CURRICULUM VITAE

Vittorio Farina

EDUCATION

1977 Laurea degree (*Summa cum Laude*) in Chemistry at the University of Pisa, Italy.
1982 Ph.D. in Organic Chemistry, the University of Alberta (Edmonton, AB, Canada)
1981-83 Post-doctoral fellowship, Cornell University (Ithaca, NY, USA)

WORK EXPERIENCE

1977-81 University of Alberta. Ph.D. work with **Prof. D.L.J. Clive** on organoselenium chemistry and new cuprate reagents.

1981-83 Postdoctoral Fellow, Cornell University. Research with **Prof. J.E. McMurry** on the total synthesis of morphinanes, Amaryllidaceae alkaloids, and digitoxin.

1983-86 Research Scientist at **Bristol-Myers in Syracuse, NY, Dept. of Chemical Process Development**. Work included the discovery of new processes in the area of cephalosporin and nucleoside chemistry in support of scale-up efforts toward clinical APIs.

1986-87 Senior Research Scientist, Bristol-Myers, Process Development.

1987-89 Senior Research Scientist, **Bristol-Myers Wallingford, CT**, **Dept. of Antitumor Chemistry**. Areas of research were in the development of enzyme inhibitors and in site-selective drug delivery, utilizing new strategies in conjunction with tumor-specific monoclonal antibodies.

1989-91 Senior Research Investigator II, Bristol-Myers Squibb, Antitumor Chemistry.

1991-1993 Principal Scientist, Bristol-Myers Squibb, Antitumor Chemistry. Primary responsibility for the development of the taxol analog program. Research was oriented toward the study of natural products as chemotherapeutic agents and their synthetic modifications.

4/93-4/94 Associate Director, Medicinal Chemistry, **Boehringer-Ingelheim in Ridgefield, CT**. Responsible for programs in Virology and Cardiovascular Diseases, as well as early scale-up.

4/94-11/03 Director, Dept. of Chemical Development, **Boehringer-Ingelheim, Ridgefield, CT.** Built department from ground zero, responsible for Process Research, Pilot Plant operations, outsourcing activities, Solid State Characterization activities, and In-Process Control group at Ridgefield CT site as well as the Richmond, VA operations. Activities include bulk synthesis of drug substances, new process exploration and establishment of commercially viable synthetic routes of new NCEs. Responsibility for IND and DMF filing. Some experience with process validation and FDA pre-approval inspections. Technology transfer to late development groups in Ingelheim, Germany and Petersburg, VA.

4/03-11/03 Sabbatical at **BI Pharma KG, Ingelheim, Germany**.

10/03-11/06 Highly Distinguished Scientist, Department of Chemical Development, **Boehringer-Ingelheim.**

12/06-12/09 Senior Research Fellow, **Johnson and Johnson Pharmaceutical R&D, Beerse, Belgium**. Responsibilities include development of new processes from early development to production.

1/2010-12/2018 Senior Scientific Director and Janssen Fellow, Pharmaceutical Development and Manufacturing Sciences, **Janssen Pharmaceutica, Beerse, Belgium**. Responsible for development of APIs from pre-development to post-approval.

2/2019-date **President, Farinachem Consulting GmbH,** Aachen, Germany. Consulting on all aspects of chemical process development in the Pharma Industry.

LANGUAGES

Italian (mother tongue); **English** (bilingual level); **German** (fluent); **Dutch** (basic); **French** (basic).

