

**CURRICULUM VITAE  
OREGON HEALTH SCIENCES UNIVERSITY****NAME** **Guang Fan, MD, PhD****DATE****June 10, 2024****I. PRESENT POSITION AND ADDRESS****Academic Rank:** **Professor****Department:** **Pathology and Clinical Laboratory Medicine****Professional Address:** **3181 SW Sam Jackson Park Road, Mail Code L471  
Portland, Oregon 97239****E-Mail Address:** [fang@ohsu.edu](mailto:fang@ohsu.edu)**II. EDUCATION****Undergraduate and Graduate (Include Year, Degree, and Institution):**

1980-1986	MD	Medical School, Beijing University, China
1986-1989	MS in Biophysics	Medical School, Beijing University, China
1989-1992	PhD in Physiology	Wayne State University, Detroit, Michigan, USA

**Postgraduate (Include Year, Degree, and Institution):**

1992-1996	Research Postdoctoral Fellowship, Molecular Biology, University of Michigan, Ann Arbor, Michigan, USA
1996-2000	Resident, Anatomic and Clinical Pathology, University of Cincinnati, Cincinnati, Ohio, USA
2000-2001	Fellowship, Hematopathology, Indiana University, Indianapolis, Indiana, USA

**Leadership Training:**

2012	Paths to Leadership offered by OHSU
2014	Laboratory Medical Direction Advanced Practical Pathology Program offered by College of American Pathologists.
2021-2022	APC Pathology Leadership Fellows Program offered by APC's Pathology Leadership Academies

2022-2023 Executive Leadership in Health Care-Drexel University

**Certification (Include Board, Number, Date, and Recertification):**

Anatomic and Clinical Pathology Certification, American Board of Pathology	9/11/2000
Hematology certification, American Board of Pathology	10/16/2001

**Licenses (Include State, Date, Status, Number, and Renewal Date):**

Oregon:	7/13/2001	active	#MD23079
Washington:	5/2/2013	active	#MD60349692
Indiana:	1999-2003	inactive	#01050628A

**III. PROFESSIONAL EXPERIENCE**

**Academic (Include Year, Position, and Institution):**

7/2001-6/2008	Assistant Professor, Department of Pathology, Oregon Health & Science University
7/2008-6/2015	Associate Professor, Department of Pathology, Oregon Health & Science University
7/2015-present	Professor, Department of Pathology, Oregon Health & Science University
10/2012-2022	Honorary Professor, Soochow University, Suzhou, China

**Administrative (Include Year, Position, and Institution):**

7/2001-6/2009	Director of Hematology Laboratory, OHSU
7/2004-1/2020	Director of Hematopathology Fellowship Program, OHSU
7/2008-6/2022	Director of Clinical Flow Cytometry Laboratory, OHSU
7/2018-6/2022	Associate Director of Clinical Laboratory, OHSU
12/2019-present	Director of Hematopathology
1/2020-11/2020	Interim Director of Microbiology Laboratory
3/2020-present	Director for Beaverton Clinic PPM laboratory testing
7/2022-present	Director of Clinical Laboratory, OHSU
9/2022-5/2023	Interim Chair of Department of Pathology and Clinical Laboratory Medicine
5/2023-present	Chair of Department of Pathology and Clinical Laboratory Medicine

**IV. Honors and Awards:**

1. Best research presentation as a postdoctoral fellow at University of Michigan Internal Medicine Research Day, 1995
2. Best research presentation finalist as a resident at American Society of Clinical Pathology Annual Meeting, 1999.
3. Laboratory Medicine Teaching Award, Department of Pathology, Oregon Health & Science University, 2002.
4. Laboratory Medicine Teaching Award, Department of Pathology, Oregon Health & Science University, 2012

5. Distinguished and Outstanding CAP inspector, College of American Pathologists, Laboratory Accreditation Program, 2012
6. Distinguished and Outstanding CAP inspector, College of American Pathologists, Laboratory Accreditation Program, 2013
7. Exceptional mentor nominated by The MD Class of 2014, Oregon Health & Science University
8. Nominated for distinguished Abstract award for AACC 2015 annual meeting as senior author. First author, Juan Ma, my mentee.
9. Received Berend Houwen Travel Award at XXVIIIth International Symposium on Technological Innovations in Laboratory Hematology, 2015 as senior author. First author, Juan Ma, my mentee.
10. Distinguished and Outstanding CAP inspector 2016
11. Distinguished and Outstanding CAP inspector 2017
12. Distinguished and Outstanding CAP inspector 2018
13. Laboratory Medicine Teaching Award, Department of Pathology, Oregon Health & Science University, 2019
14. Distinguished and Outstanding CAP inspector 2019
15. CAP Distinguished Service Award 2020
16. Tyler Yeager, Sophia Wang, Alan Wang and Guang Fan: The Evaluation of Artificial Intelligence (AI) Flow Data Analysis for Diagnosing Immunologic Disorders and Monitoring Immune Status. 2022 AACC annual meeting at Chicago. Awarded 2nd place for the 2022 AACC Industry Division Poster competition
17. Zhengchun Lu, Guang Fan, .....Donna Hansel: Community-based SARS-CoV-2 testing using saliva or nasopharyngeal swabs to compare efficacy of weekly COVID-19 screening to wastewater SARS-CoV-2 signals. 2022 AACC annual meeting at Chicago. been awarded 1st Place for the Health Access and Equity Division Outstanding Research Award in the 2022 AACC Annual Meeting.

## V. SCHOLARSHIP

### **Area(s) of Research/Scholarly Interest:**

My research has been focused on the identification of biologic markers of diagnostic, prognostic and therapeutic importance in hematologic malignancy using flow cytometry and Next Generation Sequencing (NGS). Currently, I am exploring AI application in flow cytometry analysis. I also collaborate with numerous investigators within and outside OHSU on studies related to lymphoma and leukemia.

### **Research Grants and Collaborations:**

#### **Active Grants/Contracts and Collaborations**

1. Co-Investigator (PI, Jennifer Saultz): STUDY00018917: Retrospective Analysis Of Immune Profile Changes In Hematological Malignancies and Patient Outcomes. OHSU Knight foundation 2018 - present
2. Co-Investigator (PI, Linda Stork): IRB00001255: AALL03B1: Classification of Acute Lymphoblastic Leukemia. Children's Oncology Group: 2011-present
3. Co-Investigator (PI, Brian Druker): IRB00004422: Pathogenesis of Acute Leukemia,

Lymphoproliferative Disorders, and Myeloproliferative Disorders. Leukemia & Lymphoma Society. 2013-present

4. Co-Investigator (PI, Edward Neuwelt):STUDY00016709: The use of perfusion MRI using ferumoxytol and small molecular weight gadolinium (Gd) agents to assess response to pembrolizumab in brain metastases and systemic lesions in NSCLC: A comparison of imaging modalities to address brain metastases, pseudo progression and systemic lesion tumor flare (neuro-check pilot). Merck & Co. 2017-present
5. Co-Investigator (PI, Edward Neuwelt): STUDY00016046: Response Assessment to Pembrolizumab with Standard of Care Therapy in Oligometastatic Brain Tumors from Melanoma, and Glioblastoma Using Ferumoxytol Steady State Imaging– A Pilot Study. Merck & Co. 2017-present
6. Co-Investigator (PI-Tania Vu) Molecular Digital Cyto Imaging for Leukemia Drug Screening. R 01 CA222095-4. 6/2020-present
7. Co-Investigator (PI, Donna Hansel): STUDY00022151: Community-based SARS-CoV-2 testing using saliva or NP swabs to compare efficacy of weekly COVID-19 screening to wastewater SARS-CoV-2 signals. OHSU Foundation 9/2020-present
8. Co-Investigator (PI, William Messer): STUDY00021230: The human immune response during and following acute viral infections with novel and emerging viruses. NIH 3/2/2020-present
9. Principle Investigator: STUDY00022165 Validation of AI-assisted Flow-cytometry Diagnosis. DeepCyto LLC 11/2020-present
10. PI: OHSU-OHA contract for SARS-CoV-2 Sequencing. 5/2021-present.
11. Principle Investigator: STUDY00020916: AI-assisted differential counts of digital microscopic analysis of bone marrow aspirates and body fluids. DeepCyto LLC 12,2022-present
12. Mentor for Zhengchun Lu (Trainee Principal investigator): Artificial intelligence-assisted flow cytometry. Society of 67', Association of Pathology Chairs. Dec. 2022-present
13. PI: OHSU-OHA contract for K-12 back to school SARS-CoV-2 testing. 8/2021-6/2023 (\$44 millions)
14. PI: OHSU-OHA contract for Oregon RSV,FluA/B Sequencing 10/2023 – 7/2024

### **Inactive Grants/Contracts and Completed Collaborations**

1. Principal investigator; Sponsor: Oregon MRF. Discovery of Prognostic Markers in Follicular Lymphoma. 2003-2004.
2. Principal investigator; Sponsor: Friends of Doernbecher Foundation. Monitoring and Preventing Central Nervous System Involvement by Acute Lymphoblastic Leukemia. 2003-2004.
3. Co-investigator (PI, Hua Lu); Sponsor: NIH. The Role of SSP1 in Mitosis and Tumorigenesis and the Role of P53 in Cancer Cell Survival. 2002-2006. Funded by NIH CA095441 and CA93614.
4. Co-investigator (PI, Rita Braziel); Sponsor: GeneLogic. Gene Expression Monitoring by Gene Chip Microarray in Patients with Lymphoma and Leukemia. 2003-2006.
5. Co-investigator (PI, Rosalie Sears); Sponsors: NCI. Cellular Mechanisms Controlling Myc-Protein Stability and Phosphorylation Sites That Regulate c-Myc Stability and Oncogenic Potential. NIH R01 CA100855 2004-2008.
6. Co-investigator (PI, Zhengfeng Zhou); Sponsor: NIH. The molecular mechanism of human inherited long QT syndrome (LQTS). NIH HL68854, 2004-2010.

