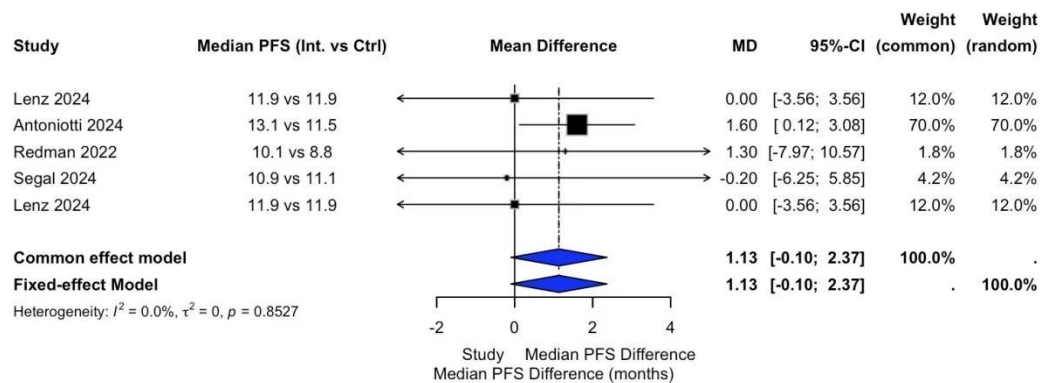
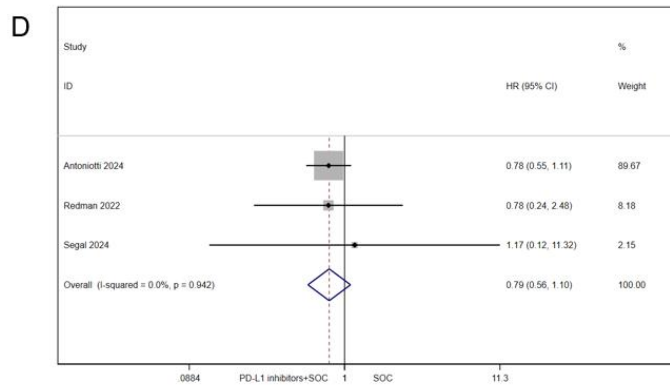
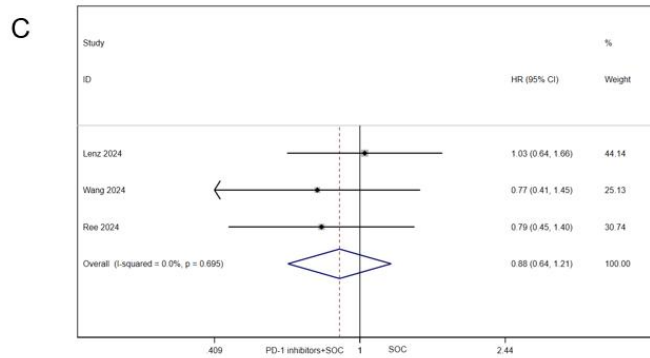
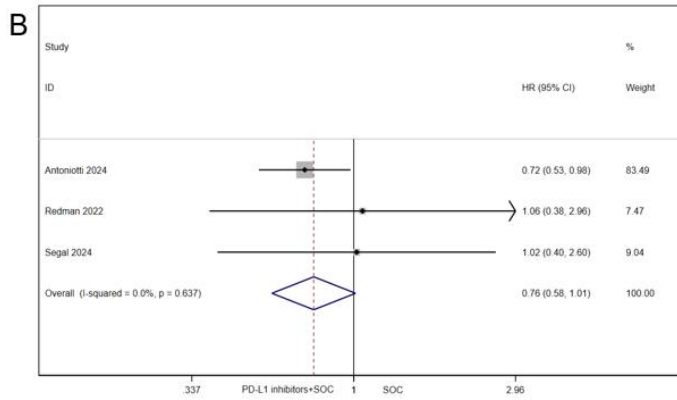
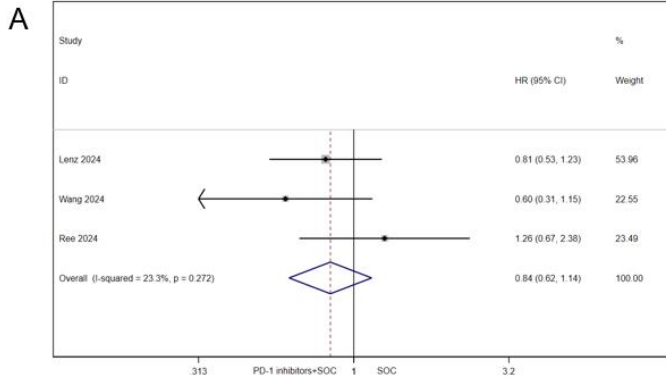


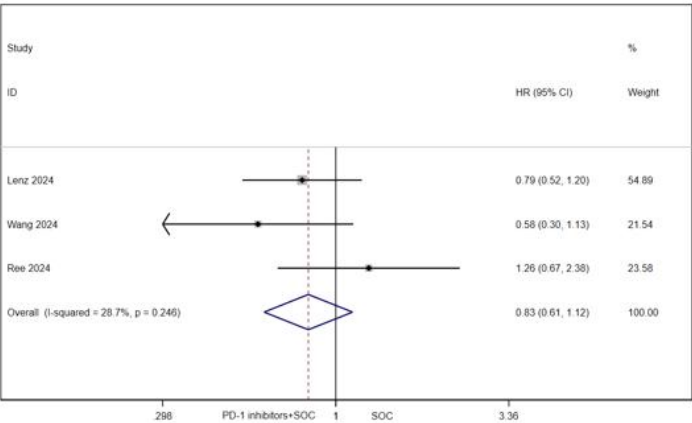


Supplementary Figure 1 Forest Plot of the meta-analysis for median PFS difference of ITT population.

