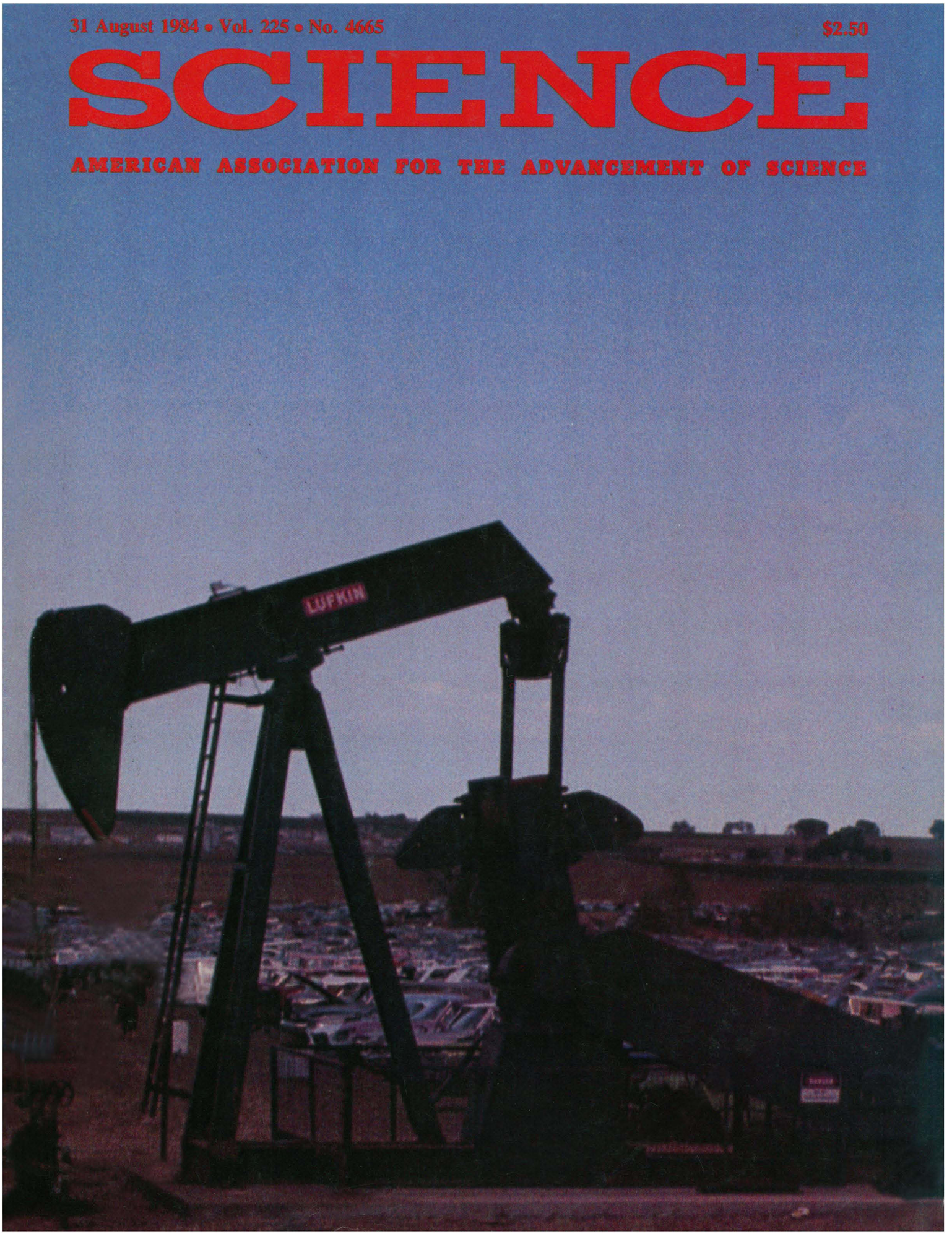
31 August 1984 • Vol. 225 • No. 4665 $2.50

