Materials and Methods

Case selection and tissue microarray construction

Study approval was obtained from the University of Pittsburgh (IRB# PRO13020493) and Washington University (201404143) Institutional Review Boards. The surgical pathology archives from the Departments of Pathology at the University of Pittsburgh Medical Center and Barnes-Jewish Hospital were queried for neuroendocrine neoplasms of the pancreas between 1995 and 2014 that underwent enucleation, central pancreatectomy, pancreaticoduodenectomy or distal pancreatectomy. Cases were cross-referenced with clinical and follow-up data obtained from patient paper and/or electronic medical records. The study inclusion criteria consisted of the following: a solitary, well-differentiated neuroendocrine tumor (confirmed with positive immunolabeling for neuroendocrine markers [e.g. synaptophysin and chromogranin A]) centered within the pancreas, surveillance and survival data of >2 years, absence of a genetic syndrome associated with pancreatic neuroendocrine neoplasms (e.g. multiple endocrine neoplasia type 1 [MEN 1] syndrome, von Hippel-Lindau [VHL] syndrome, neurofibromatosis type 1 [NF1] syndrome, and tuberous sclerosis complex [TSC] syndrome), and cases with sufficient material for ancillary studies.

In total, 367 patients with a resected PanNET fulfilled the aforementioned criteria. In addition, the surgical pathology archives from the respective institutions were cross-referenced to identify corresponding distant metastases with sufficient pathologic material for ancillary studies. Among 120 patients with distant metastases, 72 patients had pathologic material available of the distant metastasis for ancillary studies. For whole-exome sequencing, 20 distant metastatic PanNETs from 20 patients were selected

Pathologic material of the surgically resected primary PanNET from the remaining 347 patients was used to create high-density tissue microarrays (TMAs) as previously described.[1] High-density TMAs were constructed using archival FFPE tissue blocks. Three, 1.0 mm-sized cores were punched from representative areas of each patient's tumor and collected into recipient blocks. Sufficient tissue for ancillary studies on cut sections was confirmed prior to immunohistochemical testing and fluorescence in situ hybridization. Details of both whole-exome sequencing and PanNET cohorts are discussed in detail in the Supplementary Data Section.

Clinical and demographic data were reviewed for each case. Corresponding pathology gross reports and hematoxylin-and-eosin (H&E) stained slides were also reviewed for the following pathologic features: tumor size, location, lymphovascular invasion, perineural invasion, extension outside of the pancreas and regional lymph node metastasis. Each PanNET was graded using the 2010 World Health Organization (WHO) classification system for pancreatic neuroendocrine neoplasms.[2] Briefly, on the basis of mitotic rate and Ki-67 immunohistochemistry, the following criteria were used: Grade 1 (G1), <2 mitoses/10 high-power fields (hpf) and Ki-67 of <3%; Grade 2 (G2), 2 to 20 mitoses/10 hpf or Ki-67 of 3% to 20%; and Grade 3 (G3), >20 mitoses/10 hpf or Ki-67 of >20%. The mitotic rate was derived from evaluation of multiple sections in 50 hpf (400x, field diameter 0.55 mm^2) and expressed as mitoses/10 hpf. For Ki-67, at least 500 neoplastic nuclei were counted in the highest staining region for each case with careful exclusion of non-neoplastic cells.[3] A labeling index was calculated and expressed as a percentage. For cases with discordant mitotic rate and Ki-67 measurements, the highest grade was assigned. Pathologic primary tumor classification was determined according to the American Joint Committee on Cancer (AJCC) Staging Manual, seventh edition.[4] Follow-up information was extracted from the patient's paper and electronic medical records to include data on surveillance, disease recurrence/distant metastasis, and survival.

Whole-exome sequencing: sample and library preparation and next-generation sequencing

Whole-exome sequencing was performed in the University of Pittsburgh Cancer Institute, Cancer Genomics Facility (CGF). Ten, 5 um unstained formalin-fixed, paraffin-embedded (FFPE) sections from both tumor and normal were used sample and library preparation. Paraffin was melted in an air incubator (60^{o}C, 30 min), removed by submerging in 100% xylene (5 min) and rinsing in 100% ethanol three times followed by centrifugation (R5810; S4-104 rotor with slide adaptor; Eppendorf, Hamburg, Germany; 1000g; 5 min). Each unstained slide was aligned in register with its corresponding H&E and the demarcated tumor or normal phenotype domain was manually dissected with a sterile scalpel with substrate accumulated across serial slides in a 2.0 mL low retention, nuclease free tube in which the substrate underwent 2 additional xylene and ethanol washes. A stereomicroscope was utilized to assist manual microdissection (Olympus SZ61 microscope, Olympus Corp., Center Valley, PA) as needed. DNA purification was performed on all samples using the QiaAmp FFPE DNA extraction kit (Qiagen, Hilden, Germany) beginning with an overnight incubation in lysis buffer (Buffer ATL: Proteinase K; 300 uL:100 uL, 56^{o}C, shaking at 600 rpm) followed by a 100 uL proteinase spike-in and a 24 hour lysis. After the second lysis regimen, the substrate was denatured (90^{o}C; 60 min); subjected to ethanol precipitation (2X volume and buffer AL); and QIAamp column capture was performed using a 2 mL flow-through collection tube (6000g, 1 min). The column was serially washed (buffer AW1, AW2; 6000g, 1 min) and dried (20,000g; 3 min) and the DNA eluted in low TE buffer (53 uL Tris 10 mM;EDTA 0.1 mM, pH 8.0; 20,000g, 5 min). QA/QC analysis was performed utilizing an established pipeline including spectrophotometry for purity (NanoDrop 1000, OD 260/280 >1.8; Thermo Scientific, Grand Island, NY, USA), quantitative fluorometry for double stranded DNA yield (Qubit-High Sensitivity, >100 ng dsDNA, Thermo Scientific) and micro-capillary electrophoresis to determine DNA integrity (Bioanalyzer 2100, fragment size >500 bp, Agilent, Santa Clara, CA, USA).

