

Curriculum Vitae

Last Name Carreira **First Name** Erick M **Title:** Prof. Dr.

Date and Place of Birth May 30, 1963; Havana, Cuba

Nationality USA

Work Address/Affiliation

ETH Zürich
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Education

1984 B.Sc., Chemistry; *Univ. of Illinois*, Urbana, IL (Prof. Scott E. Denmark)
1990 Ph.D., Chemistry; *Harvard University*, Cambridge, MA (Prof. David Evans)
1991 Post-doctoral Fellow; *Caltech*, Pasadena, CA (Prof. Peter B. Dervan)

Professional Chronology

ETH Zürich

2011 Member of the Competence Center for Systems Physiology and Metabolic Diseases, ETH-Zürich
1998 Professor of Chemistry, Department of Chemistry and Applied Biosciences (CHAB)

California Institute of Technology, Pasadena

1997 Professor of Chemistry
1996 Associate Professor of Chemistry
1992 Assistant Professor of Chemistry
1990 National Science Foundation Postdoctoral Fellow

Co-worker cohort (as of May 2016)

Post-doctoral associates: 78
PhD students: 91
Undergraduates: 135
Visiting Scientists: 20
Apprentices: 12

Awards/Professional Recognition

2016 Ziegler Award Lecture, MPI Mulheim, DE
2015 Tischler Award Lecture, Harvard University
Gassman Award Lecture, University of Minnesota
Seymour Rothchild Lecture Award
2014 Yamada Koga Prize of the Japanese Chemical Society

	William J. Probst Memorial Lectureship
	Julich Visiting Professorship, Technion, Israel
	Len Owen Lecture, Imperial College London
2013	ACS Award for Creative Work in Synthetic Organic Chemistry
	Venture Kick Phase III Award: Glycemicon
	Gilbert Stork Lecture, Columbia University
2012	ERC Advanced Grant
	Spark Award (ETH) for the most promising invention/discovery in 2011
	SpiroChem: Winning Venture in the 15 th IMD Startup Competition
2011	A. Cruishank Lecturer, Gordon Research Conferences
	Arnold O. Beckman Lecture, Caltech, Pasadena, CA, USA
2010	Julius Stieglitz Memorial Lecture, University of Chicago
	Honorary Lifetime Member of the Israeli Chemical Society
2009	Award of the Klaus-Grohe Stiftung (with G. Wuitschik)
	DSM Science and Technology Award (with C. Nilewski)
2007	Tetrahedron Chair, Gent, Belgium
2006	Tetrahedron Young Investigator Award
2003	Solvias Ligand Contest 2003, Basel, CH
2002	IUPAC Thieme Prize
	Urmilla Gopal Singhal Endowed Lecture Award
	Wyeth/Columbia Research Award Lecture
2001	Leo H. Sternbach Symposium Speaker Hoffmann-La Roche, Nutley, NJ
2000	University of Cambridge-Merck Lectureship
1999	Springer Award
	AstraZeneca Research Award
1998	Nobel Laureate Signature Award
	Denkewalter Award-Loyola University of Chicago
1997	Novartis Young Investigator
1996	Presidential Early Career Award for Scientists and Engineers - PECASE
	1996 Fresenius Award
	American Chemical Society Award in Pure Chemistry
	Arthur C. Cope Scholar Award
	Zeneca Pharmaceuticals Excellence in Chemistry Awards
	Camille Dreyfus Teacher Scholar Award
	Alfred P. Sloan Fellow
1995	Merck Young Investigator Award
	David and Lucile Packard Foundation Fellowship in Science & Engineering
	Eli Lilly Young Investigator Award
	National Science Foundation CAREER Award
	Pfizer Research Award for Synthetic Chemistry
1994	Assoc. Students of the Caltech (ASCIT) 18 th Annual Award in Teaching
	Richard M. Badger Award for Teaching
1993	Arnold and Mabel Beckman Young Investigator Award
1992	National Science Foundation Starter Grant Award
	Camille and Henry Dreyfus New Faculty Award
	AT&T Foundation Award
1990-1992	National Science Foundation Postdoctoral Fellowship in Chemistry
1985-1988	National Science Foundation Predoctoral Fellowship in Chemistry
1984	E. I. du Pont de Nemours and Company Resident Research Program, awarded by University of Illinois, Department of Chemistry
	R. B. Woodward Award in Chemistry, Harvard University

Bronze Tablet Curriculum Honors with Highest Distinction,
University of Illinois
1982 Eastman Kodak Scholarship in Chemistry
1981 Freshman Scholarship in Chemistry, University of Illinois

