RR

OFFICE OF THE ASSISTANT TO THE SECRETARY OF DEFENSE
1400 DEFENSE PENTAGON
WASHINGTON, D.C. 20301-1400

PUBLIC AFFAIRS

4 AUG 1994

Ref: 94-F-1255

Mary Beth Sweetland
Research and Investigations
People for the Ethical Treatment of Animals
P.O. Box 42516
Washington DC 20015-0516

Dear Ms. Sweetland:

This responds to your February 17, 1994, Freedom of Information Act (FOIA) request filed with the Office of the Under Secretary of Defense (Acquisition and Technology), referred to the Defense Nuclear Agency and subsequently referred to the Secretary of Defense and received in this Directorate on June 8, 1994.

We have completed our review of the documents responsive to your request which were referred to us by the Armed Forces Radiobiology Research Institute. The documents and a copy of your request are at the enclosure. There are no assessable fees in this instance.

Sincerely,

W. M. McDonald
Director
Freedom of Information
and Security Review

Enclosures:
As stated

#630

PETA
PEOPLE FOR THE ETHICAL
TREATMENT OF ANIMALS
P.O. BOX 42516
WASHINGTON DC
20015-0516
(301) 770 - PETA
FAX (301) 770 - 8969

February 17, 1994

Kelly D. Akers
FOIA Program Manager
Office of the Under Secretary of Defense
(Acquisition & Technology)
Defense Technical Information Center
Cameron Station
Alexandria, VA 22304-6145

Dear Ms. Akers:

This request for records is made under the Federal Freedom of Information Act, 5 U.S.C. Sec 552.

People for the Ethical Treatment of Animals makes this request. We are a non-profit organization, based in Washington, D.C., dedicated to educating the public about issues concerning animal rights. People for the Ethical Treatment of Animals may be referred to hereafter as "the requester."

This request is for copies of abstracts of projects in progress that involve the use of dogs, cats, primates, pigs, or birds in experimentation whether the projects are funded by DOD or conducted in DOD facilities with grant monies from other sources. Please include Veterans Administration hospitals in this request.

If any records or documents pertaining to the above request are considered to be exempt from release, please segregate and provide access to non-exempt portions and justify deletions by reference to specific exemptions in the Freedom of Information Act.

The requester is prepared to pay all reasonable search and duplication fees relating to this request up to the amount of fifty dollars ($50.00), but asks that such fees be waived, or at least reduced, pursuant to Sec.552 (a) (4) (iii) of the Freedom of Information Act, which provides that provides that

Encl 3

> [d]ocuments shall be furnished without any charge or at a charge reduced below the fees established under clause (ii) ["reasonable standard charges"] if disclosure of the information is in the public interest because it is likely to contribute significantly to public understanding of the operations or activities of the government and is not primarily in the commercial interest of the requester.

Requester satisfies the cited fee waiver/reduction provision because disclosure of the requested information would be likely to contribute significantly to public understanding of issues related to the care of animals as required by the U.S. Fish & Wildlife Service, and the requester, a non-profit public interest organization whose federal tax-exempt number is 521218336, has no commercial interest in disclosure of the information requested.

If the waiver or reduction is denied, and fees are expected to exceed fifty dollars ($50.00), kindly notify requester by telephone before this disclosure request is processed, so that the requester may decide whether to pay the disputed fees, or, instead, to appeal the denial of the request for waiver or reduction.

I may be reached during business hours at (301)770-7444. If you have any questions regarding any aspect of this request, please contact me by telephone rather than by mail in order to expedite timely disclosure of the requested information.

Thank you for your assistance. I will look forward to receiving your reply within ten business days.

Sincerely,

Mary Beth Sweetland

Mary Beth Sweetland
Research & Investigations

RESEARCH AND TECHNOLOGY WORK UNIT SUMMARY

1. AGENCY ACCESSION	2. DATE OF SUMMARY	REPORT CONTROL SYMBOL
	931001	DD-DR&E(AR) 636

3. DATE PREV SUMMARY	4. KIND OF SUMMARY	5. SUMMARY SCTY	6. WORK SECURITY	7. REGRADING	8. DISB INSTR'N	9. LEVEL OF SUM A. WORK UNIT
921001	D. Change	U	U		NL	

10. NO./CODES:	PROGRAM ELEMENT	PROJECT NUMBER	TASK AREA NUMBER	WORK UNIT NUMBER
a. PRIMARY	62715H	RM	RD	00107
b. CONTRIBUTING				
c. CONTRIBUTING				

11. TITLE (Precede with Security Classification Code) (U) Effect of Ionizing Radiation on Gastrointestinal Physiology; Emesis and Fluid and Electrolyte Loss

12. SUBJECT AREAS
012900 Physiology; 014100 Radiobiology

13. START DATE	14. ESTIMATED COMPLETION DATE	15. FUNDING ORGANIZATION	16. PERFORMANCE METHOD
8210	9409	DH	C. In-House

17. CONTRACT/GRANT

a. DATE EFFECTIVE	EXPIRATION
b. CONTRACT/GRANT NUMBER	
c. TYPE	d. AMOUNT
e. KIND OF AWARD C	f. CUM/TOTAL 0

18. RESOURCES ESTIMATE

FISCAL YEARS	a. PROFESSIONAL WORKYEARS	b. FUNDS (In thousands)

19. RESPONSIBLE DOD ORGANIZATION	20. PERFORMING ORGANIZATION
a. NAME: Armed Forces Radiobiol. Res. Inst.	a. NAME: Physiology Department
b. ADDRESS (Include zip code): 8901 Wisconsin Avenue, Bldg. #42 Bethesda, MD. 20889-5603	b. ADDRESS: 8901 Wisconsin Avenue, Bldg. #42 Bethesda, MD. 20889-5603
c. NAME OF RESPONSIBLE INDIVIDUAL: Robert L. Bumgarner	c. NAME OF PRINCIPAL INVESTIGATOR: David R. Livengood (Acting)
d. TELEPHONE NUMBER (Include area code): (301) 295-1210	d. TELEPHONE NUMBER (Include area code): (301) 295-1212
21. GENERAL USE	f. NAME OF ASSOCIATE INVESTIGATOR (If available): Gregory L. King
MILITARY/CIVILIAN APPLICATION:	g. NAME OF ASSOCIATE INVESTIGATOR (If available): Andre Dubois

