

Naval Dental Research Institute

JDRI-PR 92-05

MAY 1992



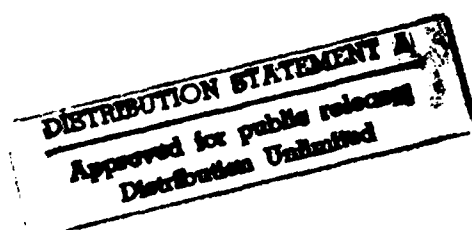
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SUMMARIES OF RESEARCH

FISCAL YEAR 1991



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Naval Medical Research and Development Command
Bethesda, Maryland

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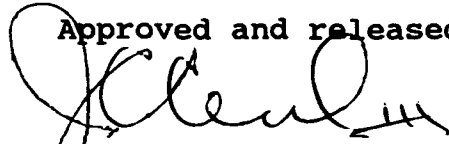
NAVAL DENTAL RESEARCH INSTITUTE
BUILDING 1-H
GREAT LAKES, ILLINOIS 60088-5259

SUMMARIES OF RESEARCH
Fiscal Year 1991

These summaries cover research carried out from 01 October 1990 through 30 September 1991.

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

Approved and released by:

A handwritten signature in black ink, appearing to read 'J. C. Cecil III', is written over the printed name.

J. C. CECIL III
Captain, Dental Corps
United States Navy
Commanding Officer

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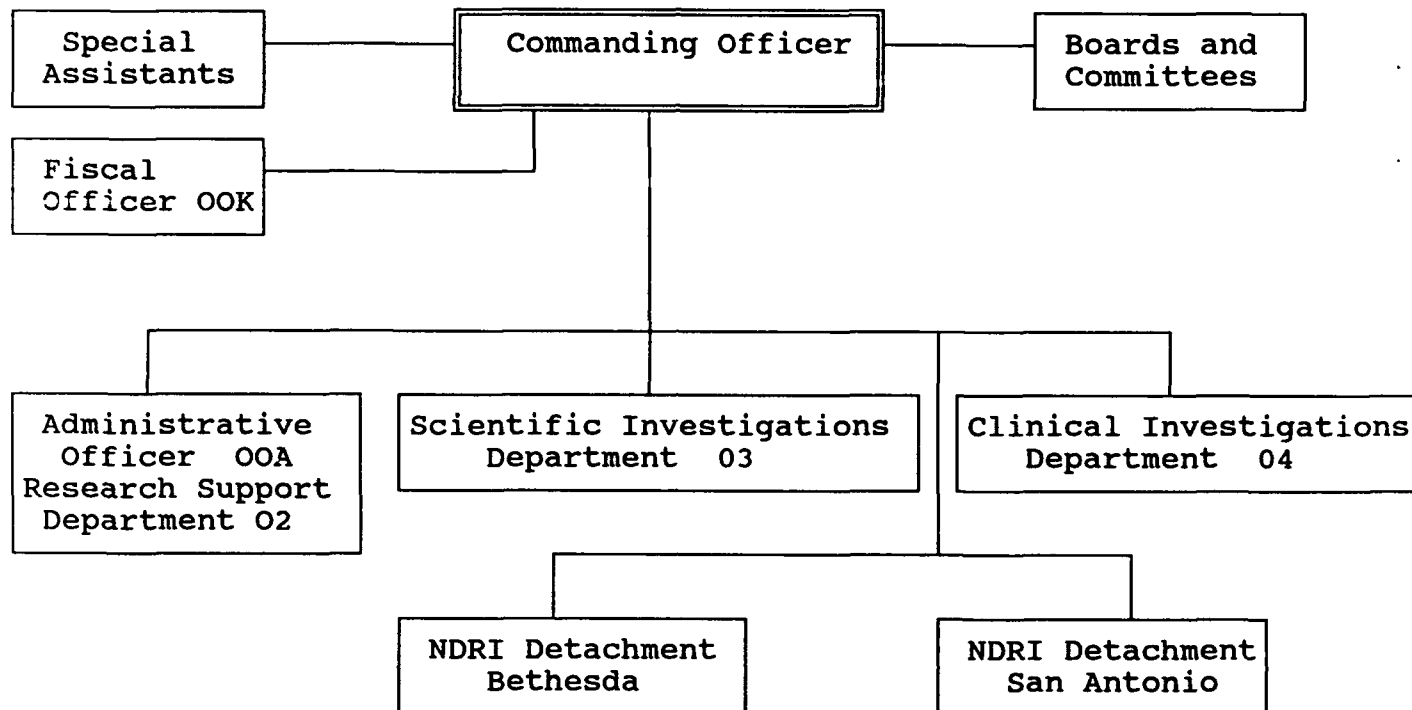
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NAVAL DENTAL RESEARCH INSTITUTE



COMMAND OVERVIEW

COMMAND

The Naval Dental Research Institute was officially established on 01 January 1967 with an Officer-in-Charge. The Institute was developed from the Dental Research Facility, which was a division of the Dental Department, Naval Administrative Command, Naval Training Center, Great Lakes. The Institute became a fourth echelon command on 17 August 1969 under a Commanding Officer. The command is under the direction of the Naval Medical Research and Development Command.

MISSION

The Institute is responsible for conducting research, development, testing and evaluation in dental and allied sciences, with particular emphasis on the problems of fleet and field dentistry and on dental and oral health in Navy and Marine Corps populations.

PERSONNEL

As of 30 September 1991, there are billets for eight commissioned officers and fourteen enlisted members. Additionally, twelve civilians were employed at the Naval Dental Research Institute.

ORGANIZATION

The Institute has undergone reorganization since 1967. The current organization of three major Departments is reflected on the preceding page. The Scientific Investigations Department consists of the Microbiology, Immunology and Molecular Biology Divisions. Respectively, they carry out required microbiological, immunological and bacteriological analyses; biochemical studies of etiological agents and of host factors involved in oral diseases; assistance, advice and preparation of specimens for histological analysis; and research in the field of laboratory animal medicine and dentistry. The Clinical Investigations Department conducts research related to prevention and treatment of infections, problems of dento-alveolar trauma and injury, and the delivery of optimal dental care for the naval population. The Research Support Department consists of Administrative, Veterinary Science, and Material Management Divisions. The Research Support Department provides the Institute with administrative, library, veterinary research, fiscal and supply services, and equipment and facility maintenance.

STATEMENT OF SIGNIFICANT ACCOMPLISHMENTS

NAVAL DENTAL RESEARCH INSTITUTE

Objectives: Dental treatment needs and emergencies continue to afflict Navy and Marine Corps personnel and impact on operations. For over 20 years, annual lost-man days have remained essentially unchanged. The Clinical Investigations Department is currently evaluating oral health and treatment needs as well as new methods and materials which show potential to promote dental wellness and reduce the incidence and impact of dental emergencies. During FY91, the Scientific Investigations Department of NDRI has continued studies aimed at improving military readiness by identifying military patients that are at high risk of a dental emergency by the use of human host response factors, rapid immunodiagnostic assays with monoclonal antibodies, DNA probes, and microbial enzyme diagnostic indicators.