Professional Service

2016 Scientific Advisory Panel, Cambridge Univ., Dept. of Chemistry
Chemical Letters Advisory Board
Thieme IUPAC Young Investigator Award Selection Committee
2015 Editorial Advisory Board ACS Medicinal Chemistry Letters
2015 EPSRC (UK) Fellow
2014 Astra Zeneca Chemistry External Science Panel (Sweden)
2014 RIKEN Advisory Board, Tokyo Japan
2013 Scientific Advisory Panel, Cambridge Univ., Dept. of Chemistry
Chemical Letters Advisory Board
2012 Synfacts Editor, Thieme Verlag, DE
2010 PACN Green Chemistry Congress, UNECA, Ethiopia
2009 Scientific Chairman for BOSS-13 Leuven, Belgium
2009 Max Planck Institute, Dortmund, Member of the Scientific Advisory Board
2009 Co-President, European Federation of Medicinal Chemistry Meeting in Kiev
2009 International Review Panel of Univ. Research in Chemistry in the UK
2009 Scientific Board Institut Català d'Investigació Química
2007 Deutsche Forschungsgemeinschaft: *Excellence Initiative Panel*, 2007
2007 Lonza AG, Switzerland: *Innovation Forum*, 2007
2007 National Academy of Sciences (USA): The Future of US Chemistry
Research: Benchmarks and Challenges, 2007 2002
2002 Royal Society of Chemistry, London; International Review Panel of the
Chemical Sciences in Great Britain
2005-2007 Institute Chair, Laboratory of Organic Chemistry ETH-Zurich
2001-2005 Scientific Advisory Board, Chembiotek International, India
2000 - present Associate Editor, *Organic Letters*, American Chemical Society
2000 - present Advisory Board, *Advanced Synthesis & Catalysis*, Wiley-VCH
1999 - present Advisory Board, *European Journal of Organic Chemistry*, Wiley-VCH
1998 - 2002 Member of the NIH (USA) Medicinal Chemistry Study Section
1999 - 2001 Observer, International Union of Pure and Applied Chemistry
1999 - present Editor for Special Issues and Featured Topics, *Synthesis*, Thieme Verlag
1998-2010 Scientific Advisory Board, Syntex/Johnson Matthey, UK
1998 - 2000 Advisory Board, *Organic Letters*, American Chemical Society
1997 -1998 Editor for the Americas, *Synthesis*, Thieme Verlag

Educational Tools Development

ReactionFlash App with Dr. David Evans at Elsevier
(<https://itunes.apple.com/us/app/reactionflash/id432080813?mt=8>)
Advanced Problems in Organic Chemistry (Apoc) App with Mr. N. Sievertsen of ETH-
Zürich
(<https://itunes.apple.com/ch/app/apoc-advanced-problems-in/id1019335489?mt=8>)

Publications

- (1) Directed Reduction of β -Hydroxy Ketones Employing Tetramethyl-ammonium Triacetoxy-borohydride. D. A. Evans, K. T. Chapman, E. M. Carreira *J. Am. Chem. Soc.* **1988**, 110, 3560.
- (2) Control of Remote Enoate Geometry in the Bryostatins with a Tethered Horner-Wadsworth-Emmons Reagent. D. A. Evans, E. M. Carreira *Tetrahedron Lett.* **1990**, 33, 4703.
- (3) Synthesis of 1,3-Diol Synthons from Epoxy Aromatic Precursors: An Approach to the Construction of Polyacetate-Derived Natural Products. D. A. Evans, J. A. Gauchet-Prunet, E. M. Carreira, A. B. Charette *J. Org. Chem.* **1991**, 56, 741.
- (4) Metal Versus Silyl Triflate Catalysis in the Mukaiyama Aldol Addition Reaction. E. M. Carreira, R. A. Singer *Tetrahedron Lett.* **1994**, 35, 4323.
- (5) Asymmetric Induction in Intramolecular [2+2]-Photocycloadditions of 1,3-Disubstituted Allenes with Enones and Enoates. E. M. Carreira, C. A. Hastings, M. A. Shepard, L. A. Yerkey, D. B. Millward *J. Am. Chem. Soc.* **1994**, 116, 6622.
- (6) Catalytic, Enantioselective Aldol Additions with Methyl and Ethyl Acetate *O*-Silyl Enolate: A Chiral Tridentate Chelate as a Ligand for Ti(IV). E. M. Carreira, R. A. Singer, W. Lee *J. Am. Chem. Soc.* **1994**, 116, 8837.
- (7) Synthesis of (+)-Zaragozic Acid C. E. M. Carreira, J. Du Bois *J. Am. Chem. Soc.* **1994**, 116, 10825.
- (8) Diastereoselective Acetylide Additions to a [3.2.1]-Dioxabicyclooctanone: Installation of the C(4) Stereocenter of (+)-Zaragozic Acid C. E. M. Carreira, J. Du Bois *Tetrahedron Lett.* **1995**, 36, 1209.
- (9) Catalytic, Enantioselective Acetone Aldol Additions with 2-Methoxypropene. E. M. Carreira, W. Lee, R. A. Singer *J. Am. Chem. Soc.* **1995**, 117, 3649.
- (10) (+)-Zaragozic Acid C: Synthesis and Related Studies. E. M. Carreira, J. Du Bois *J. Am. Chem. Soc.* **1995**, 117, 8106.
- (11) Total Synthesis of (+)-Trehazolin: Optically Active Spirocycloheptadienes as Useful Precursors for the Synthesis of Amino Cyclopentitols. B. Ledford, E. M. Carreira *J. Am. Chem. Soc.* **1995**, 117, 11811.
- (12) Catalytic, Enantioselective Dienolate Additions to Aldehydes: Preparation of Optically Active Acetoacetate Aldol Adducts. R. A. Singer, E. M. Carreira *J. Am. Chem. Soc.* **1995**, 117, 12360.
- (13) Nitrogen Transfer from a Nitridomanganese(V) Complex: Amination of Silyl Enol Ethers. J. Du Bois, J. Hong, M. W. Day, E. M. Carreira *J. Am. Chem. Soc.* **1996**, 118, 915.
- (14) Advances in Catalytic, Enantioselective Aldol Addition Reactions with Novel Ti(IV) Complexes. E. M. Carreira, R. A. Singer *Drug Discovery Today* **1996**, 1, 145.
- (15) Catalytic, Enantioselective Addition of Allylsilanes to Aldehydes: Generation of a Novel, Reactive Ti^{IV} Complex from TiF₄. D. R. Gauthier, Jr., E. M. Carreira *Angew. Chem. Int. Ed. Engl.* **1996**, 35, 2363.
- (16) An *In Situ* Procedure for Catalytic, Enantioselective Acetate Aldol Addition. Application to the Synthesis of (*R*)-(-)-Epinephrine. R. A. Singer, E. M. Carreira *Tetrahedron Letters* **1997**, 38, 927.

