

Supplementary Table 1. Clinical characterization, immunohistochemistry and mutational details of study samples.

| Case | Age | Sex | Primary Location | Size (cm) | Morphology | Risk factor | Immunohistochemistry | | | | KIT Mutation | | PDGFRA | | BRAF | |
|------|-----|-----|---|-----------|-------------------------|--------------|----------------------|----------|----------|----------|--------------|---------------------------------|-----------|----------------------|-----------------|-------|
| | | | | | | | BRAF | CD34 | CD117 | DOG1 | Exon Type | Mutation nature | Exon Type | Mutation nature | Mutation nature | Type |
| 1 | 69 | M | Stomach | 1.2 | Epithelioid | Intermediate | Strong | Positive | Positive | Positive | WT | NA | WT | NA | Present | V600E |
| 2 | 41 | M | Rectum | 0.8 | Spindle | No | Negative | Positive | Negative | Positive | Exon 11 | Junction deletions | WT | NA | WT | NA |
| 3 | 45 | M | Stomach (Multifocal) | 0.2 | Spindle | No | Negative | Positive | Negative | Positive | Exon 11 | Single nucleotide substitutions | WT | NA | WT | NA |
| 4 | 44 | F | Rectum | 1.5 | Spindle and epithelioid | Intermediate | Negative | Positive | Positive | Positive | Exon 11 | KITdelinc557/558 | WT | NA | WT | NA |
| 5 | 65 | F | Stomach (Multifocal) small bowel (duodenum) | 3.8 | Spindle | High | Strong | Positive | Positive | Positive | WT | NA | WT | NA | Present | L597S |
| 6 | 52 | M | small bowel (duodenum) | 2.5 | Spindle | Intermediate | Weak | Positive | Positive | Positive | Exon 11 | KITdelinc557/558 | WT | NA | WT | NA |
| 7 | 57 | F | small bowel (duodenum) | 2.6 | Spindle | Low | Negative | Negative | Positive | Negative | WT | NA | Exon 18 | p.D842V substitution | WT | NA |
| 8 | 54 | M | Stomach | 3.1 | Spindle | Low | Negative | Negative | Positive | Negative | Exon 11 | p.W557_K558 deletion | WT | NA | WT | NA |
| 9 | 58 | F | small bowel (duodenum) | 1.8 | Spindle and epithelioid | Intermediate | Negative | Positive | Positive | Positive | Exon 11 | KITdelinc557/558 | WT | NA | WT | NA |
| 10 | 65 | M | Stomach | 2.1 | Spindle | Low | Negative | Positive | Positive | Positive | Exon 9 | A502-Y503 codon duplications | WT | NA | WT | NA |
| 11 | 63 | M | colon small bowel (jejunum) | 0.9 | Spindle | Very low | Negative | Negative | Negative | Negative | WT | NA | Exon 12 | Deletions | WT | NA |
| 11 | 69 | M | small bowel (jejunum) | 1.1 | Spindle | Very low | Negative | Negative | Positive | Negative | WT | NA | Exon 18 | p.D842V substitution | WT | NA |
| 12 | 71 | M | colon small bowel (jejunum) | 2.1 | Spindle | Low | Negative | Positive | Positive | Positive | Exon 9 | A502-Y503 codon duplications | WT | NA | WT | NA |
| 13 | 52 | F | small bowel (jejunum) | 2.8 | Spindle | Low | Negative | Negative | Positive | Negative | Exon 17 | NA | WT | NA | WT | NA |
| 14 | 58 | M | Stomach | 1.5 | Spindle and epithelioid | Intermediate | Strong | Positive | Positive | Positive | WT | NA | WT | NA | Present | V600E |
