



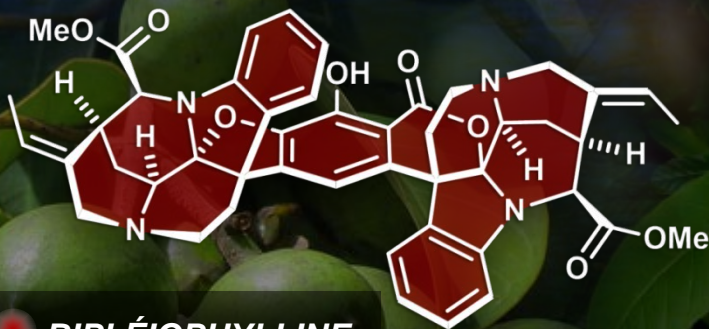


Erwan POUPON/Laurent EVANNO

« Pharmacognosie et chimie  
des substances naturelles »

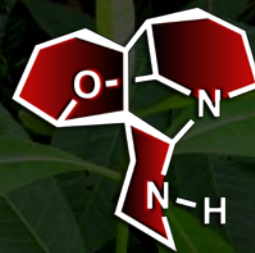






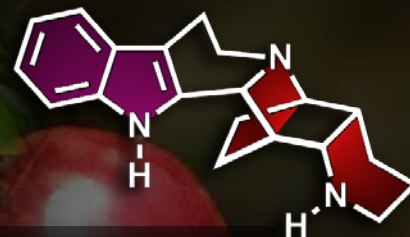
**BIPLÉIOPHYLLINE**

[*Nature Chem.* 2017]

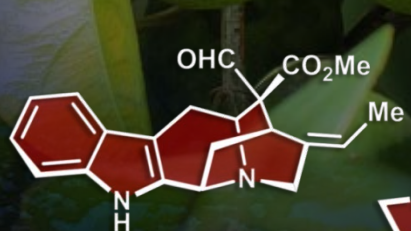


**NITRARAMINE**

[*Org. Lett.* 2005, *Tetrahedron.* 2006, *Org. Biol. Chem.* 2010, *Nat. Prod. Rep.* 2010, *Chem. Eur. J.* 2013, *ibid* 2015]



**NITRARINE**

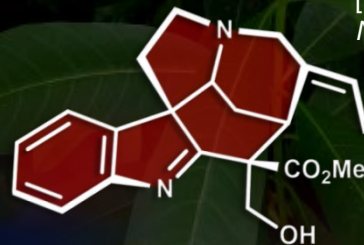


**POLYNEURIDINE**

[*Tetrahedron Lett.* 2016]

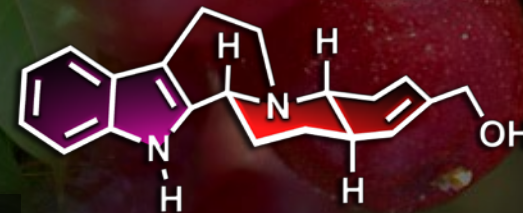


**LEUCORIDINE A**



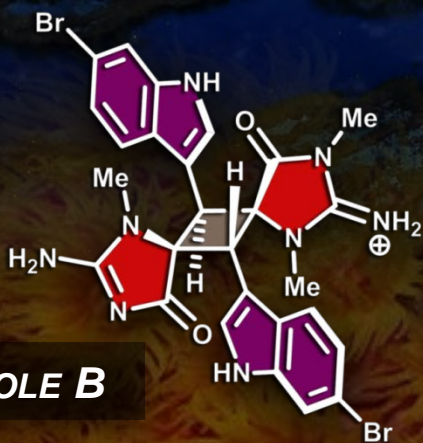
**PRÉAKUAMMINE**

[*Eur. J. Org. Chem.* 2015, *ibid* 2016]



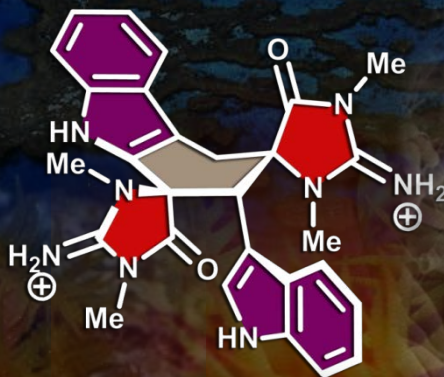
**TANGUTORINE**

[*Org. Lett.* 2009]



