

CURRICULUM VITAE

Antje Hoering

Cancer Research And Biostatistics (CRAB) • Seattle, WA 98109
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Education:

<i>Foster School of Business, University of Washington, Seattle, WA</i> Executive Development Program	2017
<i>University of Washington, Seattle, WA</i> Postdoctoral Fellow Biostatistics	1996-1999
<i>Max-Planck-Institute for Nuclear Physics, Heidelberg, Germany</i> Ph.D. Physics, cum laude	1991
<i>Oregon State University, Corvallis, Oregon</i> M.S. Physics	1988
<i>University of Tübingen, Tübingen, Germany</i> B.S. Physics	1985

Professional Positions:

Since 01/15: Chief Executive Officer, President, Cancer Research And Biostatistics (CRAB), Seattle, Washington.

Since 3/05: Affiliate Investigator, Division of Public Health Sciences, Fred Hutchinson Cancer Research Center, Seattle, Washington.

Since 2/06: Affiliate Assistant Professor, Department of Biostatistics, University of Washington, Seattle, Washington.

1/13-12/14: Chief Scientific Officer, Vice President, Cancer Research And Biostatistics (CRAB), Seattle, Washington.

11/04-12/12: Senior Biostatistician, Cancer Research And Biostatistics (CRAB), Seattle, Washington.

7/04-10/04: Assistant Professor, Mayo Medical School, Mayo Clinic, Rochester, Minnesota.

7/03-10/04: Senior Research Associate, Cancer Center Statistics, Section of Biostatistics, Mayo Clinic, Rochester, Minnesota.

1/02-6/03: Research Scientist II, Insightful Corp., Seattle, Washington.

5/99-12/01: Research Scientist I, Insightful Corp., Seattle, Washington.

6/96-4/99: Senior Fellow/Postdoctoral Trainee, Department of Biostatistics, University of Washington, Fred Hutchinson Cancer Research Center, Seattle, Washington.

11/95-5/96: Research Associate, European Center for Theoretical Studies in Nuclear Physics and Related Areas, ECT*, Trento, Italy.

- 4/93-10/95: Research Assistant Professor, Department of Physics, University of Washington, Seattle, Washington.
- 11/91-3/93: Postdoctoral Research Associate, Department of Physics, University of Washington, Seattle, Washington.
- 1/89-10/91: Research Assistant, Max Planck Institute for Nuclear Physics, Heidelberg, Germany.

Non-Profit Board Positions:

- Since 10/15: Member, Board of Governors, SWOG Cancer Research Network.
- Since 05/15: President, Cancer Research And Biostatistics (CRAB).
- 05/13-04/15: Member, Cancer Research And Biostatistics (CRAB).

Honors, Awards, Scholarships:

- 9/96-4/99: **NRSA Postdoctoral Fellow** “Statistical Methods for Analyses of HIV Vaccine Trials”, NIH/NIAID, **Sponsor:** Steven G. Self, **Principal Investigator:** Antje Hoering. 1 F32 A109651 (\$101,600).
- 6/96-8/96: **NRSA Postdoctoral Fellow** “Clinical Research on AIDS Training Grant”, NIH/NIAID, Principal Investigator: Thomas R. Fleming. 1 T32 A107450.
- 1/89-10/91: **Predoctoral Fellow**, Max Planck Society, Germany.
- 7/86-7/87: **Fellow**, International Exchange Program, University of Tübingen.

Professional Activities:

- Lead of Independent Analysis Center, Friends of Cancer Research ctMoniTR Project, since 12/2019.
- Faculty, American Society of Hematology Clinical Research Training Institute, 2017, 2018, 2019, 2020, 2021, 2022.
- Lead Statistician, SWOG Myeloma Committee, since 1/2011.
- Lead Statistician, Myeloma Institute for Research and Therapy, University of Arkansas, 1/2015-5/2019.
- Lead Statistician, International Myeloma Foundation, 11/2004-11/2018.
- Director, Biostatistics Core, Sarcoma SPORE, 9/2012-8/2017.
- Lead Statistician and Project Chair for a phase III registration trial in AML, 7/2012-7/2016.
- Biostatistics representative for Celator to pre-NDA meeting with the FDA (2016).
- Lead Statistician, SWOG Early Therapeutics Subcommittee, 5/2008-1/2014.
- Coordinating Statistician, Myeloma Institute for Research and Therapy, University of Arkansas, 11/2004-12/2014.
- Lead Statistician, Stand Up To Cancer, Pancreatic Dream Team, 7/2009-12/2013.

Coordinating Statistician, Pancreatic Cancer Research Team, 10/2005-12/2013.

Biostatistics representative for Celator to Type B meeting with the FDA (2011).

Biostatistics representative for the SWOG Myeloma Committee to Type B meeting with the FDA (2009).

Consultant on a variety of industry sponsored oncology clinical trials (phase I-phase III), including Celator, Novartis, Jennerex, Oncotherapeutics, Venti Rx, ParinGenix, Immunomedics, Marsala Biotech, IRAD Oncology, Idera Pharmaceuticals.

Committee Membership

Member, NCI Pediatric Leukemia and Lymphoma Steering Committee, since 2019.

Member, NCI Myeloma Steering Committee, since 2010

Member, DSMB committee, University of Utah School of Medicine, 2010-2016.

Representative to the NCCTG Gender and Ethnic Diversity Committee, 7/03-10/04.

Editorial

Associate Editor, Statistics in Biopharmaceutical Research (SBR), since 01/2013.

Search Committee Member to identify new SBR editor, 2019.

Statistical Reviewer, Clinical Cancer Research.

Reviewer, Clinical Trials.

Reviewer, Leukemia.

Reviewer, Statistics in Medicine.

Referee for Physical Review C, Physical Review D, and Nuclear Physics A (1992-1999).

Societies

Since 1996: American Statistical Association

Since 2006: International Biometrics Society

Since 2011: International Myeloma Society

Since 2018: American Society of Hematology

Other Professional Activities

Reviewer, Baylor Cancer Center research grant, 2011.

Reviewer, European Commission for Medical Research, Brussels, Belgium, since 2010.

Reviewer, of SPORE grants, National Cancer Institute, 2009, 2014.

Secretary, WNAR (Western North American Region of the International Biometrics Society), 2006-2011.

IBS (International Biometrics Society) Council representative, since 2014.

Organizer and Chair of Invited Session at International Biometrics Conference 2014, “Biomarkers in Oncology Clinical Trials.”

Member of the International Program Committee of the International Biometric Conference, July 2018.

Bibliography:

Publications in referred journals:

1. Herman M, **Höring A**, Reffo G.⁺ Gamma emission in precompound reactions. II. Numerical application. *Phys Rev C Nucl Phys.* 1992 Dec;46(6):2493-2500. PMID: 9968379.
2. Herman M, **Höring A**, Reffo G.⁺ Gamma emission in precompound reactions. II. Numerical application. *Phys Rev C Nucl Phys.* 1992 Dec;46(6):2493-2500. PMID: 9968379.
3. W.C. Haxton, **A. Höring**.⁺ Time-reversal-noninvariant, parity-conserving nuclear interactions, *Nuclear Physics A.* 1993 Jul 12;560(1):469-482, ISSN 0375-9474.
4. Haxton WC, **Höring A**, Musolf MJ.⁺ Constraints on T-odd and P-even hadronic interactions from nucleon, nuclear, and atomic electric dipole moments. *Phys Rev D Part Fields.* 1994 Sep 1;50(5):3422-3432. PMID: 10017977.
5. Henyey, F. S., **Hoering A**.⁺ Energetics of borelike internal waves, *J. Geophys. Res.*, 1997 Feb 15;102(C2), 3323-3330.
6. Seth A, Markee J, **Hoering A**, Sevin A, Sabath DE, Schmitz JE, Kuroda MJ, Lifton MA, Hirsch MS, Collier AC, Letvin NL, McElrath MJ. Alterations in T cell phenotype and human immunodeficiency virus type 1-specific cytotoxicity after potent antiretroviral therapy. *J Infect Dis.* 2001 Mar 1;183(5):722-9. PMID: 11181148.
7. Hudgens MG*, **Hoering A***, Self SG. On the analysis of viral load endpoints in HIV vaccine trials. *Stat Med.* 2003 Jul 30;22(14):2281-98. PMID: 12854093.
8. Eckel-Passow JE, **Hoering A**, Therneau TM, Ghobrial I. Experimental design and analysis of antibody microarrays: applying methods from cDNA arrays. *Cancer Res.* 2005 Apr 15;65(8):2985-9. Review. PMID: 15833819.
9. McClure RF, Remstein ED, Macon WR, Dewald GW, Habermann TM, **Hoering A**, Kurtin PJ. Adult B-cell lymphomas with burkitt-like morphology are phenotypically and genotypically heterogeneous with aggressive clinical behavior. *Am J Surg Pathol.* 2005 Dec;29(12):1652-60. PMID: 16327438.
10. Litzow MR, Dietz AB, Bulur PA, Butler GW, Gastineau DA, **Hoering A**, Fink SR, Letendre L, Padley DJ, Paternoster SF, Tefferi A, Vuk-Pavlović S. Testing the safety of clinical-grade mature autologous myeloid DC in a phase I clinical immunotherapy trial of CML. *Cytotherapy.* 2006;8(3):290-8. PMID: 16793737.
11. Moreno-Aspitia A, Colon-Otero G, **Hoering A**, Tefferi A, Niedringhaus RD, Vukov A, Li CY, Menke DM, Geyer SM, Alberts SR; North Central Cancer Treatment Group. Thalidomide therapy in adult patients with myelodysplastic syndrome. A North Central Cancer Treatment Group phase II trial. *Cancer.* 2006 Aug 15;107(4):767-72. PMID: 16826578.
12. Barlogie B, Tricot GJ, van Rhee F, Angtuaco E, Walker R, Epstein J, Shaughnessy JD, Jagannath S, Bolejack V, Gurley J, **Hoering A**, Vesole D, Desikan R, Siegel D, Mehta J, Singhal S, Munshi NC, Dhodapkar M, Jenkins B, Attal M, Harousseau JL, Crowley J. Long-

