

Yong Liang

Department of Molecular Medicine

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Professional Employment

- **Staff Scientist** (Beckman Research Institute, COH, Aug. 2015 – Present)
- **Postdoctoral Fellowship** (Research scientist, FIU, Jan. 2015 – Aug. 2015)

Education

- **Ph.D. in Organic Chemistry (Florida International University)** Aug 2010 – Dec 2014
- **M.S. in Organic Chemistry (Shaanxi Normal University)** Aug 2007 – Jul 2010
- **B.S. in Chemistry Education (Shaanxi Normal University)** Aug 2003 – Jul 2007

Research Experience

- Synthesis of modified oligos, fluorescent probes, long oligos in large scale followed by HPLC and/or polyacrylamide gel electrophoresis (PAGE) purification.
- Chemical modification of nucleoside/nucleotides
- Palladium-catalyzed direct arylation of pyrimidine nucleoside
- Stereoselective radical-mediated hydrogermylation of 5-ethynyl uracil nucleoside analogues.
- TBAF promoted Palladium-catalyzed cross-coupling reaction of organogermanes with aryl halides
- Synthesis of the bicyclic heteroarenes from isoflavones
- Photochemical synthesis of various Polycyclic Aromatic Hydrocarbon (PAH)

Patents (2)

- Zunting Zhang, Yuqing Ma, **Yong Liang**, Dong Xue, Qianguang Liu. Diaryl pyrazolo[1,5-*a*]pyrimidine heterocyclic compound, preparation method and application Faming Zhuanli Shenqing Gongkai Shuomingshu (2010), CN 101696209 A 20100421. CN 200910023861
- Zunting Zhang, **Yong Liang**, Farong Li, Yuqing Ma, Qianguang Liu. Diarylpyrazolo[3,4-*b*]pyridine heterocyclic compounds as antibacterial agent. Faming Zhuanli Shenqing (2011), CN 102260256 A 20111130.

Book Chapters (3)

- **Yong Liang**, Zhiwei Wen, Maria Cabrera, Abu Hasan Howlader, Stanislaw F. Wnuk, 16.17.7 Purines, Knowledge Updates, (2020) 1, 195. DOI: [10.1055/sos-SD-116-01081](https://doi.org/10.1055/sos-SD-116-01081), ISSN (print) 2510-5469; ISSN (online) 2566-7297; ISBN (print) 978-3-13-243558-2; ISBN (PDF) 978-3-13-243559-9; DOI 10.1055/b000000102
- **Yong Liang**, and Stanislaw F. Wnuk, *Chapter 7 - C-H Bond Functionalization Strategies for Modification of Nucleosides*, in *Palladium-Catalyzed Modification of Nucleosides, Nucleotides and Oligonucleotides*, A.R. Kapdi, D. Maiti, and Y.S. Sanghvi, Editors. 2018, Elsevier. p. 197-246. ISBN: 978-0-12-811292-2
- **Yong Liang**, and Stanislaw F. Wnuk, *Modification of Purine and Pyrimidine Nucleosides by Direct C-H Bond Activation*, in *Nucleoside Modifications*, Mahesh K. Lakshman and Fumi Nagatsugi, Editors. 2018, Elsevier. p. 197-246. ISBN 978-3-03842-354-6 (Pbk) ISBN 978-3-03842-355-3 (PDF) [reprint of the Special Issue published online in the open access journal *Molecules* (ISSN 1420-3049) from 2014–2016]

Journal Publications (33)

1. Ding Wang, Zhishuang Ma, Nana Wang, Chenyu Li, Tao Wang, **Yong Liang**, Zunting Zhang. Synthesis of 7-hydroxy-6*H*-naphtho[2,3-*c*]coumarin via TsOH-Mediated Tandem Reaction. *Chem. Commun.*, **2020**, 56,

10369-10372.

