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### Education

Ph. D. (1981), Université Louis Pasteur (Strasbourg-France)

### Academic Carrier

1981-1982: Post-doctoral fellow, Department of Chemistry, UCLA (Los Angeles, USA)  
(supervisor: Prof. D. J. Cram)

1982 (November): Chargé de recherche CNRS- Université Louis Pasteur-Strasbourg-France

1999 (November): Directeur de recherche CNRS- Université Louis Pasteur-Strasbourg-France

### Total Publications

Publications:78; Patents: 5, Citation : 660, h-index: 15

### Research Interests

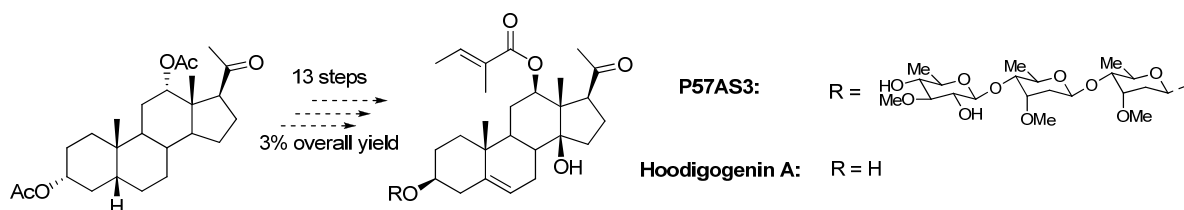
We are involved in the development of new methodologies in organic synthesis calling for intramolecular anionic cascade reactions, intramolecular alkynylogous Mukaiyama aldol reactions and organocatalyzed reactions. Thus, a wide range of bi or tricyclic carbon frameworks bearing quaternary stereogenic centers were isolated with a total diastereoselectivity for the ring junction. Asymmetric versions of these cascade reactions, as well as the scope and limitations of these reactions are under investigation. On the other hand, a new methodology that combines strain induced ring opening reactions and Lewis acid induced Dieckmann condensations is currently underway allowing new approaches to the syntheses of bioactive compounds like Hamigeran B and Mangicol. Another research area of our group is the hemi- and total synthesis of steroids especially those presenting anti-obesity or cardiogenic properties. We are also involved in food chemistry. For example, the synthesis of highly pure (oxy)phytosterol(esters) and the synthesis of irradiated food markers were achieved in order to provide sufficient amounts of compounds for analytical purposes and for biological in vitro and in vivo studies concerning especially the colon cancer.

# Synthesis of Hoodigogenin A, Aglycone of Natural Appetite Suppressant Glycosteroids Extracted from *Hoodia gordonii*

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Obesity is one of the major health concerns in the 21<sup>st</sup> century. Worldwide, more than 500 million people are obese and 1.5 billion are overweight. The increase of childhood obesity is a worrisome problem.<sup>1</sup> In this context, 14 $\beta$ -hydroxy pregnane glycosides (as for example P57AS3) extracted from *H. gordonii*, a succulent plant isolated from Apocynaceae, are suggested to have appetite suppressant properties.<sup>2</sup> However, limited reports on biological studies concerning the appetite suppressant properties are available in the open literature. One reason for that is the poor availability of these glycosteroids. Indeed, *H. gordonii* is a protected plant and the yield of extraction lies between 0.003% and 0.02%. To overcome that, synthesis represents an interesting alternative to the extraction methods. Thus, starting from 3 $\alpha$ ,12 $\alpha$ -diacetoxy-pregnanone, the first synthesis of Hoodigogenin A (aglycone of the natural 14  $\beta$ -hydroxy pregnane glycosides) was achieved (13 steps, 3% overall yield), the key step being a Norrish-Prins reaction.<sup>3</sup>



(1). World Health Organization, Fact sheet N°311 updated March 2011 (see: <http://www.who.int/topics/obesity/en/>)

(2). van Heerden F. R., Marthinus H. R., Maharaj V. J. , Vleggaar R, Senabe J. V., Gunning P. J. *Phytochemistry* **2007**, 68: 2545; (c) van Heerden F. R. *J Ethnopharmacol* **2008**; 119, 434.

(3). Geoffroy P.; Ressault B.; Marchioni E.; Miesch M. *Steroids* **2011**, 76, 702-708; (b) Geoffroy P.; Ressault B.; Marchioni E.; Miesch M. *Steroids* **2011**, 76, 1166-1175 ; (c) Geoffroy P.; Ressault B.; Miesch M.; Procédé de synthèse de stéroïdes, French Patent Application N°10/03194, 29/07/2010; (d) Support of this work was provided by ANR-07-PCVI-0016-01.