

***Railway Chemistry.
Departure Station: Italy, Direction: Austria.***

Alumni Talk
oeAD 

Vienna, 15.10.2015

Dr. Vittorio Pace
Group Leader in Synthetic Chemistry
Department of Pharmaceutical Chemistry
University of Vienna (Austria)
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VP Synopsis

- ***Born Nov 1981 in Bologna***
- ***Raised in Palata (Southern Italy)***
- ***Liceo Scientifico “Alfano da Termoli” 1995-2000***
- ***First Touch with Chemistry***



Perugia Student in Pharmacy

*2nd Year: Fascinated by Organic Chemistry
(Prof. Dr. M. Curini)*



Erasmus in Madrid

*3rd Year - 2003: De Madrid al Cielo
Coming back after the MSc? Yes!*



Laurea in Perugia

- *110 cum laude*

Functionalization of Coumarin Derivatives: Synthesis of 3-Substituted 5-amino-1,10b-dihydro-2H-cromeno-[3,4-c]pyridine-2,4-(3H)diones.



Doctoral Studies

01.2006 – 07.2010

Complutense University

Madrid, Faculty Chemical Sciences

*“Integrated Approach to the Synthesis and Reactivity of
New α -Haloketones”*

Premio Extraordinario de Doctorado UCM



Prof. Andrés R. Alcántara



Prof. Josep V. Sinisterra

PhD in Spain and More

4 years including a 2nd year examination (MPhil): *Diploma de Estudios Avanzados*

FPU (*Formación de Profesorado Universitario*) Ministry of Education (Ref. 2005-5112) 48 months grant

Visiting PhD at Trieste (L. Gardossi), Graz (W. Kroutil)

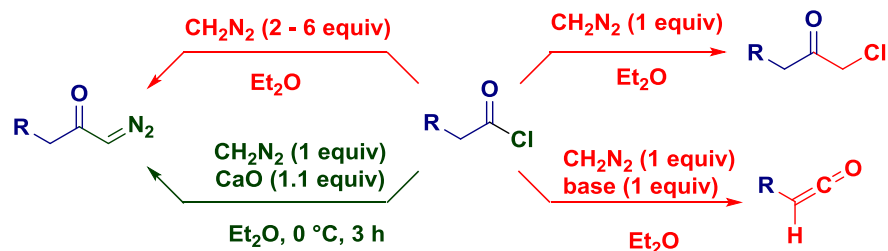
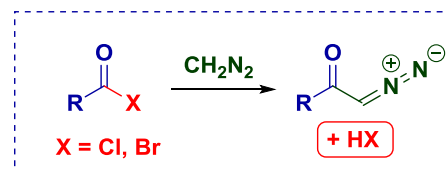


Gent: Discovering Homologations

- *Taking Inspiration from the Past for Developing Modern Synthetic Tools*
(Prof. N. De Kimpe)

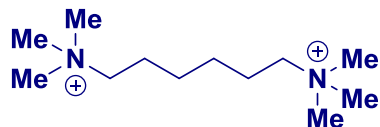


Arndt-Eistert

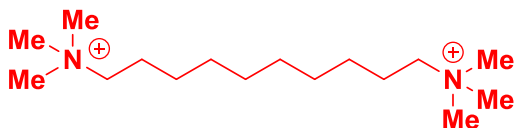


Pace, V.; Verniest, G.; Sinisterra, J. V.; Alcantara, A. R.; De Kimpe, N. *J. Org. Chem.* **2010**, *75*, 5760
See also: Pace, V.; Hoyos, P.; Alcantara, A. R.; Holzer, W. *ChemSusChem* **2013**, *6*, 905.

Homologations in Medicinal Chemistry

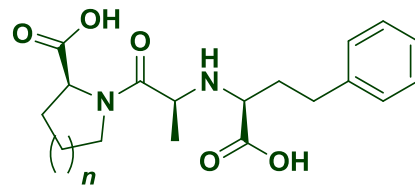


Hexamethonium
non depolarising ganglionic blocker
Nicotinic receptor antagonist



Decamethonium
depolarising muscle relaxant
Nicotinic receptor partial agonist

Medicinal Chemistry



$n = 2$ (Enalaprilat) IC_{50} 19000 nM

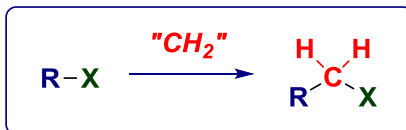
$n = 3$ IC_{50} 1700 nM

$n = 5$ IC_{50} 4.8 nM

(angiotensine-converting enzyme)

For a leading discussion, see: Wermuth, C. G. in "The Practice of Medicinal Chemistry" Wermuth C. G. ed.; Elsevier (2008) 3rd Ed. pp. 275-289

Homologation Reaction



Recommended reading: *Name Reactions for Homologation*, Li, J. -J. Ed.; Wiley: Hoboken (2009)

Postdoctoral Studies – Part 1

2010-2011 Universität Wien, Austria (Prof. Dr. W. Holzer)

