**Supplemental Table 3. Primers for qRT-PCR.**

|  |  |
| --- | --- |
| **Gene** | **Sequence** |
| RAN forward | CCACACCAACAGAGGACCTA |
| RAN reverse | TGCCAGTTAGGCACATTCTT |
| GUS forward | GAAAATATGTGGTTGGAGAGCTCATT |
| GUS reverse | CCGAGTGAAGATCCCCTTTTTA |

**Supplemental Table 4. Cellecta shRNA sequences.**

|  |  |  |  |
| --- | --- | --- | --- |
| **Gene Name, RefSeq** | **Identifier** | **Sequence** | **Notes** |
| RAN, NM\_006325 | 42301 | GCACAGTATGAGTACGATTTA | from Cellecta shRNA library, gene 514 |
| RAN, NM\_006325 | 42305 | CAGTTCAAACTTGTATTGGTT | from Cellecta shRNA library, gene 514 |
| RAN, NM\_006325 | 42303 | GTGGATATTAAGGACAGGAAA | from Cellecta shRNA library, gene 514 |
| RAN, NM\_006325 | 3’UTR | GAGTGAATGTGGCAGTTTAAA | not in Cellecta shRNA library |
| RANBP2, NM\_006267 | 31517 | CCATTAGTTCACCATCTGTTT | from Cellecta shRNA library, gene 4989 |
| RANBP2, NM\_006267 | 6267 | CATGCCGGGTGAAGGATTAAG | not in Cellecta shRNA library |

**Supplemental Table 5. Antibodies used in the study.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Protein** | **Clone** | **Catalog number** | **Company** | **Technique** |
| pJAK2 (Y1007, Y1008) | C80C3 | 3776 | Cell Signaling Technology | Flow Cytometry |
| pSTAT3 (Y705) | D3A7 | 8119 | Cell Signaling Technology | Flow Cytometry |
| pSTAT5 (Y694) | C71E5 | 9365 | Cell Signaling Technology | Flow Cytometry |
| Aqua Live/Dead | None, dye | L34957 | Thermo Fisher Scientific | Flow Cytometry |
| RAN | polyclonal | 4462S | Cell Signaling Technology | Western Blot |
| RANBP2 | polyclonal | ab2938 | Abcam | Western Blot |
| NPM1 | FC82291 | Ab10530 | Abcam | Western Blot |
| IkBα | L35A5 | 4814P | Cell Signaling Technology | Western Blot |
| P53 | DO-1 | sc-126 | Santa Cruz Biotechnology | Western Blot |
| α/β-Tubulin | polyclonal | 2148 | Cell Signaling Technology | Western Blot |
| Lamin B | polyclonal | ab16048 | Abcam | Western Blot |
| FOXO3A | 75D8 | 2497 | Cell Signaling Technology | Western Blot |
| PP2A | 52F8 | 2259 | Cell Signaling Technology | Western Blot |
| CIP2A | 2G10-3B5 | sc-80659 | Santa Cruz Biotechnology | Western Blot |
| SET (I2PP2A) | E15 | sc-5655 | Santa Cruz Biotechnology | Western Blot |

**Supplemental Table 6. Colony counts from Figure 5 (average from two technical replicates shown).**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Figure** | **Cell Type** | **Sample ID** | **Untreated** | **KPT-330** | **KPT-8602** | **Ruxolitinib** | **Rux+KPT-330** | **Rux+KPT-8602** |
| 5E | Myelofibrosis CD34+ | 12-208 | 97.5 | 36 | ND | 13 | 2.5 | ND |
| 5E | Myelofibrosis CD34+ | 13-110 | 60 | 32 | ND | 36.5 | 16.5 | ND |
| 5E | Myelofibrosis CD34+ | 13-091 | 237.5 | 144 | ND | 93.3 | 53.5 | ND |
| 5E | Myelofibrosis CD34+ | 15-401 | 192.5 | 82 | ND | 37.5 | 10 | ND |
| 5E | Myelofibrosis CD34+ | 15-430 | 22 | 15.5 | ND | 10.5 | 3 | ND |
| 5E | Myelofibrosis CD34+ | 15-574 | 101.5 | 56.5 | ND | 17 | 10 | ND |
| 5E | Myelofibrosis CD34+ | 16-068 | 132 | 83 | ND | 78.5 | 32.5 | ND |
| 5F | Myelofibrosis CD34+ | 17-261 | 187.5 | ND | 48 | 48 | ND | 1 |
| 5F | Myelofibrosis CD34+ | 17-262 | 80 | ND | 4 | 13.5 | ND | 0 |
| 5F | Myelofibrosis CD34+ | 17-276 | 245 | ND | 40 | 97.5 | ND | 2.5 |
| 5E, 5F | Cord blood CD34+ | 17-263 | 112.5 | 87.5 | 102 | 76 | 55 | 43.5 |
| 5E, 5F | Cord blood CD34+ | 17-264 | 195.5 | 143 | 174.5 | 106.5 | 75.5 | 46 |
| 5E, 5F | Cord blood CD34+ | 17-265 | 185.5 | 150 | 191.5 | 88.5 | 59.5 | 51 |

ND – not determined

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Supplemental Table 7. Details of the dosing for KPT-330 in mice.** | | |  |  |
| **Event** | **Experiment Day** | **Drug Delivery Day** | **KPT-330** | **Ruxolitinib** |
| Bone marrow transplant | 0 | -20 | none | none |
| Bleed 1 | 20 | -1 | none | none |
| Initiate regimen A | 21 | 1 | 20 mg/kg, 3x weekly | 50 mg/kg, 2x daily |
| Initiate regimen B | 24 | 4 | 10 mg/kg, 2x weekly | 50 mg/kg, 2x daily |
| Initiate regimen C | 31 | 11 | 10 mg/kg, 2x weekly | 50 mg/kg, 1x daily |
| Bleed 2\* | 35 | 15 | 10 mg/kg, 2x weekly | 50 mg/kg, 1x daily |
| Bleed 3\*, Harvest | 48-49 | 28-29 | 10 mg/kg, 2x weekly | 50 mg/kg, 1x daily |

\* Data in Figure 7 is from these time points

**Supplemental Table 8. Starting and ending cohort sizes in the in vivo study.**

|  |  |  |
| --- | --- | --- |
| **Treatment Group** | **Start** | **End** |
| Vehicles | 13 | 4 |
| Ruxolitinib | 13 | 4 |
| KPT-330 | 13 | 5 |
| Combination | 14 | 7 |