EXTERNAL AWARDS

Date	Award
1981	Research Grant, Alberta Heritage Foundation for Medical Research
1979-81	Izaak Walton Killam Fellowship, University of Alberta
1978	H.H. Parlee Memorial Fellowship, Univ. of Alberta
2014	Award for Organic Chemistry in its Industrial Applications, from the Società Chimica Italiana

SCIENTIFIC ACTIVITIES

April 1995	*Chairman*, Symposium "Transition Metal-Catalyzed Cross-Coupling Reactions", ACS National Meeting, Anaheim, California
2000-2015	*Editorial Board,* Organic Reactions
2015-present	*Advisory Board,* Organic Reactions
2004	*Guest Editor,* Special Issue of *Advanced Synthesis and Catalysis*
2009	*Chairman,* ACS Prospectives on Process Chemistry, Durham, NC (USA)
2010-present	*Editorial Advisory Board,* Advanced Synthesis and Catalysis
2012	*Chairman,* Gordon Research Conference on Stereochemistry, Newport, RI (USA)
2016-present	*International Advisory Board,* Ischia Advanced School of Organic Chemistry
2017-present	*Editorial Advisory Board,* Beilstein Journal of Organic Chemistry
2017-present	*International Advisory Board,* International Symposium on Homogeneous Catalysis

TEACHING EXPERIENCE

2002-2006 Visiting Professor, Università del Piemonte Orientale, Novara, IT.

Courses taught: Organometallic Chemistry; Stereochemistry in Drug Discovery and Development; Cross-Coupling Chemistry; Process Development in the Pharmaceutical Industry.

2017-present: Founder and Faculty Member, International School of Process Chemistry (ISPROCHEM), held annually in Gargnano (BS, Italy).

2018-2020: Visiting Professor, Università del Piemonte Orientale, Novara, IT.

2020-present: Visiting Professor, Università di Torino, Torino, IT.

2020-present: Founder and Faculty Member, MS Program in Pharmaceutical Process Development, Università di Milano, Milano, IT.

Courses taught: Transition Metal Catalysis; Process Development in the Pharmaceutical Industry, Stereochemistry in Drug Development.

SELECTED EXTERNAL LECTURES

1) 28.9.1989	Invited Lecture Palladium-Catalyzed Routes to New Cephalosporins	University of Iowa, Iowa City, Iowa (USA)
2) 25.4.1991	Invited Lecture Catalyst Tailoring in Organopalladium Chemistry	Boston University, Boston, Massachusetts (USA)
3) 31.7.1991	Invited Lecture New Ligands in the Stille Reaction	Gordon Conference on Organic Reactions and Processes, New Hampton, New Hampshire (USA)
4) 3.12.1991	Invited Lecture Recent Advances in the Stille Reaction	Wesleyan University, Middletown, Connecticut (USA)
5) 13.1.1992	Invited Lecture Recent Advances in the Stille Reaction	Emory University, Atlanta, Georgia (USA)
6) 13.4.1992	Invited Lecture Organometallic Approaches to New Cephalosporins	University of Waterloo, Waterloo, Ontario, Canada
7) 23.4.1992	Invited Lecture Organometallic Approaches to New Cephalosporin Antibiotics	Ransselaer Polytechnic Institute, Ransselaer, New York (USA)
8) 2.5.1994	Invited Lecture Recent Progress in Cross-Coupling Chemistry	University of California, Santa Barbara, California (USA)
9) 3.5.1994	Invited Lecture Recent Progress in Cross-Coupling Chemistry	University of California, Riverside, California (USA)
10) 14.9.1994	Invited Lecture Recent Progress in Cross-Coupling Chemistry	Gulf Coast Chemistry Conference, Pensacola, Florida (USA)
11) 29.9.1994	Invited Lecture Recent Progress in Cross-Coupling Chemistry	Symposium on Latest Trends in Organic Synthesis, Blacksburg, Virginia (USA)

