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The University of New Mexico
Department of Chemistry and Chemical Biology, MSC03 2060
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EDUCATION

- The Scripps Research Institute**, La Jolla, CA 2009
Ph. D., Organic Chemistry
Thesis title: "Chelation-Assisted Palladium-Catalyzed Activation of C–H Bonds: A New Avenue for Carbon–Heteroatom and Carbon–Carbon Bond Formation"
- University of Cambridge**, Cambridge, UK 2003
M. Phil., Bioorganic Chemistry
Thesis title: "Butirosin Biosynthesis: Cloning, Expression and Characterization of an NAD(P)H:FMN Oxidoreductase"
- Tribhuvan University**, Kirtipur, Nepal 1998
M. Sc., Organic Chemistry
Second Top with Distinction
Thesis title: "Potentially Anticarcinogenic Flavonoids in Edible Plant Materials, and Antibacterial Activity of *Lygodium Japonicum* (Thunb.) Sw."
- Trichandra College**, Kathmandu, Nepal 1995
B. Sc., Chemistry
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APPOINTMENT

- Assistant Professor**, Department of Chemistry and Chemical Biology, University of New Mexico 2012-present
- Researcher**, Research Center for Applied Science and Technology, Tribhuvan University 2000-2002
- Assistant Lecturer**, Trichandra College, Tribhuvan University 2000-2002
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RESEARCH EXPERIENCE

- University of California**, Berkeley, CA, and **University of Illinois**, Urbana-Champaign, IL 2009-2012
Postdoctoral Research, Advisor: Professor John F. Hartwig
- Investigated the mechanism of the Ullmann amination
 - Investigated the tandem reactions involving a metalloenzyme and a transition metal catalyst
- The Scripps Research Institute**, La Jolla, CA, and **Brandeis University**, Waltham, MA 2004-2009
Graduate Research (Ph. D.), Advisor: Professor Jin-Quan Yu
- Developed Pd-catalyzed sp^2 and sp^3 C–H activation reactions to construct carbon-heteroatom and carbon-carbon bonds
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- Synthesized palladacycles via activation of sp^2 and sp^3 C–H bonds and studied the mechanisms of Pd-catalyzed C–H activation reactions and the origin of stereoselectivity during C–H cleavage
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University of Cambridge, Cambridge, UK 2002-2003
Graduate Research (M. Phil.), Advisor: Professor Jonathan B. Spencer

- Cloned, expressed and characterized an NAD(P)H:FMN oxidoreductase to study the butirosin antibiotic biosynthetic pathway

- Studied kinetics of enzymatic reactions with NAD(P)H:FMN oxidoreductase

Research Center for Applied Science and Technology, Kirtipur, Nepal 2000-2002
Research Assistant, Supervisor: Dr. Michael Boswell (University of Northampton, UK)

- Worked on detoxification and utilization of *Jatropha curcas* seed oil for biofuels

Tribhuvan University, Kirtipur, Nepal
Graduate Research (M. Sc.), Advisor: Professor Sarbjana M. Tuladhar

- Quantified flavonoid contents in local fruits and species
 - Isolated kaempferol and ponasterone A from rhizomes of *L. japonicum*
 - Studied antibacterial activities of extracts from rhizomes of *L. japonicum*
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TEACHING EXPERIENCE

University of New Mexico, Albuquerque, NM 2012-present

Brandeis University, Waltham, MA 2004-2007
Teaching Assistant, Organic Chemistry Laboratory

Tribhuvan University, Kathmandu, Nepal 2000-2002
Assistant Lecturer, Inorganic Chemistry Lectures