The DNA samples were subjected to acoustical shearing (200ng, 50µl low TE) using a Covaris S1 (Covaris, Woburn, MA, USA) to obtain a fragment size of 150-170 bp for processing with the SureSelectXT library Prep kit (SSXT: #G9611A, Agilent). End repair was performed on individual samples (10X End Repair Buffer: 10 uL, dNTP mix: 1.6 uL, DNA polymerase: 1 uL, Klenow DNA polymerase: 2 uL, T4 Polynucleotide Kinase: 2.2 uL, nuclease free H_2O: 33.2 uL; 60 min, 20^{o}C) and the DNA captured using Agencourt AMPure beads (#A63881; Beckman-Coulter, Indianapolis, IN) with elution in nuclear free H_2O. End-repaired DNA underwent 3' adenylation (10x Klenow Polymerase Buffer: 5 uL, dATP: 1uL, Exo (-) Klenow enzyme: 3 µl, NF H_2O: 11 µl; 37^{o}C, 30 min) followed by AMPure bead purification. Adapters were ligated to the paired ends (5x T4 DNA Ligase Buffer: 10 uL, T4 DNA Ligase: 1.5 uL, undiluted Adaptor Oligo Mix: 10 uL, nuclease free H2O: 15.5 uL; 20^{o}C, 15 min) followed by AMPure bead purification and PCR amplification was performed (98°C: 2 min, 10 cycles at 98°C: 30 sec; 65°C: 30 sec; 72°C: 1 min; 72°C: 10 min) using SS primers (#G9611A) and the Herculase II Fusion DNA polymerase kit (#600679, Agilent). The DNA samples underwent QC to ensure adequate yield (>500 ng) of fragments 225 to 275 bp after PCR and AMPure bead purification.

Hybridization (SS Human All Exon V6, Agilent) was performed on individual samples (500ng DNA: 3.4 uL, SureSelect Block: 5.6 uL) which were then denatured at 95°C prior to mixing with capture baits (hyb buffer: 13 uL, baits: 5 uL, RNAse Block: 2 uL; 65^{o}C, 24hrs). Hybridization products were then captured by incubation with streptavidin T1 beads (Dynabeads MyOne Streptavidin T1, Thermo Fisher, Waltham, MA, USA) in SS binding buffer (room temp, 30 min) followed by separation in a magnetic rack. Beads were washed (SS wash 2, 200 uL, 65^{o}C, 10 min) and resuspended in H_2O followed by amplification with indexing primers (Illumina, San Diego, CA, USA) generating unique bar codes for each sample (H_2O: 18.5 uL, 5X Herculase II reaction buffer: 10 uL, 100 mM dNTP: 0.5 uL, Herculase polymerase: 1uL, indexing post-capture PCR primer: SSXT Index Reverse primers: 5 uL, DNA: 14 uL; 98^{o}C: 2 min; 11 cycles 98°C: 30 sec; 57°C: 30 sec; 72°C: 1 min). The DNA library was recovered using AMPure beads. Sequencing was performed using the NextSeq 500 (Illumina, San Diego, CA, USA) high output flow cell kit (2 x 76 paired end, 150 cycles) with samples concentrated (660 g/mol X bp fragment size x 1X10^6), pooled and titrated to 1.7 pM per sample to achieve an average base call target depth of 63x to 102x.

Sequencing data processing and variant detection

Bioinformatics analysis was performed using a custom protocol developed for tumor and paired normal analysis. First, base call (BCL) files were converted to FASTQ files using bcltofastq (Illumina, San Diego, CA, USA). Per lane FASTQ files were merged into FASTQ files for each read pair (R1 & R2), as per manufacturer's recommendation. Each set of read pair FASTQs were aligned to the human reference genome (GRCh37.p13, hg19; GCF_000001405.25) using BWA MEM and encoded into a BAM (binary sequence alignment) format using Samtools.[5, 6] RG (read group) tags for each sample were added at the time of sequence alignment. The raw BAM files were sorted, indexed and PCR duplicates marked using

Sambamba.[7] Pre-variant calling processing included concurrent local realignment around regions of known indels (COSMIC v80, dbSNPv138 and Mills gold-standard indel sets) for both tumor and normal aligned reads using GATK.[8-10] Subsequently, realigned BAMs were subjected to BQSR (Base Quality Score Recalibration) using GATK. Subsequently, variant calling was performed on the recalibrated BAMs using Varscan2 for SNV and short Indel detection and Scalpel for larger Indel detection.[11, 12] Briefly for Varscan2, recalibrated BAM files for both tumor and normal were used to generate a paired tumor-normal sequence mpileup, which was used for calling variants using Varscan2 in somatic mode. Potential false positives were marked in the VCF files using Varscan2's fpfilter based on specific parameters. Variants marked as somatic and high confidence by the variant caller were prioritized. For large indel detection, Scalpel was used in somatic (paired tumor-normal) mode. Variants were represented using VCF format v4.2 (https://samtools.github.io/hts-specs/VCFv4.2.pdf). Variant calls from both callers were integrated, normalized and annotated using custom python modules with dependencies on ANNOVAR and HGVS python package.[13, 14] For FASTQ and BAM files, quality control (QC) metrics were generated by FastQC (http://www.bioinformatics.babraham.ac.uk/projects/fastqc/) and QualiMap, respectively.[15] For variant calling, sequence reads with minimum base quality score (Phred score) of 30 and minimum mapping quality score of 20 were used. Integrative Genomics Viewer (IGV, Broad Institute) was used for manual review of sequence pileups and detected variants.[16] Genomic data was visualized and reviewed using custom developed javascript plugin, jsComut (https://github.com/pearcetm/jscomut).

