British Association of Dermatologists

Undergraduate Essay Prize 2015

# "What is the most important advance in dermatology in the last 25 years?"

Aniruddh Chhabra, University of Liverpool

## Synopsis

The progress made in dermatology in the last 25 years has been fascinating, propelled by remarkable bench and translational research advances which have delivered direct benefit to the whole spectrum of patients with skin disease. As such, the task of placing a single development on the podium of *the* most important advance is far from easy. Indeed, I believe that the single most important advance in dermatology in the last 25 years has not been an isolated development or leap in understanding but rather the *rediscovery* of a philosophy. This philosophy puts the patient firmly in the centre and guides the dermatologist in always adopting an intrinsically tailored and individualised approach towards all aspects of patient management. Although it has been a part of dermatology since the specialty began, it is arguably only in the last 25 or so years that it has been truly been brought to the fore.

The time around the turn of the 21st century heralded rapid progress in our understanding of the genetic and molecular basis of disease, peaking with the sequencing of the entire human genome and the introduction of 'massively parallel' sequencing techniques. This journey to 'personalised medicine' has been an impressive catalyst for delivering more patient-focused care within dermatology. For example, individual genetic variation has long

been recognised to play a key role in producing variability in the efficacy and toxicity of various drugs. As such, dermatology has fostered a close alliance in the last 25 years with pharmacogenetics — the study of how single gene variations affect the metabolism and action of drugs — in order to shift the treatment paradigm for skin disorders from one employing empirical, 'trial-and-error' approaches to more optimal, *relatively more* personalised therapies[1].

Dermatologic treatment is unique in that it is required not only to rectify the underlying pathological aberrations but also to remove all visible remnants of disease, a process specific to each patient. For example, the age-old first-line treatment offered to most individuals with skin cancer is surgical excision[2]; however, the exact protocol used has been refined the last 25 years and is now guided by a multitude of patient-specific factors, including cancer location, type and stage, and patient preference. In essence, this approach minimises the risk of recurrence while improving cosmetic outcomes.

A 'diagnosis' in dermatology encompasses not just the specific pathology (or pathologies) involved but also intimately considers many patient-specific psychosocial factors. Although research in the last 25 years has solidified our understanding of the psychosocial burden of chronic skin disease, one cannot view these findings as new or unforeseen. This point can be illustrated using the example of rosacea, in which emotional psychological stressors are known to function as precipitants of disease exacerbation through complex, albeit poorly understood, psychoneurocutaneous cascades[3]. Thus, the question which arises spontaneously is akin to the ‘chicken or the egg’ causality dilemma: does a skin disease such as rosacea first cause a psychological stressor (which in turn acts to propagate it) or do a set of highly innate psychosocial factors somehow initiate the disease process? Although the answer probably lies somewhere in the middle, the importance *itself* of seeking the answer

has been increasingly recognised in the last 25 years as it holds the promise of providing insights into how to effectively break the relentless stress mediated exacerbation cycle which characterises so many skin diseases. This has provided the foundation for significant developments into elucidating the precise bidirectional relationship between skin disease and a patient's psychosocial traits and dimensions.

References

[1] Motsinger-Reif AA, Jorgenson E, Relling MV, Kroetz DL, Weinshilboum R, Cox NJ, et al. Genome-wide association studies in pharmacogenomics: successes and lessons. *Pharmacogenet Genomics*. 2013; 23(8): 383-394.

[2] Bath FJ, Bong J, Perkins W, Williams HC. Interventions for basal cell carcinoma of the skin. *Cochrane Database Syst Rev*. 2003; 2: CD003412.

[3] Cribier B. Pathophysiology of rosacea: redness, telangiectasia, and rosacea. *Ann Dermatol Venereol*. 2011; 138(3): S184-S191.