
Michael R. Grunwald
contact: support@medsurityexperts.com

WORK EXPERIENCE

Levine Cancer Institute, Carolinas HealthCare System 7/1/13-present
Clinical Assistant Professor of Medicine, University of North Carolina at Chapel Hill
Acute Leukemia Specialist

I am responsible for the care of patients with hematologic malignancies. I serve as a clinical investigator, leading trials in leukemia patients.

Johns Hopkins University School of Medicine, Baltimore, MD 7/1/10-6/30/11
Assistant Chief of Service, Osler Medical Training Program
Instructor of Medicine

I oversaw more than 1,000 admissions in one year. I educated residents, interns, and students and ran teaching conferences. I partook in program improvement initiatives and performed extensive administrative duties.

New York University School of Medicine, New York, New York 5/01-8/02
Research Technician

Worked to create transgenic lines of *drosophila* in the developmental genetics laboratory of Dr. Ruth Lehmann.

Home Education Company, Brockton, MA 9/00-4/01
Teacher

Tutored disadvantaged students.

POSTGRADUATE TRAINING

Johns Hopkins University School of Medicine, Baltimore, MD 7/1/09-6/30/10, 7/1/11-6/30/13
Hematology and Oncology Fellowship Program
Postdoctoral Fellow

Johns Hopkins University School of Medicine, Baltimore, MD 7/1/07-6/30/09
Osler Medical Training Program
Resident

Johns Hopkins University School of Medicine, Baltimore, MD 7/1/06-6/30/07
Osler Medical Training Program
Intern

EDUCATION

Johns Hopkins University School of Medicine, Baltimore, MD
M.D. awarded May 2006

Harvard University, Cambridge, MA
A.B. in The Comparative Study of Religion awarded June 2000

MEMBERSHIP

American Medical Association
American Society of Clinical Oncology
American Society of Blood and Marrow Transplant
American Society of Hematology

MEDICAL LICENSE

State of North Carolina Medical License, issued July 2013
State of Maryland Medical License, issued April 2009

BOARD CERTIFICATION

American Board of Internal Medicine – Medical Oncology, 2013
American Board of Internal Medicine – Hematology, 2013
American Board of Internal Medicine – Internal Medicine, 2009

JOURNAL PEER REVIEWER

Ad Hoc Reviewer, *Journal of Hematology, Blood Transfusion & Disorders*, 2016
Ad Hoc Reviewer, *OncoTargets and Therapy*, 2016
Ad Hoc Reviewer, *Genes, Chromosomes, and Cancer*, 2016
Ad Hoc Reviewer, *Clinical Transplantation*, 2015
Ad Hoc Reviewer, *Bone Marrow Transplantation*, 2014, 2015, 2016
Ad Hoc Reviewer, *Therapeutics and Clinical Risk Management*, 2014
Ad Hoc Reviewer, *Biology of Blood and Marrow Transplantation*, 2013, 2014, 2015, 2016
Ad Hoc Reviewer, *Therapeutic Advances in Hematology*, 2013, 2014
Ad Hoc Reviewer, *Oncology Research and Treatment*, 2014
Ad Hoc Reviewer, *Cardiovascular Revascularization Medicine*, 2012
Ad Hoc Reviewer, *Journal of Clinical Oncology*, 2012

COMMITTEES

Committee on Cancer, Quality Improvement, Hematology Department Representative
Schwartz Rounds, Co-director/facilitator
Levine Cancer Institute Hematology/Oncology Fellowship Program, Core Faculty Member
Carolinas Medical Center Blood and Tissue Committee, Member
Levine Cancer Institute Quality Council, Physician Lead
Cannon Research Scholars Program, Preceptor

