

NASA SP-7011 (419)
August 5, 1996

AEROSPACE MEDICINE AND BIOLOGY

A CONTINUING BIBLIOGRAPHY WITH INDEXES



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Introduction

This issue of *Aerospace Medicine and Biology, A Continuing Bibliography with Indexes* (NASA SP-7011) lists 7 reports, articles, and other documents recently announced in the NASA STI Database.

In its subject coverage, *Aerospace Medicine and Biology* concentrates on the biological, physiological, psychological, and environmental effects to which humans are subjected during and following simulated or actual flight in the Earth's atmosphere or in interplanetary space. References describing similar effects on biological organisms of lower order are also included. Such related topics as sanitary problems, pharmacology, toxicology, safety and survival, life support systems, exobiology, and personnel factors receive appropriate attention. Applied research receives the most emphasis, but references to fundamental studies and theoretical principles related to experimental development also qualify for inclusion.

Each entry in the publication consists of a standard bibliographic citation accompanied, in most cases, by an abstract.

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Typical Report Citation and Abstract

ACCESSION NUMBER



- DOCUMENT ID NUMBER** → 19960021053; 96N24540 NASA Langley Research Center, Hampton, VA USA. ← **CORPORATE SOURCE**
- TITLE** → **An Extended Compact Tension Specimen for Fatigue Crack Propagation and Fracture**
- AUTHORS** → Piascik, R. S., NASA Langley Research Center, USA; Newman, J. C., Jr., NASA Langley Research Center, USA; ← **AUTHORS' AFFILIATION**
- PUBLICATION DATE** → Mar. 1996, pp. 16; In English
- CONTRACTS/GRANTS** → Contract(s)/Grant(s): RTOP 538-02-10-01
- REPORT NO.(S)** → Report No.(s): NASA-TM-110243; NAS 1.15:110243; No Copyright; Avail: CASI A03, Hardcopy; A01, Microfiche ← **AVAILABILITY AND PRICE CODE**
- ABSTRACT** → developed for fatigue and fracture testing. Documented herein are stress-intensity factor and compliance expressions for the EC(T) specimen.
- ABSTRACT AUTHOR** → Author
- SUBJECT TERMS** → *Crack Propagation; Stress Intensity Factors; Fatigue (Materials)*

AEROSPACE MEDICINE AND BIOLOGY

A Continuing Bibliography (Suppl. 419)

AUGUST 5, 1996

51

LIFE SCIENCES (GENERAL)

19960024132; 96N26698 NASA Langley Research Center, Hampton, VA USA

Radiosensitivity Parameters For Lethal Mutagenesis In Caenorhabditis Elegans

Cucinotta, F. A., NASA Langley Research Center, USA; Wilson, J. W., NASA Langley Research Center, USA; Katz, R., Nebraska Univ., USA; 1994, pp. 3; Repr. from Radiation Protection Dosimetry, v. 52, no. 1-4, 1994 pp 25-27; In English

Contract(s)/Grant(s): NAG1-1447

Report No.(s): NASA-CR-201041; NAS 1.26:201041; No Copyright; Avail: CASI; A01, Hardcopy; A01, Microfiche

For the first time track structure theory has been applied to radiobiological effects in a living organism. Data for lethal mutagenesis in *Caenorhabditis elegans*, obtained after irradiation with nine different types of ions of Atomic number 1-57 and gamma rays have yielded radiosensitivity parameters (E_{01} , σ_{01} , K_{01} , $m = 68$ Gy, $2.5 \times 10^{(exp -9)}$ cm (exp 2), 750, 2) comparable with those found for the transformation of C3HT10 1/2 cells (180 Gy, $1.15 \times 10^{(exp -10)}$ cm(exp 2), 750, 2) but remote from those (E_{01} and σ_{01}) = approx. 2 Gy, approx. $5 \times 10^{(exp -7)}$ cm(exp 2)) for mammalian cell survival.

