## Thomas L. Ortel, M.D., Ph.D.

# Duke University Medical Center CURRICULUM VITAE

Date Prepared: 1 December 2018

Primary academic appointment: Medicine

Primary academic department: Department of Medicine, Division of Hematology

Secondary appointment: Department of Pathology

Present academic rank and title: Professor of Medicine

Professor of Pathology

Date and rank of first Duke faculty appointment: Associate in Medicine, July 1991

**Specialty certification and dates:** Internal Medicine (15 September 1988)

Hematology (1992-2002; recertified, 2002-2012;

2012-2022)

Citizen of: USA

**Education:** 

	Institution	Date	Degree
High School:	NPHS, New Palestine, IN	1971-1975	Diploma
College:	Indiana University,	1975-1979	B.S. in Microbiology,
	Bloomington, IN		with High Distinction.
Graduate or	Indiana University,	1979-1983	Ph.D. in Chemistry.
Professional School:	Bloomington, IN	1979-1985	M.D.

**Scholarly societies**: Phi Beta Kappa, National Honor Society, 1979

Alpha Chi Sigma, National Chemistry Honor Society, 1978

#### Professional training and academic career:

Institution	Position/Title	Dates
Duke University Medical Center	Internship & Residency in Internal	7/85-6/88
	Medicine	
Duke University Medical Center	Fellow, Division of Hematology/Oncology	7/88-6/91
Duke University Medical Center	Associate, Department of Medicine	7/91-6/93

Duke University Medical Center	Assistant Professor of Medicine	7/93-12/99
Duke University Medical Center	Assistant Professor of Pathology	12/94-5/04
Duke University Medical Center	Associate Professor of Medicine (non-	1/99-2/03
·	tenured	
Duke University Medical Center	Associate Professor of Medicine	3/03-3/08
·	(tenured)	
Duke University Medical Center	Associate Professor of Pathology	6/04-3/08
Duke University Medical Center	Professor of Medicine & Pathology	4/08-present
·	(tenured)	
Duke University Medical Center	Vice Chair for Basic and Translational	7/08-3/10
·	Research, Department of Medicine	
Duke University Medical Center	Director, Laboratory-Based Research,	4/10-present
	Department of Medicine	
Duke University Medical Center	Chief, Division of Hematology	3/13-present

#### **Publications:**

#### I. Refereed journals:

- 1. Takahashi N, Bauman RA, Ortel TL, Dwulet FE, Wang C-C, Putnam FW. Internal triplication in the structure of human ceruloplasmin. <u>Proc Natl Acad Sci, USA</u>, 1983; 80: 115-119.
- 2. Ortel TL, Takahashi N, Putnam FW. Separation of limited tryptic fragments of human ceruloplasmin by gel-permeation high-performance liquid chromatography. <u>J Chromatogr.</u> 1983; 266: 257-263.
- 3. Takahashi N, Ortel TL, Putnam FW. Single chain structure of human ceruloplasmin: the complete amino acid sequence of the whole molecule. <u>Proc Natl Acad Sci, USA</u>, 1984; 81: 390-394.
- 4. Ortel TL, Takahashi N, Putnam FW. Structural model of human ceruloplasmin based on internal triplication, hydrophobic/hydrophilic character, and secondary structure of domains. Proc Natl Acad Sci, USA, 1984; 81: 4761-4765.
- 5. Takahashi N, Takahashi Y, Ortel TL, Lozier JN, Ishioka N, Putnam FW. Purification of glycopeptides of human plasma proteins by HPLC. <u>J Chromatogr</u>, 1984; 317: 11-26.
- 6. Ortel TL, Onorato JJ, Bedrosian CL, Kaufman RE. Anti-fibrinolytic therapy in the management of the Kasabach Merrit Syndrome. <u>Am J Hematol</u>, 1988; 29: 44-48.
- 7. Ortel TL, Kallianos J, Gallis H. Group C streptococcal arthritis: case report and review of the literature. Rev Infect Dis, 1990; 12: 829-837.
- 8. Doherty DC, Ortel TL, de Bruijn N, Greenberg CS, van Tright III P. "Heparin-free" cardiopulmonary bypass: first reported use of heparinoid (Org 10172) to provide anticoagulation for cardiopulmonary bypass. Anesthesiology, 1990; 73: 562-565.
- 9. Kane WH, Devore-Carter D, Ortel TL. Expression and characterization of recombinant human factor V and a mutant lacking a major portion of the connecting region. Biochemistry, 1990; 29: 6762-6768.
- 10. Ortel TL, Gockerman JP, Califf RM, McCann RL, O'Connor CM, Metzler DM, Greenberg CS. Parenteral anticoagulation with the heparinoid Lomoparan (Org 10172) in patients with heparin induced thrombocytopenia and thrombosis. <a href="https://doi.org/10172">Thromb Haemostas</a>, 1992; 67: 292-296.

- 11. Ortel TL, Devore-Carter D, Quinn-Allen MA, Kane WH. Deletion analysis of recombinant human factor V. Evidence for a phosphatidylserine binding site in the second C-type domain. J Biol Chem, 1992; 267: 4189-4198.
- Ortel TL, Quinn-Allen MA, Charles LA, Devore-Carter D, Kane WH. Characterization of an acquired inhibitor to coagulation factor V. Antibody binding to the second C-type domain of factor V inhibits the binding of factor V to phosphatidylserine and neutralizes procoagulant activity. J Clin Invest, 1992; 90: 2340-2347.
- 13. Wiedmer T, Hall SE, Ortel TL, Kane WH, Rosse WF, Sims PJ. Complement-induced vesiculation and exposure of membrane prothrombinase sites in platelets of paroxysmal nocturnal hemoglobinuria. Blood, 1993; 82: 1192-1196.
- 14. Ortel TL, Charles LA, Keller FG, Marcom PK, Oldham, Jr. HN, Kane WH, Macik BG. Topical thrombin and acquired coagulation factor inhibitors: clinical spectrum and laboratory diagnosis. <u>Am J Hematol</u>, 1994; 45: 128-135.
- Ortel TL, Quinn-Allen MA, Keller FG, Peterson JA, Larocca D, Kane WH. Localization of functionally important epitopes within the second C-type domain of coagulation factor V using recombinant chimeras. <u>J Biol Chem</u>, 1994; 269: 15898-15905.
- 16. Provenzale JM, Heinz ER, Ortel TL, Macik BG, Charles LA, Alberts MJ. Neuroradiologic findings in patients with elevated antiphospholipid antibodies. <u>Radiology</u>, 1994; 192: 531-537.
- 17. Charles LA, McGlasson DL, Hawksworth BA, Ashcraft JH, Ortel TL. Evaluation of an abbreviated procedure for Staclot LA® for the confirmation of lupus anticoagulants. <u>Blood Coag Fibrinol</u>, 1994; 5: 601-604.
- 18. Greenberg CS, Hursting MJ, Macik BG, Ortel TL, Kane WH, Moore BM. Evaluation of preanalytical variables associated with prothrombin fragment 1.2. <u>Clin Chem</u>, 1994; 40: 1962-1969.
- 19. Joyner KA, Ortel TL. A sensitive DRVVT reagent system for the detection of lupus anticoagulants. Clin Appl Thrombosis/Hemostasis, 1995; 1: 73-75.
- 20. Keller FG, Ortel TL, Quinn-Allen MA, Kane WH. Thrombin-catalyzed activation of recombinant human factor V. <u>Biochemistry</u>, 1995; 34: 4118-4124.
- 21. Provenzale JM, Ortel TL. Anatomic distribution of venous thrombosis in patients with antiphospholipid antibodies: imaging findings. <u>Am J Roentgen</u>, 1995; 165: 365-368.
- 22. Provenzale JM, Ortel TL, Nelson RC. Adrenal hemorrhage in patients with the primary antiphospholipid antibody syndrome: imaging findings. <u>Am J Roentgen</u>, 1995; 165: 361-364.
- 23. Ortel TL, Moore KD, Ezban M, Kane WH. Effect of heterologous factor V heavy chain sequences on the secretion of recombinant human factor VIII. <u>Thromb Haemostas</u>, 1996; 75: 36-44.
- 24. Moll S, Iglehart JD, Ortel TL. Thrombocytopenia in association with a wandering spleen. Am J Hematol, 1996; 53: 259-263.
- 25. Provenzale JM, Barboriak DP, Allen NB, Ortel TL. Patients with antiphospholipid antibodies CT and MR findings of the brain. <u>Am J Roentgen</u>, 1996; 167:1573-1578.
- 26. Lind SE, Callas PW, Golden EA, Joyner KA, Ortel TL. Plasma levels of factors II, VII and X, and their relationship to the INR during chronic warfarin therapy. <u>Blood Coag Fibrinol</u>, 1997; 8: 48-53.
- 27. Moll S, McCloud M, Ortel TL. Lupus anticoagulant and subdural hematoma. <u>Stroke</u>, 1997; 28: 646-648.

- 28. Moll S, Ortel TL. Monitoring warfarin therapy in patients with lupus anticoagulants. <u>Ann Intern Med</u>, 1997; 127: 177-185.
- 29. Hunt CM, Carson KL, Ortel TL. Combined factor IX and XI deficiencies discovered at time of liver biopsy. <u>Dig Diseases Sci</u>, 1997; 42:1731-1733.
- 30. Korompilias AV, Gilkeson GS, Ortel TL, Seaber AV, Urbaniak JR. Prevalence of anticardiolipin antibodies in patients with non-traumatic osteonecrosis of the femoral head. Clin Orthopaedics Rel Res, 1997; 345:174-180.
- 31. Provenzale JM, Barboriak DP, Allen NB, Ortel TL. Patients with antiphospholipid antibodies: findings at arteriography. <u>Am J Neurorad</u>, 1998; 19: 611-616.
- 32. Provenzale JM, Ortel TL, Allen NB. Non-CNS thrombosis in patients with antiphospholipid antibodies: lesion distribution and imaging findings. Am J Roentgen, 1998; 170:285-290.
- 33. Provenzale JM, Barboriak DP, Ortel TL. Dural sinus thrombosis associated with activated protein C resistance: MR imaging findings. <u>Am J Roentgen</u>, 1998; 170:499-502.
- 34. Provenzale JM, Barboriak DP, Davey IC, Ortel TL. Cerebrovascular disease risk factors: neuroradiologic findings in patients with activated protein C resistance. <u>Radiology</u>, 1998; 207: 85-89.
- 35. Ortel TL, Moore KD, Quinn-Allen MA, Okamura T, Sinclair AJ, Lazarchick J, Govindan R, Carmagnol F, Kane WH. Inhibitory anti-factor V antibodies bind to the factor V C2 domain and are associated with hemorrhagic manifestations. <u>Blood</u>, 1998; 91: 4188-4196.
- 36. Provenzale JM, Frush DP, Ortel TL. Recurrent thrombosis of the superior vena cava associated with activated protein C resistance: Imaging findings. <u>Pediatric Radiol</u>, 1998; 28: 597-8.
- 37. Moll S, Ortel TL. Monitoring warfarin therapy in patients with lupus anticoagulants [Letter]. Ann Intern Med, 1998; 128: 504-5.
- 38. Ortel TL, Moll S. Monitoring oral anticoagulant therapy in patients with lupus anticoagulants. [Letter] Br J Haematol, 1998; 101: 390-391.
- 39. Ortel TL, Chong BH. New treatment options for heparin-induced thrombocytopenia. <u>Semin</u> Hematol, 1998; 35: 26-34.
- 40. Ortel TL. Heparin-Induced Thrombocytopenia. Semin Hematol, 1998; 35: 1-2.
- 41. Moll S, Ortel TL. Diagnosis of pulmonary embolism [Letter]. N Engl J Med, 1998; 339: 1084.
- 42. Goel N, Ortel TL, Bali D, Anderson JP, Gourley IS, Smith H, Morris CA, DeSimone M, Branch DW, Ford P, Berdeaux D, Roubey RAS, Kostyu DD, Kingsmore SF, Thiel T, Amos C, Seldin MF. Familial antiphospholipid antibody syndrome: criteria for disease and evidence for autosomal dominant inheritance. <a href="https://example.com/Arthritis Rheum"><u>Arthritis Rheum</u></a>, 1999; 42: 318-327. PMID: 10025927.
- 43. Taylor CT, Petros WP, Ortel TL. Two instruments to determine activated partial thromboplastin time: implications for heparin monitoring. <u>Pharmacotherapy</u>, 1999; 19: 383-387.
- 44. Hansen KE, Moore KD, Ortel TL, Allen NB. Antiphospholipid antibodies in patients with Wegener's granulomatosis and polyarteritis nodosa. <u>Arthritis Rheum.</u>, 1999; 42: 2250-2252.
- 45. Macedo-Ribeiro S, Bode W, Huber R, Quinn-Allen MA, Kim SW, Ortel TL, Bourenkov GP, Bartunik HD, Stubbs MT, Kane WH, Fuentes-Prior P. Crystal structures of the C2 domain of human coagulation factor V: Implications for Ca<sup>2+</sup>-independent membrane binding. Nature, 1999; 402: 434-439.

- 46. Kim SW, Ortel TL, Quinn-Allen MA, Yoo L, Worfolk L, Zhai X, Lentz BR, Kane WH. Partial glycosylation at asparagine-2181 of the second C-type domain of human factor V modulates assembly of the prothrombinase complex. Biochemistry, 1999; 38: 11448-11454.
- 47. Sands JJ, Nudo SA, Ashford RG, Moore KD, Ortel TL. Antibodies to bovine thrombin correlate with access thrombosis. <u>Am. J. Kidney Dis.</u>, 2000; 35: 796-801.
- 48. Ortel TL, James AH, Thames EH, Moore KD, Greenberg CS. Assessment of primary hemostasis by PFA-100<sup>®</sup> analysis in a tertiary care center. <u>Thromb. Haemost.</u>, 2000; 84: 93-97.
- 49. Kelley MJ, Jawien W, Ortel TL, Korczak JF. Mutation of non-muscle myosin heavy chain A (*MYH*9) in May-Hegglin anomaly. <u>Nature Genetics</u>, 2000; 26: 106-108.
- 50. Ortel TL, Neal MC, Thames EH, Moore KD, Lawson JH. Immunologic impact and clinical outcomes after surgical exposure to bovine thrombin. Ann. Surg., 2001; 233: 88-96.
- 51. Lewis DA, Moore KD, Ortel TL. Factor VIII Arg<sub>2304</sub>→His binds to phosphatidylserine and is a functional cofactor in the factor X-ase complex. Thromb. Haemost., 2001; 85: 260-264.
- 52. Izumi T, Kim SW, Greist A, Macedo-Ribeiro S, Fuentes-Prior P, Bode W, Kane WH, Ortel TL. Fine mapping of inhibitory anti-factor V antibodies using factor V C2 domain mutants: identification of two antigenic epitopes involved in phospholipid binding. <a href="https://doi.org/10.1001/jhan.2001">Thromb. Haemost., 2001</a>; 85: 1048-1054.
- 53. McNeeley PA, Cockerill KA, Dlott JS, Furie RA, Iverson GM, Jack RM, Marquis DM, Ortel TL, Triplett DA, Victoria EJ, Linnick MD.  $\beta_2$ -glycoprotein I-dependent anticardiolipin antibodies preferentially bind the amino terminal domain of  $\beta_2$ -glycoprotein I. Thromb. Haemost., 2001; 86: 590-595.
- 54. Hansen KE, Kong DF, Moore KD, Ortel TL. Risk factors associated with thrombosis in subjects with antiphospholipid antibodies. <u>J Rheumatol</u>, 2001; 28: 2018-2024. PMID: 11550969.
- 55. Sands JJ, Nudo SA, Moore KD, Ortel TL. Antibodies to prothrombin, factor V, and  $\beta_2$ -glycoprotein I and vascular access thrombosis. ASAIO J., 2001; 47: 507-510.
- 56. Schoenecker JG, Johnson RK, Lesher AP, Day JD, Love SD, Hoffman MR, Ortel TL, Parker W, Lawson JH. Exposure of mice to topical bovine thrombin induces systemic autoimmunity. Am.J.Pathol., 2001; 159: 1957-1969.
- 57. Welty-Wolf KE, Carraway, MS, Idell S, Ortel TL, Ezban M, Piantadosi CA. Tissue factor in experimental acute lung injury. <u>Semin. Hematol.</u>, 2001; 38 (Suppl. 12):35-38.
- 58. Welty-Wolf KE, Carraway MS, Miller DL, Ortel TL, Ezban M, Ghio A, Idell S, Piantadosi CA. Coagulation blockade prevents sepsis-induced respiratory and renal failure in baboons. Am.J.Resp.Critical Care Med., 2001; 164, 1988-1996.
- 59. O'Shea SI, Sands JJ, Nudo SA, Ortel TL. Frequency of anti-heparin-platelet factor 4 antibodies in hemodialysis patients and correlation with recurrent vascular access thrombosis. Am. J. Hematol., 2002; 69: 72-73.
- 60. Su Z, Braun PJ, Klemp KF, Baker KR, Thames EH, Ortel TL. Abnormal optical waveform profiles in coagulation assays from patients with antiphospholipid antibodies. <u>Blood Coag.</u> Fibrinol., 2002; 13: 7-17.
- 61. van den Brink E, Bril WS, Turenhout EAM, Zuurveld M, Bovenschen N, Peters M, Yee TT, Mertens K, Lewis DA, Ortel TL, Lollar P, Scandella D, Voorberg J. Two classes of germline genes both derived from the VH1 family direct the formation of human antibodies that recognize distinct antigenic sites in the C2 domain of factor VIII. <u>Blood</u>, 2002; 99: 2828-2834.

