
Preface

When a student of Life Sciences (or Biosciences or Biological Sciences) subject embarks on a career path, the first choice may be education and the second research. Education is passing on acquired knowledge and Research is generating new knowledge. An important aspect of Biological Sciences especially the classical subjects like Zoology, Botany and Physiology, along with the newer disciplines of Microbiology, Molecular Biology, Biotechnology and Immunology, is to understand life as we know it. Taxonomy helps classify the life forms and Biology aims to study them. Health Sciences is a follow-through of this same study pertaining to human life. Medical Sciences and Anthropology are the other disciplines that study intervention strategies in health and disease and human biology, prehistory, cultural aspects and evolutionary aspects through present day, respectively. I have always felt, as a student of Zoology, that the pattern of the structural and functional aspects of life events can be studied. I was introduced to the concept of Systems Biology much later. That all forms of life have some advice to offer, as is celebrated in the Vedas and Upanishads of the ancient Hindus, is amply exemplified as I travelled the long road from classical taxonomy, the basics of the functional units of life cells and Cell Biology, the technical aspects of engineering the cell and its parts in Molecular Biology and ultimately my specialized training in Immunobiology and Stem Cell Biology and then the translational aspects namely Inflammation Biology and Regenerative Medicine, respectively. The aspects that need to be mentioned are technology, prior knowledge and present context of the research, proposal points, that is where we wish to start, why (rationale of the study), expected outcome and where we go from the lessons learnt—these make up the patchwork quilt of understanding basic principles of life and living forms so that they may become viable processes or products, bench-to-bedside health sciences aspects, missing nuances of fundamental threads of life that can lead to technology platforms and ecological aspects that can be analogous both from the perspective of within the living form and outside it. Connected and discrete systems thus take form from apparently disorganized and disparate melee of living organisms that share this planet with us. Questions ought to be simple and ways to find answers simple as well. Technology ought to be applied as per the need to derive answers, troubleshoot, find alternate strategies if the original one fails and so on, and so forth. This book ought to give some answers in tissue engineering and validation in preclinical models;

drug discovery efforts using eco-compatible probiotics, nanoparticles, polymers and peptides; and understanding signatures of behaviour of living forms at the molecular and cellular level for appropriate intervention. Green technology exploration, using advanced assays for quantitative and qualitative assessment and determination of therapeutic, prophylactic, maintenance, diagnostic or cosmetic uses of food in addition to nutrition, remains a key mission of Translational Outcomes Research Group. Biodiversity exploration not only validates usefulness of the same but also ensures their conservation. Biosurvey, bioprospecting and bioresource generation remains a mandate of the Life Sciences practitioners so that appreciation of living forms and translation of that powerful knowledge may strike a sustainability on this planet.

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