CITATION FOR DR SYDNEY BRENNER: HONORARY GRADUAND

12 APRIL 2014 By Professor Paul Maylam

"The latter half of the twentieth century", it has been said, "will be remembered as one of the great periods, perhaps the greatest, in the history of biology". It has also been said that one of the principal contributors to this golden age has been Dr Sydney Brenner. This morning's honorary graduand surely ranks among the finest and most distinguished of South African-born scientists.

This rise to the pinnacle of scientific achievement started from humble beginnings. Born in Germiston eighty-seven years ago, his father a cobbler who could not read or write, growing up in a family home comprising two rooms at the back of a shop. Yet the young Sydney was able to read fluently by the age of four – an early sign of what would be his lifelong spirit of self-reliance and self-discipline – an early indication, too, of his unceasing, voracious appetite for reading.

Completing the first three years of primary schooling in one year, he started the fourth year aged six, and by the age of ten was conducting his own scientific experiments, extracting pigments from leaves and grasses.

Then on to Wits University, enrolling for a degree in medicine at the tender age of fifteen, three to four years younger than his classmates. But other interests took over. Such was the intense curiosity of this gifted student that he digressed into a range of subjects – botany, histology, palaeontology, philosophy, and, most important, genetics, a field which had long intrigued him and the one in which he completed his Wits masters thesis. There was time, too, for involvement in student politics, organising debates, and, along with Phillip Tobias becoming one of the most prominent liberal students at the university.

Then a scholarship to Oxford, where he completed a D.Phil. at Exeter College. Those with an Oxford affiliation may not like to hear this – but perhaps the key moment of Sydney Brenner's time at Oxford was a trip he took to Cambridge in April 1953 – there meeting for the first time two of the twentieth century's most renowned scientists, Francis Crick and James Watson, Dr Brenner being among the first group of people ever to see Crick and Watson's newly structured model of DNA in the Cavendish Laboratory.

For two reasons this was a crucial moment in Dr Brenner's career: it clarified the great challenge ahead – to crack the genetic code – and it initiated a collaboration with Francis Crick that would last for decades and become one of science's great partnerships – a partnership which began in earnest in 1957, with the two sharing an office at the Laboratory of Molecular Biology in Cambridge.

The two complemented each other – Sydney Brenner adept at thinking up novel experiments, Crick playing the role of critic and clarifier, both at the centre of significant advances in molecular biology in the 1950s and 1960s. One of Sydney Brenner's most notable discoveries was to establish the existence and function of messenger RNA and to demonstrate how the order of amino acids in proteins is determined.

In the mid-1960s Dr Brenner turned his attention to unlocking the development of the nervous system – to this end working with a minute one-millimetre long roundworm as a model organism with a simple structure and nervous system – the mapping of its genes resulting in one of his most influential papers, published in 1974 and later collecting over 6000 citations. Then in the 1990s working on a much more complex organism, the Japanese puffer fish, successfully deciphering the fish's full genetic sequence. And more recently involving himself in the coelacanth genome sequencing project – a project initiated by scientists here at Rhodes and completed in 2012.

The awards, honours, fellowships bestowed on Dr Sydney Brenner are far, far too numerous to list here. To mention a few: Britain's Companion of Honour in 1987; France's Legion d'Honneur in 2003; South Africa's Order of Mapungubwe in 2004; today's will be his twenty-fifth honorary doctorate, the first awarded back in 1967 when still only forty years old; but one award stands out – the Nobel Prize in Physiology or Medicine, in 2002, shared with Robert Horvitz and John Sulston.

While showered with awards, Sydney Brenner has never been motivated by a quest for prizes and honours, rejecting, as he does, the modern idea that the chief rewards of being a scientist are prizes, grants and publications. For him the greatest reward is to solve problems – this is the striving that has driven his brilliant career.

Note his approach to tackling problems – try things out, take risks, experiment – what he has been doing for 77 years since the age of ten. He laments, though, that nowadays there is less and less opportunity for scientists to operate in this open-ended way, as funders and bureaucrats want definite results, making it difficult to take risks. He bemoans, too, the demand for instant and constant results from scientists, a pressure that militates against thorough, long-term research.

The outstanding researcher Rhodes University proudly honours today is not just a single-minded scientist, not at all the stereotypical boffin. He is a tireless storyteller, a superb conversationalist who loves wordplay, who can discourse on a huge range of subjects – politics, philosophy, literature, as well as science – and a wonderful mimic and actor who reportedly could "render a speech in Hungarian, a lecture in Japanese", who could mimic Stalin or Franco. A man, too, endowed with great wit and a capacity for self-deprecation. "Most of what I say

is rubbish", he is reported to have once said, "but there is the odd idea that can be developed into something".

Well, these "odd ideas" amount to contributions to biology that have been described as "staggering in their originality, breadth and depth". "Few biologists", it is said, "have demonstrated such a gift for innovative experimentation". About to be honoured is one of the most outstanding scientists to have grown up and been schooled on South African soil, Nobel prize-winner, one of the past century's leading pioneers in genetics and molecular biology, and surely an inspirational figure for young scientists sitting on this stage.

Mr Chancellor, I have the honour to request you to confer on Dr Sydney Brenner the degree of Doctor of Science, *honoris causa.*