12)20.10.1994	Invited Lecture Recent Progress in Cross-Coupling Chemistry	Ohio State University, Columbus, Ohio (USA)
13) 1.5.1995	Invited Lecture Recent Progress in Cross-Coupling Chemistry	University of Ottawa, Ottawa, Ontario, Canada
14) 26.6.1995	Invited Lecture Recent Progress in Cross-Coupling Reactions	5th Conference of the French-American Society, Bordeaux, France
15) 30.6.1995	Invited Lecture Recent Progress in Cross-Coupling Chemistry	University of Torino, Torino, Italy
16) 3.7.1995	Invited Lecture Recent Progress in Cross-Coupling Chemistry	University of Pisa, Pisa, Italy
17) 7.8.1995	Invited Lecture Recent Progress in Cross-Coupling Chemistry	8th Intern. Conf. on Organometallic Chemistry in Organic Synthesis (OMCOS), Santa Barbara, California (USA)
18)29.11.1995	Invited Lecture Recent Progress in Organo-palladium Chemistry	Wayne State University, Detroit, Michigan (USA)
19) 1.2.1996	Invited Lecture Recent Progress in Organo-palladium Chemistry	Southern Methodist University, Dallas, Texas (USA)
20) 20.5.1997	Invited Lecture In Search of a Second-Generation Taxol	University of Alberta, Edmonton, Alberta, Canada
21) 22.9.1997	Invited Lecture The Transition Metal-Catalyzed Cross-Coupling Reaction: Current Status and Future Opportunities	Seton Hall University, Seton Hall, New Jersey (USA)
22) 9.11.1998	Invited Lecture The Chemical Development of Ontazolast	Chiratech 98, Barcelona, Spain
23) 21.4.1999	Invited Lecture Cross-Coupling Reactions: Focus on Transmetalation	First European Catalysis Symposium, Valencia, Spain
24) 30.5.2000	Invited Lecture Practical Synthesis of LFA-1/ICAM-1 Inhibitors	Canadian Society for Chemistry Conference, Calgary, Alberta, Canada
25) 9.7.2001	Plenary Lecture Cross-Coupling Reactions of Organostannanes	10th Intern. Conference on the Coordination and Organometallic Chemistry of Ge, Sn, and Pb, Bordeaux, France
26) 31.8.2001	Invited Lecture Practical Synthesis of LFA-1/ICAM-1 Inhibitors	ACS Conference, Symposium on Practical Synthesis, Chicago, Illinois (USA)
27) 26.6.2002	Plenary Lecture New Developments in Organotin Chemistry	Balticum Organic Symposium (BOS), Vilnius, Lithuania
28) 29.9.2003 – 1.10.2003	Invited Short Course Process Development in the Pharmaceutical Industry	University of Milano, Italy
29) 6.5.2004	Invited Lecture Cost-Effective Drug Substance Strategies in Early API Development	Albany Molecular Chemical Development Symposium, Albany, New York (USA)
30)19.9.2004	Plenary Lecture Practical Synthesis of New Experimental Therapeutics	Ischia Advanced School of Organic Chemistry, Ischia, Italy
31) 4.10.2004	Invited Lecture Practical Synthesis of New HCV Protease Inhibitors	Siegfried Symposium, University of Zurich, Zurich, Switzerland