2. Wenhao Xue, Ding Wang, Chenyu Li, Zheng Zhai, Tao Wang, **Yong Liang**, Zunting Zhang. π -Expanded Coumarins: One-pot photo synthesis of 5*H*-benzo[12,1]tetrapheno[7,6,5-*cde*]chromen-5-ones and photophysical properties. *J. Org. Chem.* **2020**, *85*, 3689-3698.
3. Jinming Fan, Wei Zhang, Wangxi Gao, Tao Wang, Wei-Liang Duan, **Yong Liang**, Zunting Zhang. Syntheses of Benzofuranoquinolines and Analogues via Photoinduced Acceptorless Dehydrogenative Annulation of *o*-Phenylfuranylpyridines. *Org. Lett.* **2019**, *21*, 9183-9187.
4. Yang Kang, Wei Zhang, Tao Wang, **Yong Liang**, Zunting Zhang. Two-step synthesis of π -expanded maleimides from 3,4-diphenylfuran-2(5*H*)-ones. *J. Org. Chem.*, **2019**, *84*, 12387-12398.
5. Pei Wang, Jin Zhang, Tao Wang, **Yong Liang**, and Zunting Zhang. Synthesis of (2-hydroxyphenyl)(fusedphenyl) methanones via photo-induced rearrangement of 2'-arylisoflavones. *Org. Biomol. Chem.*, **2019**, *17*, 851-858.
6. Juan Shi, Yang Kang, Tao Wang, **Yong Liang**, Zunting Zhang. Synthesis of polycyclic heteroaromatic coumarins via photoinduced dehydrogenative annulation of 4-phenyl-3-heteroaryl coumarins. *J. Org. Chem.*, **2018**, *83*, 13940-13948.
7. Jin Zhang, Wenhao Xue, Pei Wang, Tao Wang, **Yong Liang**, Zunting Zhang. One-pot synthesis of 3-(furan-2-yl)-4-hydroxy-2*H*-chromen-2-ones using K10 montmorillonite clay as heterogeneous catalyst. *Tetrahedron*, **2018**, *74*, 4712-4720.
8. Sisi Jing, Yun He, Tao Wang, Jin Zhang, Anqi Cheng, **Yong Liang**, Zunting Zhang. Synthesis of (2-Aminophenyl)(naphthalen-2-yl)methanones via Intramolecular Rearrangement of (*E*)-3-Styrylquinolin-4(1*H*)-ones under Irradiation with 365 nm UV Light. *Synlett*, **2018**, *29*, 1578-1582.
9. Yijie Wang, Jan Hoinka, **Yong Liang**, Tomasz Adamus, Piotr Swiderski, Teresa Przytycka. AptaBlocks: Designing RNA Complexes and Accelerating RNA-based Drug Delivery Systems. *Nucleic Acids Res.* **2018**, *46*, 8133-8142.
10. Rui Wang, Jie Han, Chenchen Li, jie zhang, **Yong Liang**, Tao Wang, Zunting Zhang. One-Pot Synthesis of 3-Fluoroflavones via 1-(2-Hydroxyphenyl)-3-phenylpropane-1,3-diones and Selectfluor at Room Temperature. *Org. Biomol. Chem.*, **2018**, *16*, 2479-2488.