22. KEYWORDS (Precede EACH with Security Classification Code)
(U) Area Postrema; (U) Performance Decrement: (U) Radiation-induced Diarrhea

23. TECHNICAL OBJECTIVE 24. APPROACH 25. PROGRESS (Precede text of each with Security Classification Code)

23. (U) Exposure to ionizing radiation results in a well defined symptomatology which is related to radiation-induced gastrointestinal dysfunction. Sublethal doses produce nausea, vomiting, gastric stasis, and diarrhea which lead to severe incapacitation of irradiated personnel and decreased efficacy of orally administered medications. Supralethal doses result in the gastrointestinal syndrome characterized by fluid and electrolyte loss and septicemia. This work unit will study the mechanisms underlying radiation effects. The relation of intestinal motility and enteric infection to radiation-induced emesis and new treatments for gastrointestinal dysfunction will be evaluated.

24. (U) Studies will use both in vivo and vitro model systems. A variety of physiological parameters will be measured in irradiated animals and tissue in vitro and compared to non-irradiated controls. Plasma values of putative emetics and gastrointestinal modulators will be correlated with changes in function. Specific antagonists will be assessed for their ability to mitigate radiation effects.

25. (U) Two different 5-HT_3 receptor antagonists were shown to ameliorate emesis evoked in the ferret by neutron irradiation. Metabolic blockade of the arachidonic acid metabolism was shown to alter contractility of smooth muscle in vitro. A motilin analog stimulated gastric emptying and gastric motility in a dose-dependent manner in the pre-irradiated basal state. Preliminary data in two animals indicated that this agent can reverse radiation-induced gastric stasis while not modifying the emetic response. A total of 2 papers and 5 abstracts were published.

RESEARCH AND TECHNOLOGY WORK UN. SUMMARY	1. AGENCY ACCESSION	2. DATE SUMMARY	REPORT CONTROL SYMBOL
		931001	DD-DR&E(AR) 636

3. DATE PREV SUM'RY	4. KIND OF SUMMARY	5. SUMMARY SCTY	6. WORK SECURITY	7. REGRADING	8. DISS'N INSTR'N	9. LEVEL OF SUM A. WORK UNIT
921001	Change	U	U	NA	NL	

10. NO./CODES:	PROGRAM ELEMENT	PROJECT NUMBER	TASK AREA NUMBER	WORK UNIT NUMBER
a. PRIMARY	62715H	U99QASM	J	00082
b. CONTRIBUTING				
c. CONTRIBUTING				

11. TITLE (Precede with Security Classification Code)
(U) Radiobiology and Sepsis in Preclinical Models

12. SUBJECT AREAS
01400 Radiobiology; 012900 Physiology;017100 Weapons Effects

13. START DATE	14. ESTIMATED COMPLETION DATE	15. FUNDING ORGANIZATION	16. PERFORMANCE METHOD
9110	9609	DH	C. In-House

17. CONTRACT/GRANT

a. DATE EFFECTIVE	EXPIRATION
b. CONTRACT/GRANT NUMBER	
c. TYPE	d. AMOUNT
e. KIND OF AWARD	f. CUM/TOTAL

18. RESOURCES ESTIMATE

FISCAL YEARS	a. PROFESSIONAL WORKYEARS	b. FUNDS (In thousands)

19. RESPONSIBLE DOD ORGANIZATION
a. NAME Armed Forces Radiobiology Research Institute
b. ADDRESS (Include zip code)
8901 Wisconsin Avenue
Bethesda, MD 20889-5603
c. NAME OF RESPONSIBLE INDIVIDUAL
Robert L. Bumgarner
d. TELEPHONE NUMBER (Include area code)
301-295-1210

20. PERFORMING ORGANIZATION
a. NAME Experimental Hematology Department Armed Forces Radiobiology Research Institute
b. ADDRESS
8901 Wisconsin Avenue
Bethesda, MD 20889-5603
c. NAME OF PRINCIPAL INVESTIGATOR
Thomas J. MacVittie
d. TELEPHONE NUMBER (Include area code)
301-295-1352
f. NAME OF ASSOCIATE INVESTIGATOR (If available)
Farese, A.M., Vigneulle, R.M.
g. NAME OF ASSOCIATE INVESTIGATOR (If available)

21. GENERAL USE

MILITARY/CIVILIAN APPLICATION:

22. KEYWORDS (Precede EACH with Security Classification Code)
(U) Radiation; (U) Therapy; (U) Cytokine; (U) Sepsis

23. TECHNICAL OBJECTIVE 24. APPROACH 25. PROGRESS (Precede text of each with Security Classification Code)

23 (U). To characterize the pathophysiology of radiation-induced bone marrow stem cell aplasia and associated sepsis from opportunistic pathogens and to define therapeutic protocols for inducing recovery of the hemopoietic system and abrogate cellular demage consequent to inflammation and sepsis. Emphasis is also placed on determining the mechanisms involved in diminishing the host response to opportunistic pathogens and identification of areas for therapeutic intervention.

24 (U). Preclinical models utilizing the canine and the non-human primate have been established for cobalt-60 and mixed neutron-gamma radiation in addition to a canine model of hyperdynamic gram negative/positive intraperitoneal sepsis. A chronic tracheostomy in the sepsis models allows for analysis of systemic and a septic episode. Sublethal and lethally irradiated animals are treated with recombinant growth factors/cytokines to enhance recovery of the hemopoietic system and prevent sepsis-associated lethality.