CLINICAL TRIALS

Amgen 20120234: A Phase 1b Study Evaluating the Safety, Tolerability, Pharmacokinetics, and Pharmacodynamics of AMG 232 Alone and in Combination with Trametinib in Adult Subjects with Relapsed/Refractory Acute Myeloid Leukemia (PI)
Forma Therapeutics 1101-HEM-101: A Phase 1 Dose Escalation, Multicenter, Open-label, Safety, Pharmacokinetic and Pharmacodynamic Study of FT-1101 in Patients with Relapsed Refractory Acute Leukemia or High-Risk Myelodysplastic Syndrome (PI)
Janssen 63935937MYF2001: A Randomized, Single-Blind, Multicenter, Phase 2 Study to Evaluate the Activity of 2 Dose Levels of Imetelstat in Subjects with Intermediate-2 or High-Risk Myelofibrosis (MF) Relapsed/Refractory to Janus Kinase (JAK) Inhibitor (PI)
Janssen 63935937MDS3001: A Study to Evaluate Imetelstat (JNJ63935937) in Transfusion-Dependent Subjects with IPSS Low or Intermediate-I Risk Myelodysplastic Syndrome (MDS) that is Relapsed/Refractory to Erythropoiesis-Stimulating Agent (ESA) Treatment
Incyte INCB-MA-PV-401: Prospective, Non-Interventional Study of Disease Progression and Treatment of Patients with Polycythemia Vera in United States Academic or Community Clinical Practices (PI, Steering Committee Member)
LCI-HEM-AML-SCD-001: Leukemia Stem Cell Detection in Acute Myeloid Leukemia (PI)
LCI-HEM-AML-AZA-001R: A Retrospective Chart Review of Response to Azacitidine for AML (PI)
LCI-HEM-NOS-SPEC-001: Specimen Collection for Analysis of Hematologic Disorders (sub-investigator)

MENTORING

Blake Goodbar, MD, medical resident (Carolinas Medical Center)
Anna Mistretta, MD, medical resident (Carolinas Medical Center)
Megan McDonnell, MD, medical resident (Carolinas Medical Center)
Michael Zimmerman, undergraduate student (Davidson College), graduate student (Johns Hopkins University)
Aaron Rohlman, undergraduate student (University of North Carolina – Chapel Hill)
Daniel Peters, medical student (University of South Carolina - Columbia)
Ahmad Mufti, MD, hematology/oncology fellow (Levine Cancer Institute)
Birendra KC, MD, hematology/oncology fellow (Levine Cancer Institute)
Srinivasa Sanikommu, MD, hematology/oncology fellow (Levine Cancer Institute)
Perrin Jhaveri, MD, hematology/oncology fellow (Levine Cancer Institute)
Adarsh Hiremath, MD hematology/oncology fellow (Levine Cancer Institute)
Junaid Hussain, MD, hematology/oncology fellow (Levine Cancer Institute)

HONORS AND AWARDS

Physician of the Quarter, Levine Cancer Institute – Carolinas HealthCare System, December 2014
Oncology Fellow Research Day Award – Honorable Mention (second prize), Clinical Research, 2013
Henry Strong Denison Award (Medical Student Research), Johns Hopkins University School of Medicine, 2004
Dean's Fund Scholarship (Medical Student Research), Johns Hopkins University School of Medicine, 2003
A.B. Summa Cum Laude, Harvard University, 2000
Thomas Temple Hoopes Prize (Outstanding Undergraduate Thesis), Harvard University, 2000
Phi Beta Kappa, Harvard University, 1999

PUBLICATIONS

Grunwald MR, Levis MJ. Variations in FLT3 ligand concentrations during the course of AML therapy. In Preparation.

Grunwald MR, Miller CB, Onitilo AA, Scola MA. Management of polycythemia vera in the community oncology setting. Submitted.

Gerds AT, Ahn KW, Hu ZH, Abdel-Azim H, Akpek G, Aljurf M, Ballen KK, Beitinjaneh A, Bacher U, Cahn JY, Chhabra S, Cutler C, Daly A, DeFilipp Z, Gale RP, Gergis U, **Grunwald MR**, Hale GA, Hamilton BK, Jagasia M, Kamble RT, Kindwall-Keller T, Nishihori T, Olsson RF, Ramanathan M, Saad AA, Solh M, Ustun C, Valcárcel D, Warlick E, Wirk BM, Kalaycio M, Alyea E, Popat U, Sobecks R, Saber W. Outcomes after umbilical cord blood transplantation for myelodysplastic syndromes. Submitted.