11. Xingli Zhao, Zhuoran Zhang, Dayson Moreira, Yu-Lin Su, Haejung Won, Tomasz Adamus, Zhenyuan Dong, **Yong Liang**, Hongwei H. Yin, Piotr Swiderski, Raju K. Pillai, Larry Kwak, Stephen Forman, Marcin Kortylewski. B-cell lymphoma immunotherapy using TLR9-targeted oligonucleotide STAT3 inhibitors. *Mol. Ther.* **2018**, *26*, 695-707.
12. Jin Zhang, Xi Zhang, Tao Wang, Xinbo Yao, Pei Wang, Ping Wang, Sisi Jing, **Yong Liang**, Zunting Zhang. Oxidant and Transition-Metal-Free Photoinduced Direct Oxidative Annulation of 1-Aryl-2-(furan/thiophe-2-yl)butane-1,3-diones. *J. Org. Chem.* **2017**, *82*, 12097-12105.
13. Jinming Fan, Tao Wang, Chenchen Li, Rui Wang, Xiaoyu Lei, **Yong Liang**, Zunting Zhang. Synthesis of benzoaryl-5-yl(2-hydroxyphenyl)methanones via photo-induced rearrangement of (*E*)-3-Arylvinyl-4*H*-chromen-4-ones. *Org. Lett.* **2017**, *19*, 5984-5987.
14. Yang Kang, Tao Wang, **Yong Liang**, Yangyang Zhang, Rui Wang, Zunting Zhang. Annulation of 2,3-diphenyl-4*H*-chromen-4-ones via photo-induced hydrogen evolution. *RSC Adv.*, **2017**, *7*, 44333-44339.
15. Qian Yang, Rui Wang, Jie Han, Chenchen Li, Tao Wang, **Yong Liang**, Zunting Zhang. Photo-induced tandem cyclization of 3-iodoflavones with electron rich five-membered heteroarenes. *RSC Adv.*, **2017**, *7*, 43206-43211.
16. Jie Han, Tao Wang, **Yong Liang**, Ying Li, Chenchen Li, Rui Wang, Siqi Feng, Zunting Zhang. Transition metal-free photoinduced intramolecular annulation of 2,3-di(hetero)arylchromen-4-one. *Org. Lett.*, **2017**, *19*, 3552-3555.
17. Zhiwei Wen, Sazzad H. Suzol, Jufang Peng, **Yong Liang**, Robert Snoeck, Graciela Andrei, Sandra Liekens, Stanislaw F. Wnuk. Antiviral and Cytostatic Evaluation of 5-(1-Halo-2-sulfonylvinyl)- and 5-(2-Furyl)uracil Nucleosides. *Arch. Pharm. Chem. Life Sci* **2017**, *350*, e1700023.
18. Juan Shi, **Yong Liang** and ZunTing Zhang. Syntheses of benzo[*c*]coumarin carboxylic acids and fluorescence properties in the solid state. *Zeitschrift fuer Kristallographie - Crystalline Materials* **2017**, *232*, 719-727.

