

Press release

DEINOVE KEEPS MOVING FORWARD ON CAROTENOIDS

- **Start of operations for the manufacturing of the first batches of Deinoxanthin by POS Bio-Sciences**
- **Laboratory proof of concept for the production of two other platform carotenoid compounds, opening the way for a wide range of potential applications**
- **DEINOVE initiates the regulatory approval process of its strains, particularly in the US**
- **DEINOVE aims to commercialize several carotenoids within two to three years whose production will be ensured by production partners**

Montpellier, 26 October 2015 – DEINOVE (Alternext Paris: ALDEI), a biotech company developing innovative processes for producing biofuels and bio-based chemicals by using *Deinococcus* bacteria as host strains, provides an update regarding its carotenoids production strategy.

Carotenoids are part of the isoprenoid family, the main focus of the DEINOCHEM research program funded by the “Investing for the Future” State program¹. *Deinococcus* bacteria naturally produce carotenoids and specifically a molecule called Deinoxanthin, untapped until now. Recent achievements in this field of research have led DEINOVE to fine-tune its strategy on this target:

- For some applications, DEINOVE has decided to position itself directly on the production of marketable carotenoids rather than marketing licenses. To do this, DEINOVE will begin with the support of POS Bio-Sciences, which has the necessary infrastructure for the production, purification, and extraction of the molecule; Carotenoids production represents a small volume of very high added value products. DEINOVE has therefore provided POS Bio-Sciences with a batch of bacterial biomass to produce the first Deinoxanthin samples with two objectives: validate the production process and characterize the specific properties of Deinoxanthin with a commercialization perspective in mind.
- In parallel, the DEINOVE teams are optimizing strains for the production of other types of carotenoids that have already been approved for commercial purposes. Proof of concept has been obtained in the laboratory for two molecules. These are widely used as colorants in food, cosmetics, and dietary supplement ingredients. In addition, these molecules may be characterized as platforms, opening the way for other types of carotenoids, i.e. they may themselves be converted into other carotenoids with high added value.

At this stage, DEINOVE is also focusing on the regulatory procedure, an essential prerequisite for the industrialization of the process. The first toxicity tests have demonstrated the general non-pathogenicity of *Deinococcus* strains. More specific efficacy tests requiring a more significant production capacity will then be carried out to demonstrate the commercial value of the carotenoids produced by DEINOVE, aiming at regulatory approval notably in the United States.

¹ PR of 13 November 2013

Carotenoids are a family of molecules naturally present in many living beings and widely used in the industry for their coloring, antioxidant, and photoprotective properties. Their beneficial effect on the immune system is increasingly being studied. The global market for carotenoids is expected to reach \$ 1.8 billion by 2019². In 2013, Europe represented the largest single market segment, followed by North America. The applications of these molecules continue to diversify in feed and food as well as in cosmetics and health. The largest share of the current production comes from the chemical synthesis of petroleum derivatives; however, the molecules extracted from plants grow the fastest, notably benefiting from consumer demand. Today, there are several production techniques, such as extraction from tomatoes (lycopene) or paprika (capsanthin), and bioproduction from algae (asthaxantin) or microorganisms (beta-carotene). The supply of bio-based solutions remains limited by high production costs. The challenge that DEINOVE expects to take up is precisely to reduce these costs to meet the high demand.

"We consider carotenoids as an opportunity for quick access to the market given the natural propensity of Deinococcus to produce them and the progress of our developments over the last two years. We trust that our first batch can be marketed within two to three years, knowing that our technology should allow us to offer very competitive natural products compared with existing technologies," said Emmanuel Petiot, CEO of DEINOVE.

² Source: MARZ, U. (Juillet 2015) *The global market for carotenoids*. BCC Research

About DEINOVE

DEINOVE (Alternext Paris: ALDEI) is ushering in a new era of green chemistry by designing and developing new standards of production based on bacteria of untapped potential: the *Deinococci*. Taking advantage of the bacteria's unique genetic properties and unusual robustness, DEINOVE optimizes natural fermentation and metabolic capabilities of these bacterial "micro-factories" to produce high value-added products from non-food biomass. The Company's primary markets are 2nd-generation biofuels (DEINOL) and bio-based chemicals (DEINOCHEM). On these markets, the Company offers its technology to industrial partners globally.

Listed on NYSE Alternext since April 2010, DEINOVE was founded by Dr. Philippe Pouletty, General Partner of TRUFFLE CAPITAL, and Pr. Miroslav Radman, of the Faculty of Medicine of Paris Descartes University. The company employs almost 50 people in its new offices and laboratories located in Montpellier, France.

More information at www.deinove.com

Contacts

DEINOVE

Emmanuel Petiot

CEO

Tel.: +33 (0)4 48 19 01 28

emmanuel.petiot@deinove.com

Coralie Martin

Communication, Marketing and IR Manager

Tel.: +33 (0)4 48 19 01 60

coralie.martin@deinove.com

ALIZE RP, Press Relations

Caroline Carmagnol / Wendy Rigal

Tel.: +33 (0)1 44 54 36 66

deinove@alizerp.com

