

CURRICULUM VITAE

NAME: Roger A. Vertrees, Ph.D.

DATE: Mar 2025

PRESENT POSITION:

Chief Science and Technology Officer
Verthermia Corporation, Inc
Clinical Perfusionist
Experimental Pathologist

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BIOGRAPHICAL:

Date and Place of Birth:	January 28, 1948 Pontiac, Illinois
Home Address:	11010 County Road 210 Bertram, Texas 78605
Family:	Wife: Gertrude E. (Trudy) Vertrees, RN Children: Rebekah, Jason

EDUCATION:

1966-1969	Western Illinois University (Physics), Macomb, IL
1969-1971	Bachelor in Arts (B.A.) Microbiology, Southern Illinois University, Carbondale, IL
1993-1999	Doctor of Philosophy (Ph.D.) in Biomedical Sciences, concentration in Experimental Pathology (Oncology), Univ. of Texas Graduate School of Biomedical Sciences, Galveston, TX

CERTIFICATION:

1979-2018 American Board of Cardiovascular Perfusion (#790-149)
1988 University of Colorado Blood Conservation
1990 Academy of Surgical Research as Certified in Animal Research Surgical Techniques
2018 American Board of Cardiovascular Perfusion (#79-149) CCP-Emeritus

LICENSURE:

1995 Texas (PF 0249 Licensed Perfusionist)
2001 Human Subject Knowledge Assessment

PROFESSIONAL AND TEACHING EXPERIENCE:

1973-1975 Clinical Perfusionist-St. John's Hospital, Department of Surgery
Springfield, IL.
1975-1978 Instructor-Chemistry and Physics, St. Francis Hospital Medical Center
School of Anesthesia, Peoria, IL.
1975-1978 Chief Perfusionist-St. Francis Hospital Medical Center
Division of Cardiac Surgery, Peoria, IL.
1978-1979 Surgical Research Technician-University of Connecticut
Cardiac Surgical Research Lab, Farmington, CT.
1985-1987 Clinical Instructor of Perfusion Technology-Northeastern University
College of Pharmacy and Allied Health Professions. Boston, MA.
1978-1987 Chief Perfusionist-Baystate Medical Center-Department of Cardiac Surgery
Springfield, MA.
1987-1988 Staff Perfusionist-Medical Systems of Central Illinois
St. Francis Hospital Medical Center and Methodist Medical Center
Peoria, IL.
1988-1991 Program Director-Cooper Hospital/University Medical Center School
Of Cardiovascular Perfusion, Camden, NJ.
1988-1992 Clinical Instructor of Perfusion Technology-Cooper Hospital/University
Medical Center School of Cardiovascular Perfusion, Camden, NJ.
1990-1992 Adjunct Assistant Professor of Surgery-Robert Wood Johnson Medical

	School University of Medicine & Dentistry of NJ, Camden, NJ.
1988-1993	Director, Cardiothoracic Research Laboratory-UMDNJ-Robert Wood Johnson Medical School at Camden, Camden, NJ.
1988-1992	Vice President-Perfusion Technology, Inc., Camden, NJ.
1988-1992	Chief Perfusionist-Cooper Hospital/University Medical Center Camden, New Jersey.
1991-1992	Director of Perfusion Services-Department of Surgery Cooper Hospital/University Medical Center, Camden, NJ.
May, 1999	Completed-Teaching Improvement Project System (TIPS)-Effective Teaching in classroom and clinical settings – School of Allied Health Sciences – University of Texas Medical Branch at Galveston, TX.
1992-2000	Faculty Perfusionist and Instructor of Surgery, Department of Surgery-Division of Cardiothoracic Surgery and Instructor of Surgery of University Texas Medical Branch, Galveston, Texas.
1999-2000	Post Doctoral Research-Departments of Pathology and Surgery – Paul J. Boor, MD, Mentor and J.B. Zwischenberger, MD, Co-mentor
2000-2008	Assistant Professor, Department of Surgery-Division of Cardiothoracic Surgery University of Texas Medical Branch, Galveston, Texas.
2000-2005	Allied Health Professional Staff – Shriners Burns Hospital – Galveston, Texas.
2000-2008	Associate Member of Graduate Faculty for The Experimental Pathology Program, Department of Pathology, University of Texas Medical Branch, Galveston, Texas.
2001	Complete – Molecular Biology Laboratory Techniques. Department of Human Biological Chemistry and Genetics, University of Texas Medical Branch, Galveston, Texas.
2001-2008	Facilitator – Problem Based Learning, Cardiovascular and Pulmonary Tract, School of Medicine, University of Texas Medical Branch, Galveston, Texas.
2002	Complete – Introductory Facilitator Training Workshop. Department of Educational Development, University of Texas Medical Branch, Galveston, Texas.
2008- 2011	Associate Professor of Surgery, Department of Surgery-Division of Cardiothoracic Surgery University of Texas Medical Branch, Galveston, Texas.

2011-2019 Director of Technology Development, Chief Perfusionist and Experimental Pathologist, ThermalCore, Inc. San Jose, CA

2013-2019 Interim CEO, ThermalCore, Inc. and Chairman of the Board, Verthermia, Inc.

2013-2019 Chief Executive Officer/Chief Technology Officer, Verthermia, Inc

2019-Current Chief Scientific and Technology Officer, Verthermia, Inc.