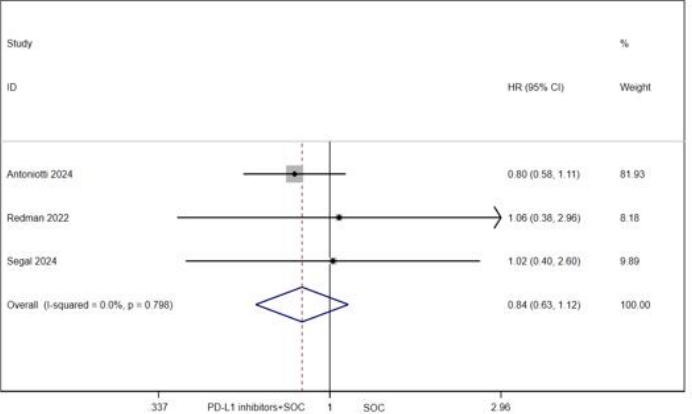


Supplementary Figure 2 Forest plots of meta-analyses for PFS and OS in PD-1 and PD-L1 subgroups of the ITT population A: Forest plot of the meta-analysis for PFS of PD-1 subgroup in ITT population; B: Forest plot of the meta-analysis for PFS of PD-L1 subgroup in ITT population; C: Forest plot of the meta-analysis for OS of PD-1 subgroup in ITT population; D: Forest plot of the meta-analysis for OS of PD-L1 subgroup in ITT population.

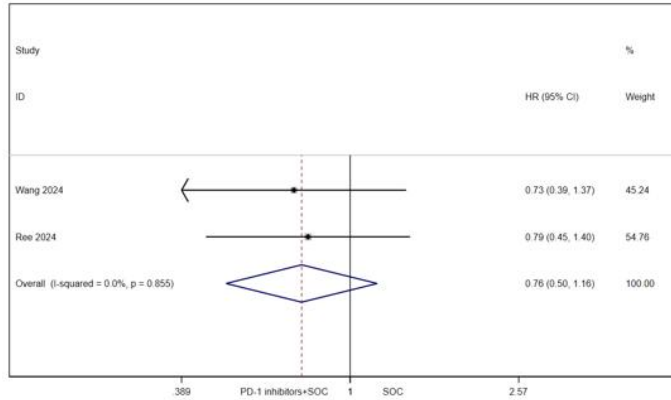
A



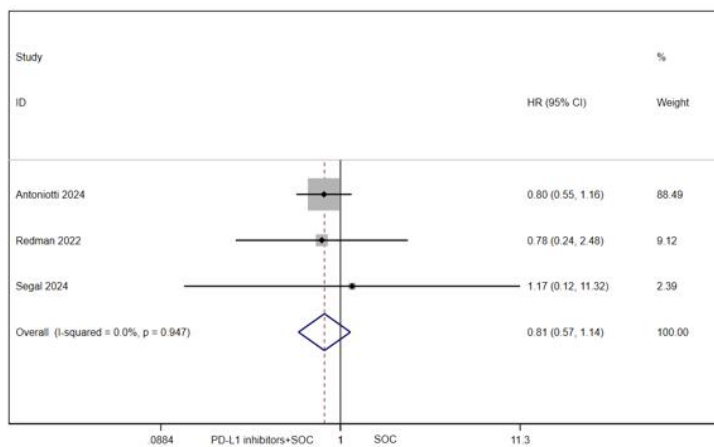
B



C

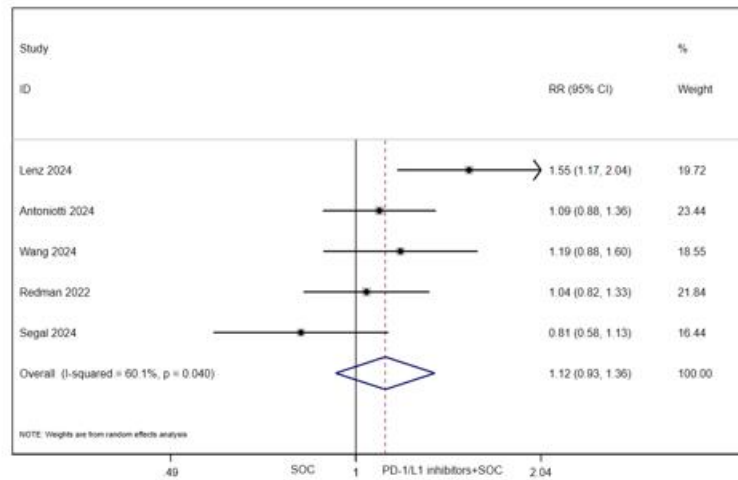


D

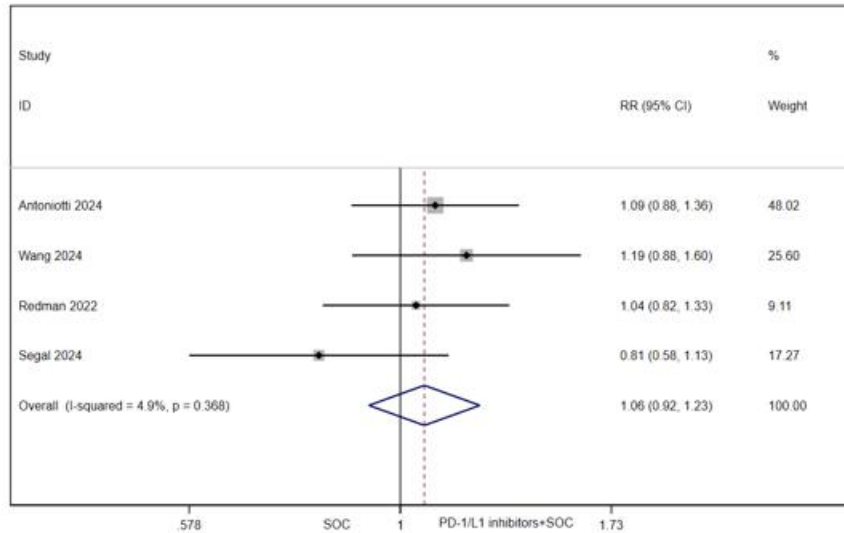


Supplementary Figure 3 Meta-analysis forest plots: PFS and OS in PD-1/PD-L1 subgroups of MSS/pMMR population. A: Forest plot of the meta-analysis for PFS of PD-1 subgroup in MSS/pMMR population; B: Forest plot of the meta-analysis for PFS of PD-L1 subgroup in MSS/pMMR population; C: Forest plot of the meta-analysis for OS of PD-1 subgroup in MSS/pMMR population; D: Forest plot of the meta-analysis for OS of PD-L1 subgroup in MSS/pMMR population.