- (17) Asymmetric Photocycloadditions with an Optically Active Allenylsilane: Trimethylsilyl as a Removable Stereocontrolling Group for the Enantioselective Synthesis of Exomethylenecyclobutanes. M. S. Shepard, E. M. Carreira *J. Am. Chem. Soc.* **1997**, *119*, 2597.
- (18) Novel, Stereoselective Synthesis of 2-Amino Saccharides. J. Du Bois, C. S. Tomooka, J. Hong, E. M. Carreira *J. Am. Chem. Soc.* **1997**, *119*, 3179.
- (19) Enantioselective Allene/Enone Photocycloadditions: The Use of an Inexpensive Optically Active 1,3-Disubstituted Allene. M. S. Shepard, E. M. Carreira *Tetrahedron*, **1997**, *53*, 16253.
- (20) Synthesis and Structure of Novel Mn^{III} and Mn^V Complexes: Development of a New, Mild Method for Forming Mn≡N Bonds. J. Du Bois, C. S. Tomooka, J. Hong, E. M. Carreira, M. W. Day *Angew. Chem.* **1997**, *36*, 1645.
- (21) Nitridomanganese(V) Complexes: Design, Preparation, and Use as Nitrogen Atom-Transfer Reagents. J. Du Bois, C. S. Tomooka, J. Hong, E. M. Carreira *Accs. Chem. Res.* **1997**, *30*, 364.
- (22) Synthesis of Substituted Tetrahydrofuranones and Tetrahydropyranones: Photocycloaddition/Fragmentation Reactions of Dioxinones. J. H. Dritz, E. M. Carreira *Tetrahedron Letters* **1997**, *38*, 5579.
- (23) Asymmetric Dipolar Cycloadditions of Me₃SiCHN₂; Synthesis Of A Novel Class Of Amino Acids: Azaprolines. M. R. Mish, F. Guerra-Martínez, E. M. Carreira *J. Am. Chem. Soc.* **1997**, *119*, 8379.
- (24) The Application of Nitrido Manganese Reagents to the Synthesis of Protected *N*-Methyl D-Fucosamine. E. M. Carreira, J. Hong, J. Du Bois, C. S. Tomooka *Pure Appl. Chem.* **1998**, *70*, 1097.
- (25) Enantioselective Synthesis of ent-Stelletamide A Via a Novel Dipolar Cycloaddition Reaction of Trimethylsilyl Diazomethane. G. A. Whitlock, E. M. Carreira *J. Org. Chem.* **1997**, *62*, 7916.
- (26) Synthesis of Unsaturated Esters from Aldehydes: An Inexpensive, Practical Alternative to the Horner-Emmons Reaction under Neutral Conditions. B. E. Ledford, E. M. Carreira *Tetrahedron Letters*, **1997**, *38*, 8125.
- (27) Mechanistic Implications of Stereospecific 1,5-Hydrogen-Atom Transfer in the Formation of an Unusual Allene/Enoate Photoproduct. C. A. Hastings, J. D. Ringgenberg, E. M. Carreira *Tetrahedron Letters*, **1997** *38*, 8789.
- (28) Total Synthesis of Macrolactin A Using a Versatile Catalytic, Enantioselective Dienolate Aldol Addition Reaction. Y. Kim, R. A. Singer, E. M. Carreira *Angew. Chem. Int. Ed.* **1998**, *37*, 1261.
- (29) Apparent Catalytic Generation of Chiral Metal Enolates: Enantioselective Dienolate Additions to Aldehydes Mediated by Tol-BINAP•Cu(II) Fluoride Complexes. J. Krüger, E. M. Carreira *J. Am. Chem. Soc.* **1998**, *120*, 837.
- (30) Catalytic, Enantioselective Acetate Aldol Additions to α , β -Ynals: Preparation of Optically Active Propargylic Alcohols. R. A. Singer, M.S. Shepard, E. M. Carreira *Tetrahedron* **1998**, *54*, 7025.
- (31) Catalytic, Enantioselective Aldol Addition Reactions. E. M. Carreira. Chapter in book entitled Comprehensive Asymmetric Catalysis. Edited by Jacobsen, Pfaltz, Yamamoto, published by Springer-Verlag.
- (32) Nucleophilic Additions to a Spiro[2,4]hepta-4,6-diene 4-Nitrile: Synthesis of 1,2-Disubstituted Cyclopentenones. J. T. Starr, A. Baudat, E. M. Carreira *Tetrahedron Letters* **1998**, *39*, 5675.

