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UNIVERSITÀ CAMPUS BIO-MEDICO DI ROMA

ANALYSIS OF TUMOR-INFILTRATING B LYMPHOCYTES FOR THE DESIGN OF NEW THERAPEUTIC STRATEGIES BASED ON SYNTHETIC ANTIBODIES

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CONFERENCE
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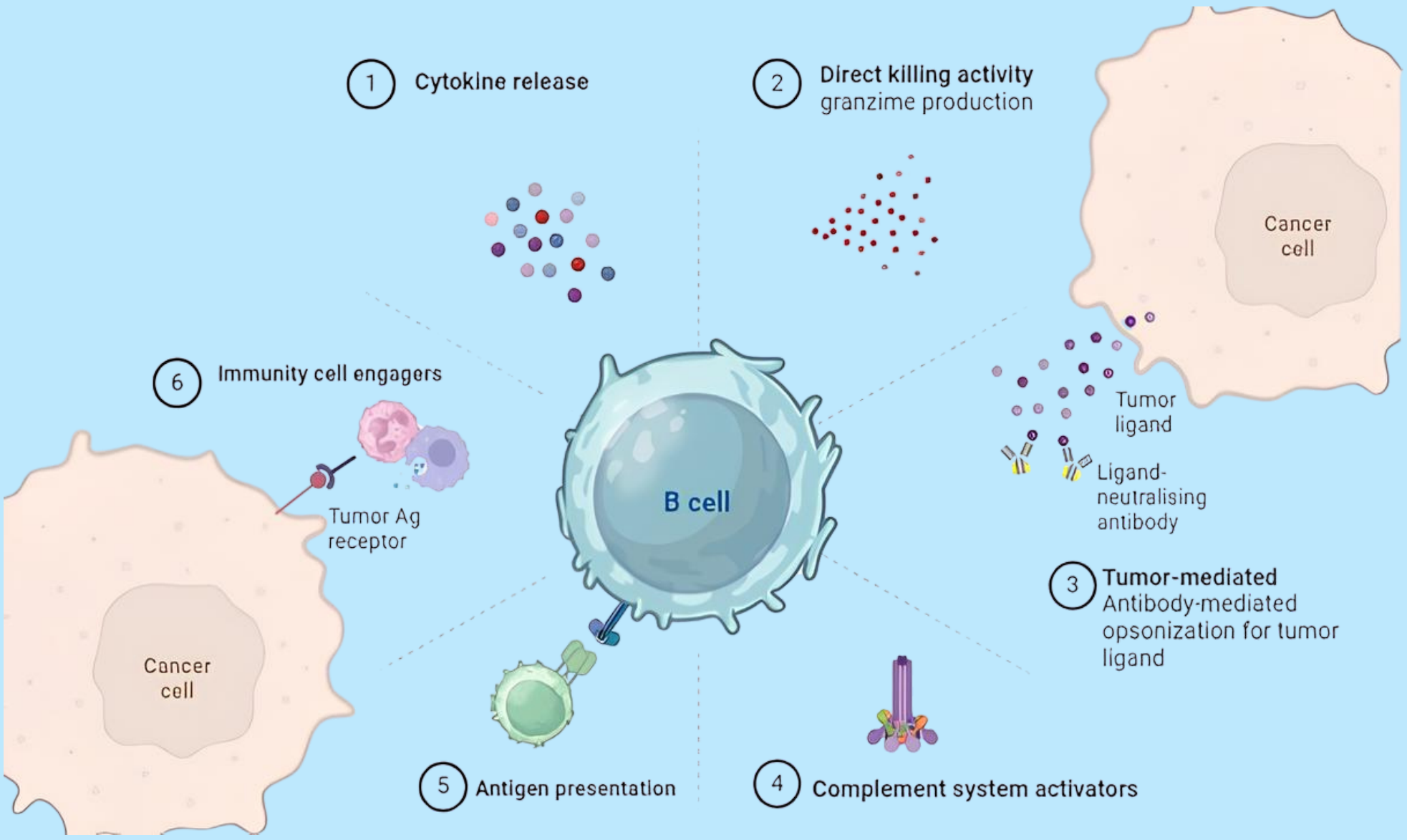
Italiadomani PIANO NAZIONALE DI RIPRESA E RESILIENZA
ROME TECHNOPOLE INNOVATION ECOSYSTEM

