Engineered bacteria effectively target tumors, enabling tumor imaging potential in mice

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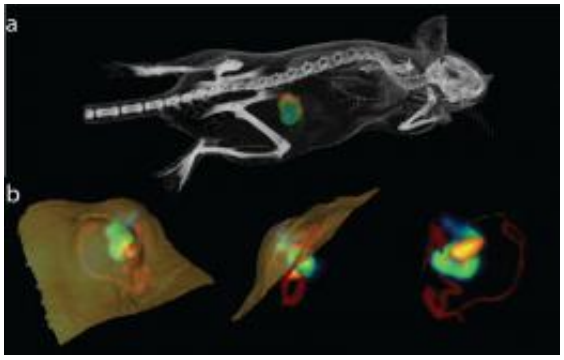

This is a scan of live mouse (using a combination of 3-dimensional bioluminescence and CT) revealing location of both bacteria and tumor (a). Lower image (b) shows, from 3 different rotational views, a magnification of the tumor, revealing the precise location of live bacteria (orange/yellow) within the tumor (green/blue) and the tumor's main blood supply (red). Image: PLoS ONE, doi:10.1371/journal.pone.0030940

Tumor-targeted bioluminescent bacteria have been shown for the first time to provide accurate 3D images of tumors in mice, further advancing the potential for targeted cancer drug delivery, according to a study published in the Jan. 25 issue of the online journal *PLoS ONE*.

The specially engineered probiotic bacteria, like those found in many yoghurts, were intravenously injected into mice with tumors, after which the researchers took full body bioluminescent images. The 3D images revealed information about the number and location of the bacteria, to the level of precisely revealing where within the tumour the bacteria were living, providing much more information on the interaction of bacteria and tumors than was previously available using similar two-dimensional imaging methods.

According to the authors, led by Mark Tangney of University College Cork in Ireland, "before now, researchers used luminescence to provide an approximation of where a test organism was within the body, and would then follow up with multiple further experiments using different techniques to try to find a precise location". This new research suggests that such bacteria can be engineered to contain diagnostic or therapeutic agents that would be produced specifically within the tumor for targeted treatment.

More information: Cronin M, Akin AR, Collins SA, Meganck J, Kim J-B, et al. (2012) High Resolution In Vivo Bioluminescent Imaging for the Study of Bacterial Tumour Targeting. *PLoS ONE* 7(1): e30940. doi:10.1371/journal.pone.0030940

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