⁺ Authors appear alphabetically; standard in Physics

- term outcome results of the first tandem autotransplant trial for multiple myeloma. *Br J Haematol*. 2006 Oct;135(2):158-64. PMID: 16939489.
13. Walker R, Barlogie B, Haessler J, Tricot G, Anaissie E, Shaughnessy JD Jr, Epstein J, van Hemert R, Erdem E, **Hoering A**, Crowley J, Ferris E, Hollmig K, van Rhee F, Zangari M, Pineda-Roman M, Mohiuddin A, Yaccoby S, Sawyer J, Angtuaco EJ. Magnetic resonance imaging in multiple myeloma: diagnostic and clinical implications. *J Clin Oncol*. 2007 Mar 20;25(9):1121-8. PMID: 17296972.
 14. **Hoering A**, Crowley J. Clinical trial designs for multiple myeloma. *Clin Adv Hematol Oncol*. 2007 Apr;5(4):309-16. Review. PMID: 17607290.
 15. Haessler J, Shaughnessy JD Jr, Zhan F, Crowley J, Epstein J, van Rhee F, Anaissie E, Pineda-Roman M, Zangari M, Hollmig K, Mohiuddin A, Alsayed Y, **Hoering A**, Tricot G, Barlogie B. Benefit of complete response in multiple myeloma limited to high-risk subgroup identified by gene expression profiling. *Clin Cancer Res*. 2007 Dec 1;13(23):7073-9. PMID: 18056185.
 16. Arzoumanian V, **Hoering A**, Sawyer J, van Rhee F, Bailey C, Gurley J, Shaughnessy JD Jr, Anaissie E, Crowley J, Barlogie B. Suppression of abnormal karyotype predicts superior survival in multiple myeloma. *Leukemia*. 2008 Apr;22(4):850-5. PMID: 18200039; PMCID: PMC3649865.
 17. **Hoering A**, LeBlanc M, Crowley JJ. Randomized phase III clinical trial designs for targeted agents. *Clin Cancer Res*. 2008 Jul 15;14(14):4358-67. PMID: 18628448; PMCID: PMC2569946.
 18. Van Ness B, Ramos C, Haznadar M, **Hoering A**, Haessler J, Crowley J, Jacobus S, Oken M, Rajkumar V, Greipp P, Barlogie B, Durie B, Katz M, Atluri G, Fang G, Gupta R, Steinbach M, Kumar V, Mushlin R, Johnson D, Morgan G. Genomic variation in myeloma: design, content, and initial application of the Bank On A Cure SNP Panel to detect associations with progression-free survival. *BMC Med*. 2008 Sep 8;6:26. PMID: 18778477; PMCID: PMC2553089.
 19. Barlogie B, van Rhee F, Shaughnessy JD Jr, Epstein J, Yaccoby S, Pineda-Roman M, Hollmig K, Alsayed Y, **Hoering A**, Szymonifka J, Anaissie E, Petty N, Kumar NS, Srivastava G, Jenkins B, Crowley J, Zeldis JB. Seven-year median time to progression with thalidomide for smoldering myeloma: partial response identifies subset requiring earlier salvage therapy for symptomatic disease. *Blood*. 2008 Oct 15;112(8):3122-5. PMID: 18669874; PMCID: PMC2569167.
 20. Johnson DC, Corthals S, Ramos C, **Hoering A**, Cocks K, Dickens NJ, Haessler J, Goldschmidt H, Child JA, Bell SE, Jackson G, Baris D, Rajkumar SV, Davies FE, Durie BG, Crowley J, Sonneveld P, Van Ness B, Morgan GJ. Genetic associations with thalidomide mediated venous thrombotic events in myeloma identified using targeted genotyping. *Blood*. 2008 Dec 15;112(13):4924-34. PMID: 18805967; PMCID: PMC3601865.
 21. Tricot G, Barlogie B, Zangari M, van Rhee F, **Hoering A**, Szymonifka J, Cottler-Fox M (2008). Mobilization of peripheral blood stem cells in myeloma with either pegfilgrastim or filgrastim following chemotherapy. *Haematologica* 93(11):1739-1742. PMID: 18728024
 22. Tricot G, Barlogie B, Zangari M, van Rhee F, **Hoering A**, Szymonifka J, Cottler-Fox M. Mobilization of peripheral blood stem cells in myeloma with either pegfilgrastim or filgrastim following chemotherapy. *Haematologica*. 2008 Nov;93(11):1739-42. PMID: 18728024.

23. Pineda-Roman M, Zangari M, van Rhee F, Anaissie E, Szymonifka J, **Hoering A**, Petty N, Crowley J, Shaughnessy J, Epstein J, Barlogie B. VTD combination therapy with bortezomib-thalidomide-dexamethasone is highly effective in advanced and refractory multiple myeloma. *Leukemia*. 2008 Jul;22(7):1419-27. PMID: 18432260; PMCID: PMC3664925.
24. van Rhee F, Dhodapkar M, Shaughnessy JD Jr, Anaissie E, Siegel D, **Hoering A**, Zeldis J, Jenkins B, Singhal S, Mehta J, Crowley J, Jagannath S, Barlogie B. First thalidomide clinical trial in multiple myeloma: a decade. *Blood*. 2008 Aug 15;112(4):1035-8. PMID: 18502827; PMCID: PMC2515147.
25. Dhodapkar MV, **Hoering A**, Gertz MA, Rivkin S, Szymonifka J, Crowley J, Barlogie B. Long-term survival in Waldenstrom macroglobulinemia: 10-year follow-up of Southwest Oncology Group-directed intergroup trial S9003. *Blood*. 2009 Jan 22;113(4):793-6. PMID: 18931340; PMCID: PMC2630265.
26. Barlogie B, Tricot G, Haessler J, van Rhee F, Cottler-Fox M, Anaissie E, Waldron J, Pineda-Roman M, Thertulien R, Zangari M, Hollmig K, Mohiuddin A, Alsayed Y, **Hoering A**, Crowley J, Sawyer J. Cytogenetically defined myelodysplasia after melphalan-based autotransplantation for multiple myeloma linked to poor hematopoietic stem-cell mobilization: the Arkansas experience in more than 3,000 patients treated since 1989. *Blood*. 2008 Jan 1;111(1):94-100. PMID: 17895401; PMCID: PMC2200826.
27. Nair B, Shaughnessy JD Jr, Zhou Y, Astrid-Cartron M, Qu P, van Rhee F, Anaissie E, Alsayed Y, Waheed S, Hollmig K, Szymonifka J, Petty N, **Hoering A**, Barlogie B. Gene expression profiling of plasma cells at myeloma relapse from tandem transplantation trial Total Therapy 2 predicts subsequent survival. *Blood*. 2009 Jun 25;113 (26):6572-5. PMID: 19389881; PMCID: PMC2710916.
28. **Hoering A**, Crowley J, Shaughnessy JD Jr, Hollmig K, Alsayed Y, Szymonifka J, Waheed S, Nair B, van Rhee F, Anaissie E, Barlogie B. Complete remission in multiple myeloma examined as time-dependent variable in terms of both onset and duration in Total Therapy protocols. *Blood*. 2009 Aug 13;114(7):1299-305. PMID: 19515721; PMCID: PMC2727409.
29. Durie BG, Van Ness B, Ramos C, Stephens O, Haznadar M, **Hoering A**, Haessler J, Katz MS, Mundy GR, Kyle RA, Morgan GJ, Crowley J, Barlogie B, Shaughnessy J Jr. Genetic polymorphisms of EPHX1, Gsk3beta, TNFSF8 and myeloma cell DKK-1 expression linked to bone disease in myeloma. *Leukemia*. 2009 Oct;23(10):1913-9. PMID: 19657367; PMCID: PMC3684359.
30. van Rhee F, Szymonifka J, Anaissie E, Nair B, Waheed S, Alsayed Y, Petty N, Shaughnessy JD Jr, **Hoering A**, Crowley J, Barlogie B. Total Therapy 3 for multiple myeloma: prognostic implications of cumulative dosing and premature discontinuation of VTD maintenance components, bortezomib, thalidomide, and dexamethasone, relevant to all phases of therapy. *Blood*. 2010 Aug 26;116(8):1220-7. PMID: 20501894; PMCID: PMC2938233.
31. Barlogie B, Anaissie E, van Rhee F, Shaughnessy JD Jr., Szymonifka J, **Hoering A**, Petty N, Crowley J (2010). Reiterative survival analyses of total therapy 2 for multiple myeloma elucidate follow-up time dependency of prognostic variables and treatment arms. *Journal of Clinical Oncology* 28(18):3023-3027. PMID: 20479421