Approach: The problem of dental emergencies is currently addressed through the following three areas of study: (1) epidemiologic assessment of dental treatment needs, oral diseases and their complications (2) evaluation of current and alternate methods to assist in the diagnosis and documentation of oro-facial disease entities and (3) evaluation of methodologies to promote dental wellness and improve dental readiness. Naval personnel provide oral health data through questionnaires, direct examinations and specimens.

CLINICAL INVESTIGATIONS DEPARTMENT

- Examinations were completed and third molar data from 1455 U.S. Naval Academy Midshipmen were entered into computerized files for analysis of complications associated with the extraction or retention of third molars in Naval personnel. Additionally, data collected on dental emergencies of over 300 garrisoned Marine Corps personnel were analyzed to define parameters to evaluate odontogenic infections and complications associated with third molars.

- Data on 324 oral surgery patients were collected relating to complications associated to the extraction of third molars. A report was submitted to the Chief, Navy Dental Corps and presented at the Recruit Dental Conference in Pensacola, FL. An abstract was presented at the annual session of the IADR in April 1991.

STATEMENT OF SIGNIFICANT ACCOMPLISHMENTS (Continued)

CLINICAL INVESTIGATIONS DEPARTMENT (Continued)

- In collaboration with researchers of the Universities of Michigan and North Carolina, a study to determine the oral effects of smokeless tobacco use by Navy men has been completed. Questionnaires assessing the past history of smokeless tobacco use and the prevalence of risk factors have been collected and analyzed by NDRI and the University of North Carolina. Data analysis was expanded to include all tobacco products due to high incidence of smoking among control and experimental groups.

- NDRI has initiated a further investigation to determine the rate of tobacco usage among Naval personnel who were deployed to the Persian Gulf during Desert Storm/Shield and to determine a change in usage before and after deployment.

- Manuscript has been prepared for publication on autoclavable high speed handpiece study which analyzed the longevity, durability, and operating performance of dental handpieces under clinical conditions following repeated steam autoclave sterilization.

- Twenty-one reserve dental officers at twelve reserve centers performed dental examinations to determine the dental treatment needs of Navy and Marine Corps Reserve personnel. Collected data was instrumental in determining dental readiness of deployed reservists during Operation Desert Storm. A report was submitted to the Chief, Navy Dental Corps and an abstract was presented at the annual session of the IADR in April 1991.

- Expanded "Navy and Marine Corps Selected Reserves Dental Treatment Needs" study to include collection and evaluation of data from 3000 Marine Corps reservists called to active duty during the Persian Gulf crisis. A team of NDRI investigators volunteered to assist NDC, Camp Pendleton and NDC, Camp Lejeune. Data collected updated the Naval Dental Corps with real time treatment needs of military personnel deployed during Operation Desert Storm.

- A study to determine the costs of implementing a dental infection control program throughout the Navy is complete. A report has been submitted to the Chief, Navy Dental Corps. Analysis of the surveys determined that the operating costs per patient sitting was \$1.11. Amortization costs were between \$0.23 and \$0.40 per patient sitting.

STATEMENT OF SIGNIFICANT ACCOMPLISHMENTS (Continued)

CLINICAL INVESTIGATIONS DEPARTMENT (Continued)

- The first phase of a multi-site study to determine the cost effectiveness of Navy dental technicians applying occlusal sealants to teeth with incipient caries has been completed at NDC, San Diego. Preliminary results are encouraging.

- Life table analysis was designed to assess survivability of pulp cap treatment performed from 1976-1982 in deep carious lesions of 317 recruits. Efforts to retrieve dental records revealed that 67 of these members are still on active duty. Current examination of these subjects could be a significant contribution to pulp cap survivability estimates.

- Interim estimates of longevity and assessment of failure factors were determined on 81 resin bonded bridges (RBBs) during 1985 and 1986. Anterior RBBs showed significantly shorter estimated survival times (25 months) than posterior RBBs (48 months). An abstract was presented at the annual session of the IADR in April 1991.

- The project "The Effect of Water and Sodium Ion Concentration on the rate of Crack Propagation and Transverse Strength in Dental Porcelains" has been submitted for publication. An abstract was presented at the annual session of the IADR in April 1991.

- Preliminary investigation completed at NDC, Great Lakes, indicated no apparent correlation of recruit AFQT scores and oral health or place of residence. Severity of dental disease may be a significant factor which requires further evaluation.

- NDRI has collaborated with CINCPACFLT to evaluate methods to improve the transfer of data to and from the dental record (NAVMED 6150/12) integrating voice activated transcription hardware, bar coding and automated data processing equipment.

Publications: There were sixteen technical reports and/or manuscripts published or accepted for publication, 5 abstracts presented and 4 major briefings by project investigators to professional organizations.

STATEMENT OF SIGNIFICANT ACCOMPLISHMENTS (Continued)

SCIENTIFIC INVESTIGATIONS DEPARTMENT

---In a previous study of samples from the Multinational Force and Observers Encampment, Sinai Desert, Egypt, a correlation between Porphyromonas gingivalis and Treponema denticola detection was identified; specifically T. denticola was only detected in subgingival plaque samples found to contain P. gingivalis. Therefore, it was postulated that P. gingivalis might produce factors which enhance the growth of T. denticola in the microenvironment of the diseased sulcus. In conjunction with NAMRU-3, Cairo, Egypt, clinical subgingival plaque samples from Egyptian patients have been analyzed for the presence of Treponema denticola and Bacteroides gingivalis. The results have verified our earlier discovery that Treponema denticola and Bacteroides gingivalis are synergistically correlated and some factor is secreted by B. gingivalis that stimulates growth of the spirochete in the microenvironment of the periodontal pocket.

---We further discovered that T. denticola growth factor(s) could be precipitated from culture filtrates of P. gingivalis using either ethanol, acetone, or ammonium sulfate. The volatile fatty acids did not stimulate T. denticola growth. Further experiments will include heat stability, molecular size, purification and possible identification of the growth factor(s).

---Work continued on correctly orienting monoclonal antibodies on latex particles to maximize reactivity with cells of Treponema denticola in a particle agglutination assay. Three biochemical orientation methods were studied: protein G, recombinant protein A/G, and antimouse IgG antibody.

---Work also continued on characterizing monoclonal antibodies produced by a contractor.

---One U.S. Patent was awarded, two patent disclosures were filed, and two patents are pending. Thirteen publications were submitted or printed in scientific journals. Ten abstracts were presented at national and/or international scientific conferences.

---ELISA's have been developed for the following host response factors: granulocyte-macrophage colony stimulating factor; factor I of complement; PMN myeloperoxidase; interleukin-1; and alpha-1 antitrypsin.

---Work to develop a reverse hemolytic plaque assay has begun.

---Efforts continue toward isolation of hybridoma clones with specificity for Treponema socranskii, T. denticola and Actinobacillus actinomycetemcomitans.

STATEMENT OF SIGNIFICANT ACCOMPLISHMENTS (Continued)

SCIENTIFIC INVESTIGATIONS DEPARTMENT (Continued)

---Graduate students continue to participate in research efforts at NDRI. Of eight students from Northwestern University Dental School who in the year past have worked on projects here, four have completed requirements for a master's degree.

---Six major briefings have been made by project investigators to various organizations.

