

## SEQUENCE LISTING

$\alpha 1$ :

- E6

Forward: 5'- RGTACWTCTGCCTCATCACAGCC -3' (SEQ ID N-1)

Reverse: 3'- CTCTGCAMTGSGTACASCGAC -5' (SEQ ID N-2)

- E7

Forward: 5'- GGARASRCRCWACSTAAAGGA -3' (SEQ ID N-3)

Reverse: 3'- CACGCRGGCACACAAWGGACA -5' (SEQ ID N-4)

- L1

Forward: 5'- GCGGCCTAGTGACRACAAGG -3' (SEQ ID N-5)

Reverse: 3'- GCACGYAACCCRGCTGCAG -5' (SEQ ID N-6)

$\alpha 2$ :

- E6

Forward: 5'- GHGHGCCMTAYGSGCCTGTG -3' (SEQ ID N-7)

Forward: 5'- CKCCSTACGGTGCWTGTGC -3' (SEQ ID N-8)

Reverse: 3'- GCGGACCGTGCATCKTRWCCA -5' (SEQ ID N-9)

Reverse: 3'- GGCTTTGGCCCATGCATCGT -5' (SEQ ID N-10)

Reverse: 3'- GTGCATCGTGACCAGCAGTAC -5' (SEQ ID N-11)

- E7

Forward: 5'- TTGRDTCTTGACACCAGAGGMCCTG -3' (SEQ ID N-12)

Forward: 5'- TGCACGGTCCGCATCCAC -3' (SEQ ID N-13)

Forward: 5'- TGTCTATGGGTGCACAAGAACCC -3' (SEQ ID N-14)

Reverse: 3'- CCCTTATATCTGCKTSGCTGCWS -5' (SEQ ID N-15)

Reverse: 3'- GCAGCGAGGRCACACGASC -5' (SEQ ID N-16)

Reverse: 3'- GGACCGTGCATCGTGACCA -5' (SEQ ID N-17)

- L1

Forward: 5'- ATGGCWYTSTGGCGCYCTAGTG -3' (SEQ ID N-18)

Reverse: 3'- CCTCCARGCTAGTRGAYGGYGGY -5' (SEQ ID N-19)

Reverse: 3'- GGGRACYACYGAACGMCGKCGCG -5' (SEQ ID N-20)

α3:

- E6

Forward: 5`- AGTGGACRGGRAAGTGCWGCAAC -3` (SEQ ID N-21)

Forward: 5`- YTGTGCAAAGACTGCGASGTGG -3` (SEQ ID N-22)

Forward: 5`- ACTGGCCATTTGGAGTMTGCGC -3` (SEQ ID N-23)

Reverse: 3`- GGCCRYGCATGTTRCYCTACAGT -5` (SEQ ID N-24)

Reverse: 3`- CACYKTCCTGTCCACTBYCCWGC -5` (SEQ ID N-25)

Reverse: 3`- CCAGTGYCGTAGCTCYCGYRYC -5` (SEQ ID N-26)

Reverse: 3`- CTGGCCGTGCATRSYCCTCT -5` (SEQ ID N-27)

- E7

Forward: 5`- VAGCAMAGCWGGCCYWTAGGGTG -3` (SEQ ID N-28)

Forward: 5`- KGYWGAACRRGCACAGCAGGCC -3` (SEQ ID N-29)

Reverse: 3`- GGCCACYRCKTCCACYATAAGCT -5` (SEQ ID N-30)

Reverse: 3`- CAGCYGGGACACACTATRTCCAC -5` (SEQ ID N-31)

Reverse: 3`- GCGCAGCSVGGACACACTAT -5` (SEQ ID N-32)

- L1

Forward: 5`- CTWTGTGGCGRCMTGGTGAYGGC -3` (SEQ ID N-33)

Reverse: 3`- GGARGGAGGGGGGCAMWACMCC -5` (SEQ ID N-34)

Reverse: 3`- CCCTGBGCVCGNTGYAGCCAR -5` (SEQ ID N-35)

α 4:

- E6

Forward: 5`- SAGTATGGTYTGGAGCTAGAGGA -3` (SEQ ID N-36)

Reverse: 3`- GTCCSGTCCACYGGCCKGM -5` (SEQ ID N-37)

- E7

Forward: 5`- MCGMCCCAGCCTSRMGGAC -3` (SEQ ID N-38)

Reverse: 3`- CCTCCATRACGCTABGCGCAG -5` (SEQ ID N-39)

- L1

Forward: 5`- TGGCCTAAACGACGTAAACGTGT -3` (SEQ ID N-40)

