About the Author

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Consultant to the Skin Care Industry

Paolo Giacomoni acts as an independent consultant to the skincare industry.

He has served as CSO of Élan Rose International (2015–2018), as VP of Skin Care R&D with Herbalife (2011–2014), and was executive director of Research at Estée Lauder (1998–2011). Dr. Giacomoni was also in charge of research and communications for Clinique and has conducted research on cell and surface biochemistry for best-selling products.

During his tenure at L'Oréal, as Head of the Department of Biology, and then as scientific attaché to the Director of Applied Research, he built a record of achievement through research on DNA damage and metabolic impairment induced by UV radiation as well as on the positive effects of antioxidants.

Dr. Giacomoni was one of the founders of the European Society for Photobiology as well as of the European Network for the Study of the Biology of Aging. He has authored 100+ publications and patents. He received his PhD. in Biochemistry from Université Paris VI, a Laurea in Atomic Physics from Università di Milano, and had Post-Doctoral Training at Deutsches Krebsforschungszentrum, Heidelberg, at the University of Wisconsin, Madison, WI, and at the University of California, San Diego, CA.

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Introductory Remarks

SPECIAL ISSUE ON SUNSCREENS

Photobiology is a discipline where the collaboration between academia and industry has been most fruitful. Scientists have shown that UV radiation is a complete carcinogen and the industry has prepared sunscreens able to filter off UVB and UVA in formulas that are agreeable to apply and that do effectively protect against UV-induced erythema. The interaction of solar radiation with living material is a quite complex phenomenon. In the human skin, UV radiation provokes DNA damage, promotes pigmentation, triggers vitamin D synthesis, depresses the immune response, and elicits erythema. Laypersons and professionals do sometimes have incomplete or confused information about the effects of UV radiation and on the ways to protect the skin.

This special issue attempts to convey rigorous information in an accessible way, by answering the following questions: Are sunscreens really protective against skin cancer? Is melanin a good sun filter? Can we improve the efficacy of sunscreens by improving DNA repair? Are there appropriate ways to formulate sunscreens to optimize protection versus concentration? What other skin conditions can benefit from the use of sunscreens? Will the legislator help the progress of the science of sun protection?

Dr. Green summarizes the results of large cohorts and long-lasting field experiments showing the protective effect of sunscreens against cutaneous squamous cell carcinoma and melanoma, but not against basal cell carcinoma.

Dr. Young presents results indicating that constitutive pigmentation (the one related to skin of the Fitzpatrick type VI, also known as "black" skin) provides relevant protection of the DNA of basal epidermal cells against UV radiation, whereas facultative pigmentation in types II–IV offers a very modest protection.

Dr. Yarosh points out that DNA repair is essential to accompany sunscreens to limit mutagenesis and cancerogenesis. He gives a few examples of successful application of boosters of DNA repair, such as the topical application of DNA repair enzymes in appropriate liposomes or the use of vitamin B3.

Dr. Moyal and her team describe ways to formulate for efficacy and provide data showing positive effects of sunscreens against photo-immunosuppression, photodermatoses, and pigmentation disorders. They also point out the necessity of photostable UV filters. Of course, photostable UV filters may act as photosensitizers (e.g., TiO_2), thus catalyzing the production of singlet oxygen, and this has to be taken into account by adding the appropriate hinderers or scavengers.

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Dr. Nadim Shaath reviews, in an acutely critical way, the legislation and the guidelines of the FDA and of other regulatory agencies around the world. His conclusion, in his own words, is that: "We need options and real solutions now for adequate protection from the harmful radiation of the sun. We need new safer ingredients and protocols for sun protection. Let us start out with approving the tried and true European filters. Also allow American ingenuity the opportunity and the path to introduce new effective and safe ingredients to combat the rising incidents of skin cancer."

I sincerely hope you will all enjoy reading the articles in this special issue.

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