7. Co-investigator (PI, Elliot Epner); Sponsor: NCI. Deregulation of cyclins in mantle cell lymphoma and multiple myeloma. 2005-2009. NIH DK56798.
8. Co-investigator (PI, Rosalie Sears); Sponsor: Leukemia and Lymphoma Society. A Novel Mechanism of c-Myc protein in Some Lymphoblastic Leukemia. 2005- 2010. Leukemia and Lymphoma Society (Award 82325) and the Pilot study fund from Knight Cancer Institute.
9. Co-investigator (PI, Linda Stork for OHSU section); Sponsor: NCI/COG. Classification of Acute Lymphoblastic leukemia, AALL03B1 Children's Oncology Group (COG) clinical trial 2005-2014.
10. Principal investigator; Sponsor: OHSU Clinical Laboratory. Early Detection of Childhood CNS Acute Lymphoblastic Leukemia in Cerebrospinal Fluid using Liquid Chromatography-Mass Spectrometry. 0 Funded by the OHSU Hospital, 2006.
11. Co-investigator (PI, Richard Press for OHSU site); Sponsor: NCI. Development and Optimization of an Assay for Detection of Somatic Mutations of IDH1 and IDH2, RFP No. ST11-205. 2012-2013.
12. Co-investigator (PI, Stephen Spurgeon); Sponsor: SBI Biotech (Therodex). Phase I study of GNKG168 Administrated by Intravenous Infusion in Patients with Relapsed or Refractory B-cell Chronic Lymphocytic Leukemia (B-CLL).2011-2014.
13. Co-investigator (PI, Marc Loriaux); Sponsor: NCI. A phase II pilot study of Kinase Inhibition in Relapsed Refractory Acute Leukemia: Using a Comprehensive in Vitro Kinase Inhibitor Panel to Select Individualized, Targeted Therapies. 2011-2014.
14. Principal investigator; Sponsor: Theradex: Lymphocyte Reconstitution-Activation 8 Color Surface Marker Panel. 2011-2015.
15. Co-investigator (PI, Emma Scott): Sponsor: OHSU. Multiple Myeloma and Lymphoma: Clinical Characteristics, Pathologic features, and Outcomes. 2012-2015.
16. Co-investigator (PI, Laurel Newell): Sponsors: Oregon MRF and University of British Columbia.
17. Role. Sponsor. Angiogenic Hormones in Post-Hematopoietic Cell Transplant (HCT) Immune Response. 2012-2015.
18. Co-investigator (PI, Catherine Leclair); Sponsor: National Vulvodynia Association. Novel Insights into Chronic Vestibulitis using Flow Cytometry and Genetic Analysis. 2012-2015.
19. Co-investigator (PI, Wei Huang): Sponsor OHSU. MRI Assessment of Leukemia Response to Therapy. 2012-2015.
20. Co-investigator (PI, Rita Braziel for OHSU section); Sponsor: NCI. Molecular Signature to Improve Diagnosis and Outcome Prediction in Non-Hodgkin Lymphoma, 2011-2016. My role was to identify and subtype study cases for gene expression profiling.
21. Co-Investigator PI, Rosalie Pelz): IRB00003330: A novel mechanism controlling the oncogenic accumulation of c-Myc protein in human cancer. 2005-2016
22. Co-PI (PI, Steve Kazmierczak): STUDY00021671. COVID-19 Real-Time PCR for Ubiquitome Liberty-16 system 3/2020-8/2020
23. Co-Investigator (PI, Phil Raess): Study00020916: Digital microscopic analysis of bone marrow aspirates and tissue: Scpio Labs Ltd 12/2019-10/ 2020

## **Publications/Creative Work:**

### **Peer-Reviewed Journal Articles**

1. **Guang Fan** and SL. Zhao: Studies on the relationship between zinc absorption micro constant

- K21/K12 ratio and absorption rate in a zinc absorption kinetic model of rat jejunum. *Acta Biophys Sinica* 1987; 3:55-59
2. Guo H. Zhang, GS Ye and **Guang Fan**: Effect of vitamin D on the zinc level of plasma, liver, kidney testis, prostate and tibia in rats. *Acta Nutr. Sinica* 1987; 9:317-322
  3. Guo H. Zhang and **Guang Fan**: Effect of insulin on kinetics of zinc absorption of jejunum and ileum in the rat. *J. Chin. Physiol.* 1987; 3: 274-278
  4. Guo H. Zhang, GS Y, **Guang Fan**, SL Zhao: Effect of testosterone propionate and diethylstilbestrol on the kinetics of zinc absorption in jejunum and ileum of rats. *Chin. J. Physiol. Sci.* 1987; 3:297 – 303
  5. **Guang Fan** and Ben J. Wu: Influence of hypoxia on the calcium influx and efflux in neuron of mice. *J. Beijing Med. Uni.* 1989; 20:53-58
  6. **Guang Fan** and Ben J. Wu: Influence of hypoxia on the fluidity of neuron cell membrane in mice. *Acta Biophys Sinica* 1989; 271-75
  7. **Guang Fan** and James A. Rillema: Effect of a tyrosine kinase inhibitor, genistein, on the actions of prolactin in cultured mouse mammary tissues. *Mol. and Cell. Endocrinology*, 1992; 83:51-55
  8. **Guang Fan** and James A. Rillema: Effects of a protein phosphatase inhibitor, okadaic acid, on the actions of prolactin in cultured mouse mammary gland explants. *Proc. Soc. Exp. Biol. Med.* 1993; 203:501-504
  9. **Guang Fan** and James A. Rillema: Prolactin stimulation of protein kinase C in isolate mouse mammary gland nuclei. *Horm. Metab. Res* 1993; 25:264-268
  10. **Guang Fan** and James A. Rillema: Possible role of tyrosine kinases in the prolactin stimulation of cell division in Nb2 node lymphoma cells. *Horm. Metab. Res.* 1993; 25:256-258
  11. **Guang Fan** and James A Rillema: Temporal effects of prolactin on casein kinase activity, casein synthesis and casein mRNA accumulation in mouse mammary gland explants. *Horm. Metab.Res.*1994; 26:367-370
  12. Lawrence B. Holzman, Steven E. Merritt, and **Guang Fan**: Identification, molecular cloning, and characterization of dual leucine zipper bearing kinase. A novel serine/threonine protein kinase that defines a second subfamily of mixed lineage kinases *J. Biol. Chem.* 1995; 269:30808-30817
  13. **Guang Fan**, Steven D. Merritt, Lawrence B Holzman: Dual leucine zipper-bearing (DLK) activates p46SAPK and p38MAPK but not ERK2. *J. Bio.Chem.* 1996, 271:24788-24793
  14. Mathias Kretzler, **Guang Fan**, Demian Rose, Lawrence B. Holzman: Novel mouse embryonic renal marker gene products differentially expressed during kidney Development. *Am. J. Physio.*1996, 271:770-777
  15. Marina Mata, **Guang Fan**, Lawrence B Holzman: Characterization of dual leucine zipper-bearing kinase, a mixed lineage kinase present in synaptic terminals whose phosphorylation state is regulated by membrane depolarization via calcineurin. *J. Bio. Chem.* 1996, 271:16888-16896
  16. **Guang Fan**, Carmilita Alvares, Harold R Schumacher: Quantitative and qualitative bone marrow analysis using the Abbott Cell-Dyn 4000 hematology analyzer. *Laboratory Hematology* 1999, 5:45-51
  17. **Guang Fan** and Jose Mira: A case report: leiomyoma in the ureter. *Arch Pathol Lab Med.* 2000, 124:302-303
  18. **Guang Fan**, Patricia Kotylo, Richard Neiman, and Rita M Braziel: Comparison of fascin expression in anaplastic large cell lymphoma and Hodgkin's disease. *Am J Clin Pathol* 2003; 119:199-204
  19. James Huang, **Guang Fan**, Yanping Zhong, Ken Gatter, Rita M Braziel, Gary Gross, and Antony Bakke: Diagnostic usefulness of aberrant CD22 expression in differentiating neoplastic cells of B-

- cell chronic lymphoproliferative disorders from admixed benign B-cells in four color multiparameter flow cytometry. *American Journal of Clinical Pathology* 2005;123 (6): 826-832
20. **Guang Fan**, Michael Molstad, Rita Braziel, Melissa Standley, James Huang, William Rodgers, and Srinivasa Nagalla. Proteomic Profiling of mature CD10-positive B-cell lymphomas. *Am J Clin Pathol.* 2005; 124(6):920-9
  21. Suman Malempati, **Guang Fan**, Yasmine Akkari, Melissa Cunningham, Susan Olson, and Rosalie Sears. Aberrant stabilization of c-Myc protein in lymphoblastic and myelogenous leukemia. *Leukemia* 2006; 20 (9):1572-81
  22. YanPing Zhong, Antony C Bakke, **Guang Fan**, Rita M Braziel, Ken Gatter, Jose F Leis, Richard Maziarz, and James Huang. Drug resistance in B-cell chronic lymphocytic leukemia: Predictable by In Vitro evaluation with a multiparameter flow cytometric cytotoxicity assay. *Cytometry Part B: Clinical Cytometry* 2007; 72 (3):189-195
  23. Ted Laderas, Cory Bystrom, Debra McMillen, **Guang Fan**, and Shannon McWeeney: TandTRAQ: An open source tool for integrated protein identification and quantitation. *Bioinformatics.* *Bioinformatics*, 2007; 23(24):3394-3396
  24. Bill Chang, Linda Stork, and **Guang Fan**: A unique case of adolescent CD56-negative nasal extranodal NK/T-cell lymphoma. *Pediatric and Developmental Pathology.* 2008; 11(1):50-54
  25. Megan L. Troxell, Jennifer B. Dunlap, Anuja Mittalhenkle, Mona Ishag, **Guang Fan**, James Z. Huang, Ken Gatter, Dan M. Byrd, Devon Webster, Donald C. Houghton: Rejection versus posttransplantation lymphoproliferative disorder in a renal transplant recipient. *Amer J Kidney Dis.* 2008; 52(6):1174-1179
  26. Cristina Smith and **Guang Fan**: The Saga of Jak2 mutations and translocations in hematologic disorders: Pathogenesis, diagnostic & therapeutic prospects, and proposed revision of WHO diagnostic criteria for chronic myeloproliferative disorders. *Human Pathology.* 2008;39:795-810
  27. Yi-Hua Chen, Juehua Gao, **Guang Fan**, and LoAnn Peterson: Nuclear expression of Sox11 is highly associated with mantle cell lymphoma but not dependent on t(11;14)(q13;q32) translocation. *Modern Pathology.* 2010; 23(1):105-112
  28. Katalin Kelemen, Ken Gatter, Rita Braziel, and **Guang Fan**: Immunophenotypic variations of Burkitt lymphoma. *American Journal of Clinical Pathology* 2010;134(1):127-138
  29. Katalin Kelemen, Ken Gatter, Rita Braziel, and **Guang Fan**: Correlation of T-cell immunophenotype between skin biopsy and peripheral blood findings in mycosis fungoides. *American Journal of Clinical Pathology* 2010,134(5):739-748
  30. Jennifer Dunlap, Katalin Kelemen, Nicky Leeborg, Rita Braziel, Susan Olson, Richard Press, James Huang, Ken Gatter, Marc Loriaux, and **Guang Fan**: Association of JAK2 mutation status and cytogenetic abnormalities in myeloproliferative neoplasms and myelodysplastic/myeloproliferative neoplasms. *American Journal of Clinical Pathology* 2011;135:709-719
  31. Katalin Kelemen, Kovacsovics Tibor, Rita M Braziel, Christopher Corless, Carol Beading, **Guang Fan**: RAS mutations in therapy-related acute myeloid leukemia after successful treatment of acute promyelocytic leukemia. *Leukemia and Lymphoma.* 2011;52(12):2237-2253
  32. Jennifer Dunlap, Carol Beadling, Andrea Warrick, Tanaya Neff, William H. Fleming, Marc Loriaux, Michael C. Heinrich, Tibor Kovacsovics, Katalin Kelemen, Nicky Leeborg, Ken Gatter, Rita M. Braziel, Richard Press, Christopher L. Corless, **Guang Fan**: Multiplex High-throughput Gene Mutation Analysis In Acute Myeloid Leukemia. *Human Pathology* 2012; 43: 2167–2176

