

Clinical trials of immune checkpoint inhibition for lung cancer (metastatic) in all type of patients

TrialResults-center www.trialresultscenter.org

1 anti-CTLA4

Trial	Treatments	Patients	Trials design and methods
ipilimumab + chemotherapy vs placebo + chemotherapy			
Reck , 2016 [NCT01450761] n=478/476 follow-up:	ipilimumab 10 mg/kg plus etoposide and platinum (cisplatin or carboplatin) versus placebo plus etoposide and platinum (cisplatin or carboplatin)	patients with newly diagnosed extensive-stage disease SCLC	Parallel groups double-blind
Govindan , 2017 [NCT01285609] n=388/361 follow-up:	ipilimumab 10 mg/kg + paclitaxel and carboplatin versus placebo + paclitaxel and carboplatin	Patients with stage IV or recurrent chemotherapy-naive squamous NSCLC	Parallel groups double-blind
phase 2 (phased ipilimumab) , 2012 n=204 follow-up:	concurrent ipilimumab (four doses of ipilimumab plus paclitaxel and carboplatin followed by two doses of placebo plus paclitaxel and carboplatin) or phased ipilimumab (two doses of placebo plus paclitaxel and carboplatin followed by four doses of ipilimumab) versus paclitaxel (175 mg/m ²) and carboplatin (area under the curve, 6)	Patients with chemotherapy-naive non-small-cell lung cancer	Parallel groups double-blind

References

Reck, 2016:

Reck M, Luft A, Szczesna A, Havel L, Kim SW, Akerley W, Pietanza MC, Wu YL, Zielinski C, Thomas M, Felip E, Gold K, Horn L, Aerts J, Nakagawa K, Lorigan P, Pieters A, Kong Sanchez T, Fairchild J, Spigel D Phase III Randomized Trial of Ipilimumab Plus Etoposide and Platinum Versus Placebo Plus Etoposide and Platinum in Extensive-Stage Small-Cell Lung Cancer. J Clin Oncol 2016 Jul 25;: [27458307] [10.1200/JCO.2016.67.6601](https://doi.org/10.1200/JCO.2016.67.6601)

Govindan, 2017:

Govindan R, Szczesna A, Ahn MJ, Schneider CP, Gonzalez Mella PF, Barlesi F, Han B, Ganea DE, Von Pawel J, Vladimirov V, Fadeeva N, Lee KH, Kurata T, Zhang L, Tamura T, Postmus PE, Jassem J, O'Byrne K, Kopit J, Li M, Tschaika M, Reck M Phase III Trial of Ipilimumab Combined With Paclitaxel and Carboplatin in Advanced Squamous Non-Small-Cell Lung Cancer. J Clin Oncol 2017;35:3449-3457 [28854067]

phase 2 (phased ipilimumab), 2012:

Lynch TJ, Bondarenko I, Luft A, Serwatowski P, Barlesi F, Chacko R, Sebastian M, Neal J, Lu H, Cuillerot JM, Reck M Ipilimumab in combination with paclitaxel and carboplatin as first-line treatment in stage IIIB/IV non-small-cell lung cancer: results from a randomized, double-blind, multicenter phase II study. J Clin Oncol 2012;30:2046-54 [22547592]

2 immunotherapy combination

Trial	Treatments	Patients	Trials design and methods
nivolumab + ipilimumab vs platinum doublet chemotherapy			
CheckMate 227 <i>ongoing</i> [NCT02477826] n=NA follow-up:	-	Subjects With Chemotherapy-Nave Stage IV or Recurrent Non-Small Cell Lung Cancer	No masking
durvalumab +tremelimumab vs Standard of Care			
MYSTIC <i>ongoing</i> [NCT02453282] n=NA follow-up:	MEDI4736 (Durvalumab)+Tremelimumab versus Standard of Care chemotherapy treatment	patients with advanced or metastatic NSCLC in the first-line treatment of patients with epidermal growth factor receptor (EGFR) and anaplastic lymphoma kinase (ALK) wild-type locally advanced or metastatic NSCLC	open label Germany

References

CheckMate 227, :
MYSTIC, 0:

