

**STEVEN JAY HATFILL M.D., Ph.D.**

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**PERSONAL DATA**

American Citizenship

Birth Date: 24 October 1953, St. Louis MO.

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**SECRET** Security Clearance

## I. EDUCATION

### MEDICAL DEGREES:

#### **M.Med / Board Certification in Hematopathology (June 1993)**

Three-year residency/specialist training in blood and bone marrow disorders at the University of Stellenbosch, RSA. Clinical rotations through coagulation/homeostasis, hemolytic and platelet disorders, immunohematology and blood transfusion medicine, hematology-oncology and the bone marrow transplantation unit (Groote Schuur Hospital, Cape Town). Pathology rotations through forensic, hematology, and chemical pathology / toxicology.

#### **Medical Degree (April 1984)**

Godfrey Huggins School of Medicine, Salisbury, Rhodesia. LRCS,. Includes; all basic medical sciences and clinical studentships (Andrew Fleming Teaching Hospital). Internship (rotating)-at the Paul Kruger Hospital (RSA). Educational Council for Foreign Medical Graduates (USA)-Certificate No. 376-621-9.

### GRADUATE DEGREES:

#### **Ph.D. Thesis in Molecular Cell Biology (August 1994)**

Completed by experimental work, thesis, Rhodes University, Department of Biochemistry and Microbiology. External Thesis Examiners- Argonne National Laboratory (USA) and NASA Center for Special Studies, Lawrence Berkley National Laboratory (USA). Thesis demonstrated mitochondrial DNA topology changes in high LET radiation-induced MDS and leukemia, as a possible basis for biological dosimetry.

#### **Master's Degree (M.Sc.) in Medical Biochemistry/Radiation Biology (Dec. 1990)**

Research Fellowship, University of Stellenbosch Medical School. Radiobiology Laboratory. Includes; cell culture, colony culture assay, immunocytochemistry, experimental animal care and drug pharmacokinetics, metabolite analysis, secondary neutron generation at the Faure National Accelerator center.

#### **Master's Degree (M.Sc.) in Microbial Genetics and Recombinant DNA (Sept. 1988)**

University of Cape Town, Thesis; "The Pathogenesis of ALPV, a New Insect Picornavirus". Includes; Isolation of a new picornavirus, standard techniques in Molecular Biology, bacterial genetics, plasmid amplification, genetic manipulation, DNA sequencing and Transmission Electron Microscopy.

### UNDERGRADUATE DEGREE:

#### **Bachelor of Arts (BA) Degree ( June 1975)**

Southwestern College, Winfield, Kansas. Basic biological and chemical undergraduate courses, medical technology practical experience, I interrupted the degree program for eight months during which time I worked as a health assistant at a remote medical mission in the Republic du Congo (Zaire), Africa.

## **POSTGRADUATE TRAINING:**

### **Toxic Chemical Training Course for Medical Support Personnel, (April 1999)**

Sponsored by U.S. Army Medical Command and conducted at Aberdeen Proving Ground, Edgewood Area, MD. Mandatory training program under (AR)50-6 for chemical warfare duty positions

### **Chemical and Biological Weapons Proliferation Course, (February 1999)**

Principles of chemical and biological weapon development, dual use and dedicated production facilities, munitions, and weapons effects/countermeasures. Sponsored by the CIA BW Division.

### **Management of Biological Warfare Casualties, USAMRIID, (October, 1997)**

Full course for medical and incident consequence management of personnel exposure to Anthrax, Tularemia, Plague, VEE, Orthopoxvirus, Filovirus, and the SEB, BOTOX and Ricin biological toxins. Offered by the United States Army Medical Research Institute for Infectious Diseases at Fort Detrick, MD.

### **Biosafety Level 4 Course, USAMRIID September, 1997)**

Certification training in the ILC Dover Chemtursion encapsulating suit and **certification / clearance** to operate in a Biosafety Level 4 environment for research on exotic viral pathogens ( Ebola, Marburg Hemorrhagic Fever). Respiratory and medical clearance to conduct research on Biosafety Level 3 pathogens ( Plague, Anthrax, and Monkeypox ).