25 (U). Primary emphasis has been placed on developing therapeutic protocols for correcting radiation-induced marrow aplasia. Protocols have utilized single cytokines in comparison to combinations of these cytokine in an attempt to promote recovery of both neutrophils and platelets in marrow aplastic non-human. Single cytokines that were most efficacious in reducing neutropenia were GM-CSF and G-CSF, these cytokine effective in reducing thrombocytopenia were IL-6 and IL-3. The best combinations were IL-3 co-administered with GM-CSF for producing both neutrophils and platelets. While IL-3 and IL-6 administered sequentially was as effective in producing platelets only.

RESEARCH AND TECHNOLOGY WORK L SUMMARY	1. AGENCY ACCESSION DH-001780	3. DAT SUMMARY 931001	REPORT CONTROL SYMBOL

3. DATE PREV SUM'RY	4. KIND OF SUMMARY	5. SUMMARY SCTY	6. WORK SECURITY	7. REGRADING	8. DISS'N INSTR'N	9. LEVEL OF SUM A. WORK UNIT
921001	D.Change	U	U	NA	NL	N/A

10. NO./CODES:	PROGRAM ELEMENT	PROJECT NUMBER	TASK AREA NUMBER	WORK UNIT NUMBER
a. PRIMARY	62715H	AD	RA	00178
b. CONTRIBUTING				
c. CONTRIBUTING				

11. TITLE (Precede with Security Classification Code)
(U) Radiation effects on complex task performance

12. SUBJECT AREAS
01400 Radiobiology; 013400 Psychology; 016800 Toxicology; 012600 Pharmacology

13. START DATE	14. ESTIMATED COMPLETION DATE	15. FUNDING ORGANIZATION	16. PERFORMANCE METHOD
8810	9509	DH	C. In-house

17. CONTRACT/GRANT

a. DATE EFFECTIVE	EXPIRATION
b. CONTRACT/GRANT NUMBER	
c. TYPE	d. AMOUNT
e. KIND OF AWARD	f. CUM/TOTAL

18. RESOURCES ESTIMATE

FISCAL YEARS	a. PROFESSIONAL WORKYEARS	b. FUNDS (In thousands)

19. RESPONSIBLE DOD ORGANIZATION	20. PERFORMING ORGANIZATION
a. NAME Armed Forces Radiobiology Research Institute	a. NAME Behavioral Sciences Department Armed Forces Radiobiology Research Institute
b. ADDRESS (Include zip code) Bethesda, MD 20889-5603	b. ADDRESS Bethesda, MD 20889-5603
c. NAME OF RESPONSIBLE INDIVIDUAL BUMGARNER, R.L.	c. NAME OF PRINCIPAL INVESTIGATOR MELE, Paul C.
d. TELEPHONE NUMBER (Include area code) (301) 295-1210	d. TELEPHONE NUMBER (Include area code) (301) 295-0526
21. GENERAL USE	f. NAME OF ASSOCIATE INVESTIGATOR (If available) WINSAUER, Peter J.
MILITARY/CIVILIAN APPLICATION:	g. NAME OF ASSOCIATE INVESTIGATOR (If available) McBRIDE, Sharon A.

22. KEYWORDS (Precede EACH with Security Classification Code)
(U) Complex Behavior; (U) Performance; (U) Antiemetic Drugs; (U) Radioprotectants

23. TECHNICAL OBJECTIVE 24. APPROACH 25. PROGRESS (Precede text of each with Security Classification Code)

23. (U) Objective: Establish animal models for evaluating effects of ionizing radiation on complex behavioral tasks. Establish the role of behavioral, biological and radiobiological factors that affect these performance decrements. Evaluate the effects of radioprotectant and antiemetic drugs on performance, and determine their ability to counteract performance decrements produced by radiation.

24. (U) Approach: Animals are trained to perform complex behavioral tasks. Dose-effect curves for disruption of performance by radiation, radioprotectants and antiemetics are determined. Radioprotectants and antiemetics are tested for efficacy in blocking radiation-induced performance decrements. Manipulations of behavioral and biological factors are performed to determine their relative contributions to radiation-induced performance decrements.

25. (U) Progress: Repeated low-doses of gamma radiation cause progressive deteriorations in cognitive performance. Acute sublethal doses of ionizing radiation increase behavioral disruptions induced by the central nervous stimulant amphetamine. 5-HT3-antagonist antiemetic drugs do not prevent postirradiation anorexia, nor do they prevent chemotherapy-induced behavioral toxicity. The glucocorticoid dexamethasone prevented chemotherapy-induced behavioral toxicity. 5-HT3 antagonists are not behaviorally toxic when administered alone, but they exacerbate the behavioral toxicity of metoclopramide, a widely used antiemetic drug. Behavioral toxicity caused by several other drugs (the anticonvulsant and anxiolytic chlordiazepoxide, the stimulant caffeine, and the motion sickness drugs scopolamine and buspirone) was only minimally increased by 5-HT3-antagonist antiemetic drugs. Strong environmental stimulus control can attenuate performance decrements caused by the sedative pentobarbital, the stimulant amphetamine, the anaesthetic ketamine, and the antiemetic 8-OH-DPAT.

