

## Exploring the Gut Microbiome in Cancer

Gut microbiome engineering for cancer therapies

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### **Abstract**

The gut microbiota has been established to possess properties that can be manipulated and resultantly aid in preventing and reducing malignancies. A major approach to achieving this is by engineering bacteria to transport therapeutic payloads that can effectively target the cancer microenvironment. This can be accomplished through various techniques like tumor-targeting probiotic bacteria, genetic engineering, and surface modification. This chapter explores the innovative techniques and approaches that can be used to enhance cancer therapy by modifying the gut microbiota chassis using synthetic biology, microbial therapies, and personalized treatments. By leveraging the potential of gut microbiota, we may be able to transform cancer therapy and pave the way for more successful treatments and outcomes.

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The gut microbiota has been established to possess properties that can be manipulated and resultantly aid in preventing and reducing malignancies. A major approach to achieving this is by engineering bacteria to transport therapeutic payloads that can effectively target the cancer microenvironment. This can be accomplished through various techniques like tumor-targeting probiotic bacteria, genetic engineering, and surface modification. This chapter explores the innovative techniques and approaches that can be used to enhance cancer therapy by modifying the gut microbiota chassis using synthetic biology, microbial therapies, and personalized treatments. By leveraging the potential of gut microbiota, we may be able to transform cancer therapy and pave the way for more successful treatments and outcomes.