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Innovation in the Amazon

Brazil: Where Else?



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Innovation in the Amazon

From biodiversity to biotechnology; unlocking the potential of the Amazon's hidden secrets

The aggressive wandering-spider, also known as the banana-spider, is one of the most frightening creatures in Brazil. It is feared for its painful bite which causes a peculiar reaction in some of its male victims: a long-lasting and painful erection. Last year alone, Brazilian health services registered four thousand bites from the species.

But the wandering-spider, or Phoneutria nigriventer, will be soon known for other reason. Biozeus, a private biotechnology company in Rio de Janeiro, is developing a cream for erectile dysfunction based on a peptide found in the spider's venom. The project is in its last stages with human trials set to begin in a couple of months.

“It is going to be an alternative for Viagra-type drugs, that don't work or cannot be used by around one third of the patients”, says Biozeus CEO Luis Eduardo Caroli.

Biozeus' business model is based on indentifying early stages projects from leading Universities and Research Institute, developing the research further and then selling the rights of the resulting therapies to pharmaceutical companies.

The wandering-spider venom project itself was firstly advanced by the public funded Federal University of Minas

Gerais. Biozeus has a portfolio of four projects in different stages of development, including a drug for cancer and rheumatoid arthritis, two for diabetes and one for obesity. All of them coming from public funded basic research.

Biodiversity to Biotechnology

Biozeus is also an example on how pharmaceutical industries are tapping on and benefiting from the huge Brazilian biodiversity, the biggest in the world. The country is home to 10% of all the species on the planet, it has more than 120 thousand different species of animals and 50 thousand of plants known and much more yet to be classified.

Cosmetic and other industries are following the same path. Based in Barueri, in São Paulo's metropolitan area, Phytobios is a company focused in developing and marketing technologies based on bio-products for pharmaceuticals, cosmetics and food industries.

Phytobios has two therapies based on elements from the Brazilian Atlantic forest on the last stages of clinical trial. The company has also recently developed and patented a lycopene from guava stabilized through nanotechnology.

“The substance can be used in functional and sports drinks

and has an advantage over the traditional tomato lycopene which is very unstable”, says Phytobios CEO Cristina Ropke.

Brazilian biodiversity was always there but now the resources are starting to be properly explored.

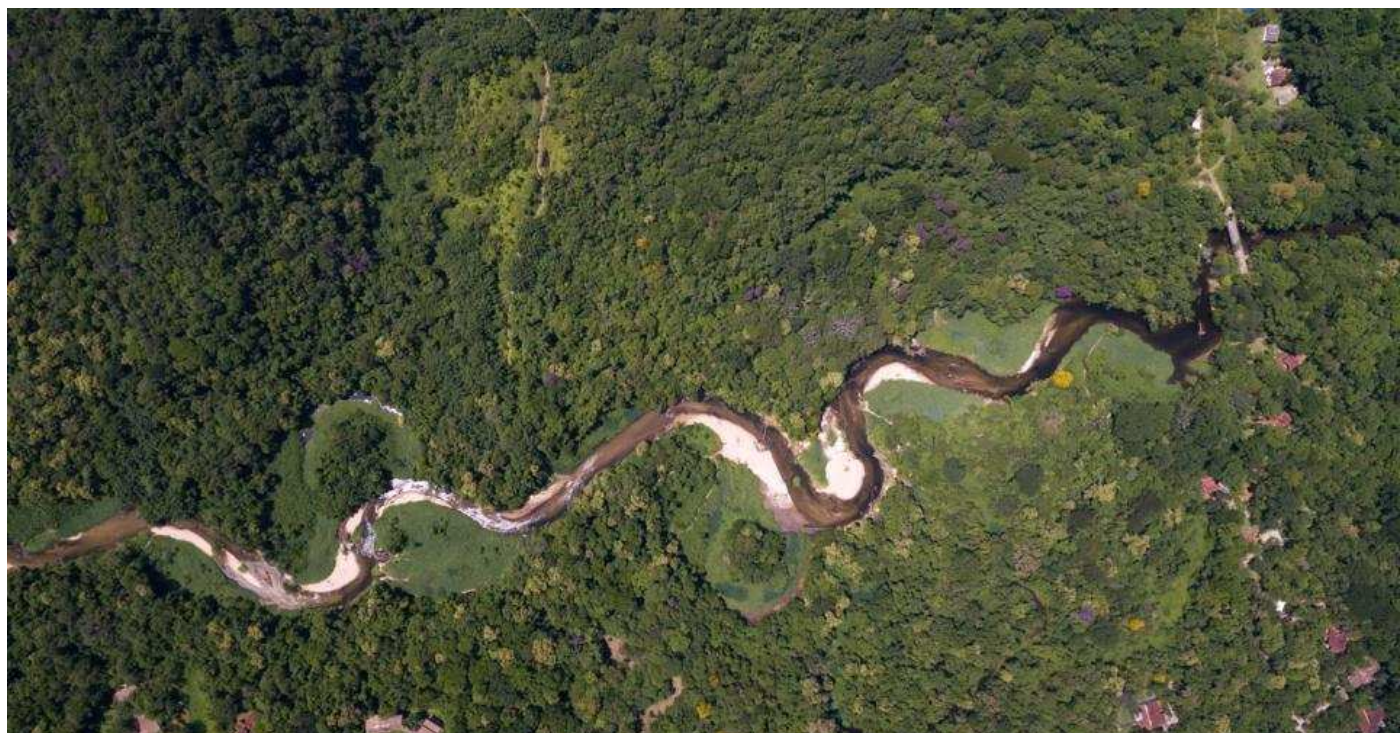
As recently as two years ago, the access to the vast biodiversity from Brazilian forests was virtually closed to the private entities. The law regulating the access was so restrictive that almost no one, especially foreign companies, would dare to take the risks involved.