Gene and variant prioritization

Variants and genes were prioritized following the 2017 AMP/ASCO/CAP joint consensus guidelines for interpretation of sequence variants in cancer.[17] Briefly, variants that were present at a minor allele frequency greater than or equal to 1% in population databases (1000genomes, ExAC-nonTCGA and Exome server variant) were filtered out as benign/likely benign.[18-20] Subsequently, non-coding variants in deep intronic, intergenic and untranslated regions, and missense variants with benign/tolerated in silico predictions (SIFT and PolyPhen2) were also filtered out.[21, 22] Truncating variants that introduced premature stop codon (frameshift deletions and insertions, stop gain and splice site) in genes where loss of function is associated with oncogenesis, were prioritized as tier I/II and included for analysis. Similarly, missense and inframe indels in genes where gain of function is implicated in oncogenesis were prioritized as Tier I/II variants based on incidence in public somatic mutation databases (COSMIC v80 and TCGA), review of gene specific published functional studies, and damaging/deleterious in silico predictions.[17, 23] Germline mutation database (ClinVar) was also reviewed for prioritization of a subset of variants.[24] Unless supporting data for pathogenicity was available from published literature or public databases, Tier III variants (variants of uncertain clinical significance) were not prioritized.[17]

Copy number variation analysis

Copy number analysis was performed using Nexus Biodiscovery software (version 8.1, El Segundo, CA) designed to take into consideration the significant mosaicism, hyperploidy and normal cell heterogeneity that is present in cancer samples even after microdissection to enrich for tumor cells. Match paired next-generation sequencing analysis required 2 BAM files comprising the tumor and normal sequence for each specimen which were combined into one result via subtraction of the log_2 ratios revealing copy number changes specific to the tumor sample. The GISTIC algorithm was used to identify aggregate regions with a statistically high frequency of copy number aberrations (gains and losses) from the global data set.[25] This method applies FDR (false discovery rate) correction for multiple testing and computes the Q-bound values (Q-Bound cutoff = 0.05, G-Score cut-off = 1.0). Individual gene queries employed the STAC (Significance testing for Aberrant Copy Number) algorithm using a minimum of 1000 reference reads per segment and the Nexus FASST2 (Fast Adaptive States Segmentation Technique) Segmentation algorithm with significance value = 1 X 10^{-6}.[26]

In addition, CNVKit (0.8.6.dev) was used as an alternate method to assess copy number changes from whole exome sequencing.[27] Briefly, a pool of normal reference was created using the aligned sequences from the paired normal samples. Subsequently, target and anti-target regions were created using the SureSelect exome v6 BED file. Next, the binned coverage for each of the loci in the target and the anti-target regions were computed. The binned coverage from the pool of normal reference was then used to normalize each tumor sample and correct biases (e.g. GC bias). Finally, copy number ratios were calculated and segmented using circular binary segmentation. Copy number changes were assessed manually using scatter plot visualization provided by CNVKit and compared to the calls made by the Nexus Biodiscovery software.

Immunohistochemistry

TMA slides were cut at 4-um and deparaffinized with serial xylene treatments and subjected to antigen retrieval using heated citrate solution (pH 9.0) at 100^{o}C for 10 minutes. Immunolabeling for Ki-67 (mouse monoclonal, prediluted, Ventana Medical Systems, Tucson, AZ, USA), synaptophysin (rabbit polyclonal, prediluted, Cell Marque, Rocklin, CA, USA), chromogranin A (mouse monoclonal, prediluted, Ventana Medical Systems, Tucson, AZ, USA), DAXX (HPA008736 rabbit polyclonal, dilution 1:50, Sigma Aldrich, St Louis, MO, USA) and ATRX (HPA001906 rabbit polyclonal, dilution 1:100, Sigma Aldrich, St Louis, MO, USA), H3K36me3 (AB9050 rabbit polyclonal, dilution 1:1000, Abcam, Eugene, OR, USA), and ARID1A (AB182560 rabbit monoclonal, dilution 1:1000, Abcam, Eugene, OR, USA) were performed on the automated Ventana Benchmark XT system using the biotin-free Ventana OptiView DAB IHC Detection Kit (Ventana Medical Systems, Tucson, AZ, USA).

Assessment of DAXX, ATRX, H3K36me3 and ARID1A was done blinded to any patient data including outcome. Preserved or "positive" expression was defined as nuclear staining within tumor cells; using stromal cells as a positive internal control. Loss or "negative" staining was scored in cases where the tumor lacked nuclear immunolabeling, but preserved expression within stromal cells was still identified. Intratumoral heterogeneity or heterogeneous staining was defined as the clear presence of two distinct populations of tumor cells demonstrating preserved and loss of nuclear staining. For cases with heterogeneous staining, each component (positive or preserved and negative or loss of nuclear staining) should comprise at least 10% of the neoplastic tissue.[1] For subsequent statistical analysis, these cases were scored as loss or negative staining.

Fluorescence in situ hybridization

Telomere-specific FISH was performed as previously described using an Alexa-488 telomeric-C PNA probe.[1] In brief, 4-um TMA sections were incubated for 30 min at 55^{o}C, washed three times for 5 min in xylene, rinsed in successive 100%, 95%, and 70% ethanol baths, and washed in double-distilled H_2O and 1% Tween before being placed in antigen unmasking solution in a boiling steamer for 30 min. Next, slides were rinsed in double-distilled H_2O and dehydrated in successive ethanol washes of 70%, 95%, and 100%. Slides were incubated at 72^{o}C for 10 min with an Alexa-488 telomeric-C PNA probe and hybridized overnight in a dark humidity chamber. Slides were washed with PNA wash buffer and PBST and incubated for 10 min in DAPI solution. After washing in double-distilled H_2O, slides were mounted with prolong anti-fade mounting medium. Images were taken on a Leica fluorescent light microscope.[28]

Scoring for ALT was performed by assessing at least 250 nuclei from all 3 tissue cores for each case (at least 750 tumor nuclei). Using previously described criteria, ALT-positive cases were defined by the presence of large, ultrabright intranuclear foci consistent with telomere FISH signals in at least 1% of tumor nuclei and the total signal intensity for individual foci >10 fold than telomere signals from stromal cells. Of note, areas of necrosis were excluded from evaluation. Among ALT-negative PanNETs, no large, ultrabright, intranuclear signals were found in over 750 tumor nuclei that were screened.