- 62. Welty-Wolf KE, Carraway MS, Ortel TL, Piantadosi CA. Coagulation and inflammation in acute lung injury. Thromb. Haemost., 2002; 88: 17-25.
- 63. Su Z, Izumi T, Thames EH, Lawson JH, Ortel TL. Antiphospholipid antibodies after surgical exposure to topical bovine thrombin. <u>J.Lab.Clin.Med.</u>, 2002; 139: 349-356.
- 64. O'Shea S, Ortel TL. Issues in the utilization of low molecular weight heparins. <u>Semin. Hematol.</u>, 2002; 39: 172-178.
- 65. Shanahan JC, Ortel TL. Antiphospholipid antibodies and stroke. <u>Semin. Cerebrovasc. Dis. Stroke</u>, 2002; 2: 120-133.
- 66. Moll S, Ortel TL. Antiphospholipid antibodies [Letter]. <u>Arch. Intern. Med.</u>, 2002; 162: 1783-1784.
- 67. Rusconi CP, Scardino E, Layzer J, Pitoc GA, Ortel TL, Monroe D, Sullenger BA. RNA aptamers as reversible antagonists of coagulation factor IXa. <u>Nature</u>, 2002; 419: 90-94. PMID: 12214238.
- 68. Izumi T, Su Z, Pound ML, Iverson GM, Ortel TL. Anti-β<sub>2</sub>-glycoprotein I antibody-mediated inhibition of activated protein C requires binding of β<sub>2</sub>-glycoprotein I to phospholipids. <u>Thromb. Haemost.</u>, 2002; 88: 620-626. PMID: 12362233.
- 69. O'Shea SI, Ortel TL, Kovalik EC. Alternative methods of anticoagulation in dialysis-dependent patients with heparin induced thrombocytopenia. <u>Semin. Dialysis</u>, 2003; 16: 61-67.
- 70. Carraway MS, Welty-Wolf KE, Miller DL, Ortel TL, Idell S, Ghio AJ, Petersen LC, Piantadosi CA. Blockade of tissue factor: a rescue strategy for multi-organ failure in established sepsis. Am.J.Resp.Critical Care Med., 2003; 167: 1200-1209.
- 71. Lewis DA, Pound ML, Ortel TL. Contributions of Asn<sup>2198</sup>, Met<sup>2199</sup>, and Phe<sup>2200</sup> in the factor VIII C2 domain to cofactor activity, phospholipid-binding, and von Willebrand factor-binding. <u>Thromb. Haemost.</u>, 2003; 89: 795-802.
- 72. Lewis DA, Moore KD, Ortel TL. Binding of factor VIII inhibitors to discrete regions of the factor VIII C2 domain disrupt phospholipid binding. <u>Blood Coag. Fibrinol.</u>, 2003; 14: 361-368.
- 73. O'Shea SI, Lawson JH, Reddan D, Ortel TL. Hypercoagulable states and antithrombotic strategies in patients with recurrent vascular access thrombosis. <u>J. Vasc. Surg.</u>, 2003; 38:541-548.
- 74. Su Z, Izumi T, Ortel TL. Prothrombin and  $\beta_2$ -glycoprotein I frequently contribute to antiphospholipid antibody interactions with thromboplastin and the generation of abnormal waveform profiles in coagulation assays. <u>Thromb. Haemost.</u>, 2003; 90: 218-226.
- 75. Perry SL, O'Shea SI, Ortel TL. Management of lepirudin therapy for a patient with antiphospholipid antibody syndrome using the whole blood ecarin clot time and aPTT. <u>Blood Coag.Fibrinol.</u>, 2003; 14: 601-604.
- 76. Lundblad RL, Bradshaw RA, Gabriel D, Ortel TL, Lawson J, Mann KG. A review of the therapeutic uses of thrombin. Thromb. Haemost., 2004; 91: 851-860.
- 77. Potti A, Danielson B, Badreddine R, Ortel T. Potassium homeostasis in patients receiving prophylactic dose enoxaparin therapy. J.Thromb.Haemost., 2004; 2: 1208-1209.
- 78. Korompilias AV, Ortel TL, Urbaniak JR. Coagulation abnormalities in patients with hip osteonecrosis. Orthop.Clin.North Am., 2004; 35: 265-271.
- 79. James AH, Lukes A, Brancazio L, Laskowitz J, Thames E, Ortel TL. Using a new platelet function analyzer to detect von Willebrand disease in women with menorrhagia. Am.J.Obstet.Gynecol., 2004; 191: 459-464.

- 80. Potti A, Rusconi CP, Sullenger BA, Ortel TL. Regulatable aptamers in medicine: focus on antithrombotic strategies. Expert Opin.Biol.Ther., 2004; 4: 1641-1647.
- 81. Rand JH, Wu X-X, Lapinski R, Waander L van Heerde, Reutelingsperger CP, Chen PP, Ortel TL. Detection of antibody-mediated reduction of annexin A5 anticoagulant activity in plasmas of patients with the antiphospholipid syndrome. <u>Blood</u>, 2004; 104: 2783-2790.
- 82. Erkan D, Ortel TL, Lockshin MD. Warfarin in antiphospholipid syndrome Time to explore new horizons. J.Rheumatol., 2005; 32: 208-212.
- 83. Lawson JH, Lynn KA, Vanmatre RM, Domzalski T, Klemp KF, Ortel TL, Niklason LE, Parker W. Antihuman factor V antibodies after use of relatively pure bovine thrombin. Ann.Thorac.Surg., 2005; 79: 1037-1038.
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- 86. Haynes BF, Fleming J, St.Clair EW, Katinger H, Stiegler G, Kunert R, Robinson J, Scearce RM, Plonk K, Staats HF, Ortel TL, Liao H-X, Alam SM. Cardiolipin polyspecific autoreactivity in two broadly neutralizing HIV-1 antibodies. Science, 2005; 308: 1906-8.
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- 91. Perry S, Samsa GP, Ortel TL. Point-of-care testing of the international normalized ratio in patients with antiphospholipid antibodies. <u>Thromb Haemost</u>, 2005; 94: 1196-1202. PMID: 16411394.
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- 93. Potti A, Ramiah V, Ortel TL. Thrombophilia and thrombosis in thrombotic thrombocytopenic purpura. <u>Semin.Thromb.Hemost.</u>, 2005; 31: 652-658.
- 94. Lewis DA, Pound ML, Ortel TL. The reactivity of paired plasma and serum samples are comparable in the anticardiolipin and anti-β2-glycoprotein-1 ELISAs. <u>J.Thromb.Haemost.</u>, 2006; 4: 265-267.
- 95. Hayward CPM, Harrison P, Cattaneo M, Ortel TL, Rao AK, on behalf of the Platelet Physiology Subcommittee of the Scientific and Standardization Committee of the International Society on Thrombosis and Haemostasis. Platelet Function Analyzer (PFA)-100® closure time in the evaluation of platelet disorders and platelet function. <u>J. Thromb.Haemost.</u>, 2006; 4: 312-319.
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- 98. Welty-Wolf KE, Carraway MS, Ortel TL, Ghio AJ, Idell S, Egan J, Zhu X, Jiao J, Wong HC, Piantadosi CA. Blockade of tissue factor-factor X binding attenuates sepsis-induced respiratory and renal failure. <u>Am.J.Physiol. Lung Cell Mol. Physiol.</u>, 2006; 290: L21-31.
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- 103. Arepally GM, Ortel TL. Heparin-Induced Thrombocytopenia. N Engl J Med, 2006; 355: 809-817. PMID: 16928996.
- 104. James AH, Brancazio LR, Gehrig TR, Wang A, Ortel TL. Low-molecular-weight heparin for thromboprophylaxis in pregnant women with mechanical heart valves. <u>J.Maternal-Fetal Neonatal Medicine</u>, 2006; 19: 543-549.
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- 106. Lewis DA, Nyska A, Potti A, Hoke HA, Klemp KF, Ward SM, Peddada SD, Wu J, Ortel TL. Hemostatic activation in a chemically induced rat model of severe hemolysis and thrombosis. Thromb.Res., 2006; 118: 747-753.
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## (c) Editorials, position, and background papers:

Welsby IJ, Ortel TL. Invited Commentary. <u>Ann.Thorac.Surg.</u>, 2007; 84: 168-169. (In reference to: Agarwal HS, Bennett JE, Churchwell KB, et al. Recombinant factor seven therapy for postoperative bleeding in neonatal and pediatric cardiac surgery. <u>Ann.Thorac.Surg.</u>, 2007; 84: 161-168).

#### (d) Monographs:

1. Ortel TL. Clinical options in the management of VTE in patients with cancer and APS. In "Advances in the Management of Venous Thromboembolic Disorders Associated with Cancer and the Antiphospholipid Syndrome". Course director: Kelton JG. Published by: Continuing Edge.

#### (e) Patents:

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#### (f) Electronic publications/guidelines:

 National Comprehensive Cancer Network, Clinical Practice Guidelines in Oncology, Venous Thromboembolic Disease, Version 1.2006 (28 March 2006). Lawrence D. Wagman, M.D., Chair; Thomas L. Ortel, M.D., Ph.D., Duke Comprehensive Cancer Center representative (www.nccn.org).

- 2. Adam SS, McDuffie JR, Ortel TL, Nagi A, Williams Jr JW. Comparative Effectiveness of Warfarin and Newer Oral Anticoagulants for the Long-Term Prevention and Treatment of Arterial and Venous Thromboembolism [Internet]. Washington (DC): Department of Veterans Affairs; 2012 Apr. Available from: http://www.ncbi.nlm.nih.gov/books/NBK97541/
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## (g) Editor:

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1. Ortel TL. Genetic Aspects of Venous Thromboembolism. Keeping in Circulation, The Official Publication of the Vascular Disease Foundation. Winter 2010; 10: 4-5.

#### (i) Guidance Document

 CLSI. Laboratory Tesing for the Lupus Anticoagulant; Approved Guideline. CLSI document H60-A. Wayne, PA: Clinical and Laboratory Standards Institute; 2014. (Authors: Ledford-Kraemer M, Moore GW, Bottenus R, Brandt JT, Castellone DD, Daniele C, de Groot PG, Depass F, Dlott JS, Exner T, Favaloro EJ, Gosselin RC, Hollensead SC, Meijer P, Moffat KA, Nichols WL, Ortel TL, Sanfelippo MJ, Scott RG, Selby R, Stang L, Thiagarajan P, Triscott M, Van Cott EM)

#### (j) UpToDate

- 1. Antibiotic Therapy in Patients with Infective Endocarditis. Ortel TL & Gaasch WH. UpToDate (2015 to present).
- 2. Diagnosis of Antiphospholipid Syndrome. Erkan D & Ortel TL. UpToDate (2016 to present).
- 3. Treatment of Antiphospholipid Syndrome. Erkan D & Ortel TL. UpToDate (2017 to present).

#### Consultant appointments: (Include US government, state, private organizations, etc.)

Zycare, Inc., develops internet-based management systems for chronic diseases. Dr. Ortel is the medical consultant for an outpatient anticoagulation management system, CoagCare<sup>®</sup>, which was investigated in a Phase I/II clinical study at Duke by Dr. Susan O'Shea when she was a clinical fellow in the Division of Hematology (2000-2009).

- bioMeriéux, Inc., develops instrumentation and reagents for clinical coagulation testing. Dr.
  Ortel was a medical consultant for the development of new reagents for lupus anticoagulant
  testing (2004-2005).
- 3. <u>Instrumentation Laboratory, Inc.</u>, develops instrumentation and reagents for clinical coagulation testing. I participate in an annual advisory meeting to review new products for hemostasis testing (2010-2015).

#### **Data and Safety Monitoring Activities**

 Independent Data Monitoring Committee for a Phase IIb clinical trial entitled: "Acute Dose Setting (10 ± 2 Days of Treatment), Dose Ranging Trial for the Evaluation of the Safety and Efficacy of Odiparcil in the Prevention of Venous Thromboembolism Post Total Knee Replacement Surgery". Study sponsor: GlaxoSmithKline, Inc. (2005-2006).

#### Professional awards and special recognitions:

Indiana University Combined Degree Fellowship, 1981-1982.

Rabe-Vermillion Scholarship, 1981-1983.

Clinician Scientist Award, American Heart Association and Genentech, 1991-1996.

Merck/AFCR M.D.-Ph.D. Postdoctoral Fellowship Award (Awarded Dec., 1990; Not activated).

Clinical Investigator Award, NHLBI (Awarded June, 1991; Not activated).

March of Dimes Basil O'Connor Starter Scholar Award, 1995-1997.

Pew Scholar Award, 1995-1999.

The Wendell Rosse, M.D., Teaching Award, 1997-98 (Awarded by Duke Hematology/Oncology Fellows for Excellence in Teaching, 24 June 1998)

ASAIO Medforte Innovation Award, 2000.

Best Doctors in America® 2001-Present.

#### **Organizations and participation:** (Offices held, committee assignments, etc.)

American Association for the Advancement of Science	1984-Present
New York Academy of Sciences (Member)	1985-2008
American Board of Internal Medicine Subspecialty Board on Hematology	2010-2016
American College of Physicians (Member)	1988-Present
American Heart Association Council on Thrombosis	1991-Present
Mid-Atlantic Study Section 2 Thrombosis Study Section, co-Chair	2005-2006 2010-2011
American Federation for Clinical Research	1991-2000
American Society of Hematology	1993-Present 6 December 1994

Session co-chair. Simultaneous Sessions, "Coagulation III:	
Coagulation Factor Structure & Function"; 36 <sup>th</sup> Annual Meeting Educational session speaker: "Pathogenesis and Treatment of	6-7 December 1997
Autoimmune Disorders of Coagulation: Antiphospholipid	
Antibody Syndromes". 39th Annual Meeting, San Diego, CA.	2000
Abstract Reviewer, 42 <sup>nd</sup> Annual Meeting, San Francisco, CA. Session co-chair. Simultaneous Sessions, "Molecular Basis of	4 December 2000
Hemophilia"; 42 <sup>nd</sup> Annual Meeting, San Francisco, CA.	2001
Abstract Reviewer, 43 <sup>rd</sup> Annual Meeting, Orlando, FL	8 December 2001
Educational session speaker: "Anticoagulation Management of the	
'Problem' Patient". 43rd Annual Meeting, Orlando, FL	10 December 2001
Session co-chair. Simultaneous Sessions, "Disorders of	
Hemostasis". 43 <sup>rd</sup> Annual Meeting, Orlando, FL.	January 2003-
Editorial Board, <i>Blood</i>	December 2007 6-9 December 2003
Editor, ASH News Daily, 45th Annual Meeting, San Diego, CA	2004
Abstract Reviewer, 46 <sup>th</sup> Annual Meeting, San Diego, CA	4-7 December 2004
Meet the Expert Session, "Diagnosis and Management of HITT",	2000
46 <sup>th</sup> Annual Meeting, San Diego, CA	6 & 7 December 2004
Session co-chair. Simultaneous Sessions, "Antithrombotic	
Therapy II", and "Antithrombotic Therapy – Clinical Studies",	
46 <sup>th</sup> Annual Meeting, San Diego, CA	10 & 11 December
Educational session speaker: "Thrombosis and the	2005
Antiphospholipid Syndrome", Thrombosis II section, 47 <sup>th</sup> Annual Meeting, Atlanta, GA	2007
ASH Representative, LabOnLine	24-25 April 2007
ASH Representative, Review Session for the 8 <sup>th</sup> Edition of the	24 20 April 2007
American College of Chest Physicians Guidelines on	
Antithrombotic and Fibrinolytic Therapy	8-9 December 2007
Scientific Sessions, Laboratory Medicine, 49th Annual Meeting,	
Atlanta, GA	5-8 December 2009
Abstract Reviewer, 51 <sup>st</sup> Annual Meeting, New Orleans, LA	5-8 December 2009
Educational session speaker (Between a rock and a hard place:	
thrombotic risk in the thrombocytopenic patient (Consultative Hematology)): "Heparin-induced thrombocytopenia: when a low	
platelet count is a mandate for anticoagulation", 51st Annual	
Meeting, New Orleans, LA	6 December 2010
Session co-chair. Simultaneous Sessions, "Disorders of Platelet	
Number or Function: Studies of TTP, HIT and Platelet Factor 4	
Biology"; 52 <sup>nd</sup> Annual Meeting, Orlando, FL	6 September 2011
ASH Educational Webinar. Antiphospholipid Antibody Syndrome.	00 00 0 40 40 0
Speaker	28-29 Sep/12-13 Oct
2012 ASH State-of-the-Art Symposium co-Chair Educational session speaker (Perioperative Hematology: To Bleed	2012 8 & 9 Dec 2012
or Not To Bleed): "Perioperative management of patients on	0 & 9 Dec 2012
chronic antithrombotic therapy", 54 <sup>th</sup> Annual Meeting, Atlanta,	
GA	19 Jan 2013
2013 Highlights of ASH in North America, speaker	2014 to present
Nominations Committee	1 Jan 2015 to present
Associate Editor, <i>Blood</i>	