| 15 | 56 | M | Stomach | 3.5 | Spindle | High | Negative | Positive | Positive | Positive | Exon 11 | p.W557_K558 deletion | WT | NA | WT | NA |
| 16 | 64 | M | small bowel (jejunum) | 4.5 | Epithelioid | High | Negative | Positive | Positive | Positive | Exon 11 | p.W557_K558 deletion | WT | NA | WT | NA |
| 17 | 52 | M | Stomach | 1.7 | Spindle | Low | Negative | Positive | Positive | Positive | Exon 9 | A502-Y503 codon duplications | WT | NA | WT | NA |
| 18 | 51 | F | colon (Multifocal) | 0.8 | Spindle | Very low | Negative | Negative | Negative | Negative | WT | NA | WT | NA | Present | G464E |
| 19 | 63 | M | Stomach omentum/ | 0.9 | Spindle | Very low | Strong | Negative | Positive | Negative | Exon 11 | Single nucleotide substitutions | WT | NA | WT | NA |
| 20 | 67 | F | pelvis (Multifocal) | 1.6 | Spindle | High | Negative | Negative | Positive | Negative | Exon 11 | Junction deletions | WT | NA | WT | NA |
| 21 | 45 | M | Rectum | 2.1 | Spindle and epithelioid | High | Negative | Positive | Positive | Positive | Exon 11 | KITdelinc557/558 | WT | NA | WT | NA |
| 22 | 43 | F | Stomach | 2.8 | Spindle | Intermediate | Negative | Positive | Positive | Positive | Exon 11 | KITdelinc557/558 | WT | NA | WT | NA |
| 23 | 49 | M | Rectum | 3.7 | Spindle | Intermediate | Negative | Positive | Positive | Positive | Exon 11 | p.W557_K558 deletion | WT | NA | WT | NA |
| 24 | 52 | M | Stomach | 3.9 | Spindle | Low | Strong | Positive | Positive | Positive | Exon 9 | A502-Y503 codon duplications | WT | NA | Present | V600E |
| 25 | 56 | F | Stomach | 4.2 | Epithelioid | Intermediate | Weak | Positive | Positive | Positive | Exon 11 | p.W557_K558 deletion | WT | NA | WT | NA |

| | | | | | | | | | | | | | | | | |
|----|----|----|------------------------|-----|-------------------------|--------------|----------|----------|----------|----------|---------|------------------------------|---------|----------------------|---------|-------|
| 26 | 58 | M | small bowel (jejunum) | 2.1 | Spindle | Low | Negative | Positive | Positive | Positive | Exon 9 | A502-Y503 codon duplications | WT | NA | WT | NA |
| 27 | 72 | M | small bowel (jejunum) | 2.3 | Spindle | Low | Negative | Positive | Positive | Positive | Exon 11 | KITdelinc557/558 | WT | NA | WT | NA |
| 28 | 61 | M | omentum/ pelvis | 5.4 | Epithelioid | High | Negative | Positive | Positive | Positive | Exon 11 | p.W557_K558 deletion | WT | NA | WT | NA |
| 29 | 52 | M | Stomach | 4.2 | Spindle | Low | Negative | Positive | Positive | Positive | Exon 11 | p.W557_K558 deletion | WT | NA | WT | NA |
| 30 | 48 | F | small bowel (jejunum) | 2.9 | Epithelioid | Intermediate | Weak | Positive | Positive | Positive | Exon 11 | Junction deletions | WT | NA | WT | NA |
| 31 | 53 | F | small bowel (duodenum) | 2.7 | Spindle | Low | Negative | Positive | Positive | Positive | Exon 11 | KITdelinc557/558 | WT | NA | WT | NA |
| 32 | 62 | M | small bowel (duodenum) | 1.1 | Spindle and epithelioid | Intermediate | Weak | Positive | Positive | Positive | Exon 11 | Junction deletions | WT | NA | WT | NA |