32. Barlogie B, Anaissie E, van Rhee F, Shaughnessy JD Jr, Szymonifka J, **Hoering A**, Petty N, Crowley J. Reiterative survival analyses of total therapy 2 for multiple myeloma elucidate follow-up time dependency of prognostic variables and treatment arms. *J Clin Oncol*. 2010 Jun 20;28(18):3023-7. PMID: 20479421; PMCID: PMC2903335.
33. **Hoering A**, LeBlanc M, Crowley J. Seamless phase I-II trial design for assessing toxicity and efficacy for targeted agents. *Clin Cancer Res*. 2011 Feb 15;17(4):640-6. PMID: 21135145; PMCID: PMC4391513.
34. Kumar SK, Lee JH, Lahuerta JJ, Morgan G, Richardson PG, Crowley J, Haessler J, Feather J, **Hoering A**, Moreau P, LeLeu X, Hulin C, Klein SK, Sonneveld P, Siegel D, Bladé J, Goldschmidt H, Jagannath S, Miguel JS, Orlowski R, Palumbo A, Sezer O, Rajkumar SV, Durie BG; International Myeloma Working Group. Risk of progression and survival in multiple myeloma relapsing after therapy with IMiDs and bortezomib: a multicenter international myeloma working group study. *Leukemia*. 2012 Jan;26(1):149-57. Erratum in: *Leukemia*. 2012 May;26(5):1153. Nari, Hareth [corrected to Nahi, Hareth]. PMID: 21799510; PMCID: PMC4109061.
35. Garg TK, Szmania SM, Khan JA, **Hoering A**, Malbrough PA, Moreno-Bost A, Greenway AD, Lingo JD, Li X, Yaccoby S, Suva LJ, Storrie B, Tricot G, Campana D, Shaughnessy JD Jr, Nair BP, Bellamy WT, Epstein J, Barlogie B, van Rhee F. Highly activated and expanded natural killer cells for multiple myeloma immunotherapy. *Haematologica*. 2012 Sep;97(9):1348-56. PMID: 22419581; PMCID: PMC3436235.
36. Usmani SZ, Nair B, Qu P, Hansen E, Zhang Q, Petty N, Waheed S, Shaughnessy JD Jr, Alsayed Y, Heuck CJ, van Rhee F, Milner T, **Hoering A**, Szymonifka J, Sexton R, Sawyer J, Singh Z, Crowley J, Barlogie B. Primary plasma cell leukemia: clinical and laboratory presentation, gene-expression profiling and clinical outcome with Total Therapy protocols. *Leukemia*. 2012 Nov;26(11):2398-405. PMID: 22508408; PMCID: PMC3426639.
37. Usmani SZ, Sexton R, **Hoering A**, Heuck CJ, Nair B, Waheed S, Al Sayed Y, Chauhan N, Ahmad N, Atrash S, Petty N, van Rhee F, Crowley J, Barlogie B. Second malignancies in total therapy 2 and 3 for newly diagnosed multiple myeloma: influence of thalidomide and lenalidomide during maintenance. *Blood*. 2012 Aug 23;120(8):1597-600. PMID: 22674807; PMCID: PMC3429303.
38. Usmani SZ, Heuck C, Mitchell A, Szymonifka J, Nair B, **Hoering A**, Alsayed Y, Waheed S, Haider S, Restrepo A, Van Rhee F, Crowley J, Barlogie B. Extramedullary disease portends poor prognosis in multiple myeloma and is over-represented in high-risk disease even in the era of novel agents. *Haematologica*. 2012 Nov;97(11):1761-7. PMID: 22689675; PMCID: PMC3487453.
39. Usmani SZ, Crowley J, **Hoering A**, Mitchell A, Waheed S, Nair B, AlSayed Y, Vanrhee F, Barlogie B. Improvement in long-term outcomes with successive Total Therapy trials for multiple myeloma: are patients now being cured? *Leukemia*. 2013 Jan;27(1):226-32. PMID: 22705990; PMCID: PMC3744094.
40. Heuck CJ, Szymonifka J, Hansen E, Shaughnessy JD Jr, Usmani SZ, van Rhee F, Anaissie E, Nair B, Waheed S, Alsayed Y, Petty N, Bailey C, Epstein J, **Hoering A**, Crowley J, Barlogie B. Thalidomide in total therapy 2 overcomes inferior prognosis of myeloma with low expression of the glucocorticoid receptor gene NR3C1. *Clin Cancer Res*. 2012 Oct 1;18(19):5499-506. Erratum in: *Clin Cancer Res*. 2013 Feb 1;19(3):752. PMID: 22855579; PMCID: PMC3677537.

41. Usmani SZ, Mitchell A, Waheed S, Crowley J, **Hoering A**, Petty N, Brown T, Bartel T, Anaissie E, van Rhee F, Barlogie B. Prognostic implications of serial 18-fluoro-deoxyglucose emission tomography in multiple myeloma treated with total therapy 3. *Blood*. 2013 Mar 7;121(10):1819-23. PMID: 23305732; PMCID: PMC3591801.
42. Stone K, Woods E, Szmania SM, Stephens OW, Garg TK, Barlogie B, Shaughnessy JD Jr, Hall B, Reddy M, **Hoering A**, Hansen E, van Rhee F. Interleukin-6 receptor polymorphism is prevalent in HIV-negative Castleman Disease and is associated with increased soluble interleukin-6 receptor levels. *PLoS One*. 2013;8(1):e54610. PMID: 23372742; PMCID: PMC3553080.
43. **Hoering A**, Mitchell A, LeBlanc M, Crowley J. Early phase trial design for assessing several dose levels for toxicity and efficacy for targeted agents. *Clin Trials*. 2013;10(3):422-9. PMID: 23529697; PMCID: PMC3744092.
44. Usmani SZ, Sawyer J, Rosenthal A, Cottler-Fox M, Epstein J, Yaccoby S, Sexton R, **Hoering A**, Singh Z, Heuck CJ, Waheed S, Chauhan N, Johann D, Abdallah AO, Muzaffar J, Petty N, Bailey C, Crowley J, van Rhee F, Barlogie B. Risk factors for MDS and acute leukemia following total therapy 2 and 3 for multiple myeloma. *Blood*. 2013 Jun 6;121(23):4753-7. PMID: 23603914; PMCID: PMC3674673.
45. Papanikolaou X, Szymonifka J, Rosenthal A, Heuck CJ, Mitchell A, Johann D Jr, Keller J, Waheed S, Usmani SZ, Van Rhee F, Bailey C, Petty N, **Hoering A**, Crowley J, Barlogie B. Metronomic therapy is an effective salvage treatment for heavily pre-treated relapsed/refractory multiple myeloma. *Haematologica*. 2013 Jul;98(7):1147-53. PMID: 23716540; PMCID: PMC3696620.
46. Sanchorawala V, **Hoering A**, Seldin DC, Finn KT, Fennessey SA, Sexton R, Mattar B, Safah HF, Holmberg LA, Dean RM, Orlowski RZ, Barlogie B. Modified high-dose melphalan and autologous SCT for AL amyloidosis or high-risk myeloma: analysis of SWOG trial S0115. *Bone Marrow Transplant*. 2013 Nov;48(12):1537-42. PMID: 23852321; PMCID: PMC3855173.
47. Gadgeel SM, Lew DL, Synold TW, LoRusso P, Chung V, Christensen SD, Smith DC, Kingsbury L, **Hoering A**, Kurzrock R. Phase I study evaluating the combination of lapatinib (a Her2/Neu and EGFR inhibitor) and everolimus (an mTOR inhibitor) in patients with advanced cancers: South West Oncology Group (SWOG) Study S0528. *Cancer Chemother Pharmacol*. 2013 Nov;72(5):1089-96. PMID: 24057042; PMCID: PMC4072025.
48. Dhodapkar MV, Sexton R, Waheed S, Usmani S, Papanikolaou X, Nair B, Petty N, Shaughnessy JD Jr, **Hoering A**, Crowley J, Orlowski RZ, Barlogie B. Clinical, genomic, and imaging predictors of myeloma progression from asymptomatic monoclonal gammopathies (SWOG S0120). *Blood*. 2014 Jan 2;123(1):78-85. PMID: 24144643; PMCID: PMC3879908.
49. Usmani SZ, **Hoering A**. Heterogeneity of outcome with single-agent carfilzomib: all relapsed/refractory myelomas are not created equal. *Leukemia*. 2013 Dec;27(12):2269-71. PMID: 24326595.
50. Srkalovic G, Hussein MA, **Hoering A**, Zonder JA, Popplewell LL, Trivedi H, Mazzoni S, Sexton R, Orlowski RZ, Barlogie B. A phase II trial of BAY 43-9006 (sorafenib) (NSC-724772) in patients with relapsing and resistant multiple myeloma: SWOG S0434. *Cancer Med*. 2014 Oct;3(5):1275-83. PMID: 24913924; PMCID: PMC4302677.

