell response (not shown).

Kontakt:

Gesellschaft für
Innovationsdienstleistungen mbH
Altenhöferallee 5
D – 60438 Frankfurt am Main
Phone: +49 69 25 61 632-0
E-Mail:
kirstin.schilling@innovectis.de



The technology has been scientifically validated in a peer-reviewed publication demonstrating strong CD8 and CD4 T-cell responses and protective efficacy in a preclinical model: Sohl J. et al. Dithranol as novel co-adjuvant for non-invasive dermal vaccination. npj Vaccines (2022).

<https://doi.org/10.1038/s41541-022-00530-9>