

# CURRICULUM VITAE

## Antje Hoering

---

Cancer Research And Biostatistics (CRAB) Seattle, WA 98101-1468  
e-mail: [antje@crab.org](mailto:antje@crab.org) • phone: (206) 839-1789

---

### Education:

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

**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 Statistician, SWOG Myeloma Committee.
- Lead Statistician, SWOG Early Therapeutics Subcommittee, 5/2008 – 1/2014.
- Director, Biostatistics Core, Sarcoma SPORE.
- Coordinating Statistician, Myeloma Institute for Research and Therapy, University of Arkansas, statistics core of a P01 grant.
- Lead Statistician, International Myeloma Foundation.
- Lead Statistician and Project Chair for a phase III registration trial in AML.
- Lead Statistician, Stand Up To Cancer, Pancreatic Dream Team, 7/2009 – 12/2013.
- Coordinating Statistician, Pancreatic Cancer Research Team, 10/2005 – 12/2013.
- 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.
- Biostatistics representative for the SWOG Myeloma Committee to Type B meeting with the FDA (2009).
- Biostatistics representative for Celator to Type B meeting with the FDA (2011).
- Biostatistics representative for Celator to pre-NDA meeting with the FDA (2016).

**Committee Membership**

- Statistical Representative to the NCCTG Gender and Ethnic Diversity Committee, 7/03-10/04.
- Member, NCI Myeloma Steering Committee, since 2010.
- Member, DSMB committee, University of Utah School of Medicine, since 2010.

**Editorial**

Associate Editor, Statistics in Biopharmaceutical Research, since 01/2013

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**

American Statistical Association

International Biometrics Society

International Myeloma Society

**Other Professional Activities**

Reviewer, Baylor Cancer Center research grant, 2011.

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

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

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

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

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

**Bibliography:****Publications in referred journals:**

1. Herman M, **Höring A**, Reffo G.<sup>+</sup> 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.<sup>+</sup> 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**.<sup>+</sup> 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.<sup>+</sup> 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**.<sup>+</sup> Energetics of borelike internal waves, J. Geophys. Res., 1997 Feb 15;102(C2), 3323-3330.

<sup>+</sup> Authors appear alphabetically; standard in Physics

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-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, Yacoby 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.

\* Authors contributed equally

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, Orłowski 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, Orłowski 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/ $\beta$ -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, Orlowski 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*. 2016 Dec 22. pii: S0140-6736(16)31594-X. PMID: 28017406.
66. **Hoering A**, Durie B, Wang H, Crowley J. End points and statistical considerations in immuno-oncology trials: impact on multiple myeloma. *Future Oncol*. 2017 Apr 11. PMID: 28395525.

#### **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.

**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](http://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 Micorarray Products Due to Launch. Bioinform July 15, 2002, [www.bioinform.com](http://www.bioinform.com).
2. Insightful wins \$750,000 SBIR Grant for Genomic Mining. July 2, 2002, [www.genomeweb.com](http://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", 15%  
**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).

### Active Funding – Collaborative Grants

- 1/13 – 2/19: **Co-Investigator** “SWOG Statistics and Data Management Center”, 40%  
**Principal Investigator:** Michael LeBlanc  
 NIH/NCI/FHCRC-U10CA38926 (\$2,493,030/year). SWOG Statistical Center.
- 7/10 – 7/15: **Investigator** “Growth Control in Multiple Myeloma”, 35%  
**Principle Investigator:** Bart Barlogie  
 NIH/NCI 5P01CA055819-17 (\$1,194,396/year)  
 CRAB serves as the statistics core on this grant.
- 9/13 – 8/14: **Co-Investigator** “Lung Master Protocol”, 5%  
**Principle Investigator:** Charles Blanke  
 NIH/NCI/CTSU/OHSU 1004086 (\$146,377/year)
- 9/12 – 8/17: **Director of Biostatistics Core** “SARC Sarcoma Spore” (10%)  
**Principal Investigator:** Raphael Pollock  
 1U54CA168512-01 (111,323/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”

### **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