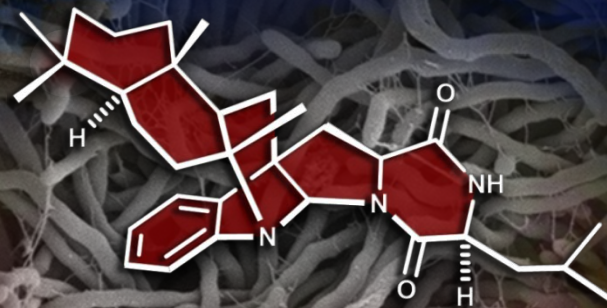
**DICTAZOLE B**

[*Angew. Chem. Int. Ed.* 2014]



**TUBASTRINDOLE B**

[*Org. Lett.* 2014]

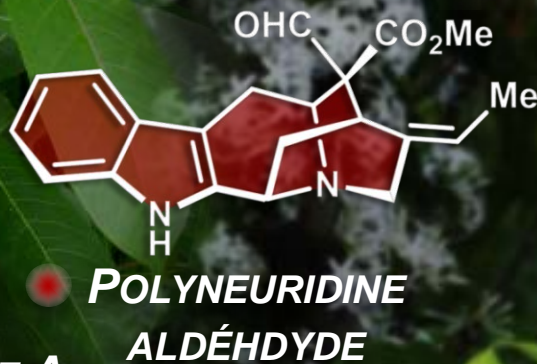
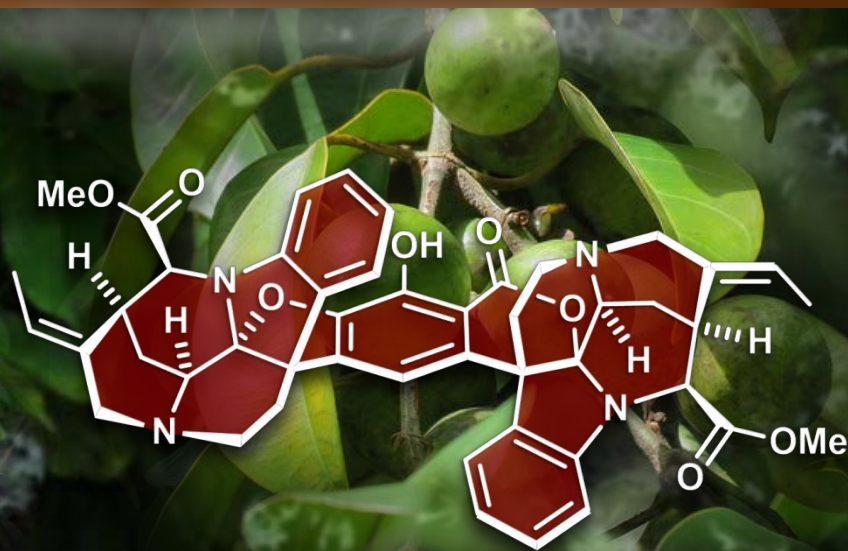
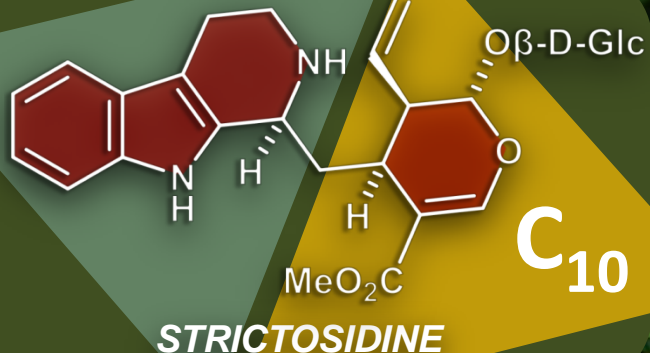


**DRIMENTINE D**

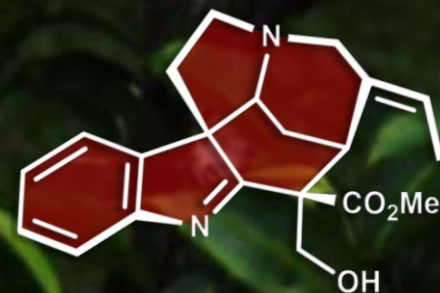
[*Eur. J. Org. Chem.* 2016]



# LES « BONS VIEUX » ALCALOÏDES INDOLOMONOTERPÉNIQUES



● **BIPLÉIOPHYLLINE**



● **PRÉAKUAMMICINE**

[S. Benayad, K. Ahamada, G. Lewin, L. Evanno, E. Poupon, *Eur. J. Org. Chem.* **2016**, 1494-1499]