Military Service

1970-1971 U.S. Army, Ft. Sam Houston Texas (E-4)

1971-1978 Illinois National Guard, Bloomington, IL (E-7)

1978-1983 US Army Reserve, Hartford CT (E-7)

2007-2018 Texas State Guard, Medical Reserve Corp, Galveston, Texas (LTC)

2/2009 Commanding Officer, Texas State Guard, Galveston Medical Response Group

11/2014 Deputy Chief of Staff, Medical Brigade, Texas State Guard, Texas Military Forces

2015 Deputy Commanding Officer for Operation Lone Star on the Texas Mexico Border

2016 Retired as LT COL, Texas State Guard

RESEARCH ACTIVITIES:

Current Interest: Extracorporeal Circulation and Hyperthermia as a therapy (alternative/adjuvant) for metastatic cancer.

1979-2008 Extracorporeal Circulation and Myocardial Preservation.

1982-2008 Blood Conservation during Open Heart Surgery.

1989-2008 The utility of extracorporeal circulation control of body temperature (Hypothermia and Hyperthermia).

1994-2008 Heparin Removal following cardiopulmonary bypass.

1996–2008 Thermal Pathobiology of Lung Cancer

1997-2001 Co-Investigator: Phase I Clinical Trial of Percutaneous venovenous Perfusion-Induced systemic hyperthermia for Stage IV non-small cell lung cancer (FDA G)

2002-2008 Tissue Engineering

2010 Development of Third Generation Whole-body Hyperthermia Device

2013 Co-Investigator: Perfusion-Induced Systemic Hyperthermia for Multiple cycles in Ovarian Cancer (FDA G130024).

Past Funding

- 9/24/07-9/24/09 R41 CA120616 - PI: Development of a Perfusion-induced Systemic Hyperthermia Delivery Apparatus (STTR phase I, #1 R41 CA120616-01A1). National Institutes of Health, National Cancer Institute (\$208,000/1 year) - 49%.
- 2007-2008 Gift from ThermoSolutions Inc. for continued development of device and interim support. \$200,000. Re-direct from Dr. Zwischenberger.
- 2005-2008 PI: Re-design of a Perfusion-induced Hyperthermia Delivery Apparatus. ThermaSolutions. Melbourne FL (\$200,000/2 yr)
- 2/27/06-10/31/08 CON 15858 - PI: Hyperthermia – Device Development. ThermaSolutions Inc. Melbourne, FL (\$150,000/3 years) - 20%.
- 2002-2005 Development of a Clinically Relevant Therapeutic Dose of Hyperthermia and Gemcitabine *in vitro*. Eli Lilly Corp, Indianapolis, IN. (\$40,000)
- 2000 Co-I: Phase I FDA Trial (Safety) Venovenous Perfusion Induced Systemic Hyperthermia for Metastatic Non-Small Cell Lung Cancer. IDT, Inc., and National Institute of Health General Clinical Research Center Grant *Zwischenberger JB (PI)*. University of Texas Medical Branch, Depart of Surgery (\$2,106,000)
- 1996 Co-I: FDA approved Phase I Trial for Veno-venous perfusion-induced systemic hyperthermia for Stage III/IV metastatic non-small cell lung cancer. Funded in part by IDT, Inc. (\$206,000) & National Institute of Health General Clinical Research Center Grant *Zwischenberger JB (PI)*. (\$1,233,698.60)
- 1995 PI: UTMB Dept. of Anesthesia Sponsored Study, Evaluation of Shed Mediastina Blood
- 1995 Co-I: The Induction of Hyperthermia by Extracorporeal Technology and Its Potential as Therapeutic Modality, Trillium Foundation, *Zwischenberger JB* (Co-PI) \$400,000 Phase I.
- 1995 Co-I: Can the MRI be Used to Access Neurological Damage Resulting from Cardiopulmonary Bypass? UTMB, Department of Anesthesiology Internal Grant *McDaniel, LB (PI)*.
- 1995 PI: Thermal Lethal Threshold of Human Immunodeficiency Virus-1, iP Scientific, Inc., \$122,000 Phase II.
- 1995 PI: Perfusion-Induced Hyperthermia: Development of a Chronic Model. IP Scientific, Inc., \$115,000, Phase III.

1996 PI: Perfusion-Induced Hyperthermia: An Iterative Multi-Disciplinary Approach.
AmSECT Research Grant Award, \$7,500.

COMMITTEE RESPONSIBILITIES:

National:

1981-1984 American Academy of Cardiovascular Perfusion: Council
1984-1993 American Board of Cardiovascular Perfusion: Examiner
1992-2001 Academy of Surgical Research: Exam Committee (Co-Chairman)
1989-2001 American Board of Cardiovascular Perfusion: Board of Directors. Secretary
(2000-Committees: Nominating (Chair 1994-Present); Security (Chair
1995-Present); Exam (Chair-1993) Government Relations (Chair-1997) Ad Hoc
Committees: Ethics, Certification, Recertification
2001-2003 Academy of Surgical Research – Publications Committee
2001-2008 American Academy of Cardiovascular Perfusion. Program Committee

Institutional (UTMB)

2001 School of Medicine – Student Advisor
2003 Member – UTMB, Comprehensive Cancer Center
2002-2004 Graduate School of Biomedical Sciences – Admissions and Recruitment
Committee for Experimental Pathology Program

Departmental:

1990-1992 Transfusion Committee
Cooper Hospital/University Medical Center
1976-1978 Member, Advisory Committee
St. Francis Hospital Medical Center School of Anesthesia

Other:

1991-1993 Delphi Panelist
Northeastern University

TEACHING EXPERIENCE AT UTMB:

1992-2008 Instructor of Surgery-University of Texas Medical Branch Galveston, TX
2000-2008 Associate Member of Graduate Faculty for The Experimental Pathology Program,
Department of Pathology, University of Texas Medical Branch, Galveston, Texas.
2001-2008 Individual Learning Tract Facilitator for Univ. of Texas School of Medicine.

