

## EuropaBio sat down with new Member Abolis, to find out about their journey from creation in 2014

Interview with... Cyrille Pauthenier, CEO of Abolis Biotechnologies - The Bio-Synthesis Architects



### About Cyrille Pauthenier

Cyrille Pauthenier graduated from "École Normale Supérieure" in Paris in both fundamental chemistry and biology with a focus on biomolecules modelling and engineering. In 2011 he specialized in Synthetic Biology participating, and he got his PhD in metabolic engineering methodology with a focus on retrieval of produced compounds at an industry viable scale. Cyrille co-founded the Abolis Biotechnologies company in 2014, with the aim of bringing state-of-the-art methodologies in metabolic engineering for the development of new micro-organism capable of producing chemical molecules using fermentation of renewable resources.

### 1) What inspired the foundation of Abolis?

Abolis Biotechnologies is inspired by a strong conviction.

I was an enthusiast student in chemistry when I first came to the lab and made an organic chemistry synthesis with my own hands. This moment was my first mantra (turning point): I realized how unsustainable, polluting, and dirty some the chemistry we were doing was. And I also had the realization that, as human beings and a society, we cannot continue in this direction indefinitely. I started searching for another way to do chemistry. I discovered Metabolic Engineering and I immediately switched to my studies towards a Master in Synthetic Biology, then followed by a PhD in the same domain.

During my PhD, I noticed that, on one hand, many European chemical companies were looking at the field, not knowing whether they should "go for it" or not. In any case, they did not have the expertise to go alone. In the other hand, there were a few SynBio company developing their own products (such as Amyris, Genomatica, Metabolic Explorer, Global Bioenergies...). They have the potential to become the future BASF or Dupont, but it will take a century to get there and our planet don't have so much time to convert to more sustainable practises.



To address the environmental issues of XXIst century challenges, we don't have but decades, not centuries. We have to go fast, and transform the chemistry from within. In 2012-2013, there were very few companies in the world that could offer Metabolic Engineering capacities to third parties, especially in Europe. This is why I decided to create Abolis Biotechnologies.

Abolis is built to answer this difficult question: any chemical company could come to us and say: "Hello Abolis, could you help us produce this Chemical/Ingredient/Molecule? If yes, can it be done at at this Scale, at that Cost?". Thanks to our multi-disciplinary team, we can set up effective feasibility studies taking biology, Intellectual Properties, Economics, Sustainability into account. If the results are promising, we can then quickly move forward using our core competences in bioinformatics, molecular biology, fermentation technology, analytics, all integrated via our robotics platform and machine learning software. With our internal core competences, complemented by our trusted network of partners, we are able then to deliver a scalable bio-process for the given target Chemical/Ingredient/Molecule in a a matter of months.

## 2) What potential to do you see in demand for bio-based ingredients, chemicals, functionalities?

It is an enormous and growing potential. In fact, almost all of the fossil-based value chains could and should at some point be replaced in a short time, by a bio-based alternative. Our planet suffers from some unsustainable aspects of our lifestyle, and everyone starts to realize that their very deep. Developed countries consumers demand it, as well as more and more environmental regulation mandate for it. The challenges is now to execute the change.

In this urgent need to "switch to BIO" puts the places the chemical industry on a positive stress test. Yet, the current "entry ticket" for new value chain enabling and development are high, especially when taking into account that what we want to replace is a high scaled, petro-chemistry complex where the performance and price have been optimized over decades.

We thus need to start from the higher-end of the market, and work downwards, for example from Pharma to Specialty Chemicals, from Flavors and Fragrances to Food and Feed. A similar approach to sustainable development has been taken in other sectors such as within the Automotive industry by Tesla, which started from high end luxury market and then moved down to consumer cards.

In time, SynBio will prove its case in other markets at the lower end of the spectrum such as below the 5 EUR/kg threshold for paint, plastics, but to do so they will need to find niche and reach performance and scale, possibly with the support of regulation till economy of scale is reached.

In fact, nobody can change the world alone, but different industrial champions, mindful consumers and forward-thinking down-to-earth regulators together can achieve much and go far together.

## 3) What are your plans for expansion?

During its first 5 years, Abolis has focused mostly on building strong and successful industrial collaborations with French leaders in the pharma, cosmetics and food markets. From there we gradually expanded our activities to other Western and Central European countries, in order to prove our value proposition in a number of different regulatory and market settings.

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Our next steps are to reinforce existing collaboration with French key players, and expand our business perspective toward pan-EU and East Asia outreach. To do that we are actively building strategic partnership with market and tech leaders in their respective fields, with a particular attention to the cosmetic, nutraceutical and pharmaceutical sector in order to secure the best combination between our SynBio competences and their access to markets.

#### 4) How do you see Abolis being able to transform the biotech sector?

No one can transform the world alone. This is a matter of political will, industrial commitment, customer demands and technological experts such as we are. Biotech is a mean, but the aim is broader than this: how are we going to survive, as human being and stop destroying our planet and ecosystems.

And in this quest for human transition, biotech holds the keys of a significant (but alone always sufficient) part of this transition. And, at Abolis, we would like to become the European leader of on-demand microbial bio-process development. I believe our experience, assets and capacity places ourself amongst the best company in the world to achieve this goal.

#### 5) How do you see Abolis being able to transform your target markets?

In general, we seek to help Europe reaching a critical mass in SynBio. We want to support re-localization via a smart use of precision fermentation, distributed manufacturing, in line with the recent BCG and McKinsey studies.

More specifically, within the following:

- Pharma and bioactives: we want to bring back to Europe production, enabling local production, ensure security of supply before future disruption (such as the one deriving from the different national government reaction to the SARS-CoV-2/COVID-19 pandemic) hit Europe.
- Flavour and Fragrances: we want to contribute to the sourcing of high-quality ingredients, emancipating the industry from complex and unsustainable practices of low yield exotic plant extractions and deforestation.
- Cosmetics and Specialty Chemicals: we want to enable new functionalities, new properties, increased bio-based content and bio-degradability. At the same time, we want to enable safer alternatives to compounds being progressively avoided by consumers or banned by regulators, such as recent concerns on endocrine-disrupting activities within sunscreen creams, a field within which we are rather active in developing novel ingredients.

Overall, we want to help reaching a new approach and mindset for sustainable production, moving from "supply chain" to "value chain", contributing to making Europe once more the Global center for (sustainable) chemistry, pharma and sustainable carbon technologies.

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1 <https://www.bcg.com/publications/2021/why-nature-co-design-will-be-so-important-for-the-next-industrial-revolution>

2 <https://www.mckinsey.com/industries/pharmaceuticals-and-medical-products/our-insights/the-bio-revolution-innovations-transforming-economies-societies-and-our-lives#>

