762P *MVX-ONCO-I:* Personalized immunotherapy with encapsulated cell technology: feasibility, safety and efficacy results from the first-in-human clinical trial in advanced relapsing solid tumors

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ABSTRACT

Preclinical data shows that sustained, local delivery of low doses of Granulocyte-macrophage colony-stimulating factor (GM-CSF) by irradiated, genetically engineered tumor cells at the immunization site leads to specific, long-lasting anti-tumor immunity in several tumor types. Providing sustained levels of subcutaneous GM-CSF at the vaccine site for several days without any systemic activity in a clinical setting remains challenging. Encapsulated Cell Technology enables the sustained and controlled delivery of GM-CSF by allogeneic cells at the local level without any negative systemic effect.

MVX-ONCO is an active, personalized cancer immunotherapy combining:

- Irradiated autologous tumor cells as source of antigen

AND

- Encapsulated allogeneic human cells genetically engineered to secrete human GM-CSF as adjuvant.

This strategy can be applied to any cancer types and in all settings (adjuvant, advanced 1st line, 2nd line).

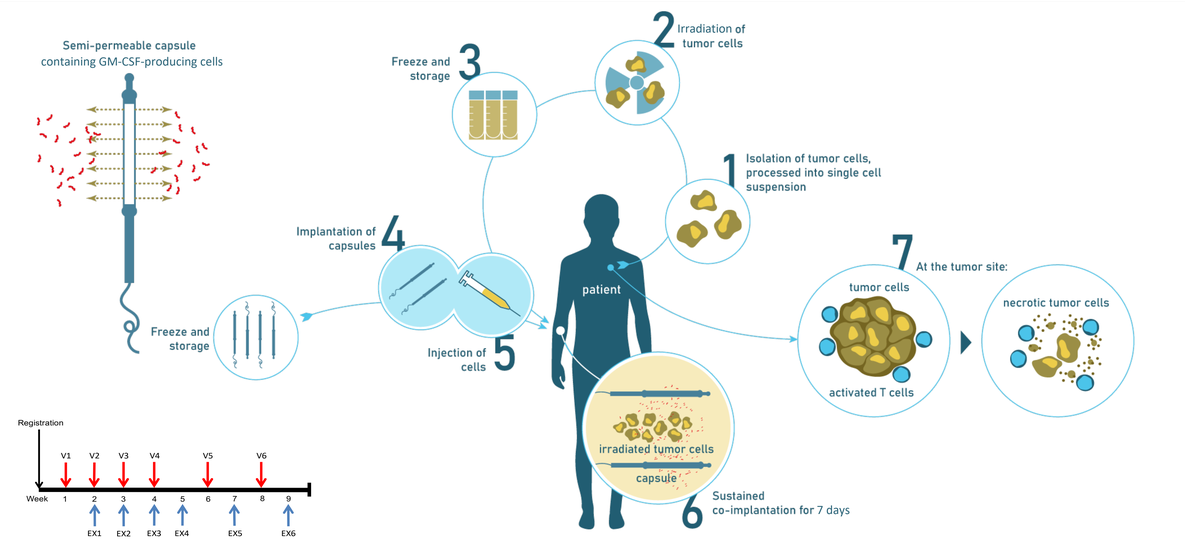
MATERIALS AND METHODS

ANTIGENS:
Patient's own cancer cells:
- Multivalent and patient specific.
- All potential immunogenic epitopes.
- No culture/expansion required.

ADJUVANT : GM-CSF

Mode of Delivery: CELL-ENCAPSULATION TECHNOLOGY
Local delivery of small doses of GM-CSF in a sustained manner by macroencapsulated genetically engineered allogeneic human cells.

Baseline disease characteristics - n (%)	
Sacral chordoma	7 (20.6)
Serous ovarian carcinoma	7 (20.6)
Clival chordoma	4 (11.8)
Colon carcinoma	3 (8.8)
HNSCC	2 (5.9)
Pancreatic adenocarcinoma	2 (5.9)
Adenoid cystic carcinoma	1 (2.9)
Endometroid ovarian carcinoma	1 (2.9)
Gastric adenocarcinoma	1 (2.9)
Liposarcoma	1 (2.9)
Melanoma	1 (2.9)
Neuroendocrine pancreatic carcinoma	1 (2.9)
Peritoneal mesothelioma	1 (2.9)
Prostate adenocarcinoma	1 (2.9)
Spindle cell sarcoma	1 (2.9)



REGIMEN: 4 vaccinations 1 week apart, followed by 2 boosters 2 weeks apart = 6 vaccinations over 8 weeks. Each dose consists of 2 capsules co-implanted subcutaneously with an injection of irradiated autologous tumor cells. Capsules are removed after 1 week.

