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The use of long-term skin equivalents in research

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An important part for the construction of skin equivalents is the living dermal compartment, which includes fibroblasts; these are mainly seeded and supported by different structures (DED, collagen, Matrigel, scaffold, etc.). Another type of dermal equivalent, developed by Ahlfors and Billiar and later adapted by Berning, et al. among others is the cell derived matrix (cdm) model. It has no artificial support and is also well suited for tumor invasion studies. Here the tumorigenic cells' behavior can be examined and their specific invasion pattern can be followed. Most skin models have a short life span and are mostly suited and used for studying acute effects, but many of the environmental agents or dermatological conditions that face the skin will not only have an immediate effect. To be able to mimic and follow conditions over a longer period of time we base our studies on stable skin equivalents that allow the generation and regeneration of epithelial tissue for up to 24 weeks, allowing us to understand the long term effects of any given alteration. The sun is one of the key environmental factors affecting the skin with our cdm model we are able to follow the effects of chronic UV exposure for several months. We have also been able to mimic old skin and follow the long-term effects of experimental sunlight on this aging model. Additionally this non-immunogenic model suits perfectly well to examine the effects of drugs such as Cyclosporin A, mimicking the skin's condition in organ transplant recipients over a longer period of time. The diversity makes these models great members of the skin equivalent family and hopefully they continue to contribute in studies and in the future give us an insight into the biological dimension of time.

Biography

Elizabeth Pavez Loriè has her expertise in skin biology, dermatology and tissue culturing and a passion in using in vitro modeling systems to provide answers to dermatological conditions and disease, linking biology to medicine and vice versa. Her goal is to provide robust and biologically accurate models to investigate the homeostatic state of the skin as well as to understand and provide the clinic with personalized testing long-term models.

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