32) 8.2.2005	Invited Lecture Efficient Synthesis of BILN 2061, a Potent HCV Protease Inhibitor, by a Convergent Approach Based on Ring-Closing Metathesis	ACS Prospectives, Miami, Florida (USA)
33) .8.2005	Invited Lecture Ruthenacyclopentenes as Likely Intermediates in Olefin Metathesis Reactions Involving Vinylcyclopropane Derivatives	International Conference on Heterocyclic Chemistry, Palermo, Italy
34)15.11.2005	Invited Lecture Challenges in API Process Development: Case Studies	The Scale-up of Chemical Processes, OPRD Conference, Naples, Florida (USA)
35) 9.3.2006	Invited Lecture Efficient Synthesis of BILN 2061, a Potent HCV Protease Inhibitor, by a Convergent Approach Based on Ring-Closing Metathesis	Chiral Quest Symposium, Princeton, New Jersey (USA)
36) 25.4.2006	Contributed Short Lecture Synthesis of New HCV Protease Inhibitors by a Convergent Synthesis Featuring Ring-Closing Metathesis	Bürgenstock Conference on Stereochemistry, Bürgenstock, Switzerland
37) 22.6.2006	Plenary Lecture Synthesis of New HCV Protease Inhibitors by a Convergent Synthesis Featuring RCM	Gordon Research Conference on Stereochemistry, Newport, Rhode Island (USA)
38) 19.9.2007	Plenary Lecture The Chemistry of Ruthenium Cyclopropylmethylidene Complexes: Mechanistic and Synthetic Implications for the RCM Reaction	The 8th International Symposium on Catalysis Applied to Fine Chemicals, Pallanza, Italy
39) 13.3.2008	Plenary Lecture Practical Regioselective Approaches to Complex 2,3-Disubstituted Indoles	Florida Heterocyclic Conference, Gainesville, Florida (USA)
40) 25.4.2008	Invited Lecture Process Development Strategies in the Pharma Industry: Having Fun with Organometallic Catalysis	RWTH, Aachen, Germany
41) 4.7.2008	Invited Lecture Process Development Strategies in the Pharma Industry: Having Fun with Organometallic Catalysis	Ecole Normale Superieure de Physique et Chimie Industrielle, Paris, France
42) 26.6.2009	Invited Lecture The Olefin Metathesis Reaction: Applications in the Pharmaceutical Industry	A. Corbella 35th Summer School, Gargnano, Italy
43) 29.9.2011	Symposium Lecture New C-Glycosylation Methodology	ACS National Meeting, Denver, Colorado (USA)
44) 29.8.2014	Invited Lecture Stereoselective Synthesis of Therapeutic C-Glycosides	Gordon Research Conference on Stereochemistry, Newport, RI (USA)
45) 9.9.2014	Award Lecture 20 Years of API Development	National Meeting of the Società Chimica Italiana, Rende, Italy

46) 14.9.2015	Keynote Lecture Synthesis of Anti-Diabetes Drug Canagliflozin and Related Substances by Non-Catalyzed Cross-Coupling of Arylzinc Derivatives with Bromosugars in Toluene/DBE Mixtures	National Meeting of the Organic Division, Società Chimica Italiana, Bologna, Italy
47) 24-26.5.2016	Invited Short Course Chirality in Drug Design and Development	University of Milano (Italy)
48) 26-30.9.2016	Invited Lecture Stereoselective C-Glycosylation with Organozinc Compounds	Ischia International School of Organic Chemistry, Ischia, Italy
49)24-26.10.2017	Invited Lecture New Synthesis of C-Glycosides via C-C Coupling: Catalyzed or Uncatalyzed?	Beilstein Symposium, Potsdam, Germany
50) 9-13.7.2018	Plenary Lecture: Synthesis of C-Glycosides Using Organozinc Reagents and a New Lewis-Acid Catalyst	21st International Symposium on Homogeneous Catalysis, Amsterdam, NL
51) 5-8.11. 2018	Plenary Lecture: Synthesis of Canagliflozin by Direct Coupling of 1-Bromosugars with Arylzinc Reagents: Scope and Mechanism of a New Approach to C-Glycosides	2018 International Forum on Reactions and Processes for Pharmaceutical Development: Shanghai CN

PUBLICATIONS

1. Barroso, S.; Joksch, M.; Puylaert, P.; Tin, S.; Bell, S.; Donnellan, L.; Duguid, S. ; Muir, M. ; Zhao, P.; **Farina, V.:** Tran, D.N.; De Vries, J. G. "Improvement in the Palladium-Catalyzed Miyaura Borylation Reaction by Optimization of the Base: Scope and Mechanistic Study", *J. Org. Chem.* **2021***, 86,* 103.

2. Lemaire, S.; Diene, C.; Gavryushin, A.; Du Jourdin, X.; Paolini, L.; Jusseau, X.; Knochel, P.; **Farina, V**. "Preparation of 2'-Deoxy-2'-spirocyclopropylcytidine via an Alternative Cyclopropanation Reaction", *J. Org. Chem*. **2019**, 84, 4910.

