A. Executive Summary

The Division combines 2 specialties, Hematology and Oncology. There are 2 faculty focusing on benign hematology and thrombosis, 4 faculty treating benign and malignant hematology, 11 medical oncologists, 1 internist (lymphedema), 6 fellows, 3 post-doctoral fellows, 6 midlevel providers, about 70 nurses and staff in the outpatient clinic. Dr. Eswar Tipirneni started in the fall of 2015 and replaces Dr. Valentine at Central Vermont Medical Center (CVMC). He works with Dr. Ospina, and covers not only CVMC, but also Gifford Hospital in Randolph. Dr. Elvira Umyarova has joined our group in July 2016. She will focus her research and clinical expertise on acute leukemia. She is coming from the University of South Carolina in Charleston.

PROGRAMS:
The Division supervises

- The Thrombosis & hemostasis Program, (Dr. Cushman, PI)
- The Apheresis Program, (Dr. Sprague, PI)
- The Hemophilia Treatment Center supported by a federal grant, (Dr. Holmes, PI)
- The Stem Cell Transplant Program, which was reaccredited in 2016, (Dr. Sprague, PI)
- The High Risk Breast Program, a clinical research program, (Dr. Wood, PI)
- Cancer Familial Genetics, (Drs. Wood and Greenblatt, PI’s)
- Oncology Rehabilitation, (Dr. Dittus, PI)
- Lymphedema Services, (Dr. O’Brien, PI)

Our group embraces the mission of the COM and UVMMC with cost effective high quality care, cutting-edge research, and dedication to all aspects of teaching and research.

Clinical work

Clinical efforts for 2016 (pro-rated) include a heavy clinical load with 33,500 outpatient visits (about 2,300 new patients), approximately 12,100 treatment infusion/injection patients and about 7,000 inpatient visits. We are also the attending for patients of local private practices when they are hospitalized at UVMMC. This year, cancer care is being reorganized into the Cancer Service Line, which is a transdisciplinary effort to provide optimal patient-centered care. The Cancer Service Line is organized into Transdisciplinary Academic Teams (TDT), groups of expert physicians and scientists who focus on all aspects of academic medicine for the specific cancers they treat and research. These TDT’s are being supported by global services. To name a few, psychiatry and counseling services (Dr. Rabinowitz and 4 psychologists), palliative care (Janet Ely), nutrition, oncology rehabilitation (Dr. Dittus), genetic counseling and other needed services for cancer patients. TDT’s’ principles include tumor boards, multidisciplinary clinics where at a single visit patients may be seen by a number of oncologic or specialty provider’s standardization of clinical care pathways, clinical trial menu and accrual, and education.
Established TDT clinics exist for breast, upper GI, ENT, lung cancer, GU, melanoma, sarcoma, leukemia’s and lymphomas. Approximately 674 cases were presented at the TDT clinics. We thank all members of other Divisions for their participation.

Research
Research within the Division is done in several collaborative ways (clinical trials, basic science research and epidemiology) covering a number of broad themes (new drug development, cancer treatment and prevention, thrombosis, cardiovascular and stroke epidemiology, supportive care of cancer patients, cancer and exercise, and cancer and coagulation). Working within Transdisciplinary Teams, the faculty of the Hematology/Oncology Division are principal investigators for the majority of the over 200 cancer related studies at the University of Vermont, with 25% of these studies being investigator initiated. Available trials include Phase I-III treatment trials, supportive care and translational studies, with the majority of the later (supportive care and translational studies) being investigator initiated. Investigators within the Division receive funding from clinical trials (cooperative group and pharmaceutical trials), NIH NCI, NHLBI, NINDS and ACS, and through the UVMCC some of the LCCRO funds support Division research activities.

