Activists target transportation of lab animals to shut down research

Animal rights groups trying to prevent the use of animals in biomedical research have recently begun targeting airlines and ferry companies involved in transporting lab animals, urging the companies to stop transporting the animals. Last week, ferry companies entirely ceased transporting all research animals into the UK. As The Channel Tunnel and all UK-based airlines already refuse to carry the animals, very few options remain for laboratories in the UK.

Former UK science minister Lord Drayson wrote in the *Times of London* that for transportation companies to bow to protestors' demands would be "inadvertently choking off vital research into some of the most debilitating diseases affecting our society." An editorial published in *Nature* argued that if scientists want continued access to animals as research models, they will have to appear with as much visibility and determination as animal-rights activists (*Nature* **483**, 373–374; 2012).

Transportation of lab animals into the US is also being targeted by protestors. Only

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a few major airlines continue to transport non-human primates and other research animals bound for research labs in the US. Many airlines, including Lufthansa, British Airways and Virgin Atlantic, already refuse to carry research primates. Air Canada is petitioning the Canadian Transportation Agency for permission to refuse to transport research primates in the future. Air France faces mounting pressure as the last major European carrier to transport research primates. United Airlines was the last major US airline to carry non-human primates for research, but its merger with Continental may put that policy in jeopardy.

Matthew Bailey, vice-president of the National Association for Biomedical Research in Washington, DC, told *Nature News*, "It's unfortunate that some airlines have chosen to capitulate to a small number of individuals with an agenda, who aren't truly representative of the general public."

Air travel is considered the fastest and least stressful way of transporting the animals, and many argue that moving the animals by other means can have deleterious effects on the animals' health. Making travel conditions less humane for animals is not the only way in which restricting the transport of animals may have the opposite of the intended effect. Researchers may be encouraged to move their research to countries where regulations are more lax. Furthermore, as Robin Lovell-Badge writes for *New Scientist*, "If we cannot transport animals, experiments will be repeated unnecessarily... This goes against the principles of reducing and refining the use of animals, which are important to reduce suffering."

Kara Rosania

BLOCKING CD47 TO STOP TUMOR GROWTH

CD47 is a protein flag normally expressed on the surfaces of certain cells, such as circulating blood stem cells, to protect them from an organism's immune system. About 10 years ago, Irving L. Weissman (Stanford University School of Medicine, CA) and colleagues showed that certain types of cancer, especially leukemia and lymphoma cells, also expressed CD47, helping them to evade destruction by immune cells. In the past few years, various research groups have successfully used antibodies against CD47 to cure some cases of leukemia and lymphoma in mice.

Now, a team led by Weissman reports that blocking CD47 is also effective in treating a host of human solid cancers transplanted into mice: breast, ovary, colon, bladder, brain, liver and prostate tumors shrank substantially or even disappeared completely when treated with antibodies against CD47 (*Proc. Natl. Acad. Sci. USA* doi:10.1073/pnas.1121623109; published online 26 March 2012).

Weissman explained the findings in a press release: "What we've shown is that CD47 isn't just important on leukemias and lymphomas. It's on every single human primary tumor that we tested." Higher expression levels of CD47 were associated with lower rates of progression-free and overall patient survival, suggesting that CD47 expression may be a useful prognostic tool in some solid tumors.

When placed together *in vitro*, immune cells called macrophages failed to destroy cancer cells. But with the addition of monoclonal antibodies against CD47, the macrophages engulfed and destroyed the cancer cells. Furthermore, when human-derived tumors were transplanted into mice and treated with anti-CD47, the tumors shrank and did not spread throughout the body. In five mice with breast cancers, treatment with anti-CD47 prevented tumor growth, and the mice remained cancer-free for 4 months afterwards. In mice with colon cancers, the tumors shrank to about one-third of their original sizes after treatment with anti-CD47. And in mice with bladder tumors, cancer spread to the lymph nodes in all 10 mice that did not receive anti-CD47 but in only 1 of 10 mice that were given the antibody.

Weissman stated, "Blocking this 'don't-eat-me' signal inhibits the growth in mice of nearly every human cancer we tested, with minimal toxicity. This shows conclusively that this protein, CD47, is a legitimate and promising target for human cancer therapy." The CD47 antibody wasn't 100% effective, however: mice with tumors transplanted from one person with breast cancer did not respond to the treatment. Nevertheless, Weissman's group is eager to begin testing the treatment in human clinical trials.

Monica Harrington