Yongseok Kwon, Ph. D.

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EDUCATION AND RESEARCH EXPERIENCE

09/2019–present **Assistant Professor** *Department of Chemistry, Sogang University, Seoul, Korea*

07/2016–08/2019 **Postdoctoral Associate** *Department of Chemistry, Yale University, New Haven, United States*
Advisor: Prof. Scott J. Miller

03/2016–07/2016 **Postdoctoral Fellow** *College of Pharmacy, Seoul National University, Seoul, Korea*
Advisor: Prof. Sanghee Kim

03/2011–02/2016 **Ph.D.** *College of Pharmacy, Seoul National University, Seoul, Korea*
Advisor: Prof. Sanghee Kim
Field of Study: Pharmaceutical Chemistry *(GPA: 4.04/4.30)*
Thesis: "PART I. Transition Metal-Catalyzed Synthesis of Substituted Phenanthrenes PART II. Determination of Double-Bond Positions in Unsaturated Natural Products by Cross-Metathesis"

03/2009–02/2011 **M.S.** *College of Pharmacy, Seoul National University, Seoul, Korea*
Advisor: Prof. Sanghee Kim
Field of Study: Pharmaceutical Chemistry *(GPA: 4.21/4.30)*
Thesis: "Synthesis and Biological Evaluation of Novel Analogues of Phenanthroindolizidine Alkaloids as Potential Antitumor Agent"

03/2005–02/2009 **B.S.** *College of Pharmacy, Chungbuk National University, Cheong-ju, Korea*
Field of Study: Pharmacy *(GPA: 4.02/4.50)*

RESEARCH INTERESTS

・Development of novel synthetic reactions

Development of asymmetric reactions for the efficient synthesis of bioactive and complex natural products; Synthesis of natural product-like chemical library based on the diversity-oriented synthesis (DOS).

・Target identification using chemical biology tools

Rational drug design and SAR study on bioactive natural products; Identification of a potential therapeutic target molecule and its binding site using chemical probes; De novo design and synthesis of ligands specifically aimed at the binding site on target proteins.

PUBLICATIONS

15. **Kwon, Y.**; Li, J.; Reid, J. P.; Crawford, J. M.; Jacob, R.; Sigman, M. S.*; Toste, F. D.*; Miller, S. J.* "Disparate Catalytic Scaffolds for Atroposelective Cyclodehydration" *J. Am. Chem. Soc.* **2019**, *141*, 6698–6705.

14. **Kwon, Y.**; Chinn, A. J.; Kim, B.; Miller, S. J.* "Divergent Control of Point and Axial Stereogenicity: Catalytic Enantioselective C−N Bond-Forming Cross-Coupling and Catalyst-Controlled Atroposelective Cyclodehydration" *Angew. Chem. Int. Ed.* **2018**, *57(21)*, 6251–6255. This publication was denoted as '*VIP*' (Very Important paper) in *Angewandte Chemie*, and also highlighted in *Chemistry Views*.

13. Chinn, A. J.; Kim, B.; **Kwon, Y.**; Miller, S. J.* "Enantioselective Intermolecular C–O Bond Formation in the Desymmetrization of Diarylmethines Employing a Guanidinylated Peptide-Based Catalyst" *J. Am. Chem. Soc.* **2017**, *139(49)*, 18107–18114.

12. Yu, S.; Oh, J.; Li, F.; **Kwon, Y.**; Cho, H.; Shin, J.; Lee, S. K.*; Kim, S.* "New Scaffold for Angiogenesis Inhibitors Discovered by Targeted Chemical Transformations of Wondonin Natural Products" *ACS Med. Chem. Lett.* **2017**, *8(10)*, 1066–1071.

11. Park, H.; **Kwon, Y.**; Shin, J. E.; Kim, W.-J.; Hwang, S.; Lee, S.; Kim, S.* "Orthoester in Cyclodehydration of Carbamate-Protected Amino Alcohols under Acidic Conditions" *Synthesis* **2017**, *49(12)*, 2761–2767.

10. **Kwon, Y.**[†]; Jung, J.[†]; Kim, J. H.; Kim, W.-J.; Kim, S.* "Amide Acetal in Palladium-Catalyzed Allylation with Allylic Alcohols under Neutral Conditions" *Asian J. Org. Chem.* **2017**, *6(5)*, 520–526. ([†]equally contributed first authors)

9. **Kwon, Y.**[†]; Song, J.[†]; Lee, H.; Kim, E.-Y.; Lee, K.; Lee, S. K.*; Kim, S.* "Design, Synthesis, and Biological Activity of Sulfonamide Analogues of Antofine and Cryptopleurine as Potent and Orally Active Antitumor Agents" *J. Med. Chem.* **2015**, *58(19)*, 7749–7762. ([†]equally contributed first authors)

8. Song, J.; **Kwon, Y.**; Kim, S.; Lee, S. K.* "Antitumor Activity of Phenanthroindolizidine Alkaloids Is Associated with Negative Regulation of Met Endosomal Signaling in Renal Cancer Cells" *Chem. Biol.* **2015**, *22(4)*, 504–515.