---Extracts of strains of Treponema denticola and T. vincentii were prepared using three techniques. Antigens were detected in the extracts using polyclonal rabbit antisera and murine monoclonal antibodies.

---Lipooligosaccharide antigens were purified and determined to be responsible for the serovar-specificity of T. denticola.

---Periplasmic flagella were purified from Treponema denticola, T. vincentii, T. socranskii, T. scoliodontum, and T. phagedenis biotype Reiter. All flagella contained five polypeptides with similar molecular weights and the 33 kDa common spirochete flagella antigen. Flagella of all T. denticola strains carried three antigenically similar polypeptides which were detected with antiserum to either whole cells of T. denticola or purified T. denticola flagella.

---During this reporting period purified chromosomal DNA from Treponema denticola (Td) ATCC 33521 was partially digested with Sau3A and ligated into BamHI digested and dephosphorylated pBR322. The gene bank included several isolates containing "trypsin-like" enzymatic activity.

---The gene bank of chromosomal DNA from T. denticola ATCC 33521 in Escherichia coli was screened for expression of T. denticola surface antigens.

---A pilot study is underway to determine the ability of two putative oral pathogens associated with human periodontal disease to colonize the gingival sulcus of gnotobiotic Sprague-Dawley rats.

---A pilot study to implant anaerobic bacteria from human plaque in conventional rice rats established that the rice rat is not a suitable host for T. denticola and B. gingivalis. The existing contract with the University of Wisconsin Gnotobiotic Laboratory was revised to reflect the change to Rattus rattus vice Oryzomys palustris as a more suitable model for human periodontal disease.

STATEMENT OF SIGNIFICANT ACCOMPLISHMENTS (Continued)

SCIENTIFIC INVESTIGATIONS DEPARTMENT (Continued)

---A pilot study was started to determine the ability of two putative oral pathogens from human subgingival plaque to colonize the periodontal tissue of gnotobiotic Sprague-Dawley rats (Rattus rattus).

---Reported the discovery of a pathogenic oral spirochete associated with human periodontitis and ANUG in the New England Journal of Medicine in collaboration with Oregon Health Sciences University. This discovery was featured in national wire services.

---In collaboration with NDC Orlando, the first quantitative study was performed showing an association of an oral spirochete and three other bacteria with severity of Localized Juvenile Periodontitis in Naval personnel.

---Prepared and screened a genomic library of Treponema denticola for useful antigens in potential probe-diagnostic (chairside) tests of active periodontal disease.

---Discovered two plasmids in T. denticola strains useful in DNA probe diagnostic assays for periodontal disease.

---Improved recovery methods from crevicular fluid samples of proteins of potential diagnostic significance in periodontal disease.

---Developed sensitive assays for two additional potential markers of periodontal disease, PMN myeloperoxidase and IL-1.

---Improved existing assays for α -1-antitrypsin and α -2-macroglobulin, two other markers of periodontal disease, and began their use in clinical studies.

---Currently developing innovative methodologies to diagnose the development and follow the progression of periodontal disease in an animal model.

STATEMENT OF SIGNIFICANT ACCOMPLISHMENTS (Continued)

NDRI DETACHMENT SAN ANTONIO, TEXAS

Evaluation of the longevity of autoclavable handpieces is continuing in dental clinics throughout the Navy Health care delivery system, with the following significant accomplishments during FY91:

A paper entitled "Performance and Durability of Autoclavable High-Speed Dental Handpieces" was submitted for publication.

The study of longevity of sonic periodontal scalers is continuing at Naval Dental Center, Pearl Harbor, Hawaii. An abstract was submitted to the American Association of Dental Research entitled: "Dentist's Evaluation of Autoclavable Sonic Periodontal Scalers."

A project investigating the performance and clinical longevity of low speed dental handpieces was begun at Branch Dental Clinic, Brunswick, Maine.

Laboratory research into the longevity of new high speed autoclavable handpiece was initiated.

A paper entitled "Crack Propagation and Transverse Strength in Porcelains under Static Load" was presented at the International Association of Dental Research meeting in Acapulco, Mexico. The manuscript is being prepared for publication submission.

Work has begun on the design and construction of a prototype portable emergency dental unit.

STATEMENT OF SIGNIFICANT ACCOMPLISHMENTS (Continued)

NDRI DETACHMENT BETHESDA, MARYLAND

A long term study to evaluate release kinetics of fluoride from various composite materials was begun. To date, ten different materials have been entered into the study.

In collaboration with the National Institute of Standards and Technology (NIST), an ongoing project to investigate novel dentin bonding agents is continuing. Two studies were completed and presented at the 1991 International Association of Dental Research (IADR) meeting. These studies showed that steric hindrance at the α -methylene carbon of N-phenylglycine (NPG) decreased molar efficiency and that increasing electron deficiency decreased bond strengths. Three new studies were initiated to examine further the effect of steric hindrance at the alpha carbon of NPG on bonding capacity, to compare torsion testing of dentin bonds with tensile testing and to examine the effect of substituting an electron donating group to NPG on bonding capacity.

The effect of handpiece speed on bur cutting effectiveness was evaluated. This study, which was presented at the 1991 IADR meeting found that bur cutting effectiveness appeared to be related directly to handpiece speed with higher speeds producing greater variability and faster wear.

A series of studies investigating immunologic aspects of experimentally induced periradicular lesions and the effectiveness of different intracanal medicaments in a canine model was initiated. This work is being done in collaboration with the Armed Forces Radiobiology Research Institute (AFRRI). The first study in this series is determining the cell types present in healing periradicular lesions and the effect of CaOH or gutta-percha and sealer on the healing process.

Three studies investigating bacterial contamination of dental radiographic film, chemical disinfection of dental radiographic film, and decontamination of polysulfide impression material with glutaraldehyde were completed and presented at the 1991 annual meeting of the IADR.

The microwave generated air plasma was found to be effective in killing spores of *B. subtilis* on a flat surface substrate. This collaborative study with NIST was presented at the 1991 IADR meeting.

Four periodontology research projects were completed and presented at the 1991 IADR meeting: 1. "Clinical evaluation of the use of decalcified freeze-dried bone allograft with Guided Tissue Regeneration in the treatment of molar furcation

STATEMENT OF SIGNIFICANT ACCOMPLISHMENTS (Continued)

NDRI DETACHMENT BETHESDA, MARYLAND (Continued)

invasions" showed that there was improvement in both vertical and horizontal fill when both techniques were used together; 2. "Thick free soft tissue and connective tissue autografts for root coverage" showed that subepithelial connective tissue autografts may provide greater root coverage than thick free soft tissue grafts and that both techniques increased the width of keratinized tissue; 3. "Comparative SEM study on the effect of acid etching on instrumented periodontally involved human root surfaces" showed that both tetracycline and citric acid solutions produced comparable morphologic characteristics when applied to instrumented periodontally involved root surfaces; 4. "Treatment of third molar induced defects with guided tissue regeneration showed that although the use of a barrier material (e-PTFE) resulted in no statistically significant difference in connective tissue attachment (CTA) gain, there was a consistently greater CTA gain at 3 and 6 months postoperative.

