

CURRICULUM VITAE

DR. COL. WILLIAM E. HOUSTON, US ARMY (RETIRED)

CAREER HISTORY:

Fifty-one (51) years of documented successes in the fields of Science and Technology development and direction; economic and business development; medical, chemical, and biological research; management and directions of scientific programs; administration and operation of a large contracts and grants programs; consultant to the U.S. Army in development and production of drugs, biological products and medical devices; Director of the U. S. Army's Medical Biological Program and Medical Chemical Defense Program; directorship of a large research and support program to the U.S. Air Force and U.S. Navy to conduct toxic hazards research on chemicals of interest to the Department of Defense; and Manager and Vice President of a multidisciplinary research and development company in support of the Environmental Protection Agency, the National Institute of Environmental Health Sciences (NIH), the National Cancer Institute, and commercial clients

EDUCATION:

PH.D., Molecular Biology and General Biology, Vanderbilt University, 1971. *Dissertation*: The Effect of Oxidation/Reduction Potentials on Biochemical Pathways and Morphologic Conversion of Dimorphic Fungi.

M.S., Microbiology, UK, 1965. *Dissertation*: Proteolysis as a Mechanism to differentiate Among the Genus *Clostridium*.

M.A., U.S. Army Command and General Staff College, Fort Leavenworth, Kansas, 1978. National Central Association of Colleges (Political Sciences) *Dissertation*: The effects of infectious diseases on tactics and strategy of the conduct of modern warfare.

B.S. Biology and English, WKU, 1960 Undergraduate Fellowship, National Science Foundation. Effects of Radiation on the Membrane Permeability of Unicellular Organisms.

EMPLOYMENT:

2001-2016- Consultant, Sr. Developer, Sr. Lecturer, National Center for Biomedical Research and Training for LSU for DHS- These programs are responsible for training medical personnel, federal and local law enforcement and emergency responder organizations in responding to incidents involving weapons of mass destruction.

2002-Consultant to WKU- Research and funding matters dealing with governmental appropriations and the Safe Drinking Water and Waste Water issues of EPA. Consultant and advisor to the Financial Affairs Office in establishing research and developmental activities, incubator businesses, and development and renovation activities for a Western-owned facility to house these activities.

2000- 2004-Consultant to EPA- Safe Drinking Water Act and Clean Water Act dealing with regulatory compliance

1998-2001-Dir.- Applied Research and Technology Program Ogden College, Water Quality, WKU, Bowling Green, KY.

1994- 2001-Member of the Faculty, Biology Department, WKU, Bowling Green, KY

1993- 1994-VP, Life Sciences and Toxicology, ManTech Environmental Technology, Inc., RTP, NC

1989- 1993-VP, Environmental Toxicology, ManTech Environmental Technology, Inc., RTP, NC

1988- 1989-Manager, Environmental Toxicology, Northrop- Environmental Sciences, RTP, NC

1986- 1988-Dir., Toxic Hazards Research, Northrop- Environmental Sciences, Wright Patterson Air Force Base, Dayton, OH

1985- 1986-Manager, Life Sciences and Engineering; Engineering and Economics Research, Inc., EER Systems, Vienna, VA

1982- 1985-Dir., U.S. Army Medical Chemical Defense Research Program, Office of the Surgeon General, Washington D.C.

1979- 1982-Dir. U.S. Army Medical Research Institute of Chemical Defense, Aberdeen (Edgewood) Proving Grounds, MD.

1978- 1979-EO, U.S. Army Medical Research Institute for Infectious Diseases, Fort Detrick, MD

1976- 1978-Dir., U.S. Army Research Program in Microbiology and Infectious Diseases, Medical Research and Development Command, Office of the US Army Surgeon General, Washington, DC.

1973-1976-Principal, Immunology and Virology, U.S. Army Medical Research Inst. for Infectious Diseases, Fort Detrick, MD

1971- 1973-Microbiologist, Life Sciences Division, Office of The Chief, R&D, Dep. of the Army, Washington, D.C.

1968- 1971-Completion of PhD degree, Vanderbilt University, Nashville, TN

1965- 1968-Chief, Virology Division, Fifth U.S. Army Medical Laboratory, St. Louis, MO.

