

## INDUSTRIAL ABSTRACT

**The Chair ABI strategy: using both bottom-up and top-down approaches to valorize biomass and by-products through white biotechnologies, green chemistry and downstream processing**

### About us

Industry-oriented public research center dedicated to biomass and biorefineries/food-feed industries byproducts valorization through white biotechnologies, green chemistry and downstream processing

### In few words

Under the patronage of local communities (Conseil Régional de Champagne-Ardenne, Conseil Général de la Marne and Reims Métropole), AgroParisTech has built a new chair of Industrial Agro-Biotechnologies devoted to the **valorization of biomass through white biotechnologies, green chemistry and downstream processing**.

To carry out its missions, the Chair ABI has built, **from October 2012, a multi-disciplinary team composed of 10 permanent scientists, 10 Ph.D. candidates, 6 post-doctoral fellows and several M.Sc. students.**

**With expertise in chemistry, microbiology, process and chemical engineering as well as analytical chemistry, the chair ABI is able to conduct fundamental as well as applied multi-disciplinary research projects.**

Our strategy is based on the combination of different approaches:

- *From our lab to the industry:*
  - We identify a promising biobased synthon and develop new (macro)molecules with innovative properties and explore the potential industrial sectors that may be interested in this new technology (ex. from saw dust to flavors and fragrances)
  - We start from a well know compound and try to devise a safer, cheaper, greener and biobased alternative (ex. bisphenol A substitutes)
- *From the industry to our lab:*
  - Industrials come to us with a technological and/or scientific bottleneck and we devise new processes or compounds to overcome their issues (ex. finding applications to a new synthon)

Examples illustrating these approaches will be presented.

The ambition of our chair is to develop and optimize **sustainable industrial processes and high valued-added products from agro-resources** (e.g., biorefineries by-products, agro-waste). More precisely, the scientists aim at the development of **platform molecules** (aka synthons), like organic acids or aromatics/phenolics - obtained **from fatty esters, polysaccharides and lignocellulosic biomass** - that will be used to develop **new functional bio-based additives, polymers or materials**. The team also aims at the **production of valuable sustainable chemical intermediates that can be used in**

**chemistry, in the food/feed industry or in cosmetology as antimicrobials, antioxidants, flavorings or surfactants to name a few.**

In the 3 years of its existence, the Chair ABI has filed **4 patents** (a 5<sup>th</sup> one is under submission), published **20 scientific articles** and presented at many international conferences (oral and poster communications).

**Chair ABI: a multidisciplinary research and teaching unit at the service of the biorefinery**

***“Green up your business through science”***

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