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ADDENDUM TO
SUMMARIES OF RESEARCH - FISCAL YEAR 1991

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WORK UNITS

61102A 3M161102.BS10.DA.440-0 - Development and Evaluation of
Methods to Prevent or Intercept Acute Dental Conditions

61153N MR04120.002 0051 - Host Responses to Periodontopathic
Microorganisms in Navy and Marine Corps Personnel

62787A 3M162775A825 - Development of an Animal Model to Study
Periodontal Disease

63706N M0095 006 003 - Evaluation of New Methods to Prevent and
Treat Dental Emergencies in Naval Personnel

INDEPENDENT RESEARCH

61152N MR00001.01.0061 - Characterization of Surface Antigens of
Treponema denticola

SCIENTIFIC JOURNAL PUBLICATIONS

Kearns, E. A., Simonson, L. G., Schutt, R. W., Johnson, M. J., Neil, L. C., Characterization of Monoclonal Antibodies to Two Treponema denticola Serotypes by the Indirect Fluorescent-Antibody Assay. Microbios 65: 147-153, 1991.

Schutt, R. W., Starsiak, W. J., Glass Bead Sterilisation of Surgical Dental Burs. Journal of Oral Maxillofacial Surgery 19: 250-251, 1990.

Forgas, L. B., Nilius, A. M., Assessing Periodontal Activity, The Role of Bacteriological, Immunological, and DNA Assays. Journal of Dental Hygiene 65(4): 188-193, 1991.

Yotis, W. W., Sharma, V. K., Gopalsami, C., Chegini, S., Chegini, S., McNulty, J., Hoerman, K., Keene, J., Simonson, L. G., Biochemical Properties of the Outer Membrane of Treponema denticola. Journal of Clinical Microbiology 29(7): 1397-1406, 1991.

Barron, S. L., Riviere, G. R., Simonson, L. G., Lukehart, S. A., Tira, D. E., O'Neil, D. W., Randomization Analysis of Dental Data Characterized by Skew and Variance Heterogeneity. Community Dentistry and Oral Epidemiology 19: 185-189, 1991.

Barron, S. L., Riviere, G. R., Simonson, L. G., Lukehart, S. A., Tira, D. E., and O'Neil, D. W., Use of Monoclonal Antibodies to Enumerate Spirochetes and Identify Treponema denticola in Dental Plaque of Children, Adolescents and Young Adults. Journal of Clinical Microbiology 29: 1397-1406, 1991.

RESEARCH PROGRESS REPORTS

- NDRI-PR 91-01 Characterization of Monoclonal Antibodies to Two Treponema denticola Serotypes by the Indirect Fluorescent-Antibody Assay
- NDRI-PR 91-02 Summaries of Research - Fiscal Year 1990
- NDRI-PR 91-03 Glass Bead Sterilisation of Surgical Dental Burs
- NDRI-PR 91-04 Assessing Periodontal Disease Activity
The Role of Bacteriological, Immunological, and DNA Assays
- NDRI-PR 91-05 Biochemical Properties of the Outer Membrane of Treponema denticola
- NDRI-PR 91-06 Randomization Analysis of Dental Data
Characterized by Skew and Variance
Heterogeneity
- NDRI-PR 91-07 Use of Monoclonal Antibodies to Enumerate Spirochetes and Identify Treponema denticola in Dental Plaque of Children, Adolescents and Young Adults.

**FORMAL PRESENTATIONS MADE AT MEETINGS OF SCIENTIFIC
SOCIETIES/GROUPS**

APRIL 1991

The following presentations were given at the 69th General Session of the International Association for Dental Research/20th Annual Session of the American Association for Dental Research held April 17-21, 1991 in Acapulco, Mexico.

Yotis, W. W., Hoerman, K., Keene, J., and Simonson, L. G., Fatty acid profiles of the outer sheaths of Treponema denticola (T.d.).

Nilius, A. M., Spencer, S. C., and Simonson, L. G., Extracellular products of Porphyromonas gingivalis stimulate the growth of Treponema denticola in vitro.

Simonson, L. G., Lloyd, D., McMahon, K., and Morton, H., Distribution of P. gingivalis and T. denticola in Egyptian adults.

Miller, J. W., Pederson, E. P., Simonson, L. G., Morton, H. E., Turner, D. W., and Chadwick, D. E., Trypsin, T. denticola and P. gingivalis levels as diagnostic markers for periodontitis.

Pederson, E. D., Covill, P. J., Gallaher, J., and Chadwick, D. E., Bacterial "Trypsin-like" enzymes detection employing Z-gly-gly-arg-AFC.

Pederson, E. D., Turner, D. W., and Gallaher, J., A sensitive ELISA-based assay for GM-CSF.

Vahey, E. P., Pederson, E. D., Turner, D. W. and Gallaher, J., Detection of tumor necrosis factor in gingival crevicular fluid.

Mapes, T. L., Thorp, S. E., Pederson, E. D., and Maggiore, D., Cloning of a "Trypsin-like" protease from Treponema denticola ATCC 33521.

McMahon, K., Lloyd, D., Wasfy, M., Minah, G., and Falkler, W., Antibiotic Resistance Studies of Oral Microflora in Multinational Soldiers.

Cohen, M. E., Sterne, J. A.. C., and Arthur, J. S., Testing for periodontal diseases subtypes.

Esquire, R. G., Kelly, J. R., and Cohen, M. E., Longevity of resin bonded bridges: Five-year survival analysis.

**FORMAL PRESENTATIONS MADE AT MEETINGS OF SCIENTIFIC SOCIETIES/
GROUPS (Continued)**

Arthur, J. S., Simecek, J. W., Meyer, D. M., and Cohen, M. E., Periodontal treatment needs of U. S. Navy and Marine reserves.

Rodden, J. W., Cohen, M. E., Morgan, L., Walter, R. G., and Cecil, J. C., Complications associated with third molars in Navy and Marine Corps personnel.

Leonard, E. P., and Cohen, M. E., Relationship between localized osteitis and seasonal temperature.

Kuehne, J. C., Cohen, M. E., and Dhuru, V. B., Crack propagation and transverse strengths in porcelains under static load.

PARTICIPATION IN PROFESSIONAL PROGRAMS AND OTHER MEETINGS

OCTOBER 1990

CECIL III, J. C., attended the Association of Public Health Dentistry in Boston, Massachusetts.

CECIL III, J. C., attended the Naval Medical Research and Development Command's Commanding Officer's Conference in Bethesda, Maryland.

KUEHNE, J. C., attended the Development, Evaluation, and Application of New Materials for Dentistry at the University of Michigan, Ann Arbor, Michigan.

MANGARAN, P. B., attended Level I Program Management Course Naval Air Station, Brunswick, Maine.

The following personnel attended the American Academy of Periodontology, 76th Annual Meeting in Dallas, Texas.

CECIL III, J. C.

SIMONSON, L. G.

NOVEMBER 1990

KLINE, S. L., attended Pre-retirement Counseling in Chicago, Illinois.

LEE, Y. S., attended basic and advanced DOS computer training in Chicago, Illinois.

MAPES, T. L., attended the American Society for Tropical Medicine and Hygiene in New Orleans, Louisiana.

PORTIS, M. J., attended Wordperfect computer training in Chicago, Illinois.

The following personnel attended the Association of Military Surgeons of the United States meeting in Nashville, Tennessee.

CECIL III, J. C.