51. Usmani SZ, Zhang Q, Stratton K, Qu P, Yaccoby S, Hansen E, Steward D, Panozzo S, Petty N, **Hoering A**, Waheed S, Van Rhee F, Crowley J, Barlogie B. Phase II study of pomalidomide in high-risk relapsed and refractory multiple myeloma. *Leukemia*. 2014 Dec;28(12):2413-5. PMID: 25151956.
52. Heuck CJ, Qu P, van Rhee F, Waheed S, Usmani SZ, Epstein J, Zhang Q, Edmondson R, **Hoering A**, Crowley J, Barlogie B. Five gene probes carry most of the discriminatory power of the 70-gene risk model in multiple myeloma. *Leukemia*. 2014 Dec;28(12):2410-3. PMID: 25079174; PMCID: PMC4274609.
53. Khan R, Apewokin S, Graziutti M, Yaccoby S, Epstein J, van Rhee F, Rosenthal A, Waheed S, Usmani S, Atrash S, Kumar S, **Hoering A**, Crowley J, Shaughnessy JD Jr, Barlogie B. Renal insufficiency retains adverse prognostic implications despite renal function improvement following Total Therapy for newly diagnosed multiple myeloma. *Leukemia*. 2015 May;29(5):1195-201. PMID: 25640885. PMCID: PMC4430702.
54. Khan R, Dhodapkar M, Rosenthal A, Heuck C, Papanikolaou X, Qu P, van Rhee F, Zangari M, Jethava Y, Epstein J, Yaccoby S, **Hoering A**, Crowley J, Petty N, Bailey C, Morgan G, Barlogie B. Four genes predict high risk of progression from smoldering to symptomatic multiple myeloma (SWOG S0120). *Haematologica*. 2015 Sep;100(9):1214-21. PMID: 26022710.
55. Usmani SZ, Sexton R, Ailawadhi S, Shah JJ, Valent J, Rosenzweig M, Lipe B, Zonder JA, Fredette S, Durie B, **Hoering A**, Bartlett B, Orlowski RZ. Phase I safety data of lenalidomide, bortezomib, dexamethasone, and elotuzumab as induction therapy for newly diagnosed symptomatic multiple myeloma: SWOG S1211. *Blood Cancer J*. 2015 Aug 7;5:e334. PMID: 26252787; PMCID: PMC4558587
56. Weinhold N, Heuck CJ, Rosenthal A, Thanendrarajan S, Stein CK, Van Rhee F, Zangari M, **Hoering A**, Tian E, Davies FE, Barlogie B, Morgan GJ. Clinical value of molecular subtyping multiple myeloma using gene expression profiling. *Leukemia*. 2016 Feb;30(2):423-30. PMID:26526987; PMCID: PMC4740265.
57. Andreotti G, Katz M, **Hoering A**, Van Ness B, Crowley J, Morgan G, Hoover RN, Baris D, Durie B. Risk of multiple myeloma in a case-spouse study. *Leuk Lymphoma*. 2015 Nov 16:1-10. PMID: 26422532.
58. Papanikolaou X, Rosenthal A, Dhodapkar M, Epstein J, Khan R, van Rhee F, Jethava Y, Waheed S, Zangari M, **Hoering A**, Crowley J, Alapat D, Davies F, Morgan G, Barlogie B. Flow cytometry defined cytoplasmic immunoglobulin index is a major prognostic factor for progression of asymptomatic monoclonal gammopathies to multiple myeloma (subset analysis of SWOG S0120). *Blood Cancer J*. 2016 Mar 25;6:e410. PMID: 27015287.
59. Zhang XD, Baladandayuthapani V, Lin H, Mulligan G, Li B, Esseltine DL, Qi L, Xu J, Hunziker W, Barlogie B, Usmani SZ, Zhang Q, Crowley J, **Hoering A**, Shah JJ, Weber DM, Manasanch EE, Thomas SK, Li BZ, Wang HH, Zhang J, Kuitatse I, Tang JL, Wang H, He J, Yang J, Milan E, Cenci S, Ma WC, Wang ZQ, Davis RE, Yang L, Orlowski RZ. Tight Junction Protein 1 Modulates Proteasome Capacity and Proteasome Inhibitor Sensitivity in Multiple Myeloma via EGFR/JAK1/STAT3 Signaling. *Cancer Cell*. 2016 May 9;29(5):639-52. PMID: 27132469.

60. Pedersen EA, Menon R, Bailey KM, Thomas DG, Van Noord RA, Tran J, Wang H, Qu PP, **Hoering A**, Fearon ER, Chugh R, Lawlor ER. Activation of Wnt/ β -Catenin in Ewing Sarcoma Cells Antagonizes EWS/ETS Function and Promotes Phenotypic Transition to More Metastatic Cell States. *Cancer Res.* 2016 Sep 1;76(17):5040-53. PMID: 27364557; PMCID: PMC5010452.
61. Jethava Y, Mitchell A, Zangari M, Waheed S, Schinke C, Thanendrarajan S, Sawyer J, Alapat D, Tian E, Stein C, Khan R, Heuck CJ, Petty N, Avery D, Steward D, Smith R, Bailey C, Epstein J, Yaccoby S, **Hoering A**, Crowley J, Morgan G, Barlogie B, van Rhee F. Dose-dense and less dose-intense Total Therapy 5 for gene expression profiling-defined high-risk multiple myeloma. *Blood Cancer J.* 2016 Jul 29;6(7):e453. PMID: 27471869; PMCID: PMC5030385.
62. Jethava Y, Mitchell A, Zangari M, Waheed S, Schinke C, Thanendrarajan S, Sawyer J, Alapat D, Tian E, Stein C, Khan R, Heuck CJ, Petty N, Avery D, Steward D, Smith R, Bailey C, Epstein J, Yaccoby S, **Hoering A**, Crowley J, Morgan G, Barlogie B, van Rhee F. Dose-dense and less dose-intense total therapy 5 for gene expression profiling-defined high-risk multiple myeloma. *Blood Cancer J.* 2016 Sep 16;6:e471. PMID: 27635734; PMCID: PMC5056975.
63. McDonald JE, Kessler MM, Gardner MW, Buros AF, Ntambi JA, Waheed S, van Rhee F, Zangari M, Heuck C, Petty N, Schinke C, Thanendrarajan S, Mitchell A, **Hoering A**, Barlogie B, Morgan G, Davies FE. Assessment of Total Lesion Glycolysis by 18F FDG PET/CT Significantly Improves Prognostic Value of GEP and ISS in Myeloma. *Clin Cancer Res.* 2016 Oct 3. pii: clincanres.0235.2016. PMID: 27698001.
64. Jethava Y, Mitchell A, Epstein J, Zangari M, Yaccoby S, Tian E, Waheed S, Khan R, Papanikolaou X, Graziutti M, Cottler-Fox M, Petty N, Steward D, Panozzo S, Bailey C, **Hoering A**, Crowley J, Sawyer J, Morgan G, Barlogie B, van Rhee F. Adverse metaphase cytogenetics can be overcome by adding bortezomib and thalidomide to fractionated melphalan transplants. *Clin Cancer Res.* 2016 Nov 3. pii: clincanres.2620.2015. PMID: 27810902.
65. Durie BG, **Hoering A**, Abidi MH, Rajkumar SV, Epstein J, Kahanic SP, Thakuri M, Reu F, Reynolds CM, Sexton R, Orłowski RZ, Barlogie B, Dispenzieri A. Bortezomib with lenalidomide and dexamethasone versus lenalidomide and dexamethasone alone in patients with newly diagnosed myeloma without intent for immediate autologous stem-cell transplant (SWOG S0777): a randomised, open-label, phase 3 trial. *Lancet.* 2017 Feb 4;389(10068):519-527. doi: 10.1016/S0140-6736(16)31594-X. PMID: 28017406.
66. **Hoering A**, Durie B, Wang H, Crowley J. End points and statistical considerations in immunology trials: impact on multiple myeloma. *Future Oncol.* 2017 Apr 11. PMID: 28395525.
67. Schinke C, **Hoering A**, Wang H, Carlton V, Thanendrarajan S, Deshpande S, Patel P, Molnar G, Susanibar S, Mohan M, Mathur P, Radhakrishnan M, Hoque S, Jo Kamimoto J, Graziutti M, van Rhee F, Zangari M, Insuasti-Beltran G, Alapat D, Post G, Yaccoby S, Epstein J, Rasche L, Johnson S, Moorhead M, Willis T, Barlogie B, Walker B, Weinhold N, Davies FE, Morgan GJ. The prognostic value of the depth of response in multiple myeloma depends on the time of assessment, risk status and molecular subtype. *Haematologica.* 2017 Aug;102(8):e313-e316. Epub 2017 May 18. PMID: 28522572.
68. Thanendrarajan S, Tian E, Qu P, Mathur P, Schinke C, van Rhee F, Zangari M, Rasche L, Weinhold N, Alapat D, Bellamy W, Ashby C, Mattox S, Epstein J, Yaccoby S, Barlogie B, **Hoering A**, Bauer M, Walker BA, Davies FE, Morgan GJ. The level of deletion 17p and bi-allelic inactivation of TP53 has a significant impact on clinical outcome in multiple myeloma. *Haematologica.* 2017 Sep;102(9):e364-e367. pii: haematol.2017.168872. PMID: 28550191.

