Supplementary Material

**Supplementary Table 1** List of the top 30 most cited clinical trial articles on ICIs for RCC.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Rank | Title | Year of Publication | Corresponding Author | Journal of Publication | Total Citations |
| 1 | Nivolumab versus Everolimus in Advanced Renal-Cell Carcinoma | 2015 | Motzer, RJ | New England Journal of Medicine | 3192 |
| 2 | Nivolumab plus Ipilimumab versus Sunitinib in Advanced Renal-Cell Carcinoma | 2018 | Motzer, RJ  Sharma, P | New England Journal of Medicine | 1411 |
| 3 | Pembrolizumab plus Axitinib versus Sunitinib for Advanced Renal-Cell Carcinoma | 2019 | Rini, BI | New England Journal of Medicine | 779 |
| 4 | Nivolumab for Metastatic Renal Cell Carcinoma: Results of a Randomized Phase II Trial | 2015 | Motzer, RJ | Journal of Clinical Oncology | 675 |
| 5 | Avelumab plus Axitinib versus Sunitinib for Advanced Renal-Cell Carcinoma | 2019 | Motzer, RJ  Choueiri, TK | New England Journal of Medicine | 661 |
| 6 | Clinical activity and molecular correlates of response to atezolizumab alone or in combination with bevacizumab versus sunitinib in renal cell carcinoma | 2018 | McDermott, DF | Nature Medicine | 369 |
| 7 | Atezolizumab plus bevacizumab versus sunitinib in patients with previously untreated metastatic renal cell carcinoma (IMmotion151): a multicentre, open-label, phase 3, randomised controlled trial | 2019 | Rini, BI | Lancet | 278 |
| 8 | Nivolumab plus ipilimumab versus sunitinib in first-line treatment for advanced renal cell carcinoma: extended follow-up of efficacy and safety results from a randomised, controlled, phase 3 trial | 2019 | Motzer, RJ | Lancet Oncology | 194 |
| 9 | Quality of life in patients with advanced renal cell carcinoma given nivolumab versus everolimus in CheckMate 025: a randomised, open-label, phase 3 trial | 2016 | Cella, D | Lancet Oncology | 141 |
| 10 | Treatment Beyond Progression in Patients with Advanced Renal Cell Carcinoma Treated with Nivolumab in CheckMate 025 | 2017 | Escudier, B | European Urology | 134 |
| 11 | Safety and Efficacy of Nivolumab in Patients With Metastatic Renal Cell Carcinoma Treated Beyond Progression A Subgroup Analysis of a Randomized Clinical Trial | 2016 | George, S | Jama Oncology | 120 |
| 12 | CheckMate 025 Randomized Phase 3 Study: Outcomes by Key Baseline Factors and Prior Therapy for Nivolumab Versus Everolimus in Advanced Renal Cell Carcinoma | 2017 | Escudier, B | European Urology | 113 |
| 13 | Patient-reported outcomes of patients with advanced renal cell carcinoma treated with nivolumab plus ipilimumab versus sunitinib (CheckMate 214): a randomised, phase 3 trial | 2019 | Cella, D | Lancet Oncology | 85 |
| 14 | Safety and Efficacy of Nivolumab in Brain Metastases From Renal Cell Carcinoma: Results of the GETUG-AFU 26 NIVOREN Multicenter Phase II Study | 2019 | Albiges, L | Journal of Clinical Oncology | 37 |
| 15 | Updated efficacy results from the JAVELIN Renal 101 trial: first-line avelumab plus axitinib versus sunitinib in patients with advanced renal cell carcinoma | 2020 | Choueiri, TK | Annals of Oncology | 32 |
| 16 | Nivolumab versus everolimus in advanced renal cell carcinoma: Japanese subgroup analysis from the CheckMate 025 study | 2017 | Tomita, Y | Japanese Journal of Clinical Oncology | 33 |
| 17 | Results of a Multicenter Phase II Study of Atezolizumab and Bevacizumab for Patients With Metastatic Renal Cell Carcinoma With Variant Histology and/or Sarcomatoid Features | 2020 | Choueiri, TK | Journal of Clinical Oncology | 24 |
| 18 | Pembrolizumab plus axitinib versus sunitinib monotherapy as first-line treatment of advanced renal cell carcinoma (KEYNOTE-426): extended follow-up from a randomised, open-label, phase 3 trial | 2020 | Powles, T | Lancet Oncology | 22 |
| 19 | Nivolumab versus everolimus in advanced renal cell carcinoma: Japanese subgroup 3-year follow-up analysis from the Phase III CheckMate 025 study | 2019 | Tomita, Y | Japanese Journal of Clinical Oncology | 20 |
| 20 | Survival outcomes and independent response assessment with nivolumab plus ipilimumab versus sunitinib in patients with advanced renal cell carcinoma: 42-month follow-up of a randomized phase 3 clinical trial | 2020 | Motzer, RJ | Journal for Immunotherapy of Cancer | 19 |
| 21 | Efficacy of Nivolumab plus Ipilimumab According to Number of IMDC Risk Factors in CheckMate 214 | 2020 | Escudier, B | European Urology | 13 |
| 22 | Nivolumab versus everolimus in patients with advanced renal cell carcinoma: Updated results with long-term follow-up of the randomized, open-label, phase 3 CheckMate 025 trial | 2020 | Motzer, RJ | Cancer | 12 |
| 23 | Nivolumab plus ipilimumab versus sunitinib in previously untreated advanced renal-cell carcinoma: analysis of Japanese patients in CheckMate 214 with extended follow-up | 2020 | Tomita, Y | Japanese Journal of Clinical Oncology | 9 |
| 24 | A phase II trial of intermittent nivolumab in patients with metastatic renal cell carcinoma (mRCC) who have received prior anti-angiogenic therapy | 2019 | Ornstein, MC | Journal for Immunotherapy of Cancer | 9 |
| 25 | Nivolumab plus Cabozantinib versus Sunitinib for Advanced Renal-Cell Carcinoma | 2021 | Motzer, RJ  Choueiri, TK | New England Journal of Medicine | 8 |
| 26 | Phase Ib/II Clinical Trial of Pembrolizumab With Bevacizumab for Metastatic Renal Cell Carcinoma: BTCRC-GU14-003 | 2020 | Dudek, AZ | Journal of Clinical Oncology | 9 |
| 27 | Nivolumab plus ipilimumab versus sunitinib for first-line treatment of advanced renal cell carcinoma: extended 4-year follow-up of the phase III CheckMate 214 trial | 2020 | Albiges, L | Esmo Open | 6 |
| 28 | Safety and Efficacy of Nivolumab in Patients With Advanced Non-Clear Cell Renal Cell Carcinoma: Results From the Phase IIIb/IV CheckMate 374 Study | 2020 | Vogelzang, NJ | Clinical Genitourinary Cancer | 5 |
| 29 | Patient-Reported Outcomes from the Phase III Randomized IMmotion151 Trial: Atezolizumab plus Bevacizumab versus Sunitinib in Treatment-Naive Metastatic Renal Cell Carcinoma | 2020 | Atkins, MB | Clinical Cancer Research | 3 |
| 30 | Patient-reported outcomes in a phase 2 study comparing atezolizumab alone or with bevacizumab vs sunitinib in previously untreated metastatic renal cell carcinoma | 2020 | Pal, SK | Bju International | 3 |