MEYER, D. M.

KUEHNE, J. C.

SIMECEK, J. W.

MCMAHON, K. T.

DECEMBER 1990

LEE, Y. S., attended Damaged Disk, File and Data Recovery computer training in Chicago, Illinois.

**PARTICIPATION IN PROFESSIONAL PROGRAMS AND OTHER MEETINGS
(Continued)**

DECEMBER 1990 (Continued)

SIMONSON, L. G., attended the 1990 Annual Government Laboratory/Industry Technology Transfer Conference in Philadelphia, Pennsylvania.

The following personnel conducted a treatment needs study to support Operation Desert Shield in Camp Pendleton, California:

LLODRA, C. Y.
SIMECEK, J. W.

THOMPSON, J. M.

JANUARY 1991

CECIL III, J. C., attended the Navy Surgeon General's Commanding Officer's Conference Washington, D. C.

LEE, Y. S., attended dBase IV computer training in Chicago, Illinois.

MANGARAN, P. B., attended Financial Specialist Training course sponsored by the Family Service Center, Great Lakes, Illinois.

PEDERSON, E. P., attended Biohazards training at OSHA Training Institute in Des Plaines, Illinois.

FEBRUARY 1991

LEE, Y. S., attended WordPerfect 5.1 computer training in Chicago, Illinois.

MANGARAN, P. B., attended the Enlisted Navy Leader Development Program at the Naval Training Center, Great Lakes, Illinois.

SIMECEK, J. W., visited NDC Camp Lejeune, North Carolina to collect data for reserve treatment needs survey.

The following personnel attended the Midwinter Meeting of the Chicago Dental Society, Chicago, Illinois:

KUEHNE, J. C.

SCHMITT, E. J.

PARTICIPATION IN PROFESSIONAL PROGRAMS AND OTHER MEETINGS
(Continued)

MARCH 1991

CANTERBURY, C. L., attended "Animal Care and Use Programs: Regulatory Compliance and Education in an Age of Fiscal Constraint" sponsored by Public Responsibility in Medicine and Research, Tufts University School of Veterinary Medicine, Boston, Massachusetts.

COVILL, P. J., attended the Pittsburgh Conference in Chicago, Illinois.

LEE, Y. S., attended Macintosh Pagemaker computer training in Chicago, Illinois.

LEE, Y. S., attended Lotus 1-2-3 computer training in Rolling Meadows, Illinois.

MCMAHON, K. T., attended Oral and Maxillofacial Surgery course at the National Naval Dental Center in Bethesda, Maryland.

The following personnel attended a workshop in Recombinant DNA Methodology sponsored by Exon-Intron Inc. in Columbia, Maryland:

MCMAHON, K. T.

SIMONSON, L. G.

The following personnel attended the 6.3 Program Review conducted by Naval Medical Research and Development Command in Bethesda, Maryland.

CECIL III, J. C.

MEYER, D. M.

The following personnel attended a Recombinant DNA Methodology course at the Catholic University of America in Washington, D.C.

THORP, S.

NELSON, L.

APRIL 1991

CECIL III, J. C., attended the Naval Medical Research and Development Command Strategic Planning Conference in Bethesda, Maryland.

COHEN, M. E., attended the Immune System Mind Matters Seminar in Evanston, Illinois.

**PARTICIPATION IN PROFESSIONAL PROGRAMS AND OTHER MEETINGS
(Continued)**

APRIL 1991 (Continued)

FORGAS, L. B., attended a Speaker Enhancement Program at Ft. Collins, Colorado.

HOGAN, W. M., attended Wordperfect 5.1 computer training in Rolling Meadows, Illinois.

JONES, D. L., attended an administration and fiscal briefing at the Naval Dental Research Institute, Great Lakes, Illinois.

LEE, Y. S., attended Advanced Wordperfect 5.1 computer training in Rolling Meadows, Illinois.

LEE, Y. S., attended Harvard Graphics computer training at Rolling Meadows, Illinois.

MANGARAN, P. B., attended Basic Radiation Safety and Management course in Matteson, Illinois.

MEYER, D. M., attended the American Association of Endodontics Annual Session in Washington, D. C.

MEYER, D. M., attended the American Academy of Craniomandibular Disorders Sixteenth annual meeting in San Francisco, California.

PORTIS, M. J., attended DOS Operating System computer training in Chicago, Illinois.

The following personnel attended the 69th General Session of the International Association for Dental Research and the 20th Annual Session of the American Association for Dental Research in Acapulco, Mexico:

COHEN, M. E.
COVILL, P. J.
ESQUIRE, R. G.
KUEHNE, J. C.
MCMAHON, K. T.

NILIUS, A. M.
PEDERSON, E. D.
SIMECEK, J. W.
SIMONSON, L. G.
THORP, S. E.

MAY 1991

BERGENER, C. G., attended Interim Wordperfect 5.1 computer training at Rolling Meadows, Illinois.

COHEN, M. E., attended the Conference of Equivalency and Superiority Claims for Products for Gingivitis and Periodontitis sponsored by the American Dental Association, Chicago, Illinois.

PARTICIPATION IN PROFESSIONAL PROGRAMS AND OTHER MEETINGS
(Continued)

MAY 1991 (Continued)

LEE, Y. S., attended Interim Lotus 1-2-3 computer training in Chicago, Illinois.

MCPAHON, K. T., conducted a site visit at Naval Medical Research Unit #3 in Cairo, Egypt.

NILIOUS, A. M., attended the 91st Annual Meeting of the American Society of Microbiology in Dallas, Texas.

The following personnel attended a Recruit Dental Conference at CNET in Pensacola, Florida:

CECIL III, J. C.
MEYER, D. M.

SIMECEK, J. W.

JUNE 1991

CECIL III, J. C., attended the National Advisory Dental Research Council meeting at the National Institutes of Health in Bethesda, Maryland.

HOGAN, W. M., attended interim Wordperfect 5.1 computer training in Rolling Meadows, Illinois.

LEE, Y. S., attended Troubleshooting, Maintenance and Repair of PC's computer training at the American Institute in Milwaukee, Wisconsin.

LLODRA, C. Y., attended NHANES III Dental Examiner training at the National Institute of Dental Research in Rockville, Maryland.

NELSON, L., attended ASCP workshop in San Francisco, California.

NILIOUS, A. M., conducted a site visit and set-up long term research goals and design projects at the Naval Dental Research Institute Detachment in Bethesda, Maryland.

NILIOUS, A. M., attended the Congress of the International Society for Human and Animal Mycology, Montreal, Quebec, Canada.

PORTIS, M. J., attended advance Wordperfect 5.1 computer training in Rolling Meadows, Illinois.

**PARTICIPATION IN PROFESSIONAL PROGRAMS AND OTHER MEETINGS
(Continued)**

JUNE 1991 (Continued)

SIMONSON, L. G., attended a Harvard Graphics Workshop at the University of Wisconsin-Parkside in Kenosha, Wisconsin.

The following personnel attended the Naval Medical Research and Development Command Finance Conference in Charleston, South Carolina:

STEWART, S. P.

MEEKER, D. R.

WRIGHT, G. A.

The following personnel conducted an oversight visit of Naval Medical Research and Development Command funded research project at the University of Oregon in Portland, Oregon:

CECIL III, J. C.

