MATWIN
MATURATION & ACCELERATING TRANSLATION **WITH INDUSTRY**

TECHNOLOGY OFFER

SUPPORTING INNOVATION AND TECHNOLOGY TRANSFER IN ONCOLOGY

THERAPY

M.A.G.I.C

Mucosal Ig**A**-based **I**mmunotherapies for the treatment of **G**astro-**I**ntestinal **C**ancer

EXECUTIVE SUMMARY

The company founded in 2007 as a spin-off of a CNRS, initially focused on drug discovery Design and develops an original concept of mucosal immunotherapy based on a new class of monoclonal antibody. The innovation is based on a process of genetic engineering of the mouse, partly developed in collaboration with the CNRS/Limoges University laboratory. The transgenic mouse models platform (**GAME**™) allows to produce directly and rapidly highly specific human chimeric antibodies with the isotype of interest: Ig**G**1 (from G...™ technology), Ig**A**1 (from H...™ technology), Ig**M** or Ig**E** (from I...™ technology).

The company is particularly involved in the development of two molecules, a vaccine candidate in Infectious Diseases: an HIV prophylactic vaccine project and **a drug candidate in oncology: a monoclonal IgA against a digestive biomarker**. The link between these two projects is its solid knowledge on immune mechanisms involved in all the mucosal barriers of our body: intestinal mucosa targeted by colorectal cancer or genital mucosa as the first gate of entrance of HIV virus.
The development of the first IgA immunotherapy for the treatment of advanced metastatic colorectal cancer is the most mature project on which the company is focusing today. They demonstrated that IgA is naturally concentrated in all the mucosal areas of our body, the gut, the lung while IgG, another class of antibodies used in immunotherapy, is more systemic. When a tumor is present in the intestinal mucosa, IgA is rapidly concentrated there while IgG can't reach it as easily.

The antibody candidate perfectly meets all requirements for any therapeutic antibody: the monoclonal IgA targets the **CEA**, a surface biomarker expressed by more than **90% of colorectal tumors**, it induces more rapidly and strongly the early events of apoptosis. In the presence of the human complement elements, tumor growth inhibition is **stronger**. IgA recruits effector cells (monocytes, macrophages and neutrophils) leading to the **Antigen-dependent cell lysis** of tumor cells.
On an animal model of a colorectal carcinoma, in the late-treated animals, tumor mass reduction is **higher** with the IgA treatment than with the IgG anti-EGF receptor, the therapeutic standard for CRC treatment. IgA exists naturally in an oral formulation, the **secretory IgA.**

The company has set up the first treatment regimen based on oral immunotherapy. **A therapeutic benefit** is also observed when the anti-CEA IgA is given **orally**, **formulated in secretory IgA.** The tumor mass is reduced by more than 35%, compared to treatment with a non-specific secretory IgA. **The company brought the proof of the concept** of the efficacy of a therapeutic IgA in CRC treatment, **with the goal for IgA to become the new gold standard for the treatment of all mucosal cancers (gastrointestinal cancers, pulmonary cancers, and accessory glands like breast).**

The business model of the company is, like many biotech companies with a solid industrial property (3 patents, 4 exclusive licenses), to develop its own portfolio of drugs before addressing it in co-development to pharma companies.

SCOPE

New specific anti-cancer drugs immunotherapy for mucosal cancers

KEYWORDS

Monoclonal antibody, IgA, Mucosal Immunotherapy, Digestive cancers, Oral administration

DEVELOPMENT & MATURATION STAGE

In vivo POC in colon cancer.
Preclinical studies ongoing

TARGET POPULATION

Mucosal cancers (colon, pancreas, gastric and lung)

TARGET PROFILE

Immunotherapy (antibody)

INTELLECTUAL PROPERTY & PATIENT CO-OWNER(S)

The company owns various technological patents for specific isotype production, and 1 therapeutic patents for cancer. (EP17305498.2)

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