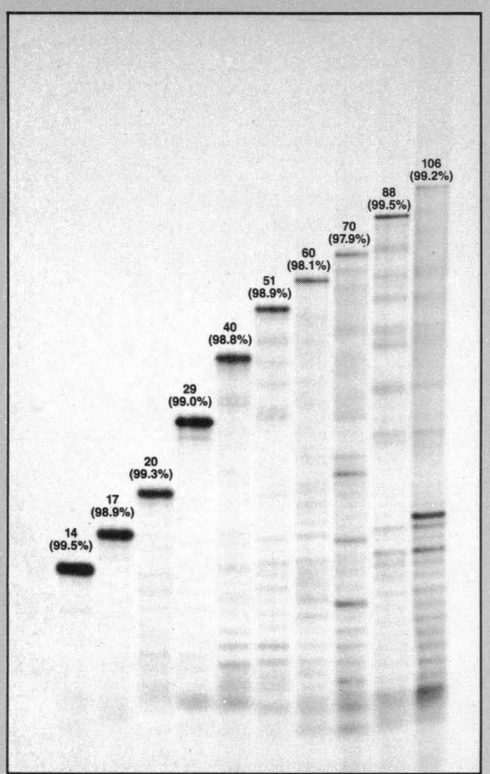
SCIENCE

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

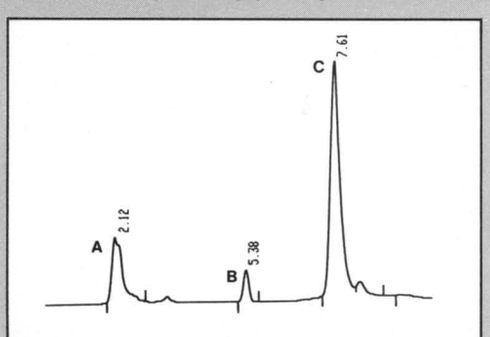


BIOSYSTEMS UPDATE

Nucleotides greater than 100 bases long demonstrate high efficiency DNA synthesis.



Autoradiogram of unpurified oligonucleotides made with the Applied Biosystems Model 380A DNA Synthesizer. The number of bases is indicated above each lane with the stepwise trityl yield in parentheses.



Reverse phase HPLC of crude 17-mer[2]. Peak A contains the detritylated material which failed to couple; benzamide, a by-product of deprotection, is Peak B. Peak C is the tritylated product. The yield by trityl assay was 99.9%. Obtained were 144 O.D. units of unpurified material, with 39 O.D. units isolated by preparative HPLC.

New, higher coupling efficiencies increase the performance of the Model 380A DNA Synthesizer to include production of oligonucleotides over 100 bases long.

The inherently high yields of the Applied Biosystems phosphoramidite DNA synthesis method have been increased by a new solid support, Controlled Pore Glass[1]. CPG, with a long alkyl chain attachment to the nucleoside, improves stepwise yields by 2–4%.

With coupling yields now routinely 98–100%, probes can frequently be used without purification. In addition, whole genes may be constructed with longer fragments requiring fewer purifications and ligations.

Model 380A DNA Synthesizers, operating in over 180 laboratories worldwide, produce more than 4,000 oligonucleotides every month. And the numbers are increasing rapidly. New developments, such as CPG and the large-scale 10-micromole synthesis columns, continue to expand the range of applications as well as improve the results obtained.

Applied Biosystems chemists and 380A users have refined procedures for the analysis and purification of oligonucleotides. Their work includes techniques for preparative and analytical gel electrophoresis, HPLC, 5′-end labeling and Maxam-Gilbert sequencing.

We've compiled this data in the latest 380A Users Bulletin. For a complimentary copy, contact your local Applied Biosystems representative, or one of the offices below.

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[1]Adams, S.P. *et al, J. Am. Chem. Soc. 105,* 661–663 (1983)

[2]Synthesis performed on Model 380A by Dr. Gerald Zon of the U.S. Food and Drug Administration

Applied Biosystems

APPLIED BIOSYSTEMS, INC., 850 Lincoln Centre Drive, Foster City, CA 94404 • (800) 874-9868 • In California (800) 831-3582 Telex: 470052
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ISSN 0036-8075

31 August 1984

Volume 225, No. 4665

SCIENCE

SCIENCE is published weekly on Friday, except the last week in December, by the American Association for the Advancement of Science, 1515 Massachusetts Avenue, NW, Washington, D.C. 20005. Second-class postage (publication No. 484460) paid at Washington, D.C., and at an additional entry. Now combined with **The Scientific Monthly**®. Domestic individual membership and subscription (51 issues): $56. Domestic institutional subscription (51 issues): $93. Foreign postage extra: Canada $24, other (surface mail) $27, air-surface via Amsterdam $65. First class, airmail, school-year, and student rates on request. Single copies $2.50 ($3 by mail); back issues $3 ($3.50 by mail); Biotechnology issue, $5 ($5.50 by mail); classroom rates on request. **Change of address:** allow 6 weeks, giving old and new addresses and seven-digit account number. **Postmaster:** Send Form 3579 to *Science*, 1515 Massachusetts Avenue, NW, Washington, D.C. 20005. *Science* is indexed in the *Reader's Guide to Periodical Literature* and in several specialized indexes.