**Supplementary Table 2** The top ten countries ranked by the citation number of articles.

|  |  |  |  |
| --- | --- | --- | --- |
| Rank | Country | No. of articles | Citations |
| 1 | USA | 27 | 8147 |
| 2 | France | 19 | 7197 |
| 3 | Japan | 18 | 6776 |
| 4 | UK | 18 | 7283 |
| 5 | Germany | 16 | 7151 |
| 6 | Italy | 14 | 6159 |
| 7 | Australia | 12 | 5913 |
| 8 | Canada | 10 | 6311 |
| 9 | Spain | 10 | 5446 |
| 10 | Denmark | 9 | 5224 |

USA: United States of America; UK: United Kingdom.

**Supplementary Table 3** The top ten institutions ranked by the citation number of articles.

|  |  |  |  |
| --- | --- | --- | --- |
| Rank | Institution | Publications | Country |
| 1 | Mem Sloan Kettering Canc Ctr | 20 | USA |
| 2 | Cleveland Clin | 14 | USA |
| 3 | Bristol Myers Squibb | 12 | USA |
| 4 | Fox Chase Canc Ctr | 11 | USA |
| 5 | Gustave Roussy | 11 | France |
| 6 | Niigata Univ | 11 | Japan |
| 7 | Macquarie Univ | 10 | Australia |
| 8 | Queen Mary Univ London | 10 | UK |
| 9 | Univ Texas MD Anderson Canc Ctr | 10 | USA |
| 10 | Aarhus Univ Hosp | 9 | Denmark |

**Supplementary Table 4** Journals in which the top 30 cited clinical trial articles were published.

|  |  |  |  |
| --- | --- | --- | --- |
| Rank | Journal Name | No. of Articles | Journal Impact Factor of 2020 |
| 1 | New England Journal of Medicine | 5 | 91.245 |
| 2 | Journal of Clinical Oncology | 4 | 44.544 |
| 3 | Lancet Oncology | 4 | 41.316 |
| 4 | European Urology | 3 | 20.096 |
| 5 | Japanese Journal of Clinical Oncology | 3 | 3.019 |
| 6 | Journal For Immunotherapy of Cancer | 2 | 13.751 |
| 7 | Lancet | 1 | 79.321 |
| 8 | Nature Medicine | 1 | 53.440 |
| 9 | Jama Oncology | 1 | 31.777 |
| 10 | Annals of Oncology | 1 | 32.976 |
| 11 | Clinical Cancer Research | 1 | 12.531 |
| 12 | Cancer | 1 | 6.860 |
| 13 | Esmo Open | 1 | 6.540 |
| 14 | Bju International | 1 | 5.588 |
| 15 | Clinical Genitourinary Cancer | 1 | 2.872 |

Journal impact factor based on Thomson Reuters Web of Knowledge Journal Citation Reports Ranking (2020).

**Supplementary Table 5** The top ten authors with the highest number of manuscripts in the top 30 most cited clinical trial articles.

|  |  |  |
| --- | --- | --- |
| Rank | Author | No. of Articles |
| 1 | Motzer RJ | [21](http://127.0.0.1:1925/au/199/) |
| 2 | Rini BI | [16](http://127.0.0.1:1925/au/238/) |
| 3 | Escudier B | [15](http://127.0.0.1:1925/au/68/) |
| 4 | Choueiri TK | [14](http://127.0.0.1:1925/au/48/) |
| 5 | McDermott DF | [13](http://127.0.0.1:1925/au/183/) |
| 6 | Gurney H | [12](http://127.0.0.1:1925/au/107/) |
| 7 | Plimack ER | [12](http://127.0.0.1:1925/au/221/) |
| 8 | George S | [11](http://127.0.0.1:1925/au/90/) |
| 9 | Powles T | 11 |
| 10 | Tomita Y | [11](http://127.0.0.1:1925/au/281/) |

**Supplementary Table 6** The top ten keywords ranked by the citation number of articles.

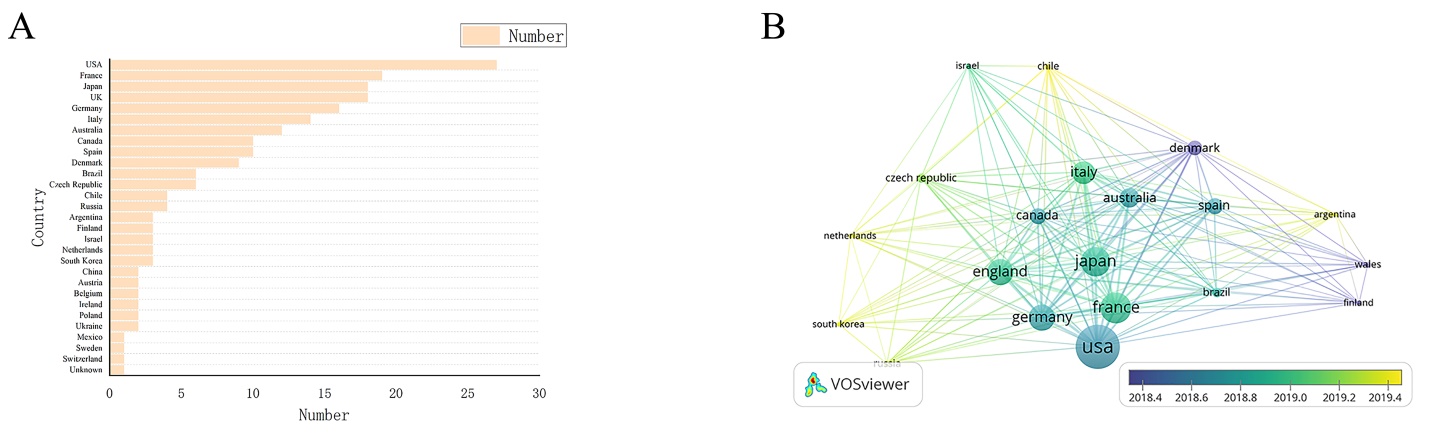
|  |  |  |  |
| --- | --- | --- | --- |
| Rank | Keyword | Count | Centrality |
| 1 | therapy | 14 | 0.27 |
| 2 | survival | 11 | 0.34 |
| 3 | nivolumab | 10 | 0.18 |
| 4 | everolimus | 8 | 0.21 |
| 5 | immunotherapy | 5 | 0.19 |
| 6 | symptom index | 5 | 0.09 |
| 7 | open label | 4 | 0.08 |
| 8 | sorafenib | 4 | 0.07 |
| 9 | interferon alpha | 4 | 0.07 |
| 10 | pazopanib | 4 | 0.04 |