- (33) Mechanistic Insights into the Cu-Catalyzed Asymmetric Aldol Reaction: Chemical and Spectroscopic Evidence for a Metalloenolate Intermediate B. L. Pagenkopf, J. Krüger, A. Stojanovic, E. M. Carreira *Angew. Chem. Int. Ed. Engl.* **1998**, 37 3124.
- (34) Convergent Synthesis of the Amphotericin Polyol Subunit Employing Asymmetric Dienolate Addition Reactions. J. Krüger, E. M. Carreira *Tetrahedron Lett.* **1998**, 39, 7013
- (35) Enantioselective Synthesis of the C(1)-C(6') Subunit of Zaragozic Acid C. E. M. Carreira, B. E. Ledford *J. Braz. Chem. Soc.* **1998**, 9, 405.
- (36) Titanium Fluoride Complexes as Catalysts for the Enantioselective Addition of Me₃Al to Aldehydes. B. L. Pagenkopf, E. M. Carreira *Tetrahedron Lett.* **1998**, 39, 9593.
- (37) Asymmetric Synthesis of Bryostatin 2. D. A. Evans, P. H. Carter, E. M. Carreira, J. A. Prunet, A. B. Charette, M. Lautens *Angew. Chem. Int. Ed.* **1998**, 37, 2354.
- (38) Total Synthesis of Macrolides. J. W. Bode, E. M. Carreira In *The Chemical Synthesis of Natural Products* (Ed. K. J. Hale); CRC: 2000, Chapter 2, 40.
- (39) Asymmetric Aldol Addition Reactions. E. M. Carreira In *Catalytic Asymmetric Synthesis* (Ed. I. Ojima), Wiley: New York, 2000.
- (40) *N,O*-Bis-(trifluoroacetyl)Hydroxylamine as a Useful Electrophilic Nitrogen Source: Catalytic Synthesis of *N*-Trifluoroacetylsulfilimines. C. S. Tomooka, D. D. LeCloux, H. Sasaki, E. M. Carreira *Organic Lett.* **1999**, 1, 149.
- (41) Facile, Novel Methodology for the Synthesis of Pyrrolidine-spiro-oxindoles: Catalyzed Ring Expansion Reactions of Cyclopropanes by Aldimines. P. B. Alper, C. Meyers, D. R. Siegel, E. M. Carreira *Angew. Chem. Int. Ed.* **1999**, 38, 3186.
- (42) Aldol Reaction: Methodology and Stereochemistry. E. M. Carreira, In *Modern Carbonyl Chemistry*, Otera, J., Ed.; Wiley: Weinheim; 2000, Chapter 8, 227.
- (43) Catalytic in Situ Generation of Zn(II)-Alkynilides under Mild Conditions: A Novel C=N Addition Process Utilizing Terminal Acetylenes. D. E. Frantz, R. Fässler, E. M. Carreira *J. Am. Chem. Soc.* **1999**, 121, 11245.
- (44) Transition Metal Fluoride Complexes in Asymmetric Catalysis B. L. Pagenkopf, E. M. Carreira *Chem. Eur. J.* **1999**, 5, 3437.
- (45) Total Synthesis of Bryostatin 2. D. A. Evans, P. H. Carter, E. M. Carreira, A. B. Charette, J. A. Prunet, M. Lautens, M. *J. Am. Chem. Soc.* **1999**, 121, 7540.
- (46) Efficient Enantioselective Synthesis of C α -Methyl Aspartic Acid and 3-Amino-3-methyl-2-pyrrolidinone. H. Sasaki, E. M. Carreira *Synthesis* **2000**, 1, 135.
- (47) Facile Entioselective Synthesis of Propargylic Alcohols by Direct Addition of Terminal Alkynes to Aldehydes. D. E. Frantz, R. Fässler, E. M. Carreira *J. Am. Chem. Soc.* **2000**, 122, 1806.
- (48) A Novel, General Method for the Synthesis of Nitrile Oxides: Dehydration of *O*-Silylated Hydroxamic Acids. D. Muri, J. W. Bode, E. M. Carreira *Org. Lett.* **2000**, 2, 539.
- (49) Synthesis of CP-225,917 and CP-263,114. J. T. Starr, E. M. Carreira *Angew. Chem.Int. Ed.* **2000**, 39, 1473.
- (50) The Discovery of Novel Reactivity in the Development of C-C Bond-Forming Reactions: In Situ Generation of Zinc Acetylides with Zn(II)/R₃N. D. E. Frantz, R. Fässler, C. S. Tomooka, E. M. Carreira, *Accs. Chem. Res.* **2000**, 33, 373.