[K. Ahamada, S. Benayad, E. Poupon, L. Evanno, *Tetrahedron Lett.* **2016**, 1718-1720]

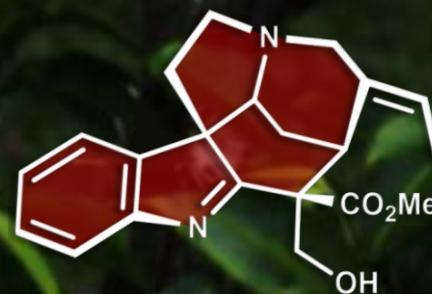
[S. Benayad, M. A. Beniddir, L. Evanno, E. Poupon, *Eur. J. Org. Chem.* **2015**, 1894-1898]



# LES « BONS VIEUX » ALCALOÏDES INDOLOMONOTERPÉNIQUES



**Jacques Poisson**  
[1927-2015]



**PRÉAKUAMMICINE**

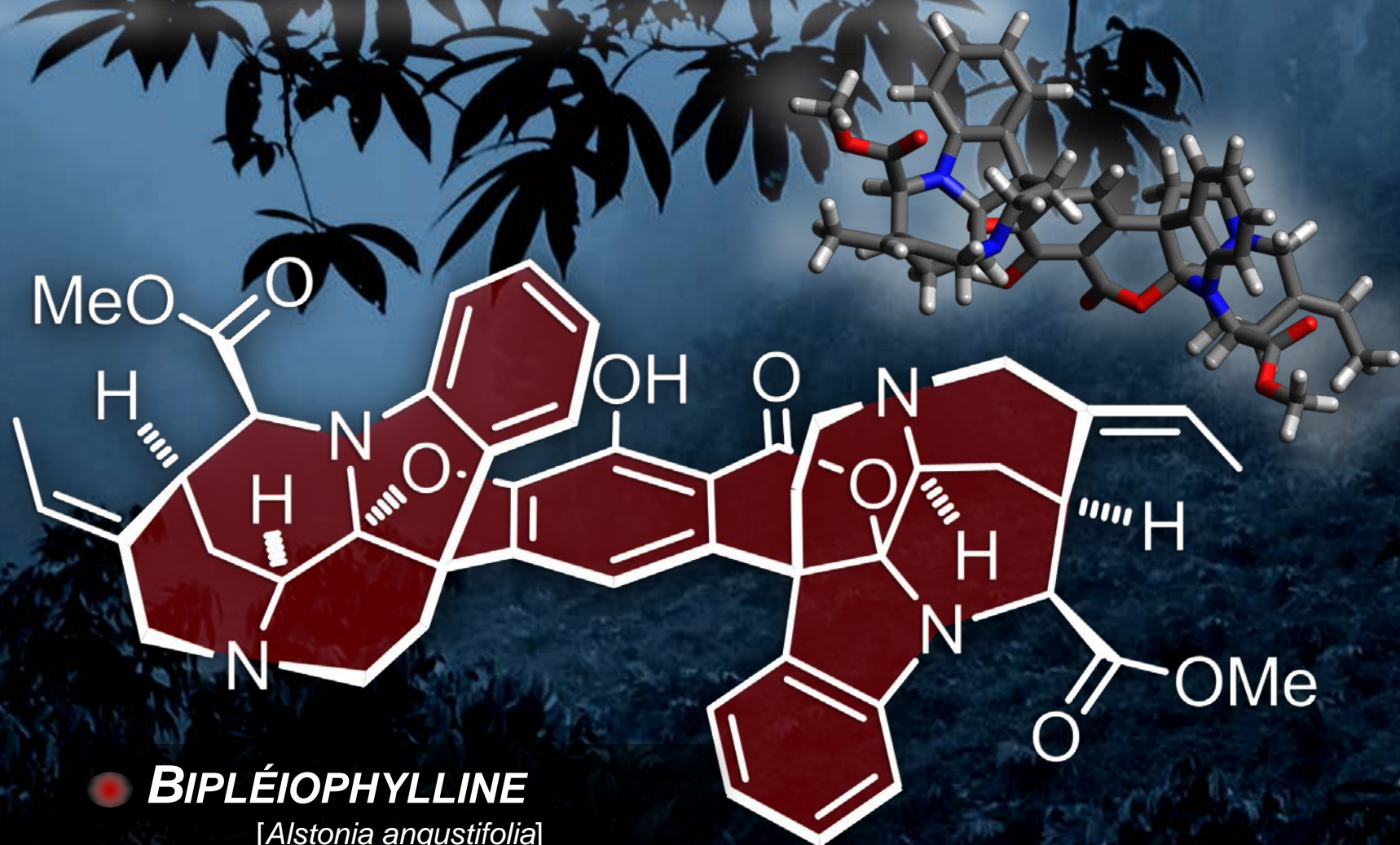
[S. Benayad, K. Ahamada, G. Lewin, L. Evanno, E. Poupon, *Eur. J. Org. Chem.* **2016**, 1494-1499]

