# PATHOPHYSIOLOGY OF THE SKIN AND SUBCUTANEOUS TISSU

PATHOPHYSIOLOGY OF THE SKIN AND SUBCUTANEOUS TISSUES Radiation damage

UVR and ionising radiation (IR) damage cellular DNA via the tumour suppressor gene p53 , inhibiting cellular repair and apoptotic mechanisms. There is also evidence that e ff erent immune responses are impaired after skin exposure to UVR, facilitating neoplasia. Friedrich Theodor Schwann , 1810–1882, Professor of Anatomy , successively at Louvain (1839–1848) and Liege, Belgium (1849–1880). Original research before the age of 27 laid the foundation of the physiology of nerve and muscle. The first to deal with problems related to living matter on a purely physical and chemical basis and to recognise the cell as the unit of living matter. Discovered pepsin and the role of living organisms in fermentation. Friedrich Von Recklinghausen , 1833–1910, German Professor of Pathology , also described haemochromatosis. - - Ultraviolet radiation UVR is divisible into A, B and C according to wavelength. UVR, inducing oxidative damage, is the principal cause of skin cancer in all skin types as well as sunburn and skin ageing. UV A and UVB are the principal natural causes of ultraviolet - (UV)-induced damage (UVC is absorbed by the atmosphere, but can be emitted by artificial sources). UV A has a longer wavelength than and less energy per photon than UVB, but - penetrates more deeply . The e ff ects of UVR are attenuated by melanin and there is an inverse relationship between melanin content and skin susceptibility to UV-induced neoplasia. Some protection is a ff orded by the stratum corneum, which reflects and refracts UVR, and by clothing, protective creams, cloud cover, particulate air pollution and buildings. - Ionising radiation The e ff ects of IR are dose, wavelength and time dependent. - The skin, with its rapid cellular turnover, shows signs soon after exposure. High-frequency rays cause electron coupling at the molecular level, damaging proteins, polysaccharides and lipids. Infrared radiation Infrared radiation generates heat; cumulative exposure can cause thermal burns.

Figure 45.3 Neuro /f_i bromatosis (courtesy of St John’s Institute for Dermatology, London, UK).

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