Publication highlights include
- Multi-gene panel testing for hereditary cancer susceptibility in a rural Familial Cancer Program, by Hermel DJ, McKinnon WC, Wood ME, Greenblatt MS (Fam Cancer. 2016);
- Skeletal muscle fiber size and fiber type distribution in human cancer: Effects of weight loss and relationship to physical function, by Toth MJ, Callahan DM, Miller MS, Tourville TW, Hackett SB, Couch ME, Dittus K (Clin Nutr. 2016);

Dr. Greenblatt is the president of the Human Genome Variation Society. Dr. Cushman serves on the National Board of Directors of the American Heart Association. Dr. Wood serves on the American Society of Clinical Oncology CME committee as the liaison to the American Society of Clinical Oncology Prevention Committee and on the Board of the New England Clinical Oncology Society Board, and on the Board of Trustees of the Alliance for Clinical Trials in Oncology. Dr. Ades is the president of the New England Clinical Oncology Society. Dr. Nunnink serves on the Board of the American Society of Clinical Oncology and is the American Society of Clinical Oncology liaison to the American Medical Association. Dr. Verschraegen has been appointed on the Board of Directors of the Alliance for Clinical Trials in Oncology and on the National Cancer Institute Gynecologic Cancers Steering Committee.
The Mission of the Thrombosis and Hemostasis Program (THP) is to deliver high quality evidence-based care to patients with venous thromboembolism (VTE), stroke, post-thrombotic syndrome and bleeding disorders, as well as rare disorders. The THP group, including clinicians and clinic staff, meets twice a month to discuss operations, projects and research.

Clinicians working in the program include 3 faculty, Drs. Cushman, Zakai and Holmes, 1 chief medicine resident, Dr. Halevy, 2 hematology oncology fellows doing continuity clinic, 2 nurse practitioners and 2 nurses. There were 740 THP referrals in 2015, an 8.2% increase over 2014. The THP group led or collaborated in over 30 quality improvement project/activities in 2015.

New Program to reduce VTE in Patients with Cancer
This quality initiative program, led by Dr. Chris Holmes, is aimed at preventing venous thromboembolism (VTE) without increasing bleed risk for patients with cancer. This new clinical intervention called VTE-PACC (VTE Prevention in the Ambulatory Cancer Center) was launched by our division, in collaboration with the Jeffords Institute for Quality on October 1, 2015. The program is fully operational and assesses risk for clotting and bleeding for all patients beginning chemotherapy or biologic therapy in the UVM Cancer Center clinic. To date over 300 patients have been assessed. Patients found to be at high risk for VTE are referred to the Thrombosis and Hemostasis Program for follow-up and recommendations. The program involves a team-based approach to educate all patients on their risk of blood clots and tailors VTE prevention treatments to the patient’s needs and risks by collaborating with oncologists, hematologists, nursing staff and pharmacists. Of all the patients assessed, 94% have received VTE education, 22% of the patients were found to be high risk of thrombosis and approximately 75% of these were treated prophylactically. To date there have been less than 3% of bleeding adverse events that required holding the preventative anticoagulation. The rate of VTE has declined from 14% to <5% among all patient screened and educated through the program.

Hemophilia Treatment Center (HCT)
The hemophilia treatment center is directed by Dr. Holmes. It is one of 140 federally funded centers offering comprehensive care to patients with hemophilia and other bleeding disorders. The HTC is supported, in part, by two active grants—one from the Centers for Disease Control (CDC) and the other from the Federal Health Resources and Services Administration (HRSA). Annually, the Vermont HTC participates in 4 national surveillance programs; Population Surveillance, American Thrombosis and Hemostasis Network (ATHN) database, Community Counts and Rare Bleeding Disorders. For the first time this year, we participated in a national patient experience survey on transition for pediatric patients. Dr. Holmes sits on the Region 1 Executive Committee, which develops regional and national policies relevant to the care of patients with bleeding disorders. In addition, UVMMC is also now participating in a national program to access transitions of care with Dr. Holmes as the site PI for this multi-institutional quality grant from the ATHN.
B. Faculty

**Steven Ades, MD, MSc – Associate Professor**
Associate Director, Hematology/Oncology Fellowship Program
Leader, University of Vermont Medical Center Upper Gastrointestinal Oncology Transdisciplinary Team
Co-Leader, University of Vermont Medical Center Medical Center Genitourinary Oncology Transdisciplinary Team
In-Patient Hematology/Oncology Service Director
Research interests include: GI and GU cancers, supportive care and thrombosis in malignancy

