



A STUDY OF CELL-MEDIATED IMMUNITY IN SUBJECTS VACCINATED

AGAINST Q FEVER AND AFTER Q FEVER INFECTION

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PREFACE

The causative organism of Q fever, originally named *Rickettsia burnetti* and now known as *Coxiella burnetti*, was isolated, quite independently and at about the same time (mid 1930's), by Derrick and colleagues from patients with "abattoir fever" in Brisbane, Queensland, Australia, and by Cox and colleagues from ticks (*Dermacentor andersoni*) collected at Nine Mile Creek, Hamilton, Montana by staff from the nearby Rocky Mountain laboratory - a well established centre of excellence for rickettsial studies originally set up to investigate Rocky Mountain Spotted Fever.

Work in the 5 or so years after the initial isolation of the Q fever organism in these two widely separated parts of the world established that the Australian and American strains of *C.burnetti* were closely similar, both biologically and antigenically, and that both caused a severe fever and sometimes pneumonitis and hepatitis in man. Also that the organism was widely distributed in ticks and small bush animals in Queensland (see Historical and Epidemiological sections).

Sporadic cases and small outbreaks of Q fever in American laboratories handling the Q fever organism and outbreaks of Q fever in abattoirs and meat processing plants in Chicago and Texas illustrated the similarity of the epidemiology of Q fever in America and in Australia.

Extensive outbreaks of Q fever among Allied and Axis troops during the

Mediterranean campaigns of the 1940's then revealed that Q fever was not limited to the USA and Australia. Studies after the war, and particularly during the 1950's in North and South California, showed that in addition to reservoirs of Q fever infection in arthropods and small bush animals identified earlier, domestic animals such as cattle, sheep and goats were also infected and that the organism could be transmitted among them by aerosol or by ingestion, independently of arthropod vectors.

The distribution of Q fever is now recognised to be essentially world-wide, although its prevalence varies considerably from country to country depending partly on the patterns of animal husbandry, the size of the population and the mix of domestic animals and the level of awareness and interest in the disease among physicians and public health workers.

In Australia Q fever, as an acute disease and because of certain chronic sequelae, is an important cause of morbidity among meatworkers and in the agricultural industry in general; the consequent expense to the industry and to Health Services is substantial. Studies of its clinical complications, pathogenesis, immunopathology, and particularly of its prevention by vaccination are therefore highly appropriate in the Australian environment.

In addition to these practical considerations, *C.burnetii* is a highly successful intracellular parasite, able to grow in macrophages, to modulate the immune response of the host, and to establish chronic infections. It therefore merits study in its own right and for the light that understanding of its interaction

with the host may throw on pathogenetic mechanisms with *Mycobacteria*, *Listeria*, *Legionella* spp. and other intracellular pathogens.