



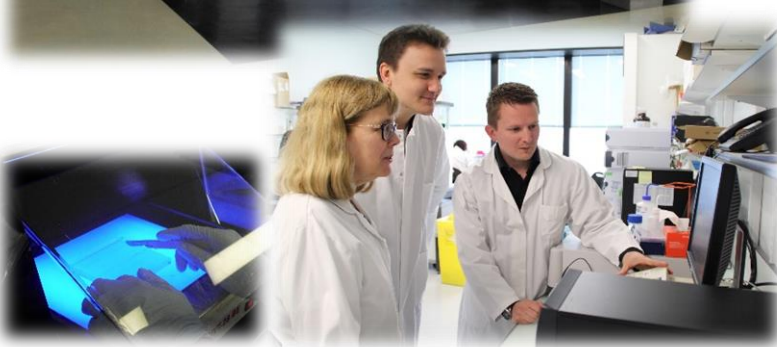
Sustainable, Natural Products and Solutions
For the Food, Feed & Personal care industries



Enzyme Innovations Industries 27-28 October 2014
Romainville, France

Eviagenics: Who we are

- **Founded in 2010**
- **Privately owned (investment funds)**
- **Located in Villejuif BioPark (near Paris) with over 300 m2 laboratories**
- **12 people: Molecular Biology, Biochemistry, Process Development , Specialty Food ingredients global business management**





Renewable Natural Raw Materials

Cellular Factory (yeast / enzymes)



Flavors & Fragrances



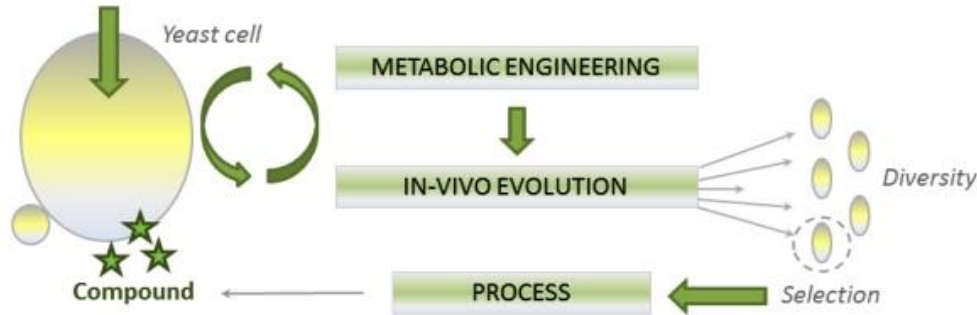
Natural Colorants



Anti-oxidants, anti microbial & functional ingredients

PATHWAY IDENTIFICATION

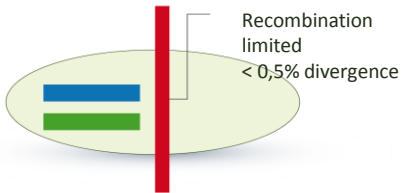
EVIAGENICS 4 pillars technology



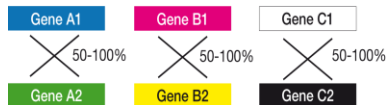
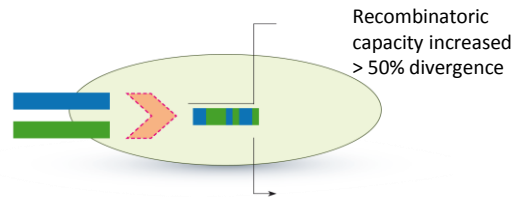
Eviagenics platform

- One step assembly and recombination
 - Proprietary pathways
 - Mosaic pathway library
- Rapid expression/screening in yeast
- Expertise metabolic engineering and process development