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

COVER

Dirt to dirt and rust to rust. Our national economy is based on an investment of high-quality energy to upgrade natural resources into economically useful forms and to maintain finished products against natural entropic decay. There are strong statistical relations between energy use and important macroeconomic indicators for the United States—such as gross national product, labor productivity, and inflation—over the past 60 to 100 years. See page 890. [David Skole, Complex Systems Research Center, University of New Hampshire, Durham 03824]

The U.S. Army Medical Research Acquisition Agency is Accepting Proposals for Research in Bacterial Diseases of Military Importance

DAMD17-84-R-0109, Issue Date: 31 August 1984

Novel methods to mitigate the pathophysiologic effects in military personnel caused by bacteria and/or their toxins subsequent to natural infections or as a result of exposure to potential biological warfare agents are sought. Studies which address the mechanisms by which these agents produce their effects and the basis of protection during chemoprophylaxis and following immunization or recovery from the disease are of special interest.

Program emphasis is on diarrheal diseases, botulinum neurotoxin(s), meningococcal infections, gonorrhea, secondary wound infections, anthrax and other bacteria or their toxins capable of eroding combat strength or agents of potential biological warfare importance. Primary emphasis will be on agents occurring in overseas areas. Research areas of interest include:

—STRUCTURE/FUNCTION STUDIES
Identification and characterization of bacterial antigens and host receptor sites.

—PATHOPHYSIOLOGICAL STUDIES
Mechanisms by which agents evoke responses in hosts.

—BIOCHEMICAL STUDIES
Synthesis, regulation, processing, and transport of virulence factors.

—GENETIC STUDIES
Isolation, sequencing and expression of DNA fragments coding for protective or diagnostic antigens.

—IMMUNOGENS
Novel approaches based on recombinant DNA, synthetic peptides, anti-idiotypes, subunit derivatives, etc.

—IMMUNE MECHANISMS
Studies of components of immune response and their role in protection. Ontogeny of immune response.

—PROPHYLAXIS/THERAPY
Development and testing of drugs and biologicals capable of preventing or reversing pathophysiological effects of toxins, to include human antibodies.

—ENHANCEMENT OF TREATMENT MODALITIES
Techniques for targeted delivery, sustained release, timed release, etc., of drugs, immunogens, antibodies, etc.

—EARLY RAPID DIAGNOSIS
Studies to improve basic understanding of rapid and simple field tests for toxins, spores and vegetative forms of interest in biological fluids.

Proposals may be submitted for one or more of the above topics or a specific portion of one topic. A proposer may submit separate proposals on different topics or different proposals on the same topic. The Government does not guarantee an award in each topic area.

In accordance with the Federal Acquisition Regulation (FAR) any contracts awarded under this solicitation may be of any type or combination of types which will promote the best interests of the Government. It is anticipated that multiple-year, incrementally-funded, level-of-effort type, cost reimbursement contracts will be awarded. Each increment will be approximately 12 months. Duration of the contract should be commensurate with the proposed scope of work but in no case shall exceed five years.

Research proposals shall include a table of contents and should cover the points cited below, insofar as they are applicable. The technical and business sections of the proposal must be separate. No cost information shall be included in the technical portion of the proposal.