19. Qing He, Liwen Wang, **Yong Liang**, Zunting Zhang, Stanislaw F. Wnuk, Transition-metal-free cross-coupling of aryl halides with arylstannanes. *J. Org. Chem.* **2016**, *81*, 9422-9427.
20. **Yong Liang**, Sazzad H. Suzol, Zhiwei Wen, Alain G. Artiles, Logesh Mathivathanan, Raphael G. Raptis, Stanislaw F. Wnuk. Uracil Nucleosides with Reactive Group at C5 Position: 5-(1-Halo-2-sulfonylvinyl)uridine Analogues. *Org. Lett.*, **2016**, *18*, 1418-1421.
21. Qian Yang, Tao Wei, Yun He, **Yong Liang**, Zunting Zhang. Direct Arylation of 5-Iodouracil and 5-Iodouridine with Heteroarenes and Benzene Via Photochemical Reaction. *Helvetica Chimica Acta* **2015**, *98*, 953-960.
22. **Yong Liang**, Stanislaw F. Wnuk. Modification of Purine and Pyrimidine Nucleosides by Direct C-H Bond Activation. *Molecules*, **2015**, *20*, 4874-4901.
23. **Yong Liang**, Jeniffer Gloudeman, Stanislaw F. Wnuk. Palladium-Catalyzed Direct Arylation of 5-Halouracils and 5-Halouracil Nucleosides with Arenes and Heteroarenes Promoted by TBAF. *J. Org. Chem.* **2014**, *79*, 4094-4103.
24. Mulin Zhu, Zunting Zhang, Dong Xue, H. Hua, **Yong Liang**, Stanislaw F. Wnuk. Synthesis of 1-Amino-5,6-diaryl-3-cyano-1*H*-pyridin-2-ones and 6,7-Diaryl-4-cyano-3-hydroxy-1*H*-[1,2]diazepines from Isoflavones. *Helv. Chim. Acta.* **2014**, *97*, 561-568.
25. Amitava Adhikary, Anil Kumar, Alicia N. Heizer, Brian J. Palmer, Venkata Pottiboyina, **Yong Liang**, Stanislaw F. Wnuk, and Michael D. Sevilla. Hydroxyl Ion Addition to One-Electron Oxidized Thymine: Unimolecular Interconversion of C5 to C6 OH-Adducts. *J. Am. Chem. Soc.* **2013**, *135*, 3121-3135.
26. **Yong Liang**, Jean-Philippe Pitteloud, Stanislaw F. Wnuk. Hydrogermylation of 5-Ethynyluracil Nucleosides: Formation of 5-(2-Germylvinyl)uracil and 5-(2-Germylacetyl)uracil Nucleosides. *J. Org. Chem.* **2013**, *78*, 5761-5767.
27. Mulin Zhu, Zunting Zhang, Dong Xue, Jinfeng Qiao, **Yong Liang**, Stanislaw F. Wnuk. Synthesis of 5,6-Diarylpyridin-2(1*H*)-ones from Isoflavones. *Chin. J. Chem.* **2013**, *31*, 1027-1032
28. Jean-Philippe Pitteloud, **Yong Liang**, Stanislaw F. Wnuk. Chemoselective Transfer of Allyl or Phenyl Group from Allyl(phenyl)germanes in Pd-catalyzed Reactions with Aryl Halides. *Chem. Lett.* **2011**, *40*, 967-969.
29. Zun-Ting Zhang, Yu-Qing Ma, **Yong Liang**, Dong Xue, Qing He. An Efficient One-pot Synthesis of Diarylpyrazolo[1,5-*a*]pyrimidine from Isoflavones. *J. Heterocyclic Chem.* **2011**, *48*, 279-285.
30. Jean-Philippe Pitteloud, Zun-Ting Zhang, **Yong Liang**, Laura Cabrera, Stanislaw F. Wnuk. Fluoride-Promoted Cross-Coupling of Chloro(mono-, di-, or triphenyl)germanes with Aryl Halides in "Moist" Toluene. Multiple Transfer of the Phenyl Group from Organogermane Substrates and Comparison of the Coupling Efficiencies of Chloro(phenyl)germanes with their Corresponding Stannane and Silane Counterparts. *J. Org. Chem.* **2010**, *75*, 8199-8212.
31. Zun-Ting Zhang, Jean-Philippe Pitteloud, Laura Cabrera, **Yong Liang**, Myrdich Toribio, and Stanislaw F. Wnuk. Arylchlorogermanes/TBAF/"Moist" Toluene: A Promising Combination for Pd-Catalyzed Germlyl-Stillie Cross-Coupling. *Org. Lett.* **2010**, *12*, 816-819.
32. Zun-Ting Zhang, **Yong Liang**, Yu-Qing Ma, Dong Xue and Jun-Ling Yang. A One-Step Synthesis of Diarylpyrazolo[3,4-*b*]pyridines from Isoflavones. *J. Comb. Chem.* **2010**, *12*, 600-603.
33. Xue-Ling Zhang, Zun-Ting Zhang, **Yong Liang**. Synthesis and Single Crystal X-Ray Structure of $[\text{Na}(\text{H}_2\text{O})_2(\text{C}_{18}\text{H}_{15}\text{O}_6\text{SO}_3)_2]$. *J. Chem. Crystallogr.* **2008**, *38*, 861-865.