BACKGROUND

B cells are well-established as a part of adaptive immune system, but only recently began to elucidate their **role in cancer**. **Density of B cells and antibody titer** often correlated with a **favorable prognosis in several human tumors**, like soft-tissue-sarcomas. However, we still have a poor understanding of heterogeneity and diversity of infiltrating B cells which poses a major obstacles when targeting B cells as oncological treatments.



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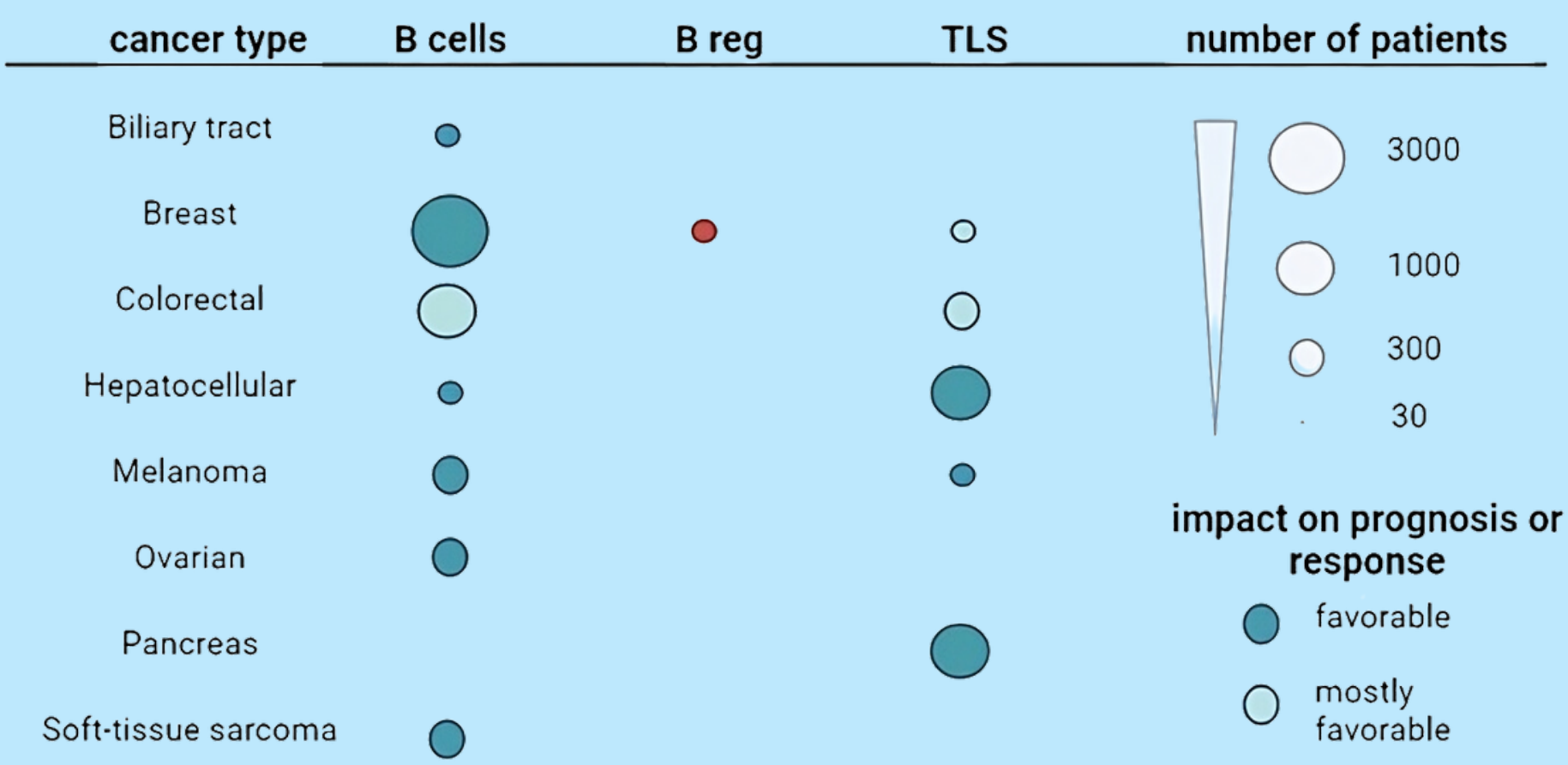
BACKGROUND