**George F. Atweh, MD-Professor**
Clinical Director, Cancer Clinical Trials Office
Member, Protocol Review and Monitoring Committee, UVM Medical Center
Member, Data Safety Monitoring Board, UVM Cancer Center
Cabinet Member, Division of Hematology/Oncology
Research interests include: Molecular basis of benign and malignant blood disorders, and clinical trials in malignant hematology

**Maura Barry, MD-Assistant Professor**
Associate Director, Hematology/Oncology Fellowship Program
Research interests include: GI and head and neck cancers

**Mary Cushman, MD, MSc – Professor, Medicine and Pathology**
Director, Thrombosis and Hemostasis Program
Research interests include: Etiology of vascular diseases and other chronic diseases; racial disparities; venous thrombosis and post thrombotic syndrome

**Kim Dittus, MD, PhD – Assistant Professor**
Medical Director of Oncology Rehabilitation
Chair Research Committee, Program in Integrative Health
Research interests include: Cancer survivorship, energy balance

**Edmund Folefac, MD – Assistant Professor**
Research interests include: GI and lung cancers

**Marc Greenblatt, MD – Professor**
Research interests include: Molecular genetics of mutation in cancer genes and gastrointestinal cancers

**Chris Holmes, MD, PhD – Associate Professor**
Director, Vermont Regional Hemophilia Treatment Center
Assistant Director, Thrombosis and Hemostasis Program
Section Chief, Hematologic Malignancies
Research interests include: venous thrombosis, platelet function, coagulation, and cancer

**Farrah Khan, MD – Assistant Professor**
Research interests include: Care of patients with breast cancer and lung cancer

**J. Chris Nunnink, MD, FASCO – Associate Professor**
Attending Physician
Research interests include: Oropharyngeal Cancer and GU Cancer

**Patricia O’Brien, MD – Assistant Professor Clinical Scholar**
Director, Lymphedema Program
**Julie Olin, MD – Associate Professor**  
Attending Physician

**Julian Sprague, MD, PhD – Assistant Professor**  
Director, Hematology/Oncology Fellowship Program  
Research interests include: Leukemia and neurotoxicity

**Eswar Tipirneni, MD—Clinical Assistant Professor**  
Physician at CVMC

**Claire Verschraegen, MD – Professor**  
Director, Hematology/Oncology Division  
Co-Director, University of Vermont Cancer Center  
Research interests include: Mesothelioma, GYN, Lung and other rare cancers

**Marie Wood, MD – Professor**  
Director, Familial Cancer Program  
Assistant Director, Hematology/Oncology Division  
Medical Director of the Cancer Clinic  
Research interests include molecular markers of breast cancer risk, attitudes of primary care physicians regarding cancer genetics, breast cancer screening and prevention

**Neil Zakai, MD, MSc – Associate Professor of Medicine and Pathology**  
Research interests include: Epidemiology and novel risk factors for venous thrombosis and cardiovascular disease. Epidemiology, causes, and consequences of anemia in diverse populations. Venous thrombosis causes and prevention, post thrombotic syndrome.

**List of Hematology/Oncology Fellows**

Samir Ambrale, MD – 3rd year fellow  
Inder Lal, MD – 3rd year fellow  
Hibba Rehman, MD – 2nd year fellow  
Jose Ruades, MD – 2nd year fellow  
Bhargavi Pulluri, MD – 1st year fellow  
Purva Sharma, MD – 1st year fellow

**List all NP’s and PA’s**

Jamie Kelly, PA  
Penny Gibson, PA  
Anne Berkowitz, NP  
Janet Ely, NP  
Patricia Lewis, NP  
Emily Parenteau, MSN, FNP Nurse Practitioner, Thrombosis & Hemostasis Clinic