PROFESSIONAL SOCIETIES:

American Academy of Microbiology, American Society of Microbiology, Society of Sigma Xi, National Registry of Microbiologists

PROFESSIONAL AWARDS AND RECOGNITION:

"Who's Who in American Colleges and Universities, Registered Microbiologist, National Registry of Microbiologists, Fellow, American Academy of Microbiology, "A" Professional Designator, awarded 1981 by the U.S. Army Surgeon General as the highest award within the U.S. Army Medical Department for professional accomplishment; Rank of Professor.

Professional CV Addendum

United States Army

U.S. Army Medical Biological Defense Research Program at Ft. Detrick, MD: **Served** four years as the Senior Director of the largest tri-service medical research program in the DoD: **Developed** pre-treatment and therapeutic pharmaceutical products to be used in the event of a chemical warfare attack upon US military personnel; Managed the development of prophylactic and treatment compounds and vaccines against biological agents prevalent in geographic areas in which troop activity was planned **Planned, programmed, budgeted, and defended** the program before the Department of Army, DoD, research and security agencies, and the Congress of the US; **Established** tri-service integration of intramural and contract programs, staff and laboratory operational elements in excess of 750 scientists and technical personnel, involving Tri- services laboratories; Army (7), Navy (3), and Air Force (3); **Retired** in 1985 with the rank of Colonel, Regular Army. **Expanded** scope of Medical Defense against Chemical Agents program on an international basis with research collaboration with Great Britain, Canada, Germany, France, Belgium, The Netherlands, and Australia. **Designed and developed** master plan for integration of programs for the three services. **Directed** the development of the first battery of cognitive and performance tests to determine decrements induced by chemical agents and chemical antidotes. **Developed** analytical system for integrating contractual and intramural programs, including functional budgetary data track by funding element, executing organization, and scientific discipline. **Directed** DOD program until 1985 that developed and fielded the pharmaceutical products that U.S. Forces had available to combat chemical weapons in the 1st and 2nd Gulf War; **Managed** research, development, repackaging and deployment of such antidotes.

U.S. Army Medical Research Institute of Chemical Defense, Aberdeen Proving Ground, MD: As Deputy Director/Commander: **Established and organized**, from inception, a research program in prophylaxis and therapy for chemical agent intoxication; **Managed** multi-disciplinary effort in assessing and developing drugs against chemical agents and training medical personnel in their use; **Served** as Scientific Advisor to research and technical staff of 150.

U.S. Army Medical Research Institute for Infectious Diseases, Fort Detrick, MD As the Executive Officer: **Managed** administration of large medical research program in infectious diseases of concern to the DoD. This research institute had, at this time, the only capability in the world to conduct research, provide patient care, and diagnose highly infectious diseases in a BL-4 mode; **Planned, programmed, and supervised** execution of budget and man-power utilization management; **Directed** daily logistics and operation of the research facility. **Studied** mechanisms and immune-potentiating properties of polynucleotides, interferon-inducers, and polyanionic agents against viral diseases for the U.S. Army Medical Research Institute for Infectious Diseases, Ft. Detrick, MD.

Director of Army Research Programs in Microbiology and Infectious Diseases: **Developed** the first management concept and program for integration of all infectious disease research for the U.S. Army Medical Research and Development Command, Washington, DC; **Planned** on-going and prospective programs; **Generated and identified** requirements; **Obtained and allocated** resources; **Defended** program before the Army General Staff and Congress, for the Office of Chief of Research and Development, Washington, DC.

As Principal Investigator of Immunological and Virological Research: **Led** a research team of 7 scientists and technicians; **Organized, staffed, managed, and personally conducted** basic and applied research in the immunology of viral diseases of interest to DoD.

As a Clinical Investigator for the U.S. Army Surgeon General: **collected, analyzed, and submitted** preclinical and clinical data in support of Investigational New Drug (IND) and New Drug Applications (NDA) for the Adenovirus 3, 4, and 7 vaccines and the meningococcus type "C" vaccine; **Conducted** field trial studies and collected clinical data for the Fifth U.S. Army Meningococcus Surveillance Program in the states of MO, KS, and CO; **Responsible** for the development and execution of the clinical protocol, and for the integrity of the data.