7. **Kwon, Y.**; Song, J.; Bae, H.; Kim, W.-J.; Lee, J.-Y.; Han, G.-H.; Lee, S. K.; Kim, S.* "Synthesis and Biological Evaluation of Carbocyclic Analogues of Pachastrissamine" *Mar. Drugs* **2015**, *13(2)*, 824–837.

6. In, J.; Lee, S.; **Kwon, Y.**; Kim, S.* "Divergent Total Synthesis of the Tricyclic Marine Alkaloids Lepadiformine, Fasicularin, and Isomers of Polycitorols by Reagent-Controlled Diastereoselective Reductive Amination" *Chem. Eur. J.* **2014**, *20(52)*, 17433–17442.

5. Hwang, S.; Park, H.; **Kwon, Y.**; Kim, S.* "Acid promoted cyclodehydration of amino alcohols with amide acetal" *RSC Adv.* **2014**, *4(104)*, 60017–60024.

4. **Kwon, Y.**; Kim, I.; Kim, S.* "Platinum-Catalyzed Synthesis of Substituted Phenanthrenes from Biphenyl Propargyl Alcohols via a Carbene Intermediate" *Org. Lett.* **2014**, *16(18)*, 4936–4939.

3. **Kwon, Y.**; Cho, H.; Kim, S.* "Expedient Synthesis of Phenanthrenes via In(III)-Catalyzed 6-*Exo*-D*ig* Cycloisomerization" *Org. Lett.* **2013**, *15(4)*, 920–923.

2. **Kwon, Y.**[†]; Song, J.[†]; Lee, B.; In, J.; Song, H.; Chung, H.-J.; Lee, S. K.*; Kim, S.* "Design, synthesis, and evaluation of a water-soluble antofine analogue with high antiproliferative and antitumor activity" *Bioorg. Med. Chem.* **2013**, *21(4)*, 1006–1017. ([†]equally contributed first authors)

1. **Kwon, Y.**; Lee, S.; Oh, D.-C.*; Kim, S.* "Simple Determination of Double Bond Positions in Long-Chain Olefins by Cross-Metathesis" *Angew. Chem. Int. Ed.* **2011**, *50(36)*, 8275–8278.

PATENTS

1. **Kwon, Y.**; Song, J.; Lee, S. K.; Kim, S. "Phenanthroindolizidine or phenanthroquinolizidine alkaloid derivatives, optical isomer thereof, or pharmaceutically acceptable salts thereof, and an anticancer composition containing the same as an active ingredient" Korea Application No. 10-2016-0008924 filed on 01/25/16, Korea Patent No. 10-1806487-0000 issued on 12/01/17.

POSTER PRESENTATIONS *(Selected)*

6. **Kwon, Y.**; Cho, H.; Jeon, H.; Kim, J. H.; Kim, S. "Transition metal-mediated synthesis of substituted phenanthrenes" PACIFICHEM-2015, Honolulu, United States, December 15–20, 2015, Abstract Number ORGN-510.

5. **Kwon, Y.**; Kim, I.; Kim, S. "Transition Metal-Catalyzed Synthesis of Highly Substituted Phenanthrenes" IUPAC-2015, Busan, Korea, August 7–13, 2015, Abstract Number MS-P1479-THU.

4. **Kwon, Y.**; Kim, I.; Kim, S. "Facile Synthesis of Substituted Phenanthrenes from Biaryl Propargyl Alcohols" The Fall International Convention of The Pharmaceutical Society of Korea, Gyeongju, Korea, October 23–24, 2014, Abstract Number P6-40.

3. **Kwon, Y.**; Jeon, H.; Oh, D.-C.; Kim, S. "Facile method for determining the double bond positions with cross-metathesis" Book of Abstract, 244th ACS National Meeting, Philadelphia, United States, August 19–23, 2012, Abstract Number 797 in the Division of Organic Chemistry.

2. **Kwon, Y.**; Kim, S. "Design, Synthesis and Biological Evaluation of Substituted Antofine Analogues" Book of Abstract, The 109th General Meeting of the Korean Chemical Society, Goyang, Korea, April 25–27, 2012, Abstract Number MEDI.P-1019.

1. **Kwon, Y.**; Kim, S. "Application of Cross-Metathesis for the Determination of Double Bond Positions" Book of Abstract, The 108th Autumn Meeting of the Korean Chemical Society, Daejeon, Korea, September 28–30, 2011, Abstract Number III-ORGN.P-168.

GRANTS AND AWARDS

02/2016 *College of Pharmacy, Seoul National University*, **Best Paper Award**

The Best Paper Award for publishing the largest number of research papers while attending the Ph. D. program at the College of Pharmacy, Seoul National University.

03/2012–02/2016 *NRF of Korea,* **Fostering Core Leaders of the Future Basic Science Program**

"Total synthesis and focused library synthesis of bioactive natural products and its application to Chemical Genomics": The overall goal of this research is to develop focused libraries based on the total synthesis of bioactive natural products, and apply them to Chemical Genomics.