

## CURRICULUM VITAE

## IDENTIFYING INFORMATION

**Academic Rank**

Professor, Department of Medicinal Chemistry  
 Graduate Faculty Appointment in Graduate Program in Medicinal Chemistry  
 UF Cancer Center Member

**Education**

| <b>Degree</b> | <b>Institution</b>  | <b>Date Degree Granted</b> |
|---------------|---|----------------------------|
| B.S.          | Dalian University of Technology<br>Area: chemistry and chemical engineering   | 1991 – 1996                |
| Ph.D.         | Arizona State University<br>Area: organic chemistry/Department of Chemistry and Biochemistry<br>Advisor: Edward B Skibo | 1996 – 2001                |

**Positions/Employment**

|   |                |
|---|----------------|
| University of Florida, Gainesville<br>Frank A. Duckworth Eminent Scholar Chair and Professor                            | 2016 – present |
| University of Minnesota, Twin Cities Campus   | 2003 – 2016    |
| Professor   | 2014 – 2016    |
| Associate Professor   | 2009 – 2014    |
| Assistant Professor   | 2003 – 2009    |
| Postdoctoral appointments<br>Harvard University, Department of Chemistry and Chemical Biology (Mentor: Andrew G. Myers) | 2001 – 2003    |
| Graduate appointments<br>Graduate Research Assistant  | 1998 – 2001    |
| Graduate Teaching Assistant   | 1996 – 1998    |

**Current Membership in Professional Organizations**

|  |                |
|--|----------------|
| Society of Toxicology                            | 2013 – present |
| American Association for Cancer Research         | 2004 – present |
| American Association of the Colleges of Pharmacy | 2003 – present |
| Masonic Cancer Center                            | 2003 – present |
| American Chemical Society                        | 1998 – present |

**HONORS AND AWARDS FOR RESEARCH/CREATIVE WORK, TEACHING, PUBLIC ENGAGEMENT, AND SERVICE**

*University of Minnesota*

|                                      |             |
|--------------------------------------|-------------|
| Pharmacy Professional Teaching Award | 2014 – 2015 |
| Pharmacy Professional Teaching Award | 2006 – 2007 |
| AACP Young Investigator Award        | 2005 – 2006 |

*External Sources*

|   |             |
|---|-------------|
| Graduate Fellowship   | 1996 – 1997 |
| Mathematics Championship of Dalian University of Technology | 1993        |
| National Chemistry Championship of China, Liaoning Region   | 1990        |
| National Mathematics Championship of China, Liaoning Region | 1989        |

**RESEARCH, SCHOLARSHIP, AND CREATIVE WORK**

**Grants and Contracts**

**External Sources**

**Active**

Role: Principal investigator  
Agency: NIH – NCI/R01CA193278  
Title: Dihydromethysticin (DHM) for lung cancer chemoprevention  
Period: 2015 – 2020  
Direct cost: \$228,750/year

Role: Principal investigator  
Agency: NIH – NCI/R01CA163864  
Title: Mechanisms of anticancer agents selective against drug resistant leukemia  
Period: 2012 – 2017  
Direct cost: \$207,500/year

**Pending**

Role: PI  
Agency: NIH – R03  
Title: Characterizing the interaction of a simple and novel antimicrotubule agent with tubulin  
Period: 2016 – 2018  
Direct cost: \$50,000/year

Role: PI  
Agency: NIH – R41  
Title: SERCA inhibitors for therapy of multi-drug resistant cancers  
Period: 2016 – 2017  
Direct cost: \$128,000/year

Role: PI  
Agency: NIH – R41  
Title: Reviving an old folk medicine, kava, for effective and safe management of anxiety  
Period: 2016 – 2017

Direct cost: \$260,485/year

Role: Consultant

Agency: NIH – R42

Title: Dihydromethysticin, targeting two root causes, to prevent colon cancer development in Apc<sup>min+</sup> mice

Period: 2016 – 2017

Direct cost: \$297,332/year

**Completed**

Role: Subcontract Principal Investigator

Agency: NIH – NCCAM/R01AT007395 (PI: Junxuan Lu)

Title: Mechanisms of prostate cancer prevention by Korean Angelica

Period: 2012 – 2015

Direct cost: \$40,000/year

Role: Principal investigator

Agency: NIH – NCI/R01CA142649

Title: Developing a post-carcinogen lung cancer chemopreventive agent

Period: 2010 – 2015

Direct cost: \$720,000

Role: Principal investigator

Agency: NIH – NCI/R03CA156301

Title: An NF-kB inhibitor as a post-carcinogen lung cancer chemopreventive agent

Period: 2011 – 2013

Direct cost: \$100,000

Role: Principal investigator

Agency: Leukemia Research Fund

Title: Anticancer agents selective against drug resistant AML

Period: 2011 – 2013

Direct cost: \$60,000

Role: Principal investigator

Agency: NIH – NCI/R01CA114294

Title: Bcl-2 selective inhibitors: development and application to cancer treatment

Period: 2006 – 2010

Direct cost: \$560,000

Role: Principal investigator

Agency: Leukemia Research Fund

Title: ER-specific Bcl-2 antagonist for leukemia malignancy

Period: 2008 – 2010

Direct cost: \$60,000

Role: Principal investigator

Agency: NIH – NCI/R03CA125844

Title: Identification of chemopreventive agents against lung tumorigenesis

Period: 2007 – 2008

Direct cost: \$100,000

Role: Principal investigator

Agency: Pancreatic Cancer SPORE Seed Grant, NIH

Title: Identification of chemotherapeutic agents against pancreatic cancer from kava

Period: 2007 – 2008

Direct cost: \$12,500

Role: Principal investigator

Agency: American Association of Colleges of Pharmacy

Title: Studies on Mechanisms of Apoptotic Induction by Inhibitors of Bcl-2 Proteins

Period: 2005 – 2006

Direct cost: \$10,000

*Received at the University of Minnesota – Student Grants*

|  |             |
|--|-------------|
| Thomas Johnson   |             |
| 3M Fellowship, 3M Company  | 2005 – 2006 |
| AFPE Fellowship, American Foundation of Pharmaceutical Education | 2006 – 2007 |
| Chemical Biology Initiative trainee, NIH                         | 2006 – 2007 |
| David Hermanson  |             |
| AFPE Fellowship, American Foundation of Pharmaceutical Education | 2010 – 2011 |
| University Ph.D. Dissertation Fellowship                         | 2011 – 2012 |
| Sonia Das  |             |
| University Ph.D. Dissertation Fellowship                         | 2010 – 2011 |

**University Sources (include the titles, dates, and amount of the awards)**

Grant-in-Aid

**Active**

**Completed**

Role: co-P.I. (PI: Portoghese)

Duration: 2008–2009

Direct cost: \$15,000

Title: Flexstation II 96-well Benchtop Scanning Fluorometer & Integrated Fluid Transfer Workstation

Role: P.I.

Duration: 2004–2005

Direct cost: \$20,961

Title: Developing member-specific Bcl-2 small-molecule modulators.

Role: P.I.

Duration: 2004–2005

Direct cost: \$14,750

Title: GENios Pro Multidetector Microplate Reader

Other awards from the Office of the Vice President for Research or the Graduate School

**Active**

**Completed**

Role: co-P.I.

PI: Joel Slaton

Agency: Academic Health Center

Type: Translational Grant

Title: Development of a giant magnetoresistive nanosensor for detecting prostate cancer

Duration: 2009-2011

Direct cost my share: \$50,000

Role: P.I.

Agency: Academic Health Center

Type: Seed Grant

Title: Nutrition-based treatment for Alzheimer's disease  
Duration: 2010-2011  
Direct cost: \$25,000

Role: P.I.  
Agency: Academic Health Center  
Type: Faculty Research Development Grant  
Title: Mechanisms of anticancer agents selective against drug resistant leukemia  
Duration: 01/01/2012–12/31/2013  
Direct cost: \$200,000

Awards from other University Sources (Office of International Programs, CURA, Office of Public Engagement, etc.)

**Active**

Role: P.I.  
Agency: Masonic Cancer Center/Seed Grant  
Title: Investigation of kava effects on the metabolism of the tobacco-specific carcinogen 4-(methylnitrosamino)-1-(3-pyridyl)-1-butanone (NNK) in humans  
Duration: 2014–2015  
Direct cost: \$25,000

Role: P.I.  
Agency: Masonic Cancer Center/MC<sup>2</sup> award  
Title: A highly potent chemopreventive agent blocking tobacco carcinogen 4-(methylnitrosamino)-1-(3-pyridyl)-1-butanone (NNK)-induced lung tumorigenesis and mechanisms  
Duration: 2014–2015  
Direct cost: \$50,000

**Completed**

Role: Co-P.I.  
P.I.: Fekadu Kassie  
Agency: Masonic Cancer Center Brainstorm  
Title: Developing a indole-3-carbinol analog as a lung cancer chemopreventive agent  
Duration: 2011-2012  
Direct cost my share: \$12,500  
Role: Co-P.I.