Liu HD, Ahn KW, Hu ZH, Hamadani M, Nishihori T, Wirk B, Beitinjaneh A, Rizzieri D, **Grunwald MR**, Sabloff M, Olsson RF, Bajel A, Bredeson C, Daly A, Inamoto Y, Majhail N, Saad A, Gupta V, Gerds A, Malone A, Tallman M, Reshef R, Marks DI, Copelan E, Gergis U, Savoie ML, Ustun C, Litzow MR, Cahn JY, Kindwall-Keller T, Akpek G, Savani BN, Aljurf M, Rowe JM, Wiernik PH, Hsu JW, Cortes J, Kalaycio M, Maziarz R, Sobecks R, Popat U, Alyea E, Saber W. Allogeneic hematopoietic cell transplant for adult chronic myelomonocytic leukemia. Submitted.

Knapper S, Russell N, Gilkes A, Hills RK, Gale RE, Cavenagh JD, Jones G, Kjeldsen L, **Grunwald MR**, Thomas I, Konig H, Levis MJ, Burnett AK. A randomized assessment of adding the kinase inhibitor lestaurtinib to first-line chemotherapy for *FLT3*-mutated acute myeloid leukemia. *Blood* 2016 Nov 21. pii: blood-2016-07-730648. [Epub ahead of print].

Grunwald MR, Avalos BR, Copelan EA. Hematopoietic Cell Transplantation in MDS: Undervalued and Underutilized. *Bone Marrow Transplant* 2016;51(8):1069-70.

Grunwald MR, McDonnell MH, Induru R, Gerber JM. Cutaneous manifestations of leukemia. *Semin Oncol* 2016;43(3):359-65.

Shaffer BC, Ahn KW, Hu ZH, Nishihori T, Malone A, Valcárcel D, **Grunwald MR**, Bacher U, Hamilton B, Kharfan-Dabaia MA, Saad A, Cutler C, Warlick E, Reshef R, Wirk BM, Sabloff M, Fasan O, Gerds A, Marks D, Olsson R, Wood WA, Costa LJ, Miller AM, Cortes J, Daly A, Kindwall-Keller T, Kamble R, Rizzieri D, Cahn JY, Gale RP, William B, Litzow M, Wiernik PH, Liesveld J, Savani BN, Vij R, Ustun C, Copelan E, Popat U, Kalaycio M, Maziarz R, Alyea E, Sobecks R, Pavletic S, Tallman M, Saber W. A prognostic system predictive of outcomes in patients undergoing allogeneic hematopoietic cell transplantation for myelodysplastic syndrome. *J Clin Oncol* 2016; 51(8):1069-1070.

McDonnell MH, Smith ET, Lipford EH, Gerber JM, **Grunwald MR**. Microgranular acute promyelocytic leukemia presenting with leukopenia and an unusual immunophenotype. *Hematol Oncol Stem Cell Ther* 2016; Jan 16. pii: S1658-3876(16)00006-6. doi: 10.1016/j.hemonc.2015.12.004. [Epub ahead of print]

Copelan EA, **Grunwald MR**, Druhan LJ, Avalos BR. The use of molecular markers to determine treatment in AML with normal cytogenetics. *Hematol Oncol Stem Cell Ther* 2015; 8(4):143-149.

Grunwald MR, Levis MJ. FLT3 tyrosine kinase inhibition as a paradigm for targeted drug development in AML. *Semin Hematol* 2015; 52(3):193-199.

Ghosh N, **Grunwald MR**, Fasan O, Bhutani M. Expanding role of lenalidomide in hematologic malignancies. *Cancer Manag Res* 2015; 7:105-119.

Copelan EA, **Grunwald MR**, Ghosh N, Plesca D, Trivedi J, Avalos BR. Hematopoietic cell transplantation in chronic myeloid leukemia in the age of tyrosine kinase inhibitors. *Discov Med* 2015; 19(104):213-218.

Copelan EA, Avalos B, Ahn KW, Zhu X, Gale RP, **Grunwald MR**, Hamadani M, Hamilton BK, Hale GA, Marks DI, Waller EK, Savani BN, Costa LJ, Ramanathan M, Cahn J, Khoury HJ, Weisdorf DJ, Inamoto Y, Kamble RT, Schouten HC, Wirk B, Litzow MR, Aljurf MD, van Besien KW, Ustun C, Bolwell BJ, Bredeson CN, Fasan O, Ghosh N, Horowitz MM, Arora M, Szer J, Loren AW, Alyea EP, Cortes J, Maziarz RT, Kalaycio ME, Saber W. *Biol Blood Marrow Transplant*. 2015; 21(3):552-558.

