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# Linear doggybone™ DNA vaccine induces comparable immunological responses to conventional plasmid DNA vaccine via STING and independently of TLR9

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DNA vaccines represent an attractive and potentially an effective modality to induce immunity against cancer. Recently a linear DNA with closed ends, the so-called doggybone DNA (dbDNA™), has been developed without the use of bacteria. The manufacturing relies on use of Phi29 DNA polymerase to amplify a plasmid template followed by protelomerase TelN to complete individual closed linear DNA. The final DNA product composes of the sequences encoding an antigen of interest, a promoter and a poly A tail, but lacks 'useless' bacterial sequences such as antibiotic resistance genes. We compared the ability of dbDNA™ vaccine with plasmid DNA vaccine with and without *in vivo* electroporation to induce adaptive immunity using clinically relevant onco-targets HPV16 E6 and E7. Despite the inability to trigger TLR9, dbDNA™ induced similar levels of Th1 CD4 and CD8 T cells as well as antibody immunity against the target antigens, with suppression of established TC-1 tumors. We demonstrated that dbDNA™ was able to activate innate immunity via STING, with induction of Th1-inducing cytokines and type I interferons. Collectively, dbDNA™ is a highly attractive novel DNA vaccine platform to induce anti-cancer immunity.

## Biography

Chuan Wang has a strong interest in Tumor Immunology and Cancer Vaccines Development. He has completed his PhD in Cancer Immunology at University of Southampton in 2014. During his PhD, he was working on developing of a novel platform to induce T-cell responses against cancer, which was based on plant viral nanoparticles (PVP). He has identified several HLA-A2+ epitopes derived from novel cancer antigens. He is now working with Dr. Natalia Savelyeva and Prof. Gareth Thomas on development of novel vaccines for HPV negative head and neck cancer.

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