3 PD-L1 inhibitors

Trial	Treatments	Patients	Trials design and methods
atezolizumab + Paclitaxel + Carboplatin vs Bevacizumab + Paclitaxel + Carboplatin			
IMpower 150 <i>ongoing</i> [NCT02366143] n=NA follow-up:	-	chemotherapy-nave patients with Stage IV non-squamous non-small cell lung cancer	open label
atezolizumab vs docetaxel			
OAK , 2016 [NCT02008227] n=425/425 follow-up: minimum 19 months	atezolizumab versus docetaxel	Patients With Locally Advanced or Metastatic Non-Small Cell Lung Cancer Who Have Failed Platinum Therapy	Parallel groups open label
POPLAR Phase 2 atezolizumab , 2016 [NCT01903993] n=144/143 follow-up:	Atezolizumab versus docetaxel 75 mg/m(2) once every 3 weeks	patients with locally Advanced or Metastatic Non-Small Cell Lung Cancer Who Have Failed Platinum Th	Parallel groups open label 13 countries in Europe and North America
avelumab vs docetaxel			

continued...

Trial	Treatments	Patients	Trials design and methods
JAVELIN Lung 200 <i>ongoing</i> [NCT02395172] n=NA follow-up:	avelumab versus docetaxel	subjects with programmed death ligand 1 (PD-L1) positive, non-small cell lung cancer (NSCLC) after failure of a platinum-based doublet	
atezolizumab vs Gemcitabine + (Cisplatin or Carboplatin)			
GO29432 <i>ongoing</i> [NCT02409355] n=NA follow-up:	-	patients with chemotherapy-naive, Stage IV squamous non-small cell lung cancer	open label
atezolizumab vs Pemetrexed + (Carboplatin or Cisplatin)			
IMpower 110 <i>ongoing</i> [NCT02409342] n=NA follow-up:	Atezolizumab (MPDL3280A) versus dual regimen of carboplatin or cisplatin plus pemetrexed	chemotherapy-naive patients with Stage IV NSCLC	open label
durvalumab vs placebo			
PACIFIC , 2017 [NCT02125461] n=473/236 follow-up:	Durvalumab (at a dose of 10 mg per kilogram of body weight intravenously) every 2 weeks for up to 12 months, administered 1 to 42 days after the patients had received chemoradiotherapy versus placebo	patients with stage III NSCLC who did not have disease progression after two or more cycles of platinum-based chemoradiotherapy	Parallel groups double-blind
NCT02273375 <i>ongoing</i> [NCT02273375] n=NA follow-up:	MEDI4736 versus placebo	Adjuvant treatment in Completely Resected Non-Small Cell Lung Cancer Completely Resected NSCLC	double-blind
avelumab vs platinum-based doublet			
JAVELIN Lung 100 <i>ongoing</i> [NCT02576574] n=NA follow-up:	avelumab versus platinum-based doublet	a First-line Treatment of Recurrent or Stage IV non-small cell lung cancer with Programmed death ligand 1+ tumors	
durvalumab vs Standard of Care			
ARCTIC <i>ongoing</i> [NCT02352948] n=NA follow-up:	-	patients with PD-L1 positive Locally Advanced or Metastatic Non Small Cell Lung Cancer who have received at least 2 prior systemic treatment regimens including 1 platinum-based chemotherapy regimen for NSCLC	
MYSTIC (monotherapy) <i>ongoing</i> [NCT02453282] n=NA follow-up:	MEDI4736 (Durvalumab) versus Standard of Care chemotherapy treatment	patients with advanced or metastatic NSCLC in the first-line treatment of patients with epidermal growth factor receptor (EGFR) and anaplastic lymphoma kinase (ALK) wild-type locally advanced or metastatic NSCLC	open label Germany
durvalumab (MEDI4736) tremelimumab vs Standard of Care			

continued...

Trial	Treatments	Patients	Trials design and methods
NEPTUNE <i>ongoing</i> [NCT02542293] n=NA follow-up:	MEDI4736 + tremelimumab versus platinum-based SoC chemotherapy	the first-line treatment of patients with epidermal growth factor receptor (EGFR) and anaplastic lymphoma kinase (ALK) wild-type advanced or metastatic NSCLC	

References

IMpower 150, 0:

OAK, 2016:

Rittmeyer A, Barlesi F, Waterkamp D, Park K, Ciardiello F, von Pawel J, Gadgeel SM, Hida T, Kowalski DM, Dols MC, Cortinovis DL, Leach J, Polikoff J, Barrios C, Kabbinavar F, Frontera OA, De Marinis F, Turna H, Lee JS, Ballinger M, Kowanetz M, He P, Chen Atezolizumab versus docetaxel in patients with previously treated non-small-cell lung cancer (OAK): a phase 3, open-label, multicentre randomised controlled trial. *Lancet* 2017;389:255-265 [27979383]

POPLAR Phase 2 atezolizumab, 2016:

Vansteenkiste J Atezolizumab monotherapy vs docetaxel in 2L/3L non-small cell lung cancer: Primary analyses for efficacy, safety and predictive biomarkers from a randomized phase II study (POPLAR) ESMO 2015

Fehrenbacher L, Spira A, Ballinger M, Kowanetz M, Vansteenkiste J, Mazieres J, Park K, Smith D, Artal-Cortes A, Lewanski C, Braiteh F, Waterkamp D, He P, Zou W, Chen DS, Yi J, Sandler A, Rittmeyer A Atezolizumab versus docetaxel for patients with previously treated non-small-cell lung cancer (POPLAR): a multicentre, open-label, phase 2 randomised controlled trial. *Lancet* 2016 Mar 9;: [26970723]

Fehrenbacher L, Spira A, Ballinger M, Kowanetz M, Vansteenkiste J, Mazieres J, Park K, Smith D, Artal-Cortes A, Lewanski C, Braiteh F, Waterkamp D, He P, Zou W, Chen DS, Yi J, Sandler A, Rittmeyer A Atezolizumab versus docetaxel for patients with previously treated non-small-cell lung cancer (POPLAR): a multicentre, open-label, phase 2 randomised controlled trial. *Lancet* 2016 Apr 30;387:1837-46 [26970723]

JAVELIN Lung 200, :

GO29432, 0:

IMpower 110, 0:

PACIFIC, 2017:

Antonia SJ, Villegas A, Daniel D, Vicente D, Murakami S, Hui R, Yokoi T, Chiappori A, Lee KH, de Wit M, Cho BC, Bourhaba M, Quantin X, Tokito T, Mekhail T, Planchard D, Kim YC, Karapetis CS, Hirt S, Ostoros G, Kubota K, Gray JE, Paz-Ares L, de Castro Car Durvalumab after Chemoradiotherapy in Stage III Non-Small-Cell Lung Cancer. *N Engl J Med* 2017;: [28855881]

NCT02273375, 0:

JAVELIN Lung 100, :

ARCTIC, 0:

MYSTIC (monotherapy), 0:

NEPTUNE, :

4 PD1 inhibitors

Trial	Treatments	Patients	Trials design and methods
AZD9291 durvalumab vs AZD9291 Monotherapy			

continued...

Trial	Treatments	Patients	Trials design and methods
CAURAL <i>ongoing</i> [NCT02454933] n=NA follow-up:	MEDI4736 & AZD9291 Combination versus AZD9291 Monotherapy (Once daily tablet 80 mg)	patients with Locally Advanced or Metastatic Epidermal Growth Factor Receptor T790M mutation-positive Non-Small Cell Lung Cancer who have received Prior Epidermal Growth Factor Receptor Tyrosine Kinase Inhibitor Therapy	open label UK
pembrolizumab + CT vs CT			
KEYNOTE-021 [NCT02039674] n=60/63 follow-up:	24 months treatment with pembrolizumab (200mg every three weeks)+ CT versus four cycles of carboplatin and pemetrexed (500 mg/m ² every three weeks)	patients with stage IIIB/IV, chemotherapy-naive, nonsquamous non-small-cell lung cancer	Parallel groups open design
nivolumab vs docetaxel			
CheckMate 057 , 2015 [NCT01673867] n=292/290 follow-up:	Nivolumab 3 mg/kg solution intravenously every 2 weeks until documented disease progression versus Docetaxel 75 mg/m concentrate for solution for intravenous infusion every 3 weeks until documented disease progression	patients with advanced nonsquamous non-small cell lung cancer (NSCLC) who had progressed on platinum-doublet chemotherapy	Parallel groups open
CheckMate 017 , 2015 <i>unpublished</i> [NCT01642004] n=135/137 follow-up:	Nivolumab 3 mg/kg solution intravenously every 2 weeks until documented disease progression versus Docetaxel 75 mg/m ² solution intravenously every 3 weeks until documented disease progression	patients with advanced SQ NSCLC who fail platinum-based doublet chemotherapy	open
pembrolizumab 10mg vs docetaxel			
Keynote 010 10mg , 2015 [NCT01905657] n=NA follow-up:	pembrolizumab 10 mg/kg versus docetaxel 75 mg/m every 3 weeks	patients with previously treated non-small-cell lung cancer with PD-L1 expression on at least 1% of tumour cells	open-label
pembrolizumab 2mg vs docetaxel			
Keynote 010 2mg , 2015 [NCT01905657] n=345/343 follow-up:	pembrolizumab 2 mg/kg versus docetaxel 75 mg/m every 3 weeks	patients with previously treated non-small-cell lung cancer with PD-L1 expression on at least 1% of tumour cells	Parallel groups open-label
nivolumab for 1 year vs nivolumab			
CheckMate 153 <i>ongoing</i> [NCT02066636] n=NA follow-up:	Nivolumab 3 mg/kg solution intravenous infusion over 60 minutes every two weeks until disease progression versus Nivolumab 3 mg/kg solution intravenous infusion over 60 minutes every two weeks until 1 year	patients With Advanced or Metastatic Non-Small Cell Lung Cancer Who Have Progressed During or After Receiving At Least One Prior Systemic Regimen	
nivolumab vs platinum doublet chemotherapy			