Analysis of intratumorally B cells by single-cell technology and **identification of Ig repertoire** will permit the design of **new immunotherapies for cancer treatment.**



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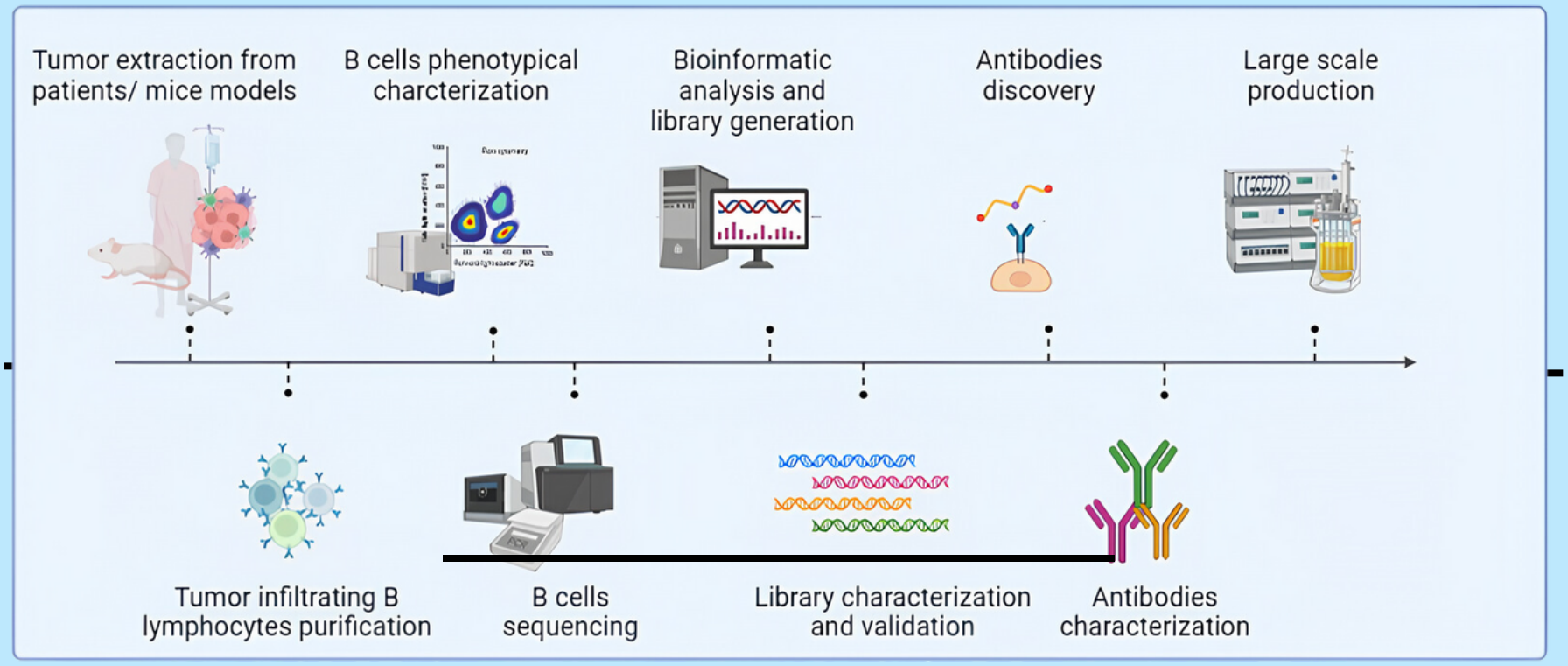
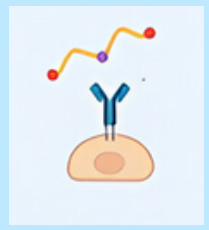
RESULTS