P.I.: Sang-Hyun Oh  
Agency: Institute for Engineering in Medicine  
Type: Seed grant for Medical Device  
Title: Nanostructured surface Plasmon resonance (SPR) multiplex detection of cancer biomarkers multiplex detection  
Duration: 2010-2011  
Direct cost my share: \$17,500

Role: Co-P.I.  
P.I.: Levi Downs

Agency: Institute for Engineering in Medicine  
Type: Seed grant for Medical Device  
Title: Nanosensor for HPV-induced cervical cancer detection  
Duration: 2010-2011  
Direct cost my share: \$10,000

Role: P.I.  
Agency: Healthy Food Healthy Life Institute  
Title: Kava as a chemopreventive agent against colorectal tumorigenesis  
Duration: 2009-2010  
Direct cost: \$50,000

Role: P.I.  
Agency: Powell Women's Health Center, University of Minnesota  
Title: GMR sensor- and high magnetic moment nanoparticle-based detection of HPV infection and cervical pre-cancer biomarkers  
Duration: 2009-2010  
Direct cost: \$25,000

Role: Co-PI  
PI: Junxuan Lu  
Agency: Masonic Cancer Center  
Type: Breast Cancer Translational Grant  
Title: Pyranocoumarin compounds for breast cancer prevention and treatment  
Duration: 2008-2010  
Direct cost my share: \$17,500

Role: Co-PI  
P.I.: Jian-ping Wang  
Agency: The Center for Nanostructured Application, University of Minnesota  
Type: Nanostructured Application Grant  
Title: Magnetic coloring and screening by nanosystems: integrating nanosensors, nanoparticles and microfluidic devices  
Duration: 2007-2009  
Direct cost my share: \$116,000

Role: P.I.  
Agency: Transdisciplinary Tobacco Use Research Center, University of Minnesota  
Title: Developing chemopreventive agents against tobacco-induced lung tumorigenesis from Kava extract  
Duration: 2006-2007  
Direct cost: \$25,000

Role: P.I.  
Agency: University of Minnesota, Cancer Center, Randy Shaver Fund  
Title: Peptide/Bcl-2 antagonist therapy for lymphoid malignancy  
Duration: 2004-2005  
Direct cost: \$25,000

Role: P.I.  
Agency: Chemical Biology Initiative RFP

Title: Method for developing protein-specific modulators  
Duration: 2004–2005  
Direct cost: \$50,000

Awards from colleges

**Active**

Role: P.I.

Agency: College of Pharmacy

Title: Effect of DHM on PhIP-induced DNA adducts in the colon and prostate tissues in C57BL/7J mic

Duration: 2014-2015

Direct cost: \$15,000

**Completed**

Role: P.I.

Agency: College of Pharmacy and Department of Medicinal Chemistry

Title: GAP grant for revised reviewed proposal

Duration: 2012-2013

Direct cost: \$40,000

Role: P.I.

Agency: College of Pharmacy

Title: A novel DYRK2 inhibitor for anxiety treatment

Duration: 2012-2013

Direct cost: \$25,000

Role: P.I.

Agency: College of Pharmacy

Title: Novel NF- $\kappa$ B inhibitors for lung cancer treatment

Duration: 2009-2010

Direct cost: \$30,000

**Publications**

*Refereed Journal Articles (use any standard format that the candidate's field uses)*

**PUBLICATIONS FROM INDEPENDENT RESEARCH**

\* Denotes corresponding author

- 1 Doshi, J. M.; Tian, D.; Xing, C.\* Structure-activity relationship studies of ethyl 2-amino-6-bromo-4-(1-cyano-2-ethoxy-2-oxoethyl)-4H-chromene-3-carboxylate (HA 14-1), an antagonist for anti-apoptotic Bcl-2 proteins to overcome drug resistance in cancer. *J. Med. Chem.* **2006**, *49*, 7731-7739. PMID: 17181155 [PubMed - indexed for MEDLINE].
- 2 Xing, C.\*; Wang, L.; Tang, X.; Sham, Y. Y. Development of selective inhibitors for anti-apoptotic Bcl-2 proteins from BHI-1. *Bioorg. Med. Chem.* **2007**, *15*, 2167-2176. PMCID: PMC2001163.
- 3 Doshi, J. M.; Tian, D.; Xing, C.\* Ethyl-2-amino-6-bromo-4-(1-cyano-2-ethoxy-2-oxoethyl)-4H-chromene-3-carboxylate (HA 14-1), a prototype small-molecule antagonist against anti-apoptotic Bcl-2 proteins, decomposes to generate reactive oxygen species



- (ROS) that induce apoptosis. *Mol. Pharmaceut.* **2007**, *4*, 919-928. PMID: 17874842 [PubMed - indexed for MEDLINE].
- 4 Tian, D.; Das, S.; Doshi, J. M.; Peng, J.; Lin, J.; Xing, C.\* sHA 14-1, a stable and ROS-free antagonist against anti-apoptotic Bcl-2 proteins, bypasses drug resistances and synergizes cancer therapies in human leukemia cell. *Cancer Lett.* **2008**, *259*, 198-208. PMCID: PMC2693013.
  - 5 Wang, L.; Kong, F.; Kokoshi, C. L.; Andrews, D. W.; Xing, C.\* Development of dimeric modulators for anti-apoptotic Bcl-2 proteins. *Bioorg. Med. Chem. Lett.* **2008**, *18*, 236-240. PMCID: PMC2266893.
  - 6 Wang, L.; Sloper, D. T.; Addo, S. N.; Tian, D.; Slaton, J. W.; Xing, C.\* WL-276, an antagonist against Bcl-2 proteins, overcomes drug resistance and suppresses prostate tumor growth. *Cancer Res.* **2008**, *68*, 4377-4383. PMCID: PMC2410026.
  - 7 Doshi, J. M.; Xing, C.\* Antagonists against anti-apoptotic Bcl-2 family proteins for cancer treatment. *Mini. Rev. Org. Chem.* **2008**, *5*, 171-178. CAN 150:70421.
  - 8 Johnson, T. E.; Kassie, F.; O'Sullivan, M. G.; Negia, M.; Hanson, T. E.; Upadhyaya, P.; Ruvolo, P. P.; Hecht, S. S.; Xing, C.\* Chemopreventive Effect of Kava on 4-(Methylnitrosamino)-1-(3-pyridyl)-1-butanone Plus Benzo[a]pyrene-Induced Lung Tumorigenesis in A/J Mice. *Cancer Prevention Research* **2008**, *1*, 430-438. PMID: 19138990 [PubMed - indexed for MEDLINE].
  - 9 Xing, C.\*; Johnson, T. E.; Limburg, P. J. Diets, Phytochemicals, and Chemoprevention of Tumorigenesis. *Journal of Dietary Supplements* **2008**, *5*, 95-105.
  - 10 Gupte, A.; Boshoff, H. I.; Wilson, D. L.; Neres, J.; Labello, N. P.; Somu, R.; Xing, C.; Barry, C. E. III.; Aldrich, C. C.\* Inhibition of siderophore biosynthesis by 2-triazole substituted analogues of 5'-O-[N-(salicyl)sulfamoyl]adenosine: antibacterial nucleosides effective against *Mycobacterium tuberculosis*. *J. Med. Chem.* **2008**, *51* (23): 7495-7507. PMCID: PMC2750848.
  - 11 Srinivasan, B.; Li, Y.; Jing, Y.; Xu, Y.; Xing, C.\*; Wang, J. P.\* A detection system based on giant magnetoresistive sensors and high-moment magnetic nanoparticles demonstrates zeptomole sensitivity: potential for personalized medicine. *Angew. Chem. Int. Ed.* **2009**, *48* (15):2764-2767. PMID: 19288507 [PubMed - indexed for MEDLINE].
  - 12 Gálvez-Peralta, M.; Hackbarth, J. S.; Flatten, K. S.; Kaufmann, S. H.; Hiasa, H.; Xing, C.; Ferguson, D. M. On the role of topoisomerase I in mediating the cytotoxicity of 9-aminoacridine-based anticancer agents. *Bioorg. Med. Chem. Lett.* **2009**, *19* (15): 4459-4462. PMCID: PMC2845530.
  - 13 Hermanson, D.; Addo, S. N.; Bajer, A.; Marchant, J.; Al-Mousa, F.; Michelangeli, F.; LeBien, T. W.; Xing, C.\* Dual mechanisms of sHA 14-1 on mitochondria and endoplasmic reticulum in inducing apoptosis. *Mol. Pharmacol.* **2009** *76* (3): 667-678. PMCID: PMC2730395.
  - 14 Shaik, A. A.; Hermanson, D. L.; Xing, C.\* Identification of methysticin as a potent and non-toxic NF- $\kappa$ B inhibitor from kava, potentially responsible for kava's chemopreventive activity. *Bioorg. Med. Chem. Lett.* **2009** *19* (19) 5732-5736. PMCID: PMC2756981.
  - 15 Das, S. G.; Doshi, J. M.; Tian, D.; Addo, S. N.; Srinivasan, B.; Hermanson, D.; Xing, C.\* Structure activity relationships and molecular mechanisms of sHA 14-1 and its analogs. *J. Med. Chem.* **2009**, *52*(19) 5937-5949. PMID: 19743858 [PubMed - indexed for MEDLINE].