33. Tarunpreet Bains, Michael Heinrich, Marc Loriaux, Carol Beading, Andrea Warrick, Tanaya Neff, Jeffrey Tyner, Jennifer Dunlap, Christopher Corless, **Guang Fan**: Newly Described Activating JAK3 Mutations in T-cell Acute Lymphoblastic Leukemia. *Leukemia* 2012;26:2144-2146
34. Nicky Leeborg and **Guang Fan**: Systemic EBV-positive T-cell lymphoproliferative Disease of Childhood. *Pathology Case Reviews*. 2012;Vol 17 (3):120-124
35. Ellen Flatley and **Guang Fan**: Bone marrow involvement by Peripheral T-cell lymphoma, Not Otherwise Specified. *Pathology Case Reviews*. 2012;Vol 17(3):125-129
36. Jeffrey Tyner, Wayne Yang, Armand Bankhead II, **Guang Fan**, Luke Fletcher, Jade Bryant, Jason Glover, Bill Chang, Stephen Spurgeon, Willam Fleming, Tibor Kovacsovics, Jason Gotlib, Sopher OH, Michael Deininger, Christian Michel Zwaan, Monique Den Boer, Marry van den Heuvel-Eibrink, Thomas O'Hare, Brian Druker, Marc Loriaux: Kinase Pathway Dependence in Primary Human Leukemias Determined by Rapid Inhibitor Screening. *Cancer Research*. 2013;73:285-296
37. Mingying Zhang, Jun Lu, Xiaodong Wang, Jiannong Ceng, **Guang Fan**, Shaoyan Hu. Early Precursor T-lymphoblastic leukemia/lymphoma arising from Pediatric Chronic Myeloid Leukemia- Unusual lymph node blast crisis. *British Journal of Hematology* 2013;Vol 161(1): 136–139
38. Daphne Ang, **Guang Fan**, Tibor Kovacsovics, Nicky Leeborg, Marc Loriaux, Andrea Warrick, Carol Beadling, Susan Olson, Ken Gatter, Rita Braziel, Christopher Corless, Richard Press, Jennifer Dunlap. Utility of multiplex mutation analysis in the diagnosis of chronic myelomonocytic leukemia. *Journal of Leukemia* 1:114. doi: 10.4172/2329-6917.1000114 May 20, 2013
39. Michael C. Kruer, Tyler Jepperson, Sudeshna Dutta, Robert D. Steiner, Lynn Sanford, Mark Merkens, Barry S. Russman, Peter A. Blasco, **Guang Fan**, Jeffrey Pollock, Sarah Stanfield, Randall L. Woltje, Catherine Mooney, Doris Kretzschma, Coro Paisán-Ruiz, Henry Houlden: Mutations in gamma adducin lead to inherited cerebral palsy. *Annals of Neurology*. December 2013; 74(6), 805–814
40. Stephen D. Smith, Andy Chen, Stephen Spurgeon, Craig Okada, **Guang Fan**, Jennifer Dunlap, Rita Braziel and Richard Maziarz: Diffuse Large B-cell Lymphoma in adults aged 75 years and older: a single institution analysis of cause-specific survival and prognostic factors. *Ther Adv Hematol*. Dec. 2013; 4(6):349-353
41. Huilan Yao, Devorah Goldman, Tamilla Nechiporuk, Sunita Kawane, Shannon K. McWeeney, Jeffrey Tyner, **Guang Fan**, Marc A. Kerenyi, Stuart H. Orkin, William H. Fleming and Gail Mandel: The co-repressor Rcor1 is essential for murine erythropoiesis. *Blood* 2014; 123:3175-3184
42. Christopher Cogle, Devorah Goldman, Gerard Madlambayan, Azzah Al Masri, Hilary Clark, Ronald Leon, Steven Asbaghi, Jeffrey Tyner, Jennifer Dunlap, **Guang Fan**, Tibor Kovacsovics, Qiuying Liu, Amy Meacham, Edward Scott, William H. Fleming: Functional integration of acute myeloid leukemia into vascular niche. *Leukemia*. 2014; 28, 1978-1987
43. Ellen Flatley, Elaine S. Jaffe, Helen Lawce, Susan Olson, **Guang Fan**. B-cell Aberrations of MYC are a common event in B-cell Prolymphocytic Leukemia. *American Journal of Clinical Pathology*. 2014;142 (3): 347-354
44. Huilan Yao, Devorah Goldman, **Guang Fan**, Gail Mandel, William H. Fleming. The co-repressor Rcor1 is essential for normal myeloerythroid lineage differentiation. *Stem Cells*, 2015; 3304-3314. DOI: 10.1002/stem.2086
45. Jonathan E Brammer, Nicky Leeborg, Eugene Carneal, **Guang Fan**, and James Gajewski: A Unique Case of Late Recurrent Langerhans Cell Histiocytosis and Postpartum Rheumatoid Arthritis Offers Insight into Possible Disease Triggers. *J Hematol Transfus* 3(1): 1034. 2015



46. Min Shi, Stephen Spurgeon, Richard Press, Susan Olson, and **Guang Fan**: MYD88 Mutation Analysis of a Rare Composite Chronic Lymphocyte Leukemia and Lymphoplasmacytic Lymphoma Using Flow Cytometry Cell Sorting. *Annals of Hematology*, Vol 94, Issue 11, 1941-1944. 2015. Ms. No. AOHE-D-15-00259R1
47. Erica Reinig, Fei Yang, Elie Traer, Ranjana Arora, Shari Brown, Rogan Rattray2, Rita Braziel, **Guang Fan**, Richard Press MD, Jennifer Dunlap. Targeted Next Generation Sequencing in Myelodysplastic Syndrome and Chronic Myelomonocytic Leukemia Aids Diagnosis in Challenging Cases and Identifies Frequent Spliceosome Mutations in Transformed AML. *AJCP*.2016;0:1-10
48. Phil Raess, Michael Cascio, **Guang Fan**, Richard Press, Brian Druker, Diana Brewer, and Stephen Spurgeon: Concurrent STAT3, DNMT3A and TET2 mutations in T-LGL leukemia with molecularly distinct clonal hematopoiesis of indeterminate potential. *American Journal of Hematology*. 2016. DOI: 10.1002/ajh.24586
49. Philipp W. Raess, Stephen R. Moore, Michael J. Cascio, Jennifer Dunlap, **Guang Fan**, Ken Gatter, Susan B. Olson, Rita M. Braziel: MYC immunohistochemical and cytogenetic analysis are required for identification of clinically relevant aggressive B cell lymphoma subtypes. *Leukemia & Lymphoma*. 2018 Jun; 59(6):1391-1398. doi: 10.1080/10428194.2017.1370547.
50. Ma Juan, Jennifer Dunlap, Aleksandra Paliga, Elie Traer, Richard Press, and **Guang Fan**: The prognostic effect of FLT3-ITD on Acute Myeloid Leukemia with intermediate-risk cytogenetic group is significantly altered by the presence or absence of DNMT3A co-mutation. *Leukemia & Lymphoma*, 2017. DOI: 10.1080/10428194.2017.1397659
51. Min Xu, Karen Chisholm, **Guang Fan**, Anne Anne M Stevens, Joe Rutledge: Hematoxylin Bodies in Pediatric Bone Marrow Aspirates and their Utility in the Diagnosis of Systemic Lupus Erythematosus. *Pediatric and Developmental Pathology* - First Published October 9, 2017. [journals.sagepub.com/doi/full/10.1177/1093526617734948](https://journals.sagepub.com/doi/full/10.1177/1093526617734948)
52. Andy I Chen, Jessica T. Leonard, Craig Y. Okada, Nathan D Gay, Kari Chansky, **Guang Fan**, Jennifer Dunlap, Philipp Rasess, Rita M. Braziel, Alex Stentz R. Outcomes of DA-EPOCH-R induction plus autologous transplant consolidation for double hit lymphoma. Accepted 12 Nov 2017, Published online: 03 Dec 2017. <https://doi.org/10.1080/10428194.2017.1406085>
53. Phil Raess, Michael Cascio, **Guang Fan**, Richard Press, Brian J. Druker and Stephen E. Spurgeon: Concurrent STAT3, DNMT3A, and TET2 mutations in T-LGL leukemia with molecularly distinct clonal hematopoiesis of indeterminate potential. *American Journal of Hematology*, Vol.92, No. 1, 2017. <https://doi.org/10.1002/ajh.24586>
54. Mihai Merzianu, Alan Groman, **Guang Fan**, etc: Trends in Bone Marrow Sampling and Core Biopsy Adequacy in the United States and Canada. A Multicenter Study. *Am J Clin Pathol*. 2018 Oct 1;150 (5):393-405. doi: 10.1093/ajcp/aqy066.
55. Richard Press, Garrett Eickelberg, Allison Froman, Fei Yang, Alex Stentz, Ellen Flatley, **Guang Fan**, Jeong Lim, Gabrielle Meyers, Richard Maziarz, and Rachel Cook: NGS-Defined Minimal Residual Disease Before Stem Cell Transplantation Predicts Acute Myeloid Leukemia Relapse. *American Journal of Hematology*. *American Journal of Hematology*. 23 May 2019. Volume 94, Issue 8. P902-912. DOI: 10.1002/ajh.25514
56. Jennifer Dunlap, Jessica Leonard, Phil Raess, **Guang Fan**, Elie Traer: The combination of NPM1, DNMT3A and IDH1/2 mutations increases risk of relapse and leads to inferior overall survival in acute myeloid leukemia. *Am J Hematol*. 2019 Aug; 94(8):913-920. DOI: 10.1002/ajh.25517

57. Abigail Wills; **Guang Fan**; Kevin White; Craig Okada; Edward Kim: Primary cutaneous Epstein-Barr virus-positive diffuse large B-cell lymphoma (DLBCL) in a patient taking fingolimod. *Dermatology Online Journal*. 2019 Issue 9, Volume 25. 2019 Sep 15;25(9):13030/qt2g62q2fq.
58. Anupriya Agarwal, William J. Bolosky, David B. Wilson, Christopher A. Eide, Susan B. Olson, **Guang Fan**, and Brian J. Druker: Differentiation of leukemic blasts is not completely blocked in acute myeloid leukemia. *PNAS* Dec.2019,116 (49) 24593-24599; <https://doi.org/10.1073/pnas.1904091116>
59. Brian Werstein, Jennifer Dunlap, Michael J. Cascio<sup>1</sup>, Robert S. Ohgami, **Guang Fan**, and Richard Press Philipp W. Raess: Molecular discordance between myeloid sarcomas and concurrent bone marrows occurs in actionable genes and is associated with worse overall survival. *The Journal of Molecular Diagnostics*. 2020 Mar;22(3):338-345. doi: 10.1016/j.jmoldx.2019.11.004
60. Adam J. Lamble<sup>1</sup>, Yoko Kosaka, Lauren Brady, Ted Laderas, Allie Maffit<sup>1</sup>, Weiwei Wang, Andy Kaempf, Jennifer Saultz, Motomi Mori, David Soong, Clare V. LeFave, Fei Huang, Homer Adams III<sup>3</sup>, Marc Loriaux, Cristina E. Tognon, Pierrette Lo, Brian J. Druker, Jeffrey W. Tyner, **Guang Fan**, Shannon McWeeney, and Evan F. Lind: Reversible suppression of T cell function in the bone marrow microenvironment of acute myeloid leukemia. 2020 Jun 23;117(25):14331-14341. doi: 10.1073/pnas.1916206117
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### **Invited Publications:**