### **Core Course in Human Clinical Research, NIH (June 1997)**

A ten month intensive course in basic epidemiological methods and design of clinical research, regulations involving human subjects research, monitoring patient oriented research, the role of the IRB, statistical data analysis and research study funding. Conducted at the Clinical Center, National Institutes of Health, Bethesda, MD.

### **Biology of Disease Vectors Course (July 1996)**

Postgraduate training conducted at the Arbovirus Infectious Disease Research Laboratory and the Centers for Disease Control (CDC)-Rock Mountain Laboratory. Includes; Vector biology, Dengue, VEE, and other mosquito / tick born diseases, plague, Lyme disease, Malaria, Trypanosomiasis. Field collection and identification of insect vectors, molecular biology and pathogenesis of vector- born disease.

### **Diploma in Diving and Submarine Medicine (September 1989)**

Postgraduate training and medical certification course in Underwater Medicine conducted at the Institute for Naval Medicine, Simonstown RSA. Includes; Respiratory and diving physiology, clinical rotations, the design and use of mixed gas decompression tables, medical and psychological aspects of submarine operations, review of research concerning the high-pressure nervous syndrome and anesthetic reversal. **Certification No. 8801-Diving Medical Officer / Hyperbaric Medicine.**

### **Diploma in Aviation Medicine (August 1985)**

Postgraduate training and medical certification course in Aviation Medicine, conducted at the Institute for Aviation Medicine, RSA. Includes; Clinical use of a high-speed centrifuge facility, sensorimotor pathology, high altitude physiology, cold weather medicine, flight crew physical standards, ejection seat injury. **Certification No. 85-104, Flight Medical Examiner.**

### **Medical Laboratory Technician Certification (August 1977)**

Training and Certification as a Medical Laboratory Technician (MLT) from the American Society of Clinical Pathologists. **ASCP Certification No. MLT-010620.**

## **II. BACKGROUND**

9/69 - 5/71	Mattoon Senior High School, Mattoon, Illinois.
9/71 - 6/75	<b>Southwestern College, Winfield, Kansas.</b>
6/75 - 3/78	United States Army Institute for Military Assistance. C. Sqn. Special Air Service (Rhodesia)
6/78 - 4/84	<b>Godfrey Huggins School of Medicine, Salisbury, Rhodesia.</b>
6/84 - 3/87	Rotating Clinical Internship <b>Certification Aviation Medicine</b> Science Leader and Physician, SANAE Antarctic Base.
3/87 - 9/88	<b>Postgraduate MSc degree (Microbial Genetics/Recombinant DNA</b>
1/89 - 12/90	<b>Postgraduate MSc degree (Medical Biochemistry/Radiobiology)</b> <b>Certification in Diving and Submarine Medicine .</b>
3/91 - 6/93	<b>Medical Residency in Hematology, M.Med degree (Haem.Path.)</b> Head; Molecular Hematology Laboratory, Tygerberg Consultant Flight Surgeon, 30th Sqn. SAAF
6/93 - 8/94	Board Certification ( Hematological Pathology ). <b>Ph.D. Thesis (Molecular Cell Biology), Rhodes Univ.</b>
9/94 - 9/95	Senior Clinical Research Scientist, Oxford University, England.
9/95 - 9/97	IRTA Research Fellow, National Institutes of Health.
9/ 97 -	NRC Senior Research Associateship-USAMRIID