a. *Name and Address of Organization.* At least one copy must carry the original signatures of an official authorized to legally bind the organization.
b. *Title of Proposed Research.*
c. *Description of Proposed Research.* Submit a detailed description of the research objectives, hypothesis, approach, methods, relationship to the state of knowledge in the field and to comparable work in progress elsewhere, military significance, previous relevant experience, bibliography and pertinent literature citations.
d. *Research Involving Human Subjects.* USAMRDC policies governing the use of human subjects parallel those contained in 45 CFR 46, 21 CFR 312 and DoD Instruction 5030.29. Submit a copy of completed Form HHS 596 with the proposal.
e. *Research Involving Animals.* Acknowledgement that conduct and reporting of the studies shall adhere to the "Guide for the Care and Use of Laboratory Animals" ((NIH) 78-23, 1978) must be included.
f. *Personnel.* Qualifications of the Principal Investigator and other senior professional personnel and the time each will devote to the research. This information, to the extent that it is information about an individual, is subject to the requirements of the Privacy Act of 1974 (5 USC 552(a)). The principal purpose and routine use of the information are for the evaluation of the qualifications of those persons who will perform the research. Disclosure of the information is voluntary, but failure to provide such will prevent evaluation of the proposal.
g. *Facilities and Equipment Available.*
h. *Cost Estimate.* An estimate of the total research project cost with a breakdown of funds by category (direct labor cost, indirect cost, property or equipment cost, travel cost, publication cost, consultant cost, other direct costs, fee or profit) by year must accompany each proposal and must be submitted on SF 1411 with complete supporting information. *No cost information shall be included in the technical portion of the proposal.*

Every effort will be made to protect the confidentiality of the proposal and any evaluations. The submitter may mark the proposal with a legend such as that provided in FAR 52.215-12. Proposals containing a more restrictive legend shall not be considered.

Unnecessarily elaborate brochures or presentations beyond that sufficient to present a complete and effective proposal are not desired.

Any proposal received after the exact time specified for submission of proposals will not be considered unless the circumstances described in FAR 52.215-10 apply.

CONSIDERATIONS

Reports. Quarterly, annual and final progress reports shall be required in accordance with the schedule of any resultant contract. Reprints of any publications resulting from sponsored research shall also be provided to the USAMRAA.

Contract Provisions. Contracts awarded shall contain, where appropriate, detailed special provisions concerning patent rights, rights in technical data and computer software, reporting requirements, equal employment opportunity, care of laboratory animals, use of human subjects, good laboratory practices requirements, acquisition and disposition of equipment, and other requirements. Contracts shall also incorporate all general provisions required by the FAR.

METHOD OF SELECTION AND EVALUATION CRITERIA

Proposals will be evaluated first on their relevance to military and program requirements. Those found to be relevant will then be evaluated on a competitive basis by a collective discussion conducted by review committees composed of scientists knowledgeable in the topic area. Scientific acceptability will be determined by using the criteria listed below:

a. *Research Objective.* Is it clear, valid and logical?
b. *Scientific Feasibility.* Are the plans, methods and procedures feasible, clear, valid, adequately referenced and state-of-the-art?
c. *Investigator Competence.* Has the investigator demonstrated the scientific and administrative capability to effectively conduct the proposed research?
d. *Safety Considerations.* Is the investigator cognizant of the requirements for and capable of working with any hazardous materials involved? Has the organization agreed to allow storage and use of such materials in its facility?
e. *Animal Use/Human Use Consideration.* Are the studies, in which animal models or human subjects to be used, to be conducted in accordance with all appropriate regulations? Are all necessary assurances of compliance and certificates provided? (NOTE: Failure to adequately document compliance will prevent evaluation of the proposal.)

After determination of scientific acceptability, an internal source evaluation board will convene and determination of the competitive range will be established by priority of program requirements, scientific acceptability, and cost to complete the contract. Although cost will be a factor in selection, program relevance and scientific acceptability will be more significant factors in selection for contract award. Also, the proposed cost must be realistic and reasonable to be selected for contract award. The government may elect to fund several or none of the proposed approaches to the same topic. There is no commitment by the government to make any awards on any topic, to make a specific number of awards, or to be responsible for any monies expended by the proposer before award of a contract. It should be noted that only a duly appointed Contracting Officer has the authority to enter into a contract on behalf of the U.S. Government.

SUBMISSION OF PROPOSALS

Ten copies of the completed proposal are required for review and evaluation. Proposals must be submitted by 4:00 p.m. on 28 September 1984 to:

Commander
U.S. Army Medical Research Acquisition Agency
ATTN: SGRD-RMA/DAMD17-84-R-0109 (C. Casey)
Fort Detrick, Frederick, MD 21701

The U.S. Army Medical Research Acquisition Agency is Accepting Proposals for Research in Low Molecular Weight Toxins of Military Importance

DAMD17-84-R-0111, Issue Date: 31 August 1984

Novel methods to mitigate the pathophysiologic effects in military personnel induced by low molecular weight toxins following natural exposure or by biological warfare attack are sought. Studies which address toxin-host interactions, identification, and methods of protection are of special interest.