Natural Cell



Eviagenics' in vivo evolution

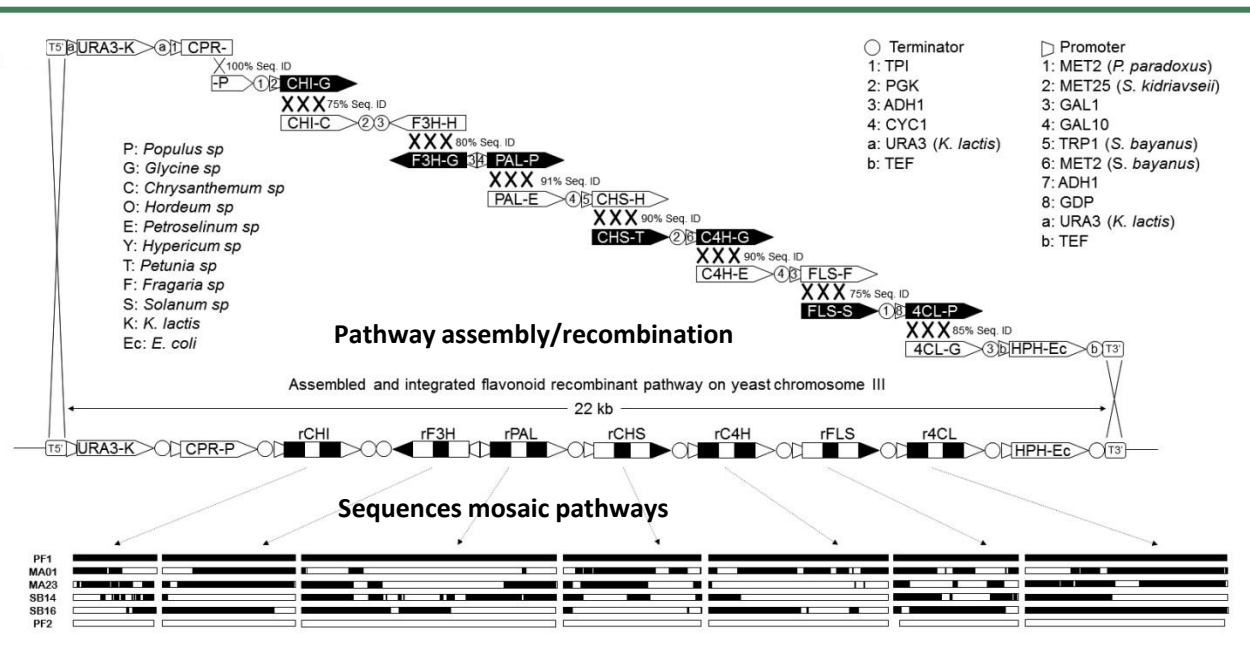


Mosaic pathways

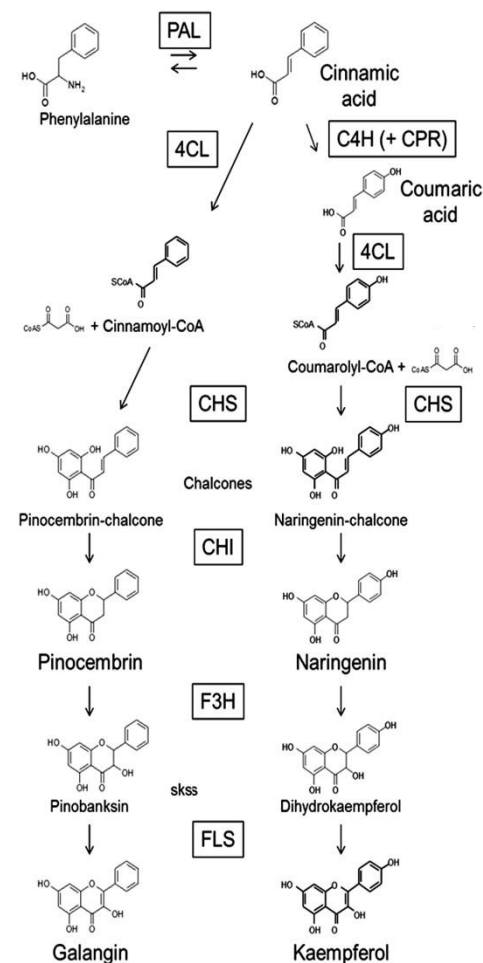
First pathway: Flavonoids

- Plant secondary metabolite
- Phenylpropanoid family
 - > 8000 known molecules
- Antioxidant, Colorant