Dual color fluorescence in situ hybridization was performed for *CDKN2A* within a Clinical Laboratory Improvement Amendments (CLIA)-accredited and College of American Pathologist (CAP)-approved laboratory as previously reported.[29] *CDKN2A* was assessed using a Spectrum-Orange labeled, locus-specific probe (Abbott Molecular, Des Plains, IL, USA) with a Spectrum Green-labeled chromosome 9 centromeric (CEP9) probe. Scoring of *CDKN2A* FISH was performed on only individual and well-delineated cells; overlapping cells were excluded from the analysis. At least 60 cells were scored for each case and controls. Each tumor was assessed by the average and the maximum numbers of copies of p16 gene per cell and the average ratio of p16 gene to chromosome 9 copy numbers (CEP9). Deletion was defined if both

CDKN2A signals were lost in at least 20% of nuclei and showed at least one signal for the CEP9 probe.

Statistical analysis

Chi-squared analysis or Fisher exact tests were used to compare categorical data, and analysis of variance was used to compare continuous variables. Survival curves were constructed using the Kaplan-Meier method and differences between groups were evaluated by the log-rank test. Disease-free survival (DFS) was calculated from the date of surgery to the date of first distant metastasis/recurrence after surgery or to the date of last follow-up (in patients without distant metastasis/recurrence) for cases without synchronous distant metastasis. Disease-specific survival (DSS) was calculated from the date of surgery to the date of death due to disease or date of last follow-up (if death did not occur). The prognostic significance of clinical and pathologic characteristics was determined using univariate Cox regression analysis. Multivariate analyses of significant risk factors by univariate analysis were performed using Cox proportional hazard regression to identify independent risk factors for both DFS and DSS. All statistical analyses were performed using the SPSS Statistical software, version 24 (IBM, Armonk, NY) and statistical significance was defined as a p value of < 0.05.

Supplementary Data

Distant metastatic PanNET whole-exome sequencing cohort

The whole-exome sequencing cohort consisted of 20 distant metastases from 20 patients with a solitary, non-syndromic PanNET. At initial presentation, patients ranged in age from 42 to 80 years (mean, 55.1 years) and included 11 females and 9 males. The patients' corresponding primary tumors were treated by either pancreaticoduodenectomy (n = 10) or distal pancreatectomy (n = 10) and pathologically confirmed to be of pancreatic origin. The primary PanNETs were distributed within the pancreas as follows: 10 in the head, 7 in the tail and 3 in the body; and ranged in size from 2.5 to 18 cm (mean, 6.2 cm). None of the PanNETs were biochemically functional.

The metastatic PanNETs consisted of 9 synchronous and 11 metachronous distant metastases, which were surgically resected from the liver (n = 19) or remnant pancreas (n = 1). Among the metachronous distant metastases, the time interval between pancreaticoduodenectomy or distal pancreatectomy and metastasectomy ranged between 1.7 to 7.8 years (mean, 4.5 years). Prior to metastatectomy, 6 of 20 (30%) patients received chemotherapy (n = 5) and/or underwent transarterial chemoembolization (TACE) to the liver (n = 2, MetaPanNET-7 and -17). All 6 patients presented with metachronous metastases. Among 5 patients that received chemotherapy, 3 patients received octreotide (MetaPanNET-10, -17 and -19) and 1 patient received everolimus (MetaPanNET-19). MetaPanNET-5 received multiple regimens of chemotherapy that included cisplatin and etoposide, carboplatin and etoposide, and irinotecan hydrochloride. Although neoadjuvant chemotherapy was documented for MetaPanNET-13, the exact regimen the patient received is unknown. While all metastatic PanNETs were morphologically well-differentiated, on the basis of mitotic rate and Ki-67 proliferation index, the tumors were classified into the following WHO grades: 1 (5%) grade 1 (G1), 13 (65%) grade 2 (G2), and 6 (30%) grade 3 (G3). Telomere-specific FISH identified ALT in 12 (60%) metastatic PanNETs and loss of nuclear expression for DAXX, ATRX or both proteins was seen in 4 (20%), 4 (20%), and 3 (15%) cases, respectively. One (5%) ALT-positive PanNET had preserved expression for DAXX/ATRX.

Primary PanNET study cohort

The study cohort consisted of 347 patients with a solitary PanNET treated by enucleation (n = 14), central pancreatectomy (n = 15), pancreaticoduodenectomy (n = 131) or distal pancreatectomy (n = 187) to include resection of identifiable metastases with curative intent. None of the patients received neoadjuvant chemotherapy, radiation or chemoembolization prior to surgical intervention. Patients ranged in age from 26 to 85 years (mean, 59 years) with a slight predominance in male gender (181 of 347, 52%). Thirty-six of 347 (10%) patients had a functional PanNET and included: 21 insulinomas, 8 gastrinomas, 5 glucagonomas, 1 somatostatinoma, 1 VIPoma and 1 ACTH-producing PanNET. The tumors were predominantly located within the pancreatic body and tail (n = 216, 62%) and ranged in size from 0.6 to 18 cm (mean, 3.4 cm). All PanNETs were morphologically well-differentiated, and, on the basis of mitotic rate and Ki-67 proliferation index, these tumors were classified into the following WHO grades: 199 (57%) grade 1 (G1), 140 (40%) grade 2 (G2), and 8 (3%) grade 3 (G3). Lymphovascular and perineural invasion were identified in 153 (44%) and 91 (26%) tumors, respectively. Using the AJCC prognostic staging system (seventh edition), the PanNETs were classified into the following pathologic tumor (pT) stages: 121 (35%) pT1, 106 (30%) pT2, and 120 (35%) pT3. Regional lymph nodes were submitted for histologic evaluation in 294 (85%)

cases with involvement of 110 (of 294, 37%) cases. At the time of surgery, 54 (16%) patients were found to have synchronous distant metastases that were resected. Of the remaining 292 patients, metachronous distant metastases were identified in 45 (of 292, 15%) cases. The DFS rates for these 292 patients were 91% at 3 years and 83% at 5 years. For all 347 patients, the DSS rates were 90% at 5 years and 76% at 10 years.