Author

Radiation Tolerance; Gamma Rays; Ion Irradiation; Radiation Effects; Biological Effects

19960024151; 96N26712 NASA Langley Research Center, Hampton, VA USA

Cell Kinetics and Track Structure

Wilson, John W., NASA Langley Research Center, USA; Cucinotta, F. A., NASA Langley Research Center, USA; Shinn, J. L., NASA Langley Research Center, USA; 1993, pp. 44; Repr. from Biological Effects and Physics of Solar and Galactic Cosmic Radiation, Part A, (New York, Plenum Press), 1993 p. 295 - 338; In English

Report No.(s): NASA-TM-111541; NAS 1.15:111541; No Copyright; Avail: CASI; A03, Hardcopy; A01, Microfiche

A major uncertainty in shield requirements for deep-space missions is establishing biological risk for high charge

and energy (HZE) exposure. Estimates of biological risk in space requires an understanding of the relationship of ground-based biological experiments with intense particle beams to the low exposure rates in the space environment. We have examined the relation of a (relatively) general cell kinetic model to the track structure theory of Katz and determined repair coefficients from the experiments of Yang et al. as a means of predicting biological response to low dose-rate exposure in the deep-space environment. The model provides repair dependent relative biological effectiveness (RBE's) which agree well with values found in ion exposure experiments and makes predictions which could be tested in future laboratory studies. The model seems to provide the necessary requirement of relating laboratory response data to space exposure conditions with the exception of the gravity environment effects.

Author

Biological Effects; Kinetics; Particle Beams; Exposure; Radiation Effects; Dosage; Prediction Analysis Techniques

19960025416; 96N27454 Columbia Univ., New York, NY USA

Int-3 Oncogene in Normal and Neoplastic Breast Development Annual Report, 1 Sep. 1994 - 31 Aug. 1995

Kitajewski, Jan, Columbia Univ., USA; Sep. 1995, pp. 21; In English

Contract(s)/Grant(s): DAMD17-94-J-4410

Report No.(s): AD-A302124; No Copyright; Avail: CASI; A03, Hardcopy; A01, Microfiche

Mutational activation of the murine int-3 oncogene can contribute to mammary gland tumorigenesis. Evidence suggests that int-3 regulates the morphogenesis and functional differentiation of the mouse mammary gland. The proposed research investigates the role of int-3 proteins in the normal physiology of breast development and the biochemical properties critical for int-3 transforming activity. The cDNAs encoding of the truncated int-3 oncogene were cloned. A full length cDNA of approximately 7.3 kilobases was subsequently cloned and has been sequenced. The deduced amino acid sequence verifies that int-3 is a Notch/lin-12 family member. Structurally, the int-3 protein contains approximately 20 EGF-like repeats, 3 Notch/lin-12 repeats, a transmembrane domain, and an intracellular domain containing six

ankyrin repeats. Analysis of int-3 mRNA shows expression in several adult tissues and during mouse embryonic development. Cell lines have been generated that express an epitope-tagged int-3 oncoprotein, which was detected by Western blot and immunofluorescence analysis. Activated int-3 oncoproteins were found primarily in the nucleus and putative nuclear localization signals have been identified. Finally, bacterially produced int-3 proteins have been purified and used to generate rabbit polyclonal serum.

DTIC

Mammary Glands; Biochemistry; Amino Acids; Proteins

19960025456; 96N27493 Tennessee Univ. Space Inst., Dept. of Mechanical and Aerospace Engineering., Tullahoma, TN USA

Protein crystallization studies

Lyne, James Evans, Tennessee Univ. Space Inst., USA; Research Reports: 1995 NASA/ASEE Summer Faculty Fellowship Program; Feb. 1996, pp. 8; In English; Also announced as 1996043981; No Copyright; Avail: CASI; A02, Hardcopy; A04, Microfiche

The Structural Biology laboratory at NASA Marshall Spaceflight Center uses x-ray crystallographic techniques to conduct research into the three-dimensional structure of a wide variety of proteins. A major effort in the laboratory involves an ongoing study of human serum albumin (the principal protein in human plasma) and its interaction with various endogenous substances and pharmaceutical agents. Another focus is on antigenic and functional proteins from several pathogenic organisms including the human immunodeficiency virus (HIV) and the widespread parasitic genus, *Schistosoma*. My efforts this summer have been twofold: first, to identify clinically significant drug interactions involving albumin binding displacement and to initiate studies of the three-dimensional structure of albumin complexed with these agents, and secondly, to establish collaborative efforts to extend the lab's work on human pathogens.

