CRISPR gene editing in cancer – real cures *in vivo* using stealth nanoparticle

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Cancer is caused by gene mutations and reengagements that alter cell growth and death pathways and while current treatments give an overall 70% response rate (all cancers) none tackle cancer at its very heart – the gene itself. Gene therapies have been applied for various conditions but for cancer no product is in clcincial use. The advent of CRISPR gene editing technologies offers a new treatment modality that will target the very genes that have gone wrong in cancers.

Using virally driven cancers, specifically the human papillomavirus, as a model system we have examined the development gene editing to treat cancer. Building on our previous RNAi work we have applied our in vivo expertise and delivery nanoparticle systems in these preclinical animal models looking at both direct tumour killing and subsequent immune responses. We show for the first time anywhere that we are able to cure animals of cancer using gene editing. I will share the rationale and details of the work and examine the gene editing fields' potential as a cancer treatment.

Luqman Jubair, Sora Fallaha, and Nigel AJ McMillan. Systemic Delivery of CRISPR/Cas9 targeting HPV oncogenes is effective at eliminating established tumors. Molecular Therapy, 4;27(12):2091-2099