A



B



Supplementary Figure 4 Incidence rate of grade ≥ 3 AEs: Meta-analysis and sensitivity analysis. A: Forest Plot of the meta-analysis for incidence rate of grade ≥ 3 AEs; B: Forest Plot of the sensitivity analysis for incidence rate of grade ≥ 3 AEs.

Supplementary Table 1 Literature search strategy-Pubmed

Search number	Query	Results
#1	"Colorectal Neoplasms"[Mesh]	249,823
#2	((((((((((((((((Colorectal Neoplasms[Title/ Abstract]) OR (Colorectal Neoplasm[Title/ Abstract])) OR (Colorectal Tumors[Title/ Abstract])) OR (Colorectal Tumor[Title/ Abstract])) OR (Colorectal Cancer[Title/ Abstract])) OR (Colorectal Cancers[Title/ Abstract])) OR (Colorectal Carcinoma[Title/ Abstract])) OR (Colorectal Carcinomas[Title/ Abstract])) OR (CRC[Title/ Abstract])) OR (colo-rectal cancer[Title/ Abstract])) OR (colo-rectal malignancies[Title/ Abstract])) OR (colo-rectal malignancy[Title/ Abstract])) OR (colorectal malignancies[Title/ Abstract])) OR (colorectal malignancy[Title/ Abstract])) OR (recto-colonic cancer[Title/ Abstract])) OR (rectocolonic cancer[Title/ Abstract])) OR (colo-rectal carcinoma[Title/ Abstract])) OR (rectocolonic carcinoma[Title/ Abstract])) OR (colo-rectal adenocarcinoma[Title/ Abstract])) OR (colorectal adenocarcinoma[Title/ Abstract]) ("Colorectal Neoplasms"[Mesh]) OR (((((((((((((((((Colorectal Neoplasms[Title/ Abstract]) OR (Colorectal Neoplasm[Title/ Abstract])) OR (Colorectal Tumors[Title/ Abstract])) OR (Colorectal Tumor[Title/ Abstract])) OR (Colorectal Cancer[Title/ Abstract])) OR (Colorectal Cancers[Title/ Abstract])) OR (Colorectal Carcinoma[Title/ Abstract])) OR (Colorectal Carcinomas[Title/ Abstract])) OR (CRC[Title/ Abstract])) OR (colo-rectal cancer[Title/ Abstract])) OR (colo-rectal malignancies[Title/ Abstract])) OR (colo-rectal malignancy[Title/ Abstract])) OR (colorectal malignancies[Title/ Abstract])) OR (colorectal malignancy[Title/ Abstract])) OR (recto-colonic cancer[Title/ Abstract])) OR (rectocolonic cancer[Title/ Abstract])) OR (colo-rectal carcinoma[Title/ Abstract])) OR (rectocolonic carcinoma[Title/ Abstract])) OR (colo-rectal adenocarcinoma[Title/ Abstract])) OR (colorectal adenocarcinoma[Title/ Abstract])	170,361
#3	("Colorectal Neoplasms"[Mesh]) OR (((((((((((((((((Colorectal Neoplasms[Title/ Abstract]) OR (Colorectal Neoplasm[Title/ Abstract])) OR (Colorectal Tumors[Title/ Abstract])) OR (Colorectal Tumor[Title/ Abstract])) OR (Colorectal Cancer[Title/ Abstract])) OR (Colorectal Cancers[Title/ Abstract])) OR (Colorectal Carcinoma[Title/ Abstract])) OR (Colorectal Carcinomas[Title/ Abstract])) OR (CRC[Title/ Abstract])) OR (colo-rectal cancer[Title/ Abstract])) OR (colo-rectal malignancies[Title/ Abstract])) OR (colo-rectal malignancy[Title/ Abstract])) OR (colorectal malignancies[Title/ Abstract])) OR (colorectal malignancy[Title/ Abstract])) OR (recto-colonic cancer[Title/ Abstract])) OR (rectocolonic cancer[Title/ Abstract])) OR (colo-rectal carcinoma[Title/ Abstract])) OR (rectocolonic carcinoma[Title/ Abstract])) OR (colo-rectal adenocarcinoma[Title/ Abstract])) OR (colorectal adenocarcinoma[Title/ Abstract])	303,219

	malignancies[Title/ Abstract]))	OR	(colorectal	
	malignancy[Title/ Abstract]))	OR	(recto-colonic	
	cancer[Title/ Abstract])) OR (rectocolonic cancer[Title/ Abstract])) OR			
	(colo-rectal carcinoma[Title/ Abstract]))	OR	(rectocolonic	
	carcinoma[Title/ Abstract]))	OR	(colo-rectal	
	adenocarcinoma[Title/ Abstract]))	OR	(colorectal	
	adenocarcinoma[Title/ Abstract]))			
#4	"Colonic Neoplasms"[Mesh]			84,969
	((((((((((((((((((((((((((((Colonic Neoplasms[Title/ Abstract]) OR (Colonic			
	Neoplasm[Title/ Abstract])) OR (Colon Neoplasms[Title/ Abstract]))			
	OR (Colon Neoplasm[Title/ Abstract])) OR (Cancer of			
	Colon[Title/ Abstract])) OR (Colon Cancers[Title/ Abstract])) OR			
	(Colonic Cancer[Title/ Abstract])) OR (Colonic			
	Cancers[Title/ Abstract])) OR (Colon Cancer[Title/ Abstract])) OR			
	(Colon Adenocarcinoma[Title/ Abstract])) OR (Colon			
	Adenocarcinomas[Title/ Abstract])) OR (colon			
	malignancies[Title/ Abstract])) OR (colon			
#5	malignancy[Title/ Abstract]))	OR	(colonic	94,621
	malignancies[Title/ Abstract]))	OR	(colonic	
	malignancy[Title/ Abstract])) OR (malignancies of the			
	colon[Title/ Abstract])) OR (malignancy of the colon[Title/ Abstract]))			
	OR (malignant colon tumor[Title/ Abstract])) OR (malignant			
	neoplasm of the colon[Title/ Abstract])) OR (malignant tumor of the			
	colon[Title/ Abstract])) OR (carcinoma in the colon[Title/ Abstract]))			
	OR (carcinoma of the colon[Title/ Abstract])) OR (colonic			
	carcinoma[Title/ Abstract])) OR (colon carcinoma[Title/ Abstract]))			
	OR (adenocarcinoma of the colon[Title/ Abstract])) OR (colonic			
	adenocarcinoma[Title/ Abstract]))			
#6	("Colonic Neoplasms"[Mesh])	OR	((((((((((((((((((((((((((((Colonic	131,292