SIMONSON, L. G.

The following personnel conducted a site visit to U.S. Army Institute of Dental Research, Naval Dental Research Institute Detachment and attended a JTCG1 meeting in Bethesda, Maryland:

CECIL III, J. C.

SIMONSON, L. G.

JULY 1991

BERGENER, C. G., attended advance Wordperfect 5.1 training in Rolling Meadows, Illinois.

ESQUIRE, R. G., attended the annual meeting of the Academy of General Dentistry in Orlando, Florida.

SMITH, F. T., attended Intro to Wordperfect 5.0 computer training in Chicago, Illinois.

COHEN, M. E., participated in the Review of Contract Proposals at NIH/NIDR, Bethesda, Maryland.

STEWART, S. P., attended the Federally Employed Women's Conference and BUMED EEO training conference in Denver, Colorado.

The following personnel attended Microbial Identification System training at Microbial ID, Inc. in Newark, Delaware.

NILIUS, A. M.

SIMONSON, L. G.

A site visit to the Naval Dental Research Institute Detachment in Bethesda, Maryland was conducted by:

WRIGHT, G. A.

PORTIS, M. J.

PARTICIPATION IN PROFESSIONAL PROGRAMS AND OTHER MEETINGS
(Continued)

AUGUST 1991

CECIL III, J. C., attended the NIH Technology Assessment Conference "Effects and Side Effects of Dental Restorative Materials" in Washington, D. C.

COHEN, M. E., attended a periodontal research meeting for periodontal residents at the National Naval Dental Center, in Bethesda, Maryland.

HOGAN, W. M., attended DOS computer training in Rolling Meadows, Illinois.

KUEHNE, J. C., attended the National Institutes of Health Technology Assessment Conference in Bethesda, Maryland.

LEE, Y. S., attended Advance Lotus 1-2-3 computer training at Rolling Meadows, Illinois.

MEYER, D. M., attended Overview of PC's computer training in Rolling Meadows, Illinois.

STEWART, S. P., participated in the Scientists at Sea Program in Norfolk, Virginia.

WRIGHT, G. A., attended Naval Leadership for CPO's at the Naval Amphibious Base in Little Creek, Virginia.

The following personnel participated in ONR funded research at the Naval Submarine Medical Research Laboratory, Submarine Base, New London in Groton Connecticut:

ESQUIRE, R. G.
COVILL, P. J.

THOMPSON, J. M.

SEPTEMBER 1991

BERGENER, C. G., attended DOS computer training in Rolling Meadows, Illinois.

CECIL III, J. C., attended the National Institutes of Health National Advisory Dental Research Council Meeting in Bethesda, Maryland.

COVILL, P. J., attended Hazardous Materials and Waste Control training in Millington, Tennessee.

LEE, Y. S., attended the 10th Annual Navy Microcomputer Conference and Exhibition in Virginia Beach, Virginia.

**PARTICIPATION IN PROFESSIONAL PROGRAMS AND OTHER MEETINGS
(Continued)**

SEPTEMBER 1991 (Continued)

LLODRA, C. Y., attended Clinical Investigations HIV/Periodontitis conference at the Naval Hospital Oakland, California.

MEYER, D. M., attended Introduction to DOS computer training in Rolling Meadows, Illinois.

PORTIS, M. J., attended Interim Lotus 1-2-3 computer training in Chicago, Illinois.

The following personnel attended Methodologies in Evaluation of Periodontal Therapy at Northwestern University Dental School and the American Dental Association in Chicago, Illinois:

COHEN, M. E
MEYER, D. M.
NILIUS, A. M.

PEDERSON, E. P.
SIMONSON, L. G.
STEELE, M. G.

The following personnel attended the Strategic Planning Retreat Conference in Bethesda, Maryland.

CECIL III, J. C.

SIMONSON, L. G.

The following personnel participated in ongoing ONR funded research at the Naval Submarine Medical Research Laboratory, Naval Submarine Base, New London in Groton, Connecticut:

KING, D. A.

THOMPSON, J. M.

The following personnel participated in the Scientist at Sea program in Norfolk, Virginia:

CANTERBURY, C. L.

SIMONSON, L. G.

DISTINGUISHED VISITORS

OCTOBER 1990

CW2 D. A. Klaohsen, USA, Veterinary Services, Fort Sheridan, Illinois.

MAJ M. W. Carr, VC, USA, United States Army Medical Department Activity, Fort Leonard Wood, Missouri.

FEBRUARY 1990

CAPT R. Kjome, DC, USN, Chief, Naval Education and Training Command, Pensacola, Florida.

CDR T. Barco, DC, USN, Naval Dental Center, Pearl Harbor, Hawaii.

LTCOL S. Davis, USAF, Dental Investigation Services, Brooks Air Force Base, San Antonio, Texas.

DT1 E. Schmitt, USN, Dental Investigation Services, Brooks Air Force Base, San Antonio, Texas.

LT W. C. Perry, DC, USN, Naval Dental Center, Great Lakes, Illinois.

RADM M. C. Clegg, DC, USN, Chief, Navy Dental Corps, Bureau of Medicine and Surgery, Washington, D. C.

Dr. G. Miller, Naval Dental Research Institute Detachment, Bethesda, Maryland.

Surgeon Commander David and Mrs. Alexander, Naval Dental Research Institute Detachment, Bethesda, Maryland.

MARCH 1991

Mrs. Mimi Drew, Deputy Assistant Secretary of the Navy, Washington, D.C.

APRIL 1991

Dr. C. Drisko, University of Missouri, Kansas City, Missouri.

Mr. E. Soak, Proctor and Gamble, Lake Zurich, Illinois.

Mr. L. J. Torbera, Marquette University, Milwaukee, Wisconsin.

DISTINGUISHED VISITORS (Continued)

MAY 1991

Commodore (D) Brian Robinson, QHDS, MSC, LDS, Royal Naval Dental Services, MOD-DMSD, London, United Kingdom.

MAJ C. Wantzer, United States Army Institute of Dental Research, Fort Meade, Maryland.

Dr. J. A. Setterstrom, United States Army Institute of Dental Research, Fort Meade, Maryland.

COL J. Denniston, Headquarters, United States Army Medical Research and Development Command, Washington, D.C.

CAPT R. L. Chaput, MSC, USN, Naval Medical Command, Washington, D. C.

JUNE 1991

LTCOL G. G. Heisey, Headquarters, United States Army Medical Research and Development Command, Fredrick, Maryland.

COL G. W. Barron, Headquarters, United States Army Medical Research and Development Command, Fredrick, Maryland.

JULY 1991

CAPT(Ret) R. P. Rog and family, Eureka, California.

SEPTEMBER 1991

COL J. King, United States Army Institute of Dental Research, Washington, D. C.

COL W. R. Posey, United States Army Institute of Dental Research, Washington, D. C.

RADM J. W. Partington, Commander, Naval Training Center, Great Lakes, Illinois.

COL M. Rethman, United States Army Institute of Dental Research, Washington, D. C.

CPT N. Robert, United States Army Institute of Dental Research, Washington, D. C.

LTC P. R. Cuenin, United States Army Institute of Dental Research, Washington, D. C.