HONORS AND AWARDS

National Science Foundation (NSF) CAREER Award 2016-2021

Theme Chemistry Journals Award 2016

Research Allocation Grant, The University of New Mexico, New Mexico 2013

Graduate Student Symposium Award, The Scripps Research Institute, La Jolla 2007

Myron Rosenblum Endowed Fellowship, Brandeis University, Waltham 2006-2007

Outstanding Teaching Fellow Award, Brandeis University, Waltham 2007

Cambridge Overseas Trust Scholarship, University of Cambridge, UK 2002-2003

Nepal Academy of Science and Technology Research Grant, Nepal 1999

PUBLICATION

Publications as a Principal Investigator

- 35 Shrestha, B.; Thapa, S.; Gurung, S. K.; Pike, R. A. S.; Giri, R. "General Copper-Catalyzed Coupling of Alkyl-, Aryl- and Alkynylaluminum Reagents with Organohalides" *J. Org. Chem.* **2016**, *81*, 787-802. (**Highlighted by Synfacts 2016, 14(4), 0403**)
34. Thapa, S.; Vangala, A. S.; Giri, R. "Copper-Catalyzed Negishi Coupling of Diarylzinc Reagents with Aryl Iodides" *Synthesis* **2016**, *48*, 504-511. (**Featured on the Cover Page**)
33. Shrestha, B.; Giri, R. "Copper-Catalyzed Arylation of Alkyl Halides with Arylaluminum Reagents" *Beilstein J. Org. Chem.* **2015**, *11*, 2400-2407.
32. Thapa, S.; Kafle, A.; Gurung, S. K.; Montoya, A.; Riedel, P.; Giri, R. "Ligand-Free Copper-Catalyzed Negishi Coupling of Alkyl-, Aryl- and Alkynylzinc Reagents with Heteroaryl Iodides" *Angew. Chem. Int. Ed.* **2015**, *54*, 8236-8240. (**Highlighted by Synfacts 2015, 11(8), 0853**)
31. Thapa, S.; Shrestha, B.; Gurung, S. K.; Giri, R. "Copper-Catalysed Cross-Coupling: An Untapped Potential" *Org. Biomol. Chem.* **2015**, *13*, 4816-4827. (*Invited review article*).
30. Gurung, S.; Thapa, S.; Shrestha, B.; Giri, R. "Copper-Catalysed Cross-Couplings of Arylboronate Esters with Aryl and Heteroaryl Iodides and Bromides" *Org. Chem. Front.* **2015**, *2*, 649-653. (*Invited contribution to celebrate Nobel Laureate and pioneer of cross-couplings Ei-ichi Negishi's 80th birthday*). (**Highlighted by Org. Process Res. Dev. 2015, 19, 950-956**)
29. Thapa, S.; Basnet, P.; Gurung, S. K.; Giri, R. "Copper-Catalysed Cross-Coupling of Arylzirconium Reagents with Aryl and Heteroaryl Iodides" *Chem. Commun.* **2015**, *51*, 4009-4012.
28. Giri, R.; Thapa, S. "Copper-Catalyzed Cross-Couplings of Organometallic Reagents with and without Assistance from PN Ligands" *Synlett* **2015**, *26*, 709-715. (**Invited Highlight: Synfacts: Featured on the Cover Page**)
27. Thapa, S.; Gurung, S. K.; Dickie, D. A.; Giri, R. "Copper-Catalyzed Coupling of Triaryl- and Trialkylindium Reagents with Aryl Iodides and Bromides via Consecutive Transmetalations" *Angew. Chem. Int. Ed.* **2014**, *53*, 11620-11624. (**Highlighted by Synfacts 2015; 11(1): 0084**)
26. Thapa, S.; Gurung, S. K.; Giri, R. "2-(Diphenylphosphino)aniline" *Electronic Encyclopedia of the Reagents for Organic Synthesis (eEROS)*, **2015**.
25. Gurung, S. K.; Thapa, S.; Shrestha, B.; Giri, R. "Copper-Catalyzed Cross-Couplings of Aryl- and Heteroaryltri-ethoxysilanes with Aryl and Heteroaryl Iodides and Bromides" *Synthesis* **2014**, *46*, 1933-1937. (*Invited Contribution*).
24. Giri, R.; Thapa, S.; Kafle, A. "Pd-Catalysed, Directed C-H Coupling with Organometallics" *Adv. Syn. Catal.* **2014**, *365*, 1395. (*Invited review article*).
23. Gurung, S. K.; Thapa, S.; Kafle, A.; Dickie, D. A.; Giri, R. "Copper-Catalyzed Suzuki-Miyaura Coupling of Arylboronate Esters: Transmetalation with (PN)CuF and Identification of Intermediates" *Org. Lett.* **2014**, *16*, 1264.
22. Gurung, S. K.; Thapa, S.; Vangala, A. S.; Giri, R. "Copper-Catalyzed Hiyama Coupling of (Hetero)aryltriethoxysilanes with (Hetero)aryl Iodides" *Org. Lett.* **2013**, *15*, 5378.

Publications as a Graduate Student and Postdoc

21. Gong, W.; Zhang, G.; Liu, T.; Giri, R.; Yu, J.-Q. "Site-selective C(sp³)-H Functionalization of Di-, Tri- and Tetrapeptides at the N-Terminus" *J. Am. Chem. Soc.* **2014**, *Just Accepted*.
20. Giri, R.; Lan, Yu.; Liu, P.; Houk, K. N.; Yu, J.-Q. "Understanding Reactivity and Stereoselectivity in Palladium-Catalyzed Diastereoselective sp³ C-H Bond Activation: Intermediate Characterization and Computational Studies" *J. Am. Chem. Soc.* **2012**, *134*, 14118.
19. **Giri, R.**; Hartwig, J. F. "Cu(I) Amido Complexes in the Ullmann Reaction. Reactions of Cu(I)-Amido Complexes with Iodoarenes with and without Autocatalysis by CuI" *J. Am. Chem. Soc.* **2010**, *132*, 15860.
18. Tye, J. W.; Weng, Z.; **Giri, R.**; Hartwig, J. F. "Copper(I) Phenoxide Complexes in the Etherification of Aryl Halides" *Angew. Chem., Int. Ed.* **2010**, *49*, 2185.