Wilkinson ST, **Grunwald MR**, Paik JJ, Ostrow LW, Gelber AC. Hickam's dictum and the rare convergence of antisynthetase syndrome and hemoglobin SC disease. *QJM*. 2015; 108(9):735-737.

Grunwald MR, Tseng LH, Lin MT, Pratz KW, Eshleman JR, Levis MJ, and Gocke CD. The detection of minimal residual disease by a sensitive PCR assay is prognostic of relapse for FLT3/ITD AML patients who have undergone allogeneic transplant. *Biol Blood Marrow Transplant*. 2014; 20(12): 1989-95.

Grunwald MR, Spivak JL. Ruxolitinib enhances platelet production in patients with thrombocytopenic myelofibrosis. *J Clin Oncol* 2016; 34(5):e38-40.

Grunwald MR. Allogeneic hematopoietic cell transplant in septuagenarians. *Biol Blood Marrow Transplant* 2013; 19: 1276-1278.

Ravandi F, Alattar ML, **Grunwald MR**, Rudek MA, Rajkhowa T, Richie MA, Pierce S, Daver N, Garcia-Manero G, Faderl S, Konopleva M, Borthakur G, Burger J, Kadia T, Dellasala S, Cortes J, Kantarjian H, and Levis M. Phase II study of azacytidine plus sorafenib in patients with relapsed and refractory acute myeloid leukemia with *FLT-3* internal tandem duplication mutation. *Blood* 2013; 121: 4655-4662.

Grunwald MR, Levis MJ. Efficacy and resistance of FLT3 inhibitors for acute myeloid leukemia. *Int J Hematol* 2013; 97: 683-694.

Desai SV, Feldman L, Brown L, Dezube R, Yeh J, Punjabi N, Afshar K, **Grunwald MR**, Harrington C, Naik R, Cofrancesco J. Impact of the 2011 ACGME on an internal medicine residency program: A prospective, randomized, controlled study of different schedules to meet duty hours and supervision requirements. *JAMA Intern Med* 2013; 173: 649-655.

Grunwald MR, Levis MJ. Are FLT3 inhibitors likely to improve FLT3-mutated AML in the foreseeable future? *Int J Hematol Oncol* 2013; 2: 9-11.

Grunwald MR, Howie L, Diaz LA, Jr. Takotsubo cardiomyopathy and fluorouracil: a case report and review of the literature. *J Clin Oncol* 2012; 30: e11-14.

Prabhakaran V, Raman SP, **Grunwald MR**, Mahadevia A, Hussain N, Lu H, Van Zijl PC, Hillis AE. Neural substrates of word generation during stroke recovery: the influence of cortical hypoperfusion. *Behav Neurol* 2007; 18: 45-52.

Grunwald MR, Goldberg MJ, Hofmann LV. Endovascular management of May-Thurner syndrome. *AJR Am J Roentgenol* 2004; 183: 1523-1524.

Grunwald MR, Hofmann LV. Comparison of urokinase, alteplase, and reteplase for catheter-directed thrombolysis of deep vein thrombosis. *J Vasc Interv Radiol* 2004; 15: 347-352.

Grunwald MR, Hofmann LV. Catheter-directed thrombolysis for treatment of symptomatic deep vein thrombosis. *Circulation* 2004; 109: e10.

ABSTRACTS

Stein B, Naim M, **Grunwald MR**, Moliterno AR, Oh ST, Paranagama D, Cordaro JA, Sun H, Parasuraman S, Boccia RV, Mesa R. Examining the clinical features and underlying cardiovascular risk among patients with polycythemia vera in the REVEAL study. American Society of Hematology Annual Meeting, San Diego, CA, December 3-6, 2016. Poster Presentation.

Kota V, Karkhanis P, Sharma R, Bolds S, Sitchenko K, Shrestha A, Jonnalagadda V, Gaddh M, Bernal-Mizrachi L, Heffner LT, Winton EF, McLemore ML, Langston A, Galipeau, Bodó I, Al-Kadhimi Z, Bashey A, Stuart RK, Vidito SI, Pati A, Gerber JM, **Grunwald MR**, Bradley KT, Tongol J, El-Geneidy M, Khoury HJ, Arellano M, Jillella A. A prospective multi-center trial shows reduction of early deaths (ED) and improved survival in elderly acute promyelocytic leukemia (APL) patients (>60 years). Results of using a simplified treatment algorithm and expert support in Georgia, South Carolina and neighboring states. American Society of Hematology Annual Meeting, San Diego, CA, December 3-6, 2016. Poster Presentation.