Forward: 5`- TTCTTTGCAGATGGCTWTGTGGC -3` (SEQ ID N-41)

Reverse: 5`- YGTGTCTCGMAARCGCRCCGC -3` :: 3`- GCGGYGCGYTTKCGAGACACR -5` (SEQ ID N-42)

Reverse: 5`- CGCAAGTTYTRYTGACGCGGGG -3` :: 3`- CCCCCTGCARYAARAACTTGCG -5` (SEQ ID N-43)

α 5:

- E6

Forward: 5`- GRGAAAGACCACGAACGCTGC -3` (SEQ ID N-44)

Forward: 5`- AATAGCAGGGYASTGGAAAGGGT -3` (SEQ ID N-45)

Reverse: 3`- GCAATTWGCRCAYTGYCCCGTCC -5` (SEQ ID N-46)

Reverse: 3`- TTGTGTTTCTGTTTGGCGCCTTG -5` (SEQ ID N-47)

Reverse: 3`- GCCTTGGTCTCCAGCAGTTTG -5` (SEQ ID N-48)

- E7

Forward: 5`- YTAGATYTGGTGCCGCAACCCG -3` (SEQ ID N-49)

Forward: 5`- MGCCATGCGTGGTAATGTACCAC -3` (SEQ ID N-50)

Reverse: 3`- CTCCASCRCCTCGRACGTTCTGT -5` (SEQ ID N-51)

Reverse: 3`- CACGGGCAMACCAGGCTTAGK -5` (SEQ ID N-52)

- L1

Forward: 5`- KCAGATGGCYTTGYGGCGTACTA -3` (SEQ ID N-53)

Forward: 5`- TGGCYTTGYGGCGTACTAGTGAC -3` (SEQ ID N-54)

Forward: 5`- TGTATTTGCCACCTGCACCWGTG -3` (SEQ ID N-55)

Reverse: 3`- GGGGCRTYRCGYTGACAKGTAGT -5` (SEQ ID N-56)

Reverse: 3`- GGCMGGSKTTTAAGGCCTGGT -5` (SEQ ID N-57)

α 6:

- E6

Forward: 5`- GARGHCCACGWASHBTGCACC -3` (SEQ ID N-58)

Forward: 5`- AATACAGRMGAGCGMCCACGTAC -3` (SEQ ID N-59)

Forward: 5`- RCAATMCACAGGAACGTCCACGA -3` (SEQ ID N-60)

Reverse: 3`- CCTCTGGTGTCAACGGMTGTTGA -5` (SEQ ID N-61)

Reverse: 3`- TCTCCARCACYSCAAACATGACC -5` (SEQ ID N-62)

- E7

Forward: 5`- GRACAGCTCAGAGGAWGAGGATG -3` (SEQ ID N-63)

Forward: 5`- GCTCAGAGGAWGAGGATGAGG -3` (SEQ ID N-64)

Forward: 5`- YTRCWGRAGCRGCCACAGCAAGC -3` (SEQ ID N-65)

Forward: 5`- GRAGCRGCCACAGCAAGCTAG -3` (SEQ ID N-66)

Forward: 5`- GAACAGCTCAGAGGAWGAGGATG -3` (SEQ ID N-67)

Forward: 5`- ARTAGACCATTTGCWGGAGCGGC -3` (SEQ ID N-68)

Reverse: 3`- GCCTTGTTGCRCASAGGGG -5` (SEQ ID N-69)

Reverse: 3`- CGCAGAGTGGGCACGTTACT -5` (SEQ ID N.70)

- L1

Forward: 5`- TTGCAGATGGCGRYGTGGCG -3` (SEQ ID N.71)

Reverse: 3`- CACCTAAAGGYTGDCDCGGC -5` (SEQ ID N.72)

$\alpha$  7:

- E6

Forward: 5`- TASAGGACAGTGYCGMCRSTGC -3` (SEQ ID N.73)

Forward: 5`- TCMCAAYCCTGMRGAACGGCCAT -3` (SEQ ID N.74)

Forward: 5`- ASAGGACAGTGTCTGYSGGTG -3` (SEQ ID N.75)

Forward: 5`- TGCCAGAAACCRTTGAAYCCAGC -3` (SEQ ID N.76)

Reverse: 3`- GTCTGCGGTCCTCYCGBTDDST -5` (SEQ ID N.77)

Reverse: 3`- CTGSCCTCKRTASTGCCCAGCT -5` (SEQ ID N.78)

