## APPENDIX 1. ADDITIONAL ENROLLMENT CRITERIA

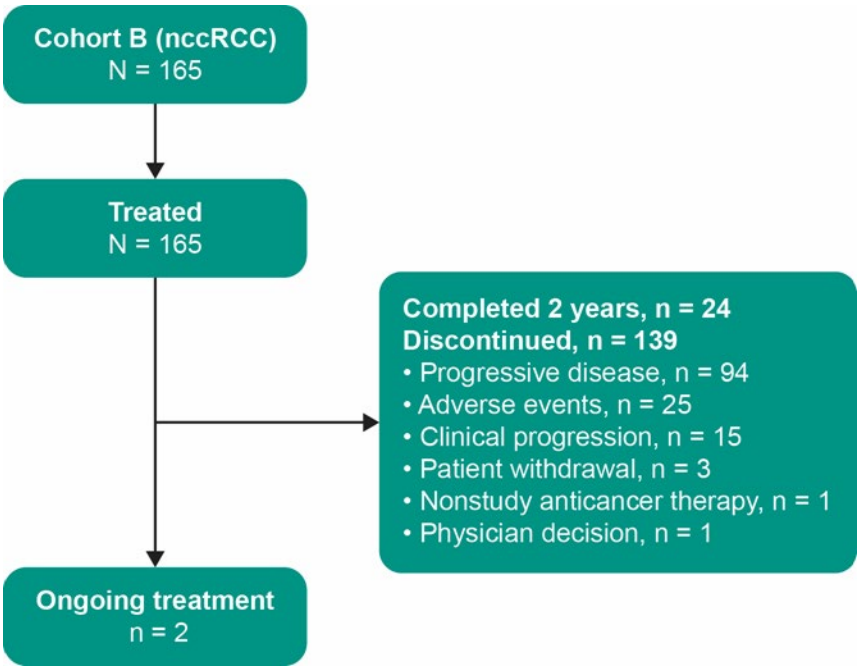
### Exclusion Criteria

Patients with a history of solid organ transplantation, major surgery within 4 weeks, radiation therapy within 2 weeks, or checkpoint inhibitor therapy were excluded. Patients with an active autoimmune disease, immunodeficiency (including HIV infection), or undergoing systemic steroid therapy (daily dose >10 mg) or immunosuppressive therapy within 7 days before treatment were also excluded. Patients with active central nervous system metastases, psychiatric or substance abuse disorders, or history of pneumonitis or hepatitis were ineligible for the study.

## APPENDIX 2. STUDY PROCEDURES

PD-L1 expression was measured in formalin-fixed paraffin-embedded samples using the PD-L1 IHC 22C3 pharmDx assay (Agilent) and characterized using CPS (defined as the ratio of number of tumor cells, lymphocytes, and macrophages expressing PD-L1 to the total number of viable tumor cells in the biopsy specimen multiplied by 100). Sarcomatoid differentiation was evaluated by a local pathologist and captured in the electronic database.