3. Hernan-Gomez, A.; Orr, S. A.; Uzelac, M.; Kennedy, A. R.; Barroso, S.; Jusseau, X.; Lemaire, S.; **Farina, V.**; Hevia, E., "Exploiting Synergistic Effects in Organozinc Chemistry for Direct Stereoselective C-Glycosylation Reactions at Room Temperature" *Angew. Chem. Int. Ed*. **2018**, *57*, 10630.

4. Eriksson, M.C.; Zeng, X.; Xu, J.; Reeves, D.C.; Busacca, C.A.; **Farina, V**.; Senanayake, C.H. "The Guareschi-Thorpe Cyclization Revisited – An Efficient Synthesis of Substituted 2,6-Dihydroxypyridines and 2,6-Dichloropyridines", *Synlett*, **2018**, *29,* 1455.

5. Lemaire, S.; Govaerts, T.; **V. Farina** "Development of a Practical Synthesis of 4'-Azido-2'-α--Methyl-2'-Desoxycytosine and Its Prodrugs as HCV Chemotherapeutic Agents", In: *Methods and Principles in Medicinal Chemistry* (**2018**), 73 (Early Drug Development, Volume 1), 145.

6. Barroso, S.; Lemaire, S.; **Farina, V**.; Steib, A.K.; Blanc, R.; Knochel, P. "Cine Substitution with Arylzinc Reagents: Scope and Mechanistic Studies", *J. Org. Chem.* **2016***, 81,* 2804.

7. Hübner, S.; De Vries, J.; **Farina, V**. "Why does Industry not Use Immobilized Transition Metal Complexes as Catalysts?", *Adv. Synth. Catal*. **2016**, *358*, 1.

8. Wagschal, S.; Guilbaud, J.; Rabet, P.; **Farina, V**.; Lemaire, S. "Synthesis of α-C-Glycosides via *syn*-Opening of 1, 2-Anhydrosugars with Organozinc Compounds in Toluene/*n*-Bu_2O", *J. Org. Chem*. **2015**, *80*, 9328.

9. **Farina, V**.; Horvath, A. *"*Ring-Closing Metathesis in the Large-Scale Synthesis of Pharmaceuticals", in Grubbs, R.H.; Wenzel, A.G.; O'Leary, D.J.; Khosravi, E. Eds. "*Handbook of Metathesis (2nd Ed.)*", Wiley-VCH; p. 637 (**2015**).

10. Lemaire, S.; Xolin, A.; Gozlan, C.; **Farina, V**. "Stereoselective C-Glycosylation of Furanosyl Halides with Arylzinc Reagents" *Pure Appl. Chem*., **2014**, 329.

11. Zhang, Y.; Lu, B.Z.; Li, G.; Rodriguez, S.; Tan, J.; Wei, H.-X.; Liu, J.-X.; Roschangar, F.; Ding, F.; Zhao, W.; Qu, B.; Islam, Q.; Grinberg, N.; Lee, H.; Heckmann, G.; Niemeier, O.; Brenner, M.; Tsantrizos, Y.; Beaulieu, P.L.; Hossain, A.; Yee, N.K.; **Farina, V.;** Senanayake, C.H. "A Highly Concise and Convergent Synthesis of HCV Polymerase Inhibitor Deleobuvir (BI207127): Application of a Pd-Catalyzed One-Pot Borylation-Suzuki Coupling Reaction", *Org. Lett*., **2014,** *16,* 4558.

12. Lu, B.Z.; Li, G.; Roschangar, F.; Hossain, A.; Herter, R.; **Farina, V**.; Senanayake, C.H. "*Development of a Practical Negishi Coupling Process for the Manufacturing of BILB1941, an HCV Polymerase Inhibitor",* in Magano, J.; Dunetz, J.R., Eds. *"Transition Metal-Catalyzed Couplings in Process Chemistry: Case Studies from the Pharmaceutical Industry"*, Wiley-VCH**;** p.105 (**2013**).