Centers for Disease Control & Prevention Chairman, Coordinating Committee for Hemostasis & Thrombosis	2005 to 2008
Program  DVT/PE Surveillance Working Group Meeting, Division of Blood	12 Jan 2010
Disorders	
Food & Drug Administration  Blood Products Advisory Committee  FDA/CBER/OTAT Hemostasis Branch Site Visit Review Program,  White Oak – Building 71, Conference Rooms 1208/1210	17 Jun 2016-Present 1 Nov 2017
International Society for Thrombosis and Haemostasis Session Co-chairman, Factor V (Amsterdam) Abstract reviewer	1993-Present 1991 2005
Platelet Physiology Subcommittee, evaluation of PFA-100 in platelet disorders and platelet function.	2004-2005
Lupus Anticoagulant/Phospholipid-dependent Antibodies Scientific Subcommittee, co-Chairman	2006-2014
Chairman Abstract reviewer	2009-2012 2009
Session Co-chairman, Risk Factors for Venous Thrombosis I (Boston)	2009
Duke Comprehensive Cancer Center	1993-Present
Center for Thrombosis and Haemostasis, University of North Carolina at Chapel Hill, Adjunct Member	1994-2001
Duke Comprehensive Hemostasis & Thrombosis Center Medical Director	2001-Present
Clinical Advances in Hematology and Oncology Editorial Advisory Board	2002-2012
Thrombosis Research	
Thrombosis Research Editorial Board Associate Editor	2003-Present January 2005- December 2014
Editorial Board	January 2005-
Editorial Board Associate Editor  Pew Scholars Program	January 2005- December 2014 4-6 September and
Editorial Board Associate Editor  Pew Scholars Program Science and Society Institute  National Hemophilia Foundation Judith Graham Pool Research Working Group	January 2005- December 2014 4-6 September and
Editorial Board Associate Editor  Pew Scholars Program Science and Society Institute  National Hemophilia Foundation Judith Graham Pool Research Working Group  National Institutes of Health NHLBI Expert Panel on Diagnosis and Treatment of von	January 2005- December 2014 4-6 September and 19-22 October, 2003
Editorial Board Associate Editor  Pew Scholars Program Science and Society Institute  National Hemophilia Foundation Judith Graham Pool Research Working Group  National Institutes of Health NHLBI Expert Panel on Diagnosis and Treatment of von Willebrand's Disease Special Emphasis Panel/Initial Review Group 2005/05 ZRG1 HEME-A	January 2005- December 2014 4-6 September and 19-22 October, 2003 2003-2008
Editorial Board Associate Editor  Pew Scholars Program Science and Society Institute  National Hemophilia Foundation Judith Graham Pool Research Working Group  National Institutes of Health NHLBI Expert Panel on Diagnosis and Treatment of von Willebrand's Disease Special Emphasis Panel/Initial Review Group 2005/05 ZRG1 HEME-A Working Group on Thrombosis and Thrombophilia	January 2005- December 2014 4-6 September and 19-22 October, 2003 2003-2008 May 2004-2009 March 2005
Editorial Board Associate Editor  Pew Scholars Program Science and Society Institute  National Hemophilia Foundation Judith Graham Pool Research Working Group  National Institutes of Health NHLBI Expert Panel on Diagnosis and Treatment of von Willebrand's Disease Special Emphasis Panel/Initial Review Group 2005/05 ZRG1 HEME-A	January 2005- December 2014 4-6 September and 19-22 October, 2003 2003-2008 May 2004-2009

NHLBI Special Emphasis Panel ZHL1 CSR-J (O1) Training	
Programs (T32's and T35's)	26 May 2006
NHLBI Program Project Review Committee, HLBP Workgroup.	·
NHLBI Special Emphasis Panel ZHL1 CSR-D (M1) Academic /	1 February 2007
Teacher Award (K07)	9 February 2007
NIA Special Emphasis Panel ZAG1 ZIJ-7 (A1-A2) Thrombosis	7.014 0007
RFA Review, Chairperson	7-8 May 2007
NIH Clinical Center, Department of Laboratory Medicine,	00 07 Can 0007
Operational Review, Hematology Laboratory	26-27 Sep 2007
NHLBI Patient Oriented Research (K23, 24, and 25's) Career Enhancement Awards ZHL1 CSR-R (M1)	17-18 Feb 2009
NHLBI Grand Opportunities in Testing Mechanistic Hypotheses	17-10 Feb 2009
from Genomic Studies ZHL1 CSR-R (05)	23 July 2009
Co-chairman, Platelet Disorders: Thrombosis, State of the Science	20 daiy 2000
Symposium in Transfusion Medicine and Hemostasis/	14-15 Sept 2009
Thrombosis, NHLBI, Lister Hill Auditorium, Bethesda, MD	11 10 Copt 2000
NHLBI Patient Oriented Research Career Enhancement Awards,	
ZHL1 CSR-R (F1)	29-30 October 2009
NHLBI Working Group: Hemophilia and Rare Hemostasis and	
Thrombosis	13 November 2009
Clinical Hematology ZRG1 VH-E 90S Review Panel	
Hemostasis & Thrombosis Study Section (ad hoc)	25 June 2010
	16 Feb 2011
NHLBI Special Emphasis Panel (R01, Vascular Biology)	6 June 2011
NHLBI Hypertension and Thrombosis (Member Conflict) 2012/05	16 Aug 2011
ZRG1 VH-J (02) M	29 March 2012
NHLBI Working Group on Thrombosis in Pediatric Cardiology and	44.45 him = 0040
Adult Congenital Heart Disease NHLBI Transfusion Medicine 2013/05 Council ZRG1 VH-F 50 R	14-15 June 2012
NHLBI Institutional Training Mechanism Review Committee	6 February 2013
NHLBI Special Emphasis Panel on Selected Topics in Transfusion	20-21 June 2013
Medicine, ZRG1 VH-F (55)	27-28 Feb 2014
NIDDK Cooperative Hematology Specialized Core Centers, ZDK1	27 201 00 2014
GRB-R (M3) Special Emphasis Panel	31 Mar-1 Apr 2015
NIDDK Cooperative Hematology Specialized Core Centers, ZDK1	0 :ap0 : .
GRB-R M4, Special Emphasis Panel	14-15 Mar 2016
NIH Clinical Center, Department of Laboratory Medicine, Opertional	
Review, Hematology Laboratory	6-7 Feb 2017
Hemophilia & Thrombosis Research Society	Jan 2005-Present
Member, Board of Directors	April 2008-April 2011
Organizing Committee, Annual Meeting	2007-2009
American Thrombosis and Hemostasis Network	Mar 2006-Present
Board Member	
Venous Disease Coalition	
Member, Leadership	2007-2013
Chair, Membership Committee	
, ,	

## **Manuscript Reviewer**

Annals of Internal Medicine

Arteriosclerosis, Thrombosis and Vascular Biology

Arthritis and Rheumatism

Blood JAMA

Journal of Thrombosis and Haemostasis

Lancet

Medical Letter

New England Journal of Medicine Thrombosis and Haemostasis

Thrombosis Research

## Teaching responsibilities including continuing education, invited lectures:

	nsibilities: Medical Student Courses and Lectures
1991-1994	Senior Instructor, Introduction to Laboratory Diagnosis (M204). School of Medicine. Duke University Medical Center, Durham, NC.
1995-1996	Director, Introduction to Laboratory Diagnosis (M204). School of Medicine. Duke University Medical Center, Durham, NC.
1995-present	Instructor, Medicine 275C, Clinical Coagulation. School of Medicine. Duke University Medical Center, Durham, NC.
1996-2003	Biochemistry Clinical Correlation Lecture ("Coagulation"). School of Medicine. Duke University Medical Center, Durham, NC.
1997	Medicine 255 and Pharmacology 255 Lecture Series ("Pharmacotherapy of Coagulopathies"). School of Medicine. Duke University Medical Center, Durham, NC. (1997 & 1998).
1998	Pathology 200 Lecture, Duke University School of Medicine: "Blood and Lymph Nodes (3)". (15 June).
1999	Pathology 200 Lecture, Duke University School of Medicine. "Blood and Lymph Nodes (1)." (1 June).
2000	Duke University Medical Student Lecture Series, "Coagulation". (10 August).
2001-2002	Duke Medical School, Pathophysiology and Therapeutics (MED 450), "Coagulation Disorders". (29 March 2001; 5 March 2002).
2004	Molecules and Cells: Clinical Correlations – 2004, School of Medicine, Duke University Medical Center. "Coagulation". (23 August).
2005	Capstone Course, 4 <sup>th</sup> Year Medical School, Duke University School of Medicine. "The Bleeding Patient. Blood Products and Reversal of Coagulopathies." (8 March 2005).
	Molecules and Cells: Clinical Correlations – 2005, (1 <sup>st</sup> Year) School of Medicine, Duke University Medical Center. "Coagulation". (18 August 2005).
2006	Capstone Course, 4 <sup>th</sup> Year Medical School, Duke University School of Medicine. "The Bleeding Patient. Blood Products and Reversal of Coagulopathies." (7 March 2006).
	Molecules and Cells: Clinical Correlations – 2006, (1st Year) School of Medicine, Duke University Medical Center. "Coagulation". (16 August).

2007	Molecules and Cells: Clinical Correlations – 2007, (1st Year) School of Medicine, Duke University Medical Center. "Coagulation". (15 August 2007).
2008	Molecules and Cells: Clinical Correlations – 2008, (1st Year) School of Medicine, Duke University Medical Center. "Coagulation". (20 August 2008).
2009	Molecules and Cells: Clinical Correlations – 2009, (1st Year) School of Medicine, Duke University Medical Center. "Coagulation". (21 August 2009).
2010	Molecules and Cells: Clinical Correlations – 2010, (1st Year) School of Medicine, Duke University Medical Center. "Coagulation" (19 August 2010).
2011	Molecules and Cells: Clinical Correlations – 2011, (1st Year) School of Medicine, Duke University Medical Center. "Coagulation" (18 August 2011).
2012	Molecules and Cells: Clinical Correlations – 2012, (1st Year) School of Medicine, Duke University Medical Center. "Coagulation" (23 August 2012).
2013	Molecules and Cells: Clinical Correlations – 2013, (1st Year) School of Medicine, Duke University Medical Center. "Coagulation" (22 August 2013).
2014	Molecules and Cells: Clinical Correlations – 2014, (1st Year) School of Medicine, Duke University Medical Center. "Coagulation" (22 August 2014).
2015	Molecules and Cells: Clinical Correlations – 2015, (1st Year) School of Medicine, Duke University Medical Center. "Coagulation" (20 August 2015).
2016	Molecules and Cells: Clinical Correlations – 2016, (1st Year) School of Medicine, Duke University Medical Center. "Coagulation" (18 August 2016).

Teaching responsibilities: Residency Training Programs (Medicine, Surgery, Pathology)		
1995	Surgery Residents' Teaching Conference, DUMC: "Disorders of Hemostasis". (12 January).	
1995-2000	Clinical Pathology Core Course Lecture Series ("Coagulation"). Department of Pathology. Duke University Medical Center, Durham, NC.	
1996-2004	Morning Report. Duke University Medical Center and the Veterans' Administration Medical Center, Durham, NC. Topic: various issues related to hemostasis and thrombosis, or other benign hematologic problems. Frequency: 3-6 times each year.	
1997	Attending Physician ("Teaching physician"), General Medicine Service, Duke University Medical Center. (15 Dec 97 – 3 Jan 98).	
1998	Attending Physician ("Teaching physician"), General Medicine Service, Durham Veterans' Administration Medical Center. (29 June – 26 July).	
1999	Pathology Residents' Lecture, DUMC. "Coagulation I." (21 April).	
	Pathology Residents' Lecture, DUMC. "Coagulation II." (28 April).	
	Medicine Housestaff Teaching Conference, DUMC. "Hypercoagulable Workup." (17 June).	
2000	Duke-UNC ABIM Review Course, UNC-Chapel Hill. "Coagulopathies". (28 May).	
2001	Emergency Lecture Series (New interns). "Bleeding Emergencies". (14 August).	
2002	Resident Teaching Lecture, Department of Pathology, DUMC. "Platelets: Functional and Immunologic Assessment". (1 August).	

Interns' Emergency Medicine Lecture Series, Department of Medicine, DUMC. "Coagulation Emergencies". (12 August).

Resident Teaching Lecture, Department of Pathology, DUMC.

"Hypercoagulable Workup". (15 August).

Resident Teaching Lecture, Department of Pathology, DUMC. "Special Coagulation Problems". (15 August).

Intern Core Curriculum Lecture Series, Duke University Medical Center, 2003 Durham, NC. "Bleeding Disorders". (31 July).

> Clinical Pharmacology Lecture Series, Duke University Medical Center, "Clinical Pearls of Anticoagulation". (16 October).

2004 Resident Teaching Lecture, Department of Pathology, DUMC. "Hypercoagulable Workup". (15 July).

> Resident Teaching Lecture, Department of Pathology, DUMC. "Special Coagulation Problems". (29 July).

> Intern Core Curriculum Lecture Series. Duke University Medical Center. Durham, NC. "Bleeding Disorders". (5 August).

> Clinical Pharmacology Lecture Series, Duke University Medical Center, "Clinical Pearls of Anticoagulation". (with Kim Hodulik, Pharm.D.) (18 November).

2005 Intern Core Curriculum Lecture Series, Duke University Medical Center, Durham, NC. "Bleeding Disorders". (14 July 2005).

2006 Intern Core Curriculum Lecture Series, Duke University Medical Center, Durham, NC. "Bleeding Disorders". (1 August 2006).

> Resident Teaching Lecture, Department of Pathology, DUMC. "Special Coagulation Problems". (17 August).

Resident Teaching Lecture, Department of Pathology, DUMC.

"Hypercoagulable Workup". (31 August).

2007 Medicine Housestaff Noon Lecture, Duke University Medical Center, Durham, NC. "Antiphospholipid Antibodies." (7 June 2007).

> Intern Core Curriculum Lecture Series, Duke University Medical Center, Durham, NC. "Bleeding Disorders". (2 August 2007).

2008 Resident Teaching Lecture, Department of Pathology, DUMC. "Special Coagulation Problems". (28 August 2008).

> Intern Core Curriculum Lecture Series, Duke University Medical Center, Durham, NC. "Bleeding Disorders". (28 August 2008).

> Resident Teaching Lecture, Department of Pathology, DUMC. "Primary Hemostasis" (11 September 2008).

Resident Teaching Lecture, Department of Pathology, DUMC. "The Hypercoagulable Workup" (25 September 2008).

Core Curriculum Lecture Series, Internal Medicine Residency Program, Duke 2009 University Medical Center, Durham, NC. "Hypercoagulable States" (4 November 2009).

Intern Core Curriculum Lecture Series, Duke University Medical Center, 2010 Durham, NC. "Bleeding Disorders" (16 August 2010).

> Resident Teaching Lecture, Department of Pathology, DUMC. "Primary Hemostasis" (26 August 2010).

2012 Resident Teaching Lecture, Department of Pathology, DUMC. "Primary Hemostasis" (23 August 2012). Resident Teaching Lecture, Department of Pathology, DUMC. "Laboratory Approach to Thrombotic Risk" (6 Sep 2012). Resident Teaching Lecture, Department of Pathology, DUMC. "Secondary Hemostasis and Special Coagulation Problems" (20 Sep 2012). Resident Teaching Lecture, Department of Pathology, DUMC. "The Clinical 2014 Laboratory and Assessment of Primary Hemostasis" (18 Sep 2014). Resident Teaching Lecture, Department of Pathology, DUMC. "Secondary Hemostasis" (16 Oct 2014). Resident Teaching Lecture, Department of Pathology, DUMC. "Laboratory Approach to Thrombophilia and Thrombosis" (30 Oct 2014). 2016 Medicine/Pediatrics Combined Noon Conference, DUMC. "Coagulation Problems" (7 Sep 2016) 2016 Resident Teaching Lecture, Department of Pathology, DUMC, "The Clinical Laboratory and Assessment of Primary Hemostasis" (8 Sep 2016). Resident Teaching Lecture, Department of Pathology, DUMC. "Secondary Hemostasis" (28 Sep 2016). Resident Teaching Lecture, Department of Pathology, DUMC. "Laboratory Approach to Thrombophilia and Thrombosis" (6 Oct 2016). 2018 Resident Teaching Lecture, Department of Pathology, DUMC. "The Clinical Laboratory and Assessment of Primary Hemostasis" (20 Sep 2018). Resident Teaching Lecture, Department of Pathology, DUMC. "Laboratory Approach to Thrombophilia and Thrombosis" (4 Oct 2018). Resident Teaching Lecture, Department of Pathology, DUMC. "Secondary

Teaching responsibilities: Fellowship Training Program (Hematology/Oncology, Pulmonary)		
1993-2003	Fellows' teaching conference ("Hemophilias"; "Qualitative Platelet Defects"; "Heparin and Warfarin"). Division of Hematology/Oncology. Duke University Medical Center, Durham, NC.	
2001	Pulmonary Fellows' Conference, DUMC. "Coagulopathies". (10 April).	
	Hematology/Oncology Fellows' Orientation Lectures. "Coagulation Emergencies". (9 August).	
2002	Fellows' Emergency Medicine Lecture Series, Divisions of Medical Oncology and Hematology. DUMC. "Coagulation Emergencies". (15 August).	
2003	Fellows' Emergency Medicine Lecture Series, Divisions of Medical Oncology and Hematology. DUMC. "Coagulation Emergencies". (14 August).	
2004	Hematology/Oncology Fellows' Orientation Lectures. "Coagulation Emergencies". (15 July).	
2005	Fellows' Teaching Conference, Divisions of Hematology and Medical Oncology, Duke University Medical Center. "Inherited and Acquired Thrombophilias." (4 April 2005).	

Hemostasis" (16 Oct 2018).

Fellows' Teaching Conference, Divisions of Hematology and Medical Oncology, Duke University Medical Center. "Inherited and Acquired Bleeding Disorders." (11 April 2005).

Hematology/Oncology Fellows' Orientation Lectures. "Coagulation Emergencies". (14 July 2005).

2006 UNC/Duke Rheumatology Fellows' Symposium, University of North Carolina at Chapel Hill, Chapel Hill, NC. "Clinical Laboratory Testing for Antiphospholipid Antibodies". (10 February 2006).

> Fellows' Teaching Conference, Divisions of Hematology and Medical Oncology, Duke University Medical Center. "Thrombophilia." (22 January). Fellows' Teaching Conference, Divisions of Hematology and Medical Oncology, Duke University Medical Center. "Inherited and Acquired Bleeding Disorders." (29 January).

Pulmonary Medicine Fellows' Conference, Duke University Medical Center. "Bleeding and Clotting Disorders in the ICU." (30 January).

Hematology/Oncology Fellows' Orientation Lectures. "Coagulation Emergencies". (9 August 2007).

Fellows' Teaching Conference, Divisions of Hematology and Medical 2008 Oncology, Duke University Medical Center. "Inherited and Acquired Bleeding Disorders." (10 November 2008).

> Fellows' Teaching Conference, Divisions of Hematology and Medical Oncology, Duke University Medical Center. "Inherited and Acquired Thrombotic Disorders." (17 November 2008).

Fellows' Teaching Conference, Divisions of Hematology and Medical Oncology, Duke University Medical Center. "Inherited and Acquired Thrombotic Disorders." (1 November 2010).

> Fellows' Teaching Conference, Divisions of Hematology and Medical Oncology, Duke University Medical Center. "Inherited and Acquired Bleeding Disorders." (22 November 2010).

