

Interview: Cristina Dislich Ropke - CEO, Phytobios, Brazil



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Cristina Dislich Ropke, CEO of Phytobios, a company that helps multinational and local companies turn Brazilian biodiversity into medicinal products, highlights the company's exceptional perseverance in studying the Brazilian biodiversity at times when legal uncertainties threatened the development of this segment. She also expands on the drug development center founded in collaboration with the Brazilian Biosciences National Laboratory (LNBio), the company's recent partnerships, and the role of Phytobios' activities in environmental sustainability.

Could you tell our readers about Phytobios' recent developments?

Phytobios was initially a joint venture between Centroflora and two other Brazilian companies. After turning the business focus to the pharmaceutical area, Phytobios became a fully owned subsidiary of Centroflora in 2014.

I would like to highlight one of the initiatives we started three years ago when Centroflora acquired the company. Phytobios turned itself toward the forest again as it was the initial idea when Phytobios started. We were looking to go deep into what was hidden in the Brazilian biodiversity.

Phytobios started a partnership with the Brazilian Biosciences National Laboratory (LNBio), a public state-of-the-art drug development and drug discovery center. Together, we designed a business model to sustainably develop drugs through the study of the world's largest source of biodiversity – the Amazon rainforest in Brazil. Hence, the 'Brazilian Biodiversity Molecular Powerhouse' was born.

Previously, the pharma industry had developed drugs as a result of chemical-based innovation, resulting in small-molecule products. But the pace of innovation has slowed down a huge amount in the past few decades, so companies are increasingly turning to large-molecules, or 'bio'-inspired drugs – based on living compounds.

However, previously, drug discovery based on biodiversity was a hard, expensive, risky, and time-consuming task. The technologies that emerged in the last five years have allowed us to look into this black box in a totally new manner. We are now capable of accessing what is hidden in plant extracts that no one has seen before, at a very early stage. We built the platform so different national and international pharmaceutical companies could access the novel library.

Two months ago, Phytobios and LNBio signed two huge projects with Brazilian pharmaceutical companies, which should be announced in December. Furthermore, we are already talking to multinational companies from the cosmetic area. This proves our model works, and that companies with different interests can now plug into this drug discovery platform to access the Brazilian biodiversity with high quality standards while sharing the risk of their research.

What expertise do you bring to the table?

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Phytobios is responsible for the tough task of organising the expeditions to the Amazon and Atlantic forest and also to the Brazilian savannah for data and sample collection. We guarantee the 100 percent tracability of the samples through the collection of GPS, environmental, and botanical data. We also make sure the samples are processed in a way that protects their quality until they reach the platform.

More specifically, after collecting the plants, stabilising the plant, and controlling the data belonging to the expedition, we produce an analysis of the underlying structures. Here, we can also apply a technique called molecular networking to look into the black box to see if the compound identified as responsible for the positive result is a novel structure or something that we have already seen. If molecular networking gives positive results, the computer can identify the components that are responsible for the positive result and cross the data with all the fractions that are listed in the data bank. In some cases, we have found exact same skeletons in plants from different geographic area such as the Amazon and Atlantic forests. This suggests that we might not need to synthesize something different to improve bioavailability.

Phytobios and its partners chose to solely focus on novelty because this is a great opportunity for pharmaceutical companies to have patents on complete novel things that no one has seen before. While one cannot patent a molecule taken from nature, the chemistry structure and research findings around it can be patented at a very early stage.

What therapeutic areas are you targeting?

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Our partners are welcome to bring their own areas of interest, but both Phytobios and LNBio have a scientific advisory board composed of important industry executives from companies like Pfizer, who also help us identify the areas with the most potential or significant unmet needs.

We are now starting a project in antibiotics, as antimicrobial resistance (AMR) is a global area of interest, and a therapy for a specific form of cancer. Since the National Laboratory research is funded by the Ministry of Science and Technology, it will also be looking into areas of neglected research as a matter of public good.