17. **Giri, R.**; Lam, J. K.; Yu, J.-Q. "Synthetic Applications of Pd(II)-Catalyzed C–H Carboxylation and Mechanistic Insights: Expedient Routes to Anthranilic Acids, Oxazolinones, and Quinazolinones" *J. Am. Chem. Soc.* **2010**, *132*, 686.
16. Chen, X.; Dobereiner, G.; Hao, X.-S.; **Giri, R.**; Mangel, N.; Yu, J.-Q. "Cu(II)-Mediated Oxidative Dimerization of 2-Phenylpyridine Derivatives" *Tetrahedron* **2009**, *65*, 3085.
15. **Giri, R.**; Shi, B.-F.; Engle, K. M.; Mangel, N.; Yu, J.-Q. "Transition Metal-Catalyzed C–H Activation Reactions: Diastereoselectivity and Enantioselectivity" *Chem. Soc. Rev.* **2009**, *38*, 3242.
14. **Giri, R.**; Yu, J.-Q. "Synthesis of 1,2-and 1,3-Dicarboxylic Acids via Pd(II)-Catalyzed Carboxylation of Aryl and Vinyl C–H Bonds" *J. Am. Chem. Soc.* **2008**, *130*, 14082.
13. **Giri, R.**; Mangel, N.; Foxman, B. M.; Yu, J.-Q. "Dehydrogenation of Alkyl Groups via Remote C–H Activation: Converting a Propyl Group into a π -Allylic Complex" *Organometallics* **2008**, *27*, 1667.
12. Li, J.-J.; **Giri, R.**; Yu, J.-Q. "Remote C–H Bond Functionalization Reveals the Distance-dependant Isotope Effect" *Tetrahedron* **2008**, *64*, 6979.
11. Mei, T.-S.; **Giri, R.**; Mangel, N.; Yu, J.-Q. "Pd(II)-Catalyzed *mono*-Selective *ortho*-Halogenation of Arene Carboxylic Acids Assisted by Counter Cations: An Orthogonal Method to Directed *ortho*-Lithiation" *Angew. Chem., Int. Ed.* **2008**, *47*, 5215.
10. Wang, D.-H.; Wasa, M.; **Giri, R.**; Yu, J.-Q. "Pd(II)-catalyzed Cross-Coupling of sp^2 and sp^3 Boronic Acids Using Air as the Oxidant" *J. Am. Chem. Soc.* **2008**, *130*, 7190.

Highlighted in Synform 2008/09.

9. **Giri, R.**; Yu, J.-Q. "Iodine Monoacetate" *Electronic Encyclopaedia of the Reagents for Organic Synthesis (eEROS)* **2008**. <http://onlinelibrary.wiley.com/o/eros/articles/rn00915/frame.html>
8. **Giri, R.**; Mangel, N.; Li, J.-J.; Wang, D.-H.; Breazzano, S. P.; Saunders, L. B.; Yu, J.-Q. "Palladium-Catalyzed Methylation and Arylation of sp^2 and sp^3 C–H Bonds in Simple Carboxylic Acids" *J. Am. Chem. Soc.* **2007**, *129*, 3510.
7. **Giri, R.**; Wasa, M.; Breazzano, S. P.; Yu, J.-Q. "Converting *gem*-Dimethyl Groups into Cyclopropanes via Pd-Catalyzed Sequential C–H Activation and Radical Cyclization" *Org. Lett.* **2006**, *8*, 5685.
6. Yu, J.-Q.; **Giri, R.**; Chen, X. " σ -Chelation-directed C–H Functionalizations using Pd(II) and Cu(II) Catalysts: Regioselectivity, Stereoselectivity and Catalytic Turnover" *Org. Biomol. Chem.* **2006**, *4*, 4041.
5. **Giri, R.**; Chen, X.; Yu, J.-Q. "Palladium-Catalyzed Asymmetric Iodination of Unactivated C–H Bonds under Mild Conditions" *Angew. Chem., Int. Ed.* **2005**, *44*, 2112.

Highlighted in Synfacts 2005, 0, 0052-0052.

