Exhibit R-2, RDT&E Budget Item Justification						Date: February 2005		
Appropriation/Budget Activity RDT&E,DW/BA 3				R-1 Item Nomenclature: Medical Advanced Technology, PE 0603002D8Z				
Cost ($ in millions)	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total PE Cost	5.915	4.691	0.000	0.000	0.000	0.000	0.000	0.000
Medical Adv. Technology/P506 Subtotal Cost	5.915	4.691	0.000	0.000	0.000	0.000	0.000	0.000

A. Mission Description and Budget Item Justification:

(U) This program supports applied research for advanced development of biomedical strategies to prevent, treat and assess health consequences from exposure to ionizing radiation. It capitalizes on findings under PE 0602787DZ, Medical Technology, and from industry and academia to advance novel medical countermeasures into and through pre-clinical studies toward newly licensed products. Program objectives focus on mitigating the health consequences from exposures to ionizing radiation that represent the highest probable threat to US forces under current tactical, humanitarian and counter-terrorism mission environments. Findings from basic and developmental research are integrated into highly focused advanced technology development studies to produce the following: (1) protective and therapeutic strategies; (2) novel biological markers and delivery platforms for rapid, field-based individual dose assessment; and (3) experimental data needed to build accurate models for predicting casualties from complex injuries involving radiation and other battlefield insults. The Armed Forces Radiobiology Research Institute (AFRRI), because of its multidisciplinary staff and exceptional laboratory and radiation facilities, is uniquely positioned to execute the program as prescribed by its mission. Because national laboratories operated by the Department of Energy no longer support advanced research relevant to military medical radiobiology, AFRRI is currently the only national resource carrying out this mission.

B. Program Change Summary:

	FY 2004	FY 2005	FY 2006	FY 2007
Previous President's Budget:	5.941	2.063	2.539	2.590
Current FY 2006 President's Budget Submission:	5.915	4.691	0.000	0.000
Adjustments to Appropriated Value:	-0.026	+2.628	-2.539	-2.590
Congressional Program Reductions:	-0.026	-0.072		
Congressional Rescissions:				
Congressional Increases:		+2.700		
Reprogrammings:			-2.539*	-2.590*
SBIR/STTR Transfers:				
Program Adjustment:				

*NOTE 1: Program transfers effective FY 2006 from RDT&E Budget Activity 3, Program Element 0603002D8Z to Defense Health Program (DHP). Plans for FY 2006 and beyond remain unchanged under DHP.

NOTE 2: FY 2005 congressional add of $1.2 million for Integrated Medical Information Technology Systems to be transferred to appropriate agency for execution.

C. Other Program Funding Summary: Not applicable

D. Acquisition Strategy: Not applicable

E. Performance Metrics:
By FY 2005 obtain "investigational new drug" status for a therapeutic agent to mitigate radiation injury.
By FY 2006 provide software tools for biodosimetric assessment.
By FY 2010 transition 4 new drugs for FDA approval for treatment of radiation injury.
By FY 2010 provide forward-fieldable biodosimetric tools.

Exhibit R-2a, RDT&E Project Justification						Date: February 2005		
Appropriation/Budget Activity RDT&E, DW/BA 3				Project Name and Number Medical Advanced Technology, PE 0603002D8Z				
Cost ($ in millions)	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Medical Advanced Technology/ P 506 Subtotal Cost	5.915	4.691	0.000	0.000	0.000	0.000	0.000	0.000

A. (U) Mission Description and Budget Item Justification:

(U) This program supports applied research for advanced development of biomedical strategies to prevent, treat and assess health consequences from exposure to ionizing radiation. It capitalizes on findings under PE 0602787D8Z, Medical Technology, and from industry and academia to advance novel medical countermeasures into and through pre-clinical studies toward newly licensed products.

B. (U) Accomplishments/Planned Program:

Cost (in $ Millions)	FY 2004	FY 2005	FY 2006	FY 2007
5-AED Preclinical Studies	0.553	0.020	0.000	0.000

FY 2004 Accomplishments**:** In FY 2003, in compliance with FDA requirements, pharmacokinetic and toxicity studies for 5-androstenediol were initiated in a large animal model through contract with a GLP certified laboratory. In vitro toxicity assessments on the contract did not demonstrate any toxicity. However, because the test article was unavailable from the pharmaceutical company for the primate studies, the contract was put on hold. The studies will resume early in FY 2005.
FY 2005 Plans**:** Obtain results from toxicology and pharmacokinetic studies in primates. Contract out GLP efficacy studies on primates. Submit IND application to FDA/CDER. Transition to advanced development for Phase I clinical trials.

Cost (in $ Millions)	FY 2004	FY 2005	FY 2006	2007
Ex-Rad Radioprotectant (Congressional add)	1.000	1.500	0.000	0.000

FY 2004 Accomplishments**:** Collaborating with Onconova Therapeutics to evaluate the cellular and molecular mechanism by which Ex-Rad ON01210 exerts its radioprotective effects. Initiated studies on the toxicity, and pharmacology of the radioprotectant. Some of these studies will be performed by contract laboratories.
FY 2005 Plans: Continue preclinical safety and toxicology studies in animal models in compliance with regulatory and quality assurance standards of the FDA.