**Supplementary Table 7** List of the original articles registered on ClinicalTrials.gov on ICIs for RCC.

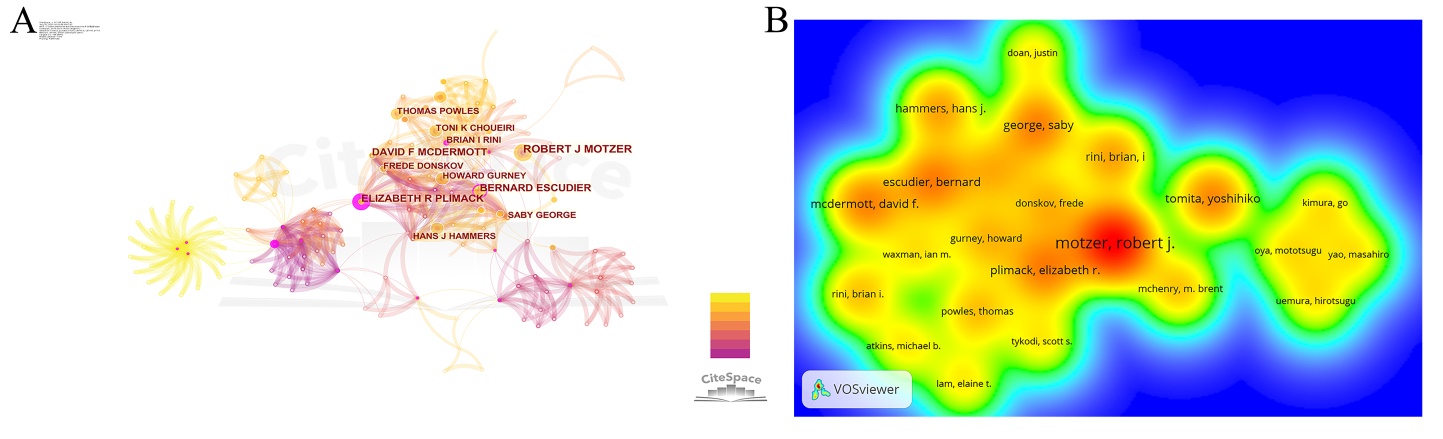
|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Rank | Title | Year of Publication | Corresponding Author | Journal of Publication | Total Citations |
| 1 | Nivolumab versus Everolimus in Advanced Renal-Cell Carcinoma | 2015 | Motzer, RJ | New England Journal of Medicine | 3192 |
| 2 | Nivolumab plus Ipilimumab versus Sunitinib in Advanced Renal-Cell Carcinoma | 2018 | Motzer, RJ  Sharma, P | New England Journal of Medicine | 1411 |
| 3 | Pembrolizumab plus Axitinib versus Sunitinib for Advanced Renal-Cell Carcinoma | 2019 | Rini, BI | New England Journal of Medicine | 779 |
| 4 | Nivolumab for Metastatic Renal Cell Carcinoma: Results of a Randomized Phase II Trial | 2015 | Motzer, RJ | Journal of Clinical Oncology | 675 |
| 5 | Avelumab plus Axitinib versus Sunitinib for Advanced Renal-Cell Carcinoma | 2019 | Motzer, RJ  Choueiri, TK | New England Journal of Medicine | 661 |
| 6 | Clinical activity and molecular correlates of response to atezolizumab alone or in combination with bevacizumab versus sunitinib in renal cell carcinoma | 2018 | McDermott, DF | Nature Medicine | 369 |
| 7 | Atezolizumab plus bevacizumab versus sunitinib in patients with previously untreated metastatic renal cell carcinoma (IMmotion151): a multicentre, open-label, phase 3, randomised controlled trial | 2019 | Rini, BI | Lancet | 278 |
| 8 | Safety and Efficacy of Nivolumab in Brain Metastases From Renal Cell Carcinoma: Results of the GETUG-AFU 26 NIVOREN Multicenter Phase II Study | 2019 | Albiges, L | Journal of Clinical Oncology | 37 |
| 9 | Results of a Multicenter Phase II Study of Atezolizumab and Bevacizumab for Patients With Metastatic Renal Cell Carcinoma With Variant Histology and/or Sarcomatoid Features | 2020 | Choueiri, TK | Journal of Clinical Oncology | 24 |
| 10 | A phase II trial of intermittent nivolumab in patients with metastatic renal cell carcinoma (mRCC) who have received prior anti-angiogenic therapy | 2019 | Ornstein, MC | Journal for Immunotherapy of Cancer | 9 |
| 11 | Nivolumab plus Cabozantinib versus Sunitinib for Advanced Renal-Cell Carcinoma | 2021 | Motzer, RJ  Choueiri, TK | New England Journal of Medicine | 8 |
| 12 | Phase Ib/II Clinical Trial of Pembrolizumab With Bevacizumab for Metastatic Renal Cell Carcinoma: BTCRC-GU14-003 | 2020 | Dudek, AZ | Journal of Clinical Oncology | 9 |
| 13 | Safety and Efficacy of Nivolumab in Patients With Advanced Non-Clear Cell Renal Cell Carcinoma: Results From the Phase IIIb/IV CheckMate 374 Study | 2020 | Vogelzang, NJ | Clinical Genitourinary Cancer | 5 |

