OFFICIAL ABSTRACT and CERTIFICATION

Assessing the Crosstalk between CD47 and SIRPa and its Role in Modulating Tumor Cell Growth

Juliane Baco
Massapequa High School, Massapequa, NY, United States

Abstract

CD47 has been found to be over expressed in melanoma, leukemia and lymphoma tumors and to bind with SIRPα to avoid phagocytosis. However, in melanoma cells, blocking CD47 expression does not enhance the phagocytosis process. Surprisingly, we found and confirmed that melanoma cells express SIRPα, and so became curious as to if the CD47 and SIRPα interaction within tumor cells had a biological function to modulate tumor cell growth. To test, cell viability was assessed by MTT assay and flow cytommetry. Gemcitabine was used as positive control, and the antibody against murine CD47 (clone MIAP301) was used. Results indicate that gemcitabine was effective in decreasing the viability of cells by around 50% in all tumor cells studied. In RAW264.7 cells and B16 cells, but not MC38 cells, cell viability was decreased upon administration of the CD47 blocking antibody. Flow cytometry data also confirmed the CD47 and SIRPα expression of the corresponding cells. The data suggests that there is a biological function in the crosstalk of CD47 and SIRPα and that it modulates cell viability, as well as a potential biological function of CD47 and SIRPα interaction in RAW 264.7 cells.

Category
Pick one only — mark an "X" in box at right

- Animal Sciences
- Behavioral & Social Sciences
- Biochemistry
- Biomedical & Health Sciences
- Biomedical Engineering
- Cellular & Molecular Biology ■
- Chemistry
- Computational Biology & Bioinformatics
- Earth & Environmental Sciences
- Embedded Systems
- Energy: Sustainable Materials and Design
- Engineering Mechanics
- Environmental Engineering
- Materials Science
- Mathematics
- Microbiology
- Physics & Astronomy
- Plant Sciences
- Robotics & Intelligent Machines
- Systems Software
- Translational Medical Sciences

1. As a part of this research project, the student directly handled, manipulated, or interacted with (check ALL that apply):

   ☐ human participants ■ potentially hazardous biological agents

   ☐ vertebrate animals ☐ microorganisms ☐ rDNA ■ tissue

2. I/we worked or used equipment in a regulated research institution or industrial setting: ■ Yes ☐ No

3. This project is a continuation of previous research. ☐ Yes ■ No

4. My display board includes non-published photographs/visual depictions of humans (other than myself): ☐ Yes ■ No

5. This abstract describes only procedures performed by me/us, reflects my/our own independent research, and represents one year's work only ■ Yes ☐ No

6. I/we hereby certify that the abstract and responses to the above statements are correct and properly reflect my/our own work. ■ Yes ☐ No

This stamp or embossed seal attests that this project is in compliance with all federal and state laws and regulations and that all appropriate reviews and approvals have been obtained including the final clearance by the Scientific Review Committee.