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2. Eric Nutt and **Guang Fan**: Cytospin Body Fluids. Medical Laboratory Observer March, 2004; p 43
3. Eric Nutt and **Guang Fan**: Repeating Critical Values. Medical Laboratory Observer April, 2004; p45
4. Eric Nutt and **Guang Fan**: How to determine an estimate of the White Blood Cell count in whole blood from the peripheral smear. Medical Laboratory Observer February, 2006; p34
5. Kathleen Siechen and **Guang Fan**: The utility of osmotic fragility test. Medical Laboratory Observer. September, 2006; 54-55
6. Eric Nutt and **Guang Fan**: Criteria for identifying bands. Medical Laboratory Observer. November, 2006; p44
7. Eric Nutt and **Guang Fan**: Poikilocytosis terminology. Medical Laboratory Observer. December, 2006; p42-44
8. Sarah Henry and **Guang Fan**: Hb and HCT do not match in oncology patients. Medical Laboratory Observer July, 2007;p50
9. Kathleen Siechen and **Guang Fan**: Reporting smudge cells in CLL. Medical Laboratory Observer. September, 2007; p42
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12. **Guang Fan**: Letter response to editor. A unique case of adolescent CD56-negative nasal extranodal NK/T-cell lymphoma. Pediatric and Developmental Pathology. 2008; Vol.11 (4); p326
13. Winfried Reichelt, Eric Nutt, and **Guang Fan**: Estimating nucleated cells from hemocytometer. Medical Laboratory Observer. May 2009;p41
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16. Nicky Leeborg and **Guang Fan**: Mixing EDTA blood too long. Medical Laboratory Observer. March 2009; p26
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20. **Guang Fan**: Interviewed and cited by editor of CAP TODAY. Residual AML testing: methods but no map. CAP TODAY. 2009. Vol. 23. No. 11. p71 & p97-109
21. Zhengchun Lu and **Guang Fan**: Healio Ace the Case: Multiple myeloma, Vindico Medical Education, September 2022
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### **Book Chapters:**

1. Rita Braziel and **Guang Fan**: Molecular Pathology in Clinical Practice, Chapter 32, B-cell lymphomas. p349-364. Springer Science+Business Media, LLC. 2007.
2. Jennifer Dunlap Nicky Leeborg, **Guang Fan**, and Rita Braziel: Molecular Pathology in Clinical Practice, B-cell lymphoma molecular testing. P579-603. Second edition. Springer Science+Business Media, LLC. 2015

### **Abstract Poster Presentations at National/International Meetings:**

1. **Guang Fan** and James A Rillema: Possible role of protein kinases and phosphatases in prolactin signal transduction pathway. The Endocrine Society 73rd annual meeting, Program and abstracts; 1991.
2. **Guang Fan** and James A. Rillema: The effects of the protein phosphatase inhibitor, okadaic acid, in the actions of prolactin in cultured mouse mammary gland. The Endocrine Society 74th annual meeting, program and abstracts; 1992.
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  35. Daphne Ang, Fei Yang, Richard Press, and **Guang Fan**: WT1 expression of different cell lineage in normal and leukemic bone marrow. 26<sup>th</sup> Annual Clinical Cytometry Meeting. 2011
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  40. Shernan Holtan, Laura F. Newell, Gabrielle Meyers, Andy I. Chen, Brandon Hayes-Lattin, James Gajewski, Susan Slater, Eneida Nemecek, Rita Braziel, **Guang Fan**, Richard T. Maziarz, Nicky Leeborg: Predictive Classification of Chronic GVHD Status by Immune Reconstitution Testing. Biol Blood Marrow Transplant 19, 2013; S279eS312
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  44. Jessica T. Leonard, Laura F. Newell, **Guang Fan**, Shernan G. Holtan: Tissue Expression of Placental Growth Factor in Acute Graft Versus Host Disease after Hematopoietic Stem Cell Transplantation. ASH annual meeting, 2014
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  46. Juan Ma, Jennifer Dunlap, Lisong Shen, **Guang Fan**: Mutation Analysis by Next Generation Sequencing (NGS) in de-novo Acute Myeloid Leukemia (AML). AACCC July, 2015 Annual Meeting. Distinguished Abstract award.
  47. Aleksandra Paliga, Elie Traer, Rita Braziel, Rick Press, **Guang Fan** and Jennifer Dunlap: Persistent Gene Mutations Detected by Next Generation Sequencing in Acute Myeloid Leukemia Following Induction Therapy. USCAP 105th Annual Meeting, 2016
  48. Ying Wang, Phil Raess, **Guang Fan**: DNA Mismatch Repair Protein Expression In Diffuse Large B-cell Lymphoma" to CAP16, Las Vegas, Nevada, September 25-28, 2016.
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  53. Sharif Adwan, Zhenzhen Zhang, Richard Press, Jennifer Dunlap, Xiaohua Wang, Phil Passes, Allison Forman, **Guang Fan**: FLT3-Tyrosine Kinase Domain (TKD) Mutation Profile Analysis in Adult Acute Myeloid Leukemia (AML) by Next Generation Sequencing (NGS), the United States & Canadian Academy of Pathology's 107th Annual Meeting 2018.
  54. Xiaohua Wang and **Guang Fan**: Utility of MYD88 mutation testing in small B cell lymphomas with plasmacytic differentiation" at ISLH annual meeting 2018
  55. Mara Rosenberg, **Guang Fan**, Brian Druker, Marc Loriaux: Determining the sensitivity of primary acute myeloid leukemia (AML) samples with FLT3-ITD or FLT3-D835 mutations to FLT3 inhibitors using an ex vivo drug sensitivity screen: ASCO annual meeting 2018
  56. Alyssa J. Penning, Michael J. Cascio, **Guang Fan**, Jennifer Dunlap, Philipp W. Raess: Extracavitary

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57. Sharif Adwan, Juan Ma, Jennifer Dunlap, **Guang Fan**, FLT3-Tyrosine Kinase Domain (FLT3-TKD) Mutation Profile across Cytogenetic Risk Groups in Acute Myeloid Leukemia (AML). CAP 2018
  58. Weiwei Wang, **Guang Fan**, Evan Lind , Andy Kaempf, Allie Maffit, Tomi Mori, Byung Park, Jennifer Saultz: High NK cell number predicts poor overall survival in de novo treatment naïve Acute Myeloid Leukemia. AACR 2019 annual meeting
  59. Weiwei Wang, Haibo Li, Ying Wang, **Guang Fan**, Lisong Shen: Clinical characteristics of patients with positive Paroxysmal nocturnal hemoglobinuria (PNH) testing. ISLH 2019 annual meeting
  60. Weiwei Wang, **Guang Fan**, Evan Lind, Andy Kaempf, Allie Maffit, Tomi Mori , Byung Park, Jennifer Saultz: T cell percentage predicts improved overall survival in de novo treatment naïve Acute Myeloid Leukemia. American Association Immunology Annual meeting 2019.
  61. Weiwei Wang, Haibo Li, Lisong Shen, **Guang Fan**: Decreased Ratio of CD4 to CD8 T-cells in Bone Marrow at Initial Diagnosis is Associated with Increased risk of GVHD in transplant patients with AML. American Association Immunology Annual meeting 2019.
  62. Weiwei Wang, Haibo Li, Lisong Shen, **Guang Fan**: Serums lactate dehydrogenase (LDH) levels correlated with patients' Paroxysmal nocturnal hemoglobinuria (PNH) clone sizes. AACC meeting 2019
  63. Tania Saliba, DO, Allen Holmes, MD, Ngoc Thy Bao Tran, MD, Weiwei Wang, Philipp Raess, MD, PhD, Jennifer Dunlap, MD, Ken Gatter, JD, MD, Rita Braziel, MD, Marc Loriaux, MD, PhD, **Guang Fan**, MD, PhD. Diagnostic Significance of Monocyte Immunophenotypic Aberrancy in Myeloid Neoplasms. ICCS Annual meeting. 2019
  64. Weiwei Wang, Haibo Li, **Guang Fan**, Lisong Shen: Increased T/NK ratio in Bone Marrow of AML Post-Induction Chemotherapy Predicts Increased Risk of GVHD in Transplant Patients. ICCS Annual meeting. 2019
  65. Weiwei Wang, Gabrielle Meyers, Haibo Li, Ying Wang, Lisong Shen, and **Guang Fan**. Retrospective Reviews of PNH Tests with Long-Term Follow-up in a Single Institution. ASH Annual meeting 2019
  66. Francisco Tria IV; Philipp W. Raess; Joanna Wiszniewska; Ngoc Tran; Tauangtham Anekpuritanang; Jennifer Dunlap; Richard Press; **Guang Fan**: Somatic Mutational Spectrum of Cytogenetically Normal Myelodysplastic Syndromes. USCAP annual meeting, 2020
  67. Francisco Tria IV; Philipp W. Raess; Joanna Wiszniewska; Ngoc Tran; Tauangtham Anekpuritanang; Jennifer Dunlap; Richard Press; Daphne Ang; **Guang Fan**: Signaling Pathway Mutations in Cytogenetically-Normal Myelodysplastic Syndromes are Associated with Progression to Acute Myeloid Leukemia. CAP annual meeting 2020
  68. Francisco Tria IV; Philipp W. Raess; Joanna Wiszniewska; Ngoc Tran; Tauangtham Anekpuritanang; Jennifer Dunlap; Richard Press; **Guang Fan**. Mutational Landscape of Cytogenetic Prognostic Risk-Stratified Myelodysplastic Syndromes. AACC annual meeting 2020.
  69. Maedeh Moheb Nasab, Stephen R. Moore, Jennifer Dunlap, Joanna Wiszniewska, Guang Fan, Wei Xie: FISH Interphase Negative, Cytogenetically Cryptic Acute Promyelocytic Leukemia: A Diagnostic Challenge and Pitfall. 2021 AMP
  70. Doris Yang, Donna Hansel, William Messer, Marcel Curlin, John Towens, Guang Fan, and Xuan Qin. Bimodal Distribution Pattern Associated with the PCR Cycle Threshold (*C<sub>t</sub>*) and Implications in COVID-19 Infections. ASM 2022
  71. Tyler Yeager, Sophia Wang, Alan Wang and Guang Fan: The Evaluation of Artificial Intelligence (AI) Flow Data Analysis for Diagnosing Immunologic Disorders and Monitoring Immune Status.

