Regular surveillance and skin monitoring is essential for the early detection of cutaneous malignancies including melanoma. Survival from melanoma is strongly correlated with tumour thickness at diagnosis. The 10-year survival rate of thin melanomas (<0.8 mm) is nearly 98% [1] compared to as low as 48% in thick melanomas (>3.50 mm) [2], and therefore, timely diagnosis is critical. While few studies emphasise the early detection of BCCs and SCCs, treatment can also become much more challenging for advanced disease. In many countries, advanced keratinocyte skin cancer treatment presents a formidable challenge for clinicians and health care systems.

Advanced imaging technology, which can be supported by automated analysis, is changing the way we diagnose skin malignancies. Digital 3D total body photography allows for the creation of a 3D body map and a digital avatar representation of the patient, with 360 degree rotation to view almost the entire skin surface [3]. Digital 3D total body photography increases the efficiency of skin monitoring as it allows for fast and comprehensive acquisition of high-resolution macroscopic images, integrated with dermoscopic images of individual lesions. It provides an accurate baseline record of the skin’s surface to precisely identify all skin lesions, and a comparative record to follow changes to existing skin lesions and detect new ones over time [3, 4]. 3D total body photography can be also supported by sequential digital dermoscopy imaging by consumers as part of their skin self-examinations. Home-based monitoring is particularly important in the COVID-19 era, where there are concerns that cancer diagnosis may be delayed during “shelter-in-place” or lockdown periods [5].

In this issue of *Dermatology*, Grochulska et al. [6] explored how 3D total body photography can enhance sequential dermoscopic imaging. The study reports on a series of 3 purposefully selected skin lesions extracted from the 3D total body photography avatars of individuals at high risk for melanoma. The images were assessed for long-term substantial changes and compared with corresponding dermoscopy images. The study found that 3D total body photography enables the detection of new lesions and can help to provide context to single lesion dermoscopy images. 3D total body photography provides additional support when monitoring cutaneous lesions as it presents lesions within their “ecosystem,” meaning lesions are considered within the context of the surrounding skin, offering a more accurate overall assessment and diagnosis than dermoscopy alone. In addition, the study found that 3D total body photography facilitates the evaluation of raised lesions, as the images captured can be viewed from multiple angles, providing a more accurate depiction of the lesion without the applied pressure of a dermatoscope.
The first of two papers by Betz-Stablein et al. [7] revealed how deep neural networks can aid clinicians in identifying naevi in 3D total body imaging. In the first study, Betz-Stablein et al. designed and tested an algorithm for automated total body naevus counts using 3D total body photography. The study used training and test datasets randomly selected from 3D avatars of participants (n = 82) in the Mind Your Moles study [8], a population-based cohort study of melanocytic naevi in Queensland adults from the general population. To our knowledge, Betz-Stablein et al. are the first to apply such an algorithm to skin lesion data. The study found a reasonable level of agreement between the automated naevus counts and the “gold standard” in-clinic and on screen dermatologist counts. Total body naevus counts assist in melanoma risk stratification, and the algorithm will be highly useful in providing a timesaving, objective method to standardise naevus counting.

In the second study, Betz-Stablein et al. [9] explored cherry angiomas, a common benign vascular lesion of an unknown aetiology. This study assessed the 3D body maps of participants (n = 164) in the Mind Your Moles study to investigate if the size and number of angiomas that individuals have varies by age, sex, or body region. The most common site for angiomas was the chest and abdomen, followed by the back, and angiomas were more common among men than women, with a median of 29 and 18, respectively. Previous studies on angioma prevalence have focused on just one body area, for example, the chest, and categorised angiomas in a binary fashion, that is, presence of angiomas, or presence of “eruptive” angiomas, with the latter often determined by an arbitrary cut-off of 10 or 30. In this study, the algorithm, paired with 3D total body imaging, supported the numerical quantification of angiomas by counting the exact number of angiomas and their body site distribution across the entire cutaneous landscape. Understanding how angiomas are distributed may help to improve our understanding of their aetiology, and provide insight into whether there is an association between multiple cherry angiomas and cutaneous malignancies.

Finally, in this issue of Dermatology, Koh et al. [10] present the quality of consumer sequential skin imaging checklist based on International Skin Imaging Collaboration guidelines [11]. Consumer sequential skin imaging and mobile teledermoscopy offer a way for consumers to send photographs of concerning lesions (either self-detected or previously identified by their medical practitioner) to their GP or dermatologist for remote assessment. Mobile teledermoscopy may be helpful between 3D total body photography or clinical visits, particularly for individuals living in rural or remote areas who would otherwise need to travel long distances for lesion monitoring. The study found that most participants were able to select and image the correct lesion over time, however, they had difficulties with standardising image orientation over time. With further validation, this assessment tool may be used as an educational tool for consumers to improve the standardisation of longitudinal skin imaging for self-monitoring and remote clinical assessment.

In summary, 3D total body photography, together with advancements in artificial intelligence, machine learning and mobile teledermoscopy, provide a unique understanding of the biological skin surface ecosystem and has the potential to significantly improve the early detection of melanoma. The reports in this issue provide details on various aspects of how 3D total body photography and sequential imaging can be used to enhance our understanding of the human skin surface ecosystem and contribute to reshaping the way we deliver dermatological care.

**Key Message**

3D total body photography enhances understanding of the skin surface ecosystem and improves dermatological care.

**Conflict of Interest Statement**

H.P.S. is shareholder of e-derm consult GmbH and MoleMap by Dermatologists Pty Ltd. He provides teledermatological reports regularly for both companies. H.P.S. also consults for Canfield Scientific Inc., Revenio Research Oy and is an adviser of First Derm™. M.J. has no conflicts of interest to declare.

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**Author Contributions**

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