13. Benhaim, C.; Lemaire, S.; Gaekens, T.; Govaerts, T.; Houpis, I.; Reniers, P.; Van Looy, A.; Vermeulen, W.A.A.; Bernhardt, S.; Diène, C.; Knochel, P.; **Farina, V**. "Synthesis of (*4'R*)-Azido-2'-Deoxy-2'-C-Methyl Uridine and its Esters by Direct Iodide Displacement", *Synlett*, **2013**, 1697.

14. Lu, B.; Wei, H.-X.; Zhao, Y.; Dufour, M.; Li, G.; **Farina, V**.; Senanayake, C. "One-pot Regiospecific Synthesis of 2,3-Disubstituted Indoles from 2-Bromoanilides via Consecutive Palladium-Catalyzed Sonogashira Coupling, Amidopalladation and Reductive Elimination", *J. Org. Chem*., **2013**, *78,* 4558.

15. Houpis, I.N.; Lemaire, S.; **Farina, V**.; Xiao, T.; Liu, R.; Nettekoven, U.; Wang, Y. "New Synthesis of 2'-4'-Functionalized Nucleotides with Stereospecific Hydrogenation and Azidation Reactions" *Synlett*, **2013**, 313.

16. Lu, B.Z.; Li, G.; Rodriguez, S.; Liu, J.; Eriksson, M.C.; Tan, Z.; Song, J.J.; Yee, N.K.; **Farina, V**.; Senanayake, C.H. "Development of a Practical Synthesis of 4-[6-(Morpholinomethyl)-pyridin-3-yl]naphthalen-1-amine, a Key Intermediate for the Synthesis of BIRB1017, a Potent p38 MAP Kinase Inhibitor", *Synlett*, **2013**, 317.

17. Busacca, C.A.; Wei, X.; Haddad, N.; Kapadia, S.; Lorenz, J.C.; Saha, A.K.; Varsolona, R.J.; Berkenbusch, T.; Campbell, S.C.; **Farina, V**.; Feng, X.W.; Gonnella, N.C.; Grinberg, N.; Jones, P.-J.; Lee, H.; Li, Z.; Niemeier, O.; Samstag, W.; Sarvestani, M.; Schroeder, J.; Smoliga, J.; Spinelli, E.M.; Vitous, J.; Senanayake, C.H. "Practical Large-Scale Synthesis of Hepatitis C Virus Protease Inhibitor BI201335", *Asian J. Org. Chem*. **2012**, *1*, 80.

18. Lemaire, S.; Houpis, I.; Xiao, T.; Li, J.; Digard, E.; Gozlan, C.; Liu, R.; Gavryushin, A.; Diène, C.; Wang, Y.; **Farina, V**.; Knochel, P. "Stereoselective C-Glycosylation Reactions with Organozinc Reagents", *Org. Lett*. **2012**, *14*, 1480.

19. Lemaire, S.; Houpis, I.; Wechselberger, R.; Langens, J.; Vermeulen, W.A.A.; Smets, N.; Nettekoven, U.; Wang, Y.; Xiao, T.; Qu, H.; Liu, R.; Jonckers, T.H.M.; Raboisson, P.; Vandyck, K.; Nilsson, K.M.; **Farina, V.** "Practical Synthesis of (*2'R*)-2'-Deoxy-2'-C-methyluridine by Highly Diastereoselective Homogeneous Hydrogenation", *J. Org. Chem.* **2011,** *76*, 297**.**

20. Liu, J.; Li, G.; Zhang, Y.; Li, G.; Roschangar, F.; **Farina, V**.; Senanayake, C.H.; Lu, B.Z. "A Novel One-Pot, Two-Step Synthesis of Polycyclic Indoles via Intramolecular Hydroamidation / Palladium-Catalyzed Annulation" *Adv. Synth. Catal.* **2010***, 352,* 2667.

21. **Farina, V**.; Shu, C.; Zeng, X.; Wei, X.; Yee, N.K.; Senanayake, C.H. "Second-Generation Process for the HCV Protease Inhibitor BILN 2061: A Greener Approach to Ru-Catalyzed Ring-Closing Metathesis", *Org. Process Res. Dev*. **2009**, *13,* 250.