Program emphasis is on (a) trichothecene mycotoxins (T-2, DAS, nivalenol) and their metabolites, (b) sodium channel blocker agents, (saxitoxin and tetradotoxin), (c) other toxins of marine origin, (d) blue-green algae toxins, and (e) other low molecular weight toxins of plant and animal origin (such as ricin) which are of military importance in biological warfare defense. Research areas of interest include:

—METABOLISM
Studies on fate in mammalian systems.

—MOLECULAR TOXICOLOGY
Identification and structural modeling of the binding site of sodium channel blockers.

—PATHOPHYSIOLOGY
Studies on the basic mechanisms of action of low molecular weight toxins. Effects of combinations of trichothecenes with aflatoxin.

—SYNTHESIS
Production of analogs of trichothecene in quantities adequate for animal testing.

—LONG TERM PATHOGENICITY
Studies of chronic organ effects, carcinogenesis, and teratogenesis following short term exposure.

—RAPID IDENTIFICATION
Novel simplified methods for the assay or identification of low molecular weight toxins, metabolites, and analogs in clinical samples and collector samples.

—LABORATORY IDENTIFICATION
More complex techniques than above which allow the chemical or physical assay of compounds of interest in biological fluids. Combination of techniques are acceptable.

—PROPHYLAXIS/THERAPY
Development and testing of drugs and biologicals capable of preventing or reversing pathophysiologic effects of low molecular weight toxins. Screening of drugs for efficacy.

Proposals may be submitted for one or more of the above topics or a specific portion of one topic. A proposer may submit separate proposals on different topics or different proposals on the same topic. The Government does not guarantee an award in each topic area.

In accordance with the Federal Acquisition Regulation (FAR) any contracts awarded under this solicitation may be of any type or combination of types which will promote the best interests of the Government. It is anticipated that multiple-year, incrementally-funded, level-of-effort type, cost reimbursement contracts will be awarded. Each increment will be approximately 12 months. Duration of the contract should be commensurate with the proposed scope of work but in no case shall exceed five years.

Research proposals shall include a table of contents and should cover the points cited below, insofar as they are applicable. The technical and business sections of the proposal must be separate. No cost information shall be included in the technical portion of the proposal.

a. *Name and Address of Organization.* At least one copy must carry the original signatures of an official authorized to legally bind the organization.
b. *Title of Proposed Research.*
c. *Description of Proposed Research.* Submit a detailed description of the research objectives, hypothesis, approach, methods, relationship to the state of knowledge in the field and to comparable work in progress elsewhere, military significance, previous relevant experience, bibliography and pertinent literature citations.
d. *Research Involving Human Subjects.* USAMRDC policies governing the use of human subjects parallel those contained in 45 CFR 46, 21 CFR 312 and DoD Instruction 5030.29. Submit a copy of completed Form HHS 596 with the proposal.
e. *Research Involving Animals.* Acknowledgement that conduct and reporting of the studies shall adhere to the "Guide for the Care and Use of Laboratory Animals" ((NIH) 78-23, 1978) must be included.
f. *Personnel.* Qualifications of the Principal Investigator and other senior professional personnel and the time each will devote to the research. This information, to the extent that it is information about an individual, is subject to the requirements of the Privacy Act of 1974 (5 USC 552(a)). The principal purpose and routine use of the information are for the evaluation of the qualifications of those persons who will perform the research. Disclosure of the information is voluntary, but failure to provide such will prevent evaluation of the proposal.
g. *Facilities and Equipment Available.*
h. *Cost Estimate.* An estimate of the total research project cost with a breakdown of funds by category (direct labor cost, indirect cost, property or equipment cost, travel cost, publication cost, consultant cost, other direct costs, fee or profit) by year must accompany each proposal and must be submitted on SF 1411 with complete supporting information. *No cost information shall be included in the technical portion of the proposal.*

Every effort will be made to protect the confidentiality of the proposal and any evaluations. The submitter may mark the proposal with a legend such as that provided in FAR 52.215-12. Proposals containing a more restrictive legend shall not be considered.