**Supplementary Table 8** The clinical information of grey data in ClinicalTrials.gov.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Rank | Study Title | Phase | Interventions | NCT Number | First Posted |
| 1 | [Nivolumab in Combination With Ipilimumab in Patients With Metastatic Renal Cell Carcinoma](https://clinicaltrials.gov/ct2/show/NCT03297593?term=Ipilimumab&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=1) | Phase 2 | Drug: Nivolumab  Drug: Ipilimumab | NCT03297593 | 2017 |
| 2 | [Study of Entinostat With Nivolumab Plus Ipilimumab in Previously Treated Renal Cell Carcinoma](https://clinicaltrials.gov/ct2/show/NCT03552380?term=Ipilimumab&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=2) | Phase 2 | Drug: Entinostat  Drug: Nivolumab  Drug: Ipilimumab | NCT03552380 | 2018 |
| 3 | [Nivolumab and Ipilimumab in T1aN0M0 Renal Cell Carcinoma Patients Ineligible for Surgical Treatment.](https://clinicaltrials.gov/ct2/show/NCT04134182?term=Ipilimumab&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=3) | Phase 2 | Drug: Nivolumab  Drug: Ipilimumab | NCT04134182 | 2019 |
| 4 | [An Investigational Immuno-Therapy Safety and Efficacy Study of Multiple Administration Regimens for Nivolumab Plus Ipilimumab in Subjects With Renal Cell Carcinoma](https://clinicaltrials.gov/ct2/show/NCT03029780?term=Ipilimumab&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=4) | Phase 2 | Drug: Nivolumab  Drug: Ipilimumab | NCT03029780 | 2017 |
| 5 | [A Study of Combination Nivolumab and Ipilimumab Retreatment in Patients With Advanced Renal Cell Carcinoma](https://clinicaltrials.gov/ct2/show/NCT04088500?term=Ipilimumab&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=5) | Phase 2 | Drug: Nivolumab  Drug: Ipilimumab | NCT04088500 | 2019 |
| 6 | [A Study of Nivolumab Combined With Ipilimumab Versus Nivolumab Alone in Participants With Advanced Kidney Cancer](https://clinicaltrials.gov/ct2/show/NCT03873402?term=Ipilimumab&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=7) | Phase 3 | Drug: Nivolumab  Drug: Ipilimumab Other: Placebo | NCT03873402 | 2019 |
| 7 | [Study of Front Line Therapy With Nivolumab and Salvage Nivolumab + Ipilimumab in Patients With Advanced Renal Cell Carcinoma](https://clinicaltrials.gov/ct2/show/NCT03117309?term=Ipilimumab&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=8) | Phase 2 | Drug: Nivolumab  Drug: Ipilimumab | NCT03117309 | 2017 |
| 8 | [Study of Cabozantinib in Combination With Nivolumab and Ipilimumab in Patients With Previously Untreated Advanced or Metastatic Renal Cell Carcinoma](https://clinicaltrials.gov/ct2/show/NCT03937219?term=Ipilimumab&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=9) | Phase 3 | Drug: Cabozantinib  Drug: Nivolumab  Drug: Ipilimumab Drug: Placebo | NCT03937219 | 2019 |
| 9 | [SBRT With Combination Ipilimumab/Nivolumab for Metastatic Kidney Cancer](https://clinicaltrials.gov/ct2/show/NCT04090710?term=Ipilimumab&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=10) | Phase 2 | Drug: Ipilimumab/ Nivolumab  Radiation: SBRT + Ipilimumab/Nivolumab | NCT04090710 | 2019 |
| 10 | [A Study Comparing Nivolumab, Nivolumab in Combination With Ipilimumab and Placebo in Participants With Localized Kidney Cancer Who Underwent Surgery to Remove Part of a Kidney](https://clinicaltrials.gov/ct2/show/NCT03138512?term=Ipilimumab&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=12) | Phase 3 | Drug: Nivolumab  Drug: Ipilimumab  Drug: Placebo | NCT03138512 | 2017 |
| 11 | [Tailored ImmunoTherapy Approach With Nivolumab in Subjects With Metastatic or Advanced Renal Cell Carcinoma](https://clinicaltrials.gov/ct2/show/NCT02917772?term=Ipilimumab&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=13) | Phase 2 | Drug: Nivolumab  Drug: Ipilimumab | NCT02917772 | 2016 |
| 12 | [Randomized Phase-II Study of Nivolumab Plus Ipilimumab vs. Standard of Care in Untreated and Advanced Non-clear Cell RCC](https://clinicaltrials.gov/ct2/show/NCT03075423?term=Ipilimumab&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=14) | Phase 2 | Drug: Nivolumab  Drug: Ipilimumab Drug: Sunitinib | NCT03075423 | 2017 |
| 13 | [A BIOmarker Driven Trial With Nivolumab and Ipilimumab or VEGFR tKi in Naïve Metastatic Kidney Cancer](https://clinicaltrials.gov/ct2/show/NCT02960906?term=Ipilimumab&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=15) | Phase 2 | Drug: Nivolumab  Drug: Ipilimumab  Drug: Pazopanib  Drug: Sunitinib | NCT02960906 | 2016 |
| 14 | [A Combination Study of Nivolumab With Ipilimumab in Participants With Untreated Advanced Kidney Cancer Conducted in India](https://clinicaltrials.gov/ct2/show/NCT04513522?term=Ipilimumab&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=16) | Phase 4 | Drug: Nivolumab  Drug: Ipilimumab | NCT04513522 | 2020 |
| 15 | [A Study to Evaluate the Safety of Nivolumab and Ipilimumab in Subjects With Previously Untreated Advanced or Metastatic Renal Cell Cancer](https://clinicaltrials.gov/ct2/show/NCT02982954?term=Ipilimumab&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=17) | Phase 4 | Drug: Nivolumab  Drug: Ipilimumab | NCT02982954 | 2016 |
| 16 | [SBRT (Stereotactic Body Radiation Therapy) in Combination With Nivolumab/Ipilimumab in Renal Cell Carcinoma (RCC) / Kidney Cancer Patients](https://clinicaltrials.gov/ct2/show/NCT03065179?term=Ipilimumab&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=18) | Phase 2 | Drug: Nivolumab  Drug: Ipilimumab Radiation: SBRT | NCT03065179 | 2017 |
| 17 | [Phase II Sequential Treatment Trial of Single Agent Nivolumab, Then Combination Ipilimumab + Nivolumab in Metastatic or Unresectable Non-Clear Cell Renal Cell Carcinoma (ANZUP1602)](https://clinicaltrials.gov/ct2/show/NCT03177239?term=Ipilimumab&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=19) | Phase 2 | Drug: Nivolumab  Drug: Ipilimumab | NCT03177239 | 2017 |
| 18 | [Study of Optimized Management of Nivolumab Based on Response in Patients With Advanced RCC (OMNIVORE Study)](https://clinicaltrials.gov/ct2/show/NCT03203473?term=Ipilimumab&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=20) | Phase 2 | Drug: Nivolumab  Drug: Ipilimumab | NCT03203473 | 2017 |