- (51) Efficient Synthesis of (±)-Horsfiline Through the MgI₂-Catalyzed Ring Expansion Reaction of a Spiro[cyclopropane-1,3'-indole]-2'-one. C. Fischer, C. Meyers, E. M. Carreira *Helv. Chim. Acta* **2000**, 83, 1175.
- (52) Stereoselectivity in Organic Synthesis. E. M. Carreira, *Angew. Chem. Int. Ed.* **2000**, 39, 1327.
- (53) Enantioselective Synthesis of ent-Stelletamide A: Asymmetric Dipolar Cylcoadditions with Me₃SiCHN₂. G. A. Whitlock, E. M. Carreira, *Helv. Chim. Acta* **2000**, 83, 2007.
- (54) Foreword. E. M. Carreira, *Problems!* Wiley, Weinheim, 2000.
- (55) Enantioselective Synthesis of the Cyclopentyl Core of the Axinellamines. J. T. Starr, G. Koch, E. M. Carreira *J. Am. Chem. Soc.* **2000**, 122, 8793.
- (56) Synthesis of 2,3-Dihydroisoxazolines from Propargylic N-Hydroxylamines via Zn(II)-Catalyzed Ring-Closure Reaction. P. Aschwanden, D. Frantz, E. M. Carreira *Org. Lett.* **2000**, 2, 2331.
- (57) Versatile, Diastereoselective Additions of Silyl Ketene Acetals, Allyl Tributylstannane, and Me₃SiCN to N-Acyl Pyrazolines: Asymmetric Synthesis of Densely Functionalized Pyrazolidines. F. M. Guerra, M. R. Mish, E. M. Carreira *Org. Lett.* **2000**, 2, 4265.
- (58) Enantioselective Addition of 2-Methyl-3-butyn-2-ol to Aldehydes: Preparation of 3-Hydroxy-1-Butynes. D. Boyall, F. López, H. Sasaki, D. Frantz, E. M. Carreira *Org. Lett.* **2000**, 2, 4233.
- (59) Asymmetric synthesis of the C(33)-C(37) Fragment of Amphotericin B J. Tholander, E. M. Carreira *Helv. Chim. Acta* **2001**, 84, 613.
- (60) Stereoselective Syntheses of Epothilones A and B via Directed Nitrile Oxide cycloaddition. J. W. Bode, E. M. Carreira *J. Am. Chem. Soc.* **2001**, 123, 3611.
- (61) Facile, Asymmetric Addition of Acetylene to Aldehydes: In Situ Generation of Reactive Zinc Acetylides. H. Sasaki, D. Boyall, E. M. Carreira *Helv. Chim. Acta* **2001**, 84, 964.
- (62) Article for the 125th Commemorative Issue: Envisioning the Summit from Afar. E. M. Carreira *Chemical & Engineering News* **2001**, 72.
- (63) A General Solution to the Modular Synthesis of Polyketide Building Blocks: Diastereoselective Hydroxyl-Directed Nitrile Oxide Cycloadditions. J. W. Bode, N. Frafel, D. Muri, E. M. Carreira *Angew. Chem. Int. Ed.* **2001**, 40, 2082.
- (64) Rearrangement of a Tricyclic 2,5-Cyclohexadienone: Towards A General Synthetic Route to the Daphnanes and (+)-Resiniferatoxin. S. R. Jackson, M. G. Johnson, M. Mikami, S. Shiokawa, E. M. Carreira *Angew. Chem. Int. Ed.* **2001**, 40, 2694.
- (65) A Mild and Chemoselective Method for the Reduction of Conjugated Isoxazolines to β-Hydroxy Ketones. J. W. Bode, E. M. Carreira *Org. Lett.* **2001**, 3, 1587.
- (66) Stereoselective Synthesis of Epothilones A and B via Nitrile Oxide Cycloadditions and Related Studies. J. W. Bode, E. M. Carreira *J. Org. Chem.* **2001**, 66, 6410.
- (67) [2,2'-[1,1,2,2-Tetramethyl-1,2-ethanediyl-bis(Nitrilomethylidyne)]] bis[phenolato nitrido manganese. C. Czekelius, E. M. Carreira *Electronic Encyclopedia of Reagents for Organic Synthesis*.

