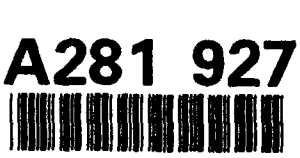

1. AGENCY USE ONLY (Leave blank)	2. REPORT DATE	3. REPORT TYPE AND DATES COVERED
	July 7, 1994	FINAL Jan 1, 1989 - Dec 30, 1993

4. TITLE AND SUBTITLE
Development of a Rapid Chair-side Test to Detect Pathogenic Bacteria Associated with Periodontal Disease

5. FUNDING NUMBERS
N00014-90-J-4094

6. AUTHOR(S)
George R. Riviere, D.D.S., Ph.D.

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)
Oregon Health Sciences University
3181 SW Sam Jackson Park Road
Portland, Oregon 97201-3098

8. PERFORMING ORGANIZATION REPORT NUMBER
FINAL

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)
Office of Naval Research
1107 NE 45th Street, Suite 350
Seattle, Washington 98105-4631

10. SPONSORING/MONITORING AGENCY REPORT NUMBER

11. SUPPLEMENTARY NOTES

12a. DISTRIBUTION/AVAILABILITY STATEMENT
UNLIMITED

This document has been approved for public release and sale; its distribution is unlimited.

12b. DISTRIBUTION CODE

13. ABSTRACT (Maximum 200 words)

The purpose of this contract research was to produce a simple and rapid test that would identify dental plaque bacteria associated with early detection of periodontal disease. Spirochetes were studied because of their strong correlation with destructive, progressive periodontal disease. Monoclonal antibodies against *Treponema pallidum* led to the discovery of a previously unrecognized oral spirochete in plaque at diseased sites and within gingiva near periodontal lesions. *In vitro* experiments demonstrated that these pathogen-related oral spirochetes (PROS) were capable of moving through living tissue; no other plaque bacteria and no cultivable oral spirochete were invasive. PROS has been found at sites of periodontal disease in HIV-negative people and in people with HIV-associated periodontal disease. Extensive efforts were made to isolate and cultivate PROS so that PROS-specific monoclonal antibodies and DNA probes could be developed for the chair-side test. Unfortunately, funding was exhausted before these goals were attained. These data were used to obtain funding from NIH/NIDR (DE09944).

14. SUBJECT TERMS	15. NUMBER OF PAGES
DTIC QUALITY INSPECTED 5	16. PRICE CODE

17. SECURITY CLASSIFICATION OF REPORT	18. SECURITY CLASSIFICATION OF THIS PAGE	19. SECURITY CLASSIFICATION OF ABSTRACT	20. LIMITATION OF ABSTRACT
U			

OREGON
HEALTH SCIENCES UNIVERSITY
611 S.W. Campus Drive, Portland, Oregon 97201-3097 (503)494-8872

School of Dentistry
Department of Pediatric Dentistry

January 20, 1994

CAPT JAMES CECIL DC USN
XO, NAV MED RES DEV COM
BUILDING 1, TOWER 12
BETHESDA, MD 20889-5600

Re: ONR N00014-90-J4094

Dear Sir:

The purpose of this document is make our final report towards our goal of developing a rapid, chair-side test for pathogenic bacteria associated with periodontal disease. As I last reported (September 23, 1993), we two goals for the last stage of our contract. They were 1) to isolate the pathogen-related oral spirochete (PROS) we discovered in dental plaque associated with destructive periodontal disease, and 2) to find a means of continuous propagation for PROS.

We have had several primary cultures derived from plaque that contained PROS but we have had some difficulty in establishing these isolates in continuous culture. We are attempting to determine whether there is a substance in our formulation that is restricting growth, or whether the medium lacks a critical element. We are following some promising leads but we expect the work to take some time. If this line of investigation is successful, you may be confident that I will acknowledge the support you have provided over the years. A list of the publications that were produced with this contract are appended.

I should note in closing that our goal of developing an antibody-based test that could be used at chair-side was not attained. Our early attempts to adsorb immune serum proved unsatisfactory. This disappointment led to the fortuitous collaboration with Dr. Sheila Lukehart who provided monoclonal antibodies specific for pathogenic treponemas. These monoclonal antibodies led to our discovery of a previously unknown treponeme in dental plaque associated with destructive periodontal disease. Our hope was that we could isolate and cultivate the new organism and then develop new PROS-specific monoclonal antibodies and DNA probes. Regrettably, isolation was not achieved in the required time frame. The established *T. pallidum* monoclonal antibodies were unavailable to us for the purpose of developing a proprietary test.

I understand that funds for continuation of this work are not available. We will miss our association with the Navy. We thank you for your firm and generous support.

Sincerely yours,

7/7/94

George R. Riviere
Professor

Publications related to ONR N00014-90-J4094/Riviere

Riviere, G.R., Thomas, D.D. and Cobb, C.M.: In vitro model of Treponema pallidum invasiveness. Infect Immun 57(8):2267-2271, 1989.

Magnarelli, L.A., Miller, J.N., Anderson, J.F. and Riviere, G.R. Cross-reactivity of non-specific treponemal antibody in serologic tests for Lyme disease. J Clin Microbiol 28(6):1276-1279, 1990.

Riviere, G.R., Weisz, K.S., Simonson, L.G. and Lukehart, S.A. Pathogen-Related Spirochetes Identified within Gingival Tissue from Patients with Acute Necrotizing Ulcerative Gingivitis. Infect Immun 59(8):2653-2657, 1991.

Riviere, G.R., Wagoner, M.A., Baker-Zander, S.A., Weisz, K.S., Adams, D.F., Simonson, L.G. and Lukehart, S.A. Discovery of spirochetes related to Treponema pallidum in dental plaque. New Eng J Med 325(8):539-543, 1991.

Riviere, G.R., Weisz, K.S., Adams, D.F. and Thomas, D.D. Pathogen-related oral spirochetes from dental plaque are invasive. Infect Immun 59(10):3377-3380, 1991.

Riviere, G.R., Weisz, K.S., Adams, D.F., Simonson, L.G., Forgas, L.B., Nilius, A.M. and Lukehart, S.A. Relative proportions of pathogen-related oral spirochetes (PROS) and T. denticola in supragingival and subgingival plaque from patients with periodontitis. J Periodontol 63:131-136, 1992.

Rosenstein DI, Riviere GR, and Elott KS. HIV-Associated Periodontal Disease: new oral spirochete found. JADA 124:76-80, 1993.