Fellows' Teaching Conference, Divisions of Hematology and Medical Oncology, Duke University Medical Center. "Fibrinogen, Factor XIII, and Fibrinolytic Therapy." (29 November 2010).

Fellows' Teaching Conference, Divisions of Hematology and Medical Oncology, Duke University Medical Center. "Inherited and Acquired Thrombotic Disorders." (26 November 2012).

> Fellows' Teaching Conference, Divisions of Hematology and Medical Oncology, Duke University Medical Center. "Inherited and Acquired Bleeding Disorders." (3 December 2012).

2013 Fellows' Teaching Conference, Divisions of Hematology and Medical Oncology, Duke University Medical Center. "Fibrinogen, Factor XIII, and Fibrinolytic Therapy" (14 January 2013).

2014 Fellows' Teaching Conference, Divisions of Hematology and Medical Oncology, Duke University Medical Center. "Inherited and Acquired Thrombotic Disorders." (20 October 2014).

> Fellows' Teaching Conference, Divisions of Hematology and Medical Oncology, Duke University Medical Center. "Inherited and Acquired Bleeding Disorders." (27 October 2014).

2010

2007

2018 Rheumatology Fellows' Didactic Lecture Series, Division of Rheumatology, Duke University Medical Center. "Antiphospholipid Syndrome. Diagnosis & Management" (12 November 2018)

# Teaching responsibilities: Graduate Student Program

<u>reaching respo</u>	risipiilies. Graduate Studerit Program
2003	Molecular Aspects of Disease, PTH385 Graduate School Course, Duke University Medical Center. "Hemophilia and Thrombophilia". (23 September).
2004	Molecular Aspects of Disease, PTH385 Pathology Graduate School Course, Duke University Medical Center. "Bleeding and Clotting Disorders". (21 October).
2005	Molecular Aspects of Disease, PTH385 Pathology Graduate School Course, Duke University Medical Center. "Hemophilia and Thrombophilia. The Tao of Hemostasis". (3 November 2005).
2006	Immunopathogenesis, Immunology 310 Graduate School Course, Duke University Medical Center. "Immune-Mediated Disorders of Hemostasis." (21 March 2006).
2008	Immunology 310 Graduate School Course, Duke University Medical Center. "Immune-Mediated Disorders of Hemostasis." (4 March 2008)
2010	Immunology 310 Graduate School Course, Duke University Medical Center. "Immune-Mediated Disorders of Hemostasis" (16 March 2010).
2012	Immunology 310 Graduate School Course, Duke University Medical Center. "Immune-Mediated Disorders of Hemostasis" (3 March 2012).
2014	Immunology 601 Graduate School Course, Duke University Medical Center. "Immune-Mediated Disorders of Hemostasis" (25 September 2014).
2015	Immunology 601 Graduate School Course, Duke University Medical Center. "Immune-Mediated Disorders of Hemostasis" (24 September 2015).
2016	Immunology 601 Graduate School Course, Duke University Medical Center. "Immune-Mediated Disorders of Hemostasis" (29 September 2016).
2017	Immunology 601 Graduate School Course, Duke University Medical Center. "Immune-Mediated Disorders of Hemostasis" (3 October 2017).
2018	Immunology 601 Graduate School Course, Duke University Medical Center. "Immune-Mediated Disorders of Hemostasis" (27 September 2018).

## Invited Presentations, Duke University Health System

1994	Stroke Conference, DUMC: "Neurologic Manifestations of Antiphospholipid
	Antibodies". (7 February).

Rheumatology Grand Rounds, DUMC: "Antiphospholipid Antibodies". (3 March).

Medical Grand Rounds, Duke University Medical Center, Durham, NC. "Familial Thrombophilia". (2 December).

Stroke Conference, DUMC: "Inherited Disorders of Hemostasis and Stroke". (19 December).

Hematology/Oncology Research Conference, DUMC: "Blood Clotting Cofactors and the Molecular Basis of Hemophilia A". (22 December).

1996 Transfusion Medicine Grand Rounds, DUMC: "Correction of Coagulation Disorders". (18 April).

11th American Orthopaedic Association International Symposium and 11th Bristol-Myers Squibb/Zimmer International Symposium, "The Etiology, Diagnosis, & Management of Osteonecrosis of the Human Skeleton", Session Moderator, "Coagulopathies". (6-9 November).

Stroke Conference, DUMC: "Management of Anticoagulant Therapy in 1997 Patients with Lupus Anticoagulants". (7 April).

> Medical Grand Rounds, Duke University Medical Center, Durham, NC. "Anticoagulation Management in the 21st Century". (27 June).

Rheumatology Grand Rounds, DUMC: "Diagnosis and Management of Lupus Anticoagulants". (28 August).

Immunology Basic Science Conference, DUMC: "Antibodies to Prothrombinase and the Antiphospholipid Antibody Syndromes". (13 October).

Department of Medicine Research Conference, DUMC: "Genetics and Pathogenesis of the Antiphospholipid Antibody Syndromes". (16 February). Radiology Grand Rounds, DUMC (with Jim Provenzale, M.D.): "Radiologic Manifestations of Hypercoagulable States". (26 February).

Hematology/Oncology Gallop Rounds: "Warfarin Embryopathy". (25 March). GI Grand Rounds, DUMC. "Recent Developments in Coagulation". (26 March). Hematology/Oncology Gallop Rounds, DUMC: "PFA-100 Platelet Analyzer". (17 June).

5th Annual Multidisciplinary Duke Heart Center Conference, Durham Marriott at the Civic Center, Durham, NC. "To Bleed or Not To Bleed: The Art of Anticoagulation." (24 September).

Stroke Conference, DUMC. "New Developments in Hemostasis and Thrombosis". (2 December).

Corporate Symposium, American Society of Hematology, 40th Annual Meeting, Miami Beach, FL. "Heparin Induced Thrombocytopenia - New Syndromes and New Treatments." (4 December).

Peri-operative Medicine Conference, DUMC. "Coagulation in the Pre-Operative Setting." (11 January).

> Department of Pathology/Clinical Laboratories Continuing Education, DUMC. "Clinical Manifestations of the Hypercoagulable State." (25 May).

> Pathology Grand Rounds, DUMC. "Anticoagulation Management." (4 June).

Obstetrics & Gynecology Grand Rounds, DUMC. "The Genetics of

Hypercoagulability: New Syndromes and Changing Paradigms." (23 June).

Perioperative Medicine Conference, DUMC. "Thromboembolic Disease and Hypercoagulable States". (14 October).

Stroke Conference, DUMC. "Update in Coagulation: Diagnostic and Therapeutic Issues". (15 December).

Clinical Use of Low Molecular Weight Heparins: Present and Future Directions, Symposium, DUMC. "Science behind Anticoagulation". (9 March).

Gastroenterology Grand Rounds, DUMC. "Rapid Assessment of Primary Hemostasis with a New Platelet Function Analyzer". (6 April).

2001 Duke University Hematology/Oncology Gallops, Research Conference, "From Bedside to Bench (...and Back?): Studies on Factor V and Factor VIII". (7 March).

Duke Telemedicine Patient Directed Teaching Conference, "Heparin Induced Thrombocytopenia". (29 March).

Medical Grand Rounds, Duke University Medical Center. "2001: A Thromboembolic Odyssey", co-presentation with Victor F. Tapson, M.D. (20 July).

Rheumatology Basic Science Conference, Duke University Medical Center. "Building a Better Mousetrap: a Novel Diagnostic Approach for Lupus Anticoagulants". (24 September).

2002 Gastroenterology Grand Rounds, DUMC. "New Therapies and Management Strategies in Hemostasis". (7 March).

Stroke Conference, DUMC. "New Therapies and Management Strategies in Heparin Induced Thrombocytopenia". (20 March).

Duke University Hematology/Oncology Gallops Conference, "4 pm on a Friday". (3 July).

Cardiothoracic Surgery Grand Rounds, Duke University Medical Center, Durham, NC. "Postoperative Coagulopathies: Heparin-Induced Thrombocytopenia." (20 November).

General Surgery Grand Rounds, Duke University Medical Center, Durham, NC. "Perioperative Coagulation Management". (16 April).

Duke Symposium on PNH, Searle Center, Duke University Medical Center, Durham, ND. "Thrombosis in PNH". (17 May).

Reproductive Endocrinology and Immunology Conference, Duke University Medical Center, Durham, NC. "Antiphospholipid Antibodies". (29 May).

Rheumatology Grand Rounds, Duke University Medical Center, Durham, NC. "Antiphospholipid Antibodies and the Antiphospholipid Antibody Syndrome". (29 July).

Medical Grand Rounds, Duke University Medical Center. "Anticoagulation Management: New Strategies and Therapeutic Agents", co-presentation with Susan I. O'Shea, M.D. (12 September).

Med/Peds Noon Conference, Duke University Medical Center. "Bleeding Disorders". (6 October).

Rheumatology Basic Science Conference, Duke University Medical Center. "From Factor Inhibitors to Antithrombotic Therapy: Targeting Factor V and Factor VIII". (17 November).

Hematology/Oncology Grand Rounds, Duke University Medical Center. "When will those pigoons be available?". (14 January).

Thrombosis Discussion Group, Duke University Medical Center. "Genetics of APS". (14 January).

Vascular Surgery Conference, Duke University Medical Center. "Anticoagulation Therapy: New Management Strategies and Therapeutic Alternatives". (6 February).

Stroke Conference, Duke University Medical Center. "Antithrombotic Therapy: New Agents and New Strategies". (21 April).

Heparin-Induced Thrombocytopenia GlaxoSmithKline Preceptorship, Duke University Medical Center. Organization of full-day preceptorship, including opening remarks and final wrap-up. (4 May).

2003

Medicine Noon Conference, State-of-the-Art Lecture, Duke University Medical Center. "Hypercoagulable Work-up". (19 May).

Anesthesiology Grand Rounds, Duke University Medical Center.

"Antithrombotic Management Strategies in the Perioperative Setting". (2 June).

Rheumatology Grand Rounds, Duke University Medical Center. "Autoimmune Disorders of Hemostasis" (16 November)

2005

Hematology/Oncology Grand Rounds, Research Presentation, Duke University Medical Center. "Platelet Transfusions in Thrombocytopenic Patients; Is There an Optimal "Dose"?" (5 January 2005).

Hematology/Oncology Grand Rounds, Extended Case Presentation, Duke University Medical Center. "When is HIT not HIT?" (2 March 2005).

Stroke Conference, Duke University Medical Center. "Stroke and the Antiphospholipid Syndrome." (4 May 2005).

Rheumatology Research Conference, Duke University Medical Center. "Thrombotic Risk in Patients with Immune-Mediated Thrombotic Disorders". (24 October 2005).

Pathology Grand Rounds, DUMC. "Clinical Applications of Basic Research: Genomic Strategies to Identify Patients at High Risk for Recurrent Thrombosis." (4 November 2005).

Hematology/Oncology Grand Rounds, DUMC. "On Cattle, Rats, and Men. An Odyssey from the Dairy Farm to Personalized Medicine." (9 November 2005).

2006

Hematology/Oncology Grand Rounds, Extended Case Presentation, DUMC. "von Willebrand Disease". Co-presentation with Nicole Whitlatch, M.D. (8 March 2006).

Thrombosis Seminar, Duke University Medical Center. "Incidence of Thromboembolic Events in Patients with Antibodies to Heparin/PF4 after Cardiac Bypass Surgery". Co-presented with Gow Arepally, M.D., Ranjit Goudar, M.D., Elizabeth Krakow, M.D., and Ian Welsby, M.D. (29 March).

Gynecologic Oncology Tumor Board/Conference, Duke University Medical Center, Durham, NC. "Venous Thromboembolism and Gynecologic Malignancy" (29 May 2006).

Vascular Surgery Conference, Duke University Medical Center. "Coagulation and Disorders of Hemostasis". (11 August).

2007

Medical Grand Rounds, Duke University Medical Center. "Inside the P&T Committee—a Pro and Con Debate on Formulary Management and Medication Safety", co-presentation with Peter Kussin, M.D., Keith Kaye, M.D., Cathy Vaughan, Pharm.D. (20 July 2007).

2008

Hematology/Oncology Grand Rounds, Duke University Medical Center, Durham, NC. "Clinical Research in Thrombosis". (9 January 2008)

Hematology/Oncology Grand Rounds, Duke University Medical Center,

Durham, NC. "Thromboprophylaxis in Cancer Patients". Co-presentation with Nicole Kuderer, M.D. (13 February 2008)

Pediatrics Hematology/Oncology Research Conference, Duke University Medical Center. "Clinical Research in Hemostasis and Thrombosis at Duke" (18 June 2008).

Dermatology Grand Rounds, Duke University Medical Center. "Antiphospholipid Syndrome" (20 August 2008).

Vascular Surgery Conference, Duke University Medical Center. "Duration and Intensity of Anticoagulation: Part 1" (22 August 2008).

Joint General Surgery/Thoracic Surgery/Anesthesiology Grand Rounds, Duke University Medical Center. "Heparin-Induced Thrombocytopenia". (22 October 2008).

Vascular Surgery Conference, Duke University Medical Center. "Duration and Intensity of Anticoagulation: Part 2" (24 October 2008).

2009

Hematology/Oncology Grand Rounds, Duke University Medical Center, Durham, NC. "New Developments in the Prevention and Treatment of Venous Thromboembolism". Co-presentation with Katherine Walsh, M.D. (29 April 2009).

Duke Gastroenterology Grand Rounds, Duke University Medical Center, Durham, NC. "Periprocedural Management of Antithrombotic Therapy". (1 October 2009).

From Foam to Filters: What's New in Venous Disease 2009, Duke Division of Vascular Surgery and Department of Radiology, Washington Duke Inn, Durham, NC. "Current Guidelines and Recommendations for the Management of DVT" (12 December 2009).

2010

Genomic Medicine Forum, Duke Institute for Genomic Science and Policy, Durham, NC. "Genomic Characterization of Recurrent Venous Thromboembolism" (14 January 2010).

Hematology/Oncology Grand Rounds, Duke University Medical Center, Durham, NC. "From Platelet Dosing to Whole Exome Sequencing: Research in Hemostasis and Thrombosis". (24 February 2010).

Medical Grand Rounds, Duke University Medical Center, Durham, NC. "Anticoagulant Therapy: (When) can it be stopped?" (2 April 2010).

Medical Grand Rounds, Duke University Medical Center, Durham, NC. "Morbidity and Mortality Conference: Therapeutic Options for PE in a Patient with Metastatic Cancer" with Drs. LeBlanc, Goodman, Fortin, Zafar, and Kussin. (25 June 2010).

Telacris Preceptor Educational Program, Duke University Medical Center, Durham, NC. "Antithrombin Deficiency and the Hematologist" (21 July 2010).

Medical Director's Continuing Education Series, Hospital Laboratories, Duke University Medical Center, Durham, NC. "New Anticoagulants and the Clinical Laboratory" (21 & 22 July 2010).

Critical Care Grand Rounds, Duke University Medical Center. "Thrombocytopenia in the ICU" (7 October 2010).

Stroke Conference, Duke University Medical Center. "Monitoring Platelet Function. The Case for Clopidogrel" (20 October 2010).

2011

Vascular Surgery Conference, Duke University Medical Center, Durham, NC. "Anticoagulant Therapy 2011. Which drug(s), what dose(s) and for how long?" (13 May 2011).

Vascular Surgery Conference, Duke University Medical Center, Durham, NC. "Anticoagulant Therapy 2011. Which drug(s), what dose(s) and for how long? Part 2" (20 May 2011).

Hematology/Oncology Grand Rounds, Duke University Medical Center, Durham, NC. "New Oral Anticoagulants. Trials and Tribulations". (5 Oct 2011).

2012

From Foam to Filters: What's New in Venous Disease 2012, Division of Vascular Surgery, Washington Duke Inn & Golf Club, Durham, NC. "Hypercoagulability and Venous Disease" (4 Feb 2012).

Medicine Grand Rounds, Duke University Medical Center, Durham, NC. "Antithrombotic Therapy. Personalizing the Approach" (27 July 2012).

Hematology/Medical Oncology Grand Rounds, Duke University Medical Center, Durham, NC. "Venous Thromboembolism: Current Research" (8 August 2012)

DCI Heme Malignancies/Cellular Therapy Seminar Series, Duke University Medical Center, Durham, NC. "Antithrombotic Therapy. Personalizing the Approach" (13 Nov 2012)

2013

From Foam to Filters: What's New in Venous Disease 2013, Division of Vascular Surgery, Washington Duke Inn & Golf Club, Durham, NC. "Ring in the New or "Wring" out the Old. Best treatment for VTE" (2 Feb 2013).

Sutton Station Internal Medicine Presentation, Durham, NC. "Anticoagulant Therapy. New Drugs, New Strategies" (20 Mar 2013)

Thoracic Surgery Grand Rounds, Duke University Medical Center, Durham, NC. "DVT and PE Prophylaxis and Treatment for the Cardiothoracic Surgery Patient" (17 July 2013)

2014

Stroke Conference, Duke University Medical Center, Durham, NC. "Coagulopathies and Stroke" (5 Feb 2014)

Duke Hematology/Oncology Grand Rounds, Duke University Medical Center, Durham, NC. "Treatment Strategies for Thromboembolic Disease" (12 Feb 2014)

Vascular Surgery Conference, Duke University Medical Center, Durham, NC. "Venous Thromboembolism. Incidence, Prevention, and Treatment at Duke" (20 June 2014).

Medical Grand Rounds, Duke University Medical Center, Durham, NC. "When Hoofbeats are not Horses. A Prolonged aPTT in the CCU" (10 October 2014).

2015

Orthopaedics Patient Safety Conference, Duke University Medical Center, Durham, NC. "Patient Safety and Perioperative Antithrombotic Therapy" (4 March 2015).

Rheumatology Grand Rounds, Duke University Medical Center, Durham, NC. "Evaluation and Management of the Antiphospholipid Syndrome" (3 November 2015)

2016

Vascular Surgery Conference, Duke University Medical Center, Durham, NC. "Direct Oral Anticoagulants and the Vascular Surgery Patient" (12 February 2016).