- (68) A Simple, Mild, Catalytic, Enantioselective Addition of Terminal Acetylenes to Aldehydes. N. Anand, E. M. Carreira *J. Am. Chem. Soc.* **2001**, *123*, 9687-9688.
- (69) Discovery and Study of New Reaction Chemistry; Applications in Complex Molecule Assembly. E. M. Carreira *Chimia* **2001**, *55*, 818.
- (70) Asymmetric Synthesis of γ -Hydroxy α,β -Unsaturated Aldehydes via Enantioselective Direct Addition of Propargyl Acetate to Aldehydes. E. El-Sayed, N. K. Anand, E. M. Carreira *Org. Lett.* **2001**, *3*, 3017.
- (71) Facile Enantioselective of a Key Allylic Alcohol Building Block for Polyketide Synthesis: TiF₄-BINOL Catalyzed Allylsilylation with Allyl Trimethylsilane. J. W. Bode, D. R. Gauthier, Jr., E. M. Carreira *Chem. Commun.* **2001** 2560.
- (72) Direct Addition of TMS-acetylene to Aldimines Catalyzed by a Simple, Commercially Available Complex. C. Fischer, E. M. Carreira *Org. Lett.* **2001**, *3*, 4319.
- (73) The Diazonamides: The Plot Thickens. T. Ritter, E. M. Carreira *Angew. Chem. Int. Ed.* **2002**, *41*, 2489.
- (74) First Synthesis of Optically Pure Propargylic *N*-Hydroxylamines by Direct, Highly Diastereoselective Addition of Terminal Alkynes to Nitrones. R. Fässler, D. E. Frantz, J. Oetiker, E. M. Carreira *Angew. Chem. Int. Ed.* **2002**, *41*, 3054.
- (75) Efficient Enantioselective Additions of Terminal Alkynes and Aldehydes under Operationally Convenient conditions. D. Boyall, D. Frantz, E. M. Carreira *Org. Lett.* **2002**, *4*, 2605.
- (76) Efficient Asymmetric Synthesis of 1-Alk-2-yne-1,4-Diols. R. Sans Diez, B. Adger, E. M. Carreira *Tetrahedron* **2002**, *58*, 8341.
- (77) Total Synthesis of Leucascandrolide A. A. Fettes, E. M. Carreira *Angew. Chem. Int. Ed.* **2002**, *41*, 4098.
- (78) Enantioselective Nitrogen-transfer to Sulfides Using Manganese Nitrido Complexes. C. S. Tomooka, E. M. Carreira *Helv. Chim. Acta* **2002**, *85*, 3773.
- (79) A Smart Photochromophore through Synergistic Coupling of Photochromic Subunits. W. Zhao, E. M. Carreira *J. Am. Chem. Soc.* **2002**, *124*, 1582.
- (80) First Total Synthesis of ($\pm$)-Strychnofoline via a Highly Selective Ring-Expansion Reaction A. Lerchner, E. M. Carreira *J. Am. Chem. Soc.* **2002**, *124*, 14826.
- (81) Total Synthesis of (-)-Spirotryprostatin B. C. Meyers, E. M. Carreira *Angew. Chem. Int. Ed.* **2003**, *42*, 694.
- (82) Enantioselective Total Synthesis of Strongylodiols A and B. S. Reber, T. F. Knoepfel, E. M. Carreira *Tetrahedron* **2003**, *59*, 6813.
- (83) Synthesis of a Tridentate Ligand for Use in Ti(IV)-Catalyzed Enantioselective Acetate Aldol Addition Reaction. R. Singer, J. Brock, E. M. Carreira *Helv. Chim. Acta* **2003**, *86*, 1040.
- (84) Construction of Spiro[Pyrrolidine-3,3'-Oxindoles]-Recent Applications to the Synthesis of Oxindole Alkaloids. C. Meyers, E. M. Carreira *Eur. J. Org. Chem.* **2003** *12*, 2209.
- (85) Leucascandrolide A: Synthesis and Related Studies. A. Fettes, E. M. Carreira *J. Org. Chem.* **2003**, *68*, 9274.
- (86) The First Conjugate Addition Reaction of Terminal Alkynes Catalytic in Copper: Conjugate Addition of Alkynes in Water. T. F. Knoepfel, E. M. Carreira *J. Am. Chem. Soc.* **2003**, *125*, 6054.

- (87) Catalytic Enantioselective Conjugate Reduction of β,β -Disubstituted Nitroalkenes. C. Czekelius, E. M. Carreira *Angew. Chem. Int. Ed.* **2003**, *42*, 4793.
- (88) Asymmetric Conjugate Addition Reactions of Meldrum's Acid Derived Acceptors Employing Chiral Phosphoramidite Ligands. T. Watanabe, T. F. Knoepfel, E. M. Carreira *Org. Lett.* **2003**, *5*, 4557.
- (89) Facile One-pot Synthesis of Photochromic Pyrans. W. Zhao, E. M. Carreira *Org. Lett.* **2003**, *5*, 4153.
- (90) Readily Available [2.2.2]-Bicyclooctadienes as New Chiral Ligands for Ir(I): Catalytic, Kinetic Resolution of Allylic Carbonates. C. Fischer, C. Defieber, T. Suzuki, E. M. Carreira *J. Am. Chem. Soc.* **2004**, *126*, 1628.
- (91) Infra-Red Spectroscopic Investigations on the Metalation of Terminal Alkynes by $\text{Zn}(\text{OTf})_2$. R. Faessler, C. Tomooka, D. Frantz, E. M. Carreira *Proc. Nat. Acad. Sc. USA*, **2004**, 5843.
- (92) Catalytic, Enantioselective Aldol Addition Reactions. E. M. Carreira, A. Fettes, C. Marti In *Organic Reactions*, **2006**, 67.
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- (281) Biological Investigations of (+)-Danicalipin A Enabled Through Synthesis A. M. Bailey, S. Wolfrum, and E. M. Carreira *Angew. Chem. Int. Ed.* **2016**, *55*, 639.
- (282) Formation of α -SF₅-Enolate Enables Preparation of 3-SF₅-Quinolin-2-ones, 3-SF₅-Quinolines and 3-SF₅-Pyridin-2-ones: Evaluation of their Physicochemical Properties A. Joliton, J.-M. Plancher, and E. M. Carreira *Angew. Chem. Int. Ed.* **2016**, *5*, 2113.
- (283) Synthesis and Biological Evaluation of Bromo- and Fluorodanicalipin A S. Fischer, N. Huwyler, S. Wolfrum and E. M. Carreira *Angew. Chem. Int. Ed.* **2016**, *55*, 2555.
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- (285) Rh-Catalyzed Stereospecific Synthesis of Allenes from Propargylic Benzoates and Arylboronic Acids J. Ruchti and E. M. Carreira *Org. Lett.* **2016**, *18*, 2174.
- (286) Synthetic Chemistry of Phytocannabinoids M. A. Schafroth and E. M. Carreira In press.