### **III. PRACTICAL EXPERIENCE**

#### **General and Clinical Medicine:**

USMC Officer Candidate Program (PLC) and participation in a rural health care program in Zaire as a university undergraduate. Served with the US Army Institute for Military Assistance (05B2S Special Forces Communications Specialist) after college graduation. Active combat experience with C Squadron Special Air Service and Medical School at the Godfrey Huggins School of Medicine, Salisbury, Rhodesia. Rotating general internship in South Africa (medicine, pediatrics, surgery, obstetrics / gynecology, accident and emergency) . Team physician for 14 months at the SANAE Antarctic base. >From 1987-1990, I continued advanced degree studies and served as Emergency Medical Officer for the Conradie General Hospital, Cape Town. Surgical experience includes trauma management, burns with skin graft management, common thoracic and abdominal emergencies, and open/closed fracture reductions. I have performed over 40 Cesarean sections, several hundred normal vaginal deliveries, and administered over 400 general anesthetics during training and medical practice. Assigned to the 2d Medical Battalion (TA Reserve) SADF. I hold certifications in Diving and Submarine Medicine and Aviation Medicine. Consultant Flight Surgeon to 30 Squadron Air/Sea rescue unit based at Yesterplatt Air Force Base, Cape Town. Board certification in Hematological Pathology. Senior Clinical Scientist at the John Radcliffe Hospital, Nuffield Department of Pathology, Oxford University, England from 1994-1995 while a member of the Royal Society of Medicine, London. Core Course in Human Clinical Research completed at NIH in 1997.

#### **Academic Research:**

Research Team Leader at the SANAE Antarctic Base in Queen Maude Land, Antarctica for a 14 month tour of duty where I performed research on pineal / hypothalamic dysfunction for the NASA Johnson Manned Spaceflight Center. I established a de-novo departmental molecular hematology laboratory for Ig /TCR rearrangement studies and directed this laboratory, during my medical residency training from 1991-1993 and in 1994. External funding grants from Ames Diagnostics and Amersham, UK. In 1993, I served as Chairman of the Experimental Biology Group (RSA) and was a member of the Blood Transfusion Utilization Committee-Tygerberg Medical Center. Advisory panel on AIDS-Council for Scientific and Industrial Research 1994; Guest Lecturer, National Cancer Institute 1992; travel grant awards-Medical Research Council (UK) 1992, 1993. Guest Lecturer, National Institutes of Health, 1994. While active at the NIH, my role was to conduct advanced tissue culture research within the framework of a NASA / NIH agreement, using advanced tissue culture technology.

#### **Present Position**

From 18<sup>th</sup> Sept. 1997 , I have been conducting research on the coagulopathy associated with Ebola and Marberg Filovirus infection in Rhesus primates using the maximum containment Biosafety Level-4 facility at USAMRIID, Ft. Detrick, MD. My role has expanded to include research on anti-viral therapeutics for orthopoxvirus and filovirus infections using rodent and non-human primate models. I am the primary civilian consultant to the Aeromedical Isolation team at USAMRIID, where I participate in field training exercises, provide training seminars, and have significantly upgraded the AIT's capability for in-flight patient monitoring.

I have participated in the development of an advanced human organ culture system for infectious disease research at USAMRIID. This was used to document tropic differences between Reston Ebola and Zaire strains.

Concurrent work outside of USAMRIID includes the historical development and theoretical applications of Caulder's equations/tables. Working knowledge of the former U.S. and foreign BW programs, wet and dry BW agents, large-scale production of bacterial, rickettsial, and viral BW pathogens and toxins, stabilizers and other additives, former BG simulant production methods, open air testing and vulnerability trials, single and 2 fluid nozzle dissemination, bomblet design, munitions programs, and former U.S. and Soviet BW munitions.

#### Current Training and Concept Development Activities

With the cooperation of SAIC and a representative for Special Concept Development at the Pentagon, I am the principle architect for the following pilot program or concept;

1. Rapid and Flexible Redistribution of Mass Casualties Following a LAC Biological Incident.
2. On-Site Intelligence Gathering on Suspected WMD Facilities by Special Operations Personnel.
3. Integrated WMD Defense Upgrades for U.S. Embassies and Residential Compounds.
4. Aerial Dissemination of CpG Immunomodulators to Counter LAC Biological Events.
5. Rational approach to decontamination following threats with Bacillus anthracis and other BW agents.