RESEARCH AND TECHNOLOGY WORK UNIT SUMMARY	1. AGENCY ACCESSION	2. DATE OF SUMMARY 930930	REPORT CONTROL SYMBOL DD-DR&E(AR) 636

3. DATE PREV SUMMARY	4. KIND OF SUMMARY	5. SUMMARY SCTY	6. WORK SECURITY	7. REGRADING	8. DISS'N INSTR'N	9. LEVEL OF SUM A. WORK UNIT
		U	U	N/A	NL	

10. NO./CODES:	PROGRAM ELEMENT	PROJECT NUMBER	TASK AREA NUMBER	WORK UNIT NUMBER
a. PRIMARY	62715H	AD	RA	04620
b. CONTRIBUTING				
c. CONTRIBUTING				

11. TITLE (Precede with Security Classification Code)

(U) Hematopoietic Stem Cell Population Size in Various Species

12. SUBJECT AREAS

(U) 12900 Physiology 01400 Radiobiology 0017100 Weapon Species

13. START DATE	14. ESTIMATED COMPLETION DATE	15. FUNDING ORGANIZATION	16. PERFORMANCE METHOD
9110	9410	DH	In-House

17. CONTRACT/GRANT

a. DATE EFFECTIVE	EXPIRATION
b. CONTRACT/GRANT NUMBER	
c. TYPE	d. AMOUNT
e. KIND OF AWARD	f. CUM/TOTAL

18. RESOURCES ESTIMATE

FISCAL YEARS	a. PROFESSIONAL WORKYEARS	b. FUNDS (In thousands)

19. RESPONSIBLE DOD ORGANIZATION	20. PERFORMING ORGANIZATION
a. NAME Armed Forces Radiobiology Research Inst.	a. NAME AFRRI/BRP
b. ADDRESS (Include zip code) 8901 Wisconsin Avenue Bethesda, MD 20889-5603	b. ADDRESS 8901 Wisconsin Avenue Bethesda, MD 20889-5603
c. NAME OF RESPONSIBLE INDIVIDUAL R.L. Bumgarner	c. NAME OF PRINCIPAL INVESTIGATOR K.F. McCarthy
d. TELEPHONE NUMBER (Include area code) (301) 295-1210	d. TELEPHONE NUMBER (Include area code) M.L. Hale
21. GENERAL USE MILITARY/CIVILIAN APPLICATION:	f. NAME OF ASSOCIATE INVESTIGATOR (If available) E.J. Ainsworth, g. NAME OF ASSOCIATE INVESTIGATOR (If available)

22. KEYWORDS (Precede EACH with Security Classification Code)

(U) Hematopoietic Stem Cell (U) Risk Assessment (U) Biogical Dosimetry

23. TECHNICAL OBJECTIVE 24. APPROACH 25. PROGRESS (Precede text of each with Security Classification Code)

23. (U) Measure the size of the Hematopoietic Stem Cell (HSC) population in mice and monkeys to either prove or disprove that all mammals have the same total number of HSC and to determine how radiation affects the HSC population.

24. (U) If a female is heterozygous for a genetic locus (A or B) located on the X-chromosome and one X-chromosome is randomly inactivated, then most cell compartments, including the HSC compartment, are mosiacs composed of either A or B cells. Using this system, the total number of HSC can be determined by the binomial formula $n=pq/s^2$ where p is the fraction of "A" HSC, q is the fraction "B" HSC, s^2 is the variance of p, and n is the total number of HSC.

25 (U) Mice were given whole body irradiation to total doses of 3, 4, 5, 6, and 7 Gy. The number of hematopoietic stem cells surviving these radiation doses was calculated using the corrected equation $n=pq/(s^2_{post\text{-}irradiation}-s^2_{pre\text{-}irradiation})$. To date the number of stem cell surviving 3 Gy irradiation was found to be 333 cells; 4 Gy, 33 cells; 5 Gy, not yet determined; 6 Gy, 5 cells; and 7 Gy, 4 cells. This preliminary data might suggest that stem cells surviving high dose radiation are part of an unique stem cell sub-population characterized by a rather large D_o.

RESEARCH AND TECHNOLOGY WORK UNIT SUMMARY

1. AGENCY ACCESSION	2. DATE OF SUMMARY	REPORT CONTROL SYMBOL
	931001	DD-DR&E(AR) 636

3. DATE PREV SUMMARY	4. KIND OF SUMMARY	5. SUMMARY SCTY	6. WORK SECURITY	7. REGRADING	8. DISB INSTR'N	9. LEVEL OF SUM A WORK UNIT
921001	D. Change	U	U		NL	

10. NO./CODES	PROGRAM ELEMENT	PROJECT NUMBER	TASK AREA NUMBER	WORK UNIT NUMBER
a. PRIMARY	62715H	RM	RD	00107
b. CONTRIBUTING				
c. CONTRIBUTING				

11. TITLE (Precede with Security Classification Code) (U) Effect of Ionizing Radiation on Gastrointestinal Physiology; Emesis and Fluid and Electrolyte Loss

12. SUBJECT AREAS
012900 Physiology; 014100 Radiobiology

13. START DATE	14. ESTIMATED COMPLETION DATE	15. FUNDING ORGANIZATION	16. PERFORMANCE METHOD
8210	9409	DH	C. In-House

17. CONTRACT/GRANT
a. DATE EFFECTIVE | EXPIRATION
b. CONTRACT/GRANT NUMBER
c. TYPE | d. AMOUNT
e. KIND OF AWARD C | f. CUM/TOTAL 0

18. RESOURCES ESTIMATE

FISCAL YEARS	a. PROFESSIONAL WORKYEARS	b. FUNDS (In thousands)

19. RESPONSIBLE DOD ORGANIZATION
a. NAME
Armed Forces Radiobiol. Res. Inst.
b. ADDRESS (Include zip code)
8901 Wisconsin Avenue, Bldg. 142
Bethesda, MD. 20889-5603
c. NAME OF RESPONSIBLE INDIVIDUAL
Robert L. Bumgarner
d. TELEPHONE NUMBER (Include area code)
(301) 295-1210

20. PERFORMING ORGANIZATION
a. NAME
Physiology Department
b. ADDRESS
8901 Wisconsin Avenue, Bldg. 142
Bethesda, MD. 20889-5603
c. NAME OF PRINCIPAL INVESTIGATOR
David R. Livengood (Acting)
d. TELEPHONE NUMBER (Include area code)
(301) 295-1212
e. NAME OF ASSOCIATE INVESTIGATOR (If available)
Gregory L. King
g. NAME OF ASSOCIATE INVESTIGATOR (If available)
Andre Dubois

21. GENERAL USE

MILITARY/CIVILIAN APPLICATION:

22. KEYWORDS (Precede EACH with Security Classification Code)
(U) Area Postrema; (U) Performance Decrement: (U) Radiation-induced Diarrhea

23. TECHNICAL OBJECTIVE 24. APPROACH 25. PROGRESS (Precede text of each with Security Classification Code)

23. (U) Exposure to ionizing radiation results in a well defined symptomatology which is related to radiation-induced gastrointestinal dysfunction. Sublethal doses produce nausea, vomiting, gastric stasis, and diarrhea which lead to severe incapacitation of irradiated personnel and decreased efficacy of orally administered medications. Supralethal doses result in the gastrointestinal syndrome characterized by fluid and electrolyte loss and septicemia. This work unit will study the mechanisms underlying radiation effects. The relation of intestinal motility and enteric infection to radiation-induced emesis and new treatments for gastrointestinal dysfunction will be evaluated.

