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## Integration of CRISPR-cas9 technology to accelerate the discovery of innovative antibiotics

- **DEINOVE strengthens its expertise in the genetic engineering of rare and varied microorganisms to accelerate the discovery and optimization of innovative antibiotic structures**
- **The integration of the CRISPR-cas9 technology into DEINOVE's metabolic engineering platform opens up promising avenues for the identification, characterization and optimization of new clusters of genes with antibiotic activities.**

DEINOVE (Euronext Growth Paris: ALDEI), a French biotechnology company that relies on a radical innovation approach to develop innovative antibiotics and bio-sourced active ingredients for cosmetics and nutrition, **announces that it has expanded its technological platform with an advanced genetic tool, the CRISPR-cas9 system, to enhance its ability to optimize various microorganisms.**

In the last few years, DEINOVE has set up a high throughput genetic engineering platform specifically dedicated to rare microorganisms and thus demonstrated its ability to adapt genetic tools to poorly described organisms. Thus, the exploitation of *Deinococci* as microbial plants has allowed the large-scale production of pure high value-added compounds such as carotenoids. It should be recalled that *Deinococci* are extremophilic microorganisms whose biological and molecular specificities have so far been little studied and therefore unexploited.

After developing a platform dedicated to the identification of novel antibiotic structures produced by rare bacteria (AGIR Program), DEINOVE strengthens its expertise in genetic engineering with the integration of a cutting-edge tool, the CRISPR-cas9 technology, known as 'molecular scissors', which has revolutionized genetic engineering in recent years.

The objective for DEINOVE is to be able to directly manipulate the strains producing antimicrobial activities or to transfer these activities into phylogenetically close frames. This has been successfully achieved by the Company which has made the *Streptomyces* chassis an effective producer of a pharmaceutical intermediate initially produced by *Microbacterium arabescens* (proof of concept DNB101/102).

Genome editing occurs at two levels. First, highlights the cluster of genes at the origin of the antibiotic activity of interest. To optimize the spectrum of activity and eliminate any potential cytotoxicity, the structure of a natural molecule can then be modified by directly, finely and precisely editing the genes responsible for this activity.

This technology opens up many opportunities in the identification and optimized production of new antibiotic structures.

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"Our expertise in the genetic engineering of a variety of microorganisms, unusual for some, is unique, and the integration of CRISPR-cas9 extends the possibilities of our platform," says **Georges GAUDRIAULT, Scientific Director of DEINOVE**. "We continue to structure the various technological bricks of the AGIR platform to be able to drastically accelerate the identification and optimization of new antibiotic structures. This technology is an additional asset in our race against the clock in the face of rising antimicrobial resistance."

## ABOUT DEINOVE

DEINOVE is a French biotechnology company, a leader in disruptive innovation, which aims to help meet the challenges of antibiotic resistance and the transition to a sustainable production model for the cosmetics and nutrition industries.

DEINOVE has developed a unique and comprehensive expertise in the field of rare bacteria that it can decipher, culture, and optimize to disclose unsuspected possibilities and induce them to produce biobased molecules with activities of interest on an industrial scale. To do so, DEINOVE has been building and documenting since its creation an unparalleled biodiversity bank that it exploits thanks to a unique technological platform in Europe.

DEINOVE is organized around two areas of expertise:

- **ANTIBIOTICS, New-generation anti-infective agents:** A first antibiotic candidate is now in Phase II. The Company is also pursuing the systematic exploration of biodiversity to supply its portfolio with new leads, drawing notably on partnerships with bioMérieux and Naicons (AGIR program supported by Bpifrance).
- **BIOACTIVES, Active ingredients of natural origin** with cosmetics as the first market and potential in nutrition and health: DEINOVE already markets a first innovative active ingredient, a second in partnership with Greentech, while two others are in development with Oléos (Hallstar Group) and a third one with DOW. It also runs a program in animal nutrition with Groupe Avril.

Within the Euromedecine science park located in Montpellier, DEINOVE employs 60 employees, mainly researchers, engineers, and technicians, and has filed more than 350 patent applications internationally. The Company has been listed on EURONEXT GROWTH® since April 2010.

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