**List all graduate students, post-doctoral fellows, MD PHD students**

Katharine Cheung, MD, Post-Doctoral Associate  
Kara Landry, MD, Post-Doctoral  
Daniel Douce, MD, Graduate Student, LCCRO Fellow  
Elizabeth Hall, MD, Resident Research Project mentored by Neil Zakai  
Matthew Lebow, BS, Post-BACC Student  
Damon Houghton, MD: Heme/Onc Fellow UNC, mentored by Neil Zakai
F. **Endowed Professorships**

G. **Leadership in Professional Societies**

**Steven Ades, MD**

- Member, UVM Faculty Senate Financial & Physical Planning Committee
- Member, UVM Surgical Oncology Faculty Search Committee
- Associate Program Director, Hematology Oncology Fellowship Program
- Member, UVM Medical Center Hematology/Oncology Fellowship Program Evaluation Committee
- Member, UVM Medical Center Hematology/Oncology Fellowship Clinical Competency Committee
- Member, Vermont Cancer Center Protocol Review and Monitoring Committee
- President, Northern New England Clinical Oncology Society
- Member, Alliance Symptom Intervention Committee

**Maura Barry, MD**

- Member, UVM Medical Center Faculty Development Committee
- Member, UVM Medical Center Hematology/Oncology Fellowship Program Evaluation Committee
- Member, UVM Internal Medicine Residency Program Evaluation Committee
- Member, UVM Medical Center Hematology/Oncology Fellowship Clinical Competency Committee

**Mary Cushman, MD, MSc**

- Member, Scientific Program Planning Committee, World Heart Federation and American Board Director, American Heart Association
- Member of the American Society of Hematology Media Experts Subcommittee.
- Member, Program Committee for Venous thrombosis Disorders, International Society on Thrombosis and Haemostasis 2015 Congress, Toronto.
- Board Director, North American Thrombosis and Hemostasis Society
- President, Board of Directors Vermont District, American Heart Association
- Member, Medical Alumni Executive Committee
- Member, Volunteer Oversight Group, American Heart Association
- Member, Quality Committee, American Society of Hematology
- Member, Media Experts Committee, American Society of Hematology
- Member, Statistics Committee, American Heart Association
- Member, Corporate Relations Review Committee
- Member, ASH Maintenance of Certification Committee

**Kim Dittus, MD, PhD**

- Member, Protocol Review Committee, UVM Cancer Center
- Member, Cancer Control Committee, UVM Medical Center
- Member, Champlain Valley Healthy Lifestyle Collaborative
- Member, Symptom Intervention Committee, Alliance
Marc Greenblatt, MD
Member, American Association of Cancer Research
Member, American Society of Clinical Oncology
Member, American Society of Human Genetics
Member, Collaborative Group of the Americas on Inherited Colorectal Cancer
Member, International Society for Gastrointestinal Hereditary Tumors (InSiGHT)
Member, Human Genome Organization Mutation Database Initiative
Member, Human Genome Variation Society
Member, Human Variome Project (HVP)
Member, International Mismatch Repair Consortium (IMRC)
Member, Cancer and Leukemia Group B- Alliance for Clinical Trials
Member, National Surgical Adjuvant Breast Program
Member, Vermont Medical Society
Co-Chair, Working Group on Assessment of Pathogenicity, Human Variome Project
Core Member, Variant Interpretation Committee, International Society for
Gastrointestinal Hereditary Tumors (InSiGHT)
Co-Chair, Working Group on Assessment of Pathogenicity, Collaborative Group of the
Americas on Inherited Colorectal Cancer (CGA-ICC)
Member, Scientific Advisory Council, Human Variome Project
Present, Human Genome Variation Society (HGVS)

Chris Holmes, MD, PhD
Member, Thrombosis Committee, American Thrombosis and Hemostasis Network,
Centers for Disease Control
National Chair, Hemophilia Transitions, American Society of Hematology Workgroup on
Transitions; American College of Physicians Pediatric to Adult Care Transition Initiative
Executive Board Member, National Network, Health and Human Services New England
Comprehensive Hemophilia Diagnostic and Treatment Centers
Director, Community Counts-Vermont, Centers for Disease Control (CDC) Public Health
Monitoring Program, Division of Blood Disorders
Member, Institutional Review Board, Committee on Human Research in the Medical
Sciences (CHRMS), University of Vermont