The picture changed after the Biodiversity Law, published in the end of 2015 but effectively put in place only in May last year.

“Since then, there is a legal framework to show the way – something that a lot of countries are still working on”, says Cristina. “So Brazil is becoming a very interesting place for foreign partnerships.”

A lot of Phytobios work is done in partnership with the Brazilian Biosciences National Laboratory (LNBio) part of the Brazilian Center for Research in Energy and Material – a private research and development institution funded

mainly by public money and open to work with private enterprises both Brazilian and foreign.



Phytobios and LNBio are also creating together the Molecular Powerhouse, the first platform for drug discovery which already has a collection of four thousand high-quality extracts from the Brazilian biodiversity open to partnerships with public and private entities.

“The public support for innovation in Brazil is quite recent, the innovation law is from 2004. But the country has already managed to come a long way, putting together a network of modern labs and trained scientists, so there is a great potential there”, adds Luis Eduardo Caroli.

Biodiversity and sustainability are also the main selling points for cosmetic products created by Natura, the second largest cosmetic company in Brazil – which has the third largest market in the world for this industry.

The Ucuuba Tree

More recently, the company has developed and launched a cream made from ucuuba, extracted from the seed of an endangered Amazonian tree that can reach 60 metres.

“Ucuuba has a special and unique property of moisturizing the skin without leaving it sticky”, says Alessandro Mendes, Natura’s director of research and innovation.

“But more important, it is a tree that used to be cut and used to make broomsticks or for building construction. Now, the local people is preserving the tree and making a living out of collecting the seeds that fall from it”, explains Alessandro Mendes, Natura’s director of research and innovation.

Vanildo Ferreira Quaresma, a 46 years old açaí collector, is one of 86 people who works in a Natura project in Abaetetuba, in Pará State collecting ucuuba and two other seeds used in the cosmetic industry: murumuru and andiroba.

“It provides us with a very good money-making activity when is not açaí season and also helping to preserve the forest around us”, says Vanildo.

BIOTECH

BRAZIL IS ONE OF THE MOST NATURALLY BIODIVERSE COUNTRIES IN THE WORLD.



IT IS HOME TO 10% OF THE WORLD'S KNOWN SPECIES

AND THE TOTAL NUMBER OF SPECIES IS ESTIMATED TO BE 9X HIGHER STILL (1.8M IN TOTAL ESTIMATED)

THE TOTAL NUMBER OF ANIMAL SPECIES



THE TOTAL NUMBER OF PLANT SPECIES



COSMETICS AND BIOTECH

NUMBER OF PATENT APPLICATIONS FOR PRODUCTS USING ELEMENTS FROM BRAZILIAN BIODIVERSITY FILED BY THE NATIONAL INSTITUTE OF AMAZONIAN RESEARCH:



18 OF EACH FOR HEALTH PRODUCTS

5 FOR COSMETIC PRODUCTS

THIS NATURAL BIODIVERSITY MEANS A WEALTH OF BIOTECH POSSIBILITIES, TOUCHING ON A HUGE RANGE OF INDUSTRIES

BIOTECH COMPANIES IN BRAZIL BY APPLICATION (2011)



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