Unnecessarily elaborate brochures or presentations beyond that sufficient to present a complete and effective proposal are not desired.

Any proposal received after the exact time specified for submission of proposals will not be considered unless the circumstances described in FAR 52.215-10 apply.

CONSIDERATIONS

Reports. Quarterly, annual and final progress reports shall be required in accordance with the schedule of any resultant contract. Reprints of any publications resulting from sponsored research shall also be provided to the USAMRAA.

Contract Provisions. Contracts awarded shall contain, where appropriate, detailed special provisions concerning patent rights, rights in technical data and computer software, reporting requirements, equal employment opportunity, care of laboratory animals, use of human subjects, good laboratory practices requirements, acquisition and disposition of equipment, and other requirements. Contracts shall also incorporate all general provisions required by the FAR.

METHOD OF SELECTION AND EVALUATION CRITERIA

Proposals will be evaluated first on their relevance to military and program requirements. Those found to be relevant will then be evaluated on a competitive basis by a collective discussion conducted by review committees composed of scientists knowledgeable in the topic area. Scientific acceptability will be determined by using the criteria listed below:

a. *Research Objective.* Is it clear, valid and logical?
b. *Scientific Feasibility.* Are the plans, methods and procedures feasible, clear, valid, adequately referenced and state-of-the-art?
c. *Investigator Competence.* Has the investigator demonstrated the scientific and administrative capability to effectively conduct the proposed research?
d. *Safety Considerations.* Is the investigator cognizant of the requirements for and capable of working with any hazardous materials involved? Has the organization agreed to allow storage and use of such materials in its facility?
e. *Animal Use/Human Use Consideration.* Are the studies, in which animal models or human subjects to be used, to be conducted in accordance with all appropriate regulations? Are all necessary assurances of compliance and certificates provided? (NOTE: Failure to adequately document compliance will prevent evaluation of the proposal.)

After determination of scientific acceptability, an internal source evaluation board will convene and determination of the competitive range will be established by priority of program requirements, scientific acceptability, and cost to complete the contract. Although cost will be a factor in selection, program relevance and scientific acceptability will be more significant factors in selection for contract award. Also, the proposed cost must be realistic and reasonable to be selected for contract award. The government may elect to fund several or none of the proposed approaches to the same topic. There is no commitment by the government to make any awards on any topic, to make a specific number of awards, or to be responsible for any monies expended by the proposer before award of a contract. It should be noted that only a duly appointed Contracting Officer has the authority to enter into a contract on behalf of the U.S. Government.

SUBMISSION OF PROPOSALS

Ten copies of the completed proposal are required for review and evaluation. Proposals must be submitted by 4:00 p.m. on 11 October 1984 to:

Commander
U.S. Army Medical Research Acquisition Agency
ATTN: SGRD-RMA/DAMD17-84-R-0111 (C. Casey)
Fort Detrick, Frederick, MD 21701

31 August 1984, Volume 225, Number 4665 **SCIENCE**

New Initiatives at NSF

Some of the new or expanded programs recently undertaken at the National Science Foundation are likely to have substantial effects on the development of science and technology. As one example, in 1985 NSF will begin support of university centers for cross-disciplinary research in engineering. This is in reponse to concern about the state of engineering research and training in our nation's colleges and universities. Computers, robotics, telecommunication, and information management have radically transformed engineering and manufacturing processes. But few university departments have the instruments required to provide hands-on experience for their students. Also, engineering practice has evolved into team attacks on problems, but university engineering research has remained the domain of small single-investigator programs. The new engineering centers program is a significant step toward improving the diversity and quality of engineering research and training.

Another NSF initiative concerns research equipment and instrumentation. At many colleges and universities, equipment is outmoded. For a decade prior to 1983, funds for buying equipment in NSF grants did not keep pace with the need. Increases in the 1984 budget have partially restored purchase of equipment to its place of importance in grants and university budgets. However, in many fields, academic science instrumentation still lags behind that available to industry or to the defense community. Continued emphasis on instrumentation will be required to undo a decade of neglect.