- 16 Srinivasan, B.; Johnson, T. E.; Lad, R.; Xing, C.\* Structure-activity relationship studies of chalcone leading to 3-hydroxy-4,3',4',5'-tetramethoxychalcone and its analogs as potent NF- $\kappa$ B inhibitors and its anticancer activities. *J. Med. Chem.* **2009** 52(22) 7228-7235. PMID: 19883086 [PubMed - indexed for MEDLINE].
- 17 Xiao, G.; Fang, H.; Xing, C.; Xu, W. Structure, function and inhibition of Bcl-2 family proteins: a new target for anti-tumor agents. *Mini. Rev. Med. Chem.* **2009**, 9(14), 1596-1604. PMID: 20236080 [PubMed - indexed for MEDLINE].
- 18 Zhang, Q.; Srinivasan, B.; Li, Y.; Jing, Y.; Xing, C.; Chang, J.; Wang, J. P. A new and facile method for measurement of apparent density of monodisperse polymer beads. *Talanta* **2010**, 80, 1681-1685. PMID: 20152396 [PubMed - indexed for MEDLINE].
- 19 Synthesis and Cancer Cell Cytotoxicity of Substituted Xanthenes. Giri, R.; Goodell, J. R.; Xing, C.; Benoit, A.; Kaur, H.; Hiasa, H.; Ferguson, D. M. *Bioorg. Med. Chem. Lett.* **2010**, 18(4), 1456-1463. PMID: 20129790 [PubMed - indexed for MEDLINE].
- 20 Li, Y.; Srinivasan, B.; Jing, Y.; Yao, Y.; Hugger, M. A.; Wang, J. P.\*; Xing, C.\* Competition-based nanomagnetic quantification of biomarkers in unprocessed sera for early disease detection. *J. Amer. Chem. Soc.* **2010**, 132(12), 4388-4392. PMID: 20192199 [PubMed - indexed for MEDLINE].
- 21 Chai, Y.; Lee, H. J.; Shaik, A. A.; NKhata, K.; Xing, C.; Zhang, J.; Jeong, S. J.; Kim, S. H.; Lü, J. Penta-O-galloyl-beta-D-glucose induces G1 arrest and DNA replicative S arrest independently of P21Cip1, P27Kip1 and P53 in human breast cancer cells and is orally active against triple negative xenograft growth. *Breast Cancer Research*, **2010**, 12 (R67):1-11. PMID: 20809980 [PubMed - as supplied by publisher].
- 22 Li, L.; Shaik, A. A.; Zhang, J.; Nhkata, K.; Wang, L.; Zhang, Y.; Xing, C.; Kim, S. H.; Lu, J. Preparation of Penta-O-galloyl-<beta>-D-glucose from tannic acid and plasma pharmacokinetic Analyses by Liquid-Liquid Extraction and Reverse-Phase HPLC. *J. Pharmaceut. Biomed.* **2011**, 54: 545-550. PMCID: PMC2981694 [Available on 2012/2/1].
- 23 Srinivasan, B.; Johnson, T. E.; Xing, C.\* Chalcone-based inhibitors against hypoxia-inducible factor 1 – Structure activity relationship studies. *Bioorg. Med. Chem. Lett.*, **2011**, 211: 555-558. PMCID: PMC3010284 [Available on 2012/1/1].
- 24 Johnson, T. E.; Hermanson, L. D.; Wang, L.; Kassie, F.; Upadhyaya, P.; O'Sullivan, M. G.; Hecht, S. S.; Lu, J.; Xing, C.\* Lung tumorigenesis suppressing effects of a commercial kava extract and its selected compounds in A/J mice. *Amer. J. Chin. Med.*, **2011**, 39(4), 727-742. PMID:21721153 [PubMed - indexed for MEDLINE]
- 25 Srinivasan, B.; Li, Y.; Jing, Y.; Xing, C.\*; Slaton, J.\*; Wang, J. P.\* A Three-Layer Competition Based GMR Assay for Direction Quantification of Endoglin from Human Urine. *Anal. Chem.*, **2011**, 83(8), 2996-3002. PMID: 21417448 [PubMed - indexed for MEDLINE]
- 26 Das, S. G.; Srinivasan, B.; Hermanson, D.; Bleeker, N.; Doshi, J. M.; Tang, R.; Beck, W. T.; Xing, C.\* Structure Activity Relationship and Molecular Mechanisms of Ethyl 2-Amino-6-(3,5-Dimethoxyphenyl)-4-(2-Ethoxy-2-Oxoethyl)-4H-Chromene-3-Carboxylate (CXL017) and Its Analogue. *J. Med. Chem.* **2011**, 54(16): 5937-5948. PMID: 21780800 [PubMed - indexed for MEDLINE]
- 27 Zhang, J.; Nkhata, K.; Shaik, A. A.; Wang, L.; Li, L.; Zhang, Y.; Higgins, L.; Kim, K. H.; Liao, J. D.; Xing, C.; Kim, S. H.; Lu, J. Mouse prostate proteome changes induced

- by oral pentagalloylglucose treatment suggest targets for cancer chemoprevention. *Curr. Cancer Drug Targets*, **2011**, 11(7): 787-798. PMID: 21762084.
- 28 Zhang, Y.; Shaik, A. A.; Xing, B.; Chai, Y.; Li, L.; Zhang, J.; Zhang, W.; Kim, S.-H.; Jiang, C.\*; Lu, J.\* A synthetic decursin analog with increased in vivo stability suppresses androgen receptor signaling in vitro and in vivo. *Investigational Cancer Agents*. **2012**, 30(5), 1820-1829. PMID: 21870073.
  - 29 Li, L.; Zhang, J.; Shaik, A. A.; Zhang, Y.; Wang, L.; Xing, C.; Kim, S. H.; Lu, J. Quantitative determination of decursin, decursinol angelate, and decursinol in mouse plasma and tumor tissue using liquid-liquid extraction and HPLC. *Planta Med.* **2012**, 78(3), 252-259. PMID: 22116603.
  - 30 Shaik, A. A.; Tan, J.; Lu, J.; Xing, C.\* Economically viable efficient synthesis of ( $\pm$ )-Methysticin - A component in kava potential responsible for its cancer chemopreventive activity. *ARKIVOC* **2012**, viii: 137-145.
  - 31 Zhang, J.; Li, L.; Jiang, C.; Xing, C.; Kim, S.-H.; Lu, J. Anti-cancer and Other Bioactivities of Korean *Angelica gigas* Nakai (AGN) and Its Major Pyranocoumarin Compounds. *Anti-Cancer Agents in Medicinal Chemistry* **2012**, 12(10): 1239-1254. PMID: 22583405 [PubMed - as supplied by publisher]
  - 32 Triolet, J.; Shaik, A. A.; Gallaher, D. D.; O'Sullivan, M. G.; Xing, C.\* Reduction in Colon Cancer Risk by Consumption of Kava or Kava Fractions in Carcinogen-treated Rats. *Nutr. Cancer* **2012**, 64(6): 838-846. PMID: 22693990 [PubMed - in process]
  - 33 Aridoss, G.; Zhou, B.; Hermanson, D. L.; Bleeker, N. P.; Xing, C.\* Ethyl 2-Amino-6-(3,5-Dimethoxyphenyl)-4-(2-Ethoxy-2-Oxoethyl)-4H-Chromene-3-Carboxylate (CXL017) Structure-Activity Relationship and its Potential to Target Multi-drug Resistance in Cancer Treatment. *J. Med. Chem.* **2012**, 55(11): 5566-5581. PMID: 22582991 [PubMed - indexed for MEDLINE].
  - 34 Warmka, J. K.; Solberg, E. L.; Zeliadt, N. A.; Srinivasan, B.; Charlson, A. T.; Xing, C.; Wattenberg, E. V. Inhibition of mitogen activated protein kinases increases the sensitivity of A549 lung cancer cells to the cytotoxicity induced by a kava chalcone analog. *Biochem. Biophys. Res. Comm.* **2012**, 424(3): 488-492. PMID: 22771807 [PubMed - in process].
  - 35 Zhang, Y.; Srinivasan, B.; Xing, C.; Lu, J.\* A new chalcone derivative (*E*)-3-(4-methoxyphenyl)-2-methyl-1-(3,4,5-trimethoxyphenyl)prop-2-en-1-one suppresses prostate cancer growth involving P53-mediated cell cycle arrests and apoptosis. *Anticancer Res.* **2012**, 32(9): 3689-3698. PMID: 22993307 [PubMed - in process].
  - 36 Das, S. G.#; Hermanson, D. L.#; Bleeker, N.; Lowman, X.; Li, Y.; Kelekar, A.; Xing, C.\* Ethyl 2-amino-6-(3,5-dimethoxyphenyl)-4-(2-ethoxy-2-oxoethyl)-4H-chromene-3-carboxylate (CXL017) a novel scaffold that re-sensitizes multidrug resistant leukemia cells to chemotherapy. *ACS Chem. Biol.* **2013**, 8(2): 327-335. PMID: 23102022 [PubMed - as supplied by publisher].
  - 37 Li, L.; Zhang, J.; Xing, C.; Kim, S. H.; Lu, J.\* Single oral dose pharmacokinetics of decursin, decursinol angelate, and decursinol in rats. *Planta Med.* **2013**, 79(3-4): 275-280.
  - 38 Hermanson, D. L.; Li, Y.; Das, S. G.; Xing, C.\* Over-expression of Mcl-1 via ERK1/2 mediated stabilization confers cross-resistance while topo II $\beta$  down-regulation introduces mitoxantrone-specific resistance in acute myeloid leukemia. *Mol. Pharmacol.* **2013**, 84(2): 236-243.