[K. Ahamada, S. Benayad, E. Poupon, L. Evanno, *Tetrahedron Lett.* **2016**, 1718-1720]

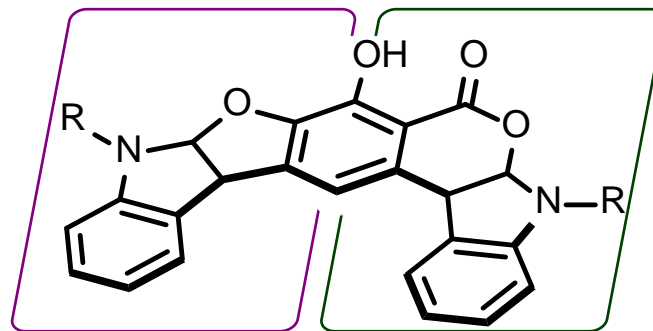
[S. Benayad, M. A. Beniddir, L. Evanno, E. Poupon, *Eur. J. Org. Chem.* **2015**, 1894-1898]



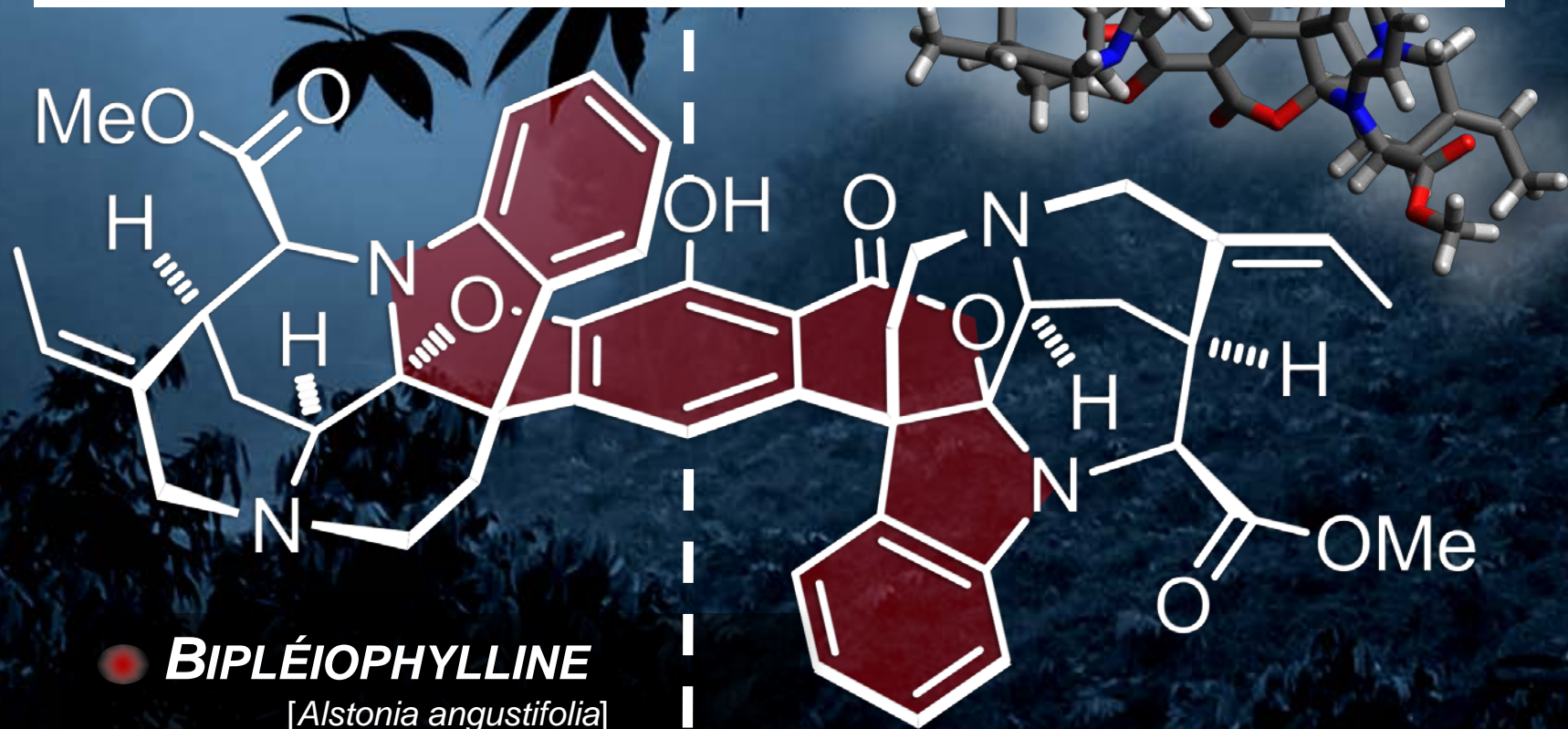
# ANALYSE DE LA STRUCTURE DE LA BIPLÉIOPHYLLINE



• **partie "ouest"**  