- 2022 AACC annual meeting at Chicago.
72. Zhengchun Lu, Guang Fan, .....Donna Hansel: Community-based SARS-CoV-2 testing using saliva or nasopharyngeal swabs to compare efficacy of weekly COVID-19 screening to wastewater SARS-CoV-2 signals. 2022 AACC annual meeting at Chicago.
  73. Jennifer N. Saultz, Daniel Bottomly, Faith Burns, Kaelan Byrd, Yoko Kosaka, Shannon K. McWeeney, Stephen E. Kurtz, Guang Fan, Andy Kaempf, Karen McGovern, Lei Wang, Marta Sanchez-Martin, Dan S Kaufman, Evan F. Lind, Jeffrey W. Tyner: The Aryl Hydrocarbon Receptor Defines a Unique Genomic and Immune Signature in AML Characterized By Monocytic Differentiation, Venetoclax Resistance and Is Targetable By Ahr Antagonist. *Blood* (2022) 140 (Supplement 1): 3071–3072. <https://doi.org/10.1182/blood-2022-163166>. ASH 2022
  74. Kaycee Moshofsky, Andy Kaempf, Stowe Mcmurry, Nick Taflin, Guang Fan, Staci Williamson, Gabrielle Meyers, Rachel Cook, Richard T Maziarz, Jennifer N Saultz: Bacterial Infections Post-Allogeneic Transplant Are Associated with Higher Relapse Related Mortality. Volume 28, Issue 3, Supplement, March 2022, Pages S352-S353. 2022 Tandem Meetings of ASTCT and CIBMTR
  75. Nora Fisher-Campbell..... Guang Fan, Wei Xie: Clinicopathologic Features of Patients with PPM1D Mutations: Myeloid Neoplasm Post Cytotoxic Therapy and De Novo Myeloid Neoplasms. March 2023 USCAP
  76. Lukas Streich, .....Guang Fan, and Wei Xie: PPM1D Mutations in Patients with Hematolymphoid Neoplasms. March 2023 USCAP
  77. Zhengchun Lu, Tyler Yeager, Alan Wang, Sophia Wang, Andrew Gao, Guang Fan: Development and clinical validation of artificial intelligence assisted flow cytometry diagnosis for acute leukemia. AACC 2023.
  78. Cheryl Claunch..... Guamg Fan.... : Pre-treatment immune biomarkers of pembrolizumab efficacy in glioblastoma patients treated with standard of care. Abstract Temporary ID#: 464628. ASCO 2024
  79. Tyler S. Yeager, Yunpeng Lyu, Mayu Morita, Athena Zhu, Sophia Y. Wang, Zhigang Wang, Guang Fan: Evaluation of Artificial Intelligence Assisted-Bone Marrow Aspirate Differentials For Diagnosing Plasma Cell Neoplasms. CAP 2024 annual meeting
  80. Tyler S. Yeager, Zhengchun Lu, Alan Wang, Guang Fan: Evaluation of Artificial Intelligence (AI)-assisted Flow Cytometry Analysis for Plasma Cell Neoplasms. ADLM 2024 annual meeting.
  81. Jordan Gillespie, Kyra Diehl, Jaclyn, Roland-McGowan, Elena Paz Munoz, Tayler Tobey, Jake Nelson, Kira Champelli, Molly Joyce, Katie Norris, Somya Khare, Michael Bonazzola, Guang Fan, Sancy Leachman: Metabolic Syndrome and Acanthosis Nigricans: A Systematic Review Protocol. *Clinical Dermatology and Surgery* Vol. 2 No.2 (2024).
  82. Zhengchun Lu, Tyler S. Yeager, Yunpeng Lyu, Mayu Morita, Zhigang Wang, and Guang Fan: Evaluation of artificial intelligence assisted-bone marrow aspirate differentials for diagnosing plasma cell neoplasms. CAP Annual Meeting 2024
  83. Amber Halse, Caitlin Kazmierczak, Xuan Qin, and Guang Fan: Validation of ELITech Primer and Probes for Adenovirus on Roche’s Cobas 8800 OMNI Channel. AMP 2024 Annual meeting

#### **Abstract/Case Platform Presentations at National/International Meetings:**

1. American Society of Clinical Pathology annual meeting: Abnormal centrosome amplification is a common feature of myelodysplastic syndromes: possible explanation for genetic instability. 1999. **Guang Fan** and Jone C. Winkelman
2. United States and Canadian Academy of Pathology annual meeting: Failure of beta-globin gene

- detection does not predict non-amplification of DNA in JH/Bcl-2 PCR analysis: Insights from a National Follicular Lymphoma Clinical Trial. 2002. **Guang Fan** and Rita Braziel.
3. United States and Canadian Academy of Pathology annual meeting: Identification of Proteins Involved in the Transformation of Follicular Lymphoma. 2004. **Guang Fan**, Michael Molstad, James Huang, Rita Braziel, William Rodgers, and Srinivasa Nagalla.
  4. United States and Canadian Academy of Pathology annual meeting 2009: New flow cytometry markers for distinguishing acute myeloid leukemia, acute myelomonocytic leukemia and acute monoblastic/monocytic leukemia. **Guang Fan**, Rita Braziel, James Huang, and Qing Chen.
  5. United States and Canadian Academy of Pathology annual meeting 2012: WT1 expression of different cell lineages in normal and leukemic bone marrow. Daphne Ang, Fei Yang, Richard Press, and **Guang Fan**.
  6. Juan Ma, Jennifer Dunlap, Lisong Shen, **Guang Fan**: Epigenetic-Regulator and Splicing-Gene Mutations in Acute Myelomonocytic Leukemia (AMML) and Acute Monocytic Leukemia (AMoL), the XXVIIIth International Symposium on Technological Innovations in Laboratory Hematology, May 2015. Berend Houwen Travel Award.
  7. Phil Raess, Alfons Krol; Rita Braziel; **Guang Fan**; Ken Gatter; Marc Loriaux; Jennifer Dunlap: Mast cell sarcoma with concurrent bone marrow involvement. SH/EAHP 2019 Workshop Case Presentation. Sept. 2019.
  8. Zhengchun Lu, Andrew Gao, Tyler Yeager, Sophia Wang, Alan Wang, and Guang Fan: "Evaluation of artificial intelligence assisted-bone marrow aspirate differentials for diagnosing hematological disorders. ISLH 2023. New Orleans, Louisiana.
  9. Zhengchun Lu and Guang Fan: Evaluation of Artificial Intelligence (AI)-assisted Flow Cytometry Analysis for ALPI. API summit 2024.

### **Invited lectures, conference presentations, or professorships:**

#### **OHSU, Regional, and International CME or CE credited**

1. The impact of gene and protein profiling on diagnostic pathology. 2009 Pathology Department Grand Rounds
2. Minimal Residual Disease (MRD) detection in acute lymphoblastic leukemia (ALL). 2012 Pathology Department Grand Rounds
3. Flow Cytometry Analysis - 2003 National Laboratory Week Lecture to laboratory technicians and residents
4. Acute Myeloid Leukemia - 2004 National Laboratory Week Lecture to laboratory technicians and residents
5. Multiple Myeloma - 2006 National Laboratory Week Lecture to laboratory technicians and residents
6. Paroxysmal nocturnal hemoglobinuria (PNH) - 2008 National Laboratory Week Lecture to laboratory technicians and residents
- 7.
8. Optimizing NGS Based Test Validation. Nov. 17, 2024. Taipei, Taiwan Society of Laboratory Medicine (TSLM)

**Regional CME or CE credited**

1. Cincinnati Pathology Society: Anaplastic Large Cell Lymphoma. Feb. 1998
2. Cincinnati Pathology Society: Inflammatory Myofibroblastic Tumor of Soft Tissue. Feb.1999
3. Oregon Pathology Association: Megakaryoblastic Leukemia Arising from Chronic Myeloid Leukemia (CML). Nov. 2001
4. Washington State Society for Clinical Laboratory Services (WSSCLS) Educational Program: Laboratory Evaluation of Acute and Chronic Myeloid Leukemias. May 2004
5. Oregon Pathology Association: Minimal Residual Disease Detection in Leukemia & Lymphoma. March 2014
6. OPA 2019: CD30+ lymphoproliferative disorders
7. Covid-19 Vaccine Roundtable for Chinese Friendship Association. Jan. 31, 2021
8. Conscientious ordering of Laboratory Test. 54th Annual Primary Care Review. Oregon Academy of Family Physicians. 2023 Organized by Oregon Health & Science University (OHSU), Hyatt Regency Portland at The Oregon Convention Center, Portland, Oregon.

**Regional Symposium Speaker (3 hours) CE credited**

1. Portland Area Laboratory Consortium for Education (PALCOE): Targeted Therapy for Acute and Chronic Myeloid Leukemia. Sept. 2005
2. Northwest Medical Laboratory Symposium (NWMLS): History of acute lymphoblastic leukemia and Minimal Residual Disease Detection for Acute Lymphoblastic Leukemia Oct 2012
3. Portland Area Laboratory Consortium for Education (PALCOE): Acute lymphoblastic leukemia: true grit in the war against cancer. Jan. 2013
4. Northwest Medical Laboratory Symposium (NWMLS): Northwest Medical Laboratory Symposium (NWMLS): Marrow Failure Syndromes-Causes, Symptoms, Diagnosis and Treatment. Oct 2014
5. Northwest Medical Laboratory Symposium (NWMLS): Evolution, Innovation, and the Future of Hematology Laboratories. Oct. 25,2024

**National/International CME or CE credited**

1. Society for Hematopathology/European Association for Hematopathology Workshop: T/NK cell Lymphoma case study. 2005. Houston, Texas
2. Society for Hematopathology/European Association for Hematopathology Workshop: Candidate Proteins Involved in the Transformation of Follicular Lymphoma by Proteomics Approach. 2006
3. Clinical Cytometry Society Annual Meeting: Biclonal Chronic Lymphocytic Leukemia, 2008. Portland, OR.
4. Chinese American Pathologists Association at USCAP meeting: Hot topics in Hematopathology. 2009, Boston, MA, USA
5. BIT Life Sciences 2<sup>nd</sup> Annual Congress: Has High Throughput Gene Profiling and Protein Profiling Brought Us Closer to Targeted Therapy and Improved Clinical Outcome for Leukemia and Lymphoma? Section of Molecular Diagnostics, 2009. Beijing, China. Section Chair and Speaker.
6. Hematology Oncology Conference of Soochow Children's Hospital: Targeted therapy in acute leukemia. 2010, Suzhou, China.
7. Society of Hebei Province Pediatric Oncology 2nd conference: Personalized Medicine. 2010 Shijiazhuang, China

8. Beijing University First Hospital 95-years Establishment Conference for Clinical Laboratory Medicine: Utility of 8-color Flow Cytometry at OHSU. 2010, Beijing, China
9. Beijing University First Hospital Clinical Laboratory Medicine conference: How to Prepare for CAP Accreditation. Oct 2012
10. Medical Student conference at Medical School of Soochow University: Leukemia: From Unknown Disease to a Nearly Curable Cancer. 2012. Suzhou, China.
11. Clinical Laboratory and Hematology-Oncology Conference of Suzhou Children Hospital: Multiplex Mutation Analysis and Target Therapy for Leukemia. 2012, Suzhou, China.
12. Annual Conference of Society of Clinical Laboratory Medicine of Shanghai: Clinical Applications of Flow Cytometry Analysis. 2013, Shanghai, China
13. American Association of Pathologists' Assistants 39th Annual Meeting: Acute lymphoblastic Leukemia. 2013, Portland, OR.
14. China Hematopathology 2<sup>th</sup> Annual Meeting: Clinical Application of Molecular Testing in Leukemia. 2013 Tianjin, China
15. 2014 Oriental Congress of Laboratory Medicine: Application of Next-Generation Sequencing in Hematologic Disorders. 2014, Shanghai, China.
16. 2015 Clinical laboratory Medicine annual meeting: The critical role of clinical laboratory in managing anemia patients. July, 2015 Zhengzhou, China
17. 2016. The 14<sup>th</sup> Asian Society for Clinical Pathology and Laboratory Medicine Congress: NGS testing in Myeloid Malignancies. March 2016 Taipei, Taiwan
18. 2016 Oriental Congress of Laboratory Medicine: Clinical Applications Flow cytometry in Immunologic disorder. December, 2016 Shanghai, China
19. CAP Annual education event: IQCP (Individualized Quality Control Plan), June 2017. Shanghai, China.
20. Shanghai Medical Doctors Association for Laboratory Medicine Professionals SMDALMP, Annual Meeting: EBV associated hematological disorders. June 2017, Shanghai, China
21. China Medical Doctors Association for Laboratory Medicine Professionals, Annual Meeting: Advancement of MRD (Minimal Residual Disease) detection in acute leukemia. June, 2017. Xian, China.
22. Hematology Oncology Annual Meeting: DLBCL update. Oct. 2017, Shanghai.
23. National Pathology Conference of Malaysia. CAP education event: "Test validation" and "The best use of Proficiency testing". Aug. 2018. Kuala Lumpur, Malaysia
24. CAP education event. "How to prepare for CAP accreditation" and "Quality Management for Clinical Laboratory". Aug. 2018 in Jakarta, Indonesia.
25. Chinese Clinical Laboratory Medicine Annual meeting: Advances in Clinical Flow Cytometry. Sept. 2018 Dalian, China
26. The topics presented: Laboratory Developed Test Validation and Most Commonly Cited Deficiencies. CAP education event. Nov. 2019 in Singapore
27. Most Frequent asked questions related to CAP accreditation. Webex presentation 3 hours for Clinical Laboratories in China ( >2000 audiences), 2020.
28. Molecular Diagnostics for Precision Medicine. Taiwan Society for Laboratory Medicine 2022. Zoom presentation 50 mins.
29. Thailand IAP 2024: Revolutionizing Hematopathology: Leading Targeted Therapy through Discoveries with Automation, AI, and Third-Generation NGS. Nov. 15, 2024 Bangkok, Thailand.
30. CAP Event for Thailand IAP 2024: Quality management in Molecular Genetics: Nov. 15, 2024

Bangkok, Thailand.