- 39 Li, L.; Zhang, J.; Xing, C.; Kim, S. H.; Jiang, C.; Lu, J.\* In Vitro Metabolism of Pyranocoumarin Isomers Decursin and Decursinol Angelate by Liver Microsomes from Man and Rodents. *Planta Med.* **2013**, 79(16): 1536-1544. The candidate was responsible for conception of the methods for compound design and synthesis, interpretation of all results, and writing the manuscript.
- 40 Bleeker, N. P.; Cornea, R. L.; Thomas, D. D.; Xing, C.\* An Inhibitor of the Sarco/Endoplasmic Reticulum Ca<sup>2+</sup>-ATPase Demonstrates Synergy with Multiple SERCA Inhibitors and Mitigates Multidrug-Resistant Leukemia. *Mol. Pharm.* **2013**, 10(11): 4358-4366.
- 41 Leitzman, P.; Naayanapillai, S. C.; Balbo, S.; Zhou, B.; Shaik, A.; O'Sullivan, M. G.; Upadhyaya, P.; Hecht, S. S.; Lu, J.; Xing, C.\* Kava Completely Blocks 4-(Methylnitrosamino)-1-(3-pyridyl)-1-butanone-induced Lung Tumorigenesis via Reducing DNA Damage in A/J Mice. *Cancer Prevention Res.* **2014**, 1(7): 86-96.
- 42 Zhuang, C.; Narayanapillai, S.; Zhang, W.; Sham, Y. Y.;; Xing, C.\* Rapid Identification of Small Molecule Inhibitors of Keap1-Nrf2 Interaction through Structure-Based Virtual Screening and Hit-Based Similarity Search. *J. Med. Chem.* **2014**, 57(3), 1121-1126.
- 43 Zhuang, C.; Miao, Z.; Wu, Y.; Guo, Z.; Li, J.; Yao, J.; Xing, C.; Sheng, C.; Zhang, W. Double-edged swords as cancer therapeutics: novel orally active small molecules simultaneously inhibit p53-MDM2 interaction and the NF- $\kappa$ B pathway. *J. Med. Chem.* **2014**, 57(3), 567-577.
- 44 He, W.; Wang, Q.; Srinivasan, B.; Xu, J.; Padilla, M. T.; Wang, X.; Gou, X.; Shen, H.; Xing, C.\*; Lin, Y.\* A JNK-mediated autophagy pathway that triggers c-IAP degradation and necroptosis for anticancer chemotherapy. *Oncogene* **2014**, 33(23): 3004-3013.
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#### **PUBLICATIONS FROM GRADUATE AND POSTDOCTORAL RESEARCH**

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### **Presentations, Posters, and Exhibits**

#### *Invited Presentations at Professional Meetings, Conferences, etc.*

1. **Xing, C.** and Skibo, E. B. Sigmatropic reactions of the aziridinyl semiquinone species: Why aziridinyl benzoquinones are metabolically more stable than aziridinyl indoloquinones. American Chemical Society National Meeting, 220<sup>th</sup>, Washington DC, **2000**.
2. **Xing, C.** Identification of GAPDH as a Protein Target of the Saframycin Class of Natural Antiproliferative Agents, Hormel Research Institute, Austin, MN, **2004**.
3. **Xing, C.** Efforts toward developing Bcl-2 member-selective modulators, University of Minnesota, Department of Chemistry, Chemical Biology Program, Minneapolis, MN, **2004**.
4. **Xing, C.** SARs of HA 14-1: binding interaction with Bcl-2 proteins, cytotoxicity, synergistic effect, and stability, University of Minnesota Cancer Center Chemoprevention Program, Minneapolis, MN, **2005**.
5. **Xing, C.** Development of selective antagonist for anti-apoptotic Bcl-2 proteins. Engebretson Symposium on Drug Discovery and Development in Cancer Experimental Therapeutics, Minneapolis, MN, **2005**.
6. **Xing, C.** and Johnson, T. Kava as a chemopreventive agent, Complimentary and Integrative Medicine Seminar, Mayo Clinic, Rochester, MN, **2006**.
7. **Xing, C.** and Wang, L. Bcl-2 antagonists for prostate cancer treatment. Prostate Cancer Research Seminar, University of Minnesota, MN **2006**.
8. Wang, L., Tang, X., and **Xing, C.** Efforts toward developing Bcl-2 member-selective modulators through solid-phase approach, International Symposium on Chemical Biology and Combinatorial Chemistry, Jinan, China, **2006**.
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10. Johnson, T. E., **Xing, C.** Kava – is it a source of chemopreventive/chemotherapeutic agents against pancreatic cancer? PanCAN symposium, Pancreatic SPORE Program, University of Minnesota, MN **2007**.
11. **Xing, C.**, Doshi, J., Tian, D., Addo, S., and Das, S. sHA 14-1 selectively targets drug-resistant cancer cells in human leukemia cells through the induction of ER Ca<sup>2+</sup> release, Hormel Research Institute, Austin, MN **2007**.
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13. **Xing, C.** Studies of small-molecule antagonists against anti-apoptotic Bcl-2 proteins, synthesis, mechanism of action, and anticancer activity. St. Cloud State University, MN, **2007**.

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15. **Xing, C.** Identification of chemopreventive agents against lung tumorigenesis. Minnesota Chemoprevention Consortium, Waseca, MN, **2008**.
16. **Xing, C.** Development of Bcl-2 antagonists toward drug-resistant cancers. Department of Biochemistry & Molecular Biology, The University of Oklahoma, Oklahoma City, OK, **2008**.
17. **Xing, C.** Bcl-2 proteins, calcium regulation, and apoptosis – a view from sHA 14-1, a small-molecule antagonist. Department of Chemistry, National University of Singapore, Singapore, **2008**.
18. **Xing, C.** Developing chemopreventive agents from natural sources – studies of kava. Department of Chemistry, Nanyang Technological University, Singapore, **2008**.
19. **Xing, C.** Studies of kava and chalcone-based flavokawains as potential chemopreventive agents, Department of Medicinal Chemistry, Shandong University, Jinan, China, **2008**.
20. **Xing, C.** Studies of sHA 14-1, a stable and ROS-free Bcl-2 antagonist, for its regulation of calcium and apoptosis. Department of Chemistry, Vanderbilt University, Nashville, TN, **2008**.
21. **Xing, C.** Kava as a chemopreventive agent against lung cancer. International Lung Cancer Conference, Liverpool, England, **2008**.
22. **Xing, C.** Johnson, T. E. Developing kava and flavokawains as chemopreventive agents, Ferulate'08 – an international conference on hydroxycinnamates and related plant phenolics, St. Paul, MN **2008**.
23. **Xing, C.** Studies of kava and chalcone-based flavokawains as potential chemopreventive agents, Department of Medicinal Chemistry, University of North Carolina, Chapel Hill, NC **2008**.
24. **Xing, C.** Dual mechanism of sHA 14-1 in eliminating cancer cells. Department of Chemistry and Biochemistry, University of Minnesota Duluth, Duluth, MN **2008**.
25. **Wang, J.,** Xing, C. Biomarkers identification and detection based on GMR sensor and sub 13 nm magnetic nanoparticles, 31<sup>st</sup> Annual International Conference of the IEEE Engineering in Medicine and Biology Society, Minneapolis, MN **2009**, #2266.
26. **Srinivasan, B.;** Li, Y.; Jing, Y.; Xu, Y.; Wang, J. P.,\* Xing, C.\* A GMR sensor- and magnetic nanoparticle-based detecting system of zeptomol sensitivity: An integrated platform potentially leading to personalized medicine. ACS 238<sup>th</sup> National Meeting, Washington DC, **2009**, MEDI-124.
27. **Xing, C.** Interdisciplinary research in disease early detection, prevention, and treatment - cancer as a model system. Powell Woman Institute – BIRWCH seminar. University of Minnesota, Minneapolis, MN Feb. 10, **2010**.
28. **Xing, C.** Preventing tobacco carcinogen-induced lung tumorigenesis in A/J Mice by kava, its safety, potential mechanisms of action, and active constituents. Masonic Cancer Center Cancer Prevention & Control Seminar. University of Minnesota, MN Oct. **2010**.
29. **Xing, C.** An anticancer candidate selective against drug resistant leukemia. Masonic Cancer Center. Leukemia Research Seminar. University of Minnesota, MN Nov. **2010**.