| 33 | 51 | F | Stomach | 2.2 | Spindle | Low | Negative | Positive | Positive | Positive | Exon 11 | KITdelinc557/558 | WT | NA | WT | NA |
| 34 | 57 | MF | Stomach | 2.8 | Spindle | Low | Negative | Positive | Positive | Positive | Exon 11 | KITdelinc557/558 | WT | NA | WT | NA |
| 35 | 44 | F | Rectum | 3.7 | Spindle | High | Negative | Positive | Positive | Positive | Exon 11 | p.W557_K558 deletion | WT | NA | WT | NA |
| 36 | 57 | M | Stomach | 2.1 | Spindle | Intermediate | Negative | Positive | Positive | Positive | Exon 11 | Junction deletions | WT | NA | WT | NA |
| 37 | 54 | M | Stomach | 2.3 | Epithelioid | Low | Strong | Positive | Positive | Positive | WT | NA | WT | NA | Present | V600E |
| 38 | 56 | M | small bowel (duodenum) | 1.8 | Spindle | Low | Negative | Positive | Positive | Positive | Exon 13 | NA | WT | NA | WT | NA |
| 39 | 52 | M | small bowel (duodenum) | 1.7 | Epithelioid | Intermediate | Negative | Positive | Positive | Positive | Exon 11 | Junction deletions | WT | NA | WT | NA |
| 40 | 54 | F | Stomach | 1.9 | Spindle | Very low | Negative | Positive | Positive | Positive | WT | NA | Exon 18 | p.D842V substitution | WT | NA |
| 41 | 61 | M | small bowel (duodenum) | 1.9 | Spindle and epithelioid | Low | Negative | Positive | Positive | Positive | Exon 9 | A502-Y503 codon duplications | WT | NA | WT | NA |
| 42 | 58 | F | small bowel (duodenum) | 2.1 | Spindle | Low | Negative | Positive | Positive | Positive | WT | NA | Exon 18 | p.D842V substitution | WT | NA |
| 43 | 56 | F | omentum/ pelvis | 2.9 | Spindle | High | Negative | Positive | Positive | Positive | Exon 11 | KITdelinc557/558 | WT | NA | WT | NA |
| 44 | 65 | M | small bowel (duodenum) | 2.1 | Spindle | High | Negative | Positive | Positive | Positive | Exon 11 | KITdelinc557/558 | WT | NA | WT | NA |
| 45 | 48 | M | colon | 1.1 | Spindle | Low | Negative | Positive | Positive | Positive | WT | NA | Exon 12 | Deletions | WT | NA |
| 46 | 49 | F | Rectum | 1.9 | Epithelioid | Low | Negative | Positive | Positive | Positive | Exon 13 | NA | WT | NA | WT | NA |
| 47 | 52 | M | small bowel (duodenum) | 1.9 | Spindle | Low | Negative | Positive | Positive | Positive | WT | NA | Exon 18 | p.D842V substitution | WT | NA |
| 48 | 53 | M | colon | 2.5 | Spindle | High | Negative | Positive | Positive | Positive | Exon 11 | KITdelinc557/558 | WT | NA | WT | NA |
| 49 | 63 | F | Stomach | 2.8 | Epithelioid | High | Negative | Positive | Positive | Positive | Exon 11 | KITdelinc557/558 | WT | NA | WT | NA |
| 50 | 48 | M | Rectum | 3.1 | Spindle | Low | Negative | Positive | Positive | Positive | WT | NA | Exon 12 | Deletions | WT | NA |
| 51 | 52 | M | small bowel (duodenum) | 2.1 | Spindle | Low | Negative | Positive | Negative | Positive | Exon 17 | NA | WT | NA | WT | NA |
| 52 | 69 | F | Stomach (Multifocal) | 2.3 | Spindle | High | Negative | Positive | Positive | Positive | Exon 11 | KITdelinc557/558 | WT | NA | WT | NA |
| 53 | 70 | M | Stomach | 2.8 | Spindle | Intermediate | Strong | Positive | Positive | Positive | WT | NA | WT | NA | Present | V600E |