I designed and implemented the current biological warfare syllabus used to train emergency room physicians as part of SBDCOM's Domestic Preparedness Program. I serve as a listed consultant to the Cyto-Matrix Corporation for their research program funded by the Biological Weapons Defense Program Office of the Defense Advanced Research Projects Agency (DARPA). I am also the designated on-site BW consultant for the Washington D.C. Metropolitan Medical Strike Force.

#### Teaching Experience

1992-1994 Undergraduate Hematology-University of Stellenbosch Medical School  
1991-1994 Supervisor for 2 Masters Degree Candidates, University of Stellenbosch  
1997 + Instructor SAIC WMD Domestic Preparedness Hospital Provider Course  
1998 + Instructor CIA Non-Proliferation Course  
1998 + Instructor DIA Joint Military Attaché School (DHM-3C)

#### Television Appearances

Armstrong Williams Show (1998) "The Emerging Threat of Biological and Chemical Terrorism"  
Voice of America (1998) (Mideast Broadcast) "Chemical and Biological Weapons"  
Canadian Broadcast Network (1998) "The Nature Of Things"

### **IV. PAPERS PRESENTED**

**Hatfill, S.J.** Biomedical Aspects of a 20 Year Manned Spaceflight Exploration Program. Presented to the National Space Council, Washington, D.C. during their 1986 design of America's future space policy-  
**Retained in the National Archives.**

**Hatfill, S.J., Viljoen,E.** The Antarctic Midwinter Syndrome-Possible Implications for Long-Duration Manned Spaceflight. XXIV International Congress of Aviation Medicine, October 14, 1987.

**Hatfill, S.J.** Design Considerations for a NASA Biobehavioral Research Laboratory in Antarctica. NASA Solar System Exploration Division, NASA Johnson Space Center, Houston, TX. April 10, 1991.

**Hatfill, S.J.** Thalidomide Induced Apoptosis in a Patient with Acute Lymphoblastic Leukemia. XII South African Pathology Congress, July 7, 1991.

**Hatfill, S.J.** Possible Risks for Leukemia Induction by Chronic Exposure to Low-Dose VZE Radiation During Long-Duration Space Missions. Lunar/Mars Exploration Office, Johnson Space Center, Houston, TX, July 1992.

**Glushakova, S., Hatfill, S.J., Margolis, L.,** Experimental HIV Infection in a NASA Designed RWV Lymphoid Tissue Bioreactor. NASA Symposium on Cell Biology and Protein Crystal growth, International Congress for In-Vitro Biology, June 25-27, 1996.

**Margolis, L.B., Murphy, P., Hatfill, S., Gulashnikova, S.** Human Lymphoid Tissue for In-Vitro Anti-HIV Drug Testing. 2d Joint Conference of the Strategic Program for Innovative Research on AIDS Treatment and the National Cooperative Drug Discovery group for the Treatment of HIV Infection (NCDDG-HIV). Vienna, VA. June 22-26, 1997.

**Hatfill, S.J.,** Biological Terrorism and Civil Defense, Crisis and Consequence Management. International Terrorism Studies Program, George Washington University Marvin Center, Washington, D.C., August 12, 1997.

**Hatfill, S.J.,** Briefing, Central Intelligence Agency, Non-Proliferation Center, New Headquarters Bldg. September 4, 1997.

**Hatfill, S.J.,** Briefing, Office of the Secretary of Defense, Defense Technology Security Administration, September 17, 1997.

**Hatfill, S.J.,** Briefing, Defense Special Weapons Agency, October 8, 1997.

**Hatfill, S.J.,** Briefing, SHIELD, U.S. State Department, 18 November, 1997.

**Hatfill, S.J.,** Integration of ALERT, DSWA and DARPA technologies with the Marine CBIRF to improve first responder capabilities to biological agent release. Army War College Conference on Improving Urban Defense Against Bioterrorism, Baltimore, MD. September 1-4, 1997.

**Hatfill, S.J., Hauer, J.** Biological Terrorism, Council on Foreign Relations, New York City, Special Meeting. May 21, 1998.