Jillella A, Karkhanis P, Sharma R, Bolds S, Shrestha A, Sitchenko K, Jonnalagadda V, Gaddh M, Bernal-Mizrachi L, Heffner LT, Winton EF, McLemore ML, Langston A, Galipeau, Bodó I, Al-Kadhimi Z, Bashey A, Stuart RK, Vidito SI, Pati A, Gerber JM, **Grunwald MR**, Bradley KT, Tongol J, El-Geneidy M, Khoury HJ, Arellano M, Kota V. A multi-center prospective study utilizing a simplified treatment algorithm complemented by expert support decreases induction mortality and improves survival in acute promyelocytic leukemia (APL). Results of the APL trial in Georgia, South Carolina and neighboring states. American Society of Hematology Annual Meeting, San Diego, CA, December 3-6, 2016. Poster Presentation.

Gerber JM, Druhan LJ, Foureau D, Jandrisevits E, Lance A, Price AE, Thurston V, Ai J, **Grunwald MR**, Lipford EH, Avalos BR. A novel approach to identify a putative leukemia stem cell population in acute lymphocytic leukemia (ALL) and distinguish Philadelphia chromosome-positive ALL from lymphoid blast crisis chronic myeloid leukemia. American Society of Hematology Annual Meeting, San Diego, CA, December 3-6, 2016. Poster Presentation.

Copelan EA, Gerber JM, Usmani SZ, **Grunwald MR**, Ghosh N, Fasan O, Bhutani M, Symanowski JT, Raghavan D, Avalos BR. American Society of Hematology Annual Meeting, San Diego, CA, December 3-6, 2016. Poster Presentation.

Stein BL, Boccia RV, Moliterno AR, **Grunwald MR**, Oh ST, Naim AB, Paranagama D, Sun H, Parasuraman S, Mesa RA. Burden of phlebotomy in patients with polycythemia vera in the United States: a preliminary analysis of baseline data from the REVEAL study. JADPRO Live at APSHO, Washington, DC, November 3-6, 2016. Poster Presentation.

Shahid Z, Symanowski J, LeStrange S, Usmani S, **Grunwald M**, Gerber J, Ghosh N, McCurdy L, Fasan O, Ai J, Avalos B, Copelan E. Cytomegalovirus Infection in T Cell Replete Peripheral Blood Stem Cell Transplant with Post-Transplant Cyclophosphamide- A Single Center Experience. IDWeek, New Orleans, LA, October 26-30, 2016. Poster Presentation.

Zimmerman MKA, **Grunwald MR**, Symanowski J, Gerber JM. Molecular and immunophenotypic predictors of response to azacitidine (aza) as frontline therapy for acute myeloid leukemia (AML). American Society of Clinical Oncology Annual Meeting, Chicago, IL, June 3-7, 2016. Poster Presentation.

Grunwald MR, Boccia RV, Moliterno A, Stein B, Oh ST, Naim AB, Cordero JA, Peng W, Sun H, Parasuraman S, Mesa RA. Self-reported quality-of-life (QoL) impairment and productivity loss in patients with polycythemia vera (PV) enrolled in the REVEAL study. American Society of Clinical Oncology Annual Meeting, Chicago, IL, June 3-7, 2016.

Grunwald MR, Stein B, Moliterno A, Boccia RV, Oh ST, Naim AB, Cordero JA, Peng W, Sun H, Parasuraman S, Mesa RA. Disease, clinical, and treatment characteristics of patients with polycythemia vera (PV) enrolled in the REVEAL study. American Society of Clinical Oncology Annual Meeting, Chicago, IL, June 3-7, 2016.

Grunwald MR, Levis MJ. Variations in FLT3 ligand levels during the course of AML treatment. 2013 American Society of Clinical Oncology Annual Meeting, Chicago, IL, May 31-June 4, 2013. Poster Discussion.