DISTINGUISHED VISITORS (Continued)

SEPTEMBER 1991 (Continued)

Mr. J. R. Davis, United States Army Institute of Dental Research, Washington, D. C.

COL B. R. Altschuler, United States Army Institute of Dental Research, Washington, D.C.

CPT E. Sanders, United States Army Institute of Dental Research, Washington, D. C.

LTC G. H. Eisenburg, United States Army Institute of Dental Research, Washington, D. C.

RADM M. C. CLEGG, DC, USN, Chief, Navy Dental Corps, Bureau of Medicine and Surgery, Washington, D.C.

**HONORS, AWARDS, POSITIONS HELD, CEREMONIES, STAFF ARRIVALS/
DEPARTURES AND REENLISTMENTS**

OCTOBER 1990

HM2 H. E. Morton received a Letter of Commendation from the Commanding Officer for Sailor of the Half Year.

Mr. C. L. Canterbury joined the staff of the Veterinary Sciences Division.

NOVEMBER 1990

ENS D. R. Meeker received a Letter of Appreciation from Commander, Naval Training Center.

Ms. S. L. Kline received a Letter of Commendation upon her retirement as the Commanding Officer's Secretary.

Mr. J. H. Ringgold received a Letter of Commendation upon his retirement from Research Support Department.

Ms. M. J. Portis received a Letter of Commendation from the Commanding Officer for her selection as Civilian of the Half-Year.

DT3 S. B. Monroe received a Letter of Commendation from the Commanding Officer upon his transfer to the USS Saratoga CV 60.

HM2 H. E. Morton was awarded a Navy Achievement.

HM2 H. E. Morton received a Letter of Commendation from the Commanding Officer upon his discharge from the military.

Mr. H. E. Morton joined the staff of the Microbiology Division.

JANUARY 1991

Dr. M. G. Steele joined the staff of the Immunology Department.

Ms. C. G. Bergener joined the staff as the Commanding Officers Secretary.

FEBRUARY 1991

LCDR T. L. Mapes received a Letter of Commendation from the Commanding Officer upon his transfer to Naval Medical Research Unit #3, Cairo, Egypt.

**HONORS, AWARDS, POSITIONS HELD, CEREMONIES, STAFF ARRIVALS/
DEPARTURES AND REENLISTMENTS (Continued)**

FEBRUARY 1991 (Continued)

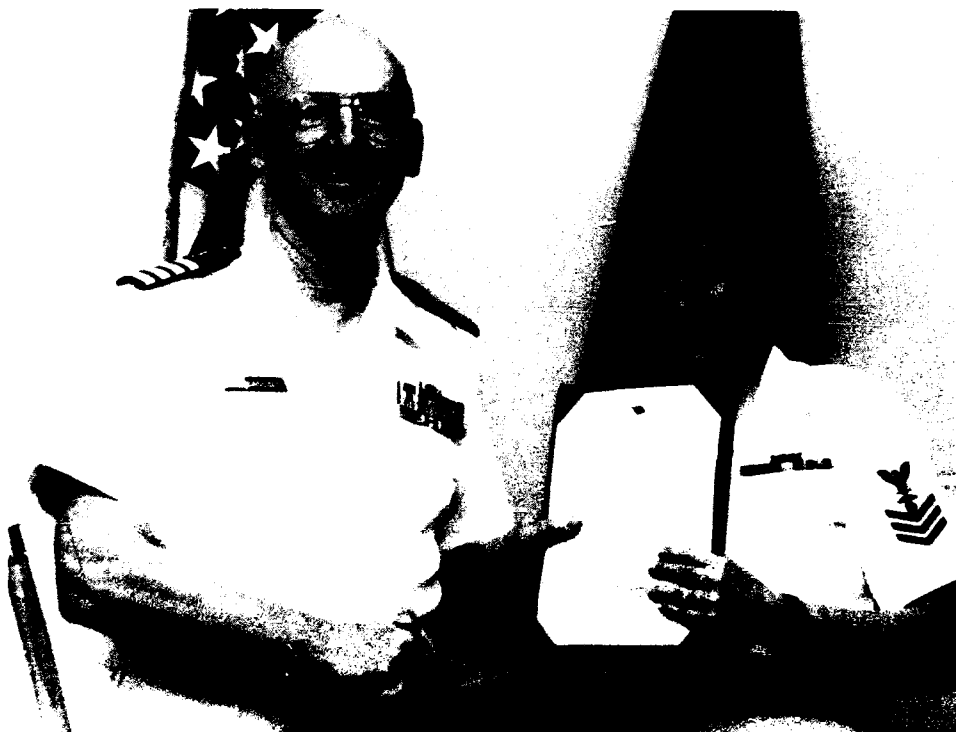
Ms. C. J. Lemley received a Letter of Commendation upon her transfer to the Naval Hospital, Great Lakes, Illinois.

DT1 D. L. Jones received a Letter of Commendation from Commander Fleet Air Mediterranean, Commander Maritime Surveillance and Reconnaissance Fleet, U.S. Sixth Fleet.

APRIL 1991

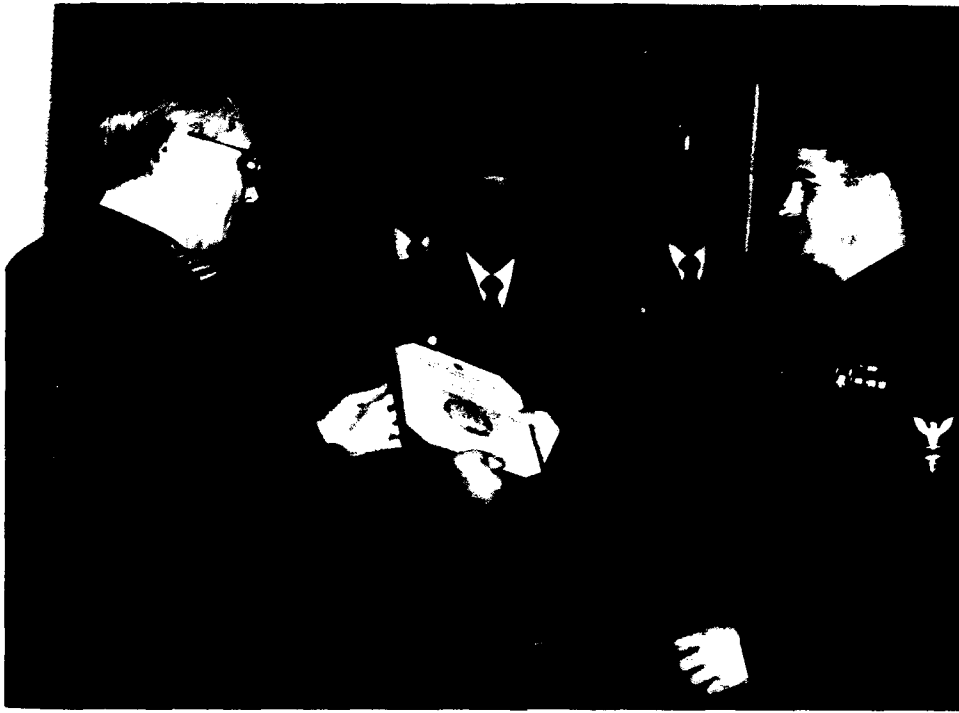
DT1 D. L. Jones received a Navy Achievement Medal from the Commanding Officer, Naval Dental Center, Naples, Italy.