Neoplasms[Title/ Abstract]) OR (Colonic Neoplasm[Title/ Abstract]))
 OR (Colon Neoplasms[Title/ Abstract])) OR (Colon
 Neoplasm[Title/ Abstract])) OR (Cancer of Colon[Title/ Abstract]))
 OR (Colon Cancers[Title/ Abstract])) OR (Colonic
 Cancer[Title/ Abstract])) OR (Colonic Cancers[Title/ Abstract])) OR
 (Colon Cancer[Title/ Abstract])) OR (Colon
 Adenocarcinoma[Title/ Abstract])) OR (Colon
 Adenocarcinomas[Title/ Abstract])) OR (colon
 malignancies[Title/ Abstract])) OR (colon
 malignancy[Title/ Abstract])) OR (colonic
 malignancies[Title/ Abstract])) OR (colonic
 malignancy[Title/ Abstract])) OR (malignancies of the
 colon[Title/ Abstract])) OR (malignancy of the colon[Title/ Abstract]))
 OR (malignant colon tumor[Title/ Abstract])) OR (malignant
 neoplasm of the colon[Title/ Abstract])) OR (malignant tumor of the
 colon[Title/ Abstract])) OR (carcinoma in the colon[Title/ Abstract]))
 OR (carcinoma of the colon[Title/ Abstract])) OR (colonic
 carcinoma[Title/ Abstract])) OR (colon carcinoma[Title/ Abstract]))
 OR (adenocarcinoma of the colon[Title/ Abstract])) OR (colonic
 adenocarcinoma[Title/ Abstract]))

#7 "Rectal Neoplasms"[Mesh] 56,490

((((((((((((((((((Rectal Neoplasms[Title/ Abstract]) OR (Rectal
 Neoplasm[Title/ Abstract])) OR (Rectum
 Neoplasms[Title/ Abstract])) OR (Rectum
 Neoplasm[Title/ Abstract])) OR (Rectal Tumors[Title/ Abstract])) OR
 (Rectal Tumor[Title/ Abstract])) OR (Cancer of
 Rectum[Title/ Abstract])) OR (Rectum Cancers[Title/ Abstract])) OR
 (Rectal Cancer[Title/ Abstract])) OR (Rectal Cancers[Title/ Abstract]))
 OR (Rectum Cancer[Title/ Abstract])) OR (malignancies of the

#8 43,033

#9

rectum[Title/Abstract])) OR (rectal malignancies[Title/Abstract]))
OR (rectal malignancy[Title/Abstract])) OR (rectum
malignancy[Title/Abstract])) OR (carcinoma of the
rectum[Title/Abstract])) OR (rectal carcinoma[Title/Abstract])) OR
(rectum carcinoma[Title/Abstract])) OR (adenocarcinoma of the
rectum[Title/Abstract])) OR (rectum
adenocarcinoma[Title/Abstract])) OR (rectal
adenocarcinoma[Title/Abstract]))
("Rectal Neoplasms"[Mesh]) OR (((((((((((((((((((Rectal
Neoplasms[Title/Abstract]) OR (Rectal Neoplasm[Title/Abstract]))
OR (Rectum Neoplasms[Title/Abstract])) OR (Rectum
Neoplasm[Title/Abstract])) OR (Rectal Tumors[Title/Abstract])) OR
(Rectal Tumor[Title/Abstract])) OR (Cancer of
Rectum[Title/Abstract])) OR (Rectum Cancers[Title/Abstract])) OR
(Rectal Cancer[Title/Abstract])) OR (Rectal Cancers[Title/Abstract]))
OR (Rectum Cancer[Title/Abstract])) OR (malignancies of the
rectum[Title/Abstract])) OR (rectal malignancies[Title/Abstract]))
OR (rectal malignancy[Title/Abstract])) OR (rectum
malignancy[Title/Abstract])) OR (carcinoma of the
rectum[Title/Abstract])) OR (rectal carcinoma[Title/Abstract])) OR
(rectum carcinoma[Title/Abstract])) OR (adenocarcinoma of the
rectum[Title/Abstract])) OR (rectum
adenocarcinoma[Title/Abstract])) OR (rectal
adenocarcinoma[Title/Abstract]))

69,937

#10

((("Colorectal Neoplasms"[Mesh]) OR (((((((((((((((((((Colorectal
Neoplasms[Title/Abstract]) OR (Colorectal
Neoplasm[Title/Abstract])) OR (Colorectal Tumors[Title/Abstract]))
OR (Colorectal Tumor[Title/Abstract])) OR (Colorectal
Cancer[Title/Abstract])) OR (Colorectal Cancers[Title/Abstract])) OR