30. **Xing, C.** An anticancer candidate selective against drug resistant leukemia and its mechanism of action. Masonic Cancer Center Research Symposium. University of Minnesota, MN May. **2011.**
31. **Xing, C.** Selectively targeting drug resistant cancer cells. Shandong University, Dept. of Medicinal Chemistry, Jinan, July, **2011.**
32. **Das, S.;** Xing, C. Synthesis of anticancer agents that selectively target drug resistant cancer, ACS national meeting – Spring 2011, March, **2011.**
33. **Xing, C.** CXL candidates targeting unique pathways to prevent/overcome drug resistance in cancer therapy. Dalian Medical University, Dalian, August, **2012.**
34. **Xing, C.** The therapeutic potential of kava, its active constituents and mechanism of action. Lovelace Respiratory Research Institute, Albuquerque NM Sept. 21<sup>st</sup> **2012.**
35. **Xing, C.** An Anticancer Drug Candidate against Drug Resistance in Leukemia and its Mechanisms of Action. Western Canadian Medicinal Chemistry Workshop, Saskatoon, SK S7N 5C9, Sept.29<sup>th</sup> **2012.**
36. **Xing, C.** Anticancer agents selectively targeting drug resistant malignancies and mechanisms of action, Lovelace Research Institute, New Mexico, NM **2013.**
37. **Xing, C.** Anticancer agents selectively targeting drug resistant malignancies and mechanisms of action, ACS national meeting – Spring 2013, New Orleans, LA **2013.**
38. **Xing, C.** Kava - its resurgence, quality control, anxiolytic activity, and hepatotoxic risk, a natural medicine with future promise and challenges, 12<sup>th</sup> Annual Oxford International Conference on the Science of Botanicals. April 2014, Oxford, MI **2013.**
39. **Xing, C.** Interdisciplinary research in cancer treatment, prevention, and early detection. University of California San Diego Department of Medicinal Chemistry, July 1, **2013.**
40. **Zhang, J.** Xing, C., and Lu, J. Subchronic Toxicological Evaluation of Ethanol Extract of Korean Medicinal Herb Angelica Gigas Nakai and its Pyranocoumarin Tissue Distribution in Mice. The 2013 AAPS Annual Meeting, Nov. 2013, San Antonio, TX **2013.**
41. **Xing, C.** Medicinal chemistry effort in cancer treatment, prevention, and early detection. University of Minnesota Masonic Cancer Center, Minneapolis, MN, Feb. 4, **2014.**
42. **Xing, C.** U of M research finds kava plant may prevent cigarette smoke-induced lung cancer. University of Minnesota Research Animal Resources, Minneapolis, MN, Feb. 7, **2014.**
43. **Xing, C.** Interdisciplinary research to address challenges on kava – its beneficial effects and potential adverse effects. International Conference on Applied Chemistry, March 5-7, 2014, Fiji **2014.**
44. **Xing, C.** Medicinal chemistry effort in cancer treatment, prevention, and early detection. International Conference on Applied Chemistry, March 10, 2014, Division of Natural Sciences and Mathematics, Chaminade University of Honolulu **2014.**
45. **Xing, C.** Kava as a lung cancer chemopreventive agent and its hepatotoxic risk. Hawaii kava/ava Association seminar, March 11<sup>th</sup>, Hilo Hawaii **2014.**
46. **Xing, C.** I Medicinal chemistry effort in cancer treatment, prevention, and early detection. International Conference on Applied Chemistry, March 11, College of Pharmacy University of Hawaii **2014.**

47. **Xing, C.** Systematic analyses of kava's hepatotoxic risk – what do we know and what we do not know. The 2014 Society of Toxicology National Meeting, March 23-27, 2014, Phoenix, AZ **2014**.
48. **Xing, C.** What do we know about kava as a dietary supplement – its potential benefit and risks. 13<sup>th</sup> Annual Oxford International Conference on the Science of Botanicals. April 16-18, Oxford, MI **2014**.
49. **Xing, C.** An anticancer candidate targeting drug resistance in leukemia and its mechanism of actions, June 4<sup>th</sup>, The Second Military University, Shanghai, China **2014**.
50. **Xing, C.** Chalcone-based compounds - their potential as probes and drug lead templates, June 5<sup>th</sup>, Northeastern Institute of Technology, Shanghai, China **2014**.
51. **Xing, C.** Medicinal chemistry effort in cancer treatment, prevention, and early detection. June 15<sup>th</sup>, Dalian University of Technology, Panjin, China **2014**.
52. **Xing, C.** Dihydromethysticin (DHM) potently blocks tobacco carcinogen 4-(methylnitrosamino)-1-(3-pyridyl)-1-butanone (NNK)-induced lung tumorigenesis and differentially reduces DNA damage in A/J mice. Structural biology and biochemistry program seminar. University of Colorado Anschutz Medical Campus, Nov. 12<sup>th</sup>, Denver, CO **2014**.
53. **Xing, C.** Progress of kava lung cancer chemoprevention, MC2 meeting, April 15<sup>th</sup>, Rochester, MN **2015**.
54. **Xing, C.** An Anticancer Candidate Selectively Targeting Multidrug-resistant Leukemia and Mechanistic Investigation. University of Arkansas for Medical Sciences, June 15<sup>th</sup>, Little Rock, AR **2015**.
55. **Xing, C.** Kava's cancer preventive potential and hepatotoxic risk – what do we know and what shall we do? July 27, Hawaii Kava Symposium, Honolulu, HA **2015**.
56. **Xing, C.** Interdisciplinary research in cancer treatment, prevention and early detection. Jan. 11, Department of Pharmaceutical Science, Washington State University, Spokane, WA **2016**.
57. **Xing, C.** Medicinal chemistry in cancer treatment, prevention and early detection. Jan. 14, Department of Medicinal Chemistry, University of Florida, Gainesville, FL **2016**.

***Abstracts (published in electronic or paper format that are archived or searchable)***

Li, Y.; Jing, Y.; Yao, X.; Srinivasan, B.; Xu, Y.; Xing, C.; Wang, J. P. Biomarker identification and detection based on GMR sensor and sub 13 nm magnetic nanoparticles. *Annual international conference of the IEEE Engineering in Medicine and Biology Society*, **2009**, 1, 5432-5435. PMID: 19963642 [PubMed - indexed for MEDLINE].

***Posters or Exhibitions***

1. Doshi, J. M.; **Xing, C.** Developing small molecules to overcome drug resistance induced by Bcl-XL. University of Minnesota NIH Training Grant Symposium, Minneapolis, MN, **2005**.
2. Wang, L.; Tang, X.; **Xing, C.** Effort toward developing Bcl-2 member-selective modulators through solid-phase based approach. University of Minnesota NIH Training Grant Symposium, Minneapolis, MN, **2005**.

3. Doshi, J. M.; **Xing, C.** Developing small molecules to overcome drug resistance induced by Bcl-XL. Engebretson Symposium on Drug Discovery and Development in Cancer Experimental Therapeutics, Minneapolis, MN, **2005**.
4. Wang, L.; Tang, X.; **Xing, C.** Effort toward developing Bcl-2 member-selective modulators through solid-phase based approach. Engebretson Symposium on Drug Discovery and Development in Cancer Experimental Therapeutics, Minneapolis, MN, **2005**.
5. **Xing, C.**; Tian, D.; Doshi, J. Apoptotic pathway induced by HA 14-1, a small-molecule antagonist for Bcl-2 protein, 232<sup>nd</sup> ACS National Meeting, San Francisco, CA, **2006**, MEDI-095.
6. Tian, D.; Doshi, J. M.; Addo, S. N.; **Xing, C.** HA 14-1 induced apoptosis in Jurkat cells – the potential mechanism for its synergism to a variety of chemotherapies, International Symposium on Chemical Biology and Combinatorial Chemistry, Jinan, China, **2006**, #41.
7. **Xing, C.**; Doshi, J. M. Identification of a novel small molecule antagonist of anti-apoptotic Bcl-2 proteins: Bcl-2 protein binding, *in vitro* cytotoxicity, and synergism, 233<sup>rd</sup> ACS National Meeting, Chicago, IL, **2007**, MEDI-094.
8. **Xing, C.**; Doshi, J. M. Studies on the stability of HA 14-1, a small molecule antagonist for anti-apoptotic Bcl-2 protein. 233<sup>rd</sup> ACS National Meeting, Chicago, IL, **2007**, MEDI-449.
9. Tian, D.; Addo, S. N.; Doshi, J. M.; **Xing, C.** Apoptotic pathways induced by HA 14-1, an antagonist of Bcl-2 protein, in Jurkat cells. AACR-ACS Joint Conference Chemistry in Cancer Research: A Vital Partnership, San Diego, CA, **2007**.
10. Doshi, J. M.; **Xing, C.** Studies on the stability of HA 14-1 – a small molecule antagonist for anti-apoptotic Bcl-2 protein, AACR Annual Meeting, Los Angeles, CA, **2007**, #3976.
11. Beishir, S.; **Xing, C.**; Kuriyama, R. Are anti-apoptotic Bcl-2 family proteins involved in cell division? The American Society For Cell Biology 47<sup>th</sup> Annual Meeting, Washington, DC, **2007**.
12. Johnson, J. E.; Kassie, F.; Upadhyaya, P.; Hecht, S. S.; **Xing, C.** Chemopreventive effect of kava on 4-(Methylnitrosamino)-1-(3-pyridyl)-1-butanone plus Benzo(a)pyrene-induced lung tumorigenesis in A/J mouse. 6<sup>th</sup> Annual AACR International Conference Frontiers in Cancer Prevention Research, Philadelphia, PA, **2007**, B141.
13. **Xing, C.**; Johnson, J. E.; Kassie, F.; Upadhyaya, P.; Hecht, S. S. Chemoprevention of kava and its potential active components against lung tumorigenesis in A/J mouse induced by 4-(Methylnitrosamino)-1-(3-pyridyl)-1-butanone and Benzo(a)pyrene. Cancer Prevention 2008 – 5<sup>th</sup> International Conference, St. Gallen, Switzerland, **2008**, #39.
14. **Xing, C.**; Wang, L., Sloper, D.; Addo, S. N.; Tian, D.; Slaton, J. WL-276, an antagonist against anti-apoptotic Bcl-2 proteins, overcome drug resistance and suppresses prostate tumor growth. AACR national meeting 2008, San Diego, CA, **2008**, #3200.
15. **Xing, C.**; Addo, N. S.; Doshi, J. M. sHA 14-1 selectively targets drug-resistant human leukemia cancer cells through the induction of ER Ca<sup>2+</sup> release, independent of mitochondria-mediated apoptotic pathway. AACR national meeting 2008, San Diego, CA, **2008**, #4751.
16. Li, Y.; Srinivasan, B.; Jing, Y.; Yao, X.; Xu, Y.; Zhang, Q.; **Xing, C.**; Wang, J. P. Magnetic biosensor for screening small molecular ligands against protein target.

