

# Circulating tumor associated foamy macrophages in prostate cancer patients: a potential prognostic role?

Maddalena Minniti<sup>1</sup>, Grazia Barbarossa<sup>1</sup>, Ivano Schito<sup>1</sup>, Simona Cara<sup>1</sup>, Biagio Arcidiacono<sup>1</sup>, Ubaldo Prati<sup>2</sup>, Chiara Mignogna<sup>1</sup>, Giuseppe Donato<sup>1</sup> and Natalia Malara<sup>1</sup>

<sup>1</sup>University of Magna Graecia, 88100 Catanzaro, Italy

<sup>2</sup>Romolo Hospital, Crotone, Italy

**corresponding author:** nataliamalara@unicz.it

## I. INTRODUCTION

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ormal prostate epithelial cells have a peculiar and very inefficient energy metabolism as they use glucose to synthesize citrate that is secreted as part of the seminal liquid. During the transformation process, prostate cancer cells modify their energy metabolism from inefficient to highly efficient, often taking advantage of the interaction with other cell types in the tumour microenvironment. Recent studies indicate that lipid contents modulate the cross-talk between tumours and phenotypic modulation of immune cells, mainly myeloid cells, such as tumour-associated macrophages (TAMs). However, the increase concentration of lipids in TAMs was specifically found in tumour tissue, indicating that quality but not quantity of TAMs. This draws attention to a potential role of lipid metabolism during cancer development, wherein the increased lipid biogenesis is inspected as a parameter to predict the prognosis of prostate cancers (PC).

### A. Goal

To investigate on potential lipid metabolic targets and relative therapeutic approaches in PC through evaluation of foamy TAMs

### B. Hypothesis

Blood derived culture enriched for PC-CTCs cultures could be used as model to detect and analyse foamy TAMs.

### C. Ethical aspects

All Patients involved signed an informed consensus approved by the local Ethics Committee with the name CHARACTEX number 2013.34

## II. METHODS

We conducted an observational prospective CHARACTEX

project in patients with a PC diagnosis and healthy subjects. Within 4 hours from blood sampling collection, the cells were isolated through a gradient passage and seeded in chamber slide useful to obtain cytological preparations. The pellet of cultivated cells were also included in paraffin to obtain cell blocks preparations in the same patient.

## III. RESULTS

Cytological evaluation on short-term expanded blood-derived cultures of PC- patients distinguished morphologically foamy PC-TAMs [figure1] further confirmed by the expression of CD45<sup>pos</sup>, CD68<sup>pos</sup> respect to PC-CTCs identified by positivity expression of Pan-Ck<sup>pos</sup> and PSA<sup>pos</sup> antigens and CD45<sup>neg</sup> [1].

## IV. DISCUSSION

The morphology evaluation and immunocytochemistry of analysis on circulating PC-TAMs in blood-derived cultures suggest that the blood-derived cultures could be used as model for foamy PC-TAMs analysis and characterization.