69. Ramanathan RK, Weiss GJ, Posner RG, Rajeshkumar NV, Jameson G, Aziz M, **Hoering A**, Bolejack V, Maitra A, Fulk M, Stites EC, Hlavacek WS, Gatalica Z, Xiu J, Hidalgo M, Von Hoff DD, Barrett MT. A phase 2 trial of personalized cytotoxic therapy based on tumor immunohistochemistry in previously treated metastatic pancreatic cancer patients. *J Gastrointest Oncol*. 2017 Dec;8(6):925-935. PMID: 29299351; PMCID: PMC5750179.
70. Davies FE, Rosenthal A, Rasche L, Petty NM, McDonald JE, Ntambi JA, Steward DM, Panozzo SB, van Rhee F, Zangari M, Schinke CD, Thanendrarajan S, Walker B, Weinhold N, Barlogie B, **Hoering A**, Morgan GJ. Treatment to suppression of focal lesions on positron emission tomography-computed tomography is a therapeutic goal in newly diagnosed multiple myeloma. *Haematologica*. 2018 Mar 22. pii: haematol.2017.177139. PMID: 29567784.
71. Schinke C, Qu P, Mehdi SJ, **Hoering A**, Epstein J, Johnson S, van Rhee F, Zangari M, Thanendrarajan S, Barlogie B, Davies FE, Yaccoby S, Morgan G. The pattern of Mesenchymal stem cell expression is an independent marker of outcome in multiple myeloma. *Clin Cancer Res*. 2018 Jun 15;24(12):2913-2919. pii: clincanres.2627.2017. PMID: 29563136.
72. Walker BA, Mavrommatis K, Wardell CP, Ashby TC, Bauer M, Davies F, Rosenthal A, Wang H, Qu P, **Hoering A**, Samur M, Towfic F, Ortiz M, Flynt E, Yu Z, Yang Z, Rozelle D, Obenauer J, Trotter M, Auclair D, Keats J, Bolli N, Fulciniti M, Szalat R, Moreau P, Durie B, Stewart AK, Goldschmidt H, Raab MS, Einsele H, Sonneveld P, San Miguel J, Lonial S, Jackson GH, Anderson KC, Avet-Loiseau H, Munshi N, Thakurta A, Morgan G. A high-risk, Double-Hit, group of newly diagnosed myeloma identified by genomic analysis. *Leukemia*. 2018 Jul 2. pii: s41375-018-0196-8. [Epub ahead of print] PMID: 29967379.
73. Walker BA, Mavrommatis K, Wardell CP, Ashby TC, Bauer M, Davies FE, Rosenthal A, Wang H, Qu P, **Hoering A**, Samur M, Towfic F, Ortiz M, Flynt E, Yu Z, Yang Z, Rozelle D, Obenauer J, Trotter M, Auclair D, Keats J, Bolli N, Fulciniti M, Szalat R, Moreau P, Durie B, Stewart AK, Goldschmidt H, Raab MS, Einsele H, Sonneveld P, San Miguel J, Lonial S, Jackson GH, Anderson KC, Avet-Loiseau H, Munshi N, Thakurta A, Morgan GJ. Identification of novel mutational drivers reveals oncogene dependencies in multiple myeloma. *Blood*. 2018 Aug 9;132(6):587-597. pii: blood-2018-03-840132. PMID: 29884741.
74. Ailawadhi S, Jacobus S, Sexton R, Stewart AK, Dispenzieri A, Hussein MA, Zonder JA, Crowley J, **Hoering A**, Barlogie B, Orlowski RZ, Rajkumar SV. Disease and outcome disparities in multiple myeloma: exploring the role of race/ethnicity in the Cooperative Group clinical trials. *Blood Cancer J*. 2018 Jul 6;8:67.
75. Lancet JE, Uy GL, Cortes JE, Newell LF, Lin TL, Ritchie EK, Stuart RK, Strickland SA, Hodge D, Solomon SR, Stone RM, Bixby DL, Kolitz JE, Schiller GJ, Wieduwilt MJ, Ryan DH, **Hoering A**, Banerjee K, Chiarella M, Louie AC, Medeiros BC. CPX-351 (cytarabine and daunorubicin) liposome for injection versus conventional cytarabine plus daunorubicin in older patients with newly diagnosed secondary acute myeloid leukemia. *J Clin Oncol*. 2018 Sep 10;36(26):2684-2692. PMID: 30024784.
76. **Hoering A**. Book Review: Scott Evans and Naitee Ting. *Fundamental Concepts for New Clinical Trials*. Boca Raton: CRC Press. Biometrics. 2018 Sep; 74(3):1131.
77. Choy E, Ballman K, Chen J, Dickson MA, Chugh R, George S, Okuno S, Pollock R, Patel RM, **Hoering A**, Patel S. SARC018_SPORE02: Phase II study of mocetinostat administered with gemcitabine for patients with metastatic leiomyosarcoma with progression or relapse following prior treatment with gemcitabine-containing therapy. *Sarcoma*. 2018 Oct 24;2018:2068517. PMID: 30473623.

78. Mehdi SJ, Johnson SK, Epstein J, Zangari M, Qu P, **Hoering A**, van Rhee F, Schinke C, Thanendrajana S, Barlogie B, Davies FE, Morgan GJ, Yaccoby S. Mesenchymal stem cells gene signature in high-risk myeloma bone marrow linked to suppression of distinct IGFBP2-expressing small adipocytes. *Br J Haematol*. 2018 Nov 8. [Epub ahead of print] PMID: 30408155.
79. Usmani SZ, **Hoering A**, Cavo M, Miguel JS, Goldschmidt H, Hajek R, Turesson I, Lahuerta JJ, Attal M, Barlogie B, Lee JH, Kumar S, Lenhoff S, Morgan G, Rajkumar SV, Durie BGM, Moreau P. Clinical predictors of long-term survival in newly diagnosed transplant eligible multiple myeloma – an IMWG Research Project. *Blood Cancer J*. 2018 Nov 23;8(12):123. PMID: 30470751.
80. Durie BGM, **Hoering A**, Sexton S, Abidi MH, Epstein J, Rajkumar SV, Dispenzieri A, Kahanic SP, Thakuri MC, Reu FJ, Reynolds CM, Orlowski RZ, Barlogie B. Longer Term Follow up of the A Randomized Phase III Trial SWOG S0777: Bortezomib, Lenalidomide and Dexamethasone Vs. Lenalidomide and Dexamethasone in Patients (Pts) with Previously Untreated Multiple Myeloma without an Intent for Immediate Autologous Stem Cell Transplant (ASCT). *Blood* 2018; 132 (Supplement 1): 1992. doi: <https://doi.org/10.1182/blood-2018-99-117003>
81. Mikulasova A, Ashby C, Tytarenko RG, Qu P, Rosenthal A, Dent JA, Ryan KR, Bauer MA, Wardell CP, **Hoering A**, Mavrommatis K, Trotter M, Deshpande S, Yaccoby S, Tian E, Keats J, Auclair D, Jackson GH, Davies FE, Thakurta A, Morgan GJ, Walker BA. Microhomology-mediated end joining drives complex rearrangements and over expression of MYC and PVT1 in multiple myeloma. *Haematologica*. 2019 Jun 20. pii: haematol.2019.217927. doi: 10.3324/haematol.2019.217927. [Epub ahead of print] PMID: 31221783.
82. Choy E, Ballman K, Chen J, Dickson MA, Chugh R, George S, Okuno S, Pollock R, Patel RM, **Hoering A**, Patel S. Corrigendum to “SARC018_SPORE02: Phase II study of mocetinostat administered with gemcitabine for patients with metastatic leiomyosarcoma with progression or relapse following prior treatment with gemcitabine-containing therapy”. *Sarcoma*. 2019 Aug 27; 2019:7608743. doi: 10.1155/2019/7608743. PMID: 31534435.
83. Boyle EM, Ashby C, Tytarenko R, Deshpande S, Wang Y, Sawyer J, Tian E, Johnson S, Rutherford MW, Wardell CP, Bauer MA, Thanendrarajan S, Schinke C, Zangari M, van Rhee F, Wang H, Rosenthal A, **Hoering A**, Flynt E, Thakurta A, Dumontet C, Facon T, Cairns DA, Jackson GH, Barlogie B, Davies FE, Morgan GJ, Walker BA. BRAF and DIS3 mutations associate with adverse outcomes in a long-term follow-up of patients with multiple myeloma. *Clin Cancer Res*. 2020 Jan 27. pii: clincanres.1507.2019. doi: 10.1158/1078-0432.CCR-19-1507. [Epub ahead of print]. PMID: 31988198
84. Nishimura KK, Barlogie B, van Rhee F, Zangari M, Walker BA, Rosenthal A, Schinke C, Thanendrarajan S, Davies FE, **Hoering A**, Morgan GJ. Long-term outcomes after autologous stem cell transplantation for multiple myeloma. *Blood Adv*. 2020 Jan 28;4(2):422-431. PMID: 31990333.
85. Ailawadhi S, Sexton R, Lentzsch S, Abidi MH, Voorhees PM, Cohen AD, Rohren EM, Heitner S, Kelly K, Mackler NJ, Baer DM, **Hoering A**, Durie B, Orlowski RZ. Low-dose versus High-dose Carfilzomib with Dexamethasone (S1304) in Patients with Relapsed-Refractory Multiple Myeloma. *Clin Cancer Res*. 2020 Apr 16. doi: 10.1158/1078-0432.CCR-19-1997. [Epub ahead of print]. PMID: 32299820.