- Scientific and Clinical Applications of Magnetic Carriers – 7<sup>th</sup> International Conference, Vancouver, Canada, **2008**, #224.
17. Johnson, T. E.; Hugger, M.; **Xing, C.** Synthesis and evaluation of chalcones, privileged chemopreventive structures. ACS 236<sup>th</sup> National Meeting, Philadelphia, PA, **2008**, MEDI-123.
  18. Johnson, T. E.; Kassie, F.; Upadhyaya, P.; Hecht, S.; **Xing, C.** Flavokawains A and B: chemopreventive constituents of kava against lung tumorigenesis. ACS 236<sup>th</sup> National Meeting, Philadelphia, PA, **2008**, MEDI-124.
  19. Li, Y.; Jing, Y.; Yao, X.; Srinivasan, B.; Xing, C.; Wang, J. Biomarkers identification and detection based on GMR sensor and sub 13 nm magnetic nanoparticles. The 31<sup>st</sup> Annual International IEEE EMBS Conference of the IEEE Engineering in Medicine and Biology Society, Minneapolis, MN, **2009**, #2266.
  20. Xing, C. Kava as a lung cancer chemopreventive agent. 8<sup>th</sup> annual AACR International Conference – Frontiers in Cancer Prevention Research 2009, Houston TX, **2009**, #294.
  21. Zhang, J.; Shaik, A.; Nhkata, K.; Wang, L.; Kim, K. H.; Liao, J. D.; Xing, C.; Kim, S. H.; Lü, J. Proteome changes in mouse prostate induced by oral administration of penta-O-galloyl-beta-D-glucose suggest targets for cancer chemoprevention. AACR national meeting 2010, Washington, DC, **2010**.
  22. Li, L.; Zhang, J.; Shaik, A.; Nhkata, K.; Xing, C.; Lu, J. Pharmacokinetics studies of anti-cancer gallotannin penta-O-galloyl-beta-D-glucose (PGG) in mice. AACR national meeting 2010, Washington, DC, **2010**.
  23. Chai, Y.; Lee, H. J.; Shaik, A.; Nhkata, K.; Xing, C.; Kim, S. H.; Lu, J. Penta-O-galloyl-beta-D-glucose induces DNA replicative S arrest and G<sub>1</sub> arrest independent of p21Cip1, p27Kip1 and p53 in human breast cancer cells and is orally active against breast cancer xenograft. AACR national meeting 2010, Washington, DC, **2010**.
  24. Xing, C.; Gallaher, D.; O’Sullivan M. G. Does Kava Reduce Colon Cancer Risk? Healthy Food Healthy Life Symposium – 2010, Saint Paul, MN, **2010**.
  25. Das, S.; Hermanson, D.; Xing, C. Selectively targeting drug resistant cancer cells. Gordon Conference, **2011**.
  26. Das, S.; Hermanson, D.; Xing, C. CXL017 re-sensitizes multidrug resistant leukemia cells to chemotherapy via modulating Bcl-2 family proteins and SERCA proteins, AACR Annual Meeting, **2012**, Chicago, IL, #767.
  27. He, W.; Wang, Q.; Srinivasan, B.; Xu, X.; Chen, W.; Padilla, M.; Gou, X.; Xing, C.; Lin, Y. Autophagy-associated necroptosis contributes to cancer cell cytotoxicity induced by the chalcone compound SBC2. AACR Annual Meeting, **2012**, Chicago, IL, #2277.
  28. Li, L.; Zhang, J.; Xing, C.; Jiang, C.; Kim, S-H.; Zhang, R.; Lu, J. in vitro metabolism studies of herbal compound decursin and decursinol angelate in rodent and human liver microsomes. ASMS **2012**, #1375.
  29. Wattenberg, E. V.; Warmka, J. K.; Srinivasan, B.; Xing, C. A kava chalcone analogue inhibits A549 lung cancer cell proliferation through a pathway modulated by mitogen activated protein kinases. The 51<sup>st</sup> SOT Annual Meeting, **2012**, #2850.
  30. Xing, C., Hermanson, D.; Aridoss, G.; Das, S. Mechanisms of multidrug resistance in AMLs and selective targeting via small molecules. AACR Molecularly Targeted Therapies – Mechanisms of Drug Resistance Meeting, **2012**, San Diego, B39.

31. Aridoss, G.; Zhou, B.; Hermanson, D. L.; Bleeker, N. P.; Xing, C. Ethyl 2-Amino-6-(3,5-Dimethoxyphenyl)-4-(2-Ethoxy-2-Oxoethyl)-4*H*-Chromene-3-Carboxylate (CXL017) Structure-Activity Relationship and its Potential to Target Multi-drug Resistance in Cancer Treatment, **2012**, St. Paul, 5<sup>th</sup> CBI symposium.
32. Bleeker, N. P.; Miller, T.; Hermanson, D. L.; Das, S. G.; Thomas, D. D.; Xing, C. Small molecule inhibitors of the sarco/endoplasmic reticulum Ca<sup>2+</sup>-ATPase as novel leads in the treatment of drug resistant leukemia, **2012**, St. Paul, 5<sup>th</sup> CBI symposium.
33. Xing, C., Hermanson, D.; Aridoss, G.; Das, S. Mechanisms of multidrug resistance in AMLs and selective targeting via small molecules. 2<sup>nd</sup> Masonic Cancer Center Symposium, 2012, Minneapolis.
34. Linda B. von Weymarn, Pablo Leitzman, Xingxin Yu, Chengguo Xing, Sharon E. Murphy. Kavalactones, inhibitors of NNK tumorigenesis and coumarin metabolism in A/J mice. The 18th International Conference on Cytochrome P450 Biochemistry, Biophysics and Structure June 18-22, **2013**, Seattle, Washington USA.
35. Zhang, W.; Xing, C.; Arndt, P. Kava-derived compounds suppress the acute inflammatory response in human neutrophils. B39. **2013**, Pennsylvania, USA
36. Zhang, J.; Li, L.; Hale, T. W.; Chee, W.; Xing, C.; Jiang, C.; Lu, J. Single oral dose pharmacokinetics of cancer chemopreventive pyranocoumarins from *Angelica gigas* Nakai in men and women. The 105<sup>th</sup> AACR national meeting, **2014**, April 5 – 9. San Diego, CA.
37. Tang, S. N.; Datta, P.; Leitzman, P.; Xing, C.; Srivastava, S.; Jiang, C.; Lu, J. Suppressing effect of a kava fraction on two lineages of prostate carcinogenesis in the transgenic adenocarcinoma of mouse prostate model. The 105th AACR national meeting, 2014, April 5 – 9. San Diego, CA.
38. Wu, W.; Puppala, M.; Tang, S.; Zhang, J.; Xing, C.; Jiang, C.; Lu, J. Equi-molarity vs. pharmacokinetics-guided dosing in anti-cancer efficacy assessment of precursor-product pairs: Example with pyranocoumarins from Korean *Angelica*. The 106<sup>th</sup> AACR national meeting, 2015, April 18 – 22. Philadelphia, PA

## **Other Key Activities and Accomplishments**

### **Patents**

1. Myers, A.; Plowright, A. T.; Kung, D. W.; Lanman, B.; Barbay, J. and **Xing, C.** Preparation of saframycin analogs for pharmaceutical use in the treatment of cancer. PCT Int. Appl. **2002**, WO 2002040477.
2. Skibo, E. B. and **Xing, C.** Recognition and cleavage at the DNA major groove. U.S. Pat. Appl. Publ. **2003**, US 2003119022.
3. Skibo, E. B. and **Xing, C.** Aziridinyl Quinone Antitumor Agents Based on Indoles and Cyclopent[b]indoles: Structure-Activity Relationships for Cytotoxicity and Antitumor Activity. U.S. Pat. Appl. Publ. **2003**, US 2003139609.
4. Skibo, E. B. and **Xing, C.** Preparation of N-unsubstituted cytotoxic (aziridinyl)indoleiones and (aziridinyl)cyclopent(b)indoleiones for the treatment of cancer. U.S. Pat. Appl. Publ. **2004**, US 20040006054.
5. Myers, A.; LaPorte, J.; **Xing, C.** Assay for identifying biological targets of polynucleotide-binding compounds. U.S. Appl. Publ. **2004**, US 2004248100.

