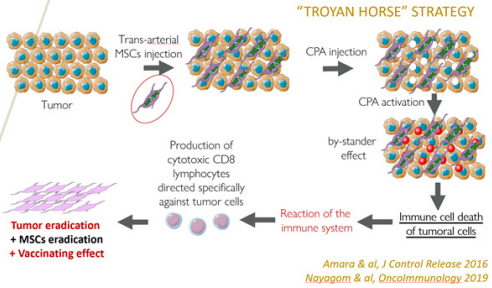
NEW CELL & GENE THERAPY PLATFORM FOR SOLID TUMORS. GENE-DIRECTED ENZYME PRODRUG THERAPY (GDETP)

Based on their previous research and expertise, INSERM and Université de Paris researchers developed a new approach of cancer treatment associating (1) tumor sensitization by a pro-drug & suicide-gene approach, and (2) triggering of a secondary specific immune response directed against tumor cells.

ERGANEO
L'AVENIR EST FAIT D'AUDACE

PRESENTATION

This so called « Gene-directed enzyme prodrug therapy (GDEPT) » consists in bringing an optimized gene - allowing to convert cyclophosphamide (CPA) into toxic metabolites 13 times more than native conversion - into the tumors, thanks to an efficient vector, mesenchymal stem cells (MSCs), and a specific (intra-arterial) administration. There, it eradicates the tumor and triggers a specific immune response, resulting in a vaccinating effect. POC in vivo have been established either in mice (treatment and rechallenge experiments), but also in an orthotopic model of hepatocarcinoma (VX2) in rabbits. Those last experiments confirmed breakthrough results, compared to Gold Standard (chemoembolization), either in terms of tumor & metastasis drastic reduction but also remission levels...



Gene-directed enzyme prodrug therapy
Cyclophosphamide highly active metabolite conversion
New cancer treatment
Gene & cell therapy

APPLICATIONS

- Solid tumor treatments : hepatocarcinoma, colon, breast.

INTELLECTUAL PROPERTY

1 patent filed in 2012 : Covers the modified gene (CYP2B6*)
WO 2012/150326
2 additional patents (October 2019) covering human MSCs expressing CYP2B6* in cancer applications WO 2021/074162 & WO 2021/074167

COMPETITIVE ADVANTAGES

- Increased therapeutic index thanks to a higher toxin concentration at tumor site only.
- Strong direct by-stander effect (free diffusion of CPA toxic metabolites).
- Specific and long-lasting anti-tumor specific immune response, which protects against recurrence and metastases.
- In vivo proof of concept in two relevant animal models.

DEVELOPMENT PHASE

- ☑ Preclinical Development. POC in vivo in 2 relevant models (murine, rabbit)

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PUBLICATIONS

- Touati & al
- Amara & al, J Control Release 2016
- Nayagom & al, OncoImmunology 2019
- Pellerin & al.