86. Boyle EM, Ashby C, Tytarenko RG, Deshpande S, Wang H, Wang Y, Rosenthal A, Sawyer J, Tian E, Flynt E, **Hoering A**, Johnson SK, Rutherford MW, Wardell CP, Bauer MA, Dumontet C, Facon T, Thanendrarajan S, Schinke CD, Zangari M, van Rhee F, Barlogie B, Cairns D, Jackson G, Thakurta A, Davies FE, Morgan GJ, Walker BA. BRAF and DIS3 Mutations Associate with Adverse Outcome in a Long-term Follow-up of Patients with Multiple Myeloma. *Clin Cancer Res.* 2020;26(10):2422-2432. doi:10.1158/1078-0432.CCR-19-1507.
87. Durie BGM, **Hoering A**, Sexton R, Abidi MH, Epstein J, Rajkumar SV, Dispenzieri A, Kahanic SP, Thakuri MC, Reu FJ, Reynolds CM, Orłowski RZ, Barlogie B. Longer term follow-up of the randomized phase III trial SWOG S0777: bortezomib, lenalidomide and dexamethasone vs. lenalidomide and dexamethasone in patients (Pts) with previously untreated multiple myeloma without an intent for immediate autologous stem cell transplant (ASCT). *Blood Cancer J.* 2020;10(5):53. Published 2020 May 11. doi:10.1038/s41408-020-0311-8.
88. Schinke C, Boyle EM, Ashby C, Wang Y, Lyzogubov V, Wardell C, Qu P, **Hoering A**, Deshpande S, Ryan K, Thanendrarajan S, Mohan M, Yarlagadda N, Khan M, Choudhury SR, Zangari M, van Rhee F, Davies F, Barlogie B, Morgan G, Walker BA. Genomic analysis of primary plasma cell leukemia reveals complex structural alterations and high-risk mutational patterns. *Blood Cancer J.* 2020;10(6):70. Published 2020 Jun 19. doi:10.1038/s41408-020-0336-z.
89. Dhodapkar MV, Sexton R, **Hoering A**, van Rhee F, Barlogie B, Orłowski RZ. Race-dependent differences in risk, genomics and Epstein-Barr virus exposure in monoclonal gammopathies: Results of SWOG S0120 [published online ahead of print, 2020 Aug 18]. *Clin Cancer Res.* 2020;clincanres.2119.2020. doi:10.1158/1078-0432.CCR-20-2119.
90. Danziger SA, McConnell M, Gockley J, Young MH, Rosenthal A, Schmitz F, Reiss DJ, Farmer P, Alapat DV, Singh A, Ashby C, Bauer M, Ren Y, Smith K, Couto SS, van Rhee F, Davies F, Zangari M, Petty N, Orłowski RZ, Dhodapkar MV, Copeland WB, Fox B, **Hoering A**, Fitch A, Newhall K, Barlogie B, Trotter MWB, Hershberg RM, Walker BA, Dervan AP, Ratushny AV, Morgan GJ. Bone marrow microenvironments that contribute to patient outcomes in newly diagnosed multiple myeloma: A cohort study of patients in the Total Therapy clinical trials. *PLoS Med.* 2020 Nov 4;17(11):e1003323. doi: 10.1371/journal.pmed.1003323. PMID: 33147277.
91. Usmani SZ, **Hoering A**, Ailawadhi S, Sexton R, Lipe B, Hita SF, Valent J, Rosenzweig M, Zonder JA, Dhodapkar M, Callander N, Zimmerman T, Voorhees PM, Durie B, Rajkumar SV, Richardson PG, Orłowski RZ; SWOG1211 Trial Investigators. Bortezomib, lenalidomide, and dexamethasone with or without elotuzumab in patients with untreated, high-risk multiple myeloma (SWOG-1211): primary analysis of a randomised, phase 2 trial. *Lancet Haematol.* 2021 Jan;8(1):e45-e54. doi: 10.1016/S2352-3026(20)30354-9. Epub 2020 Dec 22. PMID: 33357482.
92. Chaudhari M, Crowley J, **Hoering A**. A Comparative Study on the SWOG Two-Stage Design Extension to Stop Early for Efficacy in Single Arm Phase II Trials. *Statistics in Biopharmaceutical Research.* Epub 2021 Feb 1. DOI: 10.1080/19466315.2020.1865194.
93. Boyle EM, Rosenthal A, Wang Y, Farmer P, Rutherford M, Ashby C, Bauer M, Johnson SK, Wardell CP, **Hoering A**, Schinke C, Thanendrarajan S, Zangari M, Barlogie B, Davies FE, Walker BA, van Rhee F, Morgan GJ. High-risk transcriptional profiles in multiple myeloma are an acquired feature that can occur in any subtype and more frequently with each subsequent relapse. *Br J Haematol.* 2021 Jul 9. doi: 10.1111/bjh.17670. Epub ahead of print. PMID: 34244996.

94. Boyle EM, Rosenthal A, Ghamlouch H, Wang Y, Farmer P, Rutherford M, Ashby C, Bauer M, Johnson SK, Wardell CP, Wang Y, **Hoering A**, Schinke C, Thanendrarajan S, Zangari M, Barlogie B, Dhodapkar MV, Davies FE, Morgan GJ, van Rhee F, Walker BA. Plasma cells expression from smouldering myeloma to myeloma reveals the importance of the PRC2 complex, cell cycle progression, and the divergent evolutionary pathways within the different molecular subgroups. *Leukemia*. 2021 Aug 7. doi: 10.1038/s41375-021-01379-y. Epub ahead of print. PMID: 34365473.
95. Boyle EM, Rosenthal A, Wang Y, Farmer P, Rutherford M, Ashby C, Bauer M, Johnson SK, Wardell CP, **Hoering A**, Schinke C, Thanendrarajan S, Zangari M, Barlogie B, Davies FE, Walker BA, van Rhee F, Morgan GJ. High-risk transcriptional profiles in multiple myeloma are an acquired feature that can occur in any subtype and more frequently with each subsequent relapse. *Br J Haematol*. 2021 Oct;195(2):283-286. doi: 10.1111/bjh.17670. Epub 2021 Jul 9. PMID: 34244996.
96. Kumar S, Baizer L, Callander NS, Giralt SA, Hillengass J, Freidlin B, **Hoering A**, Richardson PG, Schwartz EI, Reiman A, Lentzsch S, McCarthy PL, Jagannath S, Yee AJ, Little RF, Raje NS. Gaps and opportunities in the treatment of relapsed-refractory multiple myeloma: Consensus recommendations of the NCI Multiple Myeloma Steering Committee. *Blood Cancer J*. 2022 Jun 29;12(6):98. doi: 10.1038/s41408-022-00695-5. PMID: 35768410; PMCID: PMC9243011.
97. van Rhee F, Rosenthal AL, Kanhai K, Martin RA, Nishimura KK, **Hoering A**, Fajgenbaum DC. Siltuximab is associated with improved progression-free survival in idiopathic multicentric Castleman disease. *Blood Adv*. 2022 Jul 6;bloodadvances.2022007112. doi: 10.1182/bloodadvances.2022007112. Epub ahead of print. PMID: 35793409.
98. Vega DM, Nishimura KK, Zariffa N, Thompson JC, **Hoering A**, Cilento V, Rosenthal A, Anagnostou V, Baden J, Beaver JA, Chaudhuri AA, Chudova D, Fine AD, Fiore J, Hodge R, Hodgson D, Hunkapiller N, Klass DM, Kobie J, Peña C, Pennello G, Peterman N, Philip R, Quinn KJ, Raben D, Rosner GL, Sausen M, Tezcan A, Xia Q, Yi J, Young AG, Stewart MD, Carpenter EL, Aggarwal C, Allen J. Changes in Circulating Tumor DNA Reflect Clinical Benefit Across Multiple Studies of Patients With Non-Small-Cell Lung Cancer Treated With Immune Checkpoint Inhibitors. *JCO Precis Oncol*. 2022 Aug;6:e2100372. doi: 10.1200/PO.21.00372. PMID: 35952319.

Books and edited volumes:

1. Stanford DC, Clarkson DB, **Hoering A**. Clustering or Automatic Class Discovery: Hierarchical Methods. In: Berrar DP, Dubitzky W, and Granzow M, editors. A Practical Approach to Microarray Data Analysis. London: Kluwer; 2002.
2. Crowley J; **Hoering A**, eds. Handbook of Statistics in Clinical Oncology. Third Edition. Boca Raton. Chapman & Hall/CRC Press; 2012.
3. **Hoering A**, LeBlanc M, Crowley J. Chapter 6: Seamless phase I/II trial design for assessing toxicity and efficacy for targeted agents. In: Crowley J, **Hoering A**, eds. Handbook of Statistics in Clinical Oncology. Third edition. Boca Raton. Chapman & Hall/CRC Press; 2012: 97-106.
4. **Hoering A**, LeBlanc M, Crowley J. Chapter 17: Phase III trials for targeted agents. In: Crowley J, **Hoering A**, eds. Handbook of Statistics in Clinical Oncology. Third edition. Boca Raton. Chapman & Hall/CRC Press; 2012: 251-264.
5. **Hoering A**, LeBlanc M, Crowley J. Chapter 9: Comparison of Randomized Clinical Trial Designs for Targeted Agents. In: Matsui S, Buyse M, and Simon R, eds. Design and Analysis of Clinical Trials for Predictive Medicine. Chapman & Hall/CRC Press; 2015: 147-163.
6. **Hoering A**, Crowley J. Phase III Oncology Clinical Trials. In Kevin W, Halabi S, eds. Oncology Clinical Trials, Second Edition: Successful Design, Conduct, and Analysis; New York. Springer; 2018. 148-158.