MENTOR:

Ball High School Mentor for Advanced Science Students

2003 Andrea Zwischenberger

College Student Summer Internship

2003 Kendra Kent – Louisiana State University

Medical School Students

2005 John Roaten, BS

2006 Mathew Paulley, BS

Medical Student Summer Research Program

1999 Mike Hold (Best Overall Basic Science Poster)

2000 Robert Nason

2001-2004 Angela Leeth (McLaughlin Award), Kazko Anai Memorial Award in Biochemistry, Alpha Omega Alpha, UTMB Chapter, 1st Place Award. 2002 Alpha Omega Alpha, National 1st Place Award, 2002-2003 Stjepceovich Scholar Award

2003-2004 Christopher Chumly (Best Overall Clinical Science Poster Award)

Graduate School Biomedical Sciences

2000 Danyel Hermes

National Student Research Forum

1. Smoke and Burn Injury Causes Apoptotic and Necrotic Cell Death That Is Ameliorated with AVCO₂R, 2000, Mike Hold – First Place in Molecular and Cellular Biology.
2. Smoke and Burn Induced Respiratory Distress Syndrome Causes Apoptotic and Necrotic Cell Death In Vitro, Ameliorated by Extracorporeal Arteriovenous Carbon Dioxide Removal (AVCO₂R) – 2001 Robert Nason

MEMBERSHIPS IN SOCIETY:

Fellow - American Society of Extracorporeal Technology (elected)

American Academy of Cardiovascular Perfusion - Life Membership (elected)

American Society for Artificial Internal Organs (elected)

Academy of Surgical Research (elected)

American Society of Investigative Pathology

American Association for Cancer Research- Active (elected)

International Clinical Hyperthermia Society

Society for Thermal Medicine (elected)

MISCELLANEOUS:

2005 USAT Regionally rated in Triathlon, Age Group Classification

Nov 3, 2007, Finished the Ford Ironman Florida Triathlon in 15 hours and 23 minutes.

2007 Commissioned as Major in the Texas State Guard, Medical Reserve Corps-Galveston

Commanding General's Individual Award recipient-, 2007
Commanding General's Individual Award recipient-Hurricane Dean, 2007
Meritorious Service Medal-Heroic Behavior in a Lifesaving Emergency, 2007
Meritorious Service Medal- Operation Lone Star, 2008
Military Emergency Medical Specialist Award, FEMA 2008
Basic Disaster Life Support, AMA 2008

2010 Promoted to LTC and assumed command of the Galveston Medical Response Group,
Medical Brigade, Texas State Guard

HONORS:

1967 Associate Society, Sigma Pi Sigma-National Physics Honor Society

1977 Expert Medical Badge, State of Illinois, and Department of Army

1987 President's Award, American Society of Extracorporeal Technology

1992 Roving Leader, American Society of Extracorporeal Technology

1995 Research Grant Award, American Society of Extracorporeal Technology

1997 Poster Presentation, American Society of Investigative Pathology, Graduate
Student Research Recognition Award, Abstract Title #44

1998 American Association for Cancer Research Selection for Grant Writers Workshop

1999 Stephen C. Silverthorne Memorial Award for Excellence and Perseverance in Research.
University of Texas Graduate School of Biomedical Sciences, Galveston, Texas

1999 Awarded Chair in Graduate Studies by Division of CardioThoracic Surgery, UTMB

2000 Invited Professor, University of Texas Southwestern Medical Center, Department of
Surgery, Dallas, TX.

2001 Invited Professor, MUSC, School of Cardiovascular Perfusion, Charleston, SC.

2001 Awarded Chair by American Board of Cardiovascular Perfusion for Leadership and
Dedication to Perfusion

2002 Alpha Omega Alpha Mentor Award

2002 Department of Surgery Grand Rounds: Hyperthermia: Does it Have a Clinical Role?

2003 Recognized by American Society of Extra-Corporeal Technology as Pioneer-in-Perfusion

2007 Commanding General's (Texas State Guard) Individual Award Recipient-Operation Lone
Star

2007 Meritorious Service Medal for saving the life of Jamie Hakala (1 Apr 2007)

2007 Recipient of Military Emergency Management Service Award (Oct 2007)

2007 Commanding General's (Texas State Guard) Individual Award Recipient-Hurricane Dean

ADDITIONAL INFORMATION

Journal Editorial Board

1980-1991 Journal of Extracorporeal Technology

- Associate Editor (1980-1989)
- Editor (1989-1991)
- Associate Editor (2001-2008)

1984-1988 Journal of the American Academy of Cardiovascular Perfusion (Associate Editor)

1990-1992 Proceedings of the American Society Extracorporeal Technology (Editor)

2022-present Cureus Journal of Cancer

2021-present Cureus Journal of Pathology

Journal Editorial Consultant

- Clinical Cancer Research
- Annals of Thoracic Surgery
- Journal of the American Society of Artificial Internal Organs
- Journal of Extracorporeal Technology
- Journal of Investigative Surgery
- Cureus-Oncology and Pathology

Site Visits

1991 University of Texas Health Science Center School of Cardiovascular Perfusion-Program Review

1999 Commission on Accreditation of Allied Health Education Programs Essential Guidelines for Perfusion Education (Delphi Review)

BIBLIOGRAPHY:

A. PEER REVIEWED PUBLICATIONS

1. Rohrer CH, Auvil J, **Vertrees RA**, Rousou JH, Engelman RM: Transient hypoxemia upon initiation of cardiopulmonary bypass. JECT 1979; 11:66-68.

