

BIO

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DianaPlantSciences creates natural, plant-based products

The innovative method uses green, sustainable and non-genetically modified technology

DianaPlantSciences, a division of the DIANA Group, produces natural, plant-based products using plant cell culture technology. The company focuses on locating plants with the most health benefits and isolates the specific cells in the plant to use in their products. Their techniques allow company scientists to use cells in rare plants in remote areas of the world without endangering biodiversity and ecosystems. The company is proud of its green and sustainable technology platform which fits in well with Portland's environmental culture.

By Linda Barney, Barney and Associates



DianaPlantSciences is a research and manufacturing company located in Portland, Oregon that produces natural, plant-based products using plant cell culture technology. Marc Philouze, DianaPlantSciences President states, "[DianaPlantSciences](#) is in an industry that you may not think of in terms of bioscience in Oregon because we are not in health care, pharmaceuticals or medical devices. As our name indicates, we focus on the untapped potential of the vegetal world. From the 400,000 known plant species, mankind has only exploited a small percentage due to the scarce availability of many in nature. We grant our customers access to those rare and novel phyto-actives to best serve their clients without endangering biodiversity and rare and specific ecosystems. This is a very 'green' and sustainable technology platform that is in tune with the environmentally-friendly culture in Portland."

Expanding from R&D to localized product manufacturing

DianaPlantSciences is a company of the DIANA Group, a global company focused on nutritional performance of natural ingredients for the food, pet food, nutraceutical, aquaculture and cosmetic industries. DIANA Group has revenues of over \$500 million, employs more than 1,500 people and is established in 22 countries. DianaPlantSciences was founded mid-2010 when the DIANA Group invested in a small team of Portland-based scientists and their lab who were doing upstream research on plant cell culture. DIANA has since then supported and funded the development of groundbreaking commercial products produced naturally and sustainably via that technology.

The first two years as a DIANA company focused on research and development (R&D) to determine how the DianaPlantSciences plant research could be turned into commercial products. DianaPlantSciences opened a pilot manufacturing facility in late 2012 to begin production of commercial products. The innovation underlying the technological platform enables company scientists to bring to commercial scale highly concentrated natural actives without any purification process, a typically costly and potentially polluting operation. That capability applies to all plant production including phyto-actives scarcely available in nature, such as rare plant species and actives only present in traces in wild plants.



What is plant cell culture technology? (*Plant cell culture technology is the growth and reproduction of plants, plant tissues, and/or plant cells in a controlled environment. The process of producing ingredients from plant cell culture technology utilizes non-genetically modified organism (GMO) methods where the whole plant cell remains intact throughout the entire process and cells are carefully selected that exhibit the targeted actives naturally inherent to the plant.*)

Using plant cell culture techniques in production

DianaPlantSciences has developed scientific expertise in plant cell culture by combining the best of plant biology and state-of-the-art technology using plant cell technology through:

- A unique know-how in cell line selection to single out the best producers of the targeted actives. This capability is supported by a proprietary technology enabling high throughput screening of numerous cell lines.
- A rare understanding of metabolic pathways and unlocking them to reach high active concentrations that far exceed the plant performance in the wild without compromising its natural origin.

According to Philouze, “A key to understanding our technology is the fact that we do not extract cells from plants in the wild but rather cultivate the plant cells in the lab and then dry them while maintaining the nutritional and medicinal value of the original plant. This gives our customers access to plants with high value and to rare plants that may grow in remote regions of the world. We can research the cells of a plant to determine the most valuable cells in terms of health benefits and create a product with the same cellular compounds targeted in the original plant. Our research also allows us to select the best plant cells to carry forward in our products, similar to breeding dogs or horses with the best physiological characteristics. The first DianaPlantSciences product, Cocovanol™ is based on the cocoa polyphenols with a variety of known health benefits. Product research is also being done using other plants with a second product planned for release by year-end and more plant cell culture products planned after that launch.”



A series of plant calli in a petri dish: A callus is a cell aggregate that develops from a plant cutting and that is then broken down into finer aggregates when moved into liquid suspension for larger culture.

Meeting regulatory and safety requirements

DianaPlantSciences does extensive testing of their products to guarantee safety. In cosmetic products, testing may include looking for issues such as skin irritation. In their Cocovanol™ food product, they did extensive testing to meet GRAS (Generally Recognized As Safe) status. A panel of industry experts reviewed their testing to verify the product was safe to grant GRAS approval. “We pride ourselves on creating products that are efficacious to health and which are produced in a natural and a safe manner,” said Philouze.

Interest in collaboration

While the company has some partnerships in the Pacific Northwest, they are also open to collaboration. “We are interested in companies that use rare plants and can help with tests, product trials or help in production. Companies with bio-production facilities would also be interesting to us,” says Philouze.

The impetus to grow in Oregon

DianaPlantSciences started in Oregon with a team of 14 employees and now have 21 people on their team. Philouze indicates, “While we are small, we create the kind of jobs that are needed in Oregon. Most of our employees are highly educated. In addition to R&D, we also have a pilot manufacturing facility here and plan to expand production. The Oregon legislature could help our firm, and other small bioscience firms in the state, by providing tax or manufacturing incentives to help us continue to grow locally.”

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