6. Xing, C.; Doshi, J. M. Therapeutic compounds, U. S. Patent, **2009**, US2008057892.
7. Xing, C. Therapeutic compounds, U. S. Patent, **2009**, US2008084409
8. Xing, C. and Wang, J. Nanosensor, U.S. Patent, **2009**.
9. Xing, C. et al. Kava therapeutics and their use, U.S. provisional patent, **2013**.
10. Xing, C. et al. Nrf2 modulators and their use, U.S. provisional patent, **2013**.

## TEACHING AND CURRICULUM DEVELOPMENT

### University of Minnesota

Courses, seminars, and instructional units taught

1. **Medicinal Agent I** (Phar 6154, Principles of Drug Action), 2004-2009, 12 lecture hours per year, 110 students.
2. **Medicinal Agent III** (Phar 6156, Anticancer Agents), 2005-present, 16 lecture hours per year, 110 students.
3. **Principles of Medicinal Chemistry** (MedC 5700, DNA and related therapies and physicochemical properties of drugs), 2005, 2007, and 2009, 11 - 15 lecture hours every year, 6 – 10 students.
4. **Vistas in Medicinal Chemistry Research**, (MedC 5495), 2003-current, 1 lecture hour per year, 10 students.
5. **Principles of Medicinal Chemistry** (MedC 8002, DNA and related therapeutics), 2011, 2103, and 2014, 12 lectures each year, 10 students.
6. **Principles of Medicinal Chemistry** (MedC 8001, SAR of nucleosides), 2014, 2 lecture hours each year, 10 students.
7. **Summer Journal Club**, 2005 – 2007, organizing the journal club, 10 hours per year, 60 attendants.
8. **Design of Chemotherapeutic Agents** (MedC 8500), Fall, 2011 and 2013, 18 lecture hours per year.
9. **Natural Medicine** (Phar , kava pharmacokinetics and pharmacodynamics), 2014, 1 lecture hour per year.

### Curriculum Development

1. **Summer Journal Club**, 2005 – 2007, organizing the journal club, 10 hours per year, 60 attendants
2. **Design of Chemotherapeutic Agents** (MedC 8500), Fall, 2011, and 2013, 28 lecture hours per year.

### Faculty Development Activities regarding teaching

Workshop with the Center for Teaching and Learning for the Early Career Teaching Programs, 2007

## ADVISING AND MENTORING

**Undergraduate Student Activities**

Undergraduate research projects (UROPS, directed research, lab participation, etc.)

|                        |                           |
|------------------------|---------------------------|
| Fansen Kong            | Feb. 2004 – June, 2006    |
| Midhasso Hama Foge     | Jan. 2007 – July, 2007    |
| Debela Gameda          | May 2007 – Dec. 2007      |
| Mariam Warsame         | Sept. 2007 – Dec. 2007    |
| Maryan Mohammed        | Sept. 2007 – Dec. 2007    |
| Asmeret Tesfahun       | Sept. 2007 – May 2008     |
| Marie A. Hugger        | July 2007 – July 2009     |
| Jonathan Tan Jian Yong | Jan. 2010 – Dec. 2010     |
| Bei Li                 | Jan. 2010 – Aug. 2010     |
| Hyojin Lee             | Sept. 2010 – May. 2011    |
| Evan Hendrickson       | Jan. 2011 – May 2011      |
| Matthew Guan           | May 2011 – Sept. 2011     |
| Hayat Hassen           | July 2011 – Sept 2012     |
| Pablo Leitzmen         | Jan. 2011 – July 2012     |
| Julie Lao              | May 2014 – Sept. 2014     |
| Mary O'Sullivan        | May 2014 – Sept. 2015     |
| Da Yeon Lee            | July 2014 – 2016          |
| Haini Zhang            | August 2014 – August 2015 |
| Philip Leung           | Jan 2015 – 2016           |
| Gregory Mannino        | August 2015 – 2016        |

**Graduate Student Activities**

## Master's Theses Directed

Sadiya N. Addo Fall 2005 – Spring 2008 (Graduated)  
Thesis title: Mechanistic studies of small-molecule antagonists of anti-apoptotic Bcl-2 proteins.

Thomas E. Johnson Fall 2005 – Fall 2008 (Graduated)  
Thesis title: Design, synthesis, and biological evaluation of potential chemopreventive agents against lung tumorigenesis.

Nicholas Bleeker Fall 2010 – Spring 2013 (Graduated)  
Thesis topic: Advancing a novel chemotype for the treatment of multidrug-resistant cancer.

Denise Casemore Fall 2013 – present  
Thesis topic: SERCA and CXL candidates in multi-drug resistance

## Master's Student Advisees

Shui Li 2012 – 2013  
Dan Wang 2011 – 2013

## Doctoral Dissertations Directed

Jignesh M. Doshi Fall 2003 – Spring 2008 (Graduated)

Thesis title: Rational design, syntheses, and biological evaluation of antagonists against anti-apoptotic Bcl-2 proteins.

Sonia Das Fall 2006 – Fall 2011 (Graduated)  
Thesis title: Development of effective anti-cancer agents targeting drug-resistant malignancies

David Hermanson Fall 2007 – Fall 2012 (Graduated)  
Thesis topic: Mechanisms of CXL017: targeting drug resistant cancer.

Bo Zhou Fall 2010 – present  
Thesis topic: Kava, its efficacy against various diseases, its safety, active constituents, and mechanism of action

Doctoral Students Advised (Academic advising for all or part of graduate student's program)

|   |             |
|---|-------------|
| Li Liu                                  | 2004 – 2009 |
| Brian White                             | 2005 – 2010 |
| Jin Zhou                                | 2006 – 2011 |
| Sanna Bardaweel                         | 2007 – 2011 |
| Rahul Lad                               | 2007 – 2011 |
| Kwon Ho Hong                            | 2007 – 2013 |
| Cece Martin (plant biological sciences) | 2010 – 2015 |
| Li-Kai Liu                              | 2011 – 2016 |
| Nick Struntz                            | 2011 – 2016 |
| Adam Zarth                              | 2013 – 2016 |
| Aniekan M. Okon                         | 2013 – 2016 |
| Chang Liu                               | 2013 – 2016 |
| Kimberly M. Maize                       | 2013 – 2016 |
| Emily Boldry                            | 2014 – 2016 |
| Trent West                              | 2014 – 2016 |
| Jake Peterson                           | 2014 – 2016 |

Doctoral Committees Served on

|                  |             |
|------------------|-------------|
| Dorian Nelson    | 2005 – 2006 |
| Mathew Grandois  | 2005 – 2006 |
| Daniel Wherritt  | 2005 – 2006 |
| Enver Cagri Izgu | 2007 – 2008 |
| Giang Hoang      | 2008 – 2012 |
| Feng Shao        | 2009 – 2010 |
| Zhongda Pan      | 2011 – 2012 |
| Andrew Michel    | 2012 – 2013 |

**Professional Student Activities**

Professional students supervised

***Pharm. D Research***

|              |                        |
|--------------|------------------------|
| Becky Gnan   | Dec. 2005 – June, 2006 |
| Mariam Somji | Feb. 2007 – Aug. 2007  |
| Marie Hugger | April 2008 – June 2009 |

***Pharm. D Paper***



|                    |                         |
|--------------------|-------------------------|
| Michelle Borchart  | Spring 2005 – Fall 2005 |
| Jessica R. Kaeser  | Spring 2006 – Fall 2006 |
| Becky Gnan         | Spring 2006 – Fall 2006 |
| Minh Ha            | Spring 2006 – Fall 2006 |
| Angela Schlagel    | Spring 2007 – Fall 2007 |
| Heather Stubbe     | Spring 2007 – Fall 2007 |
| Mariam Somji       | Spring 2007 – Fall 2007 |
| Robert Kinyua      | Spring 2008 – Fall 2008 |
| Robert Kin         | Spring 2009 – Fall 2009 |
| Katie Kline        | Spring 2009 – Fall 2009 |
| Sean Kenny         | Spring 2010 – Fall 2011 |
| Marie A. Hugger    | Spring 2010 – Fall 2011 |
| Kathy Olson        | Spring 2010 – Fall 2011 |
| Natasha Thoner     | Spring 2010 – Fall 2011 |
| Shelleaha Nippoldt | Spring 2011 – Fall 2011 |
| Karen McEiver      | Spring 2012 – Fall 2012 |
| Megan Nimke        | Spring 2012 – Fall 2012 |
| Quang-Think P. Cao | Fall 2012 – Spring 2013 |
| Maureen Reilly     | Fall 2012 – Spring 2013 |
| Christina Yi       | Fall 2012 – Spring 2013 |
| Aimee Rosin        | Fall 2012 – Spring 2013 |