Presentations (Total: 10; ACS 7; IUPAC 2; FAME 1; CCS 1)

- Zhiwei Wen, Jufang Peng, Paloma Tuttle, **Yong Liang**, Sunny Rishi, Amitava Adhikary, Michael D. Sevilla, Carol Garcia, Yaou Ren, Yuan Liu, Stanislaw F. Wnuk. 5-Azido-modified pyrimidine nucleosides: Chemistry and biology. 253rd ACS National Meeting & Exposition, San Francisco, CA, United States, 2017 April 2-6, ORGN-299 (Oral Presentation).
- **Yong Liang**, Sazzad H. Suzol, Zhiwei Wen, Alain G. Artiles, Stanislaw F. Wnuk, Jennifer Gloudeman, Oladeji Akinniyi, Stanislaw F. Wnuk. 5-[1-Halo-2-(arylsulfonyl)vinyl]uracil nucleosides: New probes for crosslinking with amino acids. 251st ACS National Meeting & Exposition, San Diego, CA, 2016, March 13-17, ORGN-330 (Oral Presentation).

- **Yong Liang**, Jennifer Gloudeman, Oladeji Akinniyi, Stanislaw F. Wnuk. TBAF-promoted Pd-catalyzed direct arylation of 5-iodouracil nucleosides. 247th ACS National Meeting & Exposition, Dallas, TX, United States, 2014, March 16-20, ORGN-530 (Oral Presentation).
- Stanislaw F Wnuk, **Yong Liang**, Jean-Philippe Pitteloud. Synthetic application of germanium-modified nucleosides. 44th IUPAC World Chemistry Congress in Istanbul, Turkey, 2013, August 11-16. (Oral Presentation)
- **Yong Liang**, Jean-Philippe Pitteloud, Edward Hernandez, Stanislaw F. Wnuk. Unexpected hydrogermylation of 5-ethynyluracil nucleosides: Mechanistic consideration. 89th Florida Annual Meeting and Exposition (FAME), Tampa, FL, United States, 2013, May 9-11 (Oral Presentation).
- **Yong Liang**, Jean-Philippe Pitteloud, Stanislaw F. Wnuk. Conversion of 5-ethynyluracil nucleosides to 5-(2-germylvinyl) and 5-(2-germylacetyl)uracil nucleosides via hydrogermylation. 245th ACS National Meeting & Exposition, New Orleans, LA, United States, 2013, April 7-11, CARB-93 (Oral Presentation).
- **Yong Liang**, Jean-Philippe Pitteloud, Stanislaw F. Wnuk. Organogermanes in Pd-catalyzed cross-coupling reactions. 19th IUPAC ICOS conference in Melbourne, Australia, 2012, July 1-6 (Oral Presentation).
- **Yong Liang**, Jean-Philippe Pitteloud, Stanislaw F. Wnuk. Chemoselective transfer of allyl or phenyl group from allyl(phenyl)germanes in Pd-catalyzed reactions with aryl halides. 243rd ACS National Meeting & Exposition, San Diego, CA, United States, 2012 March 25-29, ORGN-600. (Poster Presentation)
- Jean-Philippe Pitteloud, Zun-Ting Zhang, Laura Cabrera, **Yong Liang**, Myrdich Toribio, Stanislaw F Wnuk. Fluoride-promoted cross-coupling of chloro(mono-, di-, or triphenyl)germanes with aryl halides in "moist" toluene. 240th ACS National Meeting, Boston, MA, United States, August 22-26, 2010 ORGN-784. (Poster Presentation)
- **Yong Liang**, Zun-ting Zhang. The synthesis of diphenylpyrazole[3,4-b]pyridine compound and single crystal structure analysis. CCS 6th national organic chemistry conference, Xi'an, Shaanxi, China, 2009, 6, 60. (Poster Presentation)

Awards and Honors

<i>Apr. 2015</i>	Outstanding Academic Achievement in Chemistry, FIU College of Art and Science
<i>Apr. 2015</i>	Best Dissertation Award, FIU
<i>Dec. 2014</i>	World Ahead Graduate Student, FIU
<i>Oct. 2013</i>	Dissertation Year Fellowship, FIU Graduate School
<i>May 2012</i>	Graduate Student Research Award, FIU Chemistry Department

Teaching Experience

- **Organic Chem II Recitation (Lecture, CHM 2219)**, FIU
Responsibilities include new course materials explanation, preparation and solving after-class problem sets; teaching two one-hour lectures per week;
- **Organic Chem I Recitation (Lecture, CHM 2216)**, FIU
Responsibilities include grading, proctoring, new course materials explanation, preparation and solving after-class problem sets; teaching two one-hour lectures per week;
- **Organic Chem Lab II (CHM 2211L)**, FIU
Responsibilities include grading and proctoring for organic chemistry II lecture, leading two labs sessions per week (4 h/section), designing and grading pre-lab quiz, lab final exam and lab report.
- **Organic Chem Lab I (CHM 2210L)**, FIU
Responsibilities include grading and proctoring for organic chemistry I lecture, leading two labs sessions per week (4 h/section), designing and grading pre-lab quizz, lab final exam and lab report.
- **Chem & Society Lab (CHM 1032L)**, FIU
Responsibilities include grading and proctoring for chem & society lecture, leading two labs sessions per week (4 h/section), designing and grading pre-lab quiz, lab final exam and lab report, holding office hours.

Journal Reviews

- Analytical method
- Molecules
- Cogent Biology
- Inorganics
- Catalyst
- Archiv der Pharmazie
- Tetrahedron Letter
- Pharmaceuticals
- Interdisciplinary journal of chemistry
- Chemical Papers
- Molbank
- Journal of Pharmaceutical and Biomedical Analysis