DT3 D. A. King received a Navy Achievement Medal from the Commander, Naval Construction Battalion, U.S. Pacific Fleet.



Captain R. A. Cassidy, Commanding Officer of the National Naval Dental Center, presenting DT1 D. L. Jones with a Letter of Commendation from Commander, Fleet Air Mediterranean, Commander Maritime Surveillance and Reconnaissance Fleet, U.S. Sixth Fleet.

**HONORS, AWARDS, POSITIONS HELD, CEREMONIES, STAFF ARRIVALS/
DEPARTURES AND REENLISTMENTS (Continued)**



Captain J. C. Cecil III, DC, USN, presenting
DT3 D. King with a Letter of Commendation from the
Commander, Naval Training Center, Great Lakes, Illinois

MAY 1991

CDR D. M. Meyer received a Letter of Appreciation from the
Commanding Officer, National Naval Dental Center.

JUNE 1991

DT3 D. A. King received a Letter of Commendation from the
Commanding Officer upon his selection as Sailor of the Half Year.

JULY 1991

DT3 D. A. King received a Letter of Commendation from the
Commander Naval Training Center, Great Lakes, Illinois.

DT2 L. G. Morgan received a letter of Commendation from the
Commander Naval Training Center, Great Lakes, Illinois.

Ms. L. B. Forgas received a Letter of Commendation upon her
resignation from the Clinical Investigation Department.

**HONORS, AWARDS, POSITIONS HELD, CEREMONIES, STAFF ARRIVALS/
DEPARTURES AND REENLISTMENTS (Continued)**

JULY 1991 (Continued)

DT1 W. M. Hogan frocked to his present rate.

LCDR C. Y. Llodra promoted to her present rate.

AUGUST 1991

LCDR K. McMahon received a Letter of Commendation upon his transfer to Naval Dental Center, Sasabo, Japan.

LCDR C. Y. Llodra received a Letter of Appreciation from the Commanding Officer, Naval Dental Center, Great Lakes, Illinois.

LT. E. Reedy reported aboard from Officer Indoctrination School, Newport, Rhode Island.

CAPT J. W. Rodden transferred to Naval Dental Center Camp Pendleton, California.

The following personnel received Performance and/or Quality Step Increase for Outstanding Performance:

Bergener, C. G.	Nilius, A. M.
Bryant, E.	Pederson, E. P.
Canterbury, C. L.	Portis, M. J.
Lee, Y. S.	Stewart, S. P.

SEPTEMBER 1991

SKCM B. Bozant reported aboard from the USS Saratoga.

DT2 L. G. Morgan, received a Letter of Appreciation from the Commanding Officer, Naval Dental Center, Great Lakes, Illinois.

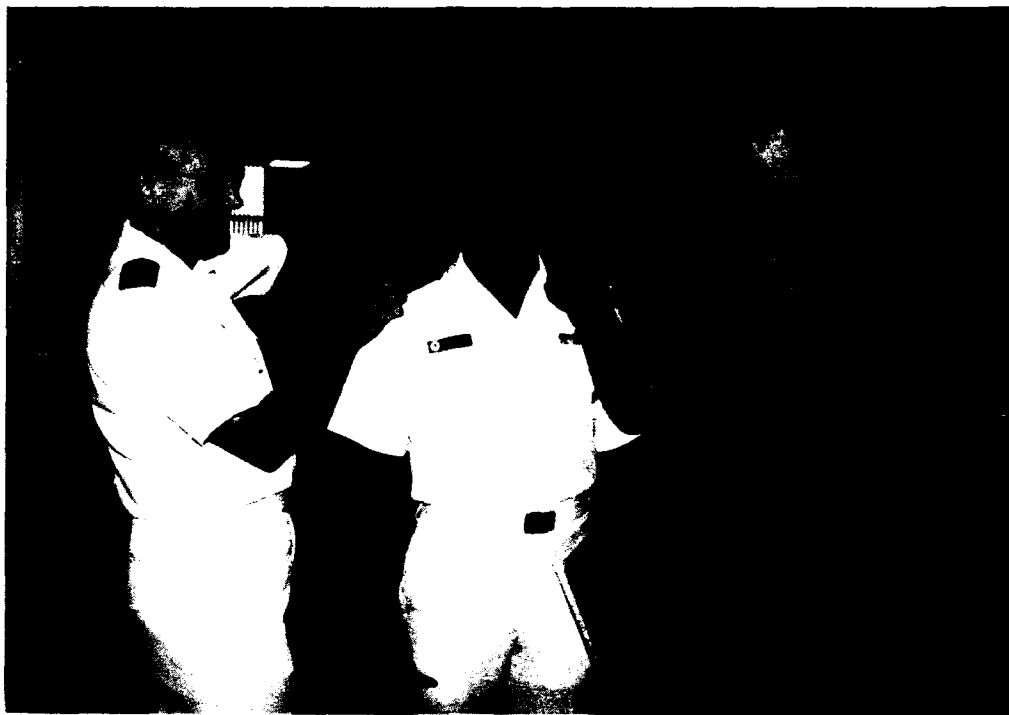
SKC G. A. Wright received a Letter of Commendation upon his transfer to the USS Stump (DD 978).

HM2 J. Bolden reported aboard from USNH Yokosuka, Japan.

LTJG D. M. Meeker promoted to his present rate.

Dr. L. Zablen joined the staff of the Molecular Biology Department.

**HONORS, AWARDS, POSITIONS HELD, CEREMONIES, STAFF ARRIVALS/
DEPARTURES AND REENLISTMENTS (Continued)**



Captain J. C. Cecil III, DC, USN, and SKC G. A. Wright donning
ENS D. R. Meeker's LTJG bars at his frocking ceremony.

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REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) SUMMARIES OF RESEARCH -FISCAL YEAR 1991		5. TYPE OF REPORT & PERIOD COVERED
		6. PERFORMING ORG. REPORT NUMBER NDRI PR 92-05
7. AUTHOR(s)		8. CONTRACT OR GRANT NUMBER(s)
9. PERFORMING ORGANIZATION NAME AND ADDRESS Naval Dental Research Institute Building 1-H Great Lakes, IL 60088-5259		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
11. CONTROLLING OFFICE NAME AND ADDRESS Naval Medical Research and Development Command, National Naval Medical Center Bethesda, MD 20814-5044		12. REPORT DATE May 1992
		13. NUMBER OF PAGES 38
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office) Chief, Bureau of Medicine and Surgery Navy Department Washington, DC 20372-5120		15. SECURITY CLASS. (of this report) UNCLASSIFIED
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE
16. DISTRIBUTION STATEMENT (of this Report) This document has been approved for public release; distribution is unlimited.		
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report) This document has been approved for public release; distribution is unlimited.		
18. SUPPLEMENTARY NOTES		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number) Summaries of Research		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) Brief summaries of research carried out from 1 October 1990 to 30 September 1991, including presentations, publications and distinguished visitors.		

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EDITION OF 1 NOV 68 IS OBSOLETE
S/N 0102-LF-014-6601UNCLASSIFIED
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