Duke Tuesday in Urology, Searle Conference Center, Duke University Medical Center, Durham, NC. "Perioperative Anticoagulants and Management Algorithms" (23 February 2016).

Orthopaedics Patient Safety Conference, Duke University Medical Center, Durham, NC. "Thromboprophylaxis in Orthopaedic Surgery" (13 July 2016).

2017 Current Issues for the Advanced Practice Provider, The Umstead Hotel & Spa, Cary, NC. "How I Manage Clotting Disorders Seen in Oncology Patients" (27

October 2017).

**2018** Sutton Station Internal Medicine Presentation, Durham, NC. "Anticoagulant

Therapy Update – 2018" (20 June 2018)

# Invited Lectures, Continuing Education, etc., North Carolina (outside Duke)

**1998**: MAHEC Lecture, Asheville, NC: "Hypercoagulable States". (12 May).

1999 Continuing Medical Education Presentation, Betsy Johnson Regional Hospital,

Dunn, NC. "Anticoagulation Therapy." (1 February).

2001 Continuing Education Program, Alamance Country Club, Burlington, NC. "The

Therapeutic Approach to Deep Venous Thrombosis and Pulmonary Embolism".

(10 April).

2002 Corporate Sponsored Program (Glaxo SmithKline), Durham, NC. "HIT: The

Duke Experience" (with Kenneth Mahaffey, M.D.). (14 May).

Session Moderator, "Cancer, Angiogenesis, and Thrombosis", Duke Comprehensive Cancer Center and Duke Comprehensive Hemostasis & Thrombosis Center, Grove Park Inn, Asheville, NC. "Clinical Implications".

(21-22 June).

Cardiology Grand Rounds, Carolinas Medical Center, Charlotte, NC. "Biology of Platelet Disorders, with a Focus on Heparin-Induced Thrombocytopenia."

(15 October).

2003 Corporate Sponsored Program (Glaxo SmithKline), Durham, NC. "HIT: The

Duke Experience. Redux.". (10 June).

Grand Rounds, New Hanover Medical Center, Wilmington, NC. "Heparin-Induced Thrombocytopenia. Diagnosis and Management". (3 September).

**2004** Educational Symposium, Crabtree Valley Marriott, Raleigh, NC. (Sponsored by

Dade Behring). "Clinical Utility of the PFA-100®". (22 April).

2006 SLE: New Horizons in Research and Treatment, Joint sponsorship by the Duke

University School of Medicine and the Lupus Foundation of America, Inc., Piedmont Chapter, Ballantyne Resort, Charlotte, NC. "Advances in the Diagnosis and Management of Antiphospholipid Syndrome". (11 February

2006).

2007 North Carolina Chapter Scientific Meeting, American College of

Physicians, Washington Duke Inn & Golf Club, Durham, NC. "How Do You

Diagnose and Treat Hypercoagulable Patients?" (20 January).

Duke Debates – Controversies in the Management of Patients with

Hematologic Malignancies, The Grove Park Inn, Asheville, NC (presented by the Division of Cellular Therapy at Duke University). "Antithrombotic Therapy in

Cancer Patients", and "Management of Inhibitor-Associated Hemostatic Disorders" (co-presentation with Murat Arcasoy, M.D.) (23 March 2007).

2008 Duke Debates – Controversies in the Management of Patients with

Hematologic Malignancies, The Grove Park Inn, Asheville, NC (presented by

Duke University Health System and the Division of Cellular Therapy). "ASCO/NCCN Guidelines for Thromboprophylaxis (and Treatment) in the

Cancer Patient" (7 March 2008).

Venous Thromboembolism. The Clinical Science and the Practice, The Friday Center, Chapel Hill, NC (co-sponsored by Duke University Pulmonary Vascular Disease Center and PRIME). "Venous Thromboembolism" (14 March 2008).

2009

Hematology & Oncology CME Series, Department of Medicine, Carolinas Medical Center Northeast, Concord, NC. "Thrombocytopenia Management Update" (4 February 2009).

Duke Debates: Controversies in the Management of Patients with Hematologic Malignancies, Inn on Biltmore Estate, Asheville, NC. "Thrombopoietin Receptor Agonists" (24 April 2009).

Bleeding Disorders Tri-Regional Meeting for Regions IV South, IV North, and VI, Raleigh Sheraton, Raleigh, NC. "Clinical Diagnosis of VWD. Perspective of the NHLBI Guidelines" (18 May 2009).

2010

From Foam to Filters: What's New in Venous Disease 2010, Duke Medicine, Washington Duke Inn & Golf Club, 3001 Cameron Blvd, Durham, NC. "Debate: Medical vs. Endovascular Management of Acute Iliofemoral DVT", with Michael J. Miller, MD (10 December 2010), and "Hypercoagulable States" (11 December 2010).

2011

North Carolina Oncology Association & South Carolina Oncology Society Joint Membership Conference, The Westin, Charlotte, NC. "Thrombosis and Coagulation" (26 February 2011).

CME Presentation, Cape Fear Valley Medical Center, Fayetteville, NC. "Venous Thromboembolism. Update on Prevention and Treatment" (14 March 2011).

Duke Debates: Controversies in the Management of Patients with Hematologic Malignancies, The Grove Park Inn, Asheville, NC. "Thrombopoietic Agents for ITP", and "Medical Management of Acute Iliofemoral DVT" (30 April 2011).

Hematology & Oncology CME Series, Department of Medicine, Carolinas Medical Center Northeast, Concord, NC. "Antibody-Mediated Thrombotic Syndromes" (4 October 2011).

2012

Duke Debates 2012: Controversies in the Management of Patients with Hematologic Malignancies, Grove Park Inn, Asheville, NC. "ITP: Splenectomy vs. Life Long Pharmacotherapy", debate with Dr. Gowthami Arepally; and "New Anticoagulants for VTE, Afib, and beyond... Is 'newer' always 'better'?, debate with Dr. Ivy Altomare (6 May 2012).

2013

Duke Debates 2013: Controversies in the Management of Patients with Hematologic Malignancies, Grove Park Inn, Asheville, NC. "Extended VTE Therapy with New Agents vs. Lovenox/Warfarin", debate with Dr. Gowthami Arepally; and "Proper Application of Routine Clinical Laboratory Tests for the New Anticoagulants" (28 April 2013).

Rheumatology Grand Rounds, University of North Carolina, Chapel Hill, NC. "Antiphospholipid Syndrome. Thrombotic Risk and Therapeutic Strategies" (26 July 2013).

2014

Duke Debates 2014: Controversies in the Management of Patients with Hematologic Malignancies, The Mills House, Charleston, SC. "Nearly All Patients Should be on the Newer/Novel Anticoagulants: No", debate with Dr. Ara Metjian (15 March 2014).

Medicine Grand Rounds, 7<sup>th</sup> Annual Jeffress Palmer Lecture, UNC School of Medicine, Chapel Hill, NC. "Bridging Anticoagulation. Then and Now..." (30 October 2014).

2015

8<sup>th</sup> Annual Venous Thromboembolism & Anticoagulation Conference, Carolinas Healthcare System Northeast, Hamrick Theatre, Charlotte, NC. "Periprocedural Bridging of Anticoagulation Therapy" and "Antiphospholipid Antibody Syndrome" (7 November 2015).

## Invited Lectures, Other Institutions (National & International)

1997

Invited Presentation, 10<sup>th</sup> International Symposium on Technological Innovations in Laboratory Hematology, Brugge, Belgium. "Thrombophilia: The Emerging Role of Molecular Diagnostics". (15 June).

Course Chairman, Heparin Induced Thrombocytopenia -- State of the Art Symposium. Washington, D.C. (21 June).

Course Chairman, Heparin Induced Thrombocytopenia -- State of the Art Symposium. American Society of Hematology, 39th Annual Meeting, San Diego, CA. (5 December).

Educational Session Speaker, American Society of Hematology, 39th Annual Meeting, San Diego, CA: "Pathogenesis and Treatment of Autoimmune Disorders of Coagulation: Antiphospholipid Antibody Syndromes". (6 & 7 December).

1998:

Medical Grand Rounds, Tulane University Medical Center, New Orleans, LA. "Heparin Induced Thrombocytopenia: An Update". (11 February).

Course Chairman, Heparin Induced Thrombocytopenia -- State of the Art Symposium. Atlanta, GA. (21 February).

Course Chairman, Heparin Induced Thrombocytopenia -- State of the Art Symposium. Houston, TX. (7 March).

Course Chairman, Heparin Induced Thrombocytopenia -- State of the Art Symposium. Boston, MA. (25 April).

Cambridge Healthtech Institute's Third Annual "Emerging Applications of Tissue Sealants", San Diego, CA. "The Hematological Safety of Bovine Thrombin" (2 May).

Course Chairman, Heparin Induced Thrombocytopenia – State of the Art Symposium. New York City, NY. (16 May).

Course Chairman, Heparin Induced Thrombocytopenia – State of the Art Symposium. Dearborn, MI. (20 June).

Hematology Conference, University of Louisville, Louisville, KY: "Heparin Induced Thrombocytopenia: An Update." (7 August).

Medicine Grand Rounds, St. Francis Medical Center, Pittsburgh, PA. "Diagnosis and Management of Heparin Induced Thrombocytopenia and Thrombosis." (21 October).

Course Chairman, Heparin Induced Thrombocytopenia – New Syndromes and New Treatments. Los Angeles, CA. (14 November).

1999

Medicine Grand Rounds, William Beaumont Hospital, Detroit, MI. "Diagnosis and Management of Heparin-Induced Thrombocytopenia." (27 January).

6th Annual Cancer Conference, "Update on Hematology: Malignant and Non-Malignant Conditions", The Helen & Harry Gray Cancer Center at Good Samaritan Medical Center, West Palm Beach, FL. "The Hypercoagulability States: Identification and Management." (1 March).

Hematology, Oncology, and Blood & Bone Marrow Transplantation Grand Rounds, University of Iowa Hospitals & Clinics, Iowa City, IA, "New Insights into the Antiphospholipid Antibody Syndromes." (7 April).

Hemostasis and Thrombosis Update 1999. 16th Annual 3-day Seminar and Workshop, Temple University School of Medicine, Philadelphia, PA. "Heparin-Induced Thrombocytopenia: Diagnosis and Management." (16 April).

Grand Rounds, Halifax Medical Center, Daytona Beach, FL. "Heparin-Induced Thrombocytopenia: Diagnosis and Management." (23 April).

MEC Symposium, Philadelphia, PA. "Heparin-Induced Thrombocytopenia: New Syndromes and New Treatments." (15 May).

MEC Symposium, Los Angeles, CA, "Heparin-Induced Thrombocytopenia: New Syndromes and New Treatments." (26 June).

Blood Club, Division of Hematology, Oncology, and Transplantation, 2000 Department of Medicine, University of Minnesota, MN. "Bovine Thrombin-Induced Antibodies". (7 February).

Hematology Grand Rounds, Mt. Sinai Medical Center, New York, NY. "Bovine Thrombin-Induced Antibody Syndromes". (29 November).

> Educational session speaker: "Anticoagulation Management of the 'Problem' Patient". American Society of Hematology, 43rd Annual Meeting, Orlando, FL. (8 December).

Continuing Medical Education Program, Halifax Regional Hospital, South Boston, VA. "Venous Thromboembolism: Diagnosis, Management, & Prevention". (21 May).

31st Annual Dameshek Symposium, Via Christi Regional Medical Center, Wichita KS. "Anticoagulant Management of the Difficult Patient". (14 June).

Medical Grand Rounds, Covenant Medical Center, Saginaw, Ml. "Heparin-Induced Thrombocytopenia". (18 June).

Platelet Physiology SSC Scientific Session, "PFA-100: The Duke Experience". The 48th Scientific and Standardization Committee Meeting of the International Society on Thrombosis and Haemostasis, Boston, MA. (19 July).

Medical Grand Rounds, University of Tennessee, Knoxville, TN. "Heparin-Induced Thrombocytopenia". (27 August).

Hematology Dinner Lecture, Club Soda, Norfolk, VA. "Heparin-Induced Thrombocytopenia." (21 October).

Piedmont Hospital Medical Conference, Piedmont Hospital, Atlanta, GA. "Anticoagulation Management: Complex Cases and New Approaches". Also, Piedmont Hospital Cardiology Conference: "Heparin-Induced Thrombocytopenia". (5 February)

Scripps Cancer Center's Annual Conference: Clinical Hematology & Oncology 2003, Scripps Cancer Center, San Diego, CA. "Anticoagulation Management of the 'Problem Patient'". (15 February).

2003 Cardiology Update, Danville Regional Medical Center, Danville, VA. "Postoperative Coagulopathies and Thrombocytopenias". (20 February).

2001

2002

Cardiology Grand Rounds, Emory University, Atlanta, GA. "Heparin-Induced Thrombocytopenia". (7 March).

CME Presentation, Provena St. Joseph Medical Center, Joliet, IL. "Antithrombotic Therapy: Management Strategies and Therapeutic Complications". (6 August).

CME Presentation, CancerCenters of the Carolinas, Cancer Treatment Center, Greenville, SC. "Heparin-Induced Thrombocytopenia: Diagnosis & Management". (20 August)

Research Seminar, Puget Sound BloodCenter, Seattle, WA. "From Factor Inhibitors to Antithrombotic Therapy: Targeting Factor V and Factor VIII". (28 October).

2004

Hematologic and Breast Cancer Conference Review 2004, National Oncology Alliance, Renaissance Boca Raton, Boca Raton, FL. "Advances in Anticoagulation Management". (7 February).

1<sup>st</sup> Saudi International Symposium on Bleeding Disorders, King Faisal Specialist Hospital and Research Centre, Riyadh, Kingdom of Saudi Arabia. "Platelet Physiology and Diagnosis of Platelet Disorders" and "Molecular Aspects of Platelet Dysfunction Syndromes". (22 February).

Medical Grand Rounds, King Faisal Specialist Hospital and Research Centre, Riyadh, Kingdom of Saudi Arabia. "Antiphospholipid Antibody Syndrome: New Strategies to Understand a Complex Autoimmune Syndrome". (23 February).

7<sup>th</sup> Annual Congress, Turkish Thoracic Society, Hotels Pine Beach and Atlantis, Belek/Antalya, Turkey. "Prophylaxis of Venous Thromboembolism in Hereditary Thrombophilia" (29 April).

Meet the Professor session, 7<sup>th</sup> Annual Congress, Turkish Thoracic Society, Hotels Pine Beach and Atlantis, Belek/Antalya, Turkey. "Clinical and Laboratory Evaluation of Thrombophilia" (29 April).

Mayo Medical Laboratories Coagulation Conference, "Bleeding and Thrombosing Diseases: The Basics and Beyond", Mayo Clinic, Rochester, MN. "Lupus Anticoagulant and the Antiphospholipid Syndrome: Laboratory & Clinical Issues". (7 August).

Hematology/Oncology Grand Rounds, University of Pittsburgh Medical Center, Pittsburgh, PA. "Heparin-induced Thrombocytopenia: a Syndrome in Evolution". (13 October).

Simultaneous Session presentation, 46<sup>th</sup> Annual Meeting of the American Society of Hematology, San Diego, CA. "Risk Factors for Thrombosis and the Beneficial Effect of Aspirin in Patients with Antiphospholipid Antibodies (aPL)". (6 December 2004).

Hematology Conference, Division of Hematology, Brigham and Women's Hospital, Boston, MA. "Antibody-Mediated Thrombotic Syndromes" (21 December 2004).

2005

First Annual Hematology Update From the 2005 ASH Conference, University of Tennessee Graduate School of Medicine and Department of Health, University of Tennessee, Knoxville, TN. "Clinical Coagulation Disorders" (8 January 2005).

An NIH Conference on Dietary Supplements, Coagulation, and Antithrombotic Therapies, Masur Auditorium, Clinical Center, National Institutes of Health,

Bethesda, MD. "Clinical Implications for Patients on Antithrombotic Therapy While Taking Supplements" (13 January 2005).

Duke Debates – Controversies in the Management of Patients with Hematologic Malignancies, The Homestead, Hot Springs, VA (presented by Duke University Health System and The Division of Cellular Therapy). "Quagmire of Coagulation" (co-presentation with Stephan Moll, M.D.)(4 February 2005).

Hemophilia and Thrombosis Research Society Annual Symposium, Radisson Hotel & Suites, Chicago, IL. "Platelet Function Testing. Many Tests, Few Answers" (7 April 2005).

Current Concepts in Hemostasis Symposium, Omni Shoreham Hotel, Washington, DC. (Symposium hosted by Diagnostica Stago, Inc.) "Lupus Anticoagulants & Antiphospholipid Antibodies." (12 April 2005).

Eighth National Conference on Anticoagulant Therapy, Anticoagulation Forum, The Ritz-Carlton Orlando Grande Lakes, Orlando, Florida. "The Antiphospholipid Syndrome. What are we really measuring? How do we measure it? And how do we treat it?" (6 & 7 May 2005).

2<sup>nd</sup> Annual Practical Critical Care: A Case-Based Approach to Neurological and General Critical Care, Jordan Hall Conference Center, University of Virginia, Charlottesville, VA. "Coaguolpathies/DIC". (22 September 2005).

DRMC Continuing Medical Education, Danville Regional Medical Center, Danville, VA. "Recognition and Management of Heparin-induced Thrombocytopenia". (29 September 2005).

Fifth Annual Southwest Symposium on Thrombosis and Hemostasis, University of New Mexico, Albuquerque, NM. "Update on the Antiphospholipid Antibody Syndrome". (7 October 2005).

Fifth Annual Southwest Symposium on Thrombosis and Hemostasis, University of New Mexico, Albuquerque, NM. "Immune Mediated Bleeding Disorders". (8 October 2005).

Hematology/Oncology Grand Rounds, University of Virginia, Charlottesville, VA. "Immune-Mediated Thrombotic Disorders". (28 October 2005).

Educational session speaker: "Thrombosis and the Antiphospholipid Syndrome". American Society of Hematology, 47<sup>th</sup> Annual Meeting, Atlanta, GA. (10 & 11 December 2005).