31. CAP Event for Thailand IAP 2024: Enhancing Patient Safety Through Effective Risk Management in Clinical Laboratory. Nov. 15, 2025 Bangkok, Thailand.
32. CAP event for Taiwan Society of Laboratory Medicine (TSLM): AL/ML's transformation Role in Pathology and Clinical Labs. Nov. 17, 2024. Taipei, Taiwan.
33. CAP event for Taiwan Society of Laboratory Medicine (TSLM): Optimizing NGS-Based Test Validation. Nov. 17, 2024. Taipei, Taiwan.

## **VI. SERVICE**

### **Membership in Professional Societies:**

1. United States and Canadian Academy of Pathology (USCAP)-active
2. College of American Pathologists (CAP)-active
3. American Society of Clinical Pathologists (ASCP)-active
4. American Society of Hematology (ASH)-active
5. Pacific Northwest Society of Pathologists (PNSP)-active
6. Oregon Pathology Association (OPA)-active
7. Society for Hematopathology (SHP)-active
8. International Clinical Cytometry Society (ICCS)-active
9. The Chinese American Pathologists Association (CAPA)-inactive
10. Children's Oncology Group (COG)-inactive
11. Society of Chinese Bioscientists in America-inactive

### **Editorial and Ad Hoc Review Activities:**

1. Editorial board member: Human Pathology 2005-2019
2. Ad Hoc reviewer: Blood: 2005-present, 1-3 papers/year
3. Ad Hoc reviewer: Journal of Molecular Diagnostics 2002-present, 1-3 papers/year.
4. Ad Hoc reviewer: Archives of Pathology and Laboratory Medicine 2003-present, 1-3 papers/year.
5. Ad Hoc reviewer: American Journal of Pathology. 2005-present, 1-3 papers/year
6. Ad Hoc reviewer: American Journal of Clinical Pathology. 2006-present, 1-3 papers/year
7. Ad Hoc reviewer: Leukemia Research. 2009-present, 1-3 papers/year
8. Ad Hoc reviewer: Clinical Chemistry. 2012-present, 1-3 papers/year
9. Ad Hoc reviewer: Cancer Research. 2012-present, 1-3 papers/year
10. Ad Hoc reviewer: Cancer Genetics. 2012-present, 1-3 papers/year
11. Ad Hoc reviewer: Diagnostic pathology. 2014, 1-3 papers/year

### **Grant reviews and Expert Consultation:**

1. NCI SPORE panel reviewer for leukemia, lymphoma, and GI cancers 2012
2. Reviewer for NCI Loan Payment Program (LRP) for 2010, 2012, 2013, 2014
3. International reviewer for National Natural Science Foundation of China, Medical Science Division, 2014
4. Member of Expert Panel for the Journal of Medical Laboratory Observer 2004-2009

### **Committees:**

**National/international:****College of American Pathologists (CAP):**

The College of American Pathologists is the leading organization of board-certified pathologists in the United States. The CAP Laboratory Accreditation Program is an internationally recognized program and serves as the gold standard for Laboratory Medicine. The CAP has accredited nearly 8000 laboratories around the world. The Centers for Medicare and Medicaid Services (CMS) has granted the CAP Laboratory Accreditation Program deeming authority. It is also recognized by the Joint Commission. CAP accreditation can be used to meet many state certification requirements.

In last 10 years working with the College of American Pathologist Laboratory Accreditation Program, I have lead team CAP inspections for over 100 laboratories in US and across the world. I have worked with a diverse range of groups including rural community health labs, large commercial labs, and university affiliated laboratories responsible for 4000 bed hospitals. The experience I have gained in quality management, quality control, laboratory operations, and cutting-edge technology has been invaluable to my work at my home institution.

My roles in the CAP are listed below.

1. CAP Laboratory Accreditation Program inspector for US laboratories 2003-present
2. Member of International Inspector Certification Program for developing education and testing materials, College of American Pathologists, 2011-2013
3. CAP Laboratory Accreditation Program Pacific Northwest Regional Commissioner, covering 6 states in the US and 3 Providences in Canada 2014-2022
4. CAP Laboratory Accreditation Program State Commissioner for Oregon 2011-2022
5. CAP Laboratory Accreditation Program Education Committee member 2012-2017
6. CAP Laboratory Accreditation Program Education Committee vice chair 2016-2017
7. CAP Laboratory Accreditation Program inspection team leader for US laboratories 2012-present
8. CAP Laboratory Accreditation Program inspection team leader for international laboratories 2014-present
9. CAP LMD course practical assessment scoring committee 2017-present
10. CAP Laboratory Accreditation Program Complaints and Investigations Committee 2018-2023
11. CAP Laboratory Accreditation Program International Accreditation Committee 2024-present
12. CAP LMD course AP3 Product Review for LMD online courses 2019-present
13. Team leader of OHSU inspection team
  - a. Providence Health and Services, Medford, OR 2012
  - b. Providence Regional Lab, Portland, OR 2012
  - c. CellNetix Labs, LLC. Everett, WA 2013
  - d. CellNetix, Seattle, WA 2014
  - e. Peace Health Laboratories, Eugene 2014
  - f. DynalLifeDx, Edmonton, AB, Canada 2015
  - g. Barlett Regional Hospital, Alaska 2016
  - h. Fairbanks Memorial Hospital, Alaska 2016
  - i. Laboratory Corporation of America, NC, Feb. 2017
  - j. The Queen's Health System, Aiea, HI, 2017



- k. Kaiser Laboratory in Fremont, CA, 2017
- l. BC Cancer Agency Genome Sciences Center, Vancouver, BC, 2019
- m. Providence Laboratory Anchorage, Alaska, 2019
- n. Barnes Hospital, Washington University, St Louis, 2021
- o. University of Oklahoma Hospital and Children Hospital, 2024

14. Team Leader for International Laboratory Accreditation Program CAP inspections

- a. Beijing Chao-Yang Hospital Laboratory, Beijing, China, 2014  
2000 beds, 2.5 million outpatient visits/year and 18,000 operations annually
- b. Al Rayan Hospital Laboratory, Riyadh, Saudi Arabia, 2014
- c. Clinical Laboratory Huashan Hospital Affiliated to Fudan University Shanghai, China, 2014  
1500 beds, 1.5 million outpatient visits/year, 20,000 operations annually
- d. Beijing Shijitan Hospital Affiliated to Capital Medial University, Beijing, China, 2014  
Nearly 1000 beds, 1 million outpatient visits/year, and 13,100 inpatients/year
- e. ICON Central Laboratories, EMT, China, 2014
- f. Kingmed Diagnostic Center Co Ltd, Guangzhou, China, 2014  
The largest commercial laboratory in China, operates a chain of medical laboratories including 22 provincial-level Labs and serving more than 6000 hospitals
- g. West China Hospital of Sichuan University, Clinical Laboratory, Sichuan, China, 2014  
More than 4000 beds, 4 million outpatient visits/year, and 1 million surgical operations annually
- h. Second Affiliated Hospital, Zhejiang University, Zhejiang, China, 2015
- i. People's hospital, Beijing University, Beijing, China, 2015
- j. United Family Hospital, Beijing, China, 2015
- k. West China Second Hospital of Sichuan University, Chengdu, China, 2015
- l. First Affiliated Hospital, Zhejiang University, Hangzhou, Zhejiang, China, 2015
- m. Institute of Hematology & Blood Diseases Hospital, Chinese Academy of Medical Sciences & Peking Union Medical College, Tianjin, China, 2015
- n. Linkou Chang Gung Memorial Hospital, Taipei, China, 2015
- o. First Hospital Beijing University, Beijing, China, 2016
- p. China Medical University Hospital, Taipei, Taiwan, 2016
- q. Beijing Union Clinical Laboratory, Beijing, China, 2016
- r. Singapore General Hospital, Singapore National University affiliated Hospital, Singapore, 2017
- s. Blueprint Gen Lab, Helsinki, Finland 2018
- t. Advanced Genomics Solutions, Hong Kong, China, 2018
- u. Singapore National University Clinical Laboratory 2019
- v. Virtual inspections in 2020 for international laboratories- NGS Labs in Japan, 2020
- w. Virtual inspections in 2021 for international laboratories- NGS Labs in Finland, Germany, and China.
- x. Virtual inspection in 2022 for international laboratories: NGS Lab in Singapore, China, Japan, and Taiwan
- y. Life Strands Genomics, Singapore, 2024
- z. Sunway Medical Center, Kuala Lumpur, Malaysia, 2044

**Other National/International Committees:**

1. International Clinical Cytometry Society – Member of international working group for standardization of clinical flow cytometry: 2011-2013
2. Society for Hematopathology – Question writer for RISE/FISHE (fellowship in service annual examination): 2008-2014
3. Society of Chinese Bioscientists in America – Oregon Chapter President: 2007-2009
4. China Medical Doctor Association of Clinical Laboratory Medicine – Member of anemia committee: 2015-present
5. China Medical Doctor Association of Clinical Laboratory Medicine – Member of clinical hematology committee: 2015-present
6. Shanghai Medical Doctor Association – Overseas Consultant: 2016-present
7. Association of Pathology Chairs (APC) Clinical Service Leaders Committee: 2023-present

**Institutional:**

1. Faculty Council Committee at OHSU, elected, 2006-2010
2. Institutional Review Board (**IRB**) at OHSU, 2005-2013
3. Knight Cancer Institute Hematologic Malignancies Program, 2009-present
4. School of Medicine. Member, M.D./Ph.D. Program Committee
5. OHSU Health System AI governance committee
6. IFP Quality steering committee OHSU Health
7. Clinical co-chair for Laboratory Value Analysis Committee, subcommittee to Value Analysis Steering Committee OHSU Health

**Departmental:**

1. Quality control and quality assurance committee for the clinical laboratory, 2001-present
2. Research committee, 2001-present
3. Promotion and tenure committee, 2010-present

**Clinical Responsibilities:**

**Overview of my role as director of multiple laboratory sections and Director of the OHSU Hospital Laboratory**

Over the years, my focus has been providing high quality service to OHSU patients and the Oregon community. I have gained broad experience in laboratory operations, and developed expertise on the diagnosis of lymphoma/leukemia via flow cytometry, and molecular testing. I lead numerous new test development projects and new instrument implementations. Based on my achievement and commitment to clinical services, I was promoted to Associate Director of the OHSU Hospital Laboratory. Through this role, I am routinely involved in quality control and quality improvement activities of entire laboratories. I have also expanded OHSU hematopathology and flow cytometry services to several outside hospitals and laboratories. I took on additional responsibilities as the interim director of microbiology laboratory on Jan 1, 2020. Three months later, the COVID-19 pandemic began. I immediately started set up of COVID-19 testing from scratch. In 2 weeks, we started testing using borrowed instruments and borrowed space. In

the following months, we dealt with reagents shortages, new instrument validations, and a high testing volume. We maintained a good turn-around time (>90% in 24 hours) throughout the process. Due to our success in COVID-19 testing, we received generous donations from Nike and the OHSU foundation (\$7 millions), contracts from the Oregon Health Authority for COVID Sequencing (\$3 millions) and K-12 back to school COVID-19 testing (\$44 millions) and partnered with under-served community groups to provide COVID testing. In Feb. 2023, I directed a team of microbiologists and lab techs opened a new microbiology laboratory using state of art technology.

