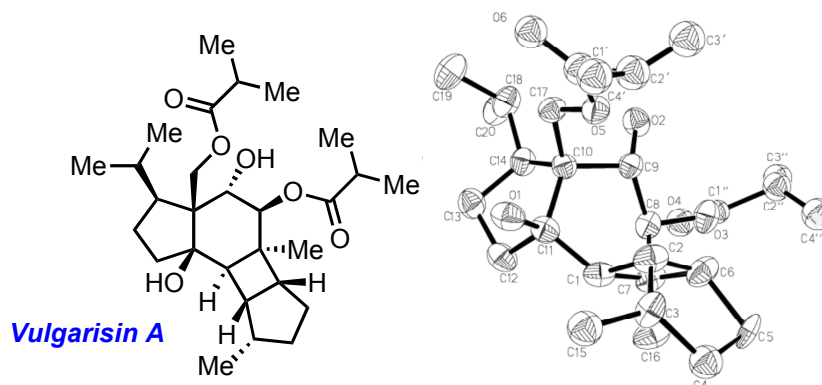


## Retrosynthesis Exercise

The natural product on which you will have to work is the **Vulgarisin A**. This diterpenoid bearing an uncommon 5/6/4/5 skeleton was isolated from a medical plant, *Prunella vulgaris* by the chinese group of Guangyi Liang (*Org. Lett.* **2014**, 16, 2696-2699). Vulgarisin A exhibits a moderate cytotoxicity against a human lung carcinoma cell line with an IC<sub>50</sub> value of 57 μM. The natural product presents a densely functionalized backbone with ten contiguous stereogenic centers.



### Aim of the game

- Propose a retrosynthetic analysis with relevant disconnections until commercially available starting materials, then,
- Show the synthetic pathway precisising the conditions for each steps, using eventually if necessary literature datas.

**Important** : the synthesis must be enantioselective. Do not use the biosynthetic pathway proposed in the article.

Of course it is a team work, so organize yourself to do it.

### Teams composition

#### Team 1

Cyril  
Jérémy  
Mylène  
Rémi  
Sylvana  
Vivek

#### Team 2

Aouicha  
Diana  
Hugo  
Prashant  
Yohan  
Yajun

#### Team 3

Fabien  
Idham  
Jocelyn  
Juan-Carlos  
Julien  
Ophélie

Let's go !