

ERROL CLIVE FRIEDBERG

Errol Clive Friedberg was born in Johannesburg and attended the University of the Witwatersrand where he was awarded the Bachelor of Science and MBBCH degrees. After an internship at King Edward VIII Hospital in Durban, he returned to Wits to begin his training in pathology. He left South Africa in 1965 after accepting a residency position to complete his training as a pathologist and carry out post-doctoral training in biochemistry at Case Western Reserve University in Cleveland. Dr Friedberg's subsequent move to Stanford University was delayed by his unexpected drafting into the US Army Medical Corps in 1968, but fortunately, he was able to carry out his military service as an independent investigator at the Walter Reed Army Institute of Research in Washington DC. In 1971, he joined the faculty of the Department of Pathology at Stanford University where he rose through the academic ranks to the position of Professor, to which he was appointed in 1984. He established and served as Director of the Graduate Program in Cancer Biology at Stanford, one of the first graduate programs in the USA dedicated to the study of cancer as a disease entity. In 1990, Professor Friedberg was appointed as Professor and Chair of Pathology at the University of Texas Southwestern Medical Center.

During his years away from South Africa he has continued to encourage medical researchers from his country of origin. He has visited Wits as a von Weilligh Fellow, conducting a postgraduate course in molecular genetics and participating in other teaching activities at the University, as well as in an advanced course organised by the Medical Research Council.

Professor Friedberg's seminal contributions to the field of DNA repair are many and varied. His early work focused on the purification and characterisation of a novel class of enzymes called DNA glycosylases from *E. coli* bacteriophage phage T4. The T4 UV endonuclease remains a widely used tool for detecting UV-induced photodimer lesions in DNA. In the early 1980s Professor Friedberg turned his attention to studying the molecular mechanisms of excision repair in eukaryotes as a means of gaining insights into the pathogenesis of the excision repair-defective and cancer-prone hereditary disorder, xeroderma pigmentosum. His astute recognition of the fact that the yeast *Saccharomyces cerevisiae* might provide an important model system for investigating the genetics and molecular biology of the complex pathway of nucleotide excision repair in higher eukaryotes led to the discovery of many of the genes involved in nucleotide excision repair in this model organism which he and his co-workers characterised in detail. Following the cloning of the first human nucleotide excision repair gene several years later, it became evident that the information gleaned from the yeast system could be directly extrapolated to the excision-repair-defective human disease, xeroderma pigmentosum.

In a series of classic studies carried out in the 1990s in collaboration with Roger Kornberg, his long-time colleague and friend at Stanford University, Professor Friedberg and co-workers made the startling discovery that the basal transcription factor TFIIF of RNA polymerase II is essential not only for messenger RNA synthesis (transcription), but also for nucleotide excision repair. The establishment of this previously unrecognised link between the processes of transcription and repair in eukaryotic cells was one of the two major advances in the field of DNA repair that led

to the cellular DNA repair machinery being designated the 1994 'Molecule of the Year' by the journal *Science*.

In recent years, Professor Friedberg has turned his attention to exploiting mouse models for studying human diseases associated with DNA repair defects. A highlight of this work was the cloning in his laboratory of the CSA gene, one of two genes which, when mutated, result in Cockayne syndrome, the severe developmental and DNA repair disorder. He also generated important mouse models of xeroderma pigmentosum, which show high susceptibility to liver and lung cancers in addition to skin cancers and which hold enormous promise for studying human disease.

Professor Friedberg has published more than 300 original papers in peer-reviewed journals. He is the sole or senior author of six books, including the standard text in the field entitled *DNA Repair and Mutagenesis*. Professor Friedberg has also edited several books and journal volumes. He has delivered numerous lectures and organised many international conferences on DNA repair. He is a member of the Board of Directors of Universities Associated for Research and Education Pathology and is a Fellow of the Royal College of Pathologists. He received the prestigious Rous-Whipple Award for 2000 from the American Society for Investigative Pathology in recognition of his outstanding contributions to the field of DNA repair and earlier this year delivered the prestigious Mellon Lecture at the University of Pittsburgh. He serves as Editor-in-Chief of the journal *DNA REPAIR*.

Errol Clive Friedberg is one of the University's most distinguished graduates. It is with great pride and pleasure that the University confers upon him its highest honour, the degree of Doctor of Science in Medicine *honoris causa*.