Novel human suicide gene for oncolytic virotherapy and safety switch in cell based therapies

- **Based on a novel approach of gene evolution (Retrovolution) unprecedented highly potent hdCK mutants were isolated**
- **hdcK M36 mutant results in only 4 mutations compared to the WT hdCK but exhibits, on Gemcitabine resistant cells (Messa-10K) a 900-fold decrease in IC50 with Gemcitabine and 10 000-fold decrease with Cytarabine**

KEYWORDS

Suicide gene
Gemcitabine
hdCK
Cancer
Chemotherapy

PATENTS

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INVENTORS

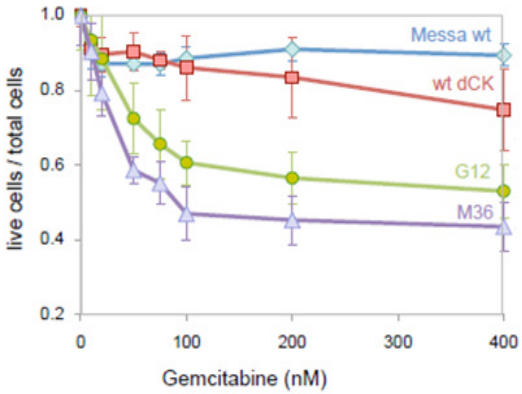
Matteo Negroni

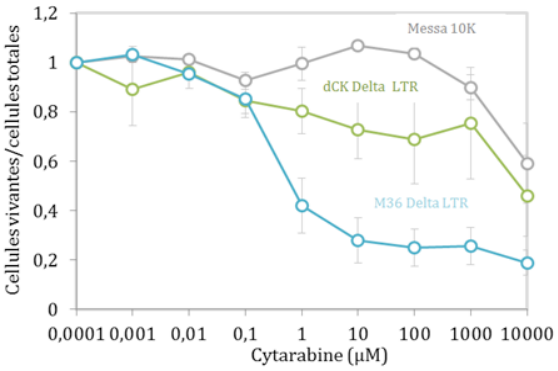
IBMC – Strasbourg (FR)

Unistra / CNRS

TECHNOLOGY

- A first mutant G12, already showed promising results (published). By evolving the G12 gene, another even more potent mutant (M36) was selected and tested on Messa 10K cells:





- M36 induces unprecedented 900 fold decreasein IC50 for Gemcitabine and 10000 fold for cYTARABINE
- Mutation results in loss of affinity for the natural substrate

APPLICATION

- **Suicide Gene** therapy for anti-cancer treatment
- **Safety switch** for cellular therapy approaches in cancer and regenerative medicine (transplantation, CARs or TCRs, iPSC based therapies)

INNOVATION ADVANTAGES

- Inducing cell death in presence of low doses of cytotoxic drug
- Currently clinically employed anticancer drug
- Countering the unwanted side-effects and improving the effectiveness
- Overcoming potential resistance arising during treatment
- Human enzyme mutant : Absence of Immunogenicity

Partnership : out-licensing

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Parc d'Innovation
650 Bd Gonthier d'Andernach
67400 ILLKIRCH - FRANCE
www.satt.conectus.fr

CONTACT
Nathalie Lenne
Business Developer Healthcare
Phone: +33 (0)6 09 79 06 13 - nathalie.lenne@satt.conectus.fr