24. (U) Studies will use both in vivo and vitro model systems. A variety of physiological parameters will be measured in irradiated animals and tissue in vitro and compared to non-irradiated controls. Plasma values of putative emetics and gastrointestinal modulators will be correlated with changes in function. Specific antagonists will be assessed for their ability to mitigate radiation effects.

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RESEARCH AND TECHNOLOGY WORK UNIT SUMMARY	1. AGENCY ACCESSION	2. DATE SUMMARY 931001	REPORT CONTROL SYMBOL DD-DR&E(AR) 636

3. DATE PREV SUMMARY	4. KIND OF SUMMARY	5. SUMMARY SCTY	6. WORK SECURITY	7. REGRADING	8. DISS'N INSTR'N	9. LEVEL OF SUM A. WORK UNIT
921001	Change	U	U	NA	NL	

10. NO./CODES	PROGRAM ELEMENT	PROJECT NUMBER	TASK AREA NUMBER	WORK UNIT NUMBER
a. PRIMARY	62715H	U99QASM	J	00082
b. CONTRIBUTING				
c. CONTRIBUTING				

11. TITLE (Precede with Security Classification Code)
(U) Radiobiology and Sepsis in Preclinical Models

12. SUBJECT AREAS
01400 Radiobiology; 012900 Physiology;017100 Weapons Effects

13. START DATE	14. ESTIMATED COMPLETION DATE	15. FUNDING ORGANIZATION	16. PERFORMANCE METHOD
9110	9609	DH	C. In-House

17. CONTRACT/GRANT

a. DATE EFFECTIVE	EXPIRATION
b. CONTRACT/GRANT NUMBER	
c. TYPE	d. AMOUNT
e. KIND OF AWARD	f. CUM/TOTAL

18. RESOURCES ESTIMATE

FISCAL YEARS	a. PROFESSIONAL WORKYEARS	b. FUNDS (In thousands)

19. RESPONSIBLE DOD ORGANIZATION	20. PERFORMING ORGANIZATION
a. NAME Armed Forces Radiobiology Research Institute	a. NAME Experimental Hematology Department Armed Forces Radiobiology Research Institute
b. ADDRESS (Include zip code) 8901 Wisconsin Avenue Bethesda, MD 20889-5603	b. ADDRESS 8901 Wisconsin Avenue Bethesda, MD 20889-5603
c. NAME OF RESPONSIBLE INDIVIDUAL Robert L. Bumgarner	c. NAME OF PRINCIPAL INVESTIGATOR Thomas J. MacVittie
d. TELEPHONE NUMBER (Include area code) 301-295-1210	d. TELEPHONE NUMBER (Include area code) 301-295-1352
21. GENERAL USE	f. NAME OF ASSOCIATE INVESTIGATOR (If available) Farese, A.M., Vigneulle, R.M.
MILITARY/CIVILIAN APPLICATION:	g. NAME OF ASSOCIATE INVESTIGATOR (If available)

22. KEYWORDS (Precede EACH with Security Classification Code)
(U) Radiation; (U) Therapy; (U) Cytokine; (U) Sepsis

23. TECHNICAL OBJECTIVE 24. APPROACH 25. PROGRESS (Precede text of each with Security Classification Code)

23 (U). To characterize the pathophysiology of radiation-induced bone marrow stem cell aplasia and associated sepsis from opportunistic pathogens and to define therapeutic protocols for inducing recovery of the hemopoietic system and abrogate cellular demage consequent to inflammation and sepsis. Emphasis is also placed on determining the mechanisms involved in diminishing the host response to opportunistic pathogens and identification of areas for therapeutic intervention.

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RESEARCH AND TECHNOLOGY WORK U SUMMARY	1. AGENCY ACCESSION DH-001780	3. DATE SUMMARY 931001	REPORT CONTROL SYMBOL

2. DATE PREV SUMRY	4. KIND OF SUMMARY	5. SUMMARY SCTY	6. WORK SECURITY	7. REGRADING	8. DISS'N INSTR'N	9. LEVEL OF SUM A. WORK UNIT
921001	D.Change	U	U	NA	NL	N/A

10. NO./CODES:	PROGRAM ELEMENT	PROJECT NUMBER	TASK AREA NUMBER	WORK UNIT NUMBER
a. PRIMARY	62715H	AD	RA	00178
b. CONTRIBUTING				
c. CONTRIBUTING				

11. TITLE (Precede with Security Classification Code)
(U) Radiation effects on complex task performance

12. SUBJECT AREAS
01400 Radiobiology; 013400 Psychology; 016800 Toxicology; 012600 Pharmacology

13. START DATE	14. ESTIMATED COMPLETION DATE	15. FUNDING ORGANIZATION	16. PERFORMANCE METHOD
8810	9509	DH	C. In-house

17. CONTRACT/GRANT

a. DATE EFFECTIVE	EXPIRATION
b. CONTRACT/GRANT NUMBER	
c. TYPE	d. AMOUNT
e. KIND OF AWARD	f. CUM/TOTAL

18. RESOURCES ESTIMATE

FISCAL YEARS	a. PROFESSIONAL WORKYEARS	b. FUNDS (In thousands)