2. Engelman RM, Rousou JH, Longo F, Auvil J, **Vertrees RA**: The time course of myocardial high-energy phosphate degradation during potassium cardioplegia arrest. Surg 1979; 86:138-147.
3. **Vertrees RA**, Auvil J, Rousou JH, Engelman RM: A technique of myocardial preservation perfusion. Ann Thorac Surg 28(6):601-2, 1979.
4. **Vertrees RA**, Auvil J, Rohrer CH, Rousou JH, Engelman RM: Intraoperative blood conservation during cardiac surgery. JECT 1980; 12:74-78.
5. **Vertrees RA**, Stark M, Auvil J, Rohrer CH, Rousou JH, Engelman RM: Weight gain and cardiopulmonary bypass. JECT 1980; 12:74-78.
6. **Vertrees RA**, Engelman RM, Haag BL, Rousou JH: Open-heart surgery in the hypothyroid patient. Chest 1980; 79:167-171.
7. Engelman RM, Rousou JH, **Vertrees RA**, Rohrer CH, Auvil J: The safety of prolonged ischemic arrest using hypothermic cardioplegia. J Thorac Cardiovasc Surg 1980; 79:705-712.
8. **Vertrees RA**, Auvil J, Harding E, Sweet S, Rousou JH, Engelman RM: A technique of hemoconcentration. JECT 14:470, 1982.
9. **Vertrees RA**, Engelman RM, Breyer RH, Johnson J, Auvil J, Rousou JA: Protamine induced anticoagulation following coronary bypass. Proceedings of the American Academy of Cardiovascular Perfusion, 7:94-8, 1986.
10. **Vertrees RA**, Renal artery stenosis, a case for pulsatile flow. Proceedings of the American Academy of Cardiovascular Perfusion, 8:245-9, 1987.
11. **Vertrees RA**, Zischler JR, Hoy FB, Munns JR, DelRossi AJ, Cilley JH Jr: Disseminated intravascular coagulation for heparin-induced thrombocytopenia. Proceedings of the American Academy of Cardiovascular Perfusion, 9:76-81, 1988.
12. Fundaro P, Velardi A, Cilley JH Jr, **Vertrees RA**, DelRossi AJ, DiBiasi P, Santoli C: A new multi-purpose aortic root cannula for open heart surgery. Perfusion 4:183-186, 1989.
13. **Vertrees RA**, DelRossi AJ, Cernaianu AC, Cilley JH Jr, Baldino WA, Wacker C, Fuller SJ: Does plasma sequestration reduce postoperative bleeding? Proceedings, American Society of Extra-Corporeal Technology, 27:104-110, 1989.
14. **Vertrees RA**, Costabile J, Collins L, Kerins P, Yu Y, Cilley JH Jr, Baldino WA, DelRossi AJ: The development of the Yucatan miniature pig as a chronic model for cardiac surgery. Proceedings, American Society of Extra-Corporeal Technology, 27:111-115, 1989.

15. Robles F, DelRossi AJ, Cilley JH Jr, Fuller SJ, Dunmire R, **Vertrees RA**: Comparison between black top CA 510 and flip top FT CA510 test tubes in the hemochron blood coagulation timing system. Proceedings, American Society of Extra-Corporeal Technology, 27:15-18; 1989.
16. Kerins P, **Vertrees RA**, Finn KA, Cilley JH Jr, DelRossi AJ: Comparison of two colloid constituents in prime solutions and the effect on blood loss following cardiopulmonary bypass. Proceedings, American Society of Extra-Corporeal Technology, 27:11-14, 1989.
17. **Vertrees RA**, Fuller SJ, Hundley S, Costabile J, Yu Y, Cilley JH Jr, Baldino WA, Cernaianu AC, DelRossi AJ: Arterial-venous perfusion without anticoagulation to reverse accidental hypothermia. JECT 21(3):83-88, 1989.
18. DelRossi AJ, Cernaianu AC, Cilley JH Jr, Spence RK, Camishion RC, Yu Y, Costabile J, **Vertrees RA**: Preventive effect of Fluosol-DA for paraplegia encountered after surgical treatment of the thoracic aorta. J Thorac Cardiovasc Surg. 99(4):665-9, 1990.
19. DelRossi AJ, Cernaianu AC, **Vertrees RA**, Fuller SJ, Costabile J, Yu Y, Cilley JH Jr, Baldino WA: Heparinless extracorporeal bypass for treatment of hypothermia. J Trauma. 30(1):79-82, 1990.
20. DelRossi AJ, Cernaianu AC, **Vertrees RA**, Wacker C, Fuller SJ, Cilley JH Jr, Baldino WA: Platelet-rich plasma reduces postoperative blood loss after cardiopulmonary bypass. J Thoracic Surg. 100(2):281-6, 1990.
21. **Vertrees RA**, Yu Y, Wacker C, Cernaianu AC, DelRossi AJ: Arterial-venous perfusion without anticoagulation: the impeller centrifugal pump. JECT. 2 (4):160-164, 1991.
22. **Vertrees RA**, Camishion RC, Cilley JH, Baldino WA, Cernaianu AC, DelRossi AJ: A surgical approach to chronic aortomyoplasty in the goat model. J Invest Surg.6 (5):419-431, 1993.
23. **Vertrees RA**, Brownstein L, Cernaianu AC, DelRossi AJ: Centrifugal pump-induced alterations in red blood cell morphology. Proceedings of the American Academy of Cardiovascular Perfusion, 13:58-64, 1992.
24. DelRossi AJ, Cernaianu AC, **Vertrees RA**, Yu Y, Cilley JH Jr, Baldino WA, Camishion RC: Biotransformation of skeletal muscle used for long-term dynamic aortomyoplasty. Basic & Applied Myology, 1(4):311-316, 1991.
25. Spence RK, Alexander JB, DelRossi AJ, Cernaianu AC, **Vertrees RA**: Transfusion guidelines for cardiovascular surgery. Lessons learned from bloodless surgery in Jehovah's Witnesses. J Vasc Surg 16(6):825-829, 1992.
26. **Vertrees RA**, McDaniel L, Deyo DJ, Kurusz M, Nutt LK, Zwischenberger JB: Nuclear magnetic resonance of the brain during cardiopulmonary bypass: technical considerations. Proceeding of the American Academy of Cardiovascular Perfusion 15:147-151, 1994.