#### Post-doctoral fellows supervised

|   |                          |
|---|--------------------------|
| XiaoHu Tang   | August 2003 – Feb. 2005  |
| Research topic: developing methods to identify protein-specific modulator   |                          |
| Liangyou Wang   | Dec. 2004 – May, 2007    |
| Research topic: developing methods to identify protein-specific modulator and synthesizing lead compounds   |                          |
| Defeng Tian   | March 2005 – Sept. 2007  |
| Research topic: elucidating the mechanism of action of small-molecule Bcl-2 antagonists   |                          |
| Balasubramanian Srinivasan  | August 2007 – April 2011 |
| Research topic: developing GMR sensor- and nanoparticle-based detection system for early cancer detection.  |                          |
| Ahmad Ali Shaik   | Sept. 2008 – Dec. 2011   |
| Research topic: synthesizing stabilized decurcinol analogs for anticancer evaluation.   |                          |
| Jinling Zhang   | Jan. 2011 – Dec. 2011    |
| Research topic: evaluating the in vivo efficacy of various candidates.  |                          |
| Aridoss Gopalakrishnan  | August 2011 – July 2012  |
| Research topic: synthesizing small molecule candidates against drug resistant leukemia.   |                          |
| Yunfang Li  | May 2012 – July 2012     |
| Research topic: elucidating the mechanisms responsible for CXL's selective anticancer potential against drug resistant malignancies.  |                          |
| Xingxin Yu  | August 2012 – Present    |
| Research topic: developing DYRK2 inhibitors and chemical probes for biological investigation and disease treatment/prevention.  |                          |
| Xin Huang   | July 2012 – Dec. 2012    |
| Research topic: characterizing the mechanism of action of various kava chemicals in vitro and evaluating the efficacy of CXL compounds against drug resistance/stem cells in AML. |                          |
| Manohar Puppala   | Feb. 2012 – Present      |
| Research topic: synthesizing CXL compounds, natural products, and peptides.   |                          |
| Sreekanth Narayanapillai  | Jan. 2013 – Present      |

|   |                     |
|---|---------------------|
| Research topic: investigating the in vivo efficacy and mechanisms of various natural and synthetic organic molecules                |                     |
| Shang-Husan Lin   | Oct. 2015 – Present |
| Research topic: characterizing the interaction of kavalactones with the AHR pathway.  |                     |
| Haifeng Sun   | Oct. 2015 – Present |
| Research topic: rational design and synthesis of CXL compounds based on the x-ray structure and pharmacokinetic analysis of CXL055. |                     |

**Other Mentoring Activities** [including serving as a mentor or member of a mentoring committee for a faculty member, etc.]

***Rotation advisor***

|                       |                         |
|-----------------------|-------------------------|
| Li Liu                | 09/05/2003 - 11/09/2003 |
| Brian White           | 11/10/2003 - 01/15/2003 |
| Jignesh Doshi         | 11/10/2003 – 01/15/2003 |
| Liaodan Liu           | 11/10/2004 - 01/15/2004 |
| Leon Goeden           | 11/10/2005 - 01/15/2005 |
| Rahul Lad             | 11/06/2006 – 01/15/2006 |
| Sreedhar Tummalapalli | 11/06/2006 – 01/15/2006 |
| Satish Patil          | 11/06/2006 – 01/15/2006 |
| Kathryn Pietsch       | 06/10/2007 – 09/03/2007 |
| Hailey Gahlon         | 11/05/2007 – 01/18/2008 |
| Anja Lesaga           | 11/05/2007 – 01/18/2008 |
| Shui Li               | 06/08/2009 – 08/14/2009 |
| Nick Struntz          | 11/09/2009 – 01/15/2010 |
| Kari Schuett          | 11/09/2009 – 01/15/2010 |
| Bo Zhou               | 11/09/2010 – 01/15/2011 |
| Nick Bleeker          | 11/09/2010 – 01/15/2011 |
| Skye Doering          | 09/06/2011 – 10/18/2011 |
| Arnie Groehler        | 10/19/2011 – 12/04/2011 |
| Aniekan Okan          | 12/05/2011 – 01/20/2012 |
| Harrison T West       | 09/10/2012 – 10/25/2012 |
| Cody Lensing          | 10/29/2012 – 12/10/2012 |
| Jacob Petersburg      | 10/29/2012 – 12/10/2012 |
| Andrea Wisniewski     | 12/13/2012 – 01/23/2013 |
| Liang Guo             | 11/05/2012 – 03/05/2013 |
| Denise Casemore       | 09/21/2013 – 10/21/2013 |
| Alex Strom            | 09/15/2014 – 10/17/2014 |
| Cliff Csizmar         | 10/20/2014 – 12/05/2014 |
| Jiewei Jiang          | 10/20/2014 – 12/05/2014 |
| John Schultz          | 09/15/2015 – 10/17/2015 |

***International exchange Ph.D. students***

|                |                         |
|----------------|-------------------------|
| Chunlin Zhuang | 12/01/2012 – 11/30/2013 |
| Tengfei Biang  | 10/01/2013 – 09/30/2014 |

***International visiting professor***

|               |                         |
|---------------|-------------------------|
| Yuesheng Dong | 09/01/2013 – 08/31/2014 |
| Xinghua Zhao  | 03/01/2015 – 02/29/2016 |

**SERVICE AND PUBLIC OUTREACH****Service To The Discipline/Profession/Interdisciplinary Area(s)***Editorial board for peer-reviewed journals*

- Madridge Journal of Pharmaceutical Research
- Future Medicinal Chemistry

*Journal Reviewer Experience*

- Chem. Res. Toxic. 2003 – present
- J. Med. Chem. 2003 – present
- Biochemistry 2007 – present
- PLoS One 2011 – present
- Bioorg. Med. Chem. 2003 – present
- Peptides 2003
- Bioorg. Med. Chem. Lett. 2004 – present
- Cancer Lett. 2006 – present
- Mol. Pharm. 2007 – present
- Eur. J. Med. Chem. 2009 – present
- Journal of Cell Science 2011 – present
- FEBS Letters 2011 – present
- Beilstein Journal of Organic Chemistry 2012 – present
- European Journal of Gastroenterology and hepatology 2013 – present
- Molecular Cancer Therapeutics 2013 – present
- Nutrition Research 2013 – present

*Review panels for external funding agencies, foundations, etc.*

- The National University of Singapore Research Grant 2006 – 2008
- The James and Esther King Biomedical Research Program 2006 – 2008
- Biomedical Research Council, Singapore A STAR Grant 2007 – 2008
- Natural Sciences and Engineering Research Council of Canada 2007 – 2008
- NCI RAID Program 2008 – 2009
- CDMRP (Congressionally Directed Medical Research Program) 2008 – 2010
- NIH/Cancer Biomarker Study Section 2010 – 2011
- NIH/Fogarty Review 2012
- NIH/CDP ad hoc 2015

*Review panels for internal funding opportunities.*

- AHC Faculty Research Development Grant 2006 – 2007
- AHC Faculty Research Seed Grant 2008 – 2009
- HFHL Research Grant 2009 – 2010
- AHC India-U 2010 – 2010
- AHC Small Grant Program 2012 – 2013
- Masonic Cancer Center Pilot Grant 2012 – 2013
- Minnesota Chemoprevention Consortium Pilot Grant 2012 – 2013
- CBITG Grant 2013 – 2014

- HFHL Research Grant 2014 – 2015

***Organization of conferences, workshops, panels, symposia***

- ACS National Meeting (2006, San Francisco, CA) Medicinal Chemistry Division “Activators of apoptosis” – Co-chair with Paul Hergenrother
- AACR National Meeting (2007, Los Angeles, CA) Drug Discovery and Design “Targeted Design and Delivery” – Co-chair with Diane Boschelli
- ACS National Meeting (2013, New Orleans, LA) Medicinal Chemistry Division “Mechanisms of drug resistance in cancer and novel therapies” - Chair

**Service To The University/College/Department**

***University of Minnesota***

University-wide service

- Chemical Biology Interdisciplinary Steering Committee. University 2007 – 2011
- Chemical Biology Interdisciplinary Admission Committee University 2007 – 2016
- Chembio Recruitment Steering Committee, University 2006 – 2007
- Masonic Cancer Center Research Symposium Committee 2011 – 2012
- Masonic Cancer Center Research Symposium Abstract Review 2012
- Masonic Cancer Center Pathology Internal Advisory Board (Chair) 2012 – 2016
- Medical Scientist Training Program (MD/PhD) 2013 – 2015
- Healthy Food and Healthy Life Institute Advisory Board 2015 – 2016

Collegiate Service and Intercollegiate Service

- Faculty Search Committee, Dept. of Pharmaceutics 2006 – 2007
- Admission Committee for College of Pharmacy 2006 – 2009
- College of Pharmacy Diversity Task Force Committee 2009 – 2013
- Mission Self Study Committee, College of Pharmacy 2008 – 2009
- EPC committee (chair elect) 2010 – 2011
- EPC committee (chair) 2011 – 2012
- EPC committee 2010 – 2013
- Rowell Fellowship Review Committee 2012
- PPS Oncology Faculty Search Committee, Duluth 2014 – 2016
- College Accreditation Committee 2014 – 2016

Department/Unit Service

- Dept. Med. Chem. Committee for revising the cumulative exam 2006
- Faculty Search Committee, Dept. of Med. Chem. 2006 – 2007
- Graduate Student Recruitment Committee, Dept. of Med. Chem. 2006
- Graduate Admissions Committee, Dept. of Med. Chem. 2006 – 2011
- Comprehensive exam committee, Dept. of Med. Chem. (chair: 2011) 2008 – 2011
- Faculty Search Committee, Dept of Med. Chem. 2008 – 2010
- Review committee for probationary faculties 2009 – 2013
- Med. Chem. Student Award Committee (chair) 2012
- Graduate Admission Committee, Dept. of Med. Chem. 2012 – 2013
- Graduate Recruiting Committee, Dept. of Med. Chem. 2013 – 2015
- Review committee for probationary faculties 2015