2<sup>nd</sup> Annual Hemophilia and Thrombosis Research Society's Symposium, Northwestern Memorial Hospital, Chicago, IL. "Antiphospholipid Antibody Syndrome. Chair's Overview" and Session Chair. (20 April).

NHF on the Road 2006, Important Issues in Thrombophilia and Thrombosis, presented by National Hemophilia Foundation and National Alliance for Thrombosis and Thrombophilia, Minneapolis, MN. "Comprehensive Care Model in Thrombophilia", Session Moderator and presentation on Thrombophilia Pilot Program (29 April).

Hematology Conference, University of Pennsylvania Health System, Division of Hematology/Oncology, Philadelphia, PA. "Immune-Mediated Thrombotic Disorders" (16 June 2006).

52<sup>nd</sup> Annual Meeting, Scientific and Standardization Committee, International Society on Thrombosis and Haemostasis, Oslo, Norway. Lupus

Anticoagulant/Phospholipid-Dependent Antibodies Subcommittee: "Gene Expression Strategies to Identify Patients at Risk for Thrombosis with Antiphospholipid Antibodies". (29 June 2006).

52<sup>nd</sup> Annual Meeting, Scientific and Standardization Committee, International Society on Thrombosis and Haemostasis, Oslo, Norway. Lupus Anticoagulant/Phospholipid-Dependent Antibodies Subcommittee: "Point-of-Care INR Monitors in Patients with Antiphospholipid Antibody Syndrome". (29 June 2006).

Bleeding and Thrombosing Diseases, 2006 Mayo Update, Mayo Medical Laboratories Coagulation Conference, Rochester, MN. "Lupus Anticoagulant and the Antiphospholipid Syndrome". (3 August 2006).

Bleeding and Thrombosing Diseases, 2006 Mayo Update, Mayo Medical Laboratories Coagulation Conference, Rochester, MN. "Clinical Diagnosis of VWD: Synthesis of Clinical and Laboratory Assessments". (4 August 2006).

Coagulation Update 2006, Central Virginia Center for Coagulation Disorders, Virginia Commonwealth University Health System, Richmond, VA. "Antiphospholipid Antibody Syndrome". (30 September).

58<sup>th</sup> Annual Meeting, National Hemophilia Foundation, Philadelphia Marriott Downtown, Philadelphia, PA. "Pregnancy in Women with Thrombophilia". (13 October).

48<sup>th</sup> Annual Meeting and Exposition of the American Society of Hematology, Friday Satellite Symposium (Advances in the Management of Venous Thromboembolic Disorders Associated with Cancer and the Antiphospholipid Syndrome), Orange County Convention Center, Orlando, FL. "Clinical Options in the Management of VTE in Patients with Cancer and the Antiphospholipid Syndrome". (8 December).

48<sup>th</sup> Annual Meeting and Exposition of the American Society of Hematology, Symposium ("Recognizing von Willebrand Disease. Simple or Complex?"), Orange County Convention Center, Orlando, FL. "Clinical Diagnosis of von Willebrand Disease: Perspective of the NHLBI Guidelines". (9 December).

Continuing Medical Education Program, Halifax Regional Hospital, South Boston, VA. "Heparin-Induced Thrombocytopenia". (7 February).

Hematology/Oncology Grand Rounds, Mount Sinai Medical Center, Division of Hematology/Oncology, New York, NY. "Immune-Mediated Thrombotic Disorders." (15 June 2007).

Thrombosis Summit 2007, Fairmont Copley Plaza Hotel, Boston Massachusetts (Brigham and Women's Hospital and Harvard Medical School). "Thrombophilia". (29 September 2007).

2007 Louisville Hemostasis & Thrombosis Symposium, Galt House East, 140 North Fourth Street, Louisville, KY. "Antiphospholipid Antibody Syndrome" (20 October 2007).

American Nephrology Nurses' Association, 2007 Fall Meeting, Hyatt Regency Embarcadero, San Francisco, CA. "Coagulopathies: an Emerging Problem". (21 October 2007).

American Heart Association, Scientific Sessions 2007, Orlando, FL. Cardiovascular Seminar, Dietary Effects on Blood Coagulation and Hemostasis Session: "Balancing Drugs, Supplements and Diet in Your Patient and Use of Laboratory Tests". (6 November 2007)

King Faisal Specialist Hospital & Research Centre, Riyadh, Saudi Arabia. Medical Grand Rounds: "Anticoagulation Management: Transforming Clinic-Based Strategies to Personalized Medicine". (19 November 2007)

King Faisal Specialist Hospital & Research Centre and King Fahad Medical City, Riyadh, Saudi Arabia. Hematology Special Lecture: "Antiphospholipid Antibody Syndrome". (19 November 2007)

1<sup>st</sup> Point of Care Testing (POCT) Workshop, Prospective Challenges and Impact in Clinical Practice, King Faisal Specialist Hospital & Research Centre and King Fahad Medical City, Riyadh, Saudi Arabia. "The Value of Different POCT Coagulation Tests in Patient Management". (21 November 2007)

49<sup>th</sup> ASH Annual Meeting and Exposition, Georgia World Congress Center, Atlanta, GA. "Diagnosis of Antiphospholipid Antibodies in the Clinical Coagulation Laboratory: Current Methods and Future Directions". (8 & 9 December 2007)

2008

3<sup>rd</sup> Annual Platelet Colloquium, Hotel Valencia Riverwalk, San Antonio, TX. "Activation of Human Platelets by Misfolded Proteins. A Link Between Aging and Thrombotic Phenotypes?" (25 January 2008)

Diagnosis and Management of Coagulation Disorders. An Interactive Workshop, Chicago City Centre Hotel, Chicago, IL (organized by Acumentis). "Diagnosis and Management of Platelet Disorders" (16 April 2008).

NHF on the Road, A Celebration of 10 Years of Activism on Behalf of Women in the Bleeding Disorders Community, Sheraton Imperial Hotel and Convention Center, Durham, NC. "Clinical Diagnosis of VWD. Perspective of the NHLBI Guidelines" (16 May 2008)

7<sup>th</sup> International Congress of Saudi Society of Hematology, King Fahd Medical City, Riyadh, Saudi Arabia. "Antiphospholipid Syndrome" (22 May 2008).

7<sup>th</sup> International Congress of Saudi Society of Hematology, King Fahd Medical City, Riyadh, Saudi Arabia. "Duration and Intensity of Anticoagulation" (22 May 2008).

7<sup>th</sup> International Congress of Saudi Society of Hematology, King Fahd Medical City, Riyadh, Saudi Arabia. "Thrombotic Thrombocytopenic Purpura" (22 May 2008).

Technical Session, 54<sup>th</sup> Annual Meeting of the Scientific and Standardization Committee of the ISTH, Vienna, Austria. "Hit by thrombotic events following heparin – think of HIT", session co-chair (4 July 2008).

Platelet Immunology Session, 54<sup>th</sup> Annual Meeting of the Scientific and Standardization Committee of the ISTH, Vienna, Austria. "Improving the specificity by using the high heparin approach in antigen tests" (4 July 2008).

American College of Rheumatology, 2008 Annual Meeting, San Francisco, CA. "New vs. Old Antithrombotics – How to Choose?" (27 October 2008).

2009

American Venous Forum, 21<sup>st</sup> Annual Meeting, Arizona Grand Resort, Phoenix, AZ. "Venous Thromboembolism Prophylaxis and Malignancy" (14 February 2009).

Duke Debates: Controversies in the Management of Patients with Hematologic Malignancies, Disney Yacht and Beach Club Resort, Orlando, FL. "Thrombopoietin Receptor Agonists" (20 March 2009).

Diagnosis and Management of Coagulation Disorders. An Interactive Workshop, The Allerton Hotel, Chicago, IL (organized by Independent Medical Education [IME] LLC). "Venous Thromboembolism" (15 April 2009).

2009 Annual Hemophilia & Thrombosis Research Society Scientific Symposium, Northwestern University, Thorne Auditorium, Chicago, IL (16-18 April 2009). "Catastrophic APS, MAPS, Lupus and TTP" (17 April 2009).

The 10<sup>th</sup> Annual Antithrombotic Therapy Symposium, Detroit Medical Center, Henry Ford Health System, Hyatt Regency Deaborn, Dearborn, MI. "Prediction of Thrombotic Risk: A Crystal Ball?" (22 April 2009).

The 10<sup>th</sup> Annual Antithrombotic Therapy Symposium, Detroit Medical Center, Henry Ford Health System, Hyatt Regency Deaborn, Dearborn, MI. "Antiphospholipid Antibodies and Venous Thrombosis" (22 April 2009).

Beckman Coulter Hemostasis CE Seminar & User Meeting, Boars Head Inn, Charlottesville, VA. "Anticoagulant Therapy. What Tests to Use?" (20 May 2009).

11<sup>th</sup> Annual Symposium on Bleeding & Thrombosis, presented by MidwestCoag Hemostasis and Thrombosis Laboratories, Westin Hotel, Indianapolis, IN. "Antiphospholipid Antibodies. Laboratory Testing". (16 June 2009).

Educational Program, XXII Congress of the International Society on Thrombosis and Haemostasis, Boston, MA. "Lupus Anticoagulants: Historical Background". (11 July 2009)

Third Annual North American Thrombosis Summit, Fairmont Copley Plaza Hotel, Boston Massachusetts (Brigham and Women's Hospital and Harvard Medical School). "Anticoagulation Bridging. The NHLBI-Sponsored Trial". (26 September 2009).

Ninth Annual Southwest Symposium on Thrombosis and Hemostasis, Albuquerque Marriott Pyramid North, Albuquerque, NM. "von Willebrand's Disease: a review of the 2008 NHLBI recommendations". (11 October 2009).

The 20<sup>th</sup> Annual William E. McKenney, MD, Memorial Conference, Kent Hospital Continuing Medical Education, The Rennaissance Hotel, Providence, RI. "Panel Discussion – Bridge Therapy for Thrombosis" (17 November 2009).

51<sup>st</sup> Annual Meeting of the American Society of Hematology, Educational Sessions, New Orleans, LA. "Heparin-induced thrombocytopenia: when a low platelet count is a mandate for anticoagulation" (5-6 December 2009).

Grand Rounds, Department of Medicine, Cork University Hospital, Cork, Ireland. "Antiphospholipid Syndrome: an Immune-Mediated Thrombotic Disorder" (3 March 2010).

Haematology and Obstetrics – Areas of Common Interest, Department of Obstetrics and Gynaecology, University College Cork, Cork, Ireland. "Antiphospholipid Antibody Syndrome", and "LMWH for Mechanical Valves Debate" (with Dr. Susan O'Shea). (5 March 2010)

Post-ASH Review. Translating Today's Science into Tomorrow's Practice, Sheraton Hotel, New Orleans, LA. "Addressing Common Questions in Consultative Hematology" (20 March 2010).

13<sup>th</sup> International Congress on Antiphospholipid Antibodies, Galveston Island Convention Center at the San Luis Resort, Galveston, TX. "Antiphospholipid Antibodies and Hemostatic Pathways" (14 April 2010).

2010 Annual Hemophilia & Thrombosis Research Society Scientific Symposium, Northwestern Memorial Hospital, Chicago, IL (15-17 April 2010). "Laboratory Diagnosis of the Antiphospholipid Syndrome" (16 April 2010).

2010 Highlights of ASH in Latin America, Windsor Barra Hotel, Rio de Janeiro, Brazil. "Management of Thrombotic Disease" (14 May 2010).

Bleeding and Thrombosing Diseases: 2010 Mayo Update, Mayo Clinic, Rochester, MN. "Lupus anticoagulants, antiphospholipid antibodies, and antiphospholipid syndrome: overview and update" (4 Aug 2010), and "Heparin-induced thrombocytopenia. Clinical and Laboratory Diagnosis & Treatment" (5 Aug 2010).

Educational Conference, Virginia Oncology Associates, Virginia Beach, VA. "The Bleeding Patient. Diagnosis and Management of Immune-Mediated Coagulopathies" (12 Aug 2010).

Cancer-Associated Thrombosis. Update on Novel Findings, Inn on the Lake, Canandaigua, NY. "Optimal Treatment of VTE in Cancer" (1 September 2010).

Internal Medicine Conference, Northside Hospital, Atlanta, GA. "Venous Thromboembolism. The Effect on the Hospitalized Patient" (28 October 2010).

American College of Rheumatology, ACR/ARHP 2010 Scientific Meeting, Study Group, Atlanta, GA. "Antiphospholipid Antibodies: Diagnostic Strategies for the Clinical Laboratory" (9 November 2010).

American Heart Association, Scientific Sessions 2010, Chicago, IL. "New Anticoagulant Therapies. Impact in Today's Healthcare Environment" (15 November 2010).

Rheumatology Grand Rounds, Hospital for Special Surgery/Cornell University, New York, NY. "Antiphospholipid Syndrome (APS)" (9 March 2011).

Portsmouth Naval Medical Center Medical Grand Rounds, Portsmouth, VA. "Venous Thromboembolism: which anticoagulant, and for how long?" (15 April 2011).

HTRS Coagulation Disorders Workshop, The Allerton Hotel, Chicago, IL. "Antiphospholipid Antibody Syndrome" (28 April 2011).

Hematology Symposium, Halifax Regional Hospital CME, South Boston, VA. "Platelets" (10 May 2011).

STAT: An Interactive Learning Activity About Bleeding Disorders and Coagulation Deficiencies for EM Residents, Boston Marriott Copley Place, Boston, MA. "The clinical utility and limitations of platelet function testing" (31 May 2011).

Bertha Bouroncle Distinguished Lecturer, Internal Medicine Grand Rounds, The Ohio State University, Columbus, OH. "Antiphospholipid Antibody Syndrome" (16 June 2011).

Lupus Anticoagulant/Phospholipid-Dependent Antibodies Subcommittee Educational Session, 57<sup>th</sup> Annual SSC Meeting, XXIII Congress of the International Society on Thrombosis and Haemostasis, Kyoto International Conference Center, Kyoto, Japan. "Catastrophic Antiphospholipid Syndrome" (23 July 2011).

2011 ASH State-of-the-Art Symposium, Palmer House Hilton, Chicago, IL. "New Oral Anticoagulants – When and When Not to Use" (24 Sep 2011).

Hematology/Oncology Grand Rounds Seminar Series, Mount Sinai School of Medicine, New York, NY. "Heparin-Induced Thrombocytopenia. Atypical Presentations". (13 Oct 2011).

2012 Hematology/Oncology Grand Rounds, University of Pittsburgh Medical Center, Pittsburgh, PA. "Atypical Presentations of Venous Thromboembolism". (4 Jan 2012).

> Thrombosis & Hemostasis Summit of North America 2012, Chicago, IL. "Antiphospholipid Syndrome" (4 May 2012).

Medicine Grand Rounds, King Khalid University Hospital, King Saud University, Riyadh, Kingdom of Saudi Arabia. "Antiphospholipid Syndrome" (14 May 2012).

3rd International Conference on Thrombosis and Hemostasis, King Khalid University Hospital, King Saud University, Riyadh, Kingdom of Saudi Arabia. "Rare Thrombotic Disorders", "von Willebrand Disease", and "Duration of Anticoagulant Therapy" (15 & 16 May 2012).

Innovation in Hemostasis: Lab Efficiency and Patient Management, Industry Workshop, AACC 2012 Meeting, Los Angeles, CA. "Integrated Diagnostic Solutions for Thrombotic Disorders" (17 July 2012).

2012 ASH Consultative Hematology Course, Sheraton Chicago Hotel & Towers, Chicago, IL. "New Anticoagulants: Pros, Cons, and Unknowns" (28) Sep 2012).

2012 ASH State-of-the-Art Symposium, Sheraton Chicago Hotel & Towers, Chicago, IL. "Thrombosis in Cancer - Review of Current ASCO and NCCN Treatment Guidelines" (28 Sep 2012).

2012 ASH State-of-the-Art Symposium, Loews Hollywood Hotel, Los Angeles, CA. "Thrombosis in Cancer – Review of Current ASCO and NCCN Treatment Guidelines" (12-13 Oct 2012).

Hematology/Oncology Grand Rounds, University of Cincinnati Cancer Institute. Cincinnati, OH. "Antibody-Mediated Thrombotic Syndromes" (14 Nov 2012).

Complex Cases in Pregnant Women with Blood Disorders: Hemostasis and Thrombosis Issues; Foundation for Women & Girls with Blood Disorders, Satellite Symposium, 54th Annual Meeting of the American Society of Hematology, Atlanta, GA. "Portal Vein Thrombosis and Heparin-Induced Thrombocytopenia" (7 Dec 2012).

Educational session speaker: "Perioperative Management of Patients on Chronic Antithrombotic Therapy". American Society of Hematology, 54th Annual Meeting, Atlanta, GA. (8 & 9 December 2012).

2013 Highlights of ASH in North America, Coronado Island Marriott, Coronado, CA. "Thrombosis and Anticoagulation" (19 Jan 2013)

LIV Congreso Nacional de la Agrupación Mexicana para el Estudio de la Hematología, Educational Sessions, Thrombosis, Mazatlan, Mexico. "Thrombotic Storm. From Case Reports to Genetic Insights" (19 April 2013)

7<sup>th</sup> New Insights into Coagulation: New Anticoagulants in 2013, Perelman School of Medicine, University of Pennsylvania, Philadelphia, PA. "Treatment Strategies for New Oral Anticoagulants" (3 May 2013)

4<sup>th</sup> International Conference on Thrombosis and Hemostasis, King Saud University, College of Medicine, Riyadh, Kingdom of Saudi Arabia. "Bridging Anticoagulation for Perioperative Management", "New Oral Anticoagulants and Changing Landscape of Anticoagulant Therapy", "Venous Thromboembolism and Anticoagulant Therapy: Duration of Therapy", "Update on the Predictive Value of D-Dimer in Patients with Idiopathic VTE" and "Translational Medicine Advances in von Willebrand Disease" (12 & 13 May 2013); and "Laboratory Assessment of Antithrombotic Therapies" (14 May 2013).