22. **Farina, V**.; Zeng, X.; Wei, X.; Napolitano, E.; Xu, Y.; Zhang, L.; Haddad, N.; Yee, N. K.; Grinberg, N.; Shen, S.; Senanayake, C. H., "The Chemistry of Cyclopropylmethylidene Complexes: Mechanistic Studies and Synthetic Implications for the Ring-Closing Metathesis Reaction", *Catalysis Today,* **2009***, 140(1-2),* 74.

23. Busacca, C.A.; Cerreta, M.; Dong, Y.; Eriksson, M.C.; **Farina, V**.; Feng, X.W.; Kim, J.-Y.; Lorenz, J.C.; Sarvestani, M.; Simpson, R.; Varsolona, R.; Vitous, J.; Campbell, S.J.; Davis, M.S.; James-Jones, P.; Norwood, D.; Qiu, F.; Beaulieu, P.L.; Duceppe, J.-S.; Hache', B.; Brong, J.; Chiu, F.-T.; Curtis, T.; Kelley, J.; Lo, Y.S.; Powner, T.H. "Development of a Pilot-Plant Process for a Nevirapine Analogue HIV NNRT Inhibitor" *Org. Process Res. Dev*. **2008**, *12*, 603.

24. Shu, C.; Zeng, X.; Hao, M.-H.; Wei, X.; Yee, N.K.; Busacca, C.A.; Han, Z.; **Farina, V**.; Senanayake, C.H. "RCM Macrocyclization at Practical Conditions: An Efficient Synthesis of HCV Protease Inhibitor BILN2061", *Org. Lett*. **2008**, *10*, 1303.

25. Ding, F.; Zhang, Y.; Qu, B.; Li, G.; **Farina, V**.; Lu, B.Z.; Senanayake, C.H., "Anionic *N*-Fries Rearrangement of *N*-Alkyl-2-iodo Anilides Induced by Iodine-Magnesium Exchange: Application for Synthesis of Strained 1,2,3-Trisubstituted Indoles", *Org. Lett*. **2008**, *10*, 1067.

26. Roschangar, F.; Rodriguez, S.; Liu, J.; Estanove, E.; Dufour, M.; **Farina, V.**; Hickey, E.; Hossain, A.; Jones, P.-J.; Lee, H.; Lu, B.Z.; Varsolona, R.; Schröder, J.; Beaulieu, P.L.; Gillard, J.; Senanayake, C., "Preparation of 3-Substituted-2-pyridin-2-ylindoles: Regioselectivity of Larock's Indole Annulation with 2-Alkynylpyridines" *Tetrahedron Lett.* **2008***, 49,* 363.

27. Fox, M.E.; Lennon, I.C.; **Farina, V**. "Catalytic Asymmetric Synthesis of Ethyl (*1R, 2S*)-Dehydrocoronamate", *Tetrahedron Lett*. **2007**, *48,* 945.

28. Wang, X.-j.; Zhang, L.; Smith-Keenan, L.L.; Houpis, I.N.; **Farina, V**., "Efficient Synthesis of (*S*)-2-(Cyclopentyloxycarbonyl)-amino-8-nonenoic Acid: Key Building Block for BILN 2061, an HCV Protease Inhibitor", *Org. Process Res. Dev.* **2007**, 11, 60.

29. **Farina, V**.; Brown, J.D., "Tamiflu: The Supply Problem", *Angew. Chem. Int. Ed. Engl.* **2006**, *45*, 7330.

30. Tsantrizos, Y.S.; Ferland, J.-M.; McClory, A.; Poirier, M.; **Farina, V.**; Yee, N. K.; Wang, X.-j.; Haddad, N.; Wei, X.; Xu, J.; Zhang, L., "Olefin Ring-Closing Metathesis as a Powerful Tool in Drug Discovery and Development: Potent Macrocyclic Inhibitors of the Hepatitis C Virus NS3 Protease", *J. Organomet. Chem.* **2006**, *691*, 5163.