**Hatfill, S.J.,** Flexible and rapid mass casualty redistribution following a large area coverage biological or chemical incident. Potomac Institute for Policy Studies/George Washington University Terrorism Studies Group- Conference on Biological Terrorism. June 16, 1998.

**Hatfill, S.J.,** Briefing, Federal Bureau of Investigation, Joint Terrorism Task Force, Washington D.C. Field Office, June 29, 1998.

**Hatfill, S.J.,** Briefing, Central Intelligence Agency, Counter-Terrorism Center, New Headquarters Building, July 8, 1998.

**Hatfill, S.J.,** Briefing, Assistant Secretary of Defense for Special Operations/Low-Intensity Conflict, Pentagon, July 14, 1998.

**Hatfill, S.J.,** Briefing, Assistant Secretary of Defense for Medical Affairs, Pentagon, August 11, 1998.

**Patrick, W.C., Alibeck, K., Hatfill, S.J.** Panel presentation on former U.S. Offensive Biological Program, Soviet Union Biopreparat Offensive Biological Program, and Terrorist Manufacture and Use of Biological Weapons. Department of Defense Worldwide Conference on Antiterrorism. San Diego, CA.. August 24-27, 1998.

**Hatfill, S.J.**, Briefing, Joint Terrorism Working Group, United States Army Military District of Washington. Ft.McNair, Washington DC., September 29, 1998.

**Hatfill, S.J., Barbish, D.F.**, Briefing Paper, National Security Council, Old Executive Office Building-Room 302, Washington, D.C., October 26, 1998.

**Hatfill, S.J.**, Briefing, Underground Facilities Working Group, DARPA, February 3, 1999.

**Hatfill, S.J.**, Technology Working Group on Rapid Diagnostics. Potomac Institute for Policy Studies. April 20, 1999.

## ABSTRACTS

**Hatfill, S.J., Kirby, R.**, Mitochondrial DNA Length Polymorphism in MDS, 36<sup>th</sup> Annual Meeting, American Society of Hematology, Dec. 5, 1994.

**Glushakova, S., Babikov, B., Hatfill, S.J., Margolis, L., Zimmerberg, J.**, HIV Infection in Experimental Histoculture. Annual Meeting, American Society for Cell Biology, Dec. 11-14, 1995.

**Glushakova, S., Margolis, L., Fitzgerald, W., Hatfill, S., Zimmerberg, J.** Viral Factors Determining the Course of HIV Infection in Human Lymphoid Tissue In-Vitro. 4<sup>th</sup> Conference on Retroviruses and Opportunistic Infections, Jan 22-26, 1997.

**Duray, P.H., Linehan, L., Margolis, L., Hatfill, S.**, Long-Term In-Vitro Maintenance of Histologically Intact Human Prostate Tissue in a NASA Designed Rotating Wall Vessel Bioreactor. United States and Canadian Academy of Pathology Congress, March 1-7, 1997.

**Bray, M., Jaax, N., Geisbert, T., Kell, W., Hatfill, S., Huggins, J.**, Pathogenesis of Lethal Ebola Virus Infection in Adult Immunocompetent Mice. American Society of Virology, Annual Meeting, Vancouver, Canada. July 11, 1998.

## PUBLICATIONS

**Levy, L.F., Chigwanda, P.C., Mauchaza, B., Hatfill, S., Bakasa, R.**, (1986) Prevalence of untreated disease in rural Zimbabwe. *Cent. Afr. J. Med.* Jul; 32 (7) 159-63.

**Hatfill, S.J., Williamson, C., Kirby, R., VonWechmar, M.B.**, (1990) Hybridization studies to localize a new insect picornavirus in aphid tissue sections. *J. Inv. Path.* 55:265-271.

**Hatfill, S.J., Kirby, R., Bohm, L.**, (1990) Hyperprolactinemia in acute myeloid leukemia and ectopic expression of prolactin in blast cells from a patient with M4 subtype. *Leukemia Res.* 14;(1), 57-62.