The 2<sup>nd</sup> TSH International Symposium: Thrombosis & Hemostasis, Centara Grand @ CentralWorld, Bangkok, Thailand. "Antiphospholipid Syndrome" and "Perioperative Anticoagulation" (25 May 2013)

59<sup>th</sup> Annual Meeting of the Scientific and Standardization Committee of the ISTH, Amsterdam, Netherlands. "Bleeding in Cancer: An Unseen Epidemic? (29 June 2013)

AACC Industry Workshop (sponsored by Instrumentation Laboratories, Inc), AACC Annual Meeting & Clinical Lab Expo 2013, Houston, TX. "Antiphospholipid Syndrome. Diagnosis and Laboratory Tests Overview" (31 July 2013).

15th Mayo Bleeding & Thrombosing Diseases Conference, Mayo Clinic, Rochester, MN. "Heparin-Induced Thrombocytopenia. Laboratory and Clinical Diagnosis, and Management" and "Lupus Anticoagulants, Antiphospholipid Antibodies and Syndrome. Overview and Update". (7 & 8 August 2013)

VTE Prevention, Management and Recovery for Oncology Surgery and Orthopaedics Lecture Series, The Capital Grille Restaurant, Northside Hospital, Atlanta GA. "Improving VTE Risk Assessment and Prophylaxis in Orthopedic Surgery" (12 Sept 2013)

14<sup>th</sup> International Congress on Antiphospholipid Antibodies & 4<sup>th</sup> Latin American Congress on Autoimmunity, Sofitel Rio de Janeiro Copacabana, Copacabana, Rio de Janeiro, Brazil. "'Weak' Lupus Anticoagulants. What are they? And what is their clinical significance?", "APS Treatment Trends. Beyond Heparin and Warfarin", and "Thrombocytopenia and APS. New Therapeutic Options" (18 & 19 Sept 2013)

HEMO 2013, Brazilian Congress of Hematology, Hematotherapy, and Cell Therapy, Convention Center, Brasilia, Brazil. "The New Anticoagulants in Clinical Practice", and "Management of Bleeding Complications in Patients Using Novel Anticoagulants" (9 & 10 Nov 2013)

14<sup>th</sup> Annual ASH Review, Cleveland Clinic/Case Western Reserve University, InterContinental Hotel & Bank of America Conference Center, Cleveland, OH. "ASH Update. Thrombosis" (22 Jan 2014)

HTRS Coagulation Disorders Workshop, The Allerton Hotel, Chicago, IL. "Diagnosis & Management of Venous Thromboembolism in Adults" (9 Apr 2014)

Spaet Visiting Professor Lecture, Department of Pathology, Montefiore Medical Center, Bronx, NY. "Rare Thrombotic Diseases" (15 May 2014)

Hematology Seminar, Washington University, St Louis, MO. "Translating Aptamers to Therapeutics. Antithrombotic Strategies" (23 July 2014)

Hematology/Oncology Grand Rounds, Weill-Cornell Medical Center, New York, NY. "Catastrophic Thrombotic Syndromes" (20 Jan 2015)

2014

Scripps' 35<sup>th</sup> Annual Conference: Clinical Hematology & Oncology, Hyatt Regency La Jolla at Aventine, San Diego, CA. "Venous Thromboembolism: Special Management Issues" (14 February 2015)

XXVIIIth International Symposium on Technological Innovations in Laboratory Hematology (in collaboration with ICSH and NASCOLA), The Sheraton Hotel, Chicago, IL. "Lupus Anticoagulants. Challenges & New Guidelines" (21 May 2015).

2015 ASCO Annual Meeting, Hematology for the Oncologist Seminar, Coagulation, McCormick Place, Chicago, IL. "Antiphospholipid Syndrome" (29 May 2015).

2016 Highlights of ASH in North America, Westin Harbour Castle, Toronto, Ontario, CA. "Thrombosis and Anticoagulation" (15 Jan 2016).

Virginia Oncology Associates' 4<sup>th</sup> Annual Hematology Conference, Hilton Virginia Beach Oceanfront, Virginia Beach, VA. "Peri-Procedural Management of Anticoagulation Therapy" (23 Jan 2016).

2016 Highlights of ASH in Latin America, Sheraton Hotel, Porto Alegre, Brazil. "Thrombosis and Anticoagulation" (29 April 2016).

7° Curso Internacional. Avances en Trombosis y Hemostasia, Hotel Crowne Plaza, Santiago, Chile. "Management of Catastrophic Thrombotic Syndromes", and "Perioperative Management of Patients on Anticoagulants" (6 May 2016).

Second Annual Venous Thromboembolism (VTE) Advocacy Summit, The College of Physicians of Philadelphia, Philadelphia, PA. Sponsored by Bristol-Myers-Squibb/Pfizer. "What's Happened since 2008? An Update to the Surgeon General's Call to Action", and "This is Serious. VTE Patient Education" (20 May 2016).

Medical Grand Rounds, Augusta University, Medical College of Georgia, Augusta, GA. "Perioperative Management of Anticoagulant Therapy" (31 May 2016).

15<sup>th</sup> International Congress on Antiphospholipid Antibodies, Elexus Hotel, North Cyprus. "How Do I Approach Thrombotic Storm" (23 September 2016).

ISTH Advanced Training Course in Thrombosis and Hemostasis, Emory University, Atlanta, GA, USA. "Diagnosis and Management of Immune Thrombocytopenias" and "Heparin-Induced Thrombocytopenia" (2 November 2016).

HTRS Trainee Workshop: "Building a Career in Hemostasis and Thrombosis", Westin San Diego Gaslamp Quarter, San Diego, CA. "Thrombophilia Management with DOACs" (1 December 2016)

Scripps' 37<sup>th</sup> Annual Conference: Clinical Hematology & Oncology 2017, Omni San Diego Hotel, San Diego, CA. "Perioperative Anticoagulation Management" and "Interesting Issues in Anticoagulation" (18 & 19 February 2017)

Hematology Grand Rounds, UT Southwestern Medical Center, Dallas TX. "Antiphospholipid Syndrome: Diagnosis and Management of a "Rare" Syndrome" (26 April 2017)

Pulmonary Embolism. State-of-the-Art and Scientific Update. 3<sup>rd</sup> Annual Symposium. The PERT Consortium. Royal Sonesta Boston, Cambridge, MA. "Thrombotic Storm. HIT, TTP, APS and Other Hypercoagulable States" (24 June 2017)

2016

2018

Hematology/Oncology Grand Rounds, University of Pittsburgh Medical Center, Pittsburgh, PA. "Catastrophic Thrombotic Syndromes and Antiphospholipid Antibodies". (14 February).

62<sup>nd</sup> Annual Meeting, Society of Thrombosis and Haemostasis Research (GTH), Vienna, Austria. "Antiphospholipid Syndrome. A Guide to Diagnosis and Treatment". (23 February).

XXI Congress of the Chilean Society of Hematology and the XI Congress of Transfusion Medicine, Puerto Varas, Chile. "Thrombosis and Cancer", "Catastrophic Thrombosis", and "Direct Oral Anticoagulants". (9-11 August 2018).

# Abstract Presentations (partial list)

2012

Ortel TL, Beecham G, Hedges D, Whitehead P, Beecham A, Hahn SE, Lawson JW, Erkan D, Brandao LR, James AH, Manco-Johnson MJ, Kulkarni R, Kitchens CS, Pericak-Vance MA, Vance JM. Whole-exome sequencing identifies novel risk variants for thrombotic storm. 58<sup>th</sup> Annual Meeting of the Scientific and Standardization Committee of the ISTH, Liverpool, UK, Hot Topics, Clinical Science, presentation HTC06, 29 June 2012.

# Telemedicine, Teleconferences, Webconferences

2001

Duke Telemedicine Patient Directed Teaching Conference, "Factor VIII Inhibitor". (25 January).

Duke Telemedicine Patient Directed Teaching Conference, "DIC". (23 August). American Society of Clinical Pathology Teleconference, "Heparin-induced Thrombocytopenia: Diagnosis and Management". (15 September).

2002

Duke Telemedicine Patient Directed Teaching Conference, DUMC. "Deep Venous Thrombosis in the Pregnant Patient" (with Andra James, M.D.). (30 April).

Duke Telemedicine Patient Directed Teaching Conference, DUMC. "Massive Pulmonary Embolism" (with Victor Tapson, M.D.). (22 May).

Duke Telemedicine Patient Directed Teaching Conference, DUMC. "Hypercoagulable Workup" (12 June).

Duke Telemedicine Patient Directed Teaching Conference, DUMC. "Prolonged aPTT in a Patient With a Stroke". (27 June).

2006

American Society of Clinical Pathology Teleconference, "Clinical and Laboratory Diagnosis of Heparin-Induced Thrombocytopenia". (22 June).

2008

American Society of Clinical Pathology Teleconference, "Antiphospholipid

Antibodies and the Clinical Laboratory". (1 October 2008).

2010

American Society of Clinical Pathology Teleconference. "Heparin-Induced Thrombocytopenia" (6 October 2010).

2011

Duke/Exeter Thromboembolism Program, Durham, NC. "Critical Illness and Venous Thromboembolism", and "Reversing Novel Oral Anticoagulants. What are the Options?" (13 January 2011).

ASH Educational Webinar. "Anticoagulant Management of Antiphospholipid Antibody Syndrome" (6 September 2011).

2012 Duke Oncology Network Journal Club Webconference. "Heparin-induced Thrombocytopenia" (6 Feb 2012).

# Patient-oriented Presentations

**2006** Blood clots: Who is at risk? How do they get treated? How do you prevent

them? Patient seminar sponsored by the UNC Thrombophilia Program and the National Alliance for Thrombosis and Thrombophilia (NATT), Hilton Hotel.

Durham, NC. "Blood Clots: the Basics". (4 March 2006).

**2008** Blood Clots and Blood Clotting Disorders. Key Issues in Diagnosis, Treatment

and Prevention. Patient seminar sponsored by the University of North Carolina Thrombosis Program in conjunction with the National Alliance for Thrombosis and Thrombophilia and Duke University Thrombosis & Hemostasis Center,

Hilton Hotel, Durham, NC. "Blood Clots". (1 March 2008)

Stop the Clot™. Interactive Forum on Blood Clots for Patients, their Families & the Public. Patient seminar presented by National Alliance for Thrombosis & Thrombophilia (NATT-North Carolina), Victorious Praise Church, Durham, NC.

"Blood Clots". (22 November 2008)

**2009** The People's Pharmacy with Joe and Terry Graedon. Radio Show #729: Deep

Vein Thrombosis (aired on WUNC-FM, 27 & 28 June 2009).

## Panel Discussions

2016 "The Future of Bleeding Management: Is Your Team Ready?" American College of Cardiology, 2016, McCormick Place, Chicago (2 April 2016).

#### Student and Fellow Trainees:

## Hematology Fellows

Stephan Moll, M.D., Research Fellow in Hematology/Medical Oncology. Project: Lupus anticoagulants and the INR. 1995-1996. Current position: Associate Professor of Medicine, Division of Hematology, University of North Carolina, Chapel Hill, NC.

Susan O'Shea, M.D., Research Fellow in Hematology/Medical Oncology. Project: Hypercoagulable states and antithrombotic strategies in hemodialysis-dependent patients. 2000-2002. Awards: ASH Scholar Award, 2002. Current position: Consultant Haematologist, Department of Haematology, Cork University Hospital, Cork, Ireland.

Stephanie Perry, M.D., Research Fellow in Hematology/Medical Oncology. Project: Monitoring anticoagulation in patients with lupus anticoagulants. 2001-2004. Awards: Duke K12 recipient, 2003-2006; K23 Award, 2007-present. Current position: Private Practice, Durham, NC.

Zöe Larned, M.D., Research Fellow in Hematology/Medical Oncology. Project: Hypercoagulability associated with hormonal therapy in patients with breast cancer. 2002-2004. Current position: Ochsner Clinic, New Orleans, LA.

- Anil Potti, M.D., Research Fellow in Hematology/Medical Oncology. Project: Genomic screening to identify thrombotic risk factors in patients with antiphospholipid antibodies. Awards: American Society of Hematology CRTI awardee, 2004. 2004-2006.
- Veshana Ramiah, M.D., Research Fellow in Hematology/Medical Oncology. Project: Identification of risk factors for thrombotic risk in patients with cancer. Awards: American Society of Hematology CRTI awardee, 2006; Hemophlia & Thrombosis Research Society Research Grant, 2007-2009. 2005-2007. Current position: Medical Hematologist/Oncologist, Danville VA.
- Nicole Whitlatch, M.D., Research Fellow in Hematology/Medical Oncology. Project: Heparin-Induced Thrombocytopenia after Cardiac Bypass Surgery. 2006-2008. Current Position: Medical Oncologist, Chico, California.
- Ara Metjian, M.D., Research Fellow in Hematology/Medical Oncology. Project: Identification of Women with Antiphospholipid Antibodies at High-Risk for Fetal Loss. 2008. Current position: Assistant Professor, Department of Medicine, Division of Hematology, Duke University Medical Center.
- Nicole Kuderer, M.D., Research Fellow in Hematology/Medical Oncology. Project: Venous Thromboembolism in the Cancer Patient. 2008-2010. Current position: Division of Hematology and Seattle Cancer Care, University of Washington, Seattle, Washington.
- Nirmish Shah, M.D., Research Fellow in Pediatric Hematology/Oncology. Project: Contribution of Thrombotic Events in Patients with Sickle Cell Disease and Acute Vaso-occlusive Crisis. 2009-June 2010. Current Position: Assistant Professor, Division of Hematology, Department of Medicine, Duke University Medical Center.
- Alexandra Borst, M.D., Research Fellow in Pediatric Hematology/Oncology. Project: Hemostasis in Pediatric Liver Transplant. 2015-17.

## Non-Hematology Fellows

- Karen Hansen, M.D., Research Fellow in Rheumatology. Project: Thrombosis in patients with antiphospholipid antibodies. 1998-1999. Current position: Chief, Division of Rheumatology, University of Wisconsin VAMC, Madison, WI.
- Joseph Shanahan, M.D., Research Fellow in Rheumatology. Project: Thrombotic risk factors in patients with antiphospholipid antibodies. 2001-2002. Current position: Clinical Rheumatologist, Raleigh, NC.
- Gregg Stashenko, M.D., Research Fellow in Pulmonary Medicine. Project: Gene Expression Profiles in Patients with Recurrent Thromboembolism. 2008-2010. Current position: Clinical Pulmonologist, Asheville, NC.
- Deepak Voora, M.D., Medical Instructor in Cardiology. Project: Gene Expression Profiles in the Analysis of Patients with Aspirin Resistance. 2008-2011. Current position: Medical Instructor, Division of Cardiology, Duke University Medical Center.

#### Post-doctoral trainees

- Deborah A. Lewis, Ph.D., Research Scientist, Division of Hematology. Project: Structure-function relationships in coagulation factor VIII. 1998-2017.
- Tomonori Izumi, Ph.D., Postdoctoral Fellow, Hematology. Project: Inhibition of activated protein C by antiphospholipid antibodies. 1999-2002. Current position: Division of Proteomics Research, Institute of Medical Science, Tokyo, Japan.

- Zuowei Su, M.D., Ph.D., Postdoctoral Fellow, Hematology. Project: Diagnostic applications of optical waveforms in coagulation assays. 1999-2004. Current position: Research Scientist, Department of Pathology, Duke University Medical Center, Durham, NC.
- Olga Meltem Akay, M.D., Osmangazi University, Faculty of Medicine, Department of Hematology, 26480 Eskişehir, Turkey. Project: Identification of Patients at High-Risk for Recurrent Thromboembolism by Gene Expression Profiles. Visiting hematologist, May-August, 2007.
- Fernanda Pessoa, Ph.D., Heart Institute (InCor) HCFMUSP, University of Sao Paulo, Brazil. Project: Platelet response to aspirin. 2012-13.

#### Graduate Students

- Jonathan Schoenecker, M.D./Ph.D. student, Medical Sciences Training Program, Duke University School of Medicine. Advisor: Jeffrey H. Lawson, M.D., Ph.D. Department: Pathology. Project: Immunostimulatory Properties of Proteases. Member of the Graduate Committee. 1999-2002. Current position: Residency in Orthopaedic Surgery, Vanderbilt University Medical Center.
- Shahid M. Nimjee, M.D./Ph.D. candidate. Advisor: Bruce Sullenger, Ph.D. Department: University Program of Genetics. Project: Aptamers and Antidotes: A Novel Approach to Drug Design. Member of the Graduate Committee. 2002-2005. Current position: Department of Surgery, Ohio State University, Columbus, OH.
- Huili Wang, Ph.D. candidate. Advisor: Pascal Goldschmidt-Clermont, M.D. Department: Pathology. Project: Molecular and Genomic Analysis of an Integrin Correlated with a High Risk for Cardiovascular Disease. Member of the Graduate Committee. 2003-2005. Current position: Post-doctoral Fellow, Environmental Pathology Training Program, University of North Carolina at Chapel Hill, Chapel Hill, NC.
- Sabah Oney, Ph.D. candidate. Advisor: Bruce Sullenger, Ph.D. Department: University Program in Genetics and Genomics. Project: Developing reversible anti-platelet therapies using RNA ligands. Member of the Graduate Committee. 2003-2008. Current position: Research Scientist, Research Triangle Park, NC.
- Dawn Kernagis, Ph.D. candidate. Advisor: Michael Datto, M.D., Ph.D., Department of Pathology, Duke University Medical Center. Project: Gene Expression Profiling of Decompression Stress. Spring, 2008 to 2012. Current position: Research scientist, Florida Institute for Human & Machine Cognition, Pensacola, FL.

### Medical Residents

Elizabeth Krakow, M.D., Resident in Internal Medicine. Project: Incidence of thromboembolic events in patients with antibodies to heparin-PF4 after cardiac bypass. Awards: PRIMER Award, 2004. 2004-2006. Current position: Resident in Hematology, McMaster University, Hamilton, Ontario, Canada.