### **1. Director of Hematopathology Clinical Service:**

Our clinical service includes bone marrows, lymph nodes/consults, flow cytometry, and molecular diagnostic services. The molecular clinical services include clinical interpretation and reporting of Next Generation Sequencing (NGS) for hematologic malignancies in addition to T & B cell clonality testing by PCR.

As director, I also mentor all new faculty on clinical services by reviewing cases and acting as a consultant for difficult clinical scenarios.

Additionally, I lead multiple quality improvement projects to establish more efficient and effective clinical services. Due to our efforts over the years to provide high quality services, improve turn-around-time, and enhance communication with OHSU and outside physicians, the number of hematopathology consultation cases has increased 5-10% annually and turn-around time has decreased by 50%.

### **2. Director of Hematology and Bone Marrow Laboratory (2001-09)**

As the Medical Director of these laboratories, I have made significant contributions to procedural improvements and quality improvement. Some of the more notable achievements are listed below.

- Introduction of two major procedures: auto-verification of the hematology analyzer and manual slide review. These procedures have improved turn-around-time by about 30%. At the same time, the quality of slide review and CBC differential count has been much improved.
- Establishment of quality control procedures for the hematology and bone marrow laboratories
- Update of outdated reference ranges and critical values
- Validation of new hematology analyzers
- Development of laboratory medical technologist education sessions
- Development of auto-staining procedure for bone marrow smears

### **3. Director of Clinical Flow Cytometry Laboratory (2008 to present)**

I am involved in daily laboratory operations, monthly quality control reviews, development of new laboratory testing, clinical consultations, competency evaluation, and laboratory personnel education to provide the best patient care and to meet state and federal regulations. In this area, my major accomplishments over the past few years include:

- Computerization of ordering processes for the flow cytometry and bone marrow laboratories
- Development of the flow cytometry database. This database has improved the hematopathologists/residents/fellows ability to analyze patient data and provide more timely,

accurate and relevant results.

- Development of minimal residual disease testing procedures for acute lymphoblastic leukemia
- Development of high sensitivity testing for paroxysmal nocturnal hemoglobinuria (PNH)
- Modification of cytoplasmic/nuclear antigen staining procedures, which saved 90 min for each staining process
- Standardized antibody staining and washing processes for more reproducible results
- New instrument validation completion for 10-color flow
- Validation of duraclonal antibody panels for leukemia/lymphoma and immunodeficiency

#### **4. Interim Director of Microbiology Lab (Jan. 2020-Dec. 2021)**

- Set up new COVID 19 testing laboratory in March 2020 that runs 7 days/week with 2 shifts/day. Currently 1000 test/day with TAT in <30 hours. This lab should be able to handle 3000 tests/day.
- Validated and went live in March 2020: HIV, HBV, HCV
- Validated and went live in Oct 2020
  - CT/NG
  - Bacterial Vaginosis, Candida Vaginitis, Trichomonas vaginalis (BV/CV/TV)
- Validated and went live in Aug. 2021: Covid-19 NGS Sequencing
- Validated and went live in Oct. 2021: HPV
- Validated and going live in Dec. 2021: CMV
- Ongoing new test development and validations:
  - NGS oncology testing, flow cytometry sorting
  - New electrophoresis
  - MALDI for microorganism identification

#### **5. Director of PPM Lab for Beaverton Clinic (2020-present): QM and QC management**

#### **6. Director of OHSU Clinical Laboratories**

- New test development planning
  - COVID Lab, 2020
  - NGS Sequencing Lab, 2021
  - Electrophoresis Lab, 2022
  - K-12 COVID testing Lab, 2021
  - Microbiology Lab 2021
  - Antibody testing for COVID, 2020
  - New instrument purchasing planning 2020-2022
    - PCR instruments, Cobas 6800/8800, Panther and Panther plus
    - RNA/DNA extraction instruments: KingFisher
    - Sequencing instrument: Illumina MiSeq and NextSeq
    - MALDI
    - MicroScan
    - BioMic
- Laboratory QA/QC meetings/activities
  - Quarterly meeting for clinical and pathology labs

- Monthly management meeting for Special Immunology Lab
- Monthly management meeting for core lab
- Monthly management meeting for Phlebotomy
- Monthly management meeting for LIS
- Self-inspection for multiple sections of the lab, teaching residents, fellows, and junior faculty
- 

## **VII. TEACHING (OHSU Educator's Portfolio):**

### **Overview of my Role as an Educator:**

During the past few years, I have been involved in numerous teaching and mentoring activities for medical students, residents, fellows, PhD students, visiting scholars, and laboratory technicians in OHSU programs and international programs. I have been selected multiple times by the pathology residents to receive the annual Laboratory Medicine Faculty Teaching Award (2002, 2012, 2019). I was also named as an exceptional mentor for the OHSU M.D. Class of 2014.

As Director of the Hematopathology Fellowship Program from 2004 to 2020, I am responsible for recruitment of fellows and have revised the fellowship curriculum several times based on feedback and ACGME-requirements. The hematopathology fellows who have graduated from our program have a 100% pass rate on the Hematology Specialty board examination.

I also teach medical students, residents, and fellows in the classroom, laboratory sessions, and when they rotate on our clinical services. My didactic lectures and clinical instruction primarily focus on hematopathology and flow cytometry. Over the years I have also mentored numerous visiting scholars and students from China for research projects and in clinical skills. Many of them have presented the work they have done with me at national/international meetings and/or published manuscripts, received funding, or became clinical laboratory directors in their own institutions.

As a committee member of the CAP Laboratory Accreditation Program, I go to committee meetings 3 times a year to design and create online training courses for inspectors and team leaders, choose webinar topics (6-10), review each set of webinar materials before release, and review feedback. I also created a subspecialty online training course for clinical flow cytometry and was a coauthor and co-presenter for a webinar titled "Quality Control: What You Need To Do and How You Can Show That You Do It". Currently, I serve on International Accreditation Committee of CAP.

### **A. CAP online course development:**

1. Required CAP Inspector Training course: Flow Cytometry Laboratory Inspection
2. Laboratory Medical Director course- 4 online modules and 2.5 CME 2016: Focus on Compliance
3. Laboratory Medical Director course- 4 online modules and 2.5 CME 2019: Improving Patient Outcomes: Managing Risk and Reducing Errors
4. Managing Risk to Build a Culture of Quality

### **B. Direct Teaching**

#### **1. Medical Students**

- a. Labs sessions for Blood, lymph node, infectious disease, clinical lab clerkship
- b. Didactic Lectures on lymphoma and leukemia
- c. Medical student hemepath rotation

## **2. Residents and Fellows**

- a. Histiocytic Cell Neoplasms
- b. T-Cell/NK-Cell Lymphomas
- c. Flow Cytometry
- d. Abnormal WBCs, PLTs, RBCs
- e. Unknown cases/slides microscopic conference
- f. Flow cytometry for acute leukemia.
- g. Bone marrow, flow, and hemepath consultation rotations

## **3. Clinical Lab Technologists**

- a. PNH
- b. Multiple Myeloma
- c. Acute Myeloid Leukemia
- d. Flow cytometry analysis
- e. Laboratory Evaluation of Acute and Chronic Myeloid Leukemia
- f. Targeted Therapy for Acute and Chronic Myeloid Leukemia
- g. History of Acute Lymphoblastic Leukemia and MRD detection
- h. Acute Lymphoblastic Leukemia: true grit in the war against cancer
- i. Marrow Failure Syndromes-Causes, Symptoms, Diagnosis and Treatment.
- j. Bone marrow biopsy quality

## **4. Clinicians, Pathologists, Clinical Scientists**

- a. Megakaryoblastic Leukemia arising from CML
- b. MRD Detection in Leukemia/Lymphoma.
- c. Biclonal Chronic Lymphocytic Leukemia
- d. Hot Topics in Hematopathology
- e. Has High Throughput Gene Profiling and Protein Profiling Brought Us Closer to Targeted Therapy
- f. Personalized Medicine
- g. Multiplex Mutation Analysis and Targeted
- h. Therapy in Acute Leukemia
- i. Leukemia: from unknown disease to a nearly curable cancer
- j. Clinical Applications of Multi-Color Flow Cytometry Analysis
- k. Application of Next-Generation Sequencing in Hematologic Disorders
- l. How to Prepare for CAP Accreditation
- m. How to do CAP Inspection for Clinical Flow
- n. Cytometry Laboratory, CAP online training course
- o. Quality Control: What You Need To Do and How You Can Show That You Do It, CAP webinar
- p. Test Validation. CAP webinar

## **C. Curriculum Development**

### **1. Title: curriculum for hematopathology fellowship program**

Purpose/Need: provide guideline for reading materials and milestones for clinical activities

Intended audience: hemepath fellows

Significant Results & Outcomes: 100% graduated fellows passed hematopathology board examination at first attempt. Many of them are directors of hematopathology divisions, hematology laboratories, and flow cytometry laboratories across the nation.

2. **Title: curriculum for hematopathology bone marrow rotation** (in collaboration with residency program director)

Purpose/Need: provide guideline for reading materials and milestones for clinical activities

Intended audience: pathology residents

Significant Results & Outcomes: Positive feedback from residents and getting above average scores for the hematopathology session at annual in-service examination

3. **Title: curriculum for pathology resident flow cytometry rotation** (in collaboration with residency program director)

Purpose/Need: provide guideline for reading materials and milestones for clinical activities

Intended audience: pathology residents

Significant Results & Outcomes: Positive feedback from residents and residents get hands-on training for data analysis using online software and data from OHSU server.

4. **Title: Hemepath Journal Club**

Role: Coordinator and presenter of a weekly journal club (2002-present)

Purpose/Need: Provide most updated information in the field, develop research projects, and encourage critical thinking and discussion.

Intended audience: hemepath fellows, hematology-oncology fellows, pathology residents, rotating medical students.

Significant Results & Outcomes: Many fellows presented abstracts in the national/international meetings and published manuscripts.

