

## CORRESPONDENCE

*This department is for the publication of informal communications that are of interest because they are informative and stimulating, and for the discussion of controversial matters. The mandate of this JOURNAL is to disseminate information relating to leprosy in particular and also other mycobacterial diseases. Dissident comment or interpretation on published research is of course valid but personality attacks on individuals would seem unnecessary. Political comments, valid or not, also are unwelcome. They might result in interference with the distribution of the JOURNAL and thus interfere with its prime purpose.*

### Inhibition of Rubino Factor as a Test for Detecting Antigens Common to Leprosy Bacilli

TO THE EDITOR:

Rubino (Ann. Inst. Pasteur **47** [1931] 147-172) factor is found in most sera from lepromatous leprosy patients and it is considered specific for leprosy. This factor produces the clumping and rapid sedimentation of formalized sheep red blood cells and it was found only in leprosy patients.

Antigens from *in vivo* grown *M. leprae* were found to neutralize this factor, inhibiting the reaction. The inhibition of Rubino test was also detected with antigens produced from cultures of some mycobacteria: *M. avium*, *M. gallinarum*, *M. tuberculosis*, *M. kansasii*, *M. simiae*, *M. abscessus*, *M. borstelense*, *M. capsulatus*, *M. peregrinum*, *M. xenopii*, *M. marianum* and *M. scrofulaceum* (Almeida and Kwapinski, Publ. Cent. Est. Leprol. **14** [1974] 73-90). Antigens produced from *M. fortuitum*, *M. intracellulare*, *Actinomyces israeli* and *A. naeslundii* did not neutralize the Rubino factor.

The inhibition of Rubino factor may be a test for detection of antigens shared with *M. leprae*.

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### Initiation of Armadillo Program

TO THE EDITOR:

I have read with growing concern the public letters and notes which have appeared in IJL (**45**: 298-299, 1977; **45**: 64-65, 1977), ASM News, and LSM written by Dr. Kirchheimer (and in one case by Dr. K. Prabhakaran) concerning the genesis of the armadillo-leprosy program. I dislike public controversy, but I feel that a few clarifying statements in regard to the start of the armadillo-leprosy program are in order to protect my scientific reputation specifically, as well as aid the cause of women in science generally.

I first made the suggestion that the armadillo might be a useful animal for the study of leprosy at a meeting with members of the U.S. Leprosy Panel at Gulf South Research Institute on March 19, 1968. This was later confirmed in a memorandum written by Dr. C. C. Shepard dated September 7, 1971.

The reasons for my making this suggestion are fully disclosed in papers written by me which have appeared in IJL (**39**: 703-714, 1971) and LEPROSY REVIEW (**45**: 8-14, 1974).

Dr. Kirchheimer was not present at this meeting, but a panel member suggested

that I contact him as a possible collaborator. I selected him because of this suggestion and the close proximity of Carville to New Iberia.

During the following weeks I made a number of visits to Carville to discuss the preparation of a grant application with Dr. Kirchheimer and he was receptive to the idea. In preparing the application, I wrote the sections on the background of the armadillo, animal husbandry, and the reasons why it should be a good model for leprosy research. Dr. Kirchheimer wrote the sections on past unsuccessful searches for an animal model, and the standard microbiological technics for preparing inoculum, etc. Thus, Dr. Kirchheimer did not write my proposal for me as claimed in LSM (August, 1973, L-456-1) and the Carville STAR (March-April, 1974, p. 1). I submit that my contributions were the innovative ones.

A grant to establish the armadillo as an animal model for the study of leprosy was awarded by CDC to GSRI on October 1, 1969 (No. CC-N-00476). I was the principal investigator and Dr. Kirchheimer was associate in microbiology. If this program was Dr. Kirchheimer's concept, why would he ever consent to such an arrangement?

Dr. Chapman Binford had been contacted prior to submission of this grant application to request his cooperation in supplying infected human tissues for inoculation of armadillos. The first armadillo to develop disseminated leprosy, animal No. 8, was inoculated by me and other GSRI staff members with material supplied by Dr. Binford. Dr. Kirchheimer was out of the country at the time this material became available, so I suggested that Dr. Binford send the tissue specimen to Carville for work-up by Dr. Kirchheimer's technician, and that I would pick it up and make the inoculations, which I did. When Dr. Kirchheimer returned he called me and stated, "Binford's biopsies were useless because of their contamination and he would like to discontinue this source for inoculum unless they are collected under sterile conditions" (quoted directly from GSRI Contact Report).

Four animals were inoculated which I examined weekly. When lesions began to develop in armadillo No. 8 in the spring of 1971, at all four sites of inoculation, I was convinced that the experiment was a suc-

cess, and telephoned Dr. Kirchheimer to inform him of my findings. He came to New Iberia to take biopsy specimens, and I later gave him the carcass for necropsy when the animal expired on July 15, 1971 (IJL 40: 229). There was no immediate news from Carville. Finally, when I phoned, I was informed that the animal was loaded with AFB and later was sent a copy of a note which had already been submitted to Leprosy Scientific Memoranda (LSM, September 1971, L-241) giving an account of our findings with Dr. Kirchheimer as the senior author. This LSM note was submitted without my knowledge or consent, even though I was principal investigator on the project. The first paper was also being prepared for the IJL on this animal without my knowledge or consent.

I was unhappy with this unilateral action and telephoned my project officer (Dr. Myron Willis of CDC) on August 27, 1971 to tell him of our problems since they seemed to be continuing and becoming more complex. I reviewed in some detail what had happened including the writing of papers without my knowledge. Dr. Willis called me the next day to report on talks with Dr. Kirchheimer. Dr. Kirchheimer was very adamant with Dr. Willis and insisted that the minute tissue left GSRI-NR—GSRI no longer had claim to those tissues. He (Kirchheimer) then considered that he was working, not under the CDC leprosy grant, but under one of his grants from NIAID. Dr. Willis, of course, could not agree with this and he checked all of our applications, correspondence, etc., and said that our application stated clearly that the microbiological work would be done within the framework of the CDC grant and that Dr. Kirchheimer would collaborate on this. In addition, there was a letter from Dr. Trautman (Director of the U.S.P.H.S. Hospital at Carville, La.) submitted with the proposal, indicating their willingness to collaborate.

Dr. Binford visited New Iberia in August 1972 to perform necropsies on armadillos No. 5 and 18. We sent Dr. Kirchheimer tissues from armadillo No. 5 since he had previously found AFB in a biopsy specimen from this animal. Armadillos No. 5 and 8 were the only two necropsied animals from the GSRI colony with disseminated disease that Dr. Kirchheimer ever examined. His

claim that Dr. Binford made no contribution to the diagnosis of leprosy in 15 animals (*ASM News* **42**: 659, 1976) is not correct.

It should be noted also, that of the first eight inoculated armadillos to develop leprosy, five were inoculated with material supplied to me by Dr. Louis Levy from mouse foot pad passage material (*Science* **183**: 851-852, 1974).

In summary, Dr. Binford was associated with this program from the start through the supply of human biopsy material for inoculation of armadillos. Later on he performed necropsies of some of the animals and histopathologic evaluation of all of the

first animals to develop disseminated disease. Dr. Kirchheimer's contribution was as the microbiologist on the program. The person with the innovative concept for the program, the one initiating the study and charged with the responsibility for the program was I.

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