Conference proceedings:

1. **Höring A**, Weidenmüller HA, Dietrich FS, Herman M, Reffo G (1990). A Study of Reaction Mechanisms for Gamma Production in Fast-Nucleon Induced Reactions, AIP Conference Proceedings, Capture Gamma-Ray Spectroscopy and Related Topics-1990 (International Symposium, Asilomar, California). PMID: n/a.
2. **Hoering A**, Clarkson BD, Gonzales R (2001). Random Effects Multidimensional Unfolding Models. Joint Statistical Meeting:276-281. www.amstat.org.
3. Mandrekar S, Geyer S, Suman V, Ballman K, **Hoering A**, Sargent D (2004). Clinical Trial Designs for Dose-seeking, Non-MTD Trials with Biomarker Endpoints, Joint Statistical Meeting. Toronto, Canada. Oral Presentation.
4. Slager S, McDonnell SK, Pankratz VS, **Hoering A**, Therneau TM, de Andrade M (2006). Evaluation of Three Approaches to Correct for Ascertainment of Pedigrees for Random-Effects Cox Proportional Hazard Linkage Analysis. Joint Statistical Meeting. Seattle, WA. Oral Presentation.

Publications about my work:

1. Karow J. Statistics Software Firms Size up Genomics; Three Microarray Products Due to Launch. Bioinform July 15, 2002, www.bioinform.com.
2. Insightful wins \$750,000 SBIR Grant for Genomic Mining. July 2, 2002, www.genomeweb.com.

Others:

1. **Höring A.** Application of the Schematic Model to Four-Quasiparticle States. Master Thesis, University of Oregon, Corvallis, Oregon, 1988.
2. **Höring A.** Dipole-Gamma Emission in Pre-Equilibrium Nuclear Reactions (in German). Ph.D. Thesis, University of Heidelberg, Heidelberg, Germany, 1991.
3. Clarkson DB, **Hoering A** (2002). S+GeneExpress Preliminary Library Design, Technical Report, Insightful Corporation, Seattle, WA.

Funding History - Statistical Methods Grants

- 3/08-7/12: **Co-Investigator**, "Statistical Methods for Clinical Studies"
Principal Investigator: Mike LeBlanc
NIH/NCI 2 R01 CA090998-06A2 (\$567,000).
- 5/02-4/04: **Principal Investigator** "Mendelian Model Based Inference in Statistical Genetics"
NIH/NIGMS 2 R44 GM60896-02 (\$749,755).
- 9/01-9/02: **Principal Investigator** "S+cDNA: Analysis Tools for Microarray Data"
NIH/NCI 1 R43 CA91631-01 (\$103,980).
- 3/00-8/01: **Principal Investigator** "Mendelian Model Based Inference in Statistical Genetics"
NIH/NCI 1 R43 GM60896-01 (\$100,912).
- 9/96-4/99: **Principal Investigator** "Statistical Methods for Analyses of HIV Vaccine Trials"
Mentor: Steve Self
NIH/NIAID NRSA Postdoctoral Fellow 1 F32 A109651 (\$101,600).

Recently Completed Funding – Collaborative Grants and Contracts

- 2/16-1/21: **Co-Investigator** "Proteasome Assembly Chaperones in Sensitivity and Resistance to Proteasome Inhibitors"
Principal Investigator: Robert Orłowski
R01 CA194264 **Subaward** (\$12,595/year)
- 1/15-12/20: **Co-Investigator** "Role of TJP1 in Sensitivity and Resistance to Proteasome Inhibitors in Myeloma"
Principal Investigator: Robert Orłowski
R01 CA184464 **Subaward** (\$12,595/year)
- 12/19-6/20: Independent Analysis Center PI "ctDNA to Monitor Treatment Response (ctMoniTR) Project"
40350 (\$412,940/year)
- 7/15-9/19: **Co-Investigator** "Knight Cancer Inst Biostat Strategic and Business Plan"
Principal Investigator: Tomi Mori
PSC-2016-0249 **Subaward** (\$85,632/year)
- 1/15-5/19: **Co-Investigator** "Growth Control in Multiple Myeloma"
Principal Investigator: Gareth Morgan

- 7/17-4/19: **Statistical Core Principal Investigator** “Growth Control in Multiple Myeloma”
Principal Investigator: Gareth Morgan
 S190120936 **Subaward** (\$809,437/year)
- 9/17-3/19 **Co-Investigator** “The Transformer Trial”
Principal Investigator: Sam Denmeade
 W81XWH-14-2-0189 **Subaward** (\$252,771/year)
- 4/14-2/19: **Consortium Principal Investigator** “SWOG Statistics and Data Management Center”
Principal Investigator: Michael LeBlanc
 U10 CA180819 (\$7,038,884/year)
Subaward (\$4,389,507/year)
- 12/15-11/17: **Co-Investigator** “PET Scan for Prognostication in Newly Diagnosed High Risk Multiple Myeloma”
Principal Investigator: Saad Usmani
 R01 CA201634 **Subaward** (\$37,941/year)
- 9/12-8/17: **Co-Investigator**, “SARC Sarcoma SPORE”
Principal Investigator: Raphael Pollock
 U54 CA168512 **Subaward** (\$111,323/year)

Active Funding – Collaborative Grants and Contracts

- 8/21-7/26: **Collaborator Principal Investigator/Project Director** “Mutographs Differentiating the Racial and Temporal Incidence of Multiple Myeloma” (5.25%)
Principal Investigator: Gareth Morgan
 R01 CA249981 \$1,234,790
Subaward (\$234,446 to date)
- 4/19-2/25: **Consortium Principal Investigator** “SWOG Statistics and Data Management Center” (45%)
Principal Investigator: Michael LeBlanc
 U10 CA180819 \$9,057,731/year
Subaward (\$4,925,027/year)
- 9/13-7/24: **Consortium Principal Investigator** “PCPT and SELECT Cohorts: Core Infrastructure Support for Cancer Research” (5%)
Principal Investigator: Catherine Tangen
 U01 CA182883 \$1,235,390/year
Subaward (\$117,001/year)
- 2/21-12/22: **Independent Analysis Center PI** “ctDNA to Monitor Treatment Response (ctMoniTR) Project” (5%)
 40351 (\$32,700/year)
- 8/14-7/21: **Principal Investigator:** “S1400, Phase Biomarker-Driven Master Protocol” (5%)
 S1400 (\$1,657,669/year)

Presentations:

- *10/90: Oregon State University, Corvallis, Oregon,
“Gamma Emission in Statistical Nuclear Reactions”.
- *10/90: LBL, Berkeley, California,
“Gamma Emission in Statistical Nuclear Reactions”.
- *10/90: Asilomar, Conference on Capture Gamma Ray Spectroscopy (poster),
“A Study of Reaction Mechanism for Gamma Production in Fast-Nucleon Induced Reactions”.
- *4/91: Michigan State University, East Lansing, Michigan,
“Gamma Emission in Precompound Nuclear Reactions”.
- *6/91: University of Heidelberg, Heidelberg, Germany,
“Dipole-Gamma Emission in Pre-Equilibrium Reactions”.
- *8/91: University of Heidelberg, Symposium on Theoretical Nuclear Physics in East and West Germany, “Dipole-Gamma Emission in Pre-Equilibrium Reactions”.
- *5/92: University of Washington, Seattle, Washington,
“Characterization of Spectral Fluctuations”.
- *10/93: MPI, Heidelberg, Symposium on Fluctuations, Chaos and Symmetries,
“Time-Reversal Noninvariant, Parity Conserving Nuclear Interactions”.
- *5/94: APL, University of Washington, Seattle, Washington,
“Energetics of an Internal Bore”.
- *8/94: INT, Program on Applications of Chaos in Many-Body Quantum Physics,
“Constraints on T-odd and P-even Hadronic Interactions”.
- *2/95: TRIUMP, Vancouver, Canada,
“Constraints on T-odd and P-even Hadronic Interactions”.
- *3/95: Argonne National Laboratory, Chicago, Illinois,
“Constraints on T-odd and P-even Hadronic Interactions”.
- *3/95: Indiana University, Bloomington, Indiana,
“Constraints on T-odd and P-even Hadronic Interactions”.
- *2/96: European Center for Theoretical Studies in Nuclear Physics, ECT*,
“From Chaos to Breaking of Time-Reversal Invariance”.
- *2/99: Insightful Corporation, Seattle, WA,
“On the Use of Viral Endpoints in HIV Vaccine Efficacy Trials”.
- *3/99: MD Anderson Cancer Research Center, Houston, TX,
“On the Use of Viral Endpoints in HIV Vaccine Efficacy Trials”.
- 8/01: Joint Statistical Meeting, Atlanta, Georgia,
“Random Effects Multidimensional Unfolding Models”.
- *11/02: Northwestern University, Chicago, IL,
“On the Use of Viral Endpoints in HIV Vaccine Efficacy Trials”.
- *11/02: Mayo Clinic, Rochester, MN,
“On the Use of Viral Endpoints in HIV Vaccine Efficacy Trials”.