27. McDaniel LB, Nguyen T, Zwischenberger JB, **Vertrees RA**, Uchida T, and Kramer GC: Hypertonic saline dextran prime reduces increased intracranial pressure during cardiopulmonary bypass in pigs. *Anesth Analg* 78:435-41, 1994.
28. **Vertrees RA**, Zwischenberger JB, McRea JC, Tao W, Kurusz M, Conti VR: Reversal of anticoagulation without protamine using a heparin removal device following cardiopulmonary bypass. *ASAIO J* 40(3): M560-564, 1994.
29. **Vertrees RA**, Weiike T, Kramer GC, Nutt L, McDaniel LB, DeVine SD, Jesmok G, Zwischenberger JB: Tumor necrosis factor monoclonal antibody prevents alterations in leukocyte populations during cardiopulmonary bypass. *ASAIO* 40(3); M554-559, 1994.
30. Conti VR, **Vertrees RA**, Zwischenberger JB, Kurusz M: First clinical use of a heparin removal device: an alternative to protamine. *J Thorac Cardiovasc Surg*. 109:1015-1017, 1995.
31. McDaniel LB, Nguyen T, **Vertrees RA**, Zwischenberger JB, Kramer GC: Mixed venous oxygen saturation during bypass poorly predicts regional venous saturation. *Anesth & Analg*. 80:466-472, 1995.
32. Tao W, Zwischenberger JB, Nguyen TT, **Vertrees RA**, Nutt LK, McDaniel LB, Kramer GC: Hypertonic saline/dextran for cardiopulmonary bypass reduces gut tissue water but does not improve mucosal perfusion. *J Surg Res*. 57: 718-725, 1994.
33. Hundley DS, **Vertrees RA**, Brownstein L, Garwood AP, DelRossi AJ: Determination and comparison of heat exchange efficiency of four commercially available blood cardioplegia sets. *Perfusion* 9(5): 343-347, 1994.
34. Tao W, Zwischenberger JB, Nguyen TT, **Vertrees RA**, McDaniel LB, Nutt LK, Herndon DN, Kramer GC: Gut mucosal ischemia during normothermic cardiopulmonary bypass results from blood flow redistribution and increased oxygen demand. *J Thorac Cardiovasc Surg* 110:819-828, 1995.
35. **Vertrees RA**, Tao W, Pencil SD, Sites JP, Altoff D, Zwischenberger JB: Induction of whole body hyperthermia with veno-venous perfusion. *ASAIO J* 42:250-254, 1996.
36. **Vertrees RA**, Conti VR, Lick SD, Zwischenberger JB, McDaniel LB, Shulman G: Adverse effects of postoperative reinfusion of shed mediastinal blood. *Ann Thorac Surg* 62:717-723, 1996.
37. Alpard SK, **Vertrees RA**, Tao W, Deyo DJ, Brunston Jr, RL, Zwischenberger JB: Therapeutic hyperthermia. *Perfusion* 11: 425-435, 1996.
38. **Vertrees RA**, Brunston RL Jr., Tao W, Deyo DJ, Zwischenberger JB. Parallel dialysis normalizes serum chemistries during veno-venous perfusion-induced hyperthermia. *ASAIO J* 43(5):M806-811, 1997.

39. Tao W, Deyo DJ, Brunston RL Jr., **Vertrees RA**, Grochoske TL, Zwischenberger JB. Efficacy of a heparin removal device in comparison with protamine after hypothermic cardiopulmonary bypass. *ASAIO J* 43:(5)M825-830, 1997.
40. Tao W, Callahan JB, **Vertrees RA**, Brunston RL Jr., Deyo DJ, McRea JL, Grochoske TL, Zwischenberger JB. Heparin clearance profiles following systemic anticoagulation using a heparin removal device system. *ASAIO J* 43:(6)922-926, 1997.
41. Zwischenberger JB, **Vertrees RA**, Brunston Jr., RL, Tao W, Alpard SK, Brown Jr PS. Application of a heparin removal device (hrd) in patients with known protamine hypersensitivity. *J Thorac Cardiovasc Surg* 115:(3)729-731, 1998.
42. Tao W, Deyo DJ, Brunston RL Jr., **Vertrees RA**, Zwischenberger JB. Extracorporeal heparin adsorption following cardiopulmonary bypass with a heparin removal device - An alternative to protamine. *Crit Care Med* 26:1096-1102, 1998.
43. Shulman G, **Vertrees RA**, McQuitty CR, Conti VR. Acute normovolemic red cell exchange for cardiopulmonary bypass in sickle cell disease. *Ann Thorac Surg* 65:1444-6, 1998.
44. Tao W, Deyo DJ, Alpard SK, **Vertrees RA**, Hoang V, Zwischenberger JB. Significant reduction in circuit pressure with modified plasma separation chamber for a heparin removal device. *ASAIO J* 1:50-52, 1999.
45. Lick SD, Brown PS, Kurusz M, **Vertrees RA**, McQuitty CK, Johnston WE. Technique of controlled reperfusion of the transplanted lung in humans. *Ann Thorac Surg* 69:910-912, 2000.
46. **Vertrees RA**, Zwischenberger JB, Boor PJ, Pencil SD. Oncogenic *RAS* Results in increased cell kill due to defective thermoprotection in lung cancer cells. *Ann Thorac Surg* 69:1675-80, 2000.
47. **Vertrees RA**, Bidani A, Deyo DJ, Tao W, Zwischenberger JB. Veno-venous perfusion-induced systemic-hyperthermia: blood flow redistribution and thermal gradients. *Ann Thorac Surg* 70:644-52, 2000.
48. **Vertrees RA**, Deyo DJ, Quast M, Wei G, Lightfoot KM, Boor PJ, Zwischenberger, JB. Development of human to murine orthotopic xenotransplanted lung cancer model. *J Invest Surg* 13:1-10, 2000.
48. Lick SD, Brown PS, Kurusz M, **Vertrees RA**, McQuitty CK, Johnston WE. Reply. *Ann Thorac Surg* 70:1450, 2000.
50. Zwischenberger JB, Tao W, Deyo DJ, **Vertrees RA**, Alpard SK, Shulwan G. Safety and efficacy of a heparin removal device – a prospective randomized preclinical outcomes study. *Ann Thorac Surg* 71:270-7, 2001.