Grunwald MR, Lin MT, Pratz KW, Gocke CD, Levis MJ. Tandem duplication PCR (TD-PCR) is a novel method of detecting minimal residual disease in FLT3/ITD AML and is highly predictive of relapse risk following allogeneic transplant. 2012 American Society of Hematology Annual Meeting, Atlanta, GA, December 8-11, 2012. Poster Presentation.

Ravandi F, Alattar ML, Levis M, Garcia-Manero G, Richie MA, Daver N, Faderl S, Andreeff M, Borthakur G, Burger J, Kadia T, **Grunwald MR**, Deltasala S, Cortes J, Kantarjian H. Combination of sorafenib and 5-Azacitidine has significant activity in patients with relapsed/refractory or untreated acute myeloid leukemia and FLT3-ITD mutation. 2012 American Society of Hematology Annual Meeting, Atlanta, GA, December 8-11, 2012. Poster Presentation.

Alattar ML, Kantarjian H, Levis MJ, Richie MA, Daver NG, Garcia-Manero G, Faderl S, Borthakur G, Burger JA, Kadia TM, **Grunwald MR**, Deltasala S, Cortes JE, Ravandi F. Response rates in patients with relapsed/refractory acute myeloid leukemia with FLT3-ITD mutation using 5-azacitidine plus sorafenib. 2012 Markers in Cancer. October 11-13, 2012, Hollywood, FL. Poster Presentation.

Desai SV, Feldman L, Brown L, Dezube R, Punjabi N, Yeh J, Afshar K, **Grunwald M**, Naik R, Harrington C, Cofrancesco J. Impact of the 2011 ACGME Regulations on an Internal Medicine Residency Program: A Prospective, Randomized Controlled Study. 2012 Annual Program Directors in Internal Medicine Spring Meeting, Atlanta, GA, April 24-25, 2012. Poster Presentation.

Grunwald MR, McCarty GP, Noronha S, McDevitt MA, Loeb DM. Identification of alternative splicing events regulated by the BCR-ABL oncoprotein. American Society of Hematology Annual Meeting, San Francisco, CA, December 6-9, 2008. Poster Presentation.

Philipose LE, Alphs HH, Vimal S, Gold L, Rachakonda A, Dasari S, Bai J, Lee HK, **Grunwald MR**, Raman SP, Mahadevia A, Prabhakaran V, Hillis AE. Validating fMRI results using acute stroke patients. Society for Neuroscience Annual Meeting, San Diego, CA, October 23-27, 2004. Poster Presentation.

Prabhakaran V, Raman SP, **Grunwald MR**, Mahadevia A, Werner JK, Philipose LE, Hussain N, Alphs HH, Sun P, Lu H, Biswal B, Rypma B, van Zijl PCM, Hillis AE. Localization of cognitive processes using stroke patients and fMRI. Cognitive Science Society Annual Meeting, Chicago, IL, August 5-6, 2004. Poster Presentation.

Prabhakaran V, Raman SP, **Grunwald MR**, Mahadevia A, Werner JK, Philipose LE, Hussain N, Alphs HH, Sun P, Lu H, Barker PB, Wityk RJ, Rypma B, Hillis AE. Neural substrates involved in cognition for stroke patients and control subjects. Cognitive Neuroscience Society Annual Meeting, San Francisco, CA, April 18-20, 2004. Poster Presentation.

Grunwald MR, Hofmann LV. Comparison of urokinase, alteplase, and reteplase for catheter-directed thrombolysis of deep vein thrombosis. Society for Interventional Radiology Annual Meeting, Phoenix, AZ, March 25-30, 2004. Poster Presentation.

Navarro C, **Grunwald MR**, Lehmann R. Oocyte determination in *Drosophila*. Society for Developmental Biology Annual Meeting, Madison, WI, July 21-25, 2002. Oral presentation given by Dr. Caryn Navarro.

GRANTS RECEIVED

For the 7/1/11 through 6/30/13 period, I was supported by an institutional T32 grant:

PI Name: Nelson, William

Application ID: 2T32CA009071-32

Proposal Title: Molecular Targets for Cancer Detection and Treatment

Project Period Begin Date: 9/15/1979

Project Period End Date: 6/30/2016

Direct Costs: \$552,582