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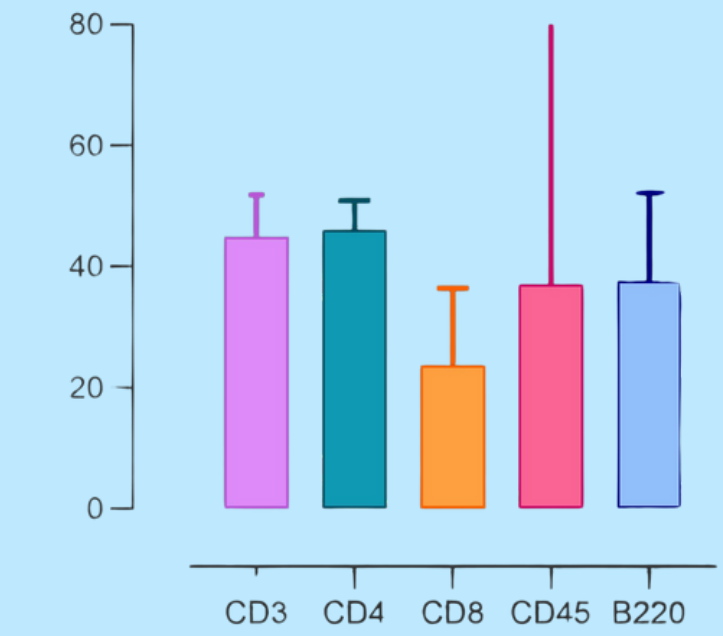
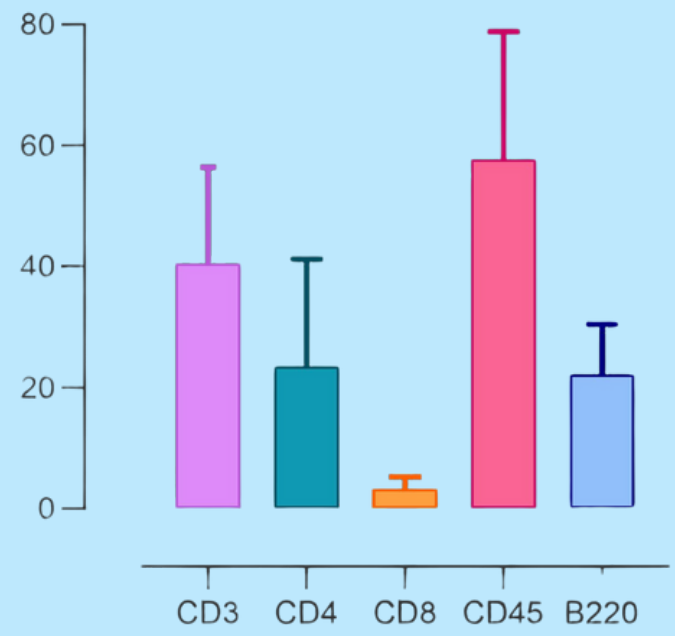