benzofuro[2,3-*b*]indoline



• **partie "est"**  
isochromano[3,4-*b*]indoline



● **BIPLÉIOPHYLLINE**  
[*Alstonia angustifolia*]

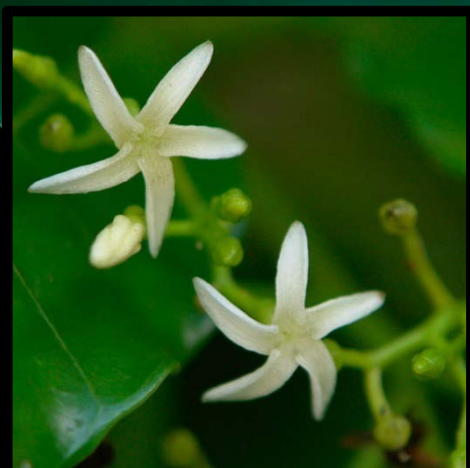
« Ouest » | « Est »



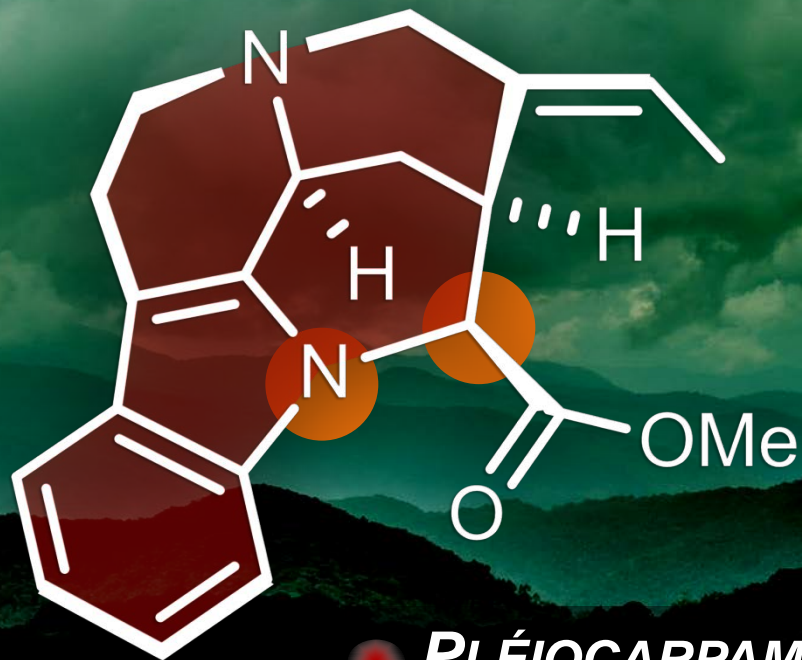
# QU'EN EST-IL DE LA PLÉIOCARPAMINE ?



