

Copy for Mr. Liddell

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AIR MAIL

24th October, 1957

Professor P.W. Wilson,
Department of Bacteriology,
University of Wisconsin,
MADISON. WISCONSIN. U.S.A.

Dear Professor Wilson,

For the past four years I have been working in Canberra with a group studying various aspects of the Rhizobium-legume symbiosis. Two and a half years of this period were spent under the direction of Dr. P.S. Nutman, now head of the Soil Bacteriology Department at Rothamsted, England. For the first 1½-2 years my work was concerned with nodule and bacteroid structure in a range of host-bacterial combinations. My early training was in the Microbiology Department of the University of Otago, Dunedin, New Zealand, and my interests in the root nodule work have always been mainly concerned with the bacterial component of the symbiotic system. Consequently for the past two years I have been studying the physiology and structure of the so-called "bacteroids" of root nodules in relation to the host tissue in which they lie. I have examined respiration, nucleic acid and nitrogen content of bacteroids throughout the functional life of soy bean nodules, and am at present engaged in a study of the terminal electron transport system of these forms. In addition, electron microscopy of thin sections of soy bean and clover nodules, has revealed a sub-microscopic membranous structure which encloses individuals and groups of bacteria in the host cytoplasm.

The results of these studies have raised the possibility that nitrogen fixation occurs not in the bacteroids, but at or near their surface, possibly in the abovementioned membranes. In order to clinch this an isotopic study of the incorporation of fixed nitrogen into the host tissue and into the bacteroids, is necessary: that is, does the fixed N appear first in the bacterial component of the nodules, or in the nodule cytoplasm.

Now comes the point of this communication. At present we have no facilities for heavy isotope work, although there is a mass spectrograph in the Australian National University which is virtually next door to us, but they are at present engaged in work with lead isotopes and cannot conveniently help us at present. The suggestion has been made that I write to you and enquire if it would be possible to come and work in your department for one year, to gain experience with ^{15}N and perhaps even to carry out the experiments which we have in mind. If the programme of your department would permit this, the experience I would gain and the contacts I would make with people interested in symbiotic nitrogen fixation would prove most valuable for future work which I may be able to do on this subject.

It is my intention to apply for a Commonwealth Scientific and Industrial Research Organization Overseas Postgraduate Studentship for 1958-59. However there is only a limited number of these awarded each year for study in the United States and my chances of winning one are therefore not great. Should I be unsuccessful would there be any possibility of a research assistantship or other similar appointment in your department? If there is, I feel sure C.S.I.R.O. would provide additional financial support for travel to and maintenance in the United States.

I will, of course, be pleased to supply in greater detail my qualifications, experience, publications and so on should you require such information, but I think I have provided sufficient for this preliminary enquiry.

I am,

Yours sincerely,

(F.J. Bergersen)
RESEARCH OFFICER