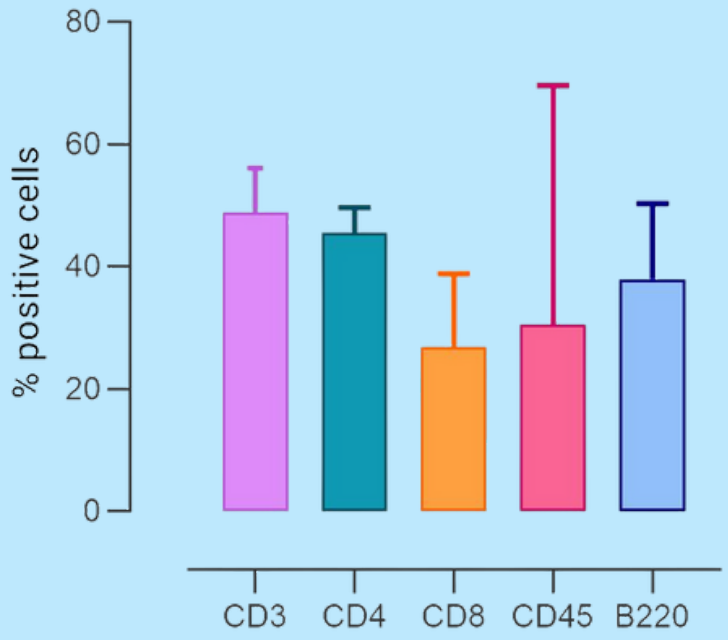
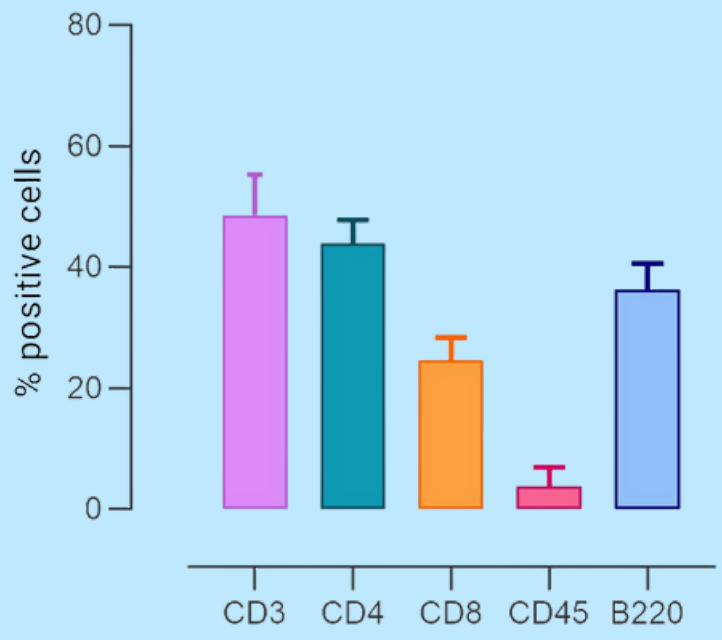
PHENOTYPIC CHARACTERIZATION OF LYMPHOCYTE INFILTRATE POPULATIONS