| 19 | [Investigator-Initiated Trial of Combined Ipilimumab, Nivolumab and Stereotactic Radiation in Patients With Metastatic Clear-Cell RCC (ccRCC) Who Have Failed Treatment With Single-Agent Nivolumab](https://clinicaltrials.gov/ct2/show/NCT03149159?term=Ipilimumab&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=22) | Phase 2 | Drug: Nivolumab  Drug: Ipilimumab  Radiation: Steriotactic radiation therapy | NCT03149159 | 2017 |
| 20 | [Dendritic Cell Immunotherapy Plus Standard Treatment of Advanced Renal Cell Carcinoma](https://clinicaltrials.gov/ct2/show/NCT04203901?term=Ipilimumab&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=23) | Phase 2 | Biological: CMN-001  Drug:Nivolumab+Ipilimumab  Drug: Lenvatinib+Everolimus | NCT04203901 | 2019 |
| 21 | [Monoclonal Antibody Therapy in Treating Patients With Metastatic Renal Cell Cancer](https://clinicaltrials.gov/ct2/show/NCT00057889?term=Ipilimumab&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=24) | Phase 2 | Drug: Ipilimumab | NCT00057889 | 2003 |
| 22 | [Cabozantinib In Combo With NIVO + IPI In Advanced NCCRCC](https://clinicaltrials.gov/ct2/show/NCT04413123?term=Ipilimumab&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=26) | Phase 2 | Drug: Cabozantinib  Drug: Nivolumab  Drug: Ipilimumab | NCT04413123 | 2020 |
| 23 | [Phase II Trial of Nivolumab Plus Ipilimumab in Patients With Renal Medullary Carcinoma](https://clinicaltrials.gov/ct2/show/NCT03274258?term=Ipilimumab&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=34) | Phase 2 | Drug: Nivolumab  Drug: Ipilimumab | NCT03274258 | 2017 |
| 24 | [Nivolumab and Stereotactic Ablative Radiation Therapy (SAbR) for Metastatic Clear Cell Renal Cell Carcinoma](https://clinicaltrials.gov/ct2/show/NCT02781506?term=nivolumab&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=9) | Phase 2 | Drug: Nivolumab  Radiation: SAbR | NCT02781506 | 2016 |
| 25 | [A Study of Subcutaneous Nivolumab Versus Intravenous Nivolumab in Participants With Previously Treated Clear Cell Renal Cell Carcinoma That is Advanced or Has Spread](https://clinicaltrials.gov/ct2/show/NCT04810078?term=nivolumab&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=10) | Phase 3 | Drug: Nivolumab + rHuPH20  Drug: Nivolumab | NCT04810078 | 2021 |
| 26 | [Neoadjuvant Sitravatinib in Combination With Nivolumab in Patients With Clear Cell Renal Cell Carcinoma](https://clinicaltrials.gov/ct2/show/NCT03680521?term=nivolumab&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=12) | Phase 2 | Drug: Sitravatinib  Drug: Nivolumab | NCT03680521 | 2018 |
| 27 | [Multi-center Trial of ESK981 in Combination With Nivolumab in Patients With Metastatic Renal Cell Carcinoma](https://clinicaltrials.gov/ct2/show/NCT03562507?term=nivolumab&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=13) | Phase 2 | Drug: ESK981  Drug: Nivolumab | NCT03562507 | 2018 |
| 28 | [A Study of Bempegaldesleukin (NKTR-214: BEMPEG) in Combination With Nivolumab Compared With the Investigator's Choice of a Tyrosine Kinase Inhibitor (TKI) Therapy (Either Sunitinib or Cabozantinib Monotherapy) for Advanced Metastatic Renal Cell Carcinoma (RCC)](https://clinicaltrials.gov/ct2/show/NCT03729245?term=nivolumab&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=14) | Phase 3 | Drug: Bempegaldesleukin  Drug: Sunitinib  Drug: Nivolumab  Drug: Cabozantinib | NCT03729245 | 2018 |
| 29 | [A Study of Anti-PD1 (Nivolumab) Therapy as Pre- and Post-operative Therapy in Metastatic Renal Cell Cancer (ADAPTeR)](https://clinicaltrials.gov/ct2/show/NCT02446860?term=nivolumab&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=15) | Phase 2 | Drug: Nivolumab | NCT02446860 | 2015 |
| 30 | [Study in Which Therapy is Either Switched to Nivolumab After 3 Months of Treatment or Therapy is Continued With a Tyrosine Kinase Inhibitor in Patients With Metastatic Renal Cell Carcinoma (RCC) and Disease Control](https://clinicaltrials.gov/ct2/show/NCT02959554?term=nivolumab&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=16) | Phase 2 | Drug: Nivolumab  Drug: Sunitinib  Drug: Pazopanib | NCT02959554 | 2016 |
| 31 | [Nivolumab Plus Stereotactic Body Radiotherapy in II and III Line of Patients With Metastatic Renal Cell Carcinoma](https://clinicaltrials.gov/ct2/show/NCT03469713?term=nivolumab&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=25) | Phase 2 | Drug: Nivolumab | NCT03469713 | 2018 |
| 32 | [Sitravatinib and Nivolumab for the Treatment of Metastatic or Advanced Clear Cell Renal Cell Cancer](https://clinicaltrials.gov/ct2/show/NCT04904302?term=nivolumab&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=29) | Phase 2 | Drug: Nivolumab  Other:Quality-of-Life Assessment  Other:Questionnaire Administration  Drug: Sitravatinib | NCT04904302 | 2021 |
| 33 | [Addition of X4P-001 to Nivolumab Treatment in Participants With Renal Cell Carcinoma](https://clinicaltrials.gov/ct2/show/NCT02923531?term=nivolumab&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=34) | Phase 2 | Drug: X4P-001  Drug: Nivolumab | NCT02923531 | 2016 |
| 34 | [CYTO Reductive Surgery in Kidney Cancer Plus Immunotherapy and Targeted Kinase Inhibition](https://clinicaltrials.gov/ct2/show/NCT04322955?term=nivolumab&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=35) | Phase 2 | Drug: Cabozantinib  Drug: Nivolumab  Procedure: Cytoreductive nephrectomy | NCT04322955 | 2020 |
| 35 | [A Study of Nivolumab In Combination With Cabozantinib in Patients With Non-Clear Cell Renal Cell Carcinoma](https://clinicaltrials.gov/ct2/show/NCT03635892?term=nivolumab&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=38) | Phase 2 | Drug: Cabozantinib  Drug: Nivolumab | NCT03635892 | 2018 |
| 36 | [A Study to Compare Treatments for a Type of Kidney Cancer Called TFE/Translocation Renal Cell Carcinoma (tRCC)](https://clinicaltrials.gov/ct2/show/NCT03595124?term=nivolumab&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=39) | Phase 2 | Drug: Axitinib  Drug: Nivolumab | NCT03595124 | 2018 |
