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Project Title: Growth Factor Containing Hyaluronic Acid Gel for Hair Follicle Transplantation

Year awarded: 2016

What do you hope to/did you learn through this research? The overall goal of this project is to study hair follicle cell behavior in a growth factor containing hyaluronic acid gel, use the gel as a vehicle to transplant hair into wounds and demonstrate that epidermal stem cells located in hair follicle bulge regions can re-epithelialize the wound. Therefore, I hope to learn more about hair follicles' ability to provide epidermal components to wound healing and hyaluronic acid as a scaffold for cell transplantation.

How can this research help patients, clinicians and/or scientists? This research can help patients with large burns and chronic wounds. This technology would minimize the need for donor site wounds that are often associated with pain and scarring. Autologous hair follicle transplantation would also be easily translatable to clinical practice.

Has your work thus far yielded any surprises? We just finished a study where we transplanted dermal grafts containing hair follicles to full-thickness wounds and showed that those grafts were able to re-epithelialize the wound equally well as conventional split-thickness skin grafts.

How did this award help your career? For a while now I've been interested in hair follicles and their capability to contribute to wound healing. This award enables me to continue research in that field.

How did you get interested in wound healing and this area in particular? I started my research career in a regenerative medicine laboratory and got interested in wound healing and burns. Skin is a great tissue because it's easily accessible and the main cells can be isolated and cultured in the laboratory, which further sparked my interests in cell therapies. Large burns and non-healing wounds are difficult to treat and therefore novel treatments are needed.

Tell us about some of the outcomes of your research you are most proud of and what it means for patients, clinicians and/or scientists. Back in Finland we developed in a collaboration with the Finnish Red Cross an autologous cell therapy for burns that is currently used in clinical practice. It was nice to see how our work was translated into clinics in a relatively short period of time. Another great recognition, was here in Boston when our group recently received a big grant from the Department of Defense for burn research. The outcomes from this project will hopefully be realized as novel treatment for burn-injured service members in the battle field and in transit to a specialized burn unit.

What are your future plans for your work in wound healing? Hopefully I could maintain a functioning wound healing laboratory and see my research being translated into practice.

Who do you consider your mentors and your close associates in this project? How did you start working with them? My early mentors were Drs. Esko Kankuri and Jyrki Vuola in the University of Helsinki, Finland. They introduced me to this field and helped and me to get forward with my career. My closest mentor in wound healing research in general is Dr. Elof Eriksson. In 2014, I moved to Boston and ever since we have worked closely together in various wound healing projects. The closest associates in this project will be the members of our Regenerative Medicine laboratory at Brigham and Women's hospital.

Tell us about your life away from the lab and/or clinic? Outside work I can be found either playing basketball in the Fenway neighborhood of Boston or rooting for Boston Celtics at the TD Garden.