Immunohistochemistry for DAXX and ATRX and telomere-specific FISH were performed for all 347 PanNETs. Loss of nuclear expression for DAXX, ATRX, or both was identified in 37 (11%), 29 (8%), and 14 (4%) PanNETs, respectively. Of note, among the DAXX/ATRX-negative cases, heterogeneous loss of expression was seen in 1 DAXX-negative and 3 ATRX-negative PanNETs.[1] For these cases, the number of neoplastic nuclei lacking staining for DAXX/ATRX ranged between 65% to 80%. In addition, 94 (27%) PanNETs demonstrated large, ultrabright intranuclear foci consistent with ALT. The presence of ALT correlated with DAXX/ATRX loss ($p < 0.001$), but 14 (4%) ALT-positive PanNETs had preserved expression for DAXX/ATRX. Similar to DAXX and ATRX, heterogeneous loss of expression was seen in 1 of 28 H3K36me3-negative PanNETs with lack of staining in 80% of the neoplastic nuclei, while all 10 ARID1A-negative PanNETs exhibited complete loss of nuclear expression for ARID1A.

Patients with PanNETs exhibiting loss of DAXX/ATRX, H3K36me3, or deletion in *CDKN2A* were associated with shorter DFS; while, patients with PanNETs showing loss of DAXX/ATRX, H3K36me3, ARID1A or deletion in *CDKN2A* were associated with poor DSS (Supplementary Figure 3). Disease-free survival (DFS) rates for patients with DAXX/ATRX-negative (loss of DAXX/ATRX) PanNETs were 60% at 3 years and 40% at 5 years ($p < 0.001$, $X^2 = 96.5$), H3K36me3-negative PanNETs were 86% at 3 years and 11% at 5 years ($p < 0.001$,

$X^2 = 28.3$), ARID1A-negative PanNETs were 80% at 3 years and 60% at 5 years ($p = 0.221$, $X^2 = 1.50$), and *CDKN2A*-negative PanNETs were 53% at 3 years and 38% at 5 years ($p < 0.001$, $X^2 = 50.2$). In comparison, DSS rates for patients with DAXX/ATRX-negative PanNETs were 78% at 5 years and 48% at 10 years ($p < 0.001$, $X^2 = 21.5$), H3K36me3-negative PanNETs were 71% at 5 years and 34% at 10 years ($p < 0.001$, $X^2 = 13.9$), ARID1A-negative PanNETs were 80% at 5 years and 27% at 10 years ($p < 0.001$, $X^2 = 13.6$), and *CDKN2A*-negative PanNETs were 69% at 5 years and 35% at 10 years ($p < 0.001$, $X^2 = 18.8$).

Results of Cox regression analysis for DFS and DSS in relationship to various clinicopathologic features is presented in Table 1. By univariate Cox regression analysis, shorter DFS and poor DSS were associated with age ($p = 0.008$ and $p = 0.038$, respectively), tumor size > 2.0 cm ($p < 0.001$ and $p = 0.001$), G2-to-G3 WHO grade ($p < 0.001$ and $p < 0.001$, respectively), lymphovascular invasion ($p < 0.001$ and $p < 0.001$), perineural invasion ($p < 0.001$ and $p < 0.001$), advanced tumor stage ($p < 0.001$ and $p < 0.001$) and regional lymph node (pN) metastasis ($p < 0.001$ and $p < 0.001$). A separate univariate analysis was performed for DAXX/ATRX and H3K36me3/ARID1A/*CDKN2A* status, independently. Loss of DAXX/ATRX and loss/deletion of H3K36me3/ARID1A/*CDKN2A* were associated with shorter DFS (HR = 12.08 [95% CI, 6.42 – 22.75], $p < 0.001$; HR = 9.07 [95% CI, 4.99 – 16.49] , $p < 0.001$, respectively) and poor DSS (HR = 3.67 [95% CI, 2.04 – 6.61], $p < 0.001$; HR = 6.35 [95% CI, 3.52 – 11.48], $p < 0.001$, respectively). Multivariate analysis was used to determine the prognostic significance of H3K36me3/ARID1A/*CDKN2A* status for DFS and DSS and included tumor size > 2.0 cm, WHO grade, regional lymph node metastasis and DAXX/ATRX loss. Independent prognostic factors for shorter DFS included tumor size > 2.0 cm (HR = 17.08 [95% CI, 2.31 – 126.40], $p = 0.005$), regional lymph node metastasis (HR = 2.03 [95% CI, 1.05 –

3.90], $p = 0.034$), DAXX/ATRX loss (HR = 4.64 [95% CI, 2.39 – 9.04], $p < 0.001$) and H3K36me3/ARID1A/*CDKN2A* loss/deletion (HR = 3.63 [95% CI, 1.93 – 6.81], $p < 0.001$). In comparison, independent prognostic factors for poor DSS included tumor size > 2.0 cm (HR = 9.47 [95% CI, 1.29 – 69.56], $p = 0.027$), G2-to-G3 WHO grade (HR = 2.29 [95% CI, 1.09 – 4.78], $p = 0.028$), regional lymph node metastasis (HR = 2.30 [95% CI, 1.14 – 4.65], $p = 0.020$) and H3K36me3/ARID1A/*CDKN2A* loss/deletion (HR = 3.07 [95% CI, 1.65 – 5.68], $p < 0.001$). Consistent with our prior study, DAXX/ATRX loss was not an independent prognostic factor for DSS.[1]

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Supplementary Figure Legends

Supplementary Figure 1. Key genomic alterations identified in 20 metastatic pancreatic neuroendocrine tumors (PanNETs). (A) Each metastatic PanNET was classified based on World Health Organization (WHO) grade, timing of metastasis (synchronous versus metachronous with respect to the patient's primary PanNET), and ATRX and DAXX immunohistochemistry, and telomere-specific fluorescence *in situ* hybridization for alternative lengthening of telomeres (ALT). These findings were correlated with recurrent genomic alterations identified by whole-exome sequencing and compared to those previously published by Scarpa et al.[30] Somatic mutations and copy number variation are colored according to functional class. Copy number variation analysis was performed using the Nexus Biosdiscovery software (version 8.1, El Segundo, CA) and CNVKit (0.8.6.dev) comparing matched pairs of metastatic PanNETs and normal controls. (B) Recurrent copy number loss was identified within the genomic locus that includes *CDKN2A*. An example of a metastatic PanNET (MetaPanNET-3) with copy number loss at the 9p21 locus (gray dots) and a deep deletion present in *CDKN2A* (red dots).

