



09.01.2018, Prof. Dr. rer. nat. Petra Boukamp

“A role for telomeres in UV-induced skin cancer”

The team of Petra Boukamp investigates the process of carcinogenesis and aging in one particular organ, the skin. They study the role of genetic alterations in the development of skin cancer. The major interest of the team is to understand the underlying biological mechanisms, both genetically and environmentally driven, that cause disturbance in the skin, in particular the ones giving rise to cancer. With regard to genetics the group has done a lot of work on chromosomal alterations and their mode of development (UV-induced telomere shortening and induction of telomeric aggregates as initiators of genomic instability), as well as the role of specific mutations.

In addition, the team of Petra Boukamp developed organ models that closely resemble human skin and enable researchers to track the development of skin cancer in culture. The group has developed a new generation of organotypic cultures (OTCs) based on scaffold- or cell-derived matrix, giving rise to authentic dermal equivalents, which make it possible to extend the life of the *in vitro* cultures for as long as 6 months. With these long-term cultures which are known for their reproducibility and *in vivo* similarities they are able to address questions concerning the identity of the epidermal stem cells during normal regeneration, wound healing and skin aging and similarly important, the studies of skin carcinogenesis with the help of the HaCaT *in vitro* skin carcinogenesis model. These studies are performed with the group's OTC skin cancer model, which allows tumor cell-specific invasion through the basement membrane into the underlying stroma, a prerequisite for tumor progression.

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