How does the human microbiome affect cancer outcome?

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In breast cancer tissue, recent evidence indicates that bacteria or their components may influence the local tumour microenvironment [1]. However, up till now, the role of the human microbiome on breast cancer progression remains unclear. Therefore, in this study, we investigated the influence of several quorum sensing peptides, produced by the guest’s microbiome, on breast cancer cell (*i.e.* MCF-7/AZ) invasion and thus cancer outcome. Based on microscopy, transcriptome and Chick Chorioallantoic Membrane (CAM) analyses, some peptides (*i.e.* PhrG from *B. subtilis*, CSP from *S. mitis* and EDF from *E. coli*, together with its tripeptide analogue) were found to promote tumour cell invasion and angiogenesis, thereby influencing tumour metastasis. As some of these quorum sensing peptides pass the intestinal epithelium, as evidenced by Caco-2 cell results, these breast tumour-promoting effects can originate from gut bacteria as well. Our findings thus clearly confirm the crosstalk phenomenon between the human microbiome and mammalian cells, previously observed in colon cancer [2].



[1] Xuan, C. *et al*. *Plos One,* **2014**, *9*.

[2] Wynendaele, E. *et al*. Submitted, **2014**.