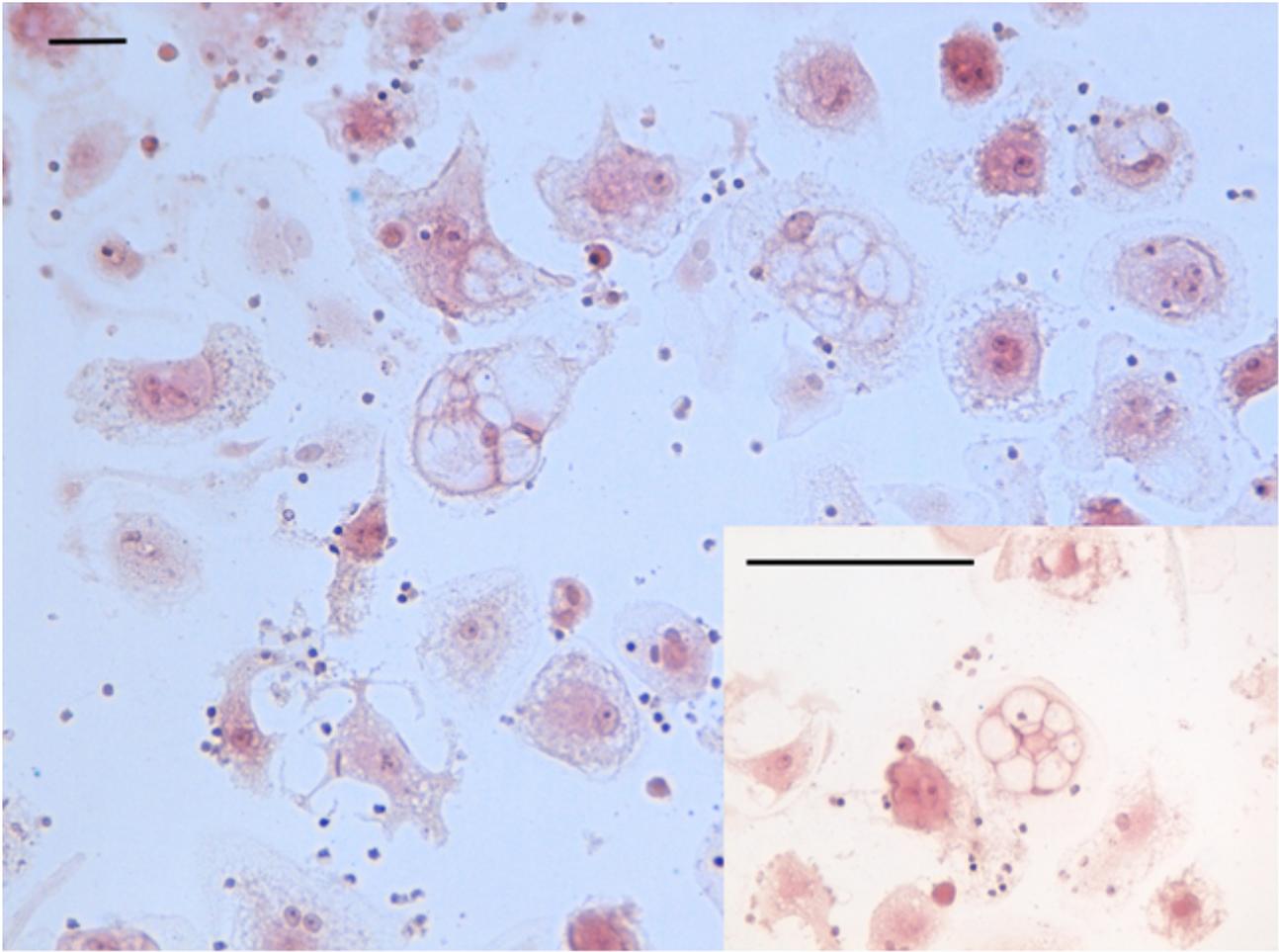
## V. CONCLUSIONS

Further studies of benchmarking with the clinical data are necessary to define the prognostic role of circulating foamy TAMs

## REFERENCES

- 1] Natalia Malara, Maria Laura Coluccio, Tania Limongi, Monica Asande, Valentina Trunzo, Gheorghe Cojoc, Cinzia Raso, Patrizio Candeloro, Gerardo Perozziello, Raffaella Raimondo, Stefania De Vitis, Laura Roveda, Maria Renne, Ubaldo Prati, Vincenzo Mollace, Enzo Di Fabrizio: Cancer Therapy: Folic Acid Functionalized Surface Highlights 5-Methylcytosine-Genomic Content within Circulating Tumor Cells (Small 21/2014). Biocontrol Science and Technology 11/2014; 10(21), DOI:10.1002/sml.201470135





**Figure 1.** Morphology of circulating foamy TAMs recognized in blood-derived cultures derived from a peripheral blood sample of advanced prostate cancer patient (Scale bars=20  $\mu$ m)