[*Pleiocarpa mutica*]  $\eta = 0,006 \%$



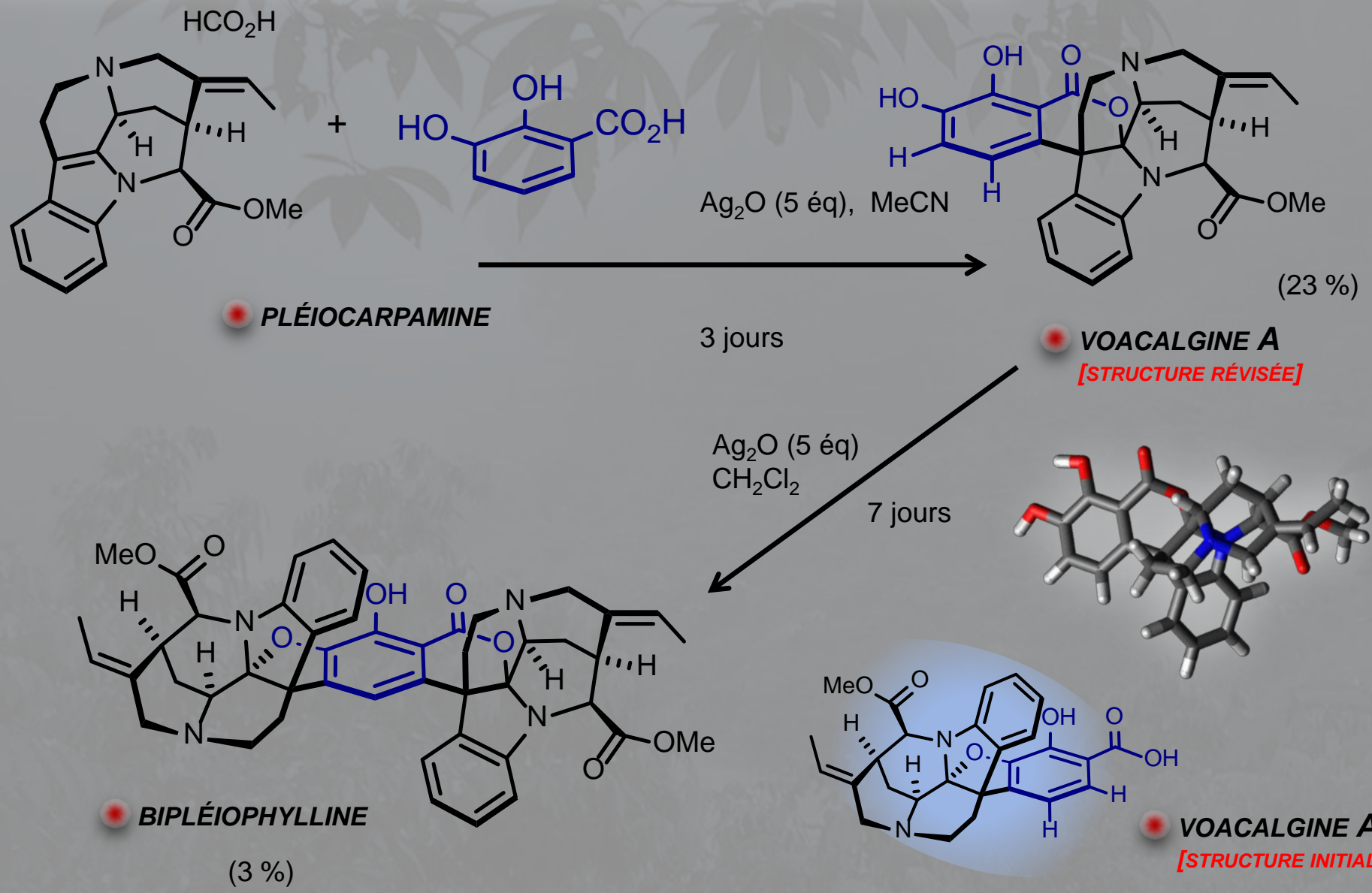
[*Alstonia balensae*]  $\eta = 0,007 \%$