**SUPPLEMENTARY FIG S1.** Patient disposition. nccRCC, non–clear cell renal cell carcinoma.



**SUPPLEMENTARY TABLE S1. Kaplan-Meier Estimates for Duration of Response and Survival Outcomes by Patient Subgroups**

| | RCC Histology | | | PD-L1 Status | | IMDC Category | | |
|---|---|---|---|---|---|---|---|---|
| | **Papillary n = 118** | **Chromophobe n = 21** | **Unclassified n = 26** | **CPS <1 n = 58** | **CPS ≥1 n = 102** | **Favorable n = 53** | **Intermediate/ Poor n = 112** | **Sarcomatoid Differentiation n = 38** |
| Response duration | | | | | | | | |
| Patients with response, n | 34 | 2 | 8 | 7 | 36 | 17 | 27 | 16 |
| Median DOR, months (range)[a] | 29.0 (2.8 to 31.6+) | NR (4.2 to 15.0+) | NR (2.8+ to 26.3+) | 9.5 (2.8 to 26.0+) | 29.0 (2.8+ to 31.6+) | 11.0 (2.8 to 27.7+) | 29.0 (2.8 to 31.6+) | 15.3 (2.8+ to 29.5+) |
| PFS | | | | | | | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Median, months (95% CI)[a] | 5.5 (3.9 to 6.9) | 3.9 (2.6 to 6.9) | 2.8 (2.8 to 5.1) | 3.7 (2.8 to 4.2) | 5.6 (2.9 to 8.3) | 5.3 (2.9 to 8.2) | 4.0 (2.8 to 6.2) | 6.9 (2.8 to 15.4) |
| 12-month PFS, % (95% CI)[a] | 25.5 (17.8 to 33.9) | 24.1 (8.2 to 44.4) | 22.0 (8.4 to 39.5) | 13.0 (5.5 to 23.8) | 32.4 (23.3 to 41.7) | 22.7 (12.4 to 35.0) | 25.8 (17.8 to 34.5) | 35.5 (20.1 to 51.2) |
| 24-month PFS, % (95% CI) [a] | 18.7 (12.0 to 26.5) | 12.0 (1.1 to 37.9) | 22.0 (8.4 to 39.5) | 9.7 (3.2 to 20.7) | 24.3 (16.2 to 33.4) | 16.5 (7.8 to 28.0) | 19.8 (12.6 to 28.3) | 24.8 (11.6 to 40.6) |
| OS | | | | | | | | |
| Median OS, months (95% CI)[a] | 31.5 (25.5 to NR) | 23.5 (9.3 to NR) | 17.6 (7.5 to NR) | 26.6 (19.2 to NR) | 30.0 (22.9 to NR) | NR (30.4 to NR) | 24.5 (16.7 to 30.0) | 25.5 (13.1 to 30.0) |
| 12-month OS, % (95% CI)[a] | 77.8 (69.2 to 84.3) | 71.4 (47.2 to 86.0) | 53.8 (33.3 to 70.6) | 70.7 (57.2 to 80.6) | 74.4 (64.7 to 81.8) | 92.5 (81.1 to 97.1) | 64.1 (54.4 to 72.2) | 68.4 (51.1 to 80.7) |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 24-month OS, % (95% CI)[a] | 64.1 (54.7 to 72.1) | 47.6 (25.7 to 66.7) | 41.7 (22.7 to 59.6) | 55.2 (41.5 to 66.9) | 60.2 (50.0 to 69.1) | 75.4 (61.5 to 84.9) | 50.3 (40.7 to 59.2) | 52.6 (35.8 to 67.0) |

Abbreviations: DOR, duration of response; CI, confidence interval; IMDC, International Metastatic Renal Cell Carcinoma Database Consortium; NR, not reached; OS, overall survival; PD-L1, programmed death ligand 1; PFS, progression-free-survival; RCC, renal cell carcinoma.

[a]Based on product-limit (Kaplan-Meier) method for censored data.

**Supplementary Table S2. Treatment-related Adverse Events Leading to Discontinuation**

| **Adverse event** | **Patients discontinuing treatment due to a treatment-related adverse event (n=16)** | |
|---|---|---|
| | *No. of patients* | *Percentage* |
| **Any treatment-related AE leading to treatment discontinuation** | 16 | 9.7 |
| Myocarditis | 2 | 1.2 |
| Nephritis | 2 | 1.2 |
| Acute kidney injury | 1 | 0.6 |
| Autoimmune hepatitis | 1 | 0.6 |
| Cardiac arrest | 1 | 0.6 |
| Colitis | 1 | 0.6 |
| Hepatotoxicity | 1 | 0.6 |
| Lipase increased | 1 | 0.6 |
| Myositis | 1 | 0.6 |
| Neuritis | 1 | 0.6 |

| | | |
|---|---|---|
| Pneumonitis | 1 | 0.6 |
| Polyarthritis | 1 | 0.6 |
| Proteinuria | 1 | 0.6 |
| Pulmonary sarcoidosis | 1 | 0.6 |

AE, adverse event.