



**Institute of
Immunology**



Hamilton Institute

Divide and conquer: The remarkable story of our immune defense system

An E.T.S. Walton Lecture

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Walter and Eliza Hall Institute for Medical Research, Melbourne, Australia

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The Royal Irish Academy, Dublin

Fifty years ago Macfarlane Burnet published a two page manuscript that came to be seen as one of the most important scientific papers of the 20th Century. In this paper Burnet outlined the principles for understanding immunity - the remarkable ability of our bodies to detect and eliminate a vast range of potential disease causing organisms. Burnet's idea solved a centuries old problem and precipitated a tremendous burst of experimental investigation into the detailed operation of the immune system that continues to this day and has had a major impact on human health.

In this anniversary year of Burnet's landmark paper, I will re-examine the problem of immune specificity and highlight the many medical triumphs that occurred both before and after Burnet's grand synthesis. In addition I will outline the state of immune knowledge today and look at some of the great challenges facing us if we are to further unlock the power of our immune systems for medical benefit. While the story of immunity illustrates the importance of scientific ideas and empirical discovery there is also a subplot. As a result of Burnet's ideas in the 1950s the small medical research community in Melbourne, where Burnet worked, became an international centre for immunology and established scientific traditions that continue strongly to the present day. Thus, remembering Burnet's paper in its anniversary year serves to illustrate the immense social and economic benefits that flow from supporting creative individuals and how their ideas continue to resonate within, and inspire, a community for many decades.