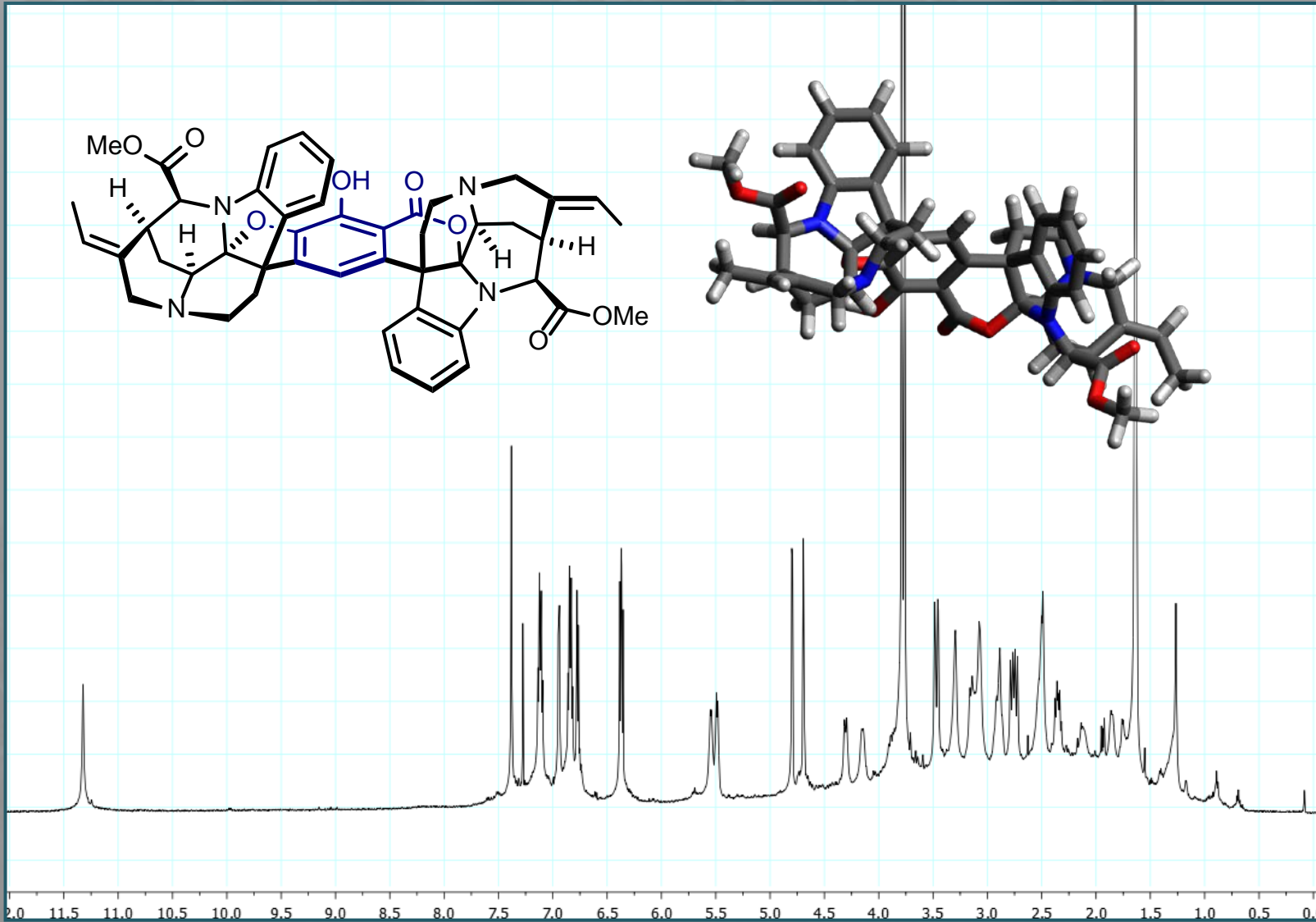
**PLÉIOCARPAMINE**



# ASSEMBLAGE BIOMIMÉTIQUE DE LA BIPLÉIOPHYLLINE

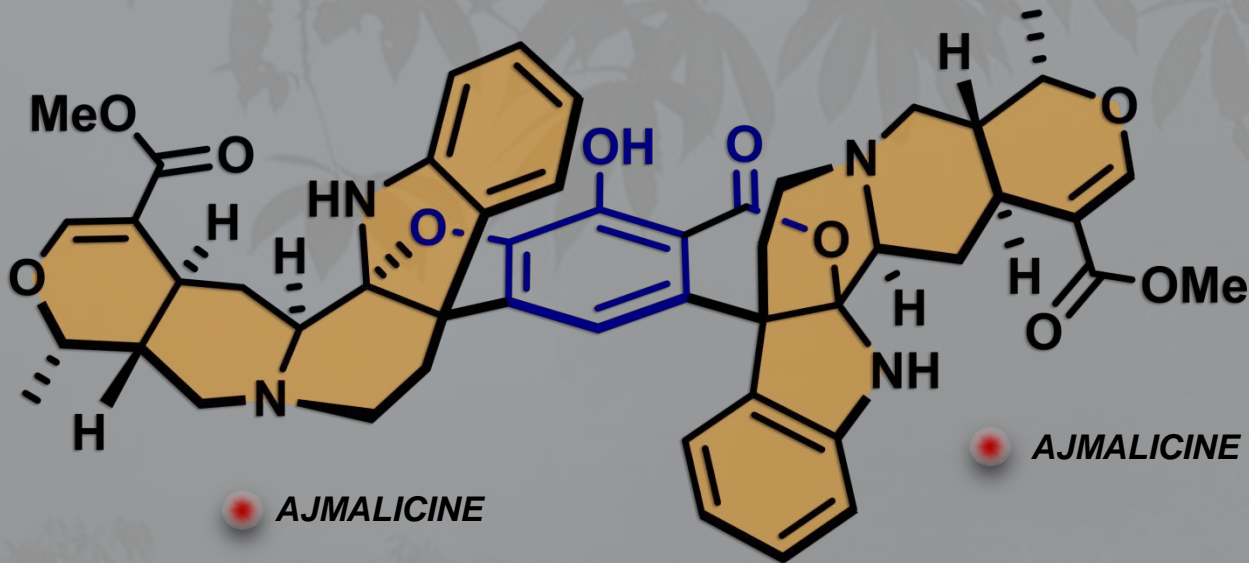


# ASSEMBLAGE BIOMIMÉTIQUE DE LA BIPLÉIOPHYLLINE



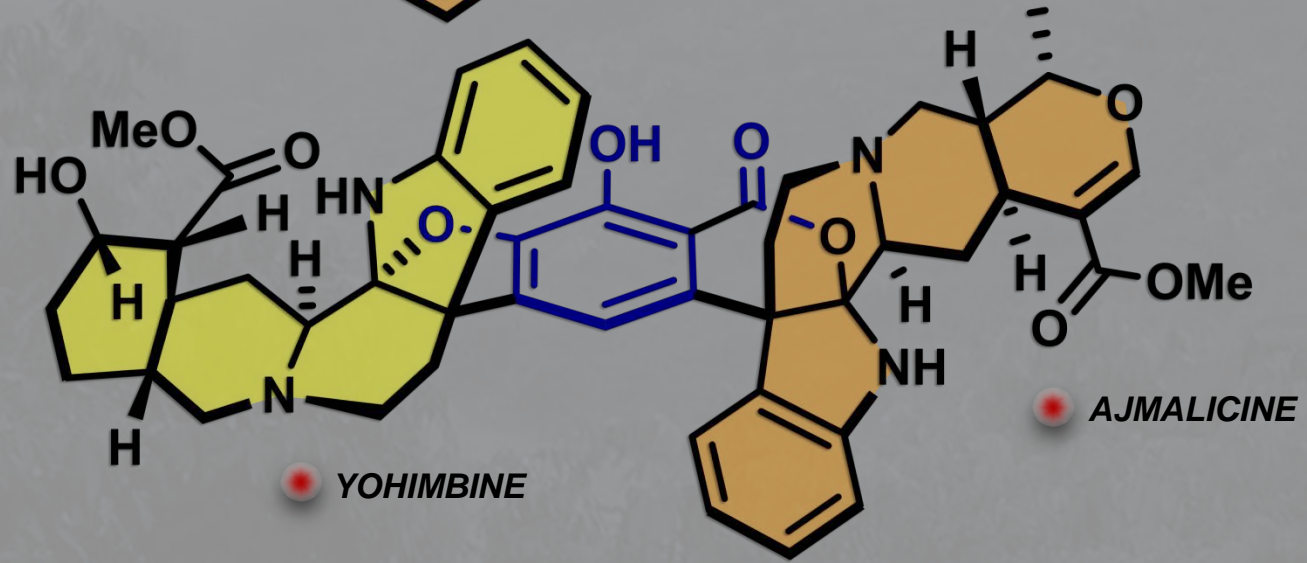


# ACCÈS À DES ARCHITECTURES MOLÉCULAIRES HAUTEMENT COMPLEXES



**AJMALICINE**

**AJMALICINE**



**YOHIMBINE**

**AJMALICINE**

nature  
chemistry

ARTICLES

PUBLISHED ONLINE: 27 FEBRUARY 2017 | DOI: 10.1038/NCHEM.2735

# Unified biomimetic assembly of voacalgine A and bipleiophylline via divergent oxidative couplings

David Lachkar<sup>1</sup>, Natacha Denizot<sup>2</sup>, Guillaume Bernadat<sup>1</sup>, Kadiria Ahamada<sup>1</sup>, Mehdi A. Beniddir<sup>1</sup>, Vincent Dumontet<sup>3</sup>, Jean-François Gallard<sup>3</sup>, Régis Guillot<sup>2</sup>, Karine Leblanc<sup>1</sup>, Elvis Otogo N'ngang<sup>1</sup>, Victor Turpin<sup>1</sup>, Cyrille Kouklovsky<sup>2</sup>, Erwan Poupon<sup>1\*</sup>, Laurent Evanno<sup>1\*</sup> and Guillaume Vincent<sup>2\*</sup>

En étroite collaboration avec l'équipe de Guillaume Vincent et  
Cyrille Kouklovsky à l'ICMMO (Orsay)

AGENCE NATIONALE DE LA RECHERCHE  
ANR