

# The World is Changing and Along with it the World of Dermatology.

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Our scientific advance has opened up limitless possibilities and the future for young dermatologists is exciting.

What have we achieved in the past 4 decades? It is time to assess our success and failures and assign the report card to history. There has been a voluminous increase in the scientific material in our speciality. Text books with two volumes have doubled to four volumes. New diseases, syndromes and therapies have been discovered and patients have benefited substantially.

The case load and the incidence of leprosy have gone down significantly with better access to diagnosis and medicines at the primary health centres. New surgical techniques have improved hand deformities while trophic ulcers no longer cause morbidity levels as in the past. Yet, there is the lurking threat of new resistant forms of leprosy starting a new chain of infections in society. It is prudent not to take one's eyes off the ball by remaining complacent about resurgence of leprosy.

Till the early 80's we had not heard of HIV. Yet it became the most dreaded disease in the next two decades claiming millions of lives across the globe until affordable drugs were made available. Developing economics suffered the greatest hardship with its youthful population being decimated.

Research is an area that needs further investment by governments and more commitment by our colleagues as it is the lifeblood of progress. It is required to establish facts, reach new conclusions and gain new knowledge. Basic research for discovery and applied research for medical treatments are equally important. Research using primary data should be cross sectional with case control, cohort and randomized controlled trial. Research using secondary data must consist of literature review, meta-analysis and analyses of existing data collected for any purpose.

What will be our future priorities? It will be tackling cancer, complicated psoriasis, atopic dermatitis, autoimmune diseases, virulent infections and poor wound healing. The next decade will be more focussed on individual diseases. Genetic diseases will be treated using chromosome transfer technologies. For example designer therapies with use of engineered antibody, antisense nucleotide and gene modulating agents will be used. We will need advanced expertise, advanced lasers and massive hospital resources. We are already using engineered antibodies to target T lymphocytes in psoriasis; BCL-2 gene modulation is effective therapy for remission of melanoma metastasis.

We are just past the centenary of the Nobel Prize award to Paul Ehrlich, the father of targeted therapy, and the half-centenary of EGF receptors as models for biological signalling and targeted cancer therapy.<sup>1</sup> For personalized therapy we now must pre-identify likely responders and treat, simultaneously, multiple targets detected in an individual's cancer.

People will age slower and live much longer. Mechanism based interventions will be required to delay ageing. Ultra Violet light and time cause similar destruction of dermal matrix infrastructure. The result is old looking skin. We have unravelled mechanisms responsible for these abnormalities. These mechanisms can be used to help understand how currently available interventions work, and how new ones can be devised. This approach will benefit growing numbers of patients who desire a more youthful appearance.

Regulation of gene expression will be the therapy in future. The human genome contains about 25,000 genes.<sup>2</sup> The expression of each of these individual genes needs to be appropriately controlled to suit the function and environment of each cell, and must change to respond to new conditions or signals. One of the general aims of biologic research is to understand how a cell's pattern of gene expression is orchestrated to promote coordinated growth and development and to understand how the inappropriate expression of genes is involved with disease.

The basic dogma of molecular biology states that the template for genetic information is encoded in DNA. Genes consist of segments of DNA that are transcribed into RNA molecules, which are then transported from the nucleus to the cytoplasm, where they are translated into proteins.

Cervical neoplasias caused by HPV will be eliminated by 2050, since the era of anti-oncogenic vaccines will have become mainline therapy. The global health care burden will be significantly reduced.

We will be bombarded with bulk information. But this does not necessarily beget much useful knowledge. Spirituality and religion will continue to have a disease modifying role. If people live in a Godless society with loss of faith, stress levels will increase and flare up of diseases such as psoriasis will worsen.

We must turn our attention to lifestyle dermatology. It is our Trojan horse. A clinical dermatologist undergoes years of training and thereafter a salary or his practice fetches moderate financial returns. Whereas the cosmetic dermatologist who spends a few weeks learning lasers, fillers and peels earns huge returns greatly disproportional to the time and effort spent in learning the nuances of cosmetology. The fear is that cosmetology will be detrimental to our speciality and will create a backlash in academic dermatology.

Once we get trivialized to the level of a beautician we will not attract the best and brightest or latest. We will still struggle with ethics. Is it ethical to use a laser with an high fee to remove a wart that can be removed by inexpensive cautery? How will we respond when a lady asks us to write her prescription in her husband's name as his company will reimburse his bill? Will you use biopsies as a tool to augment your income rather than make a diagnosis?

We have to prevent the corroding of our core. If we fail to ground dermatology in a strong set of moral values we will suffer loss of public respect. Cardinal Bernardin said that "Maintaining our professional covenants requires a willingness to incorporate into our daily lives the ancient virtues of benevolence, compassion, competence, intellectual honesty, humility and suspension of self-interest."

## REFERENCES

1. Sanna V, Pala N, Sechi M. Targeted therapy using nanotechnology: focus on cancer. *Int J Nanomedicine*. 2014;9:467-83.
2. International Human Genome Sequencing Consortium. Finishing the euchromatic sequence of the human genome. *Nature*. 2004;431(7011):931-45.