Reverse: 3`- CACCACTGTTTCACTACGCGC -5` (SEQ ID N.79)

Reverse: 3`- GCCTTGCTGTTCTTGTGCACG -5` (SEQ ID N.80)

Reverse: 3`- GTCTGGAAAGCCTTTCTTGCCGT -5` (SEQ ID N.81)

- E7

Forward: 5`- GACGRGMHGAACMACARCGTCAC -3` (SEQ ID N.82)

Forward: 5`- GACGRGMHGAACMACAGCGTCAC -3` (SEQ ID N.83)

Forward: 5`- ARCACCYTGTCTTTGTGTGTCC -3` (SEQ ID N.84)

Reverse: 3`- GTGWSTCCATAAACAGCWGCWGT -5` (SEQ ID N.85)

Reverse: 3`- CACACCAMGGACACACAAAGGAC -5` (SEQ ID N.86)

- L1

Forward: 5`- GCGBTCTAGYGACARCAHGGTGT -3` (SEQ ID N.87)

Forward: 5`- HCCTGCTATTGGKGARCAYTGGG -3` (SEQ ID N.88)

Reverse: 3`- CCAGTGYTCYCCMATRGCRGGWA -5` (SEQ ID N.89)

Reverse: 3`- TAGASCCACTDGGWGANGGRGAA -5` (SEQ ID N.90)

$\alpha$  8:

- E6

Forward: 5`- WATGWCTGCACGKWGCKGCTCC -3` (SEQ ID N.91)

Reverse: 3`- GTAGGCARTATCCYTCCACRCG -5` (SEQ ID N.92)

Reverse: 3`- CTCCGAGCGTTGGCCTTTC -5` (SEQ ID N.93)

- E7

Forward: 5`- GCGTGAGCAAAYCCACGCAAC -3` (SEQ ID N-94)

Reverse: 3`- CAGCCATKGYAGTCACACMGCTG -5` (SEQ ID N-95)

Reverse: 3`- TGCCATTGTTGTCACKCTGTAGC -5` (SEQ ID N-96)

- L1

Forward: 5`- CCYCCHATKGGNGAATATTGGGG -3` (SEQ ID N-97)

Reverse: 3`- GGAGGATGGTGCWGMACGC -5` (SEQ ID N-98)

Reverse: 3`- GGGTGACTGRCYYAGAAGAGGAA -5` (SEQ ID N-99)

α 9:

- E6

Forward: 5`- AGTRMARATGCCTCCACGYCTGC -3` (SEQ ID N-100)

Forward: 5`- CTGCACAGGACCAGATGGC -3` (SEQ ID N-101)

Reverse: 3`- TCCATGCATGWTGWCCAGCARTG -5` (SEQ ID N-102)

Reverse: 3`- GCAGCGMCCYTTCCAGGTRTCK -5` (SEQ ID N-103)

Reverse: 3`- GGCATTTGCCCCACCATTGTTAT -5` (SEQ ID N-104)

- E7

Forward: 5`- GCYTACACTGCTGGACAACATGC -3` (SEQ ID N-105)

Forward: 5`- AGACAGCTCAGAAGABGAGGTGG -3` (SEQ ID N-106)

Forward: 5`- AACAATGGTGGGCGAAATGCCAG -3` (SEQ ID N-107)

Reverse: 3`- CGTCCGCCATCSTTGTTATGKYT -5` (SEQ ID N-108)

Reverse: 3`- CCTGTRCACTSCACMACMAGCC -5` (SEQ ID N-109)

Reverse: 3`- CTGTCGCTGTAGGGTGCACA -5` (SEQ ID N-110)

- L1

Forward: 5`- ATGTGCCTCCTCCYRMCCCWGTA -3` (SEQ ID N-111)

Forward: 5`- AGATGGCTGTCTGGTTACCAGC -3` (SEQ ID N-112)

Reverse: 3`- CCATAWGGRTCYGCAGCCATTTG -5` (SEQ ID N-113)

Reverse: 3`- GCCTTACGCCTGCGCTTGG -5` (SEQ ID N-114)

α 10:

- E6

Forward: 5`- CCSARSTGTAAWCATGCRTGGAG -3` (SEQ ID N-115)

Forward: 5`- MCGSAMCCTGCACGAATTGTGTG -3` (SEQ ID N-116)

Forward: 5`- CARGACRCWGAGGARAAAACCACG -3` (SEQ ID N.117)

Reverse: 3`- CCAACACWCTGAACASCGYCC -5` (SEQ ID N.118)