#### Medical Students

- Fatih Çağri Sarikaya, 3<sup>rd</sup> Year Medical Student, Hacettepe University School of Medicine, Ankara, Turkey. Project: Genetics of Antiphospholipid Syndrome: Multiplex Antiphospholipid/Autoimmune Families. Summer 2009.
- Ahmet Alptekin, 4<sup>th</sup> Year Medical Student, Istanbul Faculty of Medicine, Istanbul, Turkey. Project: Genetics of Antiphospholipid Syndrome: Multiplex Antiphospholipid Families. Summer 2009.

# Undergraduate Students

- Jan Szatkowski, Duke Undergraduate Student. Project: Characterization of phospholipid-binding site of coagulation factor VIII. 1999-2000.
- Rashi Vora, Duke Undergraduate Student. Project: Genetics of Antiphospholipid Syndrome. Characterization of multiplex families. 2012-2015.

## Campbell Interns

- Sandy Elmehrath, Clinical Research Senior Internship, BS in Clinical Research Program, Campbell University School of Phamacy, Morrisville, NC. Project: Clinical Significance of Antibodies to Heparin/PF4 after Cardiac Bypass Surgery. Jan-Apr, 2007.
- Kendall Whitaker, Clinical Research Senior Internship, BS in Clinical Research Program, Campbell University School of Phamacy, Morrisville, NC. Project: Genetics of Antiphospholipid Syndrome. Jan-Apr, 2008.
- Kasidy Street, Clinical Research Senior Internship, BS in Clinical Research Program, Campbell University School of Phamacy, Morrisville, NC. Project: Genetics of Antiphospholipid Syndrome. May-July, 2008.
- Victoria McKissick, Clinical Research Senior Internship, BS in Clinical Research Program, Campbell University School of Phamacy, Morrisville, NC. Project: Genetics of Antiphospholipid Syndrome. August, 2008, to October, 2008.
- Shayna Hall, Clinical Research Internship, Campbell University School of Pharmacy, Morrisville, NC. Project: Thrombosis Center Patient Registry and Gene Expression for Recurrent Thromboembolism Project. January April 2010.
- Heather Kretzschmar, Clinical Research Internship, Campbell University School of Pharmacy, Morrisville, NC. Project: CDC Registry. January April 2012.
- Ryan Williford, Clinical Research Internship, Campbell University College of Pharmacy & Health Sciences, Morrisville, NC. Project: CDC Registry, RECESS study. May July 2012.
- Caitlyn Fry, Clinical Research Internship, Campbell University College of Pharmacy & Health Sciences, Morrisville, NC. Project: Fondaparinux pharmacokinetic study and the use of databases in clinical research. January April 2013.

## High-School Interns and Trainees

- Jennifer Chau, Duke Comprehensive Cancer Center Summer on the Edge High-School Intern Program. Project: Molecular Biology. Summer, 2002.
- Heather Hoke, Duke Comprehensive Cancer Center Summer on the Edge High-School Intern Program. Project: Characterization of coagulation factors in a chemically-induced rat model of hemolysis and disseminated thrombosis. Summer, 2004.
- Sade Agboola, Duke Comprehensive Cancer Center Summer on the Edge High-School Internship Program. Project: Genomic Analysis of Patients with Antiphospholipid Antibodies. Summer, 2005.
- Elizabeth Garrard, Howard Hughes Medical Institute Summer Internship Program. Project: Genomic Analysis of Patients with Antiphospholipid Antibodies. Summer, 2005.
- Annie Chen, Duke Comprehensive Cancer Center Summer on the Edge High-School Internship Program. Project: A Genomic Comparison of Cells Incubated with APS Patient Plasma. Summer, 2006.

- Lulit Price, Duke Howard Hughes Summer Internship. Project: Identification of Patients at High-Risk for Recurrent Thromboembolism by Gene Expression Profiles. Summer, 2007.
- Jeff Marinshaw, Duke Comprehensive Cancer Center Summer on the Edge High-School Internship Program. Project: Gene Expression Profiles of Patients with Single and Recurrent VTE. Summer, 2008.
- Andrew Hertzberg, Duke Comprehensive Cancer Center Summer on the Edge High-School Internship Program. Project: Gene Expression Profiles of Patients with VTE. Summer, 2009.

Anita Ghandi, High school student, North Carolina School of Science and Math, Durham, NC. Research rotation. Heparin Induced Thrombocytopenia. 2011 – March 2012.

#### Areas of research interest:

Basic/Translational Research Interests

1. Genetics of Antiphospholipid Antibody Syndrome.

Personnel: Sharon Hall

Support: Program Research Funds (Discretionary)

Collaborators: Duke Center for Human Genetics

This project is investigating the genetics of antiphospholipid antibody syndrome (APS). Multiplex families in which the proband has APS and (1) one or more family members also have APS, or (2) one or more families also have another autoimmune disorder (e.g., systemic lupus erythematosus, rheumatoid arthritis) will be identified and recruited for study. We have enrolled almost 300 probands with APS and have several multiplex families that we are planning to study.

2. Molecular Basis of Thrombotic Storm.

Personnel: Sharon Hall

Keith Klemp

Support: John P. Hussman Foundation (at University of Miami)

Program Research Funds (Discretionary)

Collaborators: Jeffery Vance, MD, PhD, Margaret Pericak-Vance, PhD, and

Karen Nuytemans, PhD, University of Miami; Craig Kitchens, MD,

University of Florida.

This project is recruiting, enrolling and ascertaining individuals with a severe clinical phenotype of multiple thromboembolic events known as thrombotic storm. Whole exome sequencing is being used to investigate for genetic mechanisms that predispose individuals to develop this severe, life-threatening disorder. Initial efforts have focused on defining the clinical and laboratory phenotype of the syndrome, and we have recently begun analyzing sequence data from a cohort of affected individuals and selected family members.

#### Clinical Research Interests

1. Characterization of molecular responses to antiplatelet therapy.

Personnel: Keith Klemp

Sharon Hall

Co-investigators: Deepak Voora, M.D.

Support: NIH R01 (Voora, P.I.; Ortel, co-investigator)

This study is investigating the metabolomic and transcriptomic responses in platelet and whole blood samples from individuals on aspirin therapy who vary in their individual responses to aspirin as detected by platelet aggregometry.

2. Hemostasis and Thrombosis Shared Resource Core Laboratory (Ortel, Director)

Personnel: Keith Klemp

Sharon Hall

Support: Stago, Siemens, IL, and other industry resources.

Duke Shared Resource Clinical Laboratory Service

The Hematology Research & Development Laboratory investigates new laboratory diagnostic methodologies and is involved in the development and implementation of new approaches to the diagnosis and therapeutic management of patients with disorders of hemostasis. The laboratory is currently involved in several studies investigating platelet activity, working with Dr. Wei Jiang, Dr. Blumenthal, and other principal investigators. The laboratory can also provide expertise in flow cytometry-based investigations. This laboratory service has been available to investigators at Duke and outside Duke since July 2007.

3. COVET (Ortel, P.I.)

Personnel: Kristy Ferraro (Project Lead, DCRI)

Duke site investigator: Ewa Wysokinska, MD

Support: PCORI

The COVET study is a prospective, randomized, open-label, blind evaluation (PROBE) study that is comparing three different anticoagulant regimens (warfarin, target INR 2-3; rivaroxaban, 10 mg daily; and apixaban, 2.5 mg twice daily) for the long-term treatment of patients with an unprovoked venous thromboembolism after an initial 3-12 months of standard anticoagulant therapy.

# Clinical activity - type of practice and estimate of time commitment:

1. <u>Hematology Consult Service</u>. The Hematology Consult Service provides inpatient consultation for patients with a wide variety of hemostatic disorders. This is a busy service, seeing an average of 2 to 5 new patients a day and following between 10 to 20 patients daily on the wards. Additional members of the clinical team include a Medicine resident and

Hematology/Oncology fellow during the week, with coverage for new patients and emergencies only over the weekends. During the 2012-13 academic year, the commitment to this activity consisted of approximately 6 weeks. There is also a weekly hour-long conference held every Tuesday morning for case presentations and review, attended by the Hematology faculty and staff, and fellows, residents, and medical students rotating on this service.

- 2. <u>Hemostasis and Thrombosis Outpatient Clinic</u>. Outpatients with disorders of hemostasis are seen in a full-day clinic every Friday. In general, between four to six new patients are seen each week. Overall, the average number of patients seen in this clinic is 15-20 patients every Friday. Many of these patients have antiphospholipid syndrome and have been involved in prior and/or current research protocols. Dr. Ortel also supervises the overall organization of the clinic, and selected patients are enrolled into ongoing clinical research programs.
- 3. Anticoagulation Management Service. The Anticoagulation Management Service has been providing outpatient management of oral and parenteral anticoagulant therapy for patients at Duke since 1994. The clinic meets five days a week, with 25 to 50 patient visits each day and a total number of patients being managed of slightly more than 650 individuals. Approximately 10% of the patients are managed in a 'virtual clinic' mode, with laboratory studies obtained either at the clinic or at an outlying site with follow-up via telephone or e-mail. Dr. Ortel currently provides the supervisory medical role for all patients seen on Mondays and Fridays, in addition to an overall supervisory role for the organization and operational management of the service. New patients to the clinic are seen by a Physician Assistant (Kathy Vokaty, PA-C) or one or the clinical pharmacists working in the clinic (Kimberly Hodulik, Pharm.D., and Michelle Schoonover, Pharm.D.). The pharmacists also facilitate early transition of patients on anticoagulant therapy from inpatient to outpatient management (currently 4-6 patients/month). Two nurse clinicians (Karen Baker, R.N., and Dawn Johnson, R.N.) provide routine anticoagulation management, and Ms. Johnson also provides office triage and management, including management of the "virtual clinic" patients. There is a weekly meeting (~1 hr) for review of all new patients and discussion of new developments and/or problems. Recently, this service has been incorporating several quality improvement strategies to enhance outpatient management of patients on the new oral anticoagulants.
- 4. Inpatient Anticoagulation/Coagulation Management Service. This service began in September, 2004, in response to the recognized need for management assistance for inpatients who are receiving hemostatic or antithrombotic agents. Initial activities of this service include: (1) assistance in the management of all patients receiving coagulation factor therapy, including replacement therapy for hemophilic patients, use of recombinant factor VIIa in non-hemophilic bleeding situations, etc.: (2) assistance in the management of all patients receiving direct thrombin inhibitors; (3) management of perioperative/periprocedural anticoagulant therapy in all patients admitted from the outpatient Anticoagulation Management Service; (4) assistance with early discharge and outpatient management of patients with acute venous thromboembolism (coordinated with the outpatient Anticoagulation Management Service; pager: 970-2DVT); and (5) provision of guidance, education, and assistance when requested for other problems with anticoagulation management in Duke Hospital. Two pharmacists currently provide rotating coverage of this service during the week (Michelle Schoonover, Pharm.D., and Kim Hodulik, Pharm.D.). A supervisory team for this service has been developed and includes representative physicians from the Departments of Surgery, Pediatrics, Obstetrics & Gynecology, and Medicine. Dr. Ortel is the Medical Director of this service.

# Participation in academic and administrative activities of Duke University and the Medical Center:

1. Medical Director, Clinical Coagulation Laboratory, Department of Pathology, Duke University Medical Center (November, 1994, to present).

Personnel:

Charles Stewart, Supervisor Maria Notini, Analytical Specialist

The Medical Director of the Clinical Coagulation Laboratory oversees all new test development and implementation, reviews CAP and CLIA compliance issues, reviews all proficiency testing, and interfaces with physicians and other healthcare providers who have questions related to the Coagulation Laboratory. The Coagulation Laboratory re-introduced the point-of-care testing for whole blood PT determinations in the Anticoagulation Clinic in 2004. Point-of-care PT testing is also now available at two general medicine-supervised anticoagulation clinics (at Pickens and Pickett Road).

- 2. Medical Director, Clinical Coagulation Laboratory, Duke Referral Laboratory Services, Department of Pathology, Duke University Medical Center (February, 1996, to present).
- 3. Medical Director, Anticoagulation Management Service, Division of Hematology, Duke University Medical Center (November, 1994, to present).

Personnel:

Karen R. Baker, R.N. Kim Hodulik, Pharm.D. Michelle Schoonover, Pharm.D. Kathy Vokaty, P.A.-C. Dawn Johnson, R.N.

The Medical Director of the Anticoagulation Management Service oversees the clinical operations of this busy outpatient service. Types of patients seen include: (1) outpatient anticoagulation management by multiple approaches, including direct patient visits, 'lab & leave' visits with subsequent patient follow-up, and home-based self-testing; (2) outpatient conversion to parenteral anticoagulants to facilitate performance of invasive procedures; (3) therapeutic management of anticoagulation during pregnancy; and (4) hypercoagulable evaluations and therapeutic recommendations. We are also in the process of developing a state-wide network of Anticoagulation Management Services to facilitate transfer of patients to clinics closer to their homes after inpatient treatment at Duke. The clinical aspects of the clinic are described above.

- 4. Hematology Laboratory Advisory Committee, Hospital Laboratories, Department of Pathology, Duke University Medical Center (1994 to 1996).
- 5. Point-of-Care Testing Oversight Committee, Hospital Laboratories, Department of Pathology, Duke University Medical Center (November, 1994, to present).

This committee meets monthly to review new applications for point-of-care tests at Duke. The committee also provides oversight to ensure testing meets all appropriate regulatory requirements. Most recently, we have reviewed the application for the thromboelastography from the Department of Anesthesiology.

6. Central Line Task Force, Department of Nursing, Duke University Medical Center (August, 1995, to February, 1996).

This committee developed recommendations for management of central lines at Duke Hospital.

- 7. Cerner LIS Oversight Charting Committee, Hospital Laboratories, Department of Pathology, Duke University Medical Center (1997).
- 8. DVT Clinical Path Committee, Duke University Medical Center (January to December, 1998).

The DVT Clinical Pathway was initiated in the Duke Emergency Department in 2002 with development of a protocol for the Clinical Evaluation Unit and activation of the 970-2DVT pager. The inpatient Anticoagulation/Coagulation Management Service will be implementing many of the recommendations initially derived by this committee.

9. Medical Director, Platelet Antibody Laboratory, Department of Medicine, Duke University Medical Center (July, 1999, to present).

Personnel: Mary Ann Quinn-Allen, Analytical Specialist Darshana Dixit, Molecular Technologist II

The Medical Director of the Platelet Antibody Laboratory oversees all new test development and implementation, reviews CAP and CLIA compliance issues, and interfaces with physicians and other healthcare providers who have questions related to the Platelet Antibody Laboratory. This clinical laboratory also interfaces closely with the Hematology Research & Development Laboratory. Recent improvements in testing methodologies include the conversion of several tests from radioimmunoassays to flow cytometric assays, including the direct antiplatelet antibody test, the PNH screen, and Super Coombs assay. The Platelet Antibody Laboratory is also working on validating an assay for ADAMTS13, to use in the evaluation and management of patients with thrombotic thrombocytopenic purpura.

10. Director, Comprehensive Hemostasis and Thrombosis Center, Duke University Medical Center (October, 2001, to present).

Co-Directors: Andra H. James, M.D.(Maternal/Fetal Medicine)

Nirmish Shah, M.D. (Pediatrics)

Jeffrey H. Lawson, M.D., Ph.D. (Surgery)

Personnel Elizabeth H. Thames, R.N., Research Coordinator

Ibrahim Saber, M.D. Sheila Lambert-Adams, Research Coordinator

The Comprehensive Hemostasis and Thrombosis Center at Duke was started in 2001 and is one of eight pilot sites for the CDC thrombophilia pilot program. The purpose of the program is to (1) determine the efficacy of integrated multi-disciplinary care and prevention services for persons with hemophilia, other hereditary bleeding disorders including women with bleeding disorders, and thrombophilia to reduce morbidity and mortality associated with bleeding and clotting diseases; (2) assess unmet needs for service delivery and identify outreach strategies designed to improve access to care; (3) develop effective messages aimed at disease management and prevention; and (4) foster the development of training programs to enhance provider skills for the delivery of hemostasis and thrombosis care.

10. Clinical Sciences Faculty Council on Academic Affairs, Duke University Medical Center (2003 to present).

This committee serves as a deliberative body to provide a forum where faculty opinions are ascertained, articulated, and voiced in all significant debates and decisions involving the strategic academic interests of the clinical sciences faculty. The CSFC consists of two representatives elected from each clinical science department, four at-large members (from different departments) who are selected by and from the clinical sciences representatives to the University Academic Council, and the clinical sciences representative of the Executive Committee of the Academic Council. Dr. Ortel is currently serving as the Chair for this committee.

11. Executive Committee of Clinical Practice, Department of Medicine, Duke University Medical Center, (2006 to 2013).

This committee includes representation from each of the Divisions within the Department of Medicine and reviews clinical performance objectives and measures.

12. Clinical Chief, Division of Hematology, Department of Medicine, Duke University Medical Center (2007 to 2013).

The Clinical Chief for the Division of Hematology oversees all clinical activities in the Division, including room allocation and use, scheduling hub services, etc. Regular meetings are also held with the Vice Chair of Clinical Affairs and Medical Informatics in the Department of Medicine to review performance indicators.

13. Vice Chair for Basic and Translational Research, Department of Medicine, Duke University Medical Center (July 2008 to May 2010).

The Vice Chair for Basic and Translational Research oversees research activities in the Department of Medicine and reports directly to the Chair of the Department. Responsibilities include review and oversight of space utilization, oversight and management of the Haynes Fellow-to-Faculty Research Awards, and supervision of grants management with the Vice Chair for Finance Administration.

14. Director of Laboratory-Based Research, Department of Medicine, Duke University Medical Center (June 2010 to present).

The Director of Laboratory Based Research is a member of the Research Team in the Department of Medicine. Responsibilities include review and oversight of space utilization, including leading the Space Committee to develop a broad plan for the management of research space within the Department. Additional responsibilities include oversight and management of the Chair's Research Awards for junior faculty transitioning to independent investigator status.

15. Chief, Division of Hematology, Department of Medicine, Duke University Medical Center (February 2013 to present).

The Chief of the Division of Hematology is responsible for the academic, clinical, and educational missions of the Division of Hematology. The Chief works with the Chair of the Department to meet the goals and objectives of the Division and the Department.