Author

Protein Crystal Growth; Albumins; Pharmacology; Pathogens

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AEROSPACE MEDICINE

Includes physiological factors; biological effects of radiation; and effects of weightlessness on man and animals.

19960025317; 96N27389 Japan Atomic Energy Research Inst., Tokyo, Japan

Panel discussion on health effects of low-dose ionizing radiation: Scientific findings and non-threshold hypothesis

Jun. 1995, pp. 44; In English; IAEA Interregional Training

Course on Health Effects of Low-dose Ionizing Radiation, 28 Feb. - 18 Mar. 1994, Tokyo, Japan

Report No.(s): JAERI-Conf-95-010; CONF-9402159; DE96-708576; No Copyright; Avail: CASI; A03, Hardcopy; A01, Microfiche

This is a record of a panel discussion in the IAEA Interregional Training Course. In current radiation work, protection measures are taken on the assumption that any amount of radiation, however small, entails a risk of deleterious effects. This so-called non-threshold assumption of radiation effects, on the one hand, creates public distrust of radiation use. However, because the health effects of low-dose ionizing radiation are difficult to verify, wide views ranging from the non-threshold hypothesis to one which sees small amounts of radiation as rather useful and necessary are presented. In this panel discussion, how the health effects of low-dose ionizing radiation should be considered from the standpoint of radiation protection was discussed. Panelists included such eminent scientists as Dr. Sugahara and Dr. Okada, who are deeply interested in this field and are playing leading parts in radiobiology research in Japan, and Dr. Stather, deputy Director of NRPB, UK, who, in UNSCEAR and ICRP, is actively participating in the interNational review of radiation effects and the preparation of reports on radiation protection recommendations. They agreed with each other that although it is reasonable, under the current scientific understanding, to follow the recommendation of ICRP, research in this area should be strongly promoted hereafter, for basing radiation protection on firm scientific grounds. Many participants actively asked about and discussed problems in their own field.

DOE

Ionizing Radiation; Education; Health; Conferences; Radiation Dosage

19960025432; 96N27469 Oakwood Coll., Dept. of Chemistry, Biochemistry and Allied Health., Huntsville, AL USA

The development, assessment and validation of virtual reality for human anatomy instruction

Marshall, Karen Benn, Oakwood Coll., USA; Research Reports: 1995 NASA/ASEE Summer Faculty Fellowship Program; Feb. 1996, pp. 6; In English; Also announced as 1996043981; No Copyright; Avail: CASI; A02, Hardcopy; A04, Microfiche

This research project seeks to meet the objective of science training by developing, assessing, validating and utilizing VR as a human anatomy training medium. Current anatomy instruction is primarily in the form of lectures and usage of textbooks. In ideal situations, anatomic models, computer-based instruction, and cadaver dissection are utilized to augment traditional methods of instruction. At many institutions, lack of financial resources limits anatomy instruction to textbooks and lectures. However, human anatomy is three-dimensional, unlike the one-dimensional depiction found in textbooks and the two-dimensional depiction

found on the computer. Virtual reality allows one to step through the computer screen into a 3-D artificial world. The primary objective of this project is to produce a virtual reality application of the abdominopelvic region of a human cadaver that can be taken back to the classroom. The hypothesis is that an immersive learning environment affords quicker anatomic recognition and orientation and a greater level of retention in human anatomy instruction. The goal is to augment not replace traditional modes of instruction.

Derived from text

Virtual Reality; Anatomy; NASA Programs; University Program; Computer Assisted Instruction; Abdomen

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BEHAVIORAL SCIENCES

Includes psychological factors; individual and group behavior; crew training and evaluation; and psychiatric research.