31. Eriksson, M.; Napolitano, E.; Xu, J.; Kapadia, S.; Byrne, D.; Nummy, L.; Grinberg, N.; Shen, S.; Lee, H.; **Farina, V.** "The Formation of a Crystalline Oxazolidin-5-one from (*L*)-Alanine and its Use as a Chiral Template in the Practical Synthesis of α -Substituted Alanine Esters", *Chimia* **2006**, *60*, 566.
32. Zeng, X.; Wei, X.; **Farina, V**.; Napolitano, E.; Xu, Y.; Zhang, L.; Haddad, N.; Yee, N. K.; Grinberg, N.; Shen, S.; Senanayake, C. H., "Epimerization Reaction of a Substituted Vinylcyclopropane Catalyzed by Ruthenium Carbenes: Mechanistic Analysis", *J. Org. Chem.* **2006**, *71*, 8864.
33. Frutos, R. P.; Haddad, N.; Houpis, I. N.; Johnson, M.; Smith-Keenan, L. L.; Fuchs, V.; Yee, N. K.; **Farina, V.**; Faucher, A.-M.; Brochu, C.; Hache, B.; Duceppe, J.-S.; Beaulieu, P., "Practical Synthesis of 2-[2-(isopropylamino)thiazol-4-yl]-7-methoxy-1H-quinolin-4-one, Key Intermediate for the Synthesis of Potent HCV NS3 Protease Inhibitor BILN 2061", *Synthesis* **2006**, 2563.
34. Yee, N. K.; **Farina, V**.; Houpis, I. N.; Haddad, N.; Frutos, R. P.; Gallou, F.; Wang, X.-J.; Wei, X.; Simpson, R.D.; Feng, X.; Fuchs, V.; Xu, Y.; Tan, J.; Zhang, L.; Xu, J.; Smith-Keenan, L. L.; Vitous, J.; Ridges, M. D.; Spinelli, E. M.; Johnson, M.; Donsbach, K.; Nicola, T.; Brenner, M.; Winter, E.; Kreye, P.; Samstag, W., **"**Efficient Large-Scale Synthesis of BILN 2061, a Potent HCV Protease Inhibitor, by a Convergent Approach Based on Ring-Closing Metathesis", *J. Org. Chem*. **2006**, *71*, 7133.
35. Deagostino, A.; **Farina, V**.; Prandi, C.; Zavattaro, C.; Venturello, P. "New Metal-Catalyzed Synthesis of Quinoline and Chromene Skeletons", *Eur. J. Org. Chem.* **2006**, *15*, 3451.
36. Liu, J.; Shen, M.; Zhang, Y.; Li, G.; Khodabocus, A.; Rodriguez, S.; Qu, B.; **Farina, V**.; Senanayake, C. H.; Lu, B. Z., "A New Entry to Polycyclic Indole Skeletons via Palladium-Catalyzed Intramolecular Heteroannulation", *Org. Lett.* **2006**, *8*, 3573.
37. Lu, B. Z.; Zhao, W.; Wei, H.-X.; Dufour, M.; **Farina, V**.; Senanayake, C. H., "A Practical, Mild, One-Pot, Regiospecific Synthesis of 2, 3-Disubstituted Indoles via Consecutive Sonogashira and Cacchi Reactions", *Org. Lett.* **2006**, *8*, 3271.
38. **Farina, V.**; Reeves, J. T.; Senanayake, C. H.; Song, J. J. **"**Asymmetric Synthesis of Active Pharmaceutical Ingredients"**,** *Chem. Rev*. **2006,** 106, 2734.
39. Haddad, N.; Tan, J.; **Farina, V**., **"**Convergent Synthesis of the Quinolone Substructure of BILN 2061 via Carbonylative Sonogashira Coupling/Cyclization", *J. Org. Chem*. **2006**, *71*, 5031.
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