Reverse: 3`- CCATGCATGATTACASCTSGGTT -5` (SEQ ID N.119)

Reverse: 3`- GTCGGGRYCTCCAACACRCYG -5` (SEQ ID N.120)

Reverse: 3`- CTCCACGCATGTTTACACTTGGG -5` (SEQ ID N.121)

- E7

Forward: 5`- GCWCAYTWGGAATHGTGTGCCCC -3` (SEQ ID N.122)

Forward: 5`- CSTGTAAMAACGCCATGAGAGGA -3` (SEQ ID N.123)

Forward: 5`- CGCCATGAGAGGAMACAASCCA -3` (SEQ ID N.124)

Reverse: 3`- GGCACACDATTCCWARTGWGCCC -5` (SEQ ID N.125)

Reverse: 3`- GGTTCTGTASGTCRSTTGYTGTAC -5` (SEQ ID N.126)

Reverse: 3`- GTGCACAGSYGGGRCACACWAYT -5` (SEQ ID N.127)

- L1

Forward: 5`- GARGCCACWGTSTACYTGCCTC -3` (SEQ ID N.128)

Forward: 5`- ACAGATGTCTCTGTGGCGGC -3` (SEQ ID N.129)

Reverse: 3`- GGATGNCCACTWAYRCCHACDCC -5` (SEQ ID N.130)

Reverse: 3`- GAGGWWACCATAGARCCACTRGG -5` (SEQ ID N.131)

Reverse: 3`- GTGCACGYTGTAGCCAATAWGGC -5` (SEQ ID N.132)

Reverse: 3`- TCCTGTAAACTRGCAGAYGGAGG -5` (SEQ ID N.133)

Reverse: 3`- GGCCYTGTGCWC GTTG YAACCAA -5` (SEQ ID N.134)

$\alpha$  11:

- E6

Forward: 5`- GAACGRCCATACAAGCTACMAGC -3` (SEQ ID N.135)

Reverse: 3`- GCAGATGGTCTCCAGCACYG -5` (SEQ ID N.136)

- E7

Forward: 5`- WATTGTGTGCCCCAACTGTTCCA -3` (SEQ ID N.137)

Reverse: 3`- CTGGAACAGTTGGGGCACACA -5` (SEQ ID N.138)

- L1

Forward: 5`- AGTTCTATCTTCTCCCCAGCC -3` (SEQ ID N.139)

Reverse: 3`- GGACGKGCACGCATACCWAG -5` (SEQ ID N.140)

α 13:

- E6

Forward: 5`- TGTCTGCTACTGAACCCACAC -3` (SEQ ID N-141)

Reverse: 3`- GGCTTCCAGCAATGTAGACACC -5` (SEQ ID N-142)

- E7

Forward: 5`- GTTTGACCTGTACTGCAGGGAG -3` (SEQ ID N-143)

Reverse: 3`- GTGAAGCACAGGTGGGACACA -5` (SEQ ID N-144)

- L1

Forward: 5`- AAAGTATACCTGCCTCCTACCCC -3` (SEQ ID N-145)

Reverse: 3`- GCACGCTTGCGCGCTGTAC -5` (SEQ ID N-146)

α 14:

- E6

Forward: 5`- TAYSAMSTGGACCTGCAGGACC -3` (SEQ ID N-147)

Reverse: 3`- GGCCWYGCATGRTKTCCAACACT -5` (SEQ ID N-148)

- E7

Forward: 5`- CAATTWGCCAGCTCAGAMGAGGA -3` (SEQ ID N-149)

Reverse: 3`- CCACCACMAGCCTWACTGYACRV -5` (SEQ ID N-150)

- L1

Forward: 5`- ARGTATACCTGCCTCCYGCCC -3` (SEQ ID N-151)

Reverse: 3`- CCTGTGCWCGTTGYAGCCAG -5` (SEQ ID N-152)

HPV16-early:

5`- CAGCGGACGTATTAATAGG -3` (SEQ ID N-153)

HPV16-late:

5`- TCATATTCCTCCCATGTC -3` (SEQ ID NO-154)

HPV18-early-pop1:

5`- AGGGGACGTTATTACCAC -3` (SEQ ID NO-155)

HPV18-early-pop2:

5`- CAGGGGACGTTATTATCAC -3` (SEQ ID NO-156)

HPV18-late-pop1:

5` - ATATTCCTCAACATGTCTGC -3` (SEQ ID NO-157)

HPV18-late-pop2:

5` - CATATTCTTCAACATGTCTGC -3` (SEQ ID NO-158)