19960024742; 96N26907 Science Applications InterNational Corp., McLean, VA USA

Operator Cursor Positioning Performance On Navigational Update and Targeting Tasks: Evaluation of Gain Functions for the B-2 Radar-Embedded Cursor System *Interim Report, Jun. 1994 - Jan. 1995*

Doyal, Jeffrey A., Science Applications InterNational Corp., USA; Irvin, Gregg E., Science Applications InterNational Corp., USA; Ramer, David P., Science Applications InterNational Corp., USA; Apr. 1995, pp. 93; In English

Contract(s)/Grant(s): F33615-92-D-2293; AF Proj. 7184
Report No.(s): AD-A301662; AL/CF-TR-1995-0106; No Copyright; Avail: CASI; A05, Hardcopy; A01, Microfiche

Sixteen USAF crew members participated in experiments evaluating cursor slewing performance with the B-2 radar-embedded cursor system. Performance was evaluated with the current linear force/cursor velocity function and an alternative sigmoidal function expected to elicit improved performance. One experiment utilized a radar update task requiring only fine positioning movements of the cursor. The second experiment consisted of a semi-operational targeting task in which both gross and fine positioning movements of the cursor were required. In addition, the effects of ambiguity of the target pixel and variability in cursor system processing delay were examined. In both experiments, the alternative gain function elicited lower designation time and fewer overshoots than the current function.

DTIC

Aircraft Equipment; Radar Equipment; B-2 Aircraft; Synthetic Aperture Radar; Airborne Radar; Position Indicators; Performance Tests

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P.O. Box 870266
Tuscaloosa, AL 35487-0266
(205) 348-6046 Fax: (205) 348-0760

ARIZONA

DEPT. OF LIBRARY, ARCHIVES, AND PUBLIC RECORDS
Research Division
Third Floor, State Capitol
1700 West Washington
Phoenix, AZ 85007
(602) 542-3701 Fax: (602) 542-4400

ARKANSAS

ARKANSAS STATE LIBRARY
State Library Service Section
Documents Service Section
One Capitol Mall
Little Rock, AR 72201-1014
(501) 682-2053 Fax: (501) 682-1529

CALIFORNIA

CALIFORNIA STATE LIBRARY
Govt. Publications Section
P.O. Box 942837 - 914 Capitol Mall
Sacramento, CA 94337-0091
(916) 654-0069 Fax: (916) 654-0241

COLORADO

UNIV. OF COLORADO - BOULDER
Libraries - Govt. Publications
Campus Box 184
Boulder, CO 80309-0184
(303) 492-8834 Fax: (303) 492-1881

DENVER PUBLIC LIBRARY

Govt. Publications Dept. BSG
1357 Broadway
Denver, CO 80203-2165
(303) 640-8846 Fax: (303) 640-8817

CONNECTICUT

CONNECTICUT STATE LIBRARY
231 Capitol Avenue
Hartford, CT 06106
(203) 566-4971 Fax: (203) 566-3322

FLORIDA

UNIV. OF FLORIDA LIBRARIES
Documents Dept.
240 Library West
Gainesville, FL 32611-2048
(904) 392-0366 Fax: (904) 392-7251

GEORGIA

UNIV. OF GEORGIA LIBRARIES
Govt. Documents Dept.
Jackson Street
Athens, GA 30602-1645
(706) 542-8949 Fax: (706) 542-4144

HAWAII

UNIV. OF HAWAII
Hamilton Library
Govt. Documents Collection
2550 The Mall
Honolulu, HI 96822
(808) 948-8230 Fax: (808) 956-5968

IDAHO

UNIV. OF IDAHO LIBRARY
Documents Section
Rayburn Street
Moscow, ID 83844-2353
(208) 885-6344 Fax: (208) 885-6817

ILLINOIS

ILLINOIS STATE LIBRARY
Federal Documents Dept.
300 South Second Street
Springfield, IL 62701-1796
(217) 782-7596 Fax: (217) 782-6437

INDIANA

INDIANA STATE LIBRARY
Serials/Documents Section
140 North Senate Avenue
Indianapolis, IN 46204-2296
(317) 232-3679 Fax: (317) 232-3728

