OFFICIAL ABSTRACT and CERTIFICATION

Evaluating the specificity of novel monoclonal antibodies for pancreatic ductal adenocarcinoma

Alex Breslav

Pancreatic ductal adenocarcinoma (PDAC) is the most common type of pancreatic cancer and is the fourth leading cause of cancer-related death. The high mortality is due to the asymptomatic traits of PDAC and lack of efficient diagnosis techniques. Currently, the major method of detecting PDAC is with positron emission tomography (PET) tracer 18F-FDG. Cancerous tumors can also be delineated through the use of monoclonal antibody-antigen interactions, targeting antigens (e.g., CA19.9 and CEA). These antigens, however, have resulted in inconsistent diagnosis and high background signal. Other antigens are currently being explored. This study evaluates the efficacy of two putative antibodies (AB1 and AB2) for PDAC detection.

PET scans were obtained from mice injected with PDAC and radiolabeled antibodies. Scans were obtained from mice after 5 hour, 1 day, 2 day, 3 day, 4 day, and 6 day time points. Results from immunohistochemical stainings were also obtained.

According to biodistribution data and PET scans, PDAC tumors show the highest Percent Injected Dose per gram (%ID/g). This value is minimal elsewhere in the body. In comparison to CA19.9 and CEA, the antigen for AB1 and AB2 does not seem to be shed into circulation, resulting in minimized background radiation.

The data from this study supports the potential use of the antibodies for PDAC tumor delineation. Studies to determine the antigen(s) to which the antibodies that the antibodies AB1 and AB2 bind to are currently being performed.

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: Chemical	☐
Energy: Physical	☐
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.