continued...

Trial	Treatments	Patients	Trials design and methods
CheckMate 227 (nivolumab alone) ongoing n=NA follow-up:	versus	Subjects With Chemotherapy-Nave Stage IV or Recurrent Non-Small Cell Lung Cancer	No masking
nivolumab vs Standard of Care			
CheckMate 026 , 2016 [NCT02041533] n=271/270 follow-up:	Nivolumab solution for Injection 3 mg/kg Intravenous every 2 weeks until disease progression versus Investigator's Choice Chemotherapy administered in 3-week cycles up to a maximum of 6 cycles of Intravenous injection until disease progression	patients with previously untreated advanced non-small cell lung cancer (NSCLC) whose tumors expressed PD-L1 at >5% (>1% ???). Patients with EGFR activating mutations and ALK translocations, which are sensitive to targeted therapy, were excluded.	Parallel groups open design
pembrolizumab vs Standard of Care			
Keynote 024 , 2015 [NCT02142738] n=154/151 follow-up: 11.2 months (median)	Pembrolizumab (200 mg, administered as intravenous (IV) infusion on Day 1 of each 21-day cycle for up to 35 cycles or until documented PD versus standard of care (SOC) platinum-based chemotherapies	previously untreated advanced NSCLC with PD-L1 expression on at least 50% of tumor cells and no sensitizing mutation of the epidermal growth factor receptor gene or translocation of the anaplastic lymphoma kinase gene	Parallel groups open label
Keynote 042 ongoing [NCT02220894] n=NA follow-up:	pembrolizumab versus SOC Treatment (Platinum-based Chemotherapy)	Treatment Nave Subjects With PD-L1 Positive Advanced or Metastatic Non-Small Cell Lung Cancer	Parallel groups open label china

References

CAURAL, 0:

KEYNOTE-021, :

CheckMate 057, 2015:

Borghaei H, Paz-Ares L, Horn L, Spigel DR, Steins M, Ready NE, Chow LQ, Vokes EE, Felip E, Holgado E, Barlesi F, Kohlhuff M, Arrieta O, Burgio MA, Fayette J, Lena H, Poddubskaya E, Gerber DE, Gettinger SN, Rudin CM, Rizvi N, Crin L, Blumenschein GR Jr, Nivolumab versus Docetaxel in Advanced Nonsquamous Non-Small-Cell Lung Cancer. *N Engl J Med* 2015 Oct 22;373:1627-39 [26412456] [10.1056/NEJMoa1507643](https://doi.org/10.1056/NEJMoa1507643)

CheckMate 017, 2015:

Brahmer J, Reckamp KL, Baas P, Crin L, Eberhardt WE, Poddubskaya E, Antonia S, Pluzanski A, Vokes EE, Holgado E, Waterhouse D, Ready N, Gainor J, Arn Frontera O, Havel L, Steins M, Garassino MC, Aerts JG, Domine M, Paz-Ares L, Reck M, Baudelet C, Harbis Nivolumab versus Docetaxel in Advanced Squamous-Cell Non-Small-Cell Lung Cancer. *N Engl J Med* 2015 May 31;: [26028407] [10.1056/NEJMoa1504627](https://doi.org/10.1056/NEJMoa1504627)