| 37 | [A Study to Compare Bempegaldesleukin (BEMPEG: NKTR-214) Combined With Nivolumab and Tyrosine Kinase Inhibitor (TKI) to Nivolumab and TKI Alone in Participants With Previously Untreated Kidney Cancer That is Advanced or Has Spread](https://clinicaltrials.gov/ct2/show/NCT04540705?term=nivolumab&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=40) | Phase 2 | Drug: Nivolumab  Drug: Bempegaldesleukin  Drug: Axitinib  Drug: Cabozantinib | NCT04540705 | 2020 |
| 38 | [Study of Nivolumab and Axitinib in Patients With Advanced Renal Cell Carcinoma](https://clinicaltrials.gov/ct2/show/NCT03172754?term=nivolumab&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=41) | Phase 2 | Drug: Nivolumab  Drug: Axitinib | NCT03172754 | 2017 |
| 39 | [Phase Ib/II Trial of Interleukin-2 and PD-1 Checkpoint Inhibitor, Nivolumab In Metastatic Clear Cell Renal Cell Cancer](https://clinicaltrials.gov/ct2/show/NCT02989714?term=nivolumab&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=42) | Phase 2 | Drug: Interleukin-2  Drug: Nivolumab | NCT02989714 | 2016 |
| 40 | [Nivolumab in Treating Patients With Localized Kidney Cancer Undergoing Nephrectomy](https://clinicaltrials.gov/ct2/show/NCT03055013?term=nivolumab&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=44) | Phase 3 | Procedure: Conventional Surgery  Drug: Nivolumab | NCT03055013 | 2017 |
| 41 | [PAC-1 for Treatment of Refractory, Metastatic Kidney Cancer](https://clinicaltrials.gov/ct2/show/NCT03927248?term=nivolumab&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=46) | Phase 2 | Drug: Nivolumab | NCT03927248 | 2019 |
| 42 | [Ibrutinib and Nivolumab in Treating Patients With Previously-Treated Metastatic Kidney Cancer](https://clinicaltrials.gov/ct2/show/NCT02899078?term=nivolumab&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=48) | Phase 2 | Drug: Ibrutinib  Drug: Nivolumab | NCT02899078 | 2016 |
| 43 | [Sitravatinib and Nivolumab in Treating Patients With Advanced or Metastatic Kidney Cancer](https://clinicaltrials.gov/ct2/show/NCT03015740?term=nivolumab&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=51) | Phase 2 | Drug: Nivolumab | NCT03015740 | 2017 |
| 44 | [Deferred Cytoreductive Nephrectomy in Synchronous Metastatic Renal Cell Carcinoma: The NORDIC-SUN-Trial](https://clinicaltrials.gov/ct2/show/NCT03977571?term=nivolumab&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=52) | Phase 3 | Procedure: Cytoreductive nephrectomy  Drug: Nivolumab  Drug: Ipilimumab | NCT03977571 | 2019 |
| 45 | [Comparing the Outcome of Immunotherapy-Based Drug Combination Therapy With or Without Surgery to Remove the Kidney in Metastatic Kidney Cancer, the PROBE Trial](https://clinicaltrials.gov/ct2/show/NCT04510597?term=nivolumab&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=59) | Phase 3 | Procedure: Cytoreductive Nephrectomy  Drug: Active Comparator | NCT04510597 | 2020 |
| 46 | [Combination Radiation and PD-1 Inhibition in Metastatic or Recurrent Renal Cell Carcinoma (RCC)](https://clinicaltrials.gov/ct2/show/NCT02962804?term=nivolumab&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=60) | Phase 2 | Drug: Nivolumab  Radiation: Radiation | NCT02962804 | 2016 |
| 47 | [Phase 1/2 Study of Tivozanib in Combination With Nivolumab in Subjects With RCC](https://clinicaltrials.gov/ct2/show/NCT03136627?term=nivolumab&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=61) | Phase 2 | Drug: Tivozanib  Drug: Nivolumab | NCT03136627 | 2017 |
| 48 | [A Phase 1/2, Open-label Study to Evaluate the Safety and Antitumor Activity of MEDI0680 (AMP-514) in Combination With Durvalumab Versus Nivolumab Monotherapy in Participants With Select Advanced Malignancies](https://clinicaltrials.gov/ct2/show/NCT02118337?term=nivolumab&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=63) | Phase 2 | Drug: MEDI0680  Drug: Durvalumab  Drug: Nivolumab | NCT02118337 | 2014 |
| 49 | [Pembrolizumab Plus Lenvatinib for First-line Advanced/Metastatic Non-clear Cell Renal Cell Carcinoma (1L nccRCC) (MK-3475-B61)](https://clinicaltrials.gov/ct2/show/NCT04704219?term=pembrolizumab&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=1) | Phase 2 | Drug: Pembrolizumab  Drug: Lenvatinib | NCT04704219 | 2021 |
| 50 | [Study of Pembrolizumab (MK-3475) Monotherapy in Locally Advanced/Metastatic Renal Cell Carcinoma (MK-3475-427/KEYNOTE-427)](https://clinicaltrials.gov/ct2/show/NCT02853344?term=pembrolizumab&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=2) | Phase 2 | Drug: Pembrolizumab | NCT02853344 | 2016 |
| 51 | [Lenvatinib (LEN) in Combination With Pembrolizumab (KEYtruda) in Subjects With Locally Advanced or Metastatic Non-clear Cell Renal Cell Carcinoma (The LENKYN Trial)](https://clinicaltrials.gov/ct2/show/NCT04267120?term=pembrolizumab&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=3) | Phase 2 | Drug: Lenvatinib  Drug: Pembrolizumab  Procedure: Research blood collection | NCT04267120 | 2020 |
| 52 | [Safety and Efficacy Study of Pembrolizumab (MK-3475) as Monotherapy in the Adjuvant Treatment of Renal Cell Carcinoma Post Nephrectomy (MK-3475-564/KEYNOTE-564)](https://clinicaltrials.gov/ct2/show/NCT03142334?term=pembrolizumab&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=4) | Phase 3 | Drug: Pembrolizumab  Drug: Placebo | NCT03142334 | 2017 |
| 53 | [Lenvatinib/Everolimus or Lenvatinib/Pembrolizumab Versus Sunitinib Alone as Treatment of Advanced Renal Cell Carcinoma](https://clinicaltrials.gov/ct2/show/NCT02811861?term=pembrolizumab&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=6) | Phase 3 | Drug: Lenvatinib  Drug: Everolimus  Drug: Pembrolizumab  Drug: Sunitinib | NCT02811861 | 2016 |
| 54 | [Denosumab and Pembrolizumab in Clear Cell Renal Carcinoma](https://clinicaltrials.gov/ct2/show/NCT03280667?term=pembrolizumab&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=7) | Phase 2 | Drug: Pembrolizumab plus denosumab | NCT03280667 | 2017 |