We also have a strong interaction with pharmaceutical developments based on the Brazilian historic knowledge and use of plants. Many of these have been used over the past two or three hundred years by the Brazilian population and we have one already in clinical trial, respecting the Brazilian law for access and benefit sharing.

This year, we will finish our first clinical trial, and in three years we will be finishing the first two powerhouse projects in which we want to reach and optimize leadership in innovation based on new molecular skeletons. I think Phytobios has the ability to provide new innovation possibilities to the whole planet. However, we do not intend to develop these medicines alone but rather, we are looking to partner with international companies.

What profile of partners will you be looking for?

We are looking to partner with other companies in Europe where the regulations and standards may be more aligned with Brazil. For example, we have some ongoing negotiations with German companies.

We are also looking for multinational partners that would like to take what is hidden in the Brazilian biodiversity to the world. I think this is a beautiful story that needs to be promoted.

Brazil has the largest biodiversity in the world. How much potential do you see here?

Only 20 percent of the Brazilian biodiversity has been studied so far. Prior to 2015, the regulatory framework made it extremely difficult to study Brazil biodiversity for commercial use without facing legal action or fines from the Ministry of Environment. For instance, Centroflora, our parent company, was affected significantly by this.

The study and use of Brazilian biodiversity suffered from legal uncertainties for ten years. Nobody wanted products derived from Brazilian biodiversity in fear of facing problems with the Ministry of Environment. Most cosmetic companies replaced the Brazilian natural extracts they were using by European ones they considered brought the same effects. For instance, jabutucaba was replaced with blueberry and pitanga by cranberry.

Since 2015, with the new Biodiversity Law, the regulatory framework has changed completely and now there is huge potential in this area to be explored. Everybody is coming back now and the good thing is Phytobios now has a privileged position in the market because it did not stop exploring, studying and developing despite legal uncertainties and the absence of clients.

Having faced the bureaucracy and continuously asked for authorisations without giving up, Phytobios now even has products that are close to market stage.

How do you promote the preservation of biodiversity while exploiting it for drug development purposes?

This is the idea behind the Convention on Biological Diversity, initiated around the Rio de Janeiro Earth Summit 1992. The benefits that follow the development of a drug should fund the preservation of the ecosystem. The new Brazilian law for access and benefit sharing makes this possible, within a modern legal framework. Precisely, Phytobios' partners will pay a share of its profits to the Ministry of Environment or a conservation project for the protection of the Brazilian biodiversity. If you obey the Brazilian law you are automatically helping to preserve the environment.

The logic is as follows: we have the experience to find something really good in the nature, if the government supervises our activities ensuring that we conduct our activities in a sustainable manner, and then there is no risk of biodiversity extinction. We know how to collect plants without jeopardizing the environment.

Centroflora started the 'Jaborandi Valorization Program' in collaboration with the German government to prevent the extinction of jaborandi, a Brazilian plant. The Brazilian Ministry of Environment awarded the National Biodiversity Award to this initiative in 2015, which trained over

4,000 people to cultivate and collect jaborandi sustainably. In turn, this increased the farmers' revenues, and their presence is one of the elements that can slow down the Amazon's deforestation by gold miners and cattle farmers. If farmers can stay at their lands and increase their income by planting and harvesting medicinal plants, it is a way to occupy these territories and preserve biodiversity.

The Minister of Environment and Minister of Health recently met in Brasilia in an attempt to connect their initiatives for the protection of the environment and development of biodiversity grounded drug discovery. I believe that if we work all together, we will manage to innovate using our biodiversity while respecting the environment.

On a more personal note, having spent ten years here, what is your main motivator to continue working in this company?

I believe much of Phytobios' impact is unrelated to the business or profits, but to other aspects such as improving people's lives, protecting the forest, and filling the gap in pharmaceutical technology. This motivates me a lot.

Additionally, I reckon the collaborative business model we have set up is the way to go about drug discovery. Having your own drug discovery center would be too expensive and prevent you from having a good ROI. It would be better for industry to collaborate with drug development companies like us, along with government support, to embrace this open innovation model.

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