IOWA

UNIV. OF IOWA LIBRARIES
Govt. Publications
Washington & Madison Streets
Iowa City, IA 52242-1166
(319) 335-5926 Fax: (319) 335-5900

KANSAS

UNIV. OF KANSAS
Govt. Documents & Maps Library
6001 Malott Hall
Lawrence, KS 66045-2800
(913) 864-4660 Fax: (913) 864-3855

KENTUCKY

UNIV. OF KENTUCKY
King Library South
Govt. Publications/Maps Dept.
Patterson Drive
Lexington, KY 40506-0039
(606) 257-3139 Fax: (606) 257-3139

LOUISIANA

LOUISIANA STATE UNIV.
Middleton Library
Govt. Documents Dept.
Baton Rouge, LA 70803-3312
(504) 388-2570 Fax: (504) 388-6992

LOUISIANA TECHNICAL UNIV.

Prescott Memorial Library
Govt. Documents Dept.
Ruston, LA 71272-0046
(318) 257-4962 Fax: (318) 257-2447

MAINE

UNIV. OF MAINE
Raymond H. Fogler Library
Govt. Documents Dept.
Orono, ME 04469-5729
(207) 581-1673 Fax: (207) 581-1653

MARYLAND

UNIV. OF MARYLAND - COLLEGE PARK
McKeldin Library
Govt. Documents/Maps Unit
College Park, MD 20742
(301) 405-9165 Fax: (301) 314-9416

MASSACHUSETTS

BOSTON PUBLIC LIBRARY
Govt. Documents
666 Boylston Street
Boston, MA 02117-0286
(617) 536-5400, ext. 226
Fax: (617) 536-7758

MICHIGAN

DETROIT PUBLIC LIBRARY
5201 Woodward Avenue
Detroit, MI 48202-4093
(313) 833-1025 Fax: (313) 833-0156

LIBRARY OF MICHIGAN

Govt. Documents Unit
P.O. Box 30007
717 West Allegan Street
Lansing, MI 48909
(517) 373-1300 Fax: (517) 373-3381

MINNESOTA

UNIV. OF MINNESOTA
Govt. Publications
409 Wilson Library
309 19th Avenue South
Minneapolis, MN 55455
(612) 624-5073 Fax: (612) 626-9353

MISSISSIPPI

UNIV. OF MISSISSIPPI
J.D. Williams Library
106 Old Gym Bldg.
University, MS 38677
(601) 232-5857 Fax: (601) 232-7465

MISSOURI

UNIV. OF MISSOURI - COLUMBIA
106B Ellis Library
Govt. Documents Sect.
Columbia, MO 65201-5149
(314) 882-6733 Fax: (314) 882-8044

MONTANA

UNIV. OF MONTANA
Mansfield Library
Documents Division
Missoula, MT 59812-1195
(406) 243-6700 Fax: (406) 243-2060

NEBRASKA

UNIV. OF NEBRASKA - LINCOLN
D.L. Love Memorial Library
Lincoln, NE 68588-0410
(402) 472-2562 Fax: (402) 472-5131

NEVADA

THE UNIV. OF NEVADA LIBRARIES
Business and Govt. Information Center
Reno, NV 89557-0044
(702) 784-6579 Fax: (702) 784-1751

NEW JERSEY

NEWARK PUBLIC LIBRARY
Science Div. - Public Access
P.O. Box 630
Five Washington Street
Newark, NJ 07101-7812
(201) 733-7782 Fax: (201) 733-5648

NEW MEXICO

UNIV. OF NEW MEXICO
General Library
Govt. Information Dept.
Albuquerque, NM 87131-1466
(505) 277-5441 Fax: (505) 277-6019

NEW MEXICO STATE LIBRARY

325 Don Gaspar Avenue
Santa Fe, NM 87503
(505) 827-3824 Fax: (505) 827-3888

NEW YORK

NEW YORK STATE LIBRARY
Cultural Education Center
Documents/Gift & Exchange Section
Empire State Plaza
Albany, NY 12230-0001
(518) 474-5355 Fax: (518) 474-5786

