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## **Comparative effectiveness**

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Recent studies indicate that non-virulent strains of *Salmonella enterica* serovar typhimurium (*S. typhimurium*) have tumor-targeting activity. Indeed, *S. typhimurium* has been observed to selectively target cancer tissue by a ratio of over 1000:1. However, most of these studies focused on the cancer cell selectivity of one strain, the genetically modified *S. typhimurium* VNP20009. One such study found that a single IV injection of VNP20009 produced tumor growth inhibition of 57-95% in mice. Another study conducted by Thamm and associates found that administration of VNP20009 results in detectable bacterial colonization of tumor tissue and partial anti-tumor activity in tumor-bearing dogs. However, VNP20009 was shown to be too toxic when given to cancer patients in phase I clinical tests. Scientists at Columbia's Cancer Research Center discovered an archival strain of *S. typhimurium* (CRC1674) that destroys PC-3M prostate cancer without extensive lysis of the cancer cells, a factor thought to contribute to the toxicity of VNP20009. My research strategy involved microarray analysis of the CRC1674 genetic sequence, identifying nine genes that had been deleted during its archival period of over forty years. I deleted these nine genes from VNP20009 using the Red-Swap protocol to determine if these gene(s) were responsible for preventing VNP20009-mediated cancer cell lysis. The *S. typhimurium* strains were then transformed with fluorescence plasmids and compared in timed competition studies for their effectiveness in targeting tumor cells.