51. **Vertrees RA**, Zwischenberger JB, Woodson L, Bedell E, Deyo DJ and Chernin JM. Veno-venous perfusion – induced systemic hyperthermia: case report with perfusion considerations. *Perfusion* 16:243-248, 2001.
52. Button B, Baker RD, **Vertrees RA**, Allen SE, Brodwick MS, Kramer GC. Quantitative assessment of a circulating depolarizing factor in shock. *Shock* 15(3):239-44, 2001.
53. Zwischenberger JB, **Vertrees RA**, Woodson LC, Alpard SK, Chernin JM, Bedell EA. Veno-venous perfusion-induced systemic hyperthermia percutaneous in advanced non-small cell lung cancer: initial clinical experience. *Ann Thorac Surg* 72:234-42, 2001.
54. Kurusz M, Roach JD, **Vertrees RA**, Girouard M, Lick SD. Leukocyte filtration in lung transplantation. *Perfusion J.* 17(2):63-67, 2002.
55. **Vertrees RA**, Leeth A, Girouard M, Roach J, Kurusz, M, Zwischenberger JB. Therapeutic whole-body hyperthermia: a review of theory, design and application. *Perfusion J.* 17:279-290, 2002.
56. **Vertrees RA**, Nason R, Hold MD, Leeth AM, Schmalstieg FC, Boor PJ, Zwischenberger JB. Smoke/burn injury-induced respiratory failure elicits apoptosis in ovine lungs and cultured lung cells, ameliorated with arteriovenous CO₂ Removal. *Chest* 125:1472-1482, 2004.
57. **Vertrees RA**, Stark M, Auvil J, Rohrer CH, Rousou JH, Engelman RM: Weight gain and cardiopulmonary bypass. *J Extra Corpor Technol* 36 (4):413-7, 2004.
58. Zwischenberger JB, **Vertrees RA**, Bedell E, McQuitty C, Chernin J, Woodson LC: Percutaneous veno-venous perfusion-induced systemic hyperthermia for lung cancer: A Phase I safety study. *Ann Thorac Surg* 77:1916-1925, 2004.
59. He N, Li C, Zhang X, Sheng T, Chi S, Chen K, Wang Q, **Vertrees R**, Logrono R, Xie J. Regulation of lung cancer cell growth and invasiveness by β -TRCP. *Mol Carcinog* 42 (1): 18-28, 2005.
60. **Vertrees RA**, Das GC, Coscio AM, Xie J, Zwischenberger JB, Boor PJ. A mechanism of hyperthermia-induced apoptosis in RAS-transformed lung cells. *Mol Carcinog* 44:111-121, 2005.
61. **Vertrees RA**, Das GC, Popov VL, Coscio AM, Goodwin T, Logrono R, Zwischenberger JB, Boor PD. Synergistic interaction of hyperthermia and gemcitabine in lung cancer. *Cancer Biol Ther* 4(10):1144-1153, 2005.
62. **Vertrees RA**, Zwischenberger JB, Boor PJ, Popov V, McCarthy M, Solley TN, Goodwin T. Cellular differentiation in three-dimensional lung cell cultures. *Cancer Biol Ther* 7(3):404-412, 2008.
63. Lick SD, Vaidya S, Kollar AC, Boor PJ, **Vertrees RA**. Perioperative alemtuzumab (Campath-1H) and plasmapheresis for high-PRA, positive lymphocyte-crossmatch heart

transplant: a strategy to shorten LVAD support. J Heart Lung Transplant
27(9):1036-1039, 2008.