NORTH CAROLINA

UNIV. OF NORTH CAROLINA - CHAPEL HILL
Walter Royal Davis Library
CB 3912, Reference Dept.
Chapel Hill, NC 27514-8890
(919) 962-1151 Fax: (919) 962-4451

NORTH DAKOTA

NORTH DAKOTA STATE UNIV. LIB.
Documents
P.O. Box 5599
Fargo, ND 58105-5599
(701) 237-8886 Fax: (701) 237-7138

UNIV. OF NORTH DAKOTA

Chester Fritz Library
University Station
P.O. Box 9000 - Centennial and University Avenue
Grand Forks, ND 58202-9000
(701) 777-4632 Fax: (701) 777-3319

OHIO

STATE LIBRARY OF OHIO
Documents Dept.
65 South Front Street
Columbus, OH 43215-4163
(614) 644-7051 Fax: (614) 752-9178

OKLAHOMA

OKLAHOMA DEPT. OF LIBRARIES
U.S. Govt. Information Division
200 Northeast 18th Street
Oklahoma City, OK 73105-3298
(405) 521-2502, ext. 253
Fax: (405) 525-7804

OKLAHOMA STATE UNIV.

Edmon Low Library
Stillwater, OK 74078-0375
(405) 744-6546 Fax: (405) 744-5183

OREGON

PORTLAND STATE UNIV.
Branford P. Miller Library
934 Southwest Harrison
Portland, OR 97207-1151
(503) 725-4123 Fax: (503) 725-4524

PENNSYLVANIA

STATE LIBRARY OF PENN.
Govt. Publications Section
116 Walnut & Commonwealth Ave.
Harrisburg, PA 17105-1601
(717) 787-3752 Fax: (717) 783-2070

SOUTH CAROLINA

CLEMSON UNIV.
Robert Muldrow Cooper Library
Public Documents Unit
P.O. Box 343001
Clemson, SC 29634-3001
(803) 656-5174 Fax: (803) 656-3025

UNIV. OF SOUTH CAROLINA

Thomas Cooper Library
Green and Sumter Streets
Columbia, SC 29208
(803) 777-4841 Fax: (803) 777-9503

TENNESSEE

UNIV. OF MEMPHIS LIBRARIES
Govt. Publications Dept.
Memphis, TN 38152-0001
(901) 678-2206 Fax: (901) 678-2511

TEXAS

TEXAS STATE LIBRARY
United States Documents
P.O. Box 12927 - 1201 Brazos
Austin, TX 78701-0001
(512) 463-5455 Fax: (512) 463-5436

TEXAS TECH. UNIV. LIBRARIES

Documents Dept.
Lubbock, TX 79409-0002
(806) 742-2282 Fax: (806) 742-1920

UTAH

UTAH STATE UNIV.
Merrill Library Documents Dept.
Logan, UT 84322-3000
(801) 797-2678 Fax: (801) 797-2677

VIRGINIA

UNIV. OF VIRGINIA
Alderman Library
Govt. Documents
University Ave. & McCormick Rd.
Charlottesville, VA 22903-2498
(804) 824-3133 Fax: (804) 924-4337

WASHINGTON

WASHINGTON STATE LIBRARY
Govt. Publications
P.O. Box 42478
16th and Water Streets
Olympia, WA 98504-2478
(206) 753-4027 Fax: (206) 586-7575

WEST VIRGINIA

WEST VIRGINIA UNIV. LIBRARY
Govt. Documents Section
P.O. Box 6069 - 1549 University Ave.
Morgantown, WV 26506-6069
(304) 293-3051 Fax: (304) 293-6638

WISCONSIN

ST. HIST. SOC. OF WISCONSIN LIBRARY
Govt. Publication Section
816 State Street
Madison, WI 53706
(608) 264-6525 Fax: (608) 264-6520

MILWAUKEE PUBLIC LIBRARY

Documents Division
814 West Wisconsin Avenue
Milwaukee, WI 53233
(414) 286-3073 Fax: (414) 286-8074