Engineering and Economics Research, Inc.; EER Systems

As Manager of Life Sciences and Engineering: **Managed** the contract effort for the U.S. Army's life cycle development of biological and pharmaceutical products and medical equipment; **Managed** model development for these products as they related to the Materiel Acquisition Cycle of the U.S. Army, and to the development of the products within the regulatory framework of the FDA; **Directed** EER in the assembly preparation, and submission of Investigational New Drug (IND) applications for 9 biological products ranging from a DNA recombinant vaccine to several conjugated vaccines; **Developed** various life cycle documents such as systems concepts papers, integrated logistics plans, cost-benefit analyses, market investigations and analyses, and product trade-off analyses, completed concomitant with regulatory documentation. Utilizing previous military experience provided a unique basis for establishing and managing this program.

Northrop Services, Inc. - Environmental Sciences (NCI-ES)

As Manager, Environmental Toxicology: **Directed, controlled and coordinated** three research and support programs consisting of 128 personnel, through daily interactions with three Research Managers in Health Effects Research, *In vivo* Toxicology Research, and Cellular and Molecular Toxicology Research. Program coordination was accomplished with management of NSI-ES customers in the EPA's Health Effects Research Laboratory, The National Institute of Environmental Health Sciences, The National Cancer Institute, DoD, and industrial companies for whom NSI-ES conducted research and support activities; **Reported** directly to the VP of NSI-ES;

Planned, developed, and executed new business ventures within Environmental Toxicology; **Managed** the professional development and acted as consultant to the Program Managers in the technical, contractual, and legal aspects of the program.

As Director, NSI-ES Research Program in Toxic Hazards Research for the U.S. Air Force and U.S. Navy at Wright Patterson Air Force Base, Dayton, OH: **Planned, managed and directed** the research, support, and administrative activities; **Designed, developed, constructed and operated** a new inhalation exposure facility with 1st hand knowledge of Aerosol and particle physics, increasing by five times the inhalation exposure capability of the program; **Established** an expanded research program including physiologically-based pharmacokinetic modeling used to predict toxic effects of chemicals of interest to DoD thus reducing the amount of testing necessary; **Expanded** program to include appropriate toxicology testing and analytical chemistry research for validation of the mathematical modeling and data application to chemical risk assessment for the Services.

ManTech Environmental Technology, Inc. (formerly Northrop Services, Inc.- Environmental Sciences)

As Vice President: **Oversaw** business development; **Directed, controlled, and coordinated** five research and scientific support programs employing 210 personnel; **Managed** profit/loss activities for Toxicology and Life Sciences programs for ManTech, supporting the EPA, The National Institute of Environmental Health Sciences, The DoD, The National Cancer Institute, and other governmental and commercial customers in collaboration with Brookhaven National Laboratory of the DoE; **Developed and organized** new business activities and opportunities between ManTech and commercial and government customers; **Interacted** with a Director of Toxicology Operations and 5 Research Managers in Health Effects Research, Inhalation Toxicology (2), Cellular and Molecular Toxicology, and Toxic Hazards Research; **Directed and conducted** a business development program with planning, staffing, and execution of new business ventures within the arena of Environmental Toxicology across the US; **Reported** directly to the EVP, ManTech Environmental Technology, Inc.; **Managed** the professional development and acted as a consultant and advisor to the program managers in the technical and contractual aspects of the program.

WKU- As Asst. to the Dean for Ogden College of Science, Technology, and Health: **Developed** outreach programs to facilitate scientific interactions and services between the College and local, regional, and state-wide commercial and industrial organizations; **Established** collaboration between the University and biotechnology companies for establishing scientific efforts for faculty, staff, and students; As a faculty member: **Developed and taught** course of instruction in Introduction to Toxicology, **Taught** courses in microbiology, anatomy, and physiology.