64. **Vertrees RA**, McCarthy M, Solley T, Popov V, Roatin J, Pauley M, Wen X, and Goodwin T: Development of a three-dimensional model of lung cancer using cultured transformed cells. Cancer Biol Therap, 8(3): 345-356, 2009.
65. **Vertrees RA**, Zwischenberger JB, Winetz J: Systemic Hyperthermia as Hyperthermic Extracorporeal Applied Tumor Therapy for Six Cycles to Treat Recurrent Metastatic Peritoneal Serous Papillary Carcinoma. Cureus. 2023 Jan; 15(1): e34100. Published online 2023 Jan 23. doi: 10.7759/cureus.34100 PMCID: PMC9870298
66. Zwischenberger JB, Mashni JP, Fischer R, Essa J, Hatchett S, Winetz J, **Vertrees RA**. Hyperthermic Extracorporeal Applied Tumor Therapy (HEATT) in Hospice-Eligible Cancer Patients. Perfusion, XXXXXXXXX

B. OTHER:

Dissertation:

- 1999 Pathobiology of Thermal Stress in Normal, Transformed and Malignant Lung Cells
2000 TX 4-909-886 (US Copyright)
Mentor/Chair – Paul J. Boor, M.D.
Members – Scot D. Pencil, M.D., Ph.D.
Mary Treinen-Moslen, Ph.D.
Marjorie Grafe, M.D., Ph.D.
B. Mark Evers, M.D.
Stephen P. Tomasovic, Ph.D.
(M.D. Anderson Cancer Center)
Joseph B. Zwischenberger, M.D.

Regulatory Submission:

- 1997 Phase I trial of PISH for non-small cell lung cancer-Investigational Plan Clinical Protocol
2004 Phase I trial HEATT (previously known as PISH) – Investigational Plan Clinical Protocol - A Phase 1 Trial of Hyperthermic Extracorporeal Applied Tumor Therapy (HEATT)
Approved and completed in 2004
2015 A Phase 1 Trial of Hyperthermic Extracorporeal Applied Tumor Therapy (HEATT®) Over Multiple Cycles for Terminal Ovarian Cancer-Final Report
Approved and completed in 2022

Letters To The Editor:

1. **Vertrees RA:** To Pulse or Not to Pulse. JECT 17, 1985
2. **Vertrees RA:** Perfusion – The future of the profession. Perfusion Life, Dec.1991
3. Lick SD, Brown PS, Kurusz M, **Vertrees RA**, McQuitty CK, Johnston WE. Reply to: Controlled Pulmonary Reperfusion: What is the Optimal Method of Delivery, Ann Thorac Surg 70:1446, 2000.

Invited Reviews:

1. **Vertrees RA.** Review of Pathophysiology and techniques of cardiopulmonary bypass. Vol 1, Utley JR (ed.) Proceedings of the American Academy of Cardiovascular Perfusion 5:182, 1984.
2. **Vertrees RA**, Engelman RM, Johnson JW III, Auvil J, Breyer RH, Rousou JA: Blood conservation during open heart surgery: A literature review. JECT 18:200-210, 1986.

3. **Vertrees RA**, Engelman RM: Blood conservation in cardiac surgery. *Revue Europeenne De Technologie Biomedicale* 4:7:225-231, 1985.
4. **Vertrees RA**, Brownstein L, DelRossi AJ: Anticoagulation and perfusion: an update. *Proceedings, Mechanisms in Perfusion V*, April, 1990.
5. **Vertrees RA**, Brownstein L, Cernaianu AC, Del Rossi AJ: Alterazioni morfologiche eritrocitarie indotte dalle pompe centrifughe. *Tekne News Letter* IX(2):11-20, 1993.
6. Kurusz, M, McRea, J.C., Tao W, **Vertrees RA**, Zwischenberger, JB. Heparin Removal Device: An Alternative Therapy. *Proceedings of the Amer. Academy of Cardiovascular Perfusion* 19:21-23, 1998.
7. **Vertrees RA**, Zwischenberger JB. Perfusion-Induced Hyperthermia: Potential Impact on the Profession. *Proceedings of the Amer. Academy of Cardiovascular Perfusion* 19:19-21, 1998.
8. **Vertrees RA**, Zwischenberger JB, Woodson LC, Bedell EA, Deyo DJ, Chernin JM. Veno-Venous Perfusion-Induced Systemic Hyperthermia: Case Report With Perfusion Considerations. *Proceedings of the Amer. Academy of Cardiovascular Perfusion* 21:119-121, 2000.

Invited Commentary:

1. Zwischenberger JB, **Vertrees RA**: Shigemura N, Akashi A, Nakagiri T, Hazama, K, Ohta M, Matsuda H. Pleural perfusion thermo-chemotherapy under VATS: A new less invasive modality for advanced lung cancer with pleural spread. *Ann Thorac Surg* 2004;77:1016-1022.
2. **Vertrees RA**, Zwischenberger: Matsuzaki Y, Edagawa M, Shimizu T, Hara M, Tomita M, Ayabe T, Onitsuka T. Intrapleural hyperthermic perfusion with chemotherapy increases apoptosis in malignant pleuritis. *Ann Thorac Surg* 2004;78:1769-1773.

Book Chapters:

1. **Vertrees RA**, Brownstein, L: Physiology of Blood Flow During Cardiopulmonary Perfusion. In: Cernaianu, AC, DelRossi, AJ, eds. Cardiac Surgery 1992. Plenum, The Language of Science Publishing Corporation 1992 p97-114.
2. **Vertrees RA**: Techniques in Autotransfusion. In: Cernaianu AC, DelRossi AJ, Spence RK, eds. Critical Issues in Surgery. Plenum, The Languages of Science Publishing Corporation 1993.
3. **Vertrees RA**, Stehling L: Alternatives to Allogenic Transfusion: Intraoperative and Perioperative Autologous Recovery. In: Petz, Swisler, Kleinman, Spence, Strauss, eds. Clinical Practice of Transfusion Medicine. p. 539-5611, 1996.