337,992

(Colorectal Carcinoma[Title/ Abstract])) OR (Colorectal
Carcinomas[Title/ Abstract])) OR (CRC[Title/ Abstract])) OR
(colo-rectal cancer[Title/ Abstract])) OR (colo-rectal
malignancies[Title/ Abstract])) OR (colo-rectal
malignancy[Title/ Abstract])) OR (colorectal
malignancies[Title/ Abstract])) OR (colorectal
malignancy[Title/ Abstract])) OR (recto-colonic
cancer[Title/ Abstract])) OR (rectocolonic cancer[Title/ Abstract])) OR
(colo-rectal carcinoma[Title/ Abstract])) OR (rectocolonic
carcinoma[Title/ Abstract])) OR (colo-rectal
adenocarcinoma[Title/ Abstract])) OR (colorectal
adenocarcinoma[Title/ Abstract])) OR ("Colonic Neoplasms"[Mesh])
OR (((((((((((((((((((((((((((((((Colonic Neoplasms[Title/ Abstract]) OR
(Colonic Neoplasm[Title/ Abstract])) OR (Colon
Neoplasms[Title/ Abstract])) OR (Colon Neoplasm[Title/ Abstract]))
OR (Cancer of Colon[Title/ Abstract])) OR (Colon
Cancers[Title/ Abstract])) OR (Colonic Cancer[Title/ Abstract])) OR
(Colonic Cancers[Title/ Abstract])) OR (Colon
Cancer[Title/ Abstract])) OR (Colon
Adenocarcinoma[Title/ Abstract])) OR (Colon
Adenocarcinomas[Title/ Abstract])) OR (colon
malignancies[Title/ Abstract])) OR (colon
malignancy[Title/ Abstract])) OR (colonic
malignancies[Title/ Abstract])) OR (colonic
malignancy[Title/ Abstract])) OR (malignancies of the
colon[Title/ Abstract])) OR (malignancy of the colon[Title/ Abstract]))
OR (malignant colon tumor[Title/ Abstract])) OR (malignant
neoplasm of the colon[Title/ Abstract])) OR (malignant tumor of the
colon[Title/ Abstract])) OR (carcinoma in the colon[Title/ Abstract]))

OR (carcinoma of the colon[Title/Abstract])) OR (colonic carcinoma[Title/Abstract])) OR (colon carcinoma[Title/Abstract])) OR (adenocarcinoma of the colon[Title/Abstract])) OR (colonic adenocarcinoma[Title/Abstract])) OR ("Rectal Neoplasms"[Mesh]) OR (((((((((((((((((((Rectal Neoplasms[Title/Abstract]) OR (Rectal Neoplasm[Title/Abstract])) OR (Rectum Neoplasms[Title/Abstract])) OR (Rectum Neoplasm[Title/Abstract])) OR (Rectal Tumors[Title/Abstract])) OR (Rectal Tumor[Title/Abstract])) OR (Cancer of Rectum[Title/Abstract])) OR (Rectum Cancers[Title/Abstract])) OR (Rectal Cancer[Title/Abstract])) OR (Rectal Cancers[Title/Abstract])) OR (Rectum Cancer[Title/Abstract])) OR (malignancies of the rectum[Title/Abstract])) OR (rectal malignancies[Title/Abstract])) OR (rectal malignancy[Title/Abstract])) OR (rectum malignancy[Title/Abstract])) OR (carcinoma of the rectum[Title/Abstract])) OR (rectal carcinoma[Title/Abstract])) OR (rectum carcinoma[Title/Abstract])) OR (adenocarcinoma of the rectum[Title/Abstract])) OR (rectum adenocarcinoma[Title/Abstract])) OR (rectal adenocarcinoma[Title/Abstract])) OR (((((((((((((((((((PD-1 inhibitor[Title/Abstract]) OR (nivolumab[Title/Abstract])) OR (opdivo[Title/Abstract])) OR (pembrolizumab[Title/Abstract])) OR (keytruda[Title/Abstract])) OR (cemiplimab[Title/Abstract])) OR (Libtayo[Title/Abstract])) OR (sintilimab[Title/Abstract])) OR (tislelizumab[Title/Abstract])) OR (camrelizumab[Title/Abstract])) OR (toripalimab[Title/Abstract])) OR (Penpulimab[Title/Abstract])) OR (zimberelimab[Title/Abstract])) OR (serplulimab[Title/Abstract])) OR (pucotenlimab[Title/Abstract])) OR

#12	(Prolgolimab[Title/ Abstract])) OR (Dostarlimab[Title/ Abstract])) OR (PD-L1 inhibitor[Title/ Abstract])) OR (atezolizumab[Title/ Abstract])) OR (tecentriq[Title/ Abstract])) OR (durvalumab[Title/ Abstract])) OR (imfinzi[Title/ Abstract])) OR (avelumab[Title/ Abstract])) OR (bavencio[Title/ Abstract])) OR (envafolimab[Title/ Abstract])) OR (sugemalimab[Title/ Abstract]) ((first-line[Title/ Abstract]) OR (treatment-naive[Title/ Abstract])) OR (untreated[Title/ Abstract])	337,754
#13	(((("Colorectal Neoplasms"[Mesh]) OR (((((((((((((((((((Colorectal Neoplasms[Title/ Abstract]) OR (Colorectal Neoplasm[Title/ Abstract])) OR (Colorectal Tumors[Title/ Abstract])) OR (Colorectal Tumor[Title/ Abstract])) OR (Colorectal Cancer[Title/ Abstract])) OR (Colorectal Cancers[Title/ Abstract])) OR (Colorectal Carcinoma[Title/ Abstract])) OR (Colorectal Carcinomas[Title/ Abstract])) OR (CRC[Title/ Abstract])) OR (colo-rectal cancer[Title/ Abstract])) OR (colo-rectal malignancies[Title/ Abstract])) OR (colo-rectal malignancy[Title/ Abstract])) OR (colorectal malignancies[Title/ Abstract])) OR (colorectal malignancy[Title/ Abstract])) OR (recto-colonic cancer[Title/ Abstract])) OR (rectocolonic cancer[Title/ Abstract])) OR (colo-rectal carcinoma[Title/ Abstract])) OR (rectocolonic carcinoma[Title/ Abstract])) OR (colo-rectal adenocarcinoma[Title/ Abstract])) OR (colorectal adenocarcinoma[Title/ Abstract])) OR ("Colonic Neoplasms"[Mesh]) OR (((((((((((((((((((Colonic Neoplasms[Title/ Abstract]) OR (Colonic Neoplasm[Title/ Abstract])) OR (Colon Neoplasms[Title/ Abstract])) OR (Colon Neoplasm[Title/ Abstract])) OR (Cancer of Colon[Title/ Abstract])) OR (Colon	160