**Hatfill, S.J., Bohm, L.**, (1991) Morphological differentiation of K562 Leukemia cells induced by Thalidomide. *Leukemia Res.* 15; (2), 129-136.

**Hatfill, S.J., Brusnick, J., Fester, E.**, (1991) Immunocytochemical identification of nuclear estrogen receptors in human acute myeloid leukemia. *Leukemia Res.* 15;(5), 315-320.

**Hatfill, S.J.** (1990), Military health strategy during the global AIDS pandemic. *Armed Forces*, (10); Oct. 18-20.

**Hatfill, S.J., Fester, E.D., Steytler, J.G.**, (1992) Apoptotic megakaryocyte dysplasia in the myelodysplastic syndromes. *Hematological Pathology*, 6;(2), 87-93.



**Hatfill, S.J., Kirby, R.** (1992) Mitochondrial mutations in the myelodysplastic syndrome. *Lancet*, 340; Aug. 8.

**Hatfill, S.J., LaCock, C.J., Kirby, R.**, (1993) A role for mitochondrial DNA in the pathogenesis of radiation-induced MDS and secondary leukemia. *Leukemia Res.* 17; (11), 907-903.

**Tarin, D., Bolodeoku, J., Hatfill, S.J., Sugino, T., Woodman, A., Yoshida, K.**, (1995) Clinical significance of the malfunction of the CD44 locus in malignancy. *J. Neurol. Oncol.* 26; 209-219.

**Hatfill, S.J., Margolis, L., Duray, P.H.**, (1996) In-vitro maintenance of normal and pathological human salivary gland tissue in a NASA designed rotating wall vessel bioreactor. *Cell Vision*, 3; (5); 397-401.

**Duray, P.H., Hatfill, S.J., Pellis, N.R.**, (1997), Tissue culture in microgravity. *Science and Medicine*, 4 (3) 46-55.

**Glushakova, S., Hatfill, S.J., Babikov, B., Margolis, L., Zimmerburg, J.**, (1997) Lymphocyte trafficking and HIV infection of human lymphoid tissue in a RWV bioreactor. *AIDS Research and Human Retroviruses*. 13, 16, 1997.

**Hatfill, S.J., Margolis, L., Duray, P.H.**, (1998) Maintenance of human prostate tissue without exogenous hormonal support in a NASA designed rotating wall vessel bioreactor. *J. Urol.* (in press 1998).

**Hatfill, S.J., Sylwester, A., Margolis, L., Duray, P.**, (1998) In-vitro generation of Kaposi Sarcoma lesions by HHV-8 in the NASA RWV bioreactor. (manuscript in preparation).

**Hatfill, S.J., Duray, P.**, (1998) In-vitro amplification and identification of Lyme disease in human tissue biopsies cultured in the NASA RWV bioreactor. (manuscript in preparation, paper presented at the U.S. and Canadian Academy of Pathologists Annual Meeting, Boston, 1998).

**Hatfill, S.J., Margolis, L., Duray, P.**, (1998) Tissue explant culture in the NASA RWV bioreactor: a possible universal culture system for infectious human pathogens. (manuscript in preparation).

**Hatfill, S.J.** Integration of the first responder ALERT system with DSWA and DARPA consequence management technologies for an improved non-military defense against chemical and biological terrorism. (manuscript submitted).

**Hatfill, S.J., Barbisch, D.F.**, (1998) Flexible and Rapid Mass Casualty redistribution following large area urban coverage by chemical and biological warfare agents. (manuscript in preparation).

**Hatfill, S.J., Bray, M., Thompson, B., Guiesberg, T., Steele, K., Jahrling, P., Huggins, J., and Margolis, L.** (1998) Pathogenic differences between Ebola Reston and Ebola Zaire in the NASA RWV Bioreactor. (in progress).

**J. Huggins, M. Bray, M. Matrinez, and S. Hatfill.**, Cidofovir treatment for Smallpox and Monkeypox orthopoxvirus infections. (Manuscript in preparation).

## **V. SCIENTIFIC AND PERSONAL REFERENCES**

### **William C. Patrick III**

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