4. **Vertrees RA**, Kurusz M, Zwischenberger JB, McRea JC and Conti VR: Heparin removal after protamine reaction. In: Toomasian JM, Kurusz M. Stafford TB, eds. Case Report, Clinical Studies in Extracorporeal Circulation. Vol 2, The PREF Press, p. 54-61, 1996.
5. **Vertrees RA**, Goodwin T: Tissue Culture Models. In: Cagle P, Zander DS, Jagirdar J, Barrios R, Haque A, and Popper H, eds. Molecular Pathology of Lung Diseases. Vol 1, Springer, The language of Science, New York, p 2007.
6. **Vertrees RA**, Jordan JM. Hyperthermia and chemotherapy: the science. In: Helm WC, Edwards R. Intraperitoneal Cancer Therapy. Humana Press Inc., Totowa, NJ, 2007.
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C. ABSTRACTS:

1. **Vertrees RA**, Zwischenberger JB, Kramer GC, Nguyen TT, Tao W, McDaniel LB: Hypertonic saline/dextran solution significantly reduces volume requirements during cardiopulmonary bypass. J Invest Surg 6:385, 1993.
2. **Vertrees RA**, Tao W, Nutt LK, McDaniel LB, Devine S, Nguyen TT, Jesmok GJ, Kramer GC, Zwischenberger JB: Tumor necrosis factor monoclonal antibody prevents alterations in leukocyte populations during cardiopulmonary bypass. ASAIO Abstracts, 1994, p57.
3. **Vertrees RA**, Zwischenberger JB, McRea JC, Kurusz M, Conti VR: Reversal of anticoagulation without protamine. ASAIO Abstracts 1994, p.58.
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5. **Vertrees RA**, Sites JP, Pencil SD, Tao W, Kinsky M, Watson W, Zwischenberger JB: Induction of whole body hyperthermia with veno-venous perfusion. ASAIO J 41:62, 1995.
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8. **Vertrees RA**, Pencil SD, Tao W, Sites JP, Bonnen MD, Kramer GC, Zwischenberger JB: Pathology of perfusion-induced whole body hyperthermia in acute swine. J Invest Surg. 8(4):288, 1995.
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10. Tao W, Callahan JD, **Vertrees RA**, Brunston RL, Jr, Deyo DJ, McRea JC, Grochoske TL, Zwischenberger JB: Heparin clearance profiles following systemic anticoagulation using a heparin removal device. ASAIO J 42(2):63, 1996.
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39. Lilja J, Winetz J, Bastidas JA, Clarke R, Hall J, Winters K and **Vertrees RA**: Systemic Hyperthermia Delivered as Hyperthermia Extracorporeal Applied Tumor Therapy (HEATT™), for Recurrent Ovarian Cancer: Case Report of Safe Delivery of Six Cycles. Tenth International Symposium on Regional Cancer Therapies. Feb 2015
40. **Vertrees RA**, Winetz J, Wells A, Good A, Lakey JT, Zwischenberger JB: Hyperthermic Extracorporeal Tumor Therapy (HEATT); Evaluation of New Sorbents; ASAIO 2021
41. Zwischenberger JB, Winetz J, Fischer R, Essa J, **Vertrees RA**: Hyperthermic Extracorporeal Applied Tumor Therapy (HEATT®) for Treatment of Advanced, Unresponsive, Hospice Eligible Cancer Patients. ASAIO 2022

IN PRESS:

SUBMITTED:

Vertrees, RA, Winetz, J, Alicia Wells ² Adam Gold², Lakey, JRT² Zwischenberger, JB³: Hyperthermic Extracorporeal Tumor Therapy (HEATT®); Evaluation of a New Device. Submitted to ASAIO, March 1, 2021

Zwischenberger JB, Winetz J, Fischer R, Essa J, **Vertrees RA**: Hyperthermic Extracorporeal Applied Tumor Therapy (HEATT®) for Treatment of Advanced, Unresponsive, Hospice Eligible Cancer Patients. ASAIO 2024

IN PREPARATION:

Manuscripts:

Vertrees, RA, Winetz, J, Zwischenberger, JB: Hyperthermic Extracorporeal Applied Tumor Therapy (HEATT) in Ovarian Carcinoma. Prepared for J of Clinical Medicine. Jan 2023

US Patents

1. **US Patent No. 11,065,379.** “Method and System for Controlled Hyperthermia” issued 7/20/2021. This patent focuses on the method for controlled hyperthermia.
2. **US Patent No. 11,185,622.** “Method and System for Controlled Hyperthermia” issued 11/30/2021. Divisional application of issued patent 11,065,379. This patent focuses on the dialysis and detoxification methods inherent in the VAI Controlled Hyperthermia process.
3. **US Patent No. 11,191,883.** “Method and System for Controlled Hyperthermia” issued 12/07/2021. Divisional application of issued patent 11,065,379. This patent focuses on the method for calculating Hyperthermia Treatment Units (HTU’s).
4. **US Patent No. 11,239,551.** “Method and System for Controlled Hyperthermia” issued 1/11/2022. Divisional application of issued patent 11,065,379. This patent focuses on the apparatus for treating various conditions from viral infections including COVID-19.
5. **US Patent Application 17/356,658.** Filed 6/24/2021. This is the fourth and final divisional of issued patent 11,065,379. This application is in the examination process. This application focuses on treatment of the blood supply to eliminate viruses.
6. **US Patent Application 17/404,956.** “Improved Method and System for Controlled Hyperthermia” filed August 17, 2021. This application discloses and claims improvements in the process in 2021. It is in the queue for examination.

International Patent Application

International Patent Application PCT/US21/46603 “Improved Method and System for Controlled Hyperthermia” filed August 19, 2021. Identical to US Pat App. 17/404,956. Received