Supplementary Figure 2. Representative examples of pancreatic neuroendocrine tumors (PanNETs) evaluated for H3K36me3 and ARID1A by immunohistochemistry and *CDKN2A* (orange) by dual-color fluorescence *in situ* hybridization (chromosome 9, green). (A) PanNET with preserved nuclear expression for both H3K36me3 (B) and ARID1A (C), and homozygous deletion of *CDKN2A* (D, loss of both orange signals, but retention of at least one green signal; white arrow, highlights a *CDKN2A* wild type stromal fibroblast). (E) PanNET with H3K36me3 loss (F), but preserved expression for ARID1A (G) and wild type *CDKN2A* (H). (I) PanNET with ARID1A loss (K), but preserved expression for H3K36me3 (J) and wild type *CDKN2A* (L).

Supplementary Figure 3. Kaplan-Meier curves comparing the cumulative probabilities of disease-free survival (DFS) and disease-specific survival (DSS) after surgical resection among 282 patients (without synchronous distant metastases) and 347 patients with PanNETs, respectively, for DAXX/ATRX, H3K36me3, ARID1A and *CDKN2A* status. Patients with PanNETs harboring loss or deletion of DAXX/ATRX, H3K36me3 or *CDKN2A* were associated with reduced time of DFS (A, B and D); while, loss or deletion of DAXX/ATRX, H3K36me3, ARID1A or *CDKN2A* was associated with reduced time of DSS (E, F, G and H), as compared to patients with wild type PanNETs.