Keynote 010 10mg, 2015:

Herbst RS, Baas P, Kim DW, Felip E, Prez-Gracia JL, Han JY, Molina J, Kim JH, Arvis CD, Ahn MJ, Majem M, Fidler MJ, de Castro G Jr, Garrido M, Lubiniecki GM, Shentu Y, Im E, Dolled-Filhart M, Garon EB Pembrolizumab versus docetaxel for previously treated, PD-L1-positive, advanced non-small-cell lung cancer (KEYNOTE-010): a randomised controlled trial. *Lancet* 2015 Dec 18;: [26712084] [10.1016/S0140-6736\(15\)01281-7](https://doi.org/10.1016/S0140-6736(15)01281-7)

Keynote 010 2mg, 2015:

Herbst RS, Baas P, Kim DW, Felip E, Prez-Gracia JL, Han JY, Molina J, Kim JH, Arvis CD, Ahn MJ, Majem M, Fidler MJ, de Castro G Jr, Garrido M, Lubiniecki GM, Shentu Y, Im E, Dolled-Filhart M, Garon EB Pembrolizumab versus docetaxel for previously treated, PD-L1-positive, advanced non-small-cell lung cancer (KEYNOTE-010): a randomised controlled trial. *Lancet* 2015 Dec 18; [26712084] [10.1016/S0140-6736\(15\)01281-7](https://doi.org/10.1016/S0140-6736(15)01281-7)

CheckMate 153, :

CheckMate 227 (nivolumab alone), 0:

CheckMate 026, 2016:

Carbone DP, Reck M, Paz-Ares L, Creelan B, Horn L, Steins M, Felip E, van den Heuvel MM, Ciuleanu TE, Badin F, Ready N, Hiltermann TJN, Nair S, Juergens R, Peters S, Minenza E, Wrangle JM, Rodriguez-Abreu D, Borghaei H, Blumenschein GR Jr, Villaruz LC, Ha First-Line Nivolumab in Stage IV or Recurrent Non-Small-Cell Lung Cancer. *N Engl J Med* 2017;376:2415-2426 [28636851]

Carbone DP, Reck M, Paz-Ares L, Creelan B, Horn L, Steins M, Felip E, van den Heuvel MM, Ciuleanu TE, Badin F, Ready N, Hiltermann TJN, Nair S, Juerg First-Line Nivolumab in Stage IV or Recurrent Non-Small-Cell Lung Cancer. *N. Engl. J. Med.* 2017; 376:2415-2426 [28636851]

Keynote 024, 2015:

Reck M, Rodriguez-Abreu D, Robinson AG, Hui R, Csoszi T, Flp A, Gottfried M, Peled N, Tafreshi A, Cuffe S, O'Brien M, Rao S, Hotta K, Leiby MA, Lubiniecki GM, Shentu Y, Rangwala R, Brahmer JR Pembrolizumab versus Chemotherapy for PD-L1-Positive Non-Small-Cell Lung Cancer. *N Engl J Med* 2016 Oct 8; [27718847] [10.1056/NEJMoa1606774](https://doi.org/10.1056/NEJMoa1606774)

Keynote 042, :

Entry terms: lambrolizumab, Keytruda, MK-3475,

5 About TrialResults-center.org

TrialResults-center is an innovative knowledge database that collects the results of RCTs and provides dynamic interactive systematic reviews and meta-analysis in the field of all major heart and vessels diseases.

The TrialResults-center database provides a unique view of the treatment efficacy based on all data provided directly from clinical trial results, offering a valuable alternative to personal bibliographic search, published meta-analysis, etc. Furthermore, it would allow comparing easily the various concurrent therapeutic for the same clinical condition.

Rigorous meta-analysis method is used to populate TrialResults-center: widespread search of published and non published trials, study selection using pre-specified criteria, data extraction using standard form.

TrialResults-center is continually updated on a weekly basis. We continually search all new results (whatever their publication channel) and these news results are immediately added to the database with a maximum of 1 week.

TrialResults-center is non-profit and self-funded.