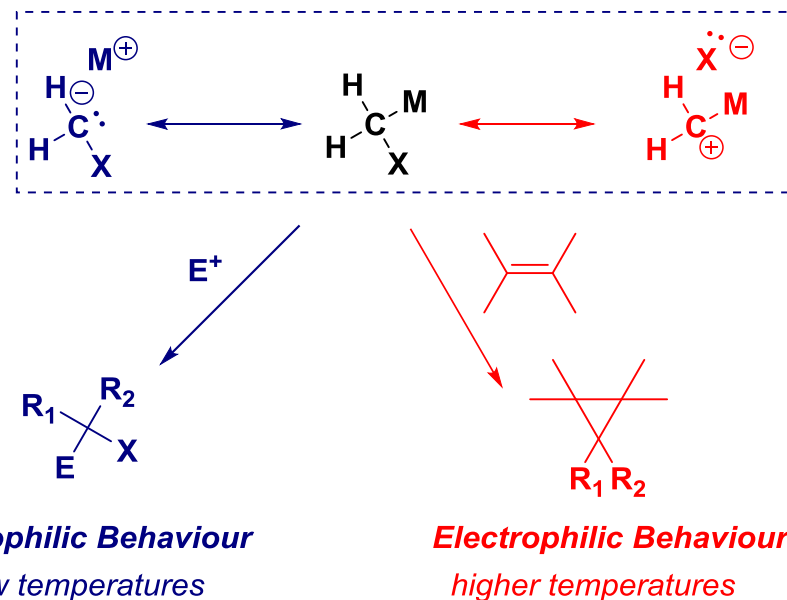
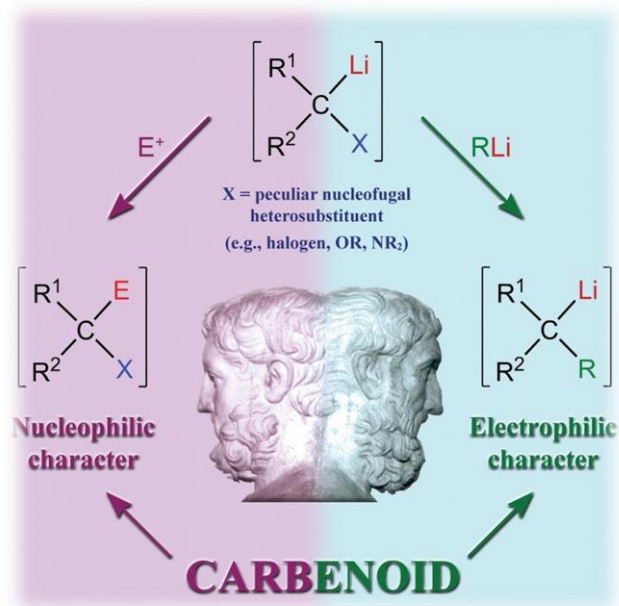
Ernst Mach Postdoctoral Fellow

“New homologation methodologies based on chloromethylithium chemistry”



- VP starts to launch his chemistry
(e-mail exchange on 16.02.2010)
- Excellent environment – infrastructures
 - Motivation
 - Strong Support

Lithium Halocarbenoids as Homologating Agents



Carbenoids: species presenting reactions qualitatively analogous to those of carbenes without necessarily being free divalent carbon species

Closs, G. L.; Moss, R. A. *J. Am. Chem. Soc.* **1964**, 86, 4042

Seminal work: Köbrich, G. *Angew. Chem. Int. Ed.* **1967**, 6, 41. For selected reviews, see: Capriati, V.; Florio, S. *Chem. Eur. J.* **2010**, 16, 4152; Capriati, V. In *Contemporary Carbene Chemistry*, Moss, R. A., Doyle, M. P., Eds.; John Wiley & Sons: Hoboken, 2014; pp. 327-362. Boche, G.; Lohrenz, J. C. W. *Chem. Rev.* **2001**, 101, 697; Pace, V. *Aust. J. Chem.* **2014**, 67, 311; Braun, M. *Lithium Carbenoids. In The Chemistry of Organolithium Compounds*; Rappoport, Z., Marek, I., Eds.; Wiley-VCH: Chichester, 2004; p 829. Nishimura, R. H. V.; Murie, V. E.; Soldi, R. A.; Lopes, J. L. C.; Clososki, G. C. *J. Braz. Chem. Soc.* **2015**, just accepted

Postdoctoral Studies – Part 2

09.2011 – 09.2013

The University of Manchester, UK (Prof. Dr. D. J. Procter)

Leverhulme Trust Research Grant

“Asymmetric Copper-catalysis in the First Total Synthesis of the Taedolidols”



Synthetic Tactics

Going into the deepest chemical concept

Knowing and rationalizing phenomena

Where I realized I could be a good chemist (if I could survive)

Postdoctoral Studies – Part 3

09.2013 – 08.2014 (expected 09.2015)

Stockholm University, Sweden (Prof. Dr. B. Olofsson)

Senior Postdoc Grant

“New Vistas on Amide Chemistry: Any Chance to React with Organometallics?”



Start to think on projects, applications and future

Full scientific freedom

9-months VIP Review writing for Adv. Synth. Catal.

Group Leader in Vienna: The Dream is Reality!