19. RESPONSIBLE DOD ORGANIZATION	20. PERFORMING ORGANIZATION
a. NAME Armed Forces Radiobiology Research Institute	a. NAME Behavioral Sciences Department Armed Forces Radiobiology Research Institute
b. ADDRESS (Include zip code) Bethesda, MD 20889-5603	b. ADDRESS Bethesda, MD 20889-5603
c. NAME OF RESPONSIBLE INDIVIDUAL BUMGARNER, R.L.	c. NAME OF PRINCIPAL INVESTIGATOR MELE, Paul C.
d. TELEPHONE NUMBER (Include area code) (301) 295-1210	d. TELEPHONE NUMBER (Include area code) (301) 295-0526
21. GENERAL USE	f. NAME OF ASSOCIATE INVESTIGATOR (If available) WINSAUER, Peter J.
MILITARY/CIVILIAN APPLICATION:	g. NAME OF ASSOCIATE INVESTIGATOR (If available) McBRIDE, Sharon A.

22. KEYWORDS (Precede EACH with Security Classification Code)
(U) Complex Behavior; (U) Performance; (U) Antiemetic Drugs; (U) Radioprotectants

23. TECHNICAL OBJECTIVE 24. APPROACH 25. PROGRESS (Precede text of each with Security Classification Code)

23. (U) Objective: Establish animal models for evaluating effects of ionizing radiation on complex behavioral tasks. Establish the role of behavioral, biological and radiobiological factors that affect these performance decrements. Evaluate the effects of radioprotectant and antiemetic drugs on performance, and determine their ability to counteract performance decrements produced by radiation.

24. (U) Approach: Animals are trained to perform complex behavioral tasks. Dose-effect curves for disruption of performance by radiation, radioprotectants and antiemetics are determined. Radioprotectants and antiemetics are tested for efficacy in blocking radiation-induced performance decrements. Manipulations of behavioral and biological factors are performed to determine their relative contributions to radiation-induced performance decrements.

25. (U) Progress: Repeated low-doses of gamma radiation cause progressive deteriorations in cognitive performance. Acute sublethal doses of ionizing radiation increase behavioral disruptions induced by the central nervous stimulant amphetamine. 5-HT3-antagonist antiemetic drugs do not prevent postirradiation anorexia, nor do they prevent chemotherapy-induced behavioral toxicity. The glucocorticoid dexamethasone prevented chemotherapy-induced behavioral toxicity. 5-HT3 antagonists are not behaviorally toxic when administered alone, but they exacerbate the behavioral toxicity of metoclopramide, a widely used antiemetic drug. Behavioral toxicity caused by several other drugs (the anticonvulsant and anxiolytic chlordiazepoxide, the stimulant caffeine, and the motion sickness drugs scopolamine and buspirone) was only minimally increased by 5-HT3-antagonist antiemetic drugs. Strong environmental stimulus control can attenuate performance decrements caused by the sedative pentobarbital, the stimulant amphetamine, the anaesthetic ketamine, and the antiemetic 8-OH-DPAT.

RESEARCH AND TECHNOLOGY WORK UNIT SUMMARY	1. AGENCY ACCESSION	2. DATE OF SUMMARY 930930	REPORT CONTROL SYMBOL DD-DR&E(AR) 636

3. DATE PREV SUMMARY	4. KIND OF SUMMARY	5. SUMMARY SCTY U	6. WORK SECURITY U	7. REGRADING N/A	8. DISS'N INSTR'N NL	9. LEVEL OF SUM A. WORK UNIT

10. NO./CODES:	PROGRAM ELEMENT	PROJECT NUMBER	TASK AREA NUMBER	WORK UNIT NUMBER
a. PRIMARY	62715H	AD	RA	04620
b. CONTRIBUTING				
c. CONTRIBUTING				

11. TITLE (Precede with Security Classification Code)
(U) Hematopoietic Stem Cell Population Size in Various Species

12. SUBJECT AREAS
(U) 12900 Physiology 01400 Radiobiology 0017100 Weapon Species

13. START DATE	14. ESTIMATED COMPLETION DATE	15. FUNDING ORGANIZATION	16. PERFORMANCE METHOD
9110	9410	DH	In-House

17. CONTRACT/GRANT
a. DATE EFFECTIVE | EXPIRATION
b. CONTRACT/GRANT NUMBER
c. TYPE | d. AMOUNT
e. KIND OF AWARD | f. CUM/TOTAL

18. RESOURCES ESTIMATE

FISCAL YEARS	a. PROFESSIONAL WORKYEARS	b. FUNDS (In thousands)

19. RESPONSIBLE DOD ORGANIZATION	20. PERFORMING ORGANIZATION
a. NAME Armed Forces Radiobiology Research Inst.	a. NAME AFRRI/BRP
b. ADDRESS (Include zip code) 8901 Wisconsin Avenue Bethesda, MD 20889-5603	b. ADDRESS 8901 Wisconsin Avenue Bethesda, MD 20889-5603
c. NAME OF RESPONSIBLE INDIVIDUAL R.L. Bumgarner	c. NAME OF PRINCIPAL INVESTIGATOR K.F. McCarthy
d. TELEPHONE NUMBER (Include area code) (301) 295-1210	d. TELEPHONE NUMBER (Include area code) M.L. Hale
21. GENERAL USE MILITARY/CIVILIAN APPLICATION:	f. NAME OF ASSOCIATE INVESTIGATOR (If available) E.J. Ainsworth, g. NAME OF ASSOCIATE INVESTIGATOR (If available)

22. KEYWORDS (Precede EACH with Security Classification Code)
(U) Hematopoietic Stem Cell (U) Risk Assessment (U) Biogical Dosimetry

23. TECHNICAL OBJECTIVE 24. APPROACH 25. PROGRESS (Precede text of each with Security Classification Code)

23. (U) Measure the size of the Hematopoietic Stem Cell (HSC) population in mice and monkeys to either prove or disprove that all mammals have the same total number of HSC and to determine how radiation affects the HSC population.