- (287) Structural and Conformational Aspects of Equatorial and Axial Trifluoromethyl, Difluoromethyl, and Monofluoromethyl Groups Q. A. Huchet, W. B. Schweizer, B. Kuhn, E. M. Carreira, K. Müller *Chem. Eur. J.* **2016**, *22*, 16920.
- (288) Effect of Partially Fluorinated N-Alkyl-Substituted Piperidine-2-carboxamides on Pharmacologically Relevant Properties R. Vorberg, N. Trapp, D. Zimmerli, B. Wagner, H. Fischer, N. A. Kratochwil, M. Kansy, E. M. Carreira, K. Müller *ChemMedChem* **2016**, *11*, 2216.
- (289) Iridium-catalyzed Enantioselective Allylic Vinylation with Potassium Alkenyltrifluoroborates. J. Y. Hamilton, D. Sarlah, E. M. Carreira *Organic Syntheses* **2015**, *92*, 1.
- (290) Cyclopropanation Strategies in Recent Total Syntheses. C. Ebner, E. M. Carreira *Chem. Rev.* Submitted.
- (291) Study of Intermediates in Iridium-(Phosphoramidite,Olefin) Catalyzed Enantioselective Allylic Substitution S. L. Rössler, S. Krautwald, and E. M. Carreira Submitted.

Spin-off activity: Glycemicon, Zurich, Switzerland (Ranked 11 in the top 100 Spinoff companies in Switzerland) <http://www.glycemicon.com/>
 Stemergie Biotechnology SA, Geneva, Switzerland
 SpiroChem, Zürich, Switzerland (Bilanz Magazine: Top 50 Companies to Invest in in Switzerland) <http://spirochem.com/>
 Oncalis Pharmaceuticals, Zürich, Switzerland
 Lipideon Biotechnology AG, Zürich, Switzerland

Patents 36 (titles available upon request)

Scientific Project-based Collaborations:

Prof. A. Adibekian, Department of Chemistry, University of Geneva, Switzerland.

Prof. J. Gertsch, Institute of Biochemistry and Molecular Medicine, NCCR TransCure, University of Bern, Switzerland

Dr. Abraham Brass, Department of Microbiology and Physiological Systems, University of Massachusetts Medical School, Worcester, MA 01655, USA; Ragon Institute of Massachusetts General Hospital, M.I.T. and Harvard University, Charlestown, MA 02129, USA; Department of Microbiology and Physiological Systems, University of Massachusetts Medical School, Albert Sherman Center, 368 Plantation Street, 8 1001, Worcester, MA 01655, USA

Prof. Dr. David BeenHouwer, Division of Infectious Diseases, Department of Medicine, The David Geffen School of Medicine at UCLA, California (USA)

Dr. Koteswara R. Chintalacharuvu, Division of Infectious Diseases, Veterans Affairs Greater Los Angeles Healthcare System, Los Angeles, California (USA)

Prof. Nenad Ban, Institute of Molecular Biology and Biophysics, ETH-Zurich (CH)

Dr. Virgine Clement, Stemergie Biotechnology (CH)

Dr. Bernd Wolscheid, ETH Systems Biology (CH)

Dr. Christian Wolfrum, ETH Biology (CH)

Dr. Alcide Barberis, Oncalis Pharmaceuticals (CH)

Dr. Ivan Huc, Institut Europeen de Chimie et Biologie (FR, IECB)

Prof. Dr. Jacob Golenser, The Hebrew University of Jerusalem (Israel)

Dr. med. G. Schulthess, Department of Internal Medicine, University of Zürich (CH)

Dr. Y.A. Ioannou, Department of Human Genetics, The Mount Sinai School of Medicine, (USA)

Dr. M. C. Phillips Children's Hospital of Philadelphia and University of Pennsylvania School of Medicine, (USA)

Lonza AG, Dr. J. Pont, (CH)

Dr. Sheo Singh, Merck (USA)

Dr. Klaus Mueller, Roche (CH)

Dr. Marck Rogers-Evans, Roche (CH)

Dr. Henner Knust, Roche (CH)

Prof. Gian Paolo Rossini, Università di Modena e Reggio Emilia (Italy)

Dr. Kazuo Murakami, Sumitomo Fine Chemicals (Japan)

Dr. Alain de Mesmaeker, Syngenta Crop Protection (CH)

Prof. Dr. Kazuro Shiomi, Laboratory of Biological Functions; Department of Drug Discovery Sciences; Kitasato Institute for Life Sciences (Japan)

Prof. Dr. A. Trokla, Institut für Medizinische Virologie at the University of Zurich, (CH)

Non-scientific Articles

Am Checkpoint Buerstensaum Wirds Eng *Chemische Rundschau* **2005**, 5, 68.

Naturstoffe: Faszination, Vorbild und Herausforderung *ETH Globe* **2011**, 4, 40.

Consulting: USA, Canada, Europe, Switzerland, Africa, and Asia: listing available on request

Funding (past and present): European Research Commission; Swiss National Science Foundation; ETH-Zurich; Consortium for Technical Innovation (Switzerland); F. Hoffmann-La Roche; Eli Lilly; Novartis; Merck; Syngenta; Sumitomo Fine Chemicals; Pfizer; Janssen; BMS; Lipideon; Glycemicon; SpiroChem; Stemergie; Packard Foundation; Beckman Foundation; AT&T; National Science Foundation; Johnson & Johnson; National Sciecone Foundation (USA); National Institutes of Health (USA); Camille and Henry Dreyfus Foundation; Astra-Zeneca.