| 55 | [Pembrolizumab (MK-3475) Plus Epacadostat vs Standard of Care in mRCC (KEYNOTE-679/ECHO-302)](https://clinicaltrials.gov/ct2/show/NCT03260894?term=pembrolizumab&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=8) | Phase 3 | Drug: Pembrolizumab  Drug: Epacadostat  Drug: Sunitinib  Drug: Pazopanib | NCT03260894 | 2017 |
| 56 | [Study of Pembrolizumab and Cabozantinib in Patients With Metastatic Renal Cell Carcinoma](https://clinicaltrials.gov/ct2/show/NCT03149822?term=pembrolizumab&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=9) | Phase 2 | Drug: Cabozantinib  Drug: Pembrolizumab | NCT03149822 | 2017 |
| 57 | [Interleukin-2 and Pembrolizumab for Metastatic Kidney Cancer](https://clinicaltrials.gov/ct2/show/NCT02964078?term=pembrolizumab&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=10) | Phase 2 | Drug: Pembrolizumab  Drug: Interleukin-2 | NCT02964078 | 2016 |
| 58 | [A Web-mediated Follow-up With the Web-application KidneyPRO Versus Standard Follow-up for Patients With Advanced Renal Cell Carcinoma Treated With Axitinib/Pembrolizumab in First Line](https://clinicaltrials.gov/ct2/show/NCT04764487?term=pembrolizumab&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=11) | Phase 3 | Device: KidneyPRO  Other: standard follow-up | NCT04764487 | 2021 |
| 59 | [Lenvatinib and Pembrolizumab Before Surgery for the Treatment of Locally Advanced Non-Metastatic Kidney Cancer](https://clinicaltrials.gov/ct2/show/NCT04393350?term=pembrolizumab&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=12) | Phase 2 | Drug: Lenvatinib  Drug: Lenvatinib Mesylate  Drug: Pembrolizumab | NCT04393350 | 2020 |
| 60 | [The CAPER Trial: A Phase Ib Clinical Trial of Cyclophosphamide And PEmbrolizumab in Metastatic Renal Cell Carcinoma](https://clinicaltrials.gov/ct2/show/NCT04262427?term=pembrolizumab&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=13) | Phase 2 | Drug: Cyclophosphamide  Drug: Pembrolizumab | NCT04262427 | 2020 |
| 61 | [Pembrolizumab With or Without Axitinib for Treatment of Locally Advanced or Metastatic Clear Cell Kidney Cancer in Patients Undergoing Surgery](https://clinicaltrials.gov/ct2/show/NCT04370509?term=pembrolizumab&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=14) | Phase 2 | Drug: Axitinib  Procedure: Cytoreductive Nephrectomy/Metastasectomy  Drug: Pembrolizumab | NCT04370509 | 2020 |
| 62 | [A Proof of Principle Study of Pembrolizumab With SBRT in TKI mRCC Patients](https://clinicaltrials.gov/ct2/show/NCT02599779?term=pembrolizumab&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=16) | Phase 2 | Drug: Pembrolizumab  Radiation: Stereotactic Body Radiation Therapy | NCT02599779 | 2015 |
| 63 | [A Study of Pembrolizumab (MK-3475) in Combination With Belzutifan (MK-6482) and Lenvatinib (MK-7902), or Pembrolizumab/Quavonlimab (MK-1308A) in Combination With Lenvatinib, Versus Pembrolizumab and Lenvatinib, for Treatment of Advanced Clear Cell Renal Cell Carcinoma (MK-6482-012)](https://clinicaltrials.gov/ct2/show/NCT04736706?term=pembrolizumab&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=18) | Phase 3 | Drug: Pembrolizumab  Drug: Belzutifan  Drug: Pembrolizumab/Quavonlimab  Drug: Lenvatinib | NCT04736706 | 2021 |
| 64 | [Role of PRoactivE Coaching on PAtient REported Outcome in Advanced or Metastatic RCC Treated With Sunitinib or a Combination of Pembrolizumab + Axitinib or Avelumab + Axitinib in First Line Therapy](https://clinicaltrials.gov/ct2/show/NCT03013946?term=pembrolizumab&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=19) | Phase 3 | Behavioral: Concomitant coaching | NCT03013946 | 2017 |
| 65 | [Stereotactic Radiotherapy and Anti-PD1 Antibody (Pembrolizumab) for Oligometastatic Renal Tumours](https://clinicaltrials.gov/ct2/show/NCT02855203?term=pembrolizumab&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=20) | Phase 2 | Radiation: Stereotactic Ablative Body Radiosurgery  Drug: Pembrolizumab | NCT02855203 | 2016 |
| 66 | [A Study of Anti-PD-1 Combinations of D-CIK Immunotherapy and Axitinib in Advanced Ranal Carcinoma](https://clinicaltrials.gov/ct2/show/NCT03736330?term=pembrolizumab&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=26) | Phase 2 | Drug: Combinations treatment | NCT03736330 | 2018 |
| 67 | [Substudy 03A: A Study of Immune and Targeted Combination Therapies in Participants With First Line (1L) Renal Cell Carcinoma (MK-3475-03A)](https://clinicaltrials.gov/ct2/show/NCT04626479?term=pembrolizumab&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=27) | Phase 2 | Drug: Pembrolizumab  Drug: Favezelimab/Pembrolizumab  Drug: Belzutifan | NCT04626479 | 2020 |
| 68 | [Substudy 03B: A Study of Immune and Targeted Combination Therapies in Participants With Second Line Plus (2L+) Renal Cell Carcinoma (MK-3475-03B)](https://clinicaltrials.gov/ct2/show/NCT04626518?term=pembrolizumab&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=28) | Phase 2 | Drug: Pembrolizumab  Drug: MK-4830  Drug: Belzutifan | NCT04626518 | 2020 |
| 69 | [A Study of Recombinant Vaccinia Virus in Combination With Cemiplimab for Renal Cell Carcinoma](https://clinicaltrials.gov/ct2/show/NCT03294083?term=Cemiplimab&cond=Renal+Cell+Carcinoma&draw=2&rank=1) | Phase 2 | Biological: Pexastimogene Devacirepvec  Drug: Cemiplimab | NCT03294083 | 2017 |
| 70 | [A Study of Atezolizumab as Adjuvant Therapy in Participants With Renal Cell Carcinoma (RCC) at High Risk of Developing Metastasis Following Nephrectomy](https://clinicaltrials.gov/ct2/show/NCT03024996?term=atezolizumab&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=1) | Phase 3 | Drug: Atezolizumab  Other: Placebo | NCT03024996 | 2017 |
| 71 | [A Study of Atezolizumab in Combination With Bevacizumab in Untreated Locally Advanced or Metastatic Clear Cell or Non-Clear Cell Renal Cell Carcinoma](https://clinicaltrials.gov/ct2/show/NCT03693573?term=atezolizumab&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=2) | Phase 3 | Drug: Atezolizumab  Drug: Bevacizumab | NCT03693573 | 2018 |
| 72 | [A Study of Atezolizumab in Combination With Cabozantinib Compared to Cabozantinib Alone in Participants With Advanced Renal Cell Carcinoma After Immune Checkpoint Inhibitor Treatment](https://clinicaltrials.gov/ct2/show/NCT04338269?term=atezolizumab&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=6) | Phase 3 | Drug: Atezolizumab  Drug: Cabozantinib | NCT04338269 | 2020 |