Generation of flavonoid mosaic pathway library



Flavonoid pathway

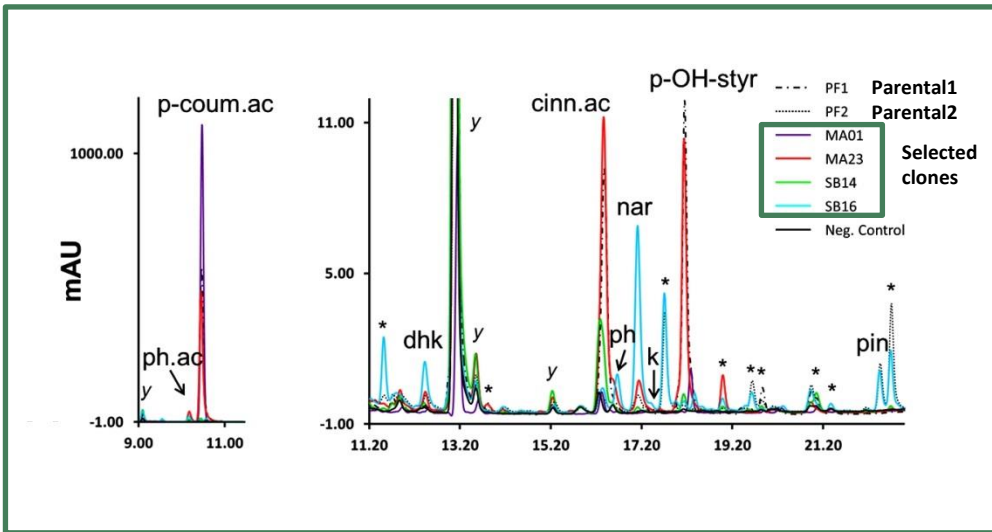
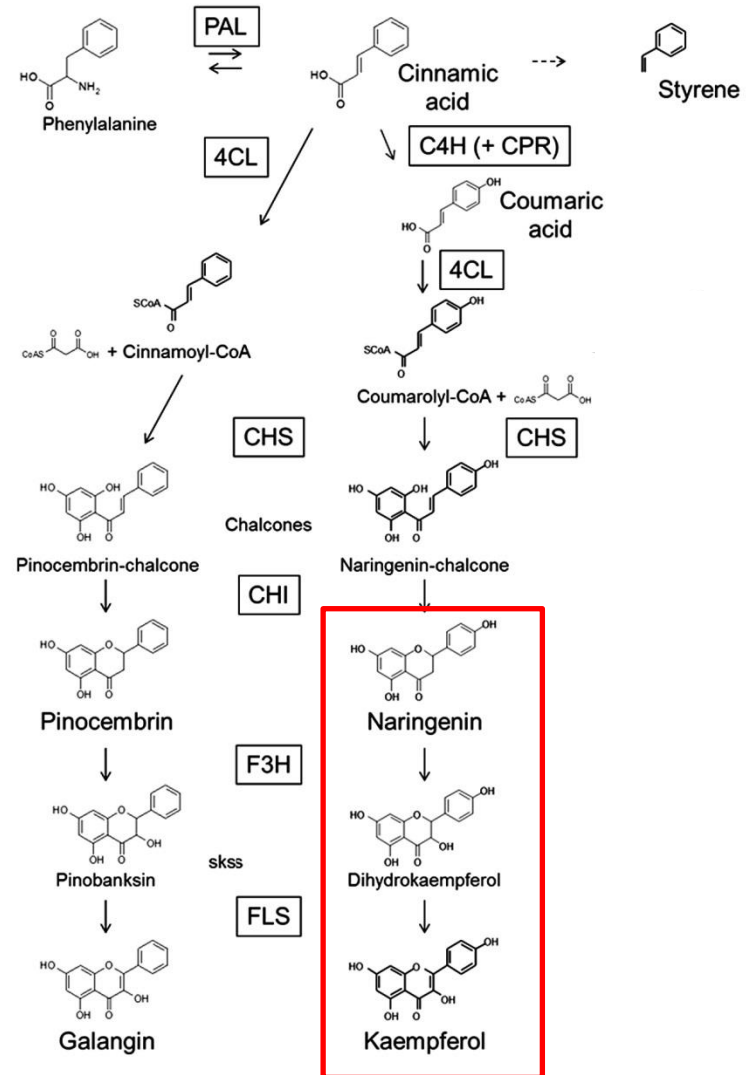