RESULTS

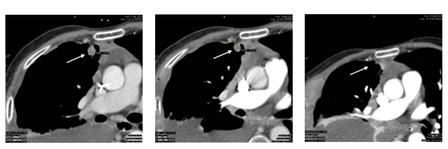
Thirty-four (34) patients were enrolled in a single-arm clinical trial (NCT02193503) evaluating the feasibility, safety and efficacy of MVX-ONCO :

FEASIBILITY: Compliant preparation of irradiated autologous tumor cells and encapsulated MVX cells was achieved in 30/34 pts (88%).

SAFETY / TOXICITY: No patients experienced any treatment-related systemic toxicities. Local hematoma at the implantation site was reported in a minority of patients.

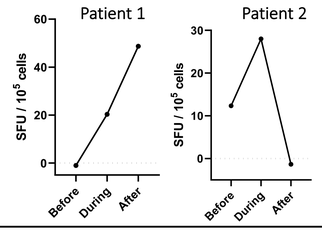
CLINICAL ACTIVITY and IMMUNE MONITORING: Some degree of disease control was observed in 20/34 patients. Prolonged survival in 2/2 R/M HNSCC patients correlated with IFN-γ EliSPOT.

Patient 1: Partial Clinical Response to MVX-ONCO:

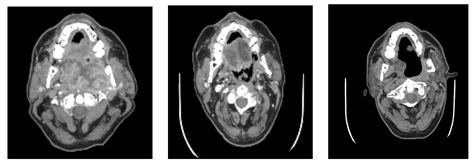


Baseline – Before MVX-ONCO | Partial Response – After MVX-ONCO | Complete Response – 2 Months after MVX-ONCO

IFN- γ secretion after stimulation with irradiated autologous tumor cells analyzed by ELISPOT



Patient 2: Complete Clinical Response to MVX-ONCO + Subsequent Palliative Treatment



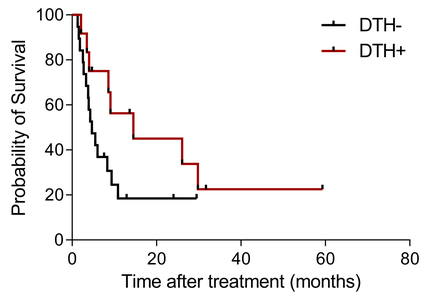
Baseline – Before MVX-ONCO | Partial Response – 7 Months after MVX-ONCO | Complete Response – 5 Years after MVX-ONCO

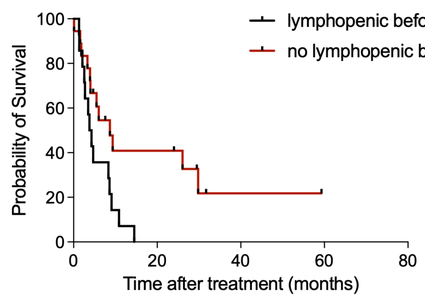
CONCLUSIONS

MVX-ONCO is **feasible, safe,** and **well-tolerated.**

Preliminary efficacy data show **immune stimulation, intriguing prolonged survival** and **tumor control** including **PR** and **CR** as Best Overall Response.

Monitoring of circulating **T cell reactivity** and **DTH positivity** correlates with **>6 months survival.**





Single-agent efficacy Phase II study is ongoing in R/M HNSCC population.
Concurrent use of anti-PD1 and MVX-ONCO should be tested in a subsequent clinical trial.

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Funding Source: Funded by Innosuisse (CTI), Coromandel, Philanthropy Settlement, and MaxiVAX SA.
Disclosure: N. Mach is a founder and minority stockholder at MaxiVAX SA. All other authors have declared no conflicts of interest.

Hôpitaux Universitaires Genève
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