08.2013 – 08.2020



Department of Pharmaceutical Chemistry
(Prof. Dr. T. Langer – Prof. Dr. E. Urban)

Towards the Austrian Habilitation (Venia Docendi)

Ass. Prof. (Habil. Nov. 2014 – MIUR)



Launching my group

- ***Hard work***
- ***Motivation***
- ***Friendly***

My Work

Studying – Reading Literature

Writing Manuscripts – Peer Review Duties

Thinking – Elaborating Ideas - Projects

Organizing and Supervising People

Networking (i.e. Zazà)

Teaching

Applications

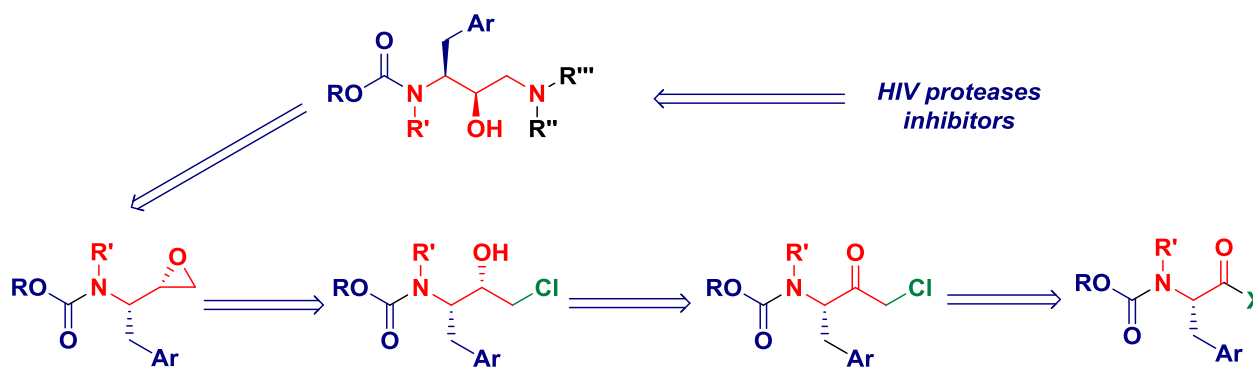
Research Focus: Intersecting Areas

Organolithium – Organomagnesium - Carbenoids

Diazo chemistry

Eco-friendly solvent

Applications in Pharmaceutical Chemistry (Dept. Projects)



For reviews, see: (a) Reeder, M. R.; Anderson, R. M. *Chem. Rev.* **2006**, *106*, 2828; (b) Izawa, K.; Onishi, T. *Chem. Rev.* **2006**, *106*, 2811; (c) Honda, Y.; Katayama, S.; Kojima, M.; Suzuki, T.; Kishibata, N.; Izawa, K. *Org. Biomol. Chem.* **2004**, *2*, 2061; (d) Karjalainen, O. K.; Koskinen, A. M. P. *Org. Biomol. Chem.* **2012**, *10*, 4311; (e) Pace, V.; Castoldi, L.; Pregolato, M. *Mini Rev. Med. Chem.* **2013**, *13*, 988. For a study on the ring-closure of epoxides starting from halohydrins, see: (e) Pace, V.; Hoyos, P.; Sinisterra, J. V.; Alcántara, A. R.; Holzer, W. *Synlett* **2011**, 1831.

People Recruiting Overview

2 Uni:docs Fellowships (Castoldi – Monticelli)

4 Ernst Mach Fellowships (Castoldi, Parisi, Murgia, De La Vega)

2 PhD Co-tutelle (Parisi-Bari, Rui-Pavia)

1 PhD Awarded (Mamuye-Sassari)

1 Visiting PhD Student (Pelosi-Perugia)

1 OEAD Austria-India Project (Thavaraj-Sastra)

Erasmus (Senator-TC Dublin, Marusakova-Comenius, Stanchev-KCL, Ruiz Garcia Barcelona)

Visiting MSc (Senatore-Perugia, Valenti-Pavia, Pismataro-Siena)

MSc WU (Safranek, Sommeliker, Lukas, Raab, Kalkus)

Bibliometric Data

> 55 papers (incl. research articles, reviews, monographs, book sections)

H index = 14

> 600 citations received (2008-2015)

Corresponding Author > 40 papers

1 VIP paper

1 Invited Feature Paper

1 Guest Editor (Curr. Org. Chem. 2013)

2 Cover Articles

5 Highlights in Synfacts

> 20 Talks at Conferences - > 30 Posters

Awards

2015 International Caglioti Award (Italian Academy of Sciences)

2015 Ciamician Medal (Italian Chemical Society)

2015 Young Investigator Award (Life Sciences – Uni Vienna)

2015 Visiting Professor Grant Uni Perugia

2015 OEAD SAIA Travel Grant Slovakia

2010 PhD Extraordinary Prize (UCM Madrid)

2005 Best Pharmacy Student (Perugia)

The Keys of My Career

Strong Determination

Studying

Clear Definition of Objectives

Diplomacy (but, o con me o contro di me)

Networking

Friends, Clubbing, Travelling

Vienna Final Station? I want!