Farrah Khan, MD
Chair, Breast Research Meeting
Member: UVMMC Department of Medicine Faculty Development Committee, Faculty
Engagement Committee
Member, UVMMC Department of Medicine Quality Assurance and Improvement
Committee

J. Chris Nunnink MD, FASCO
Member, UVM Medical Center Clinical Integration Committee
Member, UVM Medical Center CIC Committee representing Oncology
Co-Chair, UVM Medical Center Head and Neck Multidisciplinary Clinic
Director, UVM Cancer Center Network Development
Julian Sprague, MD
Member, American Society of Clinical Oncology Board of Directors
Member, American Society of Clinical Oncology Strategic Planning Committee
Member, American Society of Clinical Oncology Clinical Guidelines Committee
Member, Northern New England Clinical Oncology Society Board of Directors
Member, UVM Medical Center, Transfusion Committee
Member, UVM Medical Center, Ethics Committee
Member, UVM Medical Center, Medical School Curriculum Committee
Member, American Society of Hematology
Member, American Society of Clinical Oncology
Member, American College of Physicians

Claire Verschraegen, MD
Member, ACS New England Cancer Director’s Roundtable, Boston, MA, Conference Committee
Member, NCI Gynecological Cancers Steering Committee, SWOG representative
Board of Directors Alliance for Clinical Trials in Oncology
Member, NCI Uterine Cancer Task Force Member, SWOG representative
Member, SWOG Rare Cancers Task Force
Member, Vermonters Taking Action Against Cancer (VTAAC) –Steering Committee
Member, SWOG Early Therapeutics Committee
Member, SWOG Lung Cancer Committee
Member, SWOG Cancer Control and Prevention Committee
Member, Connective Tissue Oncology Society
Member, American College of Physicians
Board of Director, Alliance for Clinical Trials in Oncology
Board of Director, National Cancer Institute Gynecologic Cancers Steering Committee

Marie Wood, MD
Member, Alliance, Prevention Committee
Member, Alliance Foundation, Board of Trustees
Member, American Society of Clinical Oncology, CME Committee
Member, Northern New England Clinical Oncology Society Board of Directors
Member, American College of Physicians
Member, National Surgical Adjuvant Breast and Bowel Project

Neil Zakai, MD
Member, American Heart Association, Disparities Research Network Peer Review Committee
Member, American Society of Hematology VTE Guideline Panel: Prevention of VTE in Medical Patients
Co-Chair, Hemophilia and Thrombosis Research Society, Research Committee
Vice Chair, American Heart Association Council on Epidemiology and Prevention, Publications Committee
Member, American Society of Hematology “Consult a Colleague” program-content expert “Hemostasis/Thrombosis”
Member, American Heart Association Representative to the American Association of Blood Banks: Blood Banks and Transfusion Services Standards Program Unit
Member, American Heart Association POP 2 Peer Review Committee
Member, Hemophilia and Thrombosis Research Society Membership Committee
Coordinator, Hematology/Oncology Fellowship Quality Project Committee
Member, UVM Medical Center Hematology/Oncology Fellowship Research Committee
Member, UVM Medical Center Internal Medicine Residency Committee
Guest Editor, Circulation

H. Editorships and Editorial Boards
Neil Zakai
Guest Editor, Circulation

I. Study Sections and Federal Advisory Boards
Clair Verschraegen
NCI Special Emphasis Panel
NCIC Review Section

J. Major Faculty Awards

K. Grants

George Atweh
NIHUO1 HL117709 Punam, Malik (PI) 08/15/13-05/31/18
Cincinnati Center Excellence in Hemoglobinopathies Research
Role: Co-Investigator

Maura Barry
University of Vermont Medical Center Foundation 12/1/15-12/1/17
Victoria Buffum Endowment
Quality of Life Assessment for Head and Neck Cancer Patients Undergoing Treatment in The First Year of Survivorship
Role: PI

