

## pTVG4 DNA Sequence:

tggccattgcatacgttgatccatatcataatatgtacatttatattggctcatgtccaacattaccgcatgttgacattgattattgactagttattaat  
agtaatcaattacggggtcatttagttcatagcccatatatggagttccgcttacataactacggtaaatggcccgcctggctgaccgccaacgacc  
cccgccattgacgtcaataatgacgtatgttccatagtaacgccaatagggactttcattgacgtcaatgggtggagatttacggtaaactgcc  
acttggcagtacatcaagtgtatcatatgccaagtacccccctattgacgtcaatgacggtaaattggcccgcctggcattatgccagtacatgacct  
tatgggactttctacttggcagtacatctacgtattagtcacgtattaccatgggtgatgcggttttggcagtacatcaatgggctggatagcggttt  
gactcacgggatttccaagtctccacccttggcgtcaatgggagttgttttggcaccatacaacgggactttccaaatgtcgaacaactcc  
gccccattgacgcaaattggcggttaggcgtgtacgggtgggaggtctatataagcagagctcgtttagtgaaccgtcagatcgctggagacgcatcc  
acgctgtttgacctccatagaagacaccgggaccgatccagctccgcgggcgggaacgggtgattggaacgaggattccccgtgccaagagtac  
gtaagtaccgctatagactctataggcacaccctttggctctatgcatgctatactgttttggcttggggctatacacccccgcttcttatgctat  
aggatgatggatagcttagcctatagggtggtttattgaccattattgaccactccaacgggtggaggcagtgtagtctgagcagtagtactgctgctgc  
gcgcgccaccagacataatagctgacagactaacagactgttctttccatgggtctttctgacgtcaccgtcgtcgacggtatcgataagcttgat  
atcgaaattcacgtgggcccggtagctatactctagagcggccggtaccagatctaacgacaaaacgacaaaacgacaaggcgcagatctggc  
gtttcgttttgcgttttgcgttagatcttttccctctgcaaaaattatggggacatcatgaagcccctgagcatctgactctgctaataaaggaa  
atatttttcatgcaatagtggttgaatttttgtgtctctcactcggaggacatattgggaggcacaatcattaaaacatcagaatgagatttgggt  
ttagatttggcaacatagcccattcttccgcttctcgtcactgactcgtcgcctcggctgctcggtcgtcggtcgcggcagcggtatcagctcaagg  
cgtaatacgggtatccacagaatcaggggataacgcaggaagaacatgtgagcaaaaggccagcaaaaggccaggaaccgtaaaaaggccgc  
gttgcgtggcgttttccataggctcgcctcgtgacgagcatcaaaaaatcgacgtcaagttaggggtggcaaacccgacaggactataaagat  
accaggcgtttccccctggaagctcctcgtcgcctctcgttccgacctcgcctaccggatacctgtccgctttctcccttgggaagcgtggcg  
ctttctcatagctcacgctgtaggtatctcagttcgggtgtaggtcgttcgctccaagctgggctgtgtgcacgaacccccggtcagcccagcgtcgc  
ctatccggtaactatcgtctgagccaaccggtaagacacgacttatcgccactggcagcagccactggaacaggattagcagagcgaggtatg  
tagggcgtgctacagagttctgaagtgggtggcctaactacggctacactagaagaacagtagtttggtatctcgcctctgctgaagcagttaccttgcg  
aaaaagagttgtagctcttgatccggcaaaacaaccaccgctgtagcgggtggttttttggcaagcagcagattacgcgcaaaaaaaggat  
ctcaagaagatcctttgatcttttctacgggtctgacgctcagtggaacgaaaactcacgttaaggattttggtcatgagattcaaaaaaggatctt  
cacctagatccttttaataaaaaatgaagtttaaatcaatctaaagtatatgagtaaactggctgacagttaccaatgcttaacagtgaggca  
cctatctcagcgtctgtctatttctgttcatcattagttgcctgactcggggggggggcgctgaggtctgcctcgtgaagaaggtgttgcctgactcat  
accaggcctgaatcgcccatcatccagcagaagttagggagccacgggtgatgagagcttggtaggtggaccagttggtgatttgaacttt  
gctttgccacggaacggtctcgttgcgggaagatgctgatctgatcctcaactcagcaaaagttcgattttatcaaaaagcccgctcccgtca  
agtacgctaagtctcgtcaggtgtacaaccaataaccaattctgattagaaaaactcatcgagcatcaaatgaaactgcaatttattcatatcagg  
attatcaataccatattttgaaaagcgtttctgtaatgaaggagaaaactcaccgaggcagttccataggatggcaagatcctggatcggtctgc  
gattccgactcgtcaacatcaatacaacctataatttccctcgtcaaaaataaggttatcaagtgagaaatcaccatgagtgacgactgaatccgg  
tgagaatggcaaaagcttatgcatcttccagactgttcaacaggccagccattacgctcgtcatcaaaatcactcgcacaaacaccgttattc  
attcgtgattgctcctgagcagacgaaatacgcgatcgtgttaaaaggacaattacaacaggaatcgaatgcaaccggcgaggaacactgcc  
agcgcatacaaatattttcacctgaatcaggatattcttctaatacctggaatgctgttttccggggatcgagtggtgagtaacctgcatcatcag  
gagtagcagataaatgcttgatggcgaagaggcataaattccgtcagccagtttagtctgacatctcatctgtaacatcattggcaacgctacctt  
gcatgtttcagaacaactcggcgcacgggctccatacaatcgatagattgtcgcacctgattgcccacattatcgcgagccattataccca  
tataaatcagcatcattgttgaatttaacgcggcctcagcaagacgtttcccgttgaataggctcataacaccctgtattactgttatgtaagc  
agacagttttattgtcatgatgatatattttatctgtgcaatgtaacatcagagattttgagacacaactggctttccccccccccattattgaag  
catttatcagggttattgtctcatgagcggatacatatttgaatgtatttagaaaaataaacaatagggttccgcgcacatttccccgaaaagtgcc  
acctgacgtctaagaacaccattatcatgacattaacctataaaaataggcgtatcacgaggcccttctcgtcgcgcttccggtgatgacggtgaa  
aacctctgacacatgacgctcccggagacgggtcacagcttctgtgtaagcggatgcccgggagcagacaagcccgtcagggcgctcagcgggtgtg  
gcgggtgctggggctggcttaactatcgggcatcagagcagattgtactgagagtgacccatattcgggtgtgaaataccgcacagatgctgaaggag  
aaaataccgcatcagattggctat

Courtesy of Dr. Douglas McNeel from University of Wisconsin.

**Reference:** Johnson LE, Frye TP, Arnot AR, Marquette C, Couture LA, Gendron-Fitzpatrick A, McNeel DG. Safety and immunological efficacy of a prostate cancer plasmid DNA vaccine encoding prostatic acid phosphatase (PAP). *Vaccine*. 2006 Jan 16;24(3):293-303. PubMed: <http://www.ncbi.nlm.nih.gov/pubmed/16115700> .

**Note:** The highlighted sequence with yellow color represents two back-to-back copies (the second copy is inverted) of the following 36-bp insert in the BglII site downstream of the multi-cloning site of the pNGVL3 vector: AGATCTAACGACAAAACGACAAAACGACAAGGCGCC .