#### **D. Advising and Mentoring**

I am passionate about trainee mentoring. For pre-medical students, I've mentored one summer internship student (Kaitlin Pataroque), one college student (Justin Yan), and one laboratory assistant (Richard Carpenter II). All of their research abstracts were accepted for presentation at international meetings. I have also mentored one PhD student (Huilan Yao), who published a manuscript in *Blood*, the leading journal in hematology field. I have mentored numerous residents and fellows for Grand Rounds, development of research projects and presentation of research abstracts at national/international meetings, and publication of manuscripts in pathology journals. The publications and presentations by individuals who I mentored are listed in outcomes below. Several hematopathology fellows have gone on to join academic departments at OHSU or other institutions. In addition, I have mentored several visiting scholars from top medical schools in China (Beijing, Shanghai, Suzhou, and Shijiazhuang) and Philippine (Manila). All of these visiting faculty members were MD/PhD pathologists and received national/university funding from their home country for training at OHSU from 6 months to one year. Throughout the years, these visiting faculty members and I have presented abstracts and published manuscripts together. All of them have returned to China and assumed positions of increased responsibility in their home institutions. They have become vice chairs of their university departments of clinical laboratory medicine and directors of hematology and molecular laboratories.

#### **1. Hematopathology Fellows**

- a. Marc Loriaux, MD/PhD: Associate professor at OHSU with numerous research grants and publications

- b. Pam Smith, MD: Pathologist in Salem, OR. Presented “CD43 is a sensitive marker for screening Hematologic malignancy” at ASCP annual meeting 2005.
- c. Kathleen Siechen, MD: Director of flow lab in Minnesota large pathology group Published “The utility of osmotic fragility test”, “Reporting smudge cells” & “Usefulness of reporting RBC morphology” in Medical Laboratory Observer 2006
- d. Sarah Henry MD: Director of Hematology Laboratory in Oklahoma. Published “The utility of osmotic fragility test”, “Reporting smudge cells” & “Usefulness of reporting RBC morphology” in Medical Laboratory Observer 2006
- e. Frank Cruz, MD. Pathologist in Adventist, Portland, OR. Presented abstract “The significance of T-cell clonality analysis for possible lymphomatoid papulosis” International investigative dermatology annual meeting 2008
- f. David Gray, MD: Pathologist in Vermont. Presented abstract “Polyclonal plasma cells do not exclude a diagnosis of primary cutaneous marginal zone lymphoma” CAP annual meeting 2008; and Published “Does vortexing the EDTA tube resolve platelet clumping?” Medical Laboratory Observer 2009
- g. Nicky Leeborg, MD: Director of Molecular Laboratory in Kaiser, Portland, OR. Published, “Mixing EDTA blood too long”. Medical Laboratory Observer. March 2009
- h. Winfried Reichelt, MD/PhD: Director of Hematopathologist in Kansas. Published, “Estimating nucleated cells from hemocytometer”, “Neutrophil hypersegmentation index” & “Quality of skin puncture”. Medical Laboratory Observer in 2009
- i. Gang Xu, MD/PhD: Director of Hematopathology in Denver. Published “The best laboratory practice for resolving the clumping of white blood cells”. Medical Laboratory Observer. 2009
- j. Christina Smith, MD: Medical director in Denver. Published “The Saga of Jak2 mutations and translocations in hematologic disorders: Pathogenesis, diagnostic & therapeutic prospects, and proposed revision of WHO diagnostic criteria for chronic myeloproliferative disorders”. Human Pathology. 2008;39:795-810
- k. Jennifer Dunlap, MD: Associate professor at OHSU. Published “Association of JAK2 mutation status and cytogenetic abnormalities in myeloproliferative neoplasms and myelodysplastic/myeloproliferative neoplasms. Amer J Clin Pathol 2011 & “Multiplex High-throughput Gene Mutation Analysis In Acute Myeloid Leukemia”. Human Pathology. 2012
- l. Ying Pei, MD/PhD: Director of Pathology department in VA medical Center, Idaho. Presented “Analysis of the immunophenotypic aberrancies in the maturing myeloid and monocytic compartment in acute myeloid leukemia by flow cytometry”. 26th Annual Clinical Cytometry Meeting. 2011.
- m. Jason Schallheim, MD: Assistant professor in Oklahoma University. Presented “T Cell Receptor Gene Rearrangement in Chronic Lymphoproliferative Disorders of NK Cells using flow cytometry sorting”. 26th Annual Clinical Cytometry Meeting. 2011
- n. Daphne C. Ang, MD: Director of Clinical Laboratory in Philippines. Published “Utility of multiplex mutation analysis in the diagnosis of chronic myelomonocytic leukemia” in J Leuk 2013. Presented “WT1 expression of different cell lineage in normal and leukemic bone marrow. 26th Annual Clinical Cytometry Meeting. 2011 and “Utility of multiplex mutation analysis in the diagnosis of chronic myelomonocytic leukemia”. USCAP annual meeting 2013

**Hematology-Oncology Fellows:**

- a. Suman Malempati, MD: Associate professor at OHSU. Published “Aberrant stabilization of c-Myc protein in lymphoblastic and myelogenous leukemia. Leukemia 2006



- b. Bill Chang, MD/PhD: Professor at OHSU. Published “A unique case of adolescent CD56-negative nasal extranodal NK/T-cell lymphoma”. *Pediatric and Developmental Pathology*. 2008
- c. Tarunpreet Bains, MD: Physician at Providence, California. Published “Newly Described Activating JAK3 Mutations in T-cell Acute Lymphoblastic Leukemia”. *Leukemia*. 2012.

#### **Pathology Residents:**

- a. Erick Jacobson-Dunlop, MD: Presented “CD30 positive Scabs mimic lymphomatoid papulosis.” SH/EAHP workshop 2011
- b. Elizabeth Kehrl, MD: Presented “The usefulness of FISH panel in routine diagnosis of diffuse large B-cell lymphoma.” 2011 Pan Pacific Lymphoma conference
- c. Ellen Flatey, MD: Published “Bone marrow involvement by Peripheral T-cell lymphoma, Not Otherwise Specified.” *Pathology Case Reviews*. 2012
- d. Amariëk Jensen-de la Cruz, MD: Presented “Who’s the big FISH now.” ASCP annual meeting 2013
- e. XiaoHua Wang, MD, PhD: Presented “MRD analysis in AML.” ICCS 2014 annual meeting

#### **Graduate Students/Visiting Scholars:**

- a. Huilan Yao, PhD: Published “The co-repressor Rcor1 is essential for murine erythropoiesis.” *Blood* 2014
- b. Yanping Zhong, MD: Professor in Yunnan, China  
Published “Diagnostic Utility of aberrant CD22 expression in Differentiating Neoplastic cells of small B-cell lymphoproliferative disorders from benign B-cells in Immunophenotyping by Four Color Flow Cytometry.” *AJCP* 2005, & “Drug resistance in B-cell chronic lymphocytic leukemia: Predictable by In Vitro evaluation with a multiparameter flow cytometric cytotoxicity assay. *Cytometry Part B: Clinical Cytometry 2007*. Presented “Candidate Proteins Involved in the Transformation of Follicular Lymphoma by Proteomics Approach.” AACR-NCI-EORTC International Conference on Molecular Targets and Cancer Therapeutics, 2005 & “Cerebrospinal Fluid (CSF) Proteomics in Children with Acute Lymphoblastic Leukemia (ALL).” ASH 48th annual meeting, 2006
- c. Xuejun Shao, PhD: Vice Chair of Department of Clinical Laboratory, Suzhou Children’s Hospital, Suzhou University, Suzhou, China
- d. Chenxue Qu, MD/PhD: Vice Chair of Department of Clinical Laboratory, Beijing First Hospital, Beijing University, Beijing, China. Presented “Flow Sorting for MRD detection in ALL” ICCS 2014 annual meeting. Received funding from Government as Mentor for MD/PhD student.
- e. Min Shi, PhD: Vice Chair of Department of Clinical Laboratory, Second Hospital, Hebei University, Shijiazhuang, China. Published “MYD88 Mutation Analysis of a Rare Composite Chronic Lymphocyte Leukemia and Lymphoplasmacytic Lymphoma Using Flow Cytometry Cell Sorting. *Annul of Hematology*” Vol 94, Issue 11, 1941-1944. 2015. Ms. No. AOHE-D-15-00259R1
- f. Juan Ma, MD/PhD: Received Berend Houwen Travel Award and Selected for plenary presentation at XXVIIIth International Symposium on Technological Innovations in Laboratory Hematology, May 2015, titled “Epigenetic-Regulator and Splicing-Gene Mutations in Acute Myelomonocytic Leukemia (AMML) and Acute Monocytic Leukemia (AMoL)” and Distinguished Abstract Award for AACC 2015 annual meeting, July 2015, titled “Mutation Analysis by Next Generation Sequencing (NGS) in de-novo Acute Myeloid Leukemia (AML)”
- g. Weiwei Wang, MD/PhD: Director of flow cytometry laboratory, Xihua Hospital in Shanghai. Published “Clinical applications of monitoring immune status with 90 immune cell subsets in human whole blood by 10-color flow cytometry” . *International Journal of Laboratory Hematology*. April 2021

h. Francisco Tria MD: Director of Laboratory in Philippine. Published “Somatic Mutational Analysis using Next Generation Sequencing in Predicting Disease Behavior of Cytogenetically Normal Myelodysplastic Syndromes”. International Journal of Blood Research and Disorders. March 24, 2021

### **Grand Rounds:**

#### Resident/Fellows

1. Katie Siechen: Feb. 2006 Mastocytosis
2. Karen MacDonell: Oct. 2007 FISH and its application to Hematologic disorders
3. Frank Cruz: Feb. 2008 Lymphomatoid Papulosis
4. Craig Midgen: April. 2009 Inherited Bone Marrow Failure
5. Eric A Goranson: Sept. 2010. “In situ” Follicular lymphoma-one end of the spectrum
6. Jennifer Dunlap: Sept. 2010. Biology of High Grade B-cell Lymphoma
7. Jennifer Dunlap: Feb. 2011. High-Throughput Mutation Analysis in Acute Myeloid Leukemia
8. Gang Xu: Sept. 2011 Cutaneous B-cell lymphoma
9. Jason Schallheim: Dec. 2012 LGL
10. Erin Merboth: Feb. 2013 Hemophagocytic Lymphohistiocytosis
11. Amariék Jensen: May 2013 Plasma Cell Myeloma
12. Ranjana Arora: Dec. 2013 PTLN
13. Amariék Jensen: Feb. 2014 Cytogenetics vs FISH in AML
14. Brian Brinkerhoff: Feb. 2014 Core-Binding Factor AML
15. Xiaohua Wang: April. 2014 Hairy cell leukemia
16. Xiaohua Wang: Oct. 2015 BCR-ABL negative lymphocytosis
17. Erica Reinig: Feb. 18, 2015 Granulomatous lymphadenitis
18. Zhuang Feng: Feb. 4, 2015 Hematologic Neoplasms with Plasmacytic Differentiation
19. Ying Wang: May 2015 Update on molecular abnormalities of myelodysplastic syndrome
20. Ranjana Arora: June 2015 Precision Medicine in Myeloid Hematologic Neoplasms
21. Aleksandra Paliga 2016: Mutations Detected by Next Generation Sequencing in Acute Myeloid Leukemia
22. Xiaohua Wang 2016: CHIP
23. Ying Wang 2018: Molecular Landscape of Classical myeloproliferative neoplasms: JAK2, MPL, CALR.