Cancers[Title/ Abstract])) OR (Colonic Cancer[Title/ Abstract])) OR (Colonic Cancers[Title/ Abstract])) OR (Colon Cancer[Title/ Abstract])) OR (Colon Adenocarcinoma[Title/ Abstract])) OR (Colon Adenocarcinomas[Title/ Abstract])) OR (colon malignancies[Title/ Abstract])) OR (colon malignancy[Title/ Abstract])) OR (colonic malignancies[Title/ Abstract])) OR (colonic malignancy[Title/ Abstract])) OR (malignancies of the colon[Title/ Abstract])) OR (malignancy of the colon[Title/ Abstract])) OR (malignant colon tumor[Title/ Abstract])) OR (malignant neoplasm of the colon[Title/ Abstract])) OR (malignant tumor of the colon[Title/ Abstract])) OR (carcinoma in the colon[Title/ Abstract])) OR (carcinoma of the colon[Title/ Abstract])) OR (colonic carcinoma[Title/ Abstract])) OR (colon carcinoma[Title/ Abstract])) OR (adenocarcinoma of the colon[Title/ Abstract])) OR (colonic adenocarcinoma[Title/ Abstract])) OR ("Rectal Neoplasms"[Mesh]) OR (((((((((((((((((((((((Rectal Neoplasms[Title/ Abstract]) OR (Rectal Neoplasm[Title/ Abstract])) OR (Rectum Neoplasms[Title/ Abstract])) OR (Rectum Neoplasm[Title/ Abstract])) OR (Rectal Tumors[Title/ Abstract])) OR (Rectal Tumor[Title/ Abstract])) OR (Cancer of Rectum[Title/ Abstract])) OR (Rectum Cancers[Title/ Abstract])) OR (Rectal Cancer[Title/ Abstract])) OR (Rectal Cancers[Title/ Abstract])) OR (Rectum Cancer[Title/ Abstract])) OR (malignancies of the rectum[Title/ Abstract])) OR (rectal malignancies[Title/ Abstract])) OR (rectal malignancy[Title/ Abstract])) OR (rectum malignancy[Title/ Abstract])) OR (carcinoma of the rectum[Title/ Abstract])) OR (rectal carcinoma[Title/ Abstract])) OR

(rectum carcinoma[Title/ Abstract])) OR (adenocarcinoma of the
 rectum[Title/ Abstract])) OR (rectum
 adenocarcinoma[Title/ Abstract])) OR (rectal
 adenocarcinoma[Title/ Abstract])) AND (((((((((((((((((((((((PD-1
 inhibitor[Title/ Abstract]) OR (nivolumab[Title/ Abstract])) OR
 (opdivo[Title/ Abstract])) OR (pembrolizumab[Title/ Abstract])) OR
 (keytruda[Title/ Abstract])) OR (cemiplimab[Title/ Abstract])) OR
 (Libtayo[Title/ Abstract])) OR (sintilimab[Title/ Abstract])) OR
 (tislelizumab[Title/ Abstract])) OR (camrelizumab[Title/ Abstract]))
 OR (toripalimab[Title/ Abstract])) OR (Penpulimab[Title/ Abstract]))
 OR (zimberelimab[Title/ Abstract])) OR
 (serplulimab[Title/ Abstract])) OR (pucotenlimab[Title/ Abstract]))
 OR (Prolgolimab[Title/ Abstract])) OR (Dostarlimab[Title/ Abstract]))
 OR (PD-L1 inhibitor[Title/ Abstract])) OR
 (atezolizumab[Title/ Abstract])) OR (tecentriq[Title/ Abstract])) OR
 (durvalumab[Title/ Abstract])) OR (imfinzi[Title/ Abstract])) OR
 (avelumab[Title/ Abstract])) OR (bavencio[Title/ Abstract])) OR
 (envafolimab[Title/ Abstract])) OR (sugemalimab[Title/ Abstract]))
 AND (((first-line[Title/ Abstract])) OR
 (treatment-naive[Title/ Abstract])) OR (untreated[Title/ Abstract]))

Supplementary Table 2 Literature search strategy-Cochrane

Search number	Query	Results
#1	MeSH descriptor: [Colorectal Neoplasms] explode all trees	12914
	(Colorectal Neoplasms):ti,ab,kw OR (Colorectal Neoplasm):ti,ab,kw	
#2	OR (Colorectal Tumors):ti,ab,kw OR (Colorectal Tumor):ti,ab,kw OR	20988
	(Colorectal Cancer):ti,ab,kw	
	(Colorectal Cancers):ti,ab,kw OR (Colorectal Carcinoma):ti,ab,kw OR	
#3	(Colorectal Carcinomas):ti,ab,kw OR (CRC):ti,ab,kw OR (colo-rectal	9263
	cancer):ti,ab,kw	
	(colo-rectal malignancies):ti,ab,kw OR (colo-rectal	
#4	malignancy):ti,ab,kw OR (colorectal malignancies):ti,ab,kw OR	563
	(colorectal malignancy):ti,ab,kw OR (recto-colonic cancer):ti,ab,kw	
	(rectocolonic cancer):ti,ab,kw OR (colo-rectal carcinoma):ti,ab,kw OR	
#5	(rectocolonic carcinoma):ti,ab,kw OR (colo-rectal	1557
	adenocarcinoma):ti,ab,kw OR (colorectal adenocarcinoma):ti,ab,kw	
#6	#1 or #2 or #3 or #4 or #5	25469
#7	MeSH descriptor: [Colonic Neoplasms] explode all trees	2578
	(Colonic Neoplasms):ti,ab,kw OR (Colonic Neoplasm):ti,ab,kw OR	
#8	(Colon Neoplasms):ti,ab,kw OR (Colon Neoplasm):ti,ab,kw OR	9116
	(Cancer of Colon):ti,ab,kw	
	(Colon Cancers):ti,ab,kw OR (Colonic Cancer):ti,ab,kw OR (Colonic	
#9	Cancers):ti,ab,kw OR (Colon Cancer):ti,ab,kw OR (Colon	8505
	Adenocarcinoma):ti,ab,kw	
	(Colon Adenocarcinomas):ti,ab,kw OR (colon malignancies):ti,ab,kw	
#10	OR (colon malignancy):ti,ab,kw OR (colonic malignancies):ti,ab,kw	451
	OR (colonic malignancy):ti,ab,kw	
	(malignancies of the colon):ti,ab,kw OR (malignancy of the	
#11	colon):ti,ab,kw OR (malignant colon tumor):ti,ab,kw OR (malignant	844