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Variant	Specimen ID	Gene	Variant Description
3:42264742:C:A	MetaPanNET-10	TRAK1	TRAK1:NM_001042646:exon16:c.C2375A:p.S792Y
7:56007617:G:T	MetaPanNET-5	ZNF713	ZNF713:NM_182633:exon7:c.G1250T:p.R417M
11:64572033:G:A	MetaPanNET-2	MEN1	MEN1:NM_000244:exon10:c.C1621T:p.Q541X\x3bMEN1:NM_130799:exon10:c.C1606T:p.Q536X\x3bMEN1:NM_130800:exon10:c.C1621T:p.Q541X\x3bMEN1:NM_130801:e
7:112129897:A:G	MetaPanNET-11	LSMEM1	LSMEM1:NM_001134468:exon4:c.A289G:p.R97G\x3bLSMEM1:NM_182597:exon4:c.A289G:p.R97G
1:247263695:T:C	MetaPanNET-10	ZNF669	ZNF669:NM_001142572:exon4:c.A1118G:p.Q373R\x3bZNF669:NM_024804:exon4:c.A1376G:p.Q459R
1:36821030:C:T	MetaPanNET-7	STK40	STK40:NM_001282546:exon5:c.G362A:p.R121H\x3bSTK40:NM_001282547:exon5:c.G347A:p.R116H\x3bSTK40:NM_032017:exon6:c.G347A:p.R116H
12:57535234:C:T	MetaPanNET-14	LRP1	LRP1:NM_002332:exon3:c.C268T:p.R90C
12:49165518:T:C	MetaPanNET-17	ADCY6	ADCY6:NM_015270:exon18:c.A3026G:p.N1009S\x3bADCY6:NM_020983:exon18:c.A2867G:p.N956S
2:207509263:C:G	MetaPanNET-6	LOC200726	LOC200726:NM_001102659:exon2:c.C303G:p.I101M
11:82892936:G:A	MetaPanNET-5	PCF11	PCF11:NM_015885:exon13:c.G4208A:p.R1403Q
1:171755039:G:A	MetaPanNET-2	METTL13	METTL13:NM_001007239:exon3:c.G466A:p.E156K\x3bMETTL13:NM_014955:exon3:c.G676A:p.E226K\x3bMETTL13:NM_015935:exon3:c.G934A:p.E312K
13:24895827:G:A	MetaPanNET-14	C1QTNF9	C1QTNF9:NM_001303138:exon4:c.G923A:p.G308E\x3bC1QTNF9:NM_178540:exon4:c.G923A:p.G308E\x3bC1QTNF9:NM_001303137:exon5:c.G923A:p.G308E
7:91793825:G:A	MetaPanNET-17	LRRD1	LRRD1:NM_001161528:exon1:c.C692T:p.S231F
3:108072305:TC:T	MetaPanNET-20	HHLA2	HHLA2:NM_001282556:exon4:c.97delC:p.P33fs\x3bHHLA2:NM_001282557:exon4:c.97delC:p.P33fs\x3bHHLA2:NM_007072:exon4:c.97delC:p.P33fs\x3bHHLA2:NM_0012825
17:7164015:T:C	MetaPanNET-11	CLDN7	CLDN7:NM_001307:exon3:c.A419G:p.Y140C\x3bCLDN7:NM_001185022:exon4:c.A419G:p.Y140C
3:195508956:C:G	MetaPanNET-12	MUC4	MUC4:NM_018406:exon2:c.G9495C:p.Q3165H
2:225750782:G:A	MetaPanNET-16	DOCK10	DOCK10:NM_001290263:exon6:c.C592T:p.R198W\x3bDOCK10:NM_014689:exon6:c.C610T:p.R204W
2:102029529:A:G	MetaPanNET-4	RFX8	RFX8:NM_001145664:exon8:c.T566C:p.M189T
14:105417337:T:C	MetaPanNET-11	AHNAK2	AHNAK2:NM_138420:exon7:c.A4451G:p.K1484R
18:48190800:A:T	MetaPanNET-4	MAPK4	MAPK4:NM_001292040:exon2:c.A472T:p.S158C\x3bMAPK4:NM_002747:exon2:c.A472T:p.S158C
1:144621504:T:G	MetaPanNET-5	NBPF8\x3bNBPF9	UNKNOWN
1:89448812:T:G	MetaPanNET-6	RBMXL1	RBMXL1:NM_019610:exon2:c.A698C:p.D233A\x3bRBMXL1:NM_001162536:exon3:c.A698C:p.D233A
2:68270152:C:T	MetaPanNET-2	C1D	C1D:NM_006333:exon5:c.G295A:p.E99K\x3bC1D:NM_173177:exon5:c.G295A:p.E99K\x3bC1D:NM_001190263:exon6:c.G295A:p.E99K\x3bC1D:NM_001190265:exon6:c.G29
X:76888796:A:C	MetaPanNET-2	ATRX	ATRX:NM_138270:exon18:c.T4919G:p.V1640G\x3bATRX:NM_000489:exon19:c.T5033G:p.V1678G
3:51452107:C:A	MetaPanNET-9	VPRBP	VPRBP:NM_001171904:exon17:c.G3646T:p.G1216X\x3bVPRBP:NM_014703:exon18:c.G3649T:p.G1217X
3:13368913:C:A	MetaPanNET-18	NUP210	NUP210:NM_024923:exon32:c.G4311T:p.K1437N
9:113233812:G:A	MetaPanNET-2	SVEP1	SVEP1:NM_153366:exon16:c.C2830T:p.Q944X
X:152954101:GC:G	MetaPanNET-12	SLC6A8	SLC6A8:NM_001142805:exon1:c.73delC:p.P25fs\x3bSLC6A8:NM_005629:exon1:c.73delC:p.P25fs
3:195505925:G:A	MetaPanNET-5	MUC4	MUC4:NM_018406:exon2:c.C12526T:p.P4176S
4:17654521:T:A	MetaPanNET-16	FAM184B	FAM184B:NM_015688:exon11:c.A2123T:p.E708V
16:4745139:CAGA:C	MetaPanNET-4	NUDT16L1	NUDT16L1:NM_032349:exon3:c.596_598del:p.199_200del
2:233708795:C:T	MetaPanNET-17	GIGYF2	GIGYF2:NM_001103148:exon23:c.C2911T:p.Q971X\x3bGIGYF2:NM_001103146:exon24:c.C2929T:p.Q977X\x3bGIGYF2:NM_001103147:exon26:c.C2992T:p.Q998X\x3bGIGYF
12:117672547:C:T	MetaPanNET-12	NOS1	NOS1:NM_001204213:exon20:c.G2050A:p.V684M\x3bNOS1:NM_001204214:exon20:c.G2050A:p.V684M\x3bNOS1:NM_000620:exon21:c.G3058A:p.V1020M\x3bNOS1:NM_
1:15694073:T:A	MetaPanNET-7	FHAD1	FHAD1:NM_052929:exon24:c.T3203A:p.V1068E
6:42236640:C:A	MetaPanNET-17	TRERF1	TRERF1:NM_001297573:exon5:c.G689T:p.G230V\x3bTRERF1:NM_001297574:exon5:c.G689T:p.G230V\x3bTRERF1:NM_033502:exon5:c.G689T:p.G230V
8:17406211:A:C	MetaPanNET-6	SLC7A2	SLC7A2:NM_001008539:exon4:c.A557C:p.E186A\x3bSLC7A2:NM_001164771:exon4:c.A677C:p.E226A\x3bSLC7A2:NM_003046:exon4:c.A677C:p.E226A
1:18809211:G:A	MetaPanNET-16	KLHDC7A	KLHDC7A:NM_152375:exon1:c.G1736A:p.R579Q
19:22496479:G:A	MetaPanNET-17	ZNF729	ZNF729:NM_001242680:exon4:c.G260A:p.R87H
6:52357123:G:A	MetaPanNET-14	EFHC1	EFHC1:NM_018100:exon11:c.G1907A:p.R636H\x3bEFHC1:NM_001172420:exon12:c.G1850A:p.R617H
