Claims

【Claim 1】 ~~A~~ Use of a pharmaceutical composition comprising a human papillomavirus (HPV) vaccine and a checkpoint inhibitor agent in the manufacture of a medicament for combination therapy for preventing or treating a human papillomavirus (HPV)-induced cancer.

【Claim 2】 Use of a human papillomavirus (HPV) vaccine in the manufacture of a first medicament and use of a checkpoint inhibitor agent in the manufacture of a second medicament, wherein the first and second medicaments are to be used in combination therapy for preventing or treating a human papillomavirus (HPV)-induced cancer.

【Claim ~~2~~3】 The use ~~pharmaceutical composition~~ of claim 1 or 2, wherein the HPV vaccine comprises HPV vaccine comprising the polynucleotide of SEQ ID NO: 15 or a functional variant with sequence identity of 85% or more to SEQ ID NO: 15.

【Claim ~~3~~4】 The use ~~pharmaceutical composition~~ of claim ~~2~~3, wherein a dose of the HPV vaccine is 0.5 mg to 5 mg.

【Claim ~~4~~5】 The use ~~pharmaceutical composition~~ of claim ~~2~~3, wherein the HPV vaccine is for intramuscular injection.

【Claim ~~5~~6】 The use ~~pharmaceutical composition~~ of claim 1 or 2, wherein the checkpoint inhibitor agent is a programmed death (PD)-1/PD-L1 inhibitor.

【Claim ~~6~~7】 The use ~~pharmaceutical composition~~ of claim 1 or 2, wherein the checkpoint inhibitor agent is an anti-PD-1 antibody or anti-PD-1L antibody.

【Claim ~~7~~8】 The use ~~pharmaceutical composition~~ of claim 1 or 2, wherein the checkpoint inhibitor agent is selected from the group consisting of pembrolizumab, nivolumab, atezolizumab, avelumab, durvalumab, ~~-~~ cemiplimab, and a combination thereof.

【Claim ~~8~~9】 The use ~~pharmaceutical composition~~ of claim ~~5~~6, wherein a dose of the checkpoint inhibitor agent is 50 mg to 500 mg.

【Claim ~~9~~10】 The use ~~pharmaceutical composition~~ of claim ~~5~~6, wherein the checkpoint inhibitor agent is for intravenous injection.

【Claim ~~10~~11】 The use ~~pharmaceutical composition~~ of claim 1 or 2, wherein the HPV vaccine and the checkpoint inhibitor agent is to be administered multiple times.

【Claim ~~11~~12】 The use ~~pharmaceutical composition~~ of claim 1 or 2, the HPV vaccine and the checkpoint inhibitor agent is to be administered simultaneously, separately, or sequentially.

【Claim ~~12~~13】 The use ~~pharmaceutical composition~~ of claim 1 or 2, wherein the HPV vaccine is to be administered at week 1, 2, 4, 7, 13, and 19, and further optionally at week 46.

【Claim ~~13~~14】 The use ~~pharmaceutical composition~~ of claim 1 or 2, wherein the checkpoint inhibitor agent is to be administered at an interval of three weeks.

【Claim ~~14~~15】 The use~~pharmaceutical composition~~ of claim 1 or 2, wherein the HPV-induced cancer is cervical cancer.

【Claim ~~15~~16】 The use ~~pharmaceutical composition~~ of claim ~~14~~15, wherein the cervical cancer is squamous cell carcinoma or adenocarcinoma.

【Claim ~~16~~17】 The use ~~pharmaceutical composition~~ of claim 1 or 2, wherein the HPV-induced cancer is metastatic, recurrent, or advanced cancer and the subject has been or is subject to an anti-cancer treatment.

【Claim ~~17~~18】 The use ~~pharmaceutical composition~~ of claim 1 or 2, wherein the HPV is HPV 16, HPV 18, or a combination thereof.

【Claim ~~18~~19】 The use ~~pharmaceutical composition~~ of claim 1 or 2, wherein a subject for preventing or treating the HPV-induced cancer is PD-L1 positive or PD-L1 negative.

【Claim ~~19~~20】 The use ~~pharmaceutical composition~~ of claim 1 or 2, wherein the HPV is HPV 16; and a subject for preventing or treating the HPV-induced cancer is PD-L1 positive.

【Claim 2~~0~~】 The use ~~pharmaceutical composition~~ of claim 1 or 2, wherein the HPV-induced cancer is cervical cancer being squamous cell carcinoma; the HPV is HPV 16; and/or a subject for preventing or treating the HPV-induced cancer is PD-L1 positive.

~~【Claim 21】~~ ~~Use of a pharmaceutical composition comprising (a) a human papillomavirus (HPV) vaccine; and (b) a checkpoint inhibitor agnet in the manufacture of a medicament for preventing or treating a human papillomavirus (HPV) induced cancer.~~