4. **Giri, R.**; Liang, J.; Lei, J.-G.; Li, J.-J.; Wang, D.-H.; Chen, X.; Naggar, I. C.; Guo, C.; Foxman, B. M.; Yu, J. Q. "Palladium-Catalyzed Stereoselective Oxidation of Methyl Groups by Inexpensive Oxidants under Mild Conditions: a Dual Role for Carboxylic Anhydrides in Catalytic C–H Bond Oxidation" *Angew. Chem., Int. Ed.* **2005**, *44*, 7420.
3. **Giri, R.**; Chen, X.; Hao, X.-H.; Li, J.-J.; Liang, J.; Fan, Z.-P.; Yu, J.-Q. "Catalytic and Stereoselective Iodination of Prochiral C–H Bonds" *Tetrahedron: Asymmetry* **2005**, *16*, 3502.
2. Li, Y.; Llewellyn, N. M.; **Giri, R.**; Huang, F.; Spencer, J. B. "Biosynthesis of the Unique Amino Acid Side Chain of Butirosin: Possible Protective-Group Chemistry in an Acyl Carrier Protein-Mediated Pathway" *Chem. Biol.* **2005**, *12*, 665.
1. Bajracharya, G. B.; Pokhrel, D.; **Giri, R.**; Tuladhar, S. M. "Potentially Anti-carcinogenic Flavonoids in Vegetables, Fruits and Spices" *Npl. J. Sci. Tech.* **2000**, *2*, 17.

5. Gordon Research Conference (GRC)-Organic Reactions & Processes, "Copper-Catalyzed Cross-Couplings of Organometallic Reagents and their Mechanistic Studies" July 23, 2015.
4. Gurung, S. K.; Thapa, S.; Vangala, A. S.; Giri, R. "Copper-Catalyzed Hiyama Coupling of Aryl- and Heteroaryltriethoxysilanes with Aryl- and Heteroaryl Iodides" Poster Presentation at the 247th ACS National Meeting & Exposition, Dallas, TX, United States, March 16-20, 2014.
3. Giri, R.; Denard, C.; Zhao, H.; Hartwig, J. F. "Biphasic Tandem Catalysis: Isomerization and Epoxidation of Olefins with Ruthenium Catalysts and P450 Enzymes" 2010 CENTC Annual Meeting, University of Washington Center for Urban Horticulture, September 12-14, 2010.
2. Giri, R.; Yu, J.-Q. "Palladium-Catalyzed Functionalization of Unactivated C-H Bonds in Carboxylic Acids" Student Faculty Symposium, The Scripps Research Institute, La Jolla, September 7, 2007.
1. Giri, R.; Mangel, N.; Yu, J.-Q. "Palladium-Catalyzed Methylation and Arylation of Unactivated C-H Bonds in Simple Carboxylic Acids" Poster Presentation in 234th Annual Meeting of the American Chemical Society, Boston, August 19-23, 2007.

PUBLISHED PATENT APPLICATION

1. Giri, R.; Yu, J.-Q. "Catalytic Asymmetric Activation, Such as Iodination and Carboxylation (Acetoxylation), of Unactivated C-H Bonds of Substituted Oxazolines and Related Compounds in the Presence of Oxidants" PCT Int. Appl. (2006), WO 2006026053 A1 20060309.

INVITED SEMINAR/TALK

9. Rutgers University-Newark, "Enabling Copper for Coupling and Tandem Reactions through Tailored Ligand Design and Mechanistic Studies" February 18, 2016.
8. Gordon Research Conference (GRC)-Organic Reactions & Processes, "Copper-Catalyzed Cross-Couplings of Organometallic Reagents and their Mechanistic Studies" July 23, 2015 (selected talk from posters).
7. The Scripps Research Institute (TSRI), La Jolla, "Enabling Copper for Coupling and Tandem Reactions through Tailored Ligand Design and Mechanistic Studies" July 2, 2015.
6. Rice University, "Copper-Catalyzed Cross-Couplings for Carbon-Carbon Bond Formation" November 10, 2014.
5. New Mexico State University, "Copper-Catalyzed Cross-Couplings for Carbon-Carbon Bond Formation" October 2, 2014.
4. 248th ACS National Meeting & Exposition, San Francisco, CA, United States, "Copper-Catalyzed Cross-Couplings for Carbon-Carbon Bond Formation" August 10-14, 2014.
3. University of New Mexico (UNM), Gallup Campus, "Copper-Catalyzed Cross-Couplings", April 11, 2014.
2. New Mexico Tech (NMT), Socorro, "Cross-Coupling Reactions with First Row Late Metals", October 25, 2013.

1. University of New Mexico (UNM), Gallup Campus, "Cleavage and Functionalization of Non-Acidic C–H Bonds with Palladium Catalysts", March 29, 2013.

SCHOLARLY AND PROFESSIONAL ACTIVITIES

4. Chaired a session on Asymmetric Catalysis, the Division of Organic Chemistry program at the 248th ACS meeting (August 10-14, 2014) in San Francisco, California.
3. External Judge, Senior Thesis Presentation, New Mexico Tech, Spring 2014 (April 25).
2. **Guest Editor**, *Molecules*, special issue "Transition Metals Catalysis", 2012.
1. **Member**, *American Chemical Society*, 2007-present.