A third initiative at NSF involves supercomputing. In order to do first-rate research today, many scientists and engineers must have access to computers for modeling and data analysis. In a sense, supercomputers are a special subset within the whole problem of scientific instrumentation. We have been attacking the supercomputer problem in three ways. First, we support the research that scientists and engineers need to develop the most advanced computers. Second, in order to increase academic access to supercomputers, NSF has arranged for large blocks of supercomputer services at the University of Minnesota, Purdue University, and Boeing Computer Services and is offering these services on a competitive basis to scientists and engineers as part of their research grants. Finally, we intend to establish advanced computing centers throughout the country and to develop nationwide networks to allow research scientists to have access to a variety of supercomputer facilities.

My experience in Washington causes me to offer some parting advice to those involved in complex fields involving interdisciplinary research. In research fields that incorporate a number of different disciplines, it is especially important that investigators develop a clear-cut consensus as to what needs to be done and how to do it. This helps unify the research community, bringing developments in various disciplines to the scrutiny and attention of colleagues in other fields. This, in turn, builds bridges between disciplines and helps generate exciting new approaches to old problems. Carefully considered priorities also help decision-makers in the executive and legislative branches of government make the choices that affect scientific work and the health of the scientific community.

Finally, NSF should continue to emphasize that its role is the development and maintenance of the health of American science and engineering—a far bigger role than that of only a grant-making agency. The emphasis that has been placed on developing the entire university scientific system must be continued and expanded. We can only have scientific leadership if we train the best scientists; it is the people that count.—EDWARD A. KNAPP,* *Senior Fellow and Research Adviser, Los Alamos National Laboratory, Los Alamos, New Mexico 87545*

*Dr. Knapp served as director of the National Science Foundation from 3 November 1982 to 11 August 1984.

The U.S. Army Medical Research Acquisition Agency is Accepting Proposals for Research in Parasitic Diseases of Military Importance

DAMD17-84-R-0110, Issue Date: 31 August 1984

Novel methods to mitigate the pathophysiologic effects induced by parasitic diseases following natural infections in military personnel are sought. Studies which address agent-host interactions and the basis of protection during prophylaxis or following active immunization are of special interest.

Program emphasis is on malaria, leishmaniasis, trypanosomiasis, and schistosomiasis which are capable of eroding combat strength in troops deployed in overseas areas.

—**MOLECULAR PARASITOLOGY**
Studies on basic structure of parasites of interest in relation to pathophysiologic processes, expression of genomic sequences in relation to host/antibody pressures, development of immunogens and diagnostic tools, etc.

—**PATHOGENESIS**
Host-parasite relationships and their effects on severity of disease, duration of incapacitation and outcome of infections.

—**METABOLISM AND BIOCHEMISTRY**
Identification of novel metabolic pathways yielding new approaches to chemotherapy.

—**PROTECTION**
Mechanisms leading to protection following administration of prophylactic drugs or immunogens.

—**RESISTANCE**
Studies of metabolic and/or biochemical bases of naturally developed drug resistance.

—**SCREENING**
Development of improved laboratory models (either *in vivo* or *in vitro*) for screening and evaluation of candidate drugs.

—**IMMUNOGENS**
Novel approaches based on nucleic acid recombinants, synthetic peptides, anti-idiotypes, subunit derivatives, etc.

—**IMMUNOPOTENTIATORS/IMMUNOMODULATORS**
Role in natural history of disease and prevention of infection.

Proposals may be submitted for one or more of the above topics or a specific portion of one topic. A proposer may submit separate proposals on different topics or different proposals on the same topic. The Government does not guarantee an award in each topic area.

In accordance with the Federal Acquisition Regulation (FAR) any contracts awarded under this solicitation may be of any type or combination of types which will promote the best interests of the Government. It is anticipated that multiple-year, incrementally-funded, level-of-effort type, cost reimbursement contracts will be awarded. Each increment will be approximately 12 months. Duration of the contract should be commensurate with the proposed scope of work but in no case shall exceed five years.