| 73 | [Atezolizumab in Combination With Entinostat and Bevacizumab in Patients With Advanced Renal Cell Carcinoma](https://clinicaltrials.gov/ct2/show/NCT03024437?term=atezolizumab&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=7) | Phase 2 | Drug: Atezolizumab  Drug: Bevacizumab  Drug: Entinostat | NCT03024437 | 2017 |
| 74 | [Talazoparib and Avelumab in Participants With Metastatic Renal Cell Carcinoma](https://clinicaltrials.gov/ct2/show/NCT04068831?term=avelumab&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=1) | Phase 2 | Drug: Talazoparib  Drug: Avelumab | NCT04068831 | 2019 |
| 75 | [Avelumab Plus Intermittent Axitinib in Previously Untreated Patients With Metastatic Renal Cell Carcinoma](https://clinicaltrials.gov/ct2/show/NCT04698213?term=avelumab&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=2) | Phase 2 | Drug: Axitinib Oral Tablet  Drug: Avelumab | NCT04698213 | 2021 |
| 76 | [Sunitinib Followed by Avelumab or the Reverse for Metastatic Renal Cell Carcinoma](https://clinicaltrials.gov/ct2/show/NCT03035630?term=avelumab&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=4) | Phase 2 | Drug: Avelumab  Drug: Sunitinib | NCT03035630 | 2017 |
| 77 | [Avelumab (Bavencio) With IL-15 in Subjects With Clear-Cell Renal Carcinoma](https://clinicaltrials.gov/ct2/show/NCT04150562?term=avelumab&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=5) | Phase 2 | Drug: rhIL-15  Drug: Avelumab | NCT04150562 | 2019 |
| 78 | [Neoadjuvant AXITINIB and AVELUMAB for Patients With Localized Clear-cell RCC](https://clinicaltrials.gov/ct2/show/NCT03341845?term=avelumab&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=6) | Phase 2 | Drug: Axitinib  Drug: Avelumab | NCT03341845 | 2017 |
| 79 | [PolyImmune {Durvalumab (MEDI4736) and Tremelimumab} & Vaccine Orchestrated Treatment for Patients With Advanced/Metastatic Renal Cell Carcinoma](https://clinicaltrials.gov/ct2/show/NCT03598816?term=durvalumab&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=1) | Phase 2 | Drug: Durvalumab  Drug: Tremelimumab | NCT03598816 | 2018 |
| 80 | [MEDI4736 Combinations in Metastatic Renal Cell Carcinoma](https://clinicaltrials.gov/ct2/show/NCT02819596?term=durvalumab&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=2) | Phase 2 | Drug: Savolitinib  Drug: MEDI4736  Drug: Tremelimumab | NCT02819596 | 2016 |
| 81 | [Renal Adjuvant MultiPle Arm Randomised Trial](https://clinicaltrials.gov/ct2/show/NCT03288532?term=durvalumab&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=3) | Phase 3 | Drug: Durvalumab  Drug: Tremelimumab | NCT03288532 | 2017 |
| 82 | [WIRE - Novel Treatments in Renal Cell Cancer](https://clinicaltrials.gov/ct2/show/NCT03741426?term=durvalumab&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=4) | Phase 2 | Drug: Olaparib  Drug: Cediranib  Drug: Durvalumab | NCT03741426 | 2018 |
| 83 | [Study of Durvalumab and Guadecitabine in Advanced Kidney Cancer](https://clinicaltrials.gov/ct2/show/NCT03308396?term=durvalumab&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=5) | Phase 2 | Drug: Guadecitabine  Drug: Durvalumab | NCT03308396 | 2017 |
| 84 | [Toripalimab Combined With Axitinib as Neoadjuvant Therapy in Patients With Non-metastatic Locally Advanced Nonmetastatic Clear Cell Renal Cell Carcinoma](https://clinicaltrials.gov/ct2/show/NCT04118855?term=toripalimab&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=1) | Phase 2 | Drug: Toripalimab  Drug: Axitinib | NCT04118855 | 2019 |
| 85 | [Study to Evaluate the Efficacy and Safety of Toripalimab in Combination With Axitinib Versus Sunitinib Monotherapy in Advanced Renal Cell Cancer](https://clinicaltrials.gov/ct2/show/NCT04394975?term=toripalimab&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=2) | Phase 3 | Drug: Toripalimab +Axitinib  Drug: Sunitinib | NCT04394975 | 2020 |
| 86 | [Toripalimab Combined With Axitinib as Neoadjuvant Therapy for Advanced/Metastatic Non-clear Cell Renal Cell Carcinoma](https://clinicaltrials.gov/ct2/show/NCT04385654?term=toripalimab&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=3) | Phase 2 | Drug: Toripalimab  Drug: Axitinib | NCT04385654 | 2020 |
| 87 | [Sintilimab in FH-deficient Renal Cell Carcinoma](https://clinicaltrials.gov/ct2/show/NCT04146831?term=Sintilimab&cond=Renal+Cell+Carcinoma&draw=2&rank=1) | Phase 2 | Drug: Sintilimab | NCT04146831 | 2019 |
| 88 | [Sintilimab Injection Combined With Inlyta in Fumarate Hydratase- Deficient Renal Cell Carcinoma](https://clinicaltrials.gov/ct2/show/NCT04387500?term=Sintilimab&cond=Renal+Cell+Carcinoma&draw=2&rank=2) | Phase 2 | Drug: Sintilimab injection | NCT04387500 | 2020 |
| 89 | [Study of PD-1 Inhibitor Combination With Autologous Cell Immunotherapy in the Metastatic Renal Cell Carcinoma](https://clinicaltrials.gov/ct2/show/NCT03987698?term=PD-1&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=1) | Phase 2 | Drug: SHR-1210  Biological: CIK cells | NCT03987698 | 2019 |
| 90 | [A Study of TQB2450 Injection Combined With Anlotinib Hydrochloride Capsule Versus Sunitinib in Subjects With Advanced Renal Cancer](https://clinicaltrials.gov/ct2/show/NCT04523272?term=PD-1&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=53) | Phase 3 | Drug: TQB2450  Drug: Anlotinib  Drug: Sunitinib | NCT04523272 | 2020 |
| 91 | [Immunotherapy With Nivolumab and Ipilimumab Followed by Nivolumab or Nivolumab With Cabozantinib for Patients With Advanced Kidney Cancer, The PDIGREE Study](https://clinicaltrials.gov/ct2/show/NCT03793166?term=CTLA-4&cond=Renal+Cell+Carcinoma&phase=123&draw=2&rank=8) | Phase 3 | Drug: Cabozantinib  Drug: Nivolumab  Drug: Ipilimumab | NCT03793166 | 2019 |



**Supplementary Figure 1** (A) Number of publications in countries/regions. (B) The countries/regions with network visualization.



**Supplementary Figure 2** (A) The co-authorship among the top 30 highly cited authors. (B) Heat map of publications in the author.