Takis successfully identified lymphocyte infiltrates in murine sarcoma (A-B) (analogous to the human target) and muscle carcinoma (C-D) models, effectively demonstrating the feasibility of the workflow related to the characterization of lymphocytes in an in vivo model.

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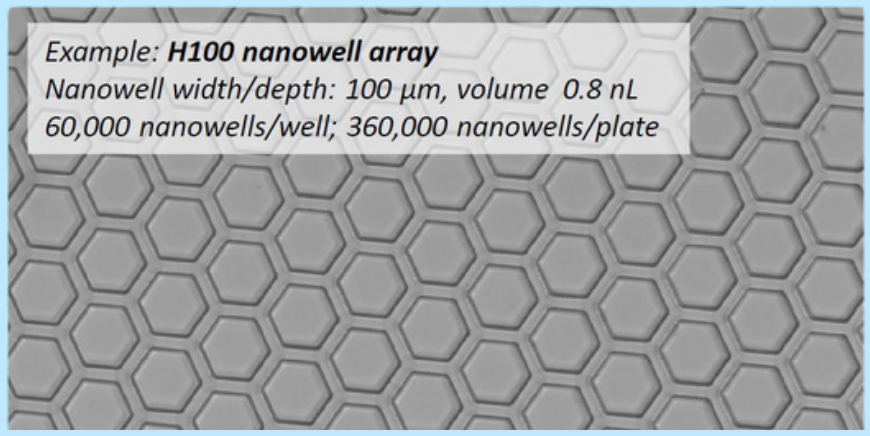
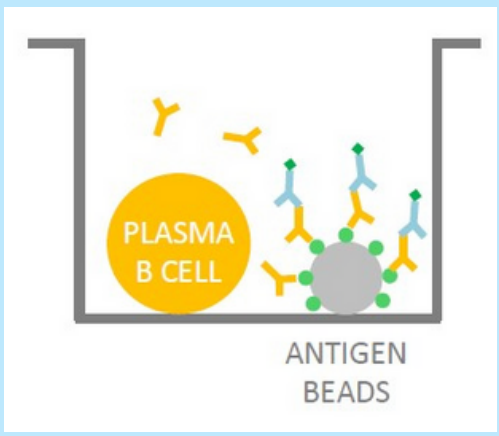
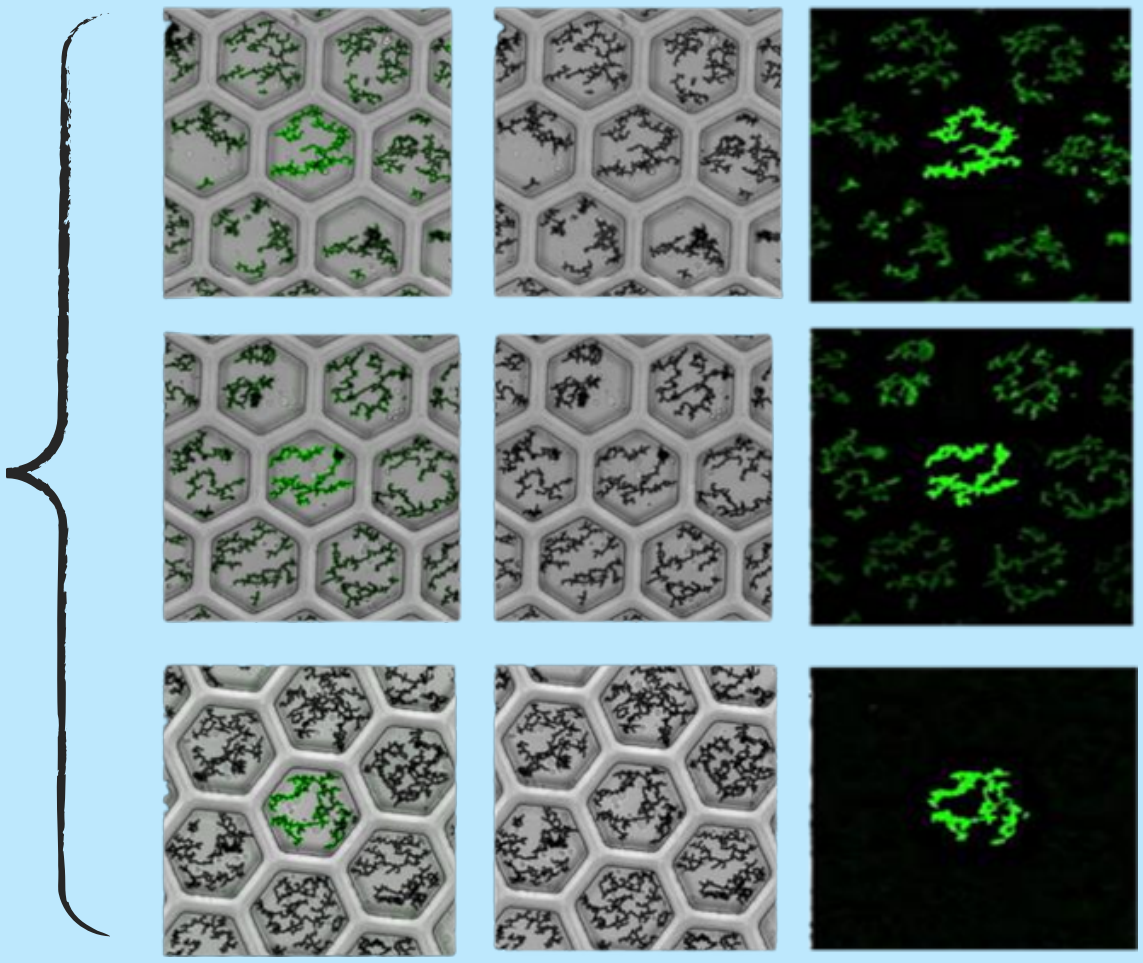
VALIDATE PROTOCOLS FOR IDENTIFYING B-CELLS USING CELLCELECTOR SYSTEM