Cost (in $ Millions)	FY 2004	FY 2005	FY 2006	FY 2007
Radiation Dose Assessment: Improving the Throughput	0.735	0.254	0.000	0.000

FY 2004 Accomplishments**:** Defined high throughput approaches for dose assessment of mass casualties, to include improvements in quality control and quality assurance with data logging and bar-coding for example. In addition, demonstrated proof of concept that high throughput systems for lymphocyte isolation and metaphase spread preparation will work and are amenable to automation. Supplemental funding from NIAID allowed the purchase of necessary equipment for laboratory automation. FY 2005 Plans**:** Integrate the automation process for dicentric assay, including tracking system and automated assay preparation.				
Cost (in $ Millions)	FY 2004	FY 2005	FY 2006	FY 2007
Biodosimetry Assay Validation of PCC Assay	0.705	0.296	0.000	0.000
FY 2004 Accomplishments**:** Initiated collaborative studies to assess the effect of sampling delay on the persistency of chromosome damage using the mouse. Continued validation of PCC assay using samples from accident victims and radiotherapy patients. FY 2005 Plans**:** Complete time-course study to determine the effect of sampling delay on the PCC assay. Establish multicolor chromosome aberration analysis. Continue validation of assays using samples from accident victims and radiotherapy patients.				
Cost (in $ Millions)	FY 2004	FY 2005	FY 2006	FY 2007
Biodosimetry Assay Validation of Molecular Markers	0.973	0.360	0.000	0.000
FY 2004 Accomplishments: Demonstrated that the gene expression markers developed in peripheral blood lymphocytes irradiated ex vivo were up regulated in vivo in an animal model and in human radiotherapy patients. Developed a 4 target QRT-PCR assay for gene expression to increase assay throughput, increase the number of observable targets, conserve sample, and reduce assay cost. FY 2005 Plans: Using radiotherapy patients whenever possible, continue to validate the assays for both protein and gene expression markers. Initiate validation studies for gene expression and protein biomarkers in rodent exposed to radiation in vivo. Initiate studies to assess the responses follow partial body exposures. Begin development of fieldable protocols for blood collection, stabilization of sample, sample isolation, and assay.				
Cost (in $ Millions)	FY 2004	FY 2005	FY 2006	FY 2007
Biodosimetry Assessment Tool (BAT) and Blood Markers for biodosimetry	0.638	0.258	0.000	0.000

FY 2004 Accomplishments: Created the preliminary version of the "First Responder Radiological Assessment Triage" (FRAT) which is the PDA version of the software tool for dose prediction, "Biodosimetry Assessment Tool" (BAT). Evaluated accuracy of hematology analyzer and initiated testing of reliability, accuracy and dynamic range. Initiated development of hematology protocol with necessary quality control. Created hematology database from REAC/TS accident registry including photon and criticality exposure scenarios and initiated analysis of lymphocyte depletion kinetics for consideration to use to expand BAT and FRAT.
FY 2005 Plans: Incorporate dose-dependent time window on lymphocyte depletion data analysis into BAT. Incorporate neutron criticality lymphocyte depletion data set into BAT. Complete FRAT software application. Complete hematology protocol development and exercise deployable hematology system.

Cost (in $ Millions)	FY 2004	FY 2005	FY 2006	FY 2007
Assessment of uranium exposure	0.111	0.083	0.000	0.000

FY 2004 Accomplishments: Began assessment of commercially available resins to concentrate urinary uranium to increase the sensitivity of methodology for the rapid detection. Continued synthesis of imprinted polymers capable of sequestering uranium.
FY 2005 Plans: Assess the utility of imprinted polymers to concentrate urinary uranium. Assess the utility of chelation chromatography methodologies for the concentration of uranium in urine.

Cost (in $ Millions)	FY 2004	FY 2005	FY 2006	FY 2007
Integrated medical information technology systems (Congressional add)	0.000	1.200	0.000	0.000

NOTE : Funds to be transferred to appropriate agency for execution

Cost (in $ Millions)	FY 2004	FY 2005	FY 2006	FY 2007
Infection Therapies	1.200	0.720	0.000	0.000

FY 2004 Accomplishments: Demonstrated a non-specific biological response modifier (beta-1,3-1,6 glucan) and the antimicrobial agent ceftriazone enhanced survival of opportunistic infection with K. pneumoniae in sublethally irradiated mice. The combination therapy was superior to either the beta glucan or the antibiotic alone.
FY 2005 Plans: Determine the pharmacokinetics of gatifloxacin, ciprofloxacin, and moxifloxacin in mice after irradiation. Evaluate a variety of antibiotics for their efficacy to treat gram-positive and gram-negative infections that result after lethal irradiation.

C. Other Program Funding Summary: Not applicable.

D. Acquisition Strategy: Not applicable.

E. Major Performers: Armed Forces Radiobiology Research Institute, Bethesda, MD.