Luque A, Sebai SC, Santiago-Schübel B, Le Coz Y, Jenot D, Ramaen O, Sauveplane V, Pandjaitan R.
 Metab Eng. 2014 May;23:123-35

- Assembly and recombination of 14 genes on 9 fragments
- Total length pathway: 22kb
- Genes from 9 different organisms (75%-91% homology)
- Generation of pathway library
 - Mosaic genes
 - Mosaic pathways

Functional expression of recombinant pathways

- **Functional mosaic pathways**
- **Identification of hits:**
 - Different flavonoid profiles
 - Increased production of flavonoids
- **Identification of other phenylpropanoids**



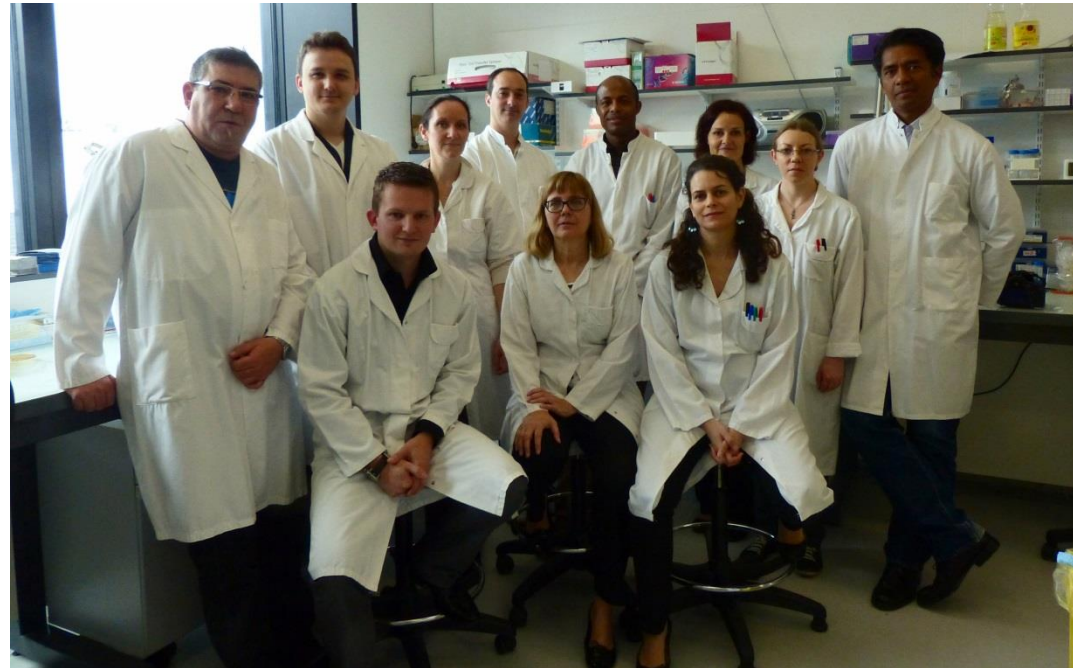
- **Eviagenics *in vivo* evolution :**
 - **Efficient assembly/recombination of multienzyme pathway (>20kb)**
 - **Random recombination events**
 - **Exchanges ranging from single nucleotide to several hundred base pairs**
 - **Intra-and intergenic recombinants**
- **Eviagenics pathway library:**
 - **Recombined mosaic pathways highly functional**
 - **Different flavonoid profiles**
 - **Increased production of flavonoids**
 - **Identification of other phenylpropanoids**



The project team



Alejandro Luque
Sarra Sebai
Odile Lainé
Vincent Sauveplane
Yann Le Coz
Delphine Jenot
Rudy Pandjaitan



Eviagenics
Villejuif Biopark
1, mail du Prof. Georges Mathé
94800 Villejuif
France
www.eviagenics.com
direct: +33 (0)1 49 59 97 00