Outreach (pro bono)

2016

September 26, 2016, Workshop TecDays at a local middle school to familiarize students with chemistry and careers in research and teaching.

Location: <https://www.fgz.ch/en/>

Day of Open Lab 2016: crafted and implemented activities for a day, during which the general public can visit my laboratories and get insight into research in Chemistry:

<https://www.chab.ethz.ch/outreach/oeffentlichkeitsarbeit/tag-der-offenen-laboratorien/tol-2016.html>

Experimental Open House for Children: Participated and designed an afternoon event in which children in the age group 7-12 visit the laboratories and are engaged in science: <https://www.chab.ethz.ch/outreach/oeffentlichkeitsarbeit/fuer-mittelschulen---kinder.html>.

2015

Supervised the development of an open access app (Apoc: Advanced Problems in Organic Chemistry)) with which students can access on demand (off-line and on-line) problems in organic chemistry. Apoc is available at no cost and can be downloaded from various internet venues, such as i-Tunes and Google Store:

<https://itunes.apple.com/ch/app/apoc-advanced-problems-in/id1019335489?mt=8>

Supervised the development of an Open Access App in collaboration with Elsevier. The App, which goes by the name of ReactionFlash, provides a compendium of name reactions in organic chemistry. Two different learning modes can be activated. One of these is similar to a flashcard setup with a large database of reactions. In the second mode students are prompted to review their knowledge of reactions in a game-type setup, which prompts students to select starting materials, reagents, and products for a given transformation. The App is available at no cost and can be downloaded from various internet venues, such as i-Tunes: <https://www.elsevier.com/about/press-releases/clinical-solutions/elsevier-supports-the-next-generation-of-chemists-with-mobile-access-to-named-reactions>.

Presentation at the Rotary Club in Zurich promoting science and education to an audience of bankers and businessmen at the invitation of Dr. D. Kalias.

2012

Participated in an EU-sponsored event to craft new paradigms for teaching in the 21st Century: University of Namur, Belgium.

2011-2015

Participated in workshops sponsored by the American Chemical Society (ACS Campus) in Italy and The Netherlands promoting ethical practices in publishing.

2010

Participated in outreach meetings with undergraduate students from various universities in the Republic of South Africa to promote science and education.

2009

Participated in the Pan Africa Chemistry Network Congress at the United Nations Headquarters in Addis, Ababa, Ethiopia.

2005

Participated in outreach programs in Kolkata, India, which involved visiting a collection of high schools and participating in workshops/presentations promoting education and science.

1998

Visited several junior high schools in Los Angeles, CA to engage students and promote science.

Top Ten Publications (selected by EMC)

- (1) Catalytic, Enantioselective Aldol Additions with Methyl and Ethyl Acetate *O*-Silyl Enolate: A Chiral Tridentate Chelate as a Ligand for Ti(IV). E. M. Carreira, R. A. Singer, W. Lee *J. Am. Chem. Soc.* **1994**, *116*, 8837.
- (2) Apparent Catalytic Generation of Chiral Metal Enolates: Enantioselective Dienolate Additions to Aldehydes Mediated by Tol-BINAP•Cu(II) Fluoride Complexes. J. Krüger, E. M. Carreira *J. Am. Chem. Soc.* **1998**, *120*, 837.
- (3) Facile enantioselective synthesis of propargylic alcohols by direct addition of terminal alkynes to aldehydes D. E. Frantz, R. Fassler, E. M. Carreira *J. Am. Chem. Soc.* **2000** *122*, 1806.
- (4) Readily available [2.2.2]-bicyclooctadienes as new chiral ligands for Ir(I): Catalytic, kinetic resolution of allyl carbonates C. Fischer, C. Defieber, T. Suzuki, E. M. Carreira *J. Am. Chem. Soc.* **2004**, *126*, 1628.
- (5) Asymmetric Synthesis of 3,3-Diarylpropanals using Chiral Diene-Rhodium Catalysts. J.-F. Paquin, C. Defieber, C. R. J. Stephenson, E. M. Carreira *J. Am. Chem. Soc.* **2005**, *127*, 10850.
- (6) Hydrazines and Azides via the Metal-catalyzed Hydrohydrazination and Hydroazidation of Olefins J. Waser, B. Gaspar, H. Nambu, E. M. Carreira *J. Am. Chem. Soc.* **2006**, *128*, 11693.
- (7) Oxetanes in Drug Discovery: Structural and Synthetic Insights G. Wuitschik, Georg; Carreira, Erick M.; B. Wagner, Bjoern, H. Fischer, I. Parilla, F. Schuler, M. Rogers-Evans, K. Müller *J. Med. Chem.* **2010**, *53* 3227.
- (8) Total Synthesis of a Chlorosulfolipid Cytotoxin Associated with Seafood Poisoning. C. Nilewski, R. W. Geisser and E. M. Carreira *Nature* **2009**, *457* (29), 573.
- (9) Iron-Catalyzed Cyclopropanation in 6M KOH with in Situ Generation of Diazomethane. B. Morandi and E. M. Carreira *Science*, **2012**, *335*, 1471.
- (10) Enantio- and Diastereodivergent Dual Catalysis: α -Allylation of Branched Aldehydes S. Krautwald, D. Sarlah, M. A. Schafroth, and E. M. Carreira *Science* **2013**, *340*, 1065.