As Director of the Applied Research and Technology Program: **Initiated and obtained** supporting grants and federal appropriations for a multi-faceted program to assist small water companies in KY and throughout the 8 states comprising EPA Region 4 in achieving and maintaining capacity development in the operation of their companies to achieve regulatory compliance; **Provided** administrative management and established an operating program in fiscal accountability for 10 research centers that comprise the Program of Distinction for WKU.

PUBLICATIONS, ABSTRACTS, PRESENTATIONS:

McVeigh, I. and Houston, W.E. Factors affecting mycelial to yeast phase conversion and growth of the yeast phase of *Histoplasma capsulatum* *Mycopathologia et Mycologia Applicata* 41: 1-2: 135-151, 1972. **Houston, W.E., Pedersen, C.E., Cole, F.E., Jr. and Spertzel, R.O.** Effects of antigen-antibody complexes on the primary immune response in rhesus monkeys. *Infection and Immunity* 10:3:437-442, September, 1974. **Houston, W.E.** Determination of equivalency in virus antigen-antibody complexes. Abstract, *Amer. Soc. Microbio.*, 1974. **Houston, W.E.** Alteration in the primary immune response in rhesus monkeys immunized with VEE antigen-antibody complexes, Abstract, *Amer. Soc. Microbiol.* 1975. **Hilmas, D.E., Houston, W.E., Faulkner, R.T., Brown, J.R. Crabbs, C.L., and Spertzel, R.O.** Vascular clearance of live, attenuated VEE virus, TC-83, in monkeys. *IRCS Med. Sci. (Immunol, Allergy, and Microbiol.)* 3: 234, April 1975. **Houston, W.E., Crabbs, C.L., Kremer, R.J., and Springer, J.Q.** Adjuvant effects of diethylaminoethyl- dextran. *Infect. Immun.* 13:6: 1559-1562, June, 1976. **Houston, W.E., Crabbs, C.L., Stephen, E.E., and Levy, H.B.** Modified polyriboinosinic-polyribocytidylic acid: An immunological adjuvant. *Infect.Immun.* 14: 1: 318-319, July 1976. **Houston, W.E., Kremer, R.J. Crabbs, C.L., and Spertzel, R.O.** Inactivated Venezuelan equine encephalomyelitis virus vaccine with specific antibody; Enhanced primary immune response and altered pattern of antibody class elicited. *J. Infect. Dis.* 135: 4: 600-619, April 1977. **Houston, W.E.,** Dose response of primates and rodents to the adjuvant effects of poly inosinic-cytidylic-lysine (ICCL) acid and VEE virus vaccine. Abstract, *Amer. Soc. Microbio.* 1980. Oximes and Related Antidotes as Potential New Therapeutic Drugs in Medical Chemical Defense. Presentation to Representative Robin Beard, Member of Congress, in Strategic Planning Sessions in Developing Preventive Measures for Medical CW Defense. May 1980. International Chemical-Biological Warfare Defense Interface in Multilateral Treaty Negotiations. Presentation to Dr. Robert Mikulak, Senior Chemical Negotiator for U.S. Army Control Committee and Disarmament Agency, DoS. November 1980. Medical Defense against Chemical Agents. "Research Needs and Opportunities." Planning session by Office of the Under Secretary of Defense (R&D). November 1980. The Medical Chemical Defense Program- A New Start. Paper presented to the National Research Council, National Academy of Sciences, establishing research priorities and funding in The President's 1992 Development Program. October 1981. "The Medical Chemical Defense Program." Presentation to the Board on Army Science and Technology (BAST) in their evaluation of new therapies for chemical warfare agents. July 1982. "Medical Aspects of Chemical Defense." Presentation to the Assistant Secretary of the Army in preparation for the Meselson Debate on "Straight Talk" WOR- TV, New York, July 1982. The Medical Chemical Defense Program. Budget Defense. Presented to David Stockman, Director of the Office of Management and Budget, and the Office of the Secretary of Defense. September 1982. Senior U.S. Military representative to the International Chemical Warfare Multi-national Conference held in Ghent, Belgium. Previewed alleged atrocities in the Iran-Iraq War. June 1983. **Rickett, D.L., Glenn, J.F., Houston, W.E.** Medical Defense Against Nerve Agents : New Directions. *Military Medicine*, Vol. 152, 35-41, 1987.