24. (U) If a female is heterozygous for a genetic locus (A or B) located on the X-chromosome and one X-chromosome is randomly inactivated, then most cell compartments, including the HSC compartment, are mosiacs composed of either A or B cells. Using this system, the total number of HSC can be determined by the binomial formula $n=pq/s^2$ where p is the fraction of "A" HSC, q is the fraction "B" HSC, s^2 is the variance of p, and n is the total number of HSC.

25 (U) Mice were given whole body irradiation to total doses of 3, 4, 5, 6, and 7 Gy. The number of hematopoietic stem cells surviving these radiation doses was calculated using the corrected equation $n=pq/(s^2_{post\text{-}irradiation}-s^2_{pre\text{-}irradiation})$. To date the number of stem cell surviving 3 Gy irradiation was found to be 333 cells; 4 Gy, 33 cells; 5 Gy, not yet determined; 6 Gy, 5 cells; and 7 Gy, 4 cells. This preliminary data might suggest that stem cells surviving high dose radiation are part of an unique stem cell sub-population characterized by a rather large D_o.

THE WHITE HOUSE

WASHINGTON

~~SECRET/XGDS~~

May 18, 1975

MEMORANDUM FOR

THE SECRETARY OF DEFENSE

SUBJECT: The Rescue of the SS Mayaguez and its Crew

In the aftermath of the operation to rescue the SS Mayaguez and its crew, I consider it essential that we evaluate, as a means of insuring the most effective possible performance in future crises, the manner in which this operation was planned and conducted.

In order to facilitate this evaluation, I would like to receive, on a priority basis, the following:

(a) A detailed and comprehensive chronological exposition of events and activities from the time of the seizure of the SS Mayaguez through the completion of the evacuation of Marines from Koh Tang Island, focussed on the activities of your Department.

(b) A copy of each order, verbal or written, which was issued directing military plans and operations, from the time of the basic planning decisions made at the National Security Council meeting at 10:30 p.m. on May 13 through the evacuation from Koh Tang Island. Included should be all orders from you to the Chairman, Joint Chiefs of Staff, from the Joint Chiefs of Staff to the Commander, Pacific Command, and from that Commander to subordinate commanders in the field.

(c) Any observations or suggestions which you consider would contribute to improvement in the ability of the National Security Council machinery to deal effectively with crisis situations.

~~SECRET/XGDS~~

DF

DECLASSIFIED
BY NSC
DATE Apr 26, 1999

SEC DEF HAS SEEN

1456

(1)

CONFR No.

This evaluation should be conducted on a very close hold basis. The material in (b) above should be submitted by noon, Tuesday, May 20, and the remainder by close of business Friday, May 23. I have requested similar submissions from the Secretary of State, the Director of Central Intelligence, and the Assistant to the President for National Security Affairs.

Gerald R. Ford

Udm train ACC

14 MAY 75 15 242

NMCC CWO

VZCZCNMC529 ~~T O P S E C R E T~~
NMCC 59231
SECT 01 OF 59177

ACTION
DISTR TERMSVC JCSIMC( ) J3ISPCAT NMCC FILE(1)
(001)

TRANSIT/ Z/141522Z/ ! TOR1341512
DE RUWTEKA #8609 1341555
ZNY AAAAA
BT
~~T O P S E C R E T SPECAT~~ SVC VOL CCN RUWTEKA3116 1341355 CORRECTION
Z O 141332Z MAY 75
Z O 141332Z MAY 75
FM CINCSAC OFFUTT AFB NE/CV
TO RUHJOFA/3AD ANDERSEN AFB GUAM/CC
RUHQHQA/CINCPAC HONOLULU HI
INFO RUEKJCS/JCS WASH DC/J 3
RUEFHQA/CSAF WASH DC/XO
RUHVAAA/CINCPACAF HICKAM AFB HI
RHHMBRA/CINCPAC MAKALAPA HI
RUMORGA/COMUSSAG 7AF NAKHON PHANOM RTAFB THAILAND
RUHGOAA/COMSEVENTH FLT
RUMORGA/SAC ADVON NAKHON PHANOM RTAFB THAILAND
BT
~~T O P S E C R E T SPECAT~~ EXCLUSIVE FOR MGEN MINTER, ADM GAYLER
INFO: LT GEN SITTON, LTGEN HUYSER, GEN WILSON, ADM WEISNER,
LTGEN BURNS, AND VADM STEELE FROM GEN KECK SECTION I OF II
DELIVER UPON RECEIPT
SUBJECT: B-52 CONVENTIONAL STRIKE MISSION (S)
THIS IS A WARNING ORDER FOR B-52 STRIKE MISSIONS AGAINST
CAMBODIAN TARGETS.
PART 1. TWELVE (12) B-52DS WILL LAUNCH FROM ANDERSEN AFB,
GUAM: COMPLETE INFLIGHT REFUELING WITH 12 ANDERSEN
BUDDY KC-135S: PROCEED ON THE STRIKE MISSION AND RETURN
TO ANDERSEN AFB. FOUR (4) CELLS OF THREE (3) AIRCRAFT
EACH WILL STRIKE THE FOLLOWING TARGETS.
PART TWO
ITEM 1 TGT NUMBER ONE - PHUMI PHSAR REAM NAVAL BASE
ITEM 2 BE NUMBER - ZERO SEVEN THREE X NINE - ZERO ZERO
ZERO FOUR SEVEN
ITEM 3 COMMON POINT - SAME AS PIP
ITEM 4 PIP - ZERO EIGHT DEGREES ZERO ZERO MINUTES NORTH
ONE ZERO FOUR DEGREES ZERO ZERO MINUTES

4
DOD / DFOISR
TOP SECRET CONTROL
Copy No.
Case No. 98-F-1819
T.S. No. 99-TS-033
Document No. 3

DECLASSIFIED
BY HQ ACC
DATE Apr 23, 1999

21

EAST

ITEM 5 IP - X ZERO NINE DEGREES TWENTY MINUTES NORTH
ONE ZERO THREE DEGREES THREE EIGHT MINUTES
EAST
09 - 20N 103 - 38E

ITEM 6 TGT - ONE ZERO DEGREES THREE ZERO MINUTES ONE
NINE SECONDS NORTH ONE ZERO THREE DEGREES
THREE SEVEN MINUTES ZERO TWO SECONDS EAST.
10-30-19N 103-37-02E

ITEM 7 BOMB RUN AXIS - THREE SIX ZERO DEGREES
360 DEGREES

ITEM 8 TIME ON TGT - ONE FIVE/ZERO ONE THREE ZERO ZULU
- 15/0130Z MAY 75

ITEM 9 BOMBING ALT - HIGH ALTITUDE AS DETERMINED BY
THIRD AIR DIVISION.

