

Preface



“Aged? But he does not appear aged,
just look, his hair has remained young!”
Marcel Proust, In Search of Lost Time (1913–27)

The appearance of hair plays an important role in peoples’ overall physical appearance and self-perception. With today’s increasing life-expectation, the desire to look youthful plays a bigger role than ever. The hair care industry has become aware of this, and capable to deliver active products that are directed toward meeting this consumer demand. The discovery of pharmacological targets and the development of safe and effective drugs such as minoxidil and finasteride also indicate strategies of the drug industry for maintenance of healthy and beautiful hair in the young and old.

The study of hair aging focuses on two main streams of interest: On the one hand, the esthetic problem of aging hair and its management, in other words everything that happens outside the skin; on the other hand, the biological problem of aging hair, in terms of microscopic, biochemical, and molecular changes, in other words the “secret life” of the hair follicle in the depth of the skin.

Hair aging comprises hair shaft aging, and aging of the hair follicle. The former involves weathering and photoaging of the hair shaft, while the latter manifests as decrease of melanocyte function (graying) and decrease in hair production (alopecia). The scalp and hair are subject to intrinsic or physiologic aging, and extrinsic or premature aging due to external factors. Intrinsic factors are related to individual genetic and epigenetic mechanisms with interindividual variations. Prototypes are familial premature graying and androgenetic alopecia. Extrinsic factors include ultraviolet radiation, air pollution, smoking, and nutrition.

Finally, basic scientists interested in the biology of hair growth and pigmentation have exposed the hair follicle as a highly accessible and unique model that offers

unequaled opportunities also to the gerontologist for the study of age-related effects. Its complex multicell-type interaction system involving epithelium, mesenchyme, and neuroectoderm, and its unique cyclical activity of growth, regression, rest, and regrowth provides the investigator with a range of stem, differentiating, mitotic, and postmitotic terminally differentiated cells, including cells with variable susceptibility to apoptosis, for study. Ultimately, a number of intrinsic and extrinsic modulating factors for hair growth and pigmentation have been identified and are being further tested. Current lines of research and future directions for therapeutic interventions are gene polymorphism diagnostics, the hair follicular route for targeted delivery of active compounds affecting the hair, stem cells of hair follicular origin, and tissue engineering of the hair follicle.

This monograph attempts to provide an up-to-date overview regarding all aspects of hair aging. It includes in-depth contributions from internationally recognized experts on the biologic basis as well as on current concepts for the diagnosis, treatment, and prevention of hair aging.

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