CellCelector employs a unique cell culture plate with a "honeycomb" polymer, converting standard culture well into an array of thousand microwells. If present, antibodies secreted from plasma cells, surround the antigen-beads complex (A). A secondary antibody conjugated to a fluorochrome allows the detection of specific antigen B cells that are picked thanks to a glass microcapillary and deposit in a PCR destination plate for next generation sequencing (B). AF488: Alexa Flour 488.

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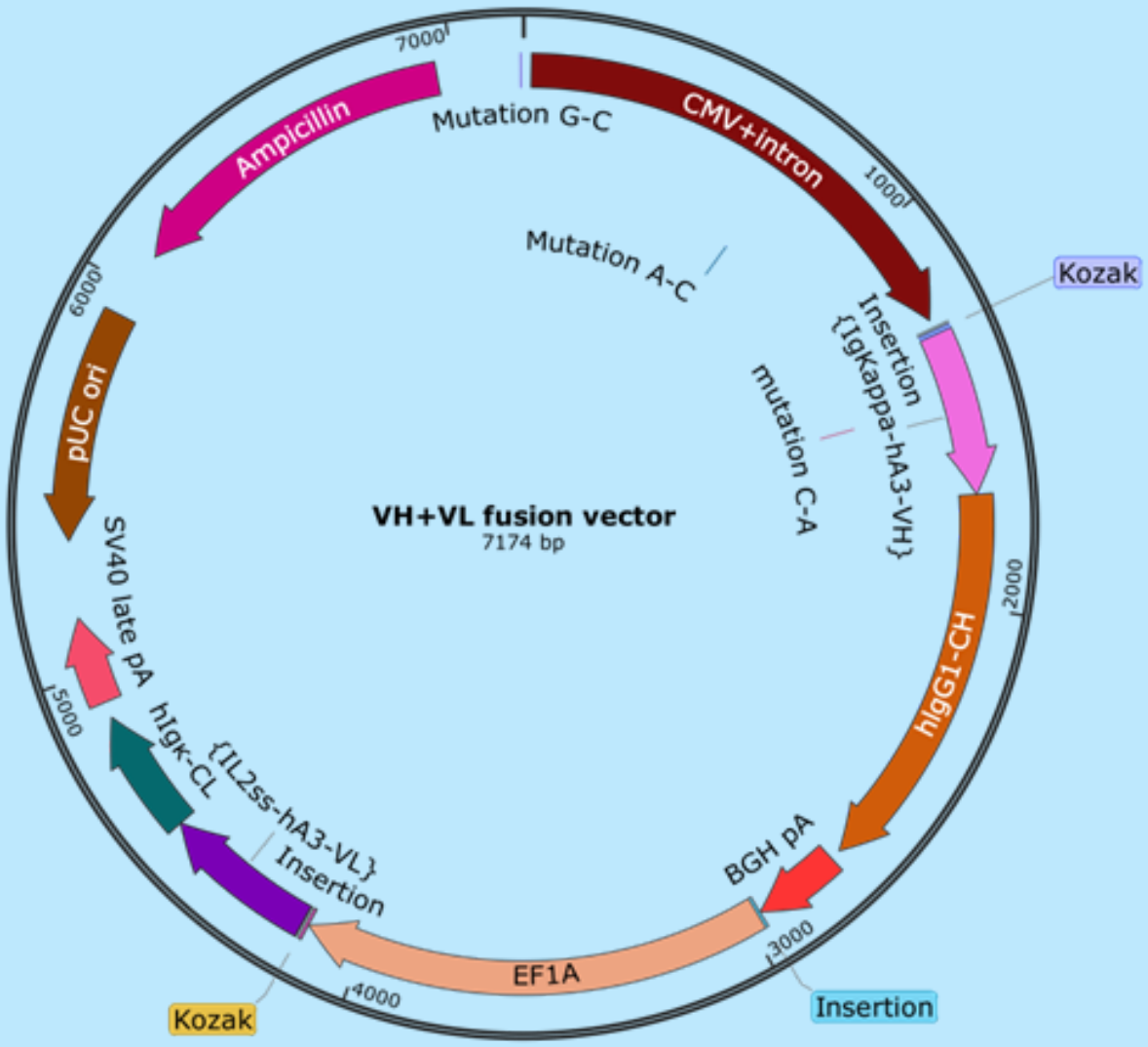
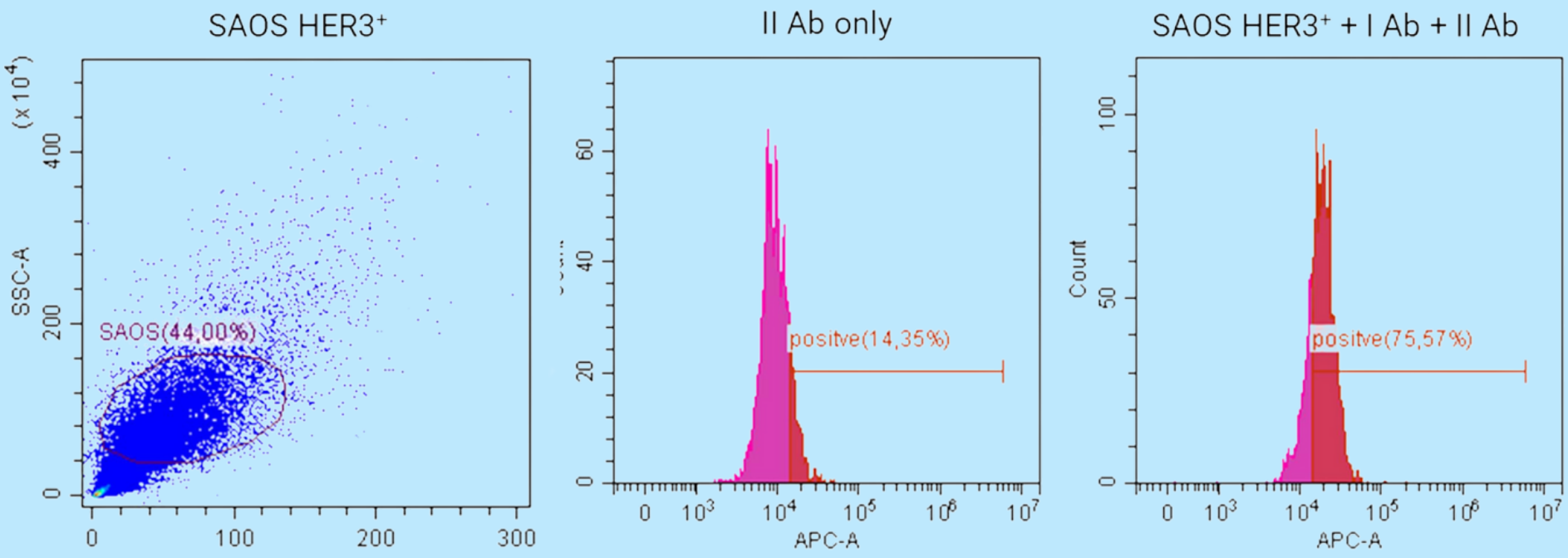
DESIGN OF AN IN-HOUSE EXPRESSION VECTOR FOR LIBRARY CHARACTERIZATION





The expression vector contain both VH and VL variable domain of a selected antibody in frame with human IgG1 constant regions. Antibody functionality was evaluated by Facs assays.

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CONCLUSION AND FUTURE GOALS

While waiting for soft tissue sarcomas of human patients, **Takis** and **Campus Biomedico** continued to **develop technologies** and **processes** required **for the experimental project**. Takis has made **significant progress** in its research endeavours, leveraging collaborative partnerships, innovative methodologies, and cutting-edge technologies to advance cancer treatment.

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