Research proposals shall include a table of contents and should cover the points cited below, insofar as they are applicable. The technical and business sections of the proposal must be separate. No cost information shall be included in the technical portion of the proposal.

a. *Name and Address of Organization.* At least one copy must carry the original signatures of an official authorized to legally bind the organization.
b. *Title of Proposed Research.*
c. *Description of Proposed Research.* Submit a detailed description of the research objectives, hypothesis, approach, methods, relationship to the state of knowledge in the field and to comparable work in progress elsewhere, military significance, previous relevant experience, bibliography and pertinent literature citations.
d. *Research Involving Human Subjects.* USAMRDC policies governing the use of human subjects parallel those contained in 45 CFR 46, 21 CFR 312 and DoD Instruction 5030.29. Submit a copy of completed Form HHS 596 with the proposal.
e. *Research Involving Animals.* Acknowledgement that conduct and reporting of the studies shall adhere to the "Guide for the Care and Use of Laboratory Animals" ((NIH) 78-23, 1978) must be included.
f. *Personnel.* Qualifications of the Principal Investigator and other senior professional personnel and the time each will devote to the research. This information, to the extent that it is information about an individual, is subject to the requirements of the Privacy Act of 1974 (5 USC 552(a)). The principal purpose and routine use of the information are for the evaluation of the qualifications of those persons who will perform the research. Disclosure of the information is voluntary, but failure to provide such will prevent evaluation of the proposal.
g. *Facilities and Equipment Available.*
h. *Cost Estimate.* An estimate of the total research project cost with a breakdown of funds by category (direct labor cost, indirect cost, property or equipment cost, travel cost, publication cost, consultant cost, other direct costs, fee or profit) by year must accompany each proposal and must be submitted on SF 1411 with complete supporting information. *No cost information shall be included in the technical portion of the proposal.*

Every effort will be made to protect the confidentiality of the proposal and any evaluations. The submitter may mark the proposal with a legend such as that provided in FAR 52.215-12. Proposals containing a more restrictive legend shall not be considered.

Unnecessarily elaborate brochures or presentations beyond that sufficient to present a complete and effective proposal are not desired.

Any proposal received after the exact time specified for submission of proposals will not be considered unless the circumstances described in FAR 52.215-10 apply.

CONSIDERATIONS

Reports. Quarterly, annual and final progress reports shall be required in accordance with the schedule of any resultant contract. Reprints of any publications resulting from sponsored research shall also be provided to the USAMRAA.

Contract Provisions. Contracts awarded shall contain, where appropriate, detailed special provisions concerning patent rights, rights in technical data and computer software, reporting requirements, equal employment opportunity, care of laboratory animals, use of human subjects, good laboratory practices requirements, acquisition and disposition of equipment, and other requirements. Contracts shall also incorporate all general provisions required by the FAR.

METHOD OF SELECTION AND EVALUATION CRITERIA

Proposals will be evaluated first on their relevance to military and program requirements. Those found to be relevant will then be evaluated on a competitive basis by a collective discussion conducted by review committees composed of scientists knowledgeable in the topic area. Scientific acceptability will be determined by using the criteria listed below:

a. *Research Objective.* Is it clear, valid and logical?
b. *Scientific Feasibility.* Are the plans, methods and procedures feasible, clear, valid, adequately referenced and state-of-the-art?
c. *Investigator Competence.* Has the investigator demonstrated the scientific and administrative capability to effectively conduct the proposed research?
d. *Safety Considerations.* Is the investigator cognizant of the requirements for and capable of working with any hazardous materials involved? Has the organization agreed to allow storage and use of such materials in its facility?
e. *Animal Use/Human Use Consideration.* Are the studies, in which animal models or human subjects to be used, to be conducted in accordance with all appropriate regulations? Are all necessary assurances of compliance and certificates provided? (NOTE: Failure to adequately document compliance will prevent evaluation of the proposal.)

After determination of scientific acceptability, an internal source evaluation board will convene and determination of the competitive range will be established by priority of program requirements, scientific acceptability, and cost to complete the contract. Although cost will be a factor in selection, program relevance and scientific acceptability will be more significant factors in selection for contract award. Also, the proposed cost must be realistic and reasonable to be selected for contract award. The government may elect to fund several or none of the proposed approaches to the same topic. There is no commitment by the government to make any awards on any topic, to make a specific number of awards, or to be responsible for any monies expended by the proposer before award of a contract. It should be noted that only a duly appointed Contracting Officer has the authority to enter into a contract on behalf of the U.S. Government.

SUBMISSION OF PROPOSALS

Ten copies of the completed proposal are required for review and evaluation. Proposals must be submitted by 4:00 p.m. on 8 October 1984 to:

Commander
U.S. Army Medical Research Acquisition Agency
ATTN: SGRD-RMA/DAMD17-84-R-0110 (M. Losee)
Fort Detrick, Frederick, MD 21701