	neoplasm of the colon):ti,ab,kw OR (malignant tumor of the colon):ti,ab,kw	
#12	(carcinoma in the colon):ti,ab,kw OR (carcinoma of the colon):ti,ab,kw OR (colonic carcinoma):ti,ab,kw OR (colon carcinoma):ti,ab,kw OR (adenocarcinoma of the colon):ti,ab,kw	2038
#13	(colonic adenocarcinoma):ti,ab,kw	420
#14	#7 or #8 or #9 or #10 or #11 or #12 or #13	9730
#15	MeSH descriptor: [Rectal Neoplasms] explode all trees	2922
#16	(Rectal Neoplasms):ti,ab,kw OR (Rectal Neoplasm):ti,ab,kw OR (Rectum Neoplasms):ti,ab,kw OR (Rectum Neoplasm):ti,ab,kw OR (Rectal Tumors):ti,ab,kw	5669
#17	(Rectal Tumor):ti,ab,kw OR (Cancer of Rectum):ti,ab,kw OR (Rectum Cancers):ti,ab,kw OR (Rectal Cancer):ti,ab,kw OR (Rectal Cancers):ti,ab,kw	8707
#18	(Rectum Cancer):ti,ab,kw OR (malignancies of the rectum):ti,ab,kw OR (rectal malignancies):ti,ab,kw OR (rectal malignancy):ti,ab,kw OR (rectum malignancy):ti,ab,kw	4967
#19	(carcinoma of the rectum):ti,ab,kw OR (rectal carcinoma):ti,ab,kw OR (rectum carcinoma):ti,ab,kw OR (adenocarcinoma of the rectum):ti,ab,kw OR (rectum adenocarcinoma):ti,ab,kw	2222
#20	(rectal adenocarcinoma):ti,ab,kw	1146
#21	#15 or #16 or #17 or #18 or #19 or #20	9826
#22	#6 or #14 or #21	32558
#23	(PD-1 inhibitor):ti,ab,kw OR (nivolumab):ti,ab,kw OR (opdivo):ti,ab,kw OR (pembrolizumab):ti,ab,kw OR (keytruda):ti,ab,kw	7147
#24	(cemiplimab):ti,ab,kw OR (Libtayo):ti,ab,kw OR (sintilimab):ti,ab,kw OR (tislelizumab):ti,ab,kw OR (camrelizumab):ti,ab,kw	1018
#25	(toripalimab):ti,ab,kw OR (Penpulimab):ti,ab,kw OR	316

	(zimberelimab):ti,ab,kw	OR	(serplulimab):ti,ab,kw	OR	
	(pucotenlimab):ti,ab,kw				
	(Prolgolimab):ti,ab,kw	OR	(Dostarlimab):ti,ab,kw	OR	(PD-L1
#26	inhibitor):ti,ab,kw	OR	(atezolizumab):ti,ab,kw	OR	2599
	(tecentriq):ti,ab,kw				
#27	(durvalumab):ti,ab,kw	OR	(imfinzi):ti,ab,kw	OR	(avelumab):ti,ab,kw
	OR (bavencio):ti,ab,kw	OR	(envafolimab):ti,ab,kw		1797
#28	(sugemalimab):ti,ab,kw				21
#29	#23 or #24 or #25 or #26 or #27 or #28				11260
#30	(first-line):ti,ab,kw	OR	(treatment-naive):ti,ab,kw	OR	54578
	(untreated):ti,ab,kw				
#31	#22 and #29 and #30				177

Supplementary Table 3 Literature search strategy-Embase

Search number	Query	Results
#1	'colorectal cancer'/exp	415613
#2	'colorectal neoplasms':ab,ti OR 'colorectal neoplasm':ab,ti OR 'colorectal tumors':ab,ti OR 'colorectal tumor':ab,ti OR 'colorectal cancer':ab,ti OR 'colorectal cancers':ab,ti OR 'colorectal carcinoma':ab,ti OR 'colorectal carcinomas':ab,ti OR crc:ab,ti OR 'colo-rectal cancer':ab,ti OR 'colo-rectal malignancies':ab,ti OR 'colo-rectal malignancy':ab,ti OR 'colorectal malignancies':ab,ti OR 'colorectal malignancy':ab,ti OR 'recto-colonic cancer':ab,ti OR 'rectocolonic cancer':ab,ti OR 'colo-rectal carcinoma':ab,ti OR 'rectocolonic carcinoma':ab,ti OR 'colo-rectal adenocarcinoma':ab,ti OR 'colorectal adenocarcinoma':ab,ti	248925
#3	#1 OR #2	466685
#4	'colon cancer'/exp	134868
#5	'colonic neoplasms':ab,ti OR 'colonic neoplasm':ab,ti OR 'colon neoplasms':ab,ti OR 'colon neoplasm':ab,ti OR 'cancer of colon':ab,ti OR 'colon cancers':ab,ti OR 'colonic cancer':ab,ti OR 'colonic cancers':ab,ti OR 'colon cancer':ab,ti OR 'colon adenocarcinoma':ab,ti OR 'colon adenocarcinomas':ab,ti OR 'colon malignancies':ab,ti OR 'colon malignancy':ab,ti OR 'colonic malignancies':ab,ti OR 'colonic malignancy':ab,ti OR 'malignancies of the colon':ab,ti OR 'malignancy of the colon':ab,ti OR 'malignant colon tumor':ab,ti OR 'malignant neoplasm of the colon':ab,ti OR 'malignant tumor of the colon':ab,ti OR 'carcinoma in the colon':ab,ti OR 'carcinoma of the colon':ab,ti OR 'colonic carcinoma':ab,ti OR 'colon carcinoma':ab,ti OR 'adenocarcinoma of the colon':ab,ti OR 'colonic adenocarcinoma':ab,ti	116610
#6	#4 OR #5	175852
#7	'rectum cancer'/exp	62287
#8	'rectal neoplasms':ab,ti OR 'rectal neoplasm':ab,ti OR 'rectum	60053