Mary Cushman
NINDS 08/01/02-11/30/17
U01 NS041588
Etiology of Geographic and Racial Differences in Stroke Mortality
G Howard, PI, University of Alabama at Birmingham
ADC (current Vermont subcontract): $684,296
Role: Subcontract PI, 20%
NHLBI
R01 HL59367
Epidemiology of Venous Thrombosis and Pulmonary Embolism
AR Folsom, PI, University of Minnesota
ADC (current Vermont Contract: $33,723
Role: Subcontract PI, 10%

NHLBI
HHSN2682015000031
Multiethnic Study of Atherosclerosis
R. McClelland, PI, University of Washington
ADC (current Vermont Subcontract): $92,375 (current cycle)
Role: Subcontract PI, 5%

NIH
P01HD03192116A1
The National Longitudinal Study of Adolescent Health - Wave V
ADC: (Vermont Subcontract): $478,373
K Harris, PI; University of North Carolina, Chapel Hill
ADC: (Vermont Subcontract): $478,373
Role: Subcontract PI, 10%

NIH
P20GM109098
Effects of Perfluoroalkyl Chemicals on Stroke Incidence and Mortality
S Frisbee, PI
ADC (Subcontract): $6,978
Role: Subcontract, PI, 2%

NIH
NICHHD
Social Context, Life Course and Genetic Transcription in Add Health
ADC (subcontract): $23,489
Role: Subcontract PI, 2.5%

NIH
Transitions to Family Caregiving and its Impact on Health Indicators
ADC: $75,466
Role: Co-Investigator, 5%

Kim Dittus
NIH-NIGMS
Higgins (PI)
1P20GM103644-01A1
Vermont Center on Behavior and Health, COBRE
Junior Investigator Project: Predictors of Weight Loss Success in
Overweight Breast Cancer Survivors
Role: PI, Junior Investigator Project

**Marc Greenblatt**  
NIH-NHGRI Berg, Jonathan (PI) 11/1/13-10/31/17  
U01 HG007437-01  
A Knowledge Base for Clinically Relevant Genes and Variants  
Role: Co-Investigator

1 ROI CA164944 03/01/13-02-28-17  
NIH/NCI  
Classifying DNA Mismatch Repair Gene Variants of Unknown Significance  
Role: Co-PI

Vermont Cancer Center 5/1/15-2/29/16  
Classifying DNS Mismatch Repair Gene Variants of Unknown Significance  
Role: PI

**Chris Holmes**  
20694075 01/01-12/31/18  
The Joint Commission Oversight  
Pfizer & Bristol-Myers Squibb Funding  
Transition of Care for Patients with Venous Thromboembolism at ATHN Affiliated Sites  
Rajpurkar and DeSancho (Co-Is)  
Role: Site PI

ATHN2011001-1-1 Brettler (PI) 09/30/11-09/29/16  
Centers for Disease Control and Prevention  
American Thrombosis and Hemostasis Network  
Public Health Surveillance for the Prevention of Complications of Bleeding and Clotting Disorders  
Role: Sub-Investigator

**Claire Verschraegen**  
Lake Champlain Cancer Research Organization (LCCRO) Verschraegen (PI) 2011-Present  
Role: PI

Alliance for Clinical Trials in Oncology 2013-Present  
Role: Site PI

SPARK VT, Award $50,000 2014-Present  
Role: Co-PI

**Neil Zakai**  
NINDS U01 NS041588 04/2014-04/2019  
Etiology of Geographic and Racial Differences in Stroke Mortality
L. Publications


Olson NC, Butenas S, Lange E, Lange LA, Jenny NS, Walston J, Cushman M, Tracy RP, Reiner AP. Coagulation Factor XII Genetic Variation Ex Vivo Thrombin Generation and Stroke


Hermel DJ, McKinnon WC, Wood ME, Greenblatt MS, Multi-gene panel testing for hereditary cancer susceptibility in a rural Familial Cancer Program. Fam Cancer 2016 (Epub ahead of print) PMID: 27401692