- *7/04: Cancer Research And Biostatistics, Seattle, WA,
“Mixed Effects Cox Model and Ascertainment Effects”.
- *6/06: International Myeloma Workshop, Kos, Greece,
“Clinical Trial Designs for Multiple Myeloma”.
- *7/07: Fred Hutchinson Cancer Research Center, Seattle, WA,
“Phase III Trial Design for Targeted Therapies”.
- *9/07: Biostatistics Departmental Retreat, University of Washington, WA,
“Statistics at CRAB and Clinical Trial Designs for Targeted Therapies”.
- *10/07: Southwest Oncology Group Meeting, Huntington Beach, CA,
“Statistical Analyses for Bank on a Cure, a Myeloma-Specific DNA Bank”.
- *5/08: Southwest Oncology Group Meeting Plenary Session, Atlanta, GA,
“Randomized Phase III Clinical Trial Designs for Targeted Agents”.
- 6/10: American Society of Clinical Oncology, Annual Meeting, Chicago, Illinois,
“Genomic Evolution in Total Therapy 2 and Total Therapy 3 for Newly Diagnosed Multiple Myeloma”.
- *6/10: Western North American Region of the International Biometrics Society, Seattle, WA,
“Seamless Phase I/II Trial Design for Targeted Agents”.
- 12/10: American Society of Hematology, Annual Meeting, Orlando, FL
“Prognostic Index for Predicting Overall Survival and Event-Free Survival in Total Therapy 3 Patients”.
- *3/11: Clinical Trials Affinity Group, Fred Hutchinson Cancer Research Center,
“Randomized Phase III clinical Trial Designs for Targeted Agents”.
- *2/12: Department of Biostatistics, Departmental Seminar, University of Washington, Seattle, WA,
“Randomized Phase III clinical Trial Designs for Targeted Agents”.
- *10/12: Beijing University of Chinese Medicine, Beijing, China,
“Design of Cancer Clinical Trials, Phase I-III”.
- *10/12: Beijing University of Chinese Medicine, Beijing, China,
“Phase III Oncology Clinical Trials in the Era of Targeted Agents”.
- *4/14: American Association of Cancer Research, San Diego, California,
“Statistical Designs in Complex Phase II Trials and Definitive Phase III Studies in the Era of Targeted Agents”.
- *11/14: Canadian Statistical Sciences Institute (CANSSI), Toronto, Canada,
“Randomized Phase III Clinical Trial Designs for Targeted Therapies”
- *8/15: Pacific Rim Cancer Biostatistics Conference, Seattle, WA,
“Early Phase Trial Design for Targeted Agents”
- *4/16: East Seminar, Seattle, WA,
“Practical Challenges with S1400 – Lung-MAP”
- *8/16: Joint Statistical Meeting, Chicago, IL
“Teams in the Setting of Coordinating Centers”

- *9/16: Minimal Residual Disease as a Surrogate Endpoint in Hematologic Cancer Trials, Washington, DC, Panelist
“Use of MRD as a Surrogate Endpoint in Multiple Myeloma”
- *9/16: Cancer Clinical Trial Methods Workshop, Knight Cancer Institute
“Phase II and I-II Trial Designs” and “Integration of Biomarkers into Clinical Trials”
- *10/17: Jeri & Noboru Oishi Symposium, SWOG Group Meeting, Chicago, IL
“Updates on SWOG Myeloma Study S0777”
- *11/17: Addressing the Cancer Burden in Mexico and the US Hispanic and Native American Populations through Clinical Trials, Mexico City, Mexico
“Integration of Biomarkers into Phase III Trial Designs”
- *8/18: American Society of Hematology, Clinical Research Training Institute, La Jolla, CA
“DIY Statistics for Hematologists: Statistical Tools for design and analysis for standard trials”
- *11/18: Addressing the Cancer Burden in Colombia through Clinical Trials, Bogota, Colombia
“Integrating Biomarkers in Clinical Trials”
- *12/18: American Society of Hematology, Annual Meeting, San Diego, CA
“Basic Statistics for Hematologist”
- *1/19: Cancer Clinical Trial Methods Training Workshop, Knight Cancer Institute, Portland, OR
“Design Consideration for Larger Cancer Clinical Trials in the Presence of Predictive Markers”
- *3/19: AACR Annual Meeting, Educational Session, Atlanta, GA
“Precision Oncology: Integration of Biomarkers into Phase III Trial Designs”
- *5/19: PCRT Annual Meeting, Chicago, IL
“PCRT Updates and Platform Solutions”
- *8/19: American Society of Hematology, Clinical Research Training Institute, La Jolla, CA
“DIY Statistics for Hematologists”
- *9/19: Clinical Biomarkers & World CDx Conference, Boston, MA
“Integrating Biomarkers in Phase III Clinical Trial Designs”
- *1/20: Knight 4th Cancer Clinical Trials Methods and Training Workshop, Portland, OR
“Integrating Biomarkers in Phase III Clinical Trial Designs”
- *8/20: Friends of Cancer Research, virtual meeting
Panelist on: “Do Changes in ctDNA Reflect Response to Treatment?”
- *8/20: Friends of Cancer Research, virtual Q&A session
Panelist on: “Building ctMoniTR: Step 1 Questions and Step 2 Goals”
- *9/20: Clinical Biomarkers and World CDx Digital Summit, Women and Diversity in Precision Medicine event
Panel Chair on: “The Collective Benefits and Practical Application of Mentoring Schemes”
- *11/20: Clinical Research as a Tool for Addressing the Cancer Burden in Latin America, virtual meeting
“Integrating Biomarkers in Phase III Clinical Trial Designs”

- *2/21: American Society of Hematology, Clinical Research Training Institute, virtual
“Sample Size Considerations and Tools”
- *3/21: Knight 5th Cancer Clinical Trials Methods and Training Workshop, Portland, OR
“Study Design Considerations for Precision Oncology”
- *4/21: SWOG Latin America Initiative Conference, Cancer Clinical Study Design, virtual
“Statistical Tools for Design: Part I”
- *8/22: American Society of Hematology, Clinical Research Training Institute, La Jolla, CA
“Sample Size Considerations & Tools”
- *9/22: International Myeloma Society, 19th Annual Meeting & Exposition, Los Angeles, CA
“How do you Define Cure in Myeloma?”
- *9/22: ASA Biopharmaceutical Section Regulatory-Industry Statistics Workshop, Rockville, MD
“Evidentiary Roadmap for Use of CtDNA in Cancer Drug Development and as an Early Endpoint”
- *11/22 Future of Drug Development in Multiple Myeloma: An IMS-FDA Joint Workshop, Bethesda, MD
Panelist on: “Regulatory considerations for endpoints (PFS, OS, MRD, QoL)”

* Invited presentation

Teaching History:

Taught two courses for upper division physics majors preparing to be high school science teachers, Physics Department, University of Washington, Winter 1995, Spring 1996.

Tutored students and organized seminars in the program on Research Experience for Undergraduates, Physics Department, University of Washington, Summer 1996.

Taught tutorial sessions as part of introductory physics classes, Physics Department, University of Washington, Fall 1995 through Spring 1996.

Lead the CRAB statistics team, including 5 PhD statisticians, 7 MS statisticians and one SAS programmer, since 2004.

Ph.D. applied Exam Grader, 2009.

Mentor new medical doctor in the SWOG Myeloma committee at the SWOG Young Investigator Course, 2010, 2012.

Coordinator of SWOG Young Investigator Course (SWOG Clinical Trials Training Course and Protocol Development), 2011, 2012, 2013, 2014.

Instructor at Summer Institute in Biostatistics, University of Washington. Taught 2.5-day intensive workshop on “Design of Clinical Trials in Oncology”, 8/2012, 8/2013.

Advisory Board Member on Bachelor’s of Public Health Degree at the Lake Washington Institute of Technology (LWIT), 8/2013-5/2016.

Instructor and mentor at CRAB/Cancer Treatment Center of America Clinical Trials Training Course, 10/2013, 4/2014, 11/2014, 5/2015.

Instructor at the Statistics in Clinical Oncology Workshop at the Belgian Cancer Academy,
10/2014.

Instructor at Cancer Clinical Trial Methods: Training and Workshop at the Knight Cancer Institute,
9/2016.

Instructor at Addressing the Cancer Burden in Mexico and the US Hispanic and Native American
Populations through Clinical Trials, 11/2017.

Instructor at Addressing the Cancer Burden in Colombia through Clinical Trials, 11/2018.

Instructor at Cancer Clinical Trial Methods: Training and Workshop at the Knight Cancer Institute,
1/2019.

Instructor of BIOST 582 Student Seminar: University of Washington. Department of Biostatistics,
10/2019.