neoplasms':ab,ti OR 'rectum neoplasm':ab,ti OR 'rectal tumors':ab,ti OR
 'rectal tumor':ab,ti OR 'cancer of rectum':ab,ti OR 'rectum cancers':ab,ti
 OR 'rectal cancer':ab,ti OR 'rectal cancers':ab,ti OR 'rectum cancer':ab,ti
 OR 'malignancies of the rectum':ab,ti OR 'rectal malignancies':ab,ti OR
 'rectal malignancy':ab,ti OR 'rectum malignancy':ab,ti OR 'carcinoma of
 the rectum':ab,ti OR 'rectal carcinoma':ab,ti OR 'rectum carcinoma':ab,ti
 OR 'adenocarcinoma of the rectum':ab,ti OR 'rectum
 adenocarcinoma':ab,ti OR 'rectal adenocarcinoma':ab,ti

#9	#7 OR #8	78726
#10	#3 OR #6 OR #9	500491
#11	pd-1 inhibitor':ab,ti OR nivolumab:ab,ti OR opdivo:ab,ti OR pembrolizumab:ab,ti OR keytruda:ab,ti OR cemiplimab:ab,ti OR libtayo:ab,ti OR sintilimab:ab,ti OR tislelizumab:ab,ti OR camrelizumab:ab,ti OR toripalimab:ab,ti OR penpulimab:ab,ti OR zimberelimab:ab,ti OR serplulimab:ab,ti OR pucotenlimab:ab,ti OR prolgolimab:ab,ti OR dostarlimab:ab,ti OR 'pd-l1 inhibitor':ab,ti OR atezolizumab:ab,ti OR tecentriq:ab,ti OR durvalumab:ab,ti OR imfinzi:ab,ti OR avelumab:ab,ti OR bavencio:ab,ti OR envafolimab:ab,ti OR sugemalimab:ab,ti	53516
#12	first line':ab,ti OR 'treatment naive':ab,ti OR untreated:ab,ti	520651
#13	#10 AND #11 AND #12	441

Supplementary Table 4 Literature search strategy-Web of science

Search number	Query	Results
#1	Colorectal Neoplasms (Topic) OR Colorectal Neoplasm (Topic) OR Colorectal Tumors (Topic) OR Colorectal Tumor (Topic) OR Colorectal Cancer (Topic) OR Colorectal Cancers (Topic) OR Colorectal Carcinoma (Topic) OR Colorectal Carcinomas (Topic) OR CRC (Topic) OR colo-rectal cancer (Topic) OR colo-rectal malignancies (Topic) OR colo-rectal malignancy (Topic) OR colorectal malignancies (Topic) OR colorectal malignancy (Topic) OR recto-colonic cancer (Topic) OR rectocolonic cancer (Topic) OR colo-rectal carcinoma (Topic) OR rectocolonic carcinoma (Topic) OR colo-rectal adenocarcinoma (Topic) OR colorectal adenocarcinoma (Topic) OR Colonic Neoplasms (Topic) OR Colonic Neoplasm (Topic) OR Colon Neoplasms (Topic) OR Colon Neoplasm (Topic) OR Cancer of Colon (Topic) OR Colon Cancers (Topic) OR Colonic Cancer (Topic) OR Colonic Cancers (Topic) OR Colon Cancer (Topic) OR Colon Adenocarcinoma (Topic) OR Colon Adenocarcinomas (Topic) OR colon malignancies (Topic) OR colon malignancy (Topic) OR colonic malignancies (Topic) OR colonic malignancy (Topic) OR malignancies of the colon (Topic) OR malignancy of the colon (Topic) OR malignant colon tumor (Topic) OR malignant neoplasm of the colon (Topic) OR malignant tumor of the colon (Topic) OR carcinoma in the colon (Topic) OR carcinoma of the colon (Topic) OR colonic carcinoma (Topic) OR colon carcinoma (Topic) OR adenocarcinoma of the colon (Topic) OR colonic adenocarcinoma (Topic) OR Rectal Neoplasms (Topic) OR Rectal Neoplasm (Topic) OR Rectum Neoplasms (Topic) OR Rectum Neoplasm (Topic) OR Rectal Tumors (Topic) OR Rectal	450970

	Tumor (Topic) OR Cancer of Rectum (Topic) OR Rectum Cancers (Topic) OR Rectal Cancer (Topic) OR Rectal Cancers (Topic) OR Rectum Cancer (Topic) OR malignancies of the rectum (Topic) OR rectal malignancies (Topic) OR rectal malignancy (Topic) OR rectum malignancy (Topic) OR carcinoma of the rectum (Topic) OR rectal carcinoma (Topic) OR rectum carcinoma (Topic) OR adenocarcinoma of the rectum (Topic) OR rectum adenocarcinoma (Topic) OR rectal adenocarcinoma (Topic) PD-1 inhibitor (Topic) OR nivolumab (Topic) OR opdivo (Topic) OR pembrolizumab (Topic) OR keytruda (Topic) OR cemiplimab (Topic) OR Libtayo (Topic) OR sintilimab (Topic) OR tislelizumab (Topic) OR camrelizumab (Topic) OR toripalimab (Topic) OR Penpulimab (Topic) OR zimberelimab (Topic) OR serplulimab (Topic) OR pucotenlimab (Topic) OR 63789 Prolgolimab (Topic) OR Dostarlimab (Topic) OR PD-L1 inhibitor (Topic) OR atezolizumab (Topic) OR tecentriq (Topic) OR durvalumab (Topic) OR imfinzi (Topic) OR avelumab (Topic) OR bavencio (Topic) OR envafolimab (Topic) OR sugemalimab (Topic)	
#2	first-line (Topic) OR treatment-naive (Topic) OR Untreated (Topic)	403815
#3		
#4	#1 AND #2 AND #3	302