ITEM 10 TYPE RELEASE - SYNCHRONOUS

ITEM 11 TRAIN LENGTH - TWO TWO ZERO ZERO FEET
- 2200

ITEM 12 AFTER RELEASE - HOLD HDG ONE FIVE (15) SEC; LEFT
TURN TO WITHDRAWAL HDG TWO ZERO
SIX DEGREES (206 DEGREES); DIRECT
- ONE ZERO DEGREES ZERO ZERO NORTH
ONE ZERO THREE DEGREES TWO ZERO
MINUTES EAST
- 10-00N 103-20E

PART THREE

ITEM ONE TGT NUMBER TWO - REAM AIRFIELD

ITEM 2 BE NUMBER - ZERO SEVEN THREE NINE - ZERO EIGHT
SIX SIX SIX
- 0739 - 08666

ITEM 3 COMMON POINT - ZERO EIGHT DEGREES ZERO ZERO MINUTES
NORTH ONE ZERO FOUR DEGREES ZERO ZERO
MINUTES EAST
- 08-00N 104-00E

ITEM 4 PIP - ZERO NINE DEGREES TWO TWO MINUTES NORTH ONE
ZERO THREE DEGREES ZERO ZERO MINUTES EAST
- 09-22N 103-00E

ITEM 5 IP - ZERO NINE DEGREES FIVE EIGHT MINUTES NORTH
ONE ZERO TWO DEGREES THREE FIVE MINUTES EAST
-09-58N 102-35E

ITEM 6 TGT - ONE ZERO DEGREES THREE FOUR MINUTES FORTY
SECONDS NORTH ONE ZERO THREE DEGREES
THREE EIGHT MINUTES TWO FOUR SECONDS EAST

-10-34-40N 103-38-24E

ITEM 7 BOMB RUN AXIS - ZERO SIX ZERO DEGREES
-060 DEGREES

ITEM 8 TIME ON TARGET - ONE FIVE/ZERO ONE FOUR FIVE ZULU
-15/0145Z MAY 1975

ITEM 9 BOMBING ALTITUDE - HIGH ALTITUDE AS DETERMINED BY
THIRD AIR DIVISION

ITEM 10 TYPE RELEASE - SYNCHRONOUS

ITEM 11 TRAIN LENGTH - TWO ZERO ZERO ZERO FEET
- 2000'

ITEM 12 AFTER RELEASE - HOLD HDG ONE FIVE (15) SEC; RIGHT
TURN WITHDRAWAL HDG ONE SIX ZERO
DEGREES (160 DEGREES) DIRECT ONE ZERO
DEDGREES ZERO ZERO MINUTES NORTH
ONE ZERO THREE DEGREES FIVE ONE
MINUTES EAST
- 10-00N 103-51E

PART FOUR

ITEM 1 TGT NUMBER THREE - KOMPONG SOM HARBOR

ITEM 2 BE NUMBER - ZERO SEVEN THREE NINE - ZERO ZERO
ZERO NINE EIGHT
- 0739-00098

ITEM 3 COMMON POINT - ZERO EIGHT DEGREES ZERO ZERO MINUTES
NORTH ONE ZERO FOUR DEGREES ZERO ZERO
MINUTES EAST
- 08-00N 104-00E

ITEM 4 PIP - ZERO NINE DEGREES TWO TWO MINUTES NORTH ONE
ZERO THREE DEGREES ZERO ZERO MINUTES EAST
- 09-22N 103-02E

ITEM 5 IP - ONE ZERO DEGREES ONE EIGHT MINUTES NORTH ONE
ZERO TWO DEGREES ONE NINE MINUTES EAST
- 10-18N 102-19E

ITEM 6 TGT - ONE ZERO DEGREES THREE EIGHT MINUTES THREE
FIVE SECONDS NORTH ONE ZERO THREE DEGREES
THREE ZERO MINUTES TWO SIX SECONDS EAST
-10-38-35N 103-30-26E

ITEM 7 BOMB RUN AXIS-ZERO SEVEN FOUR DEGREES
-074 DEGREES

ITEM 8 TIME ON TARGET - CELL NUMBER THREE
-ONE FIVE/ZERO TWO ZERO ZERO ZULU
-15/0200Z MAY 75

TIME ON TARGET -CELL NUMBER FOUR
- ONE FIVE ZERO TWO ONE FIVE ZULU

-15/0215Z MAY 75

ITEM 9 BOMBING ALTITUDE-HIGH ALTITUDE AS DETERMINED BY THIRD AIR DIVISION

BT
#8609
ANNOTES
STAMP THIS MSG SPECAT-EXCLUSIVE
DISTR ONE CY BY NAME IN A SEALED ENV TO GEN JONES, GEN PAULY, LTG SITTON, VADM TRAIN, MGEN SIMMONS, RADM WELANDER, LTG HUYSER, BGEN WHITE, AND COL ATKINSON, J 3.
HARD COPY DELIVERY TO VADM TRAIN AND COL ATKINSON
NMCC FOR DDO
NUMBER COPIES
WMB OCJ

NNNN
141523Z