20:1456828:C:A	MetaPanNET-5	SIRPB2	SIRPB2:NM_001122962:exon5:c.G1013T:p.S338I\x3bSIRPB2:NM_001134836:exon5:c.G719T:p.S240I
11:130319024:ACTCATTT:A	MetaPanNET-17	ADAMTS15	ADAMTS15:NM_139055:exon1:c.157_163del:p.L53fs
9:123777490:C:A	MetaPanNET-5	C5	C5:NM_001735:exon16:c.G2046T:p.K682N
2:27361001:G:T	MetaPanNET-14	PRR30	PRR30:NM_178553:exon3:c.C197A:p.S66Y
12:40878420:T:C	MetaPanNET-2	MUC19	UNKNOWN
11:8667371:G:A	MetaPanNET-2	TRIM66	TRIM66:NM_014818:exon7:c.C586T:p.R196C
10:100154954:C:T	MetaPanNET-12	PYROXD2	PYROXD2:NM_032709:exon8:c.G784A:p.G262R
11:46908042:C:T	MetaPanNET-11	LRP4	LRP4:NM_002334:exon17:c.G2258A:p.R753H
2:179638340:A:T	MetaPanNET-7	TTN	TTN:NM_003319:exon31:c.T7305A:p.N2435K\x3bTTN:NM_133432:exon31:c.T7305A:p.N2435K\x3bTTN:NM_133437:exon31:c.T7305A:p.N2435K\x3bTTN:NM_001256850:ex
2:220439932:G:T	MetaPanNET-5	INHA	INHA:NM_002191:exon2:c.G785T:p.C262F
1:47904838:G:GC	MetaPanNET-2	FOXD2	FOXD2:NM_004474:exon1:c.1032dupC:p.G344fs
17:39036158:A:T	MetaPanNET-11	KRT20	KRT20:NM_019010:exon5:c.T825A:p.N275K
6:32489892:G:A	MetaPanNET-2	HLA-DRB5	HLA-DRB5:NM_002125:exon2:c.C160T:p.R54W
20:3838388:C:T	MetaPanNET-1	MAVS	MAVS:NM_020746:exon3:c.C224T:p.A75V
6:117592126:G:A	MetaPanNET-2	VGLL2	VGLL2:NM_182645:exon3:c.G812A:p.G271D
13:108518557:T:G	MetaPanNET-15	FAM155A	FAM155A:NM_001080396:exon1:c.A388C:p.T130P
10:35426781:G:T	MetaPanNET-5	CREM	CREM:NM_183011:exon1:c.G18T:p.R6S\x3bCREM:NM_183012:exon1:c.G18T:p.R6S\x3bCREM:NM_181571:exon2:c.G18T:p.R6S\x3bCREM:NM_183013:exon2:c.G18T:p.R6S
6:31911738:G:A	MetaPanNET-14	C2	C2:NM_001178063:exon10:c.G1136A:p.R379Q\x3bC2:NM_001282457:exon10:c.G1040A:p.R347Q\x3bC2:NM_001145903:exon12:c.G1382A:p.R461Q\x3bC2:NM_000063:ex
11:1212792:C:T	MetaPanNET-1	MUC5AC	UNKNOWN
6:160211648:T:G	MetaPanNET-1	MRPL18	MRPL18:NM_014161:exon1:c.T29G:p.L10W
1:183189964:C:T	MetaPanNET-15	LAMC2	LAMC2:NM_005562:exon5:c.C508T:p.R170X\x3bLAMC2:NM_018891:exon5:c.C508T:p.R170X
X:24329914:G:C	MetaPanNET-20	SUPT20HL2	SUPT20HL2:NM_001136233:exon1:c.C1519G:p.P507A
12:49722824:G:T	MetaPanNET-16	TROAP	TROAP:NM_005480:exon9:c.G1006T:p.G336C
14:105206086:G:A	MetaPanNET-5	ADSSL1	.
15:32917403:C:G	MetaPanNET-14	ARHGAP11A	ARHGAP11A:NM_001286479:exon5:c.C107G:p.A36G\x3bARHGAP11A:NM_014783:exon5:c.C674G:p.A225G\x3bARHGAP11A:NM_199357:exon5:c.C674G:p.A225G\x3bARHG
1:202722177:C:T	MetaPanNET-9	KDM5B	KDM5B:NM_006618:exon12:c.G1557A:p.W519X
1:63119738:C:G	MetaPanNET-5	DOCK7	DOCK7:NM_001271999:exon3:c.G237C:p.L79F\x3bDOCK7:NM_001272000:exon3:c.G237C:p.L79F\x3bDOCK7:NM_001272001:exon3:c.G237C:p.L79F\x3bDOCK7:NM_001272
6:32489882:T:A	MetaPanNET-2	HLA-DRB5	HLA-DRB5:NM_002125:exon2:c.A170T:p.H57L
3:130873879:G:C	MetaPanNET-5	NEK11	.
18:30804879:C:T	MetaPanNET-5	CCDC178	CCDC178:NM_001105528:exon16:c.G1678A:p.E560K\x3bCCDC178:NM_198995:exon17:c.G1678A:p.E560K
3:184043280:C:A	MetaPanNET-3	EIF4G1	EIF4G1:NM_004953:exon13:c.C2389A:p.P797T\x3bEIF4G1:NM_198242:exon16:c.C2482A:p.P828T\x3bEIF4G1:NM_198244:exon17:c.C2713A:p.P905T\x3bEIF4G1:NM_18291
4:57333859:C:T	MetaPanNET-4	SRP72	SRP72:NM_001267722:exon1:c.C58T:p.R20W\x3bSRP72:NM_006947:exon1:c.C58T:p.R20W
2:166618500:TTGTC:T	MetaPanNET-9	GALNT3	GALNT3:NM_004482:exon4:c.749_752del:p.R250fs
11:65810753:C:T	MetaPanNET-6	GAL3ST3	GAL3ST3:NM_033036:exon3:c.G521A:p.R174H
3:111312615:T:C	MetaPanNET-4	ZBED2	ZBED2:NM_024508:exon2:c.A434G:p.Q145R
6:87953192:G:A	MetaPanNET-1	ZNF292	.
14:53010244:C:T	MetaPanNET-17	TXNDC16	TXNDC16:NM_001160047:exon3:c.G32A:p.G11E\x3bTXNDC16:NM_020784:exon3:c.G32A:p.G11E
11:64575139:A:C	MetaPanNET-1	MEN1	MEN1:NM_000244:exon4:c.T683G:p.L228R\x3bMEN1:NM_130799:exon4:c.T668G:p.L223R\x3bMEN1:NM_130800:exon4:c.T683G:p.L228R\x3bMEN1:NM_130801:exon4:c.T
3:195510614:T:C	MetaPanNET-10	MUC4	MUC4:NM_018406:exon2:c.A7837G:p.S2613G
5:179743775:C:T	MetaPanNET-14	GFPT2	GFPT2:NM_005110:exon12:c.G1141A:p.A381T
7:100551130:G:A	MetaPanNET-3	MUC3A	MUC3A:NM_005960:exon2:c.G1711A:p.G571S
3:195505886:C:G	MetaPanNET-2	MUC4	MUC4:NM_018406:exon2:c.G12565C:p.D4189H
18:52265084:T:C	MetaPanNET-11	DYNAP	DYNAP:NM_173629:exon3:c.T341C:p.V114A
19:20229964:C:A	MetaPanNET-16	ZNF90	ZNF90:NM_007138:exon4:c.C1601A:p.A534E
1:177899015:C:A	MetaPanNET-9	SEC16B	SEC16B:NM_033127:exon26:c.G3161T:p.R1054L
6:55406939:C:A	MetaPanNET-17	HMGCLL1	.
1:201180037:G:A	MetaPanNET-18	IGFN1	IGFN1:NM_001164586:exon12:c.G6016A:p.E2006K
11:103018514:G:C	MetaPanNET-17	DYNC2H1	DYNC2H1:NM_001080463:exon19:c.G2716C:p.D906H\x3bDYNC2H1:NM_001377:exon19:c.G2716C:p.D906H
5:140075322:G:A	MetaPanNET-17	HARS2	.
7:99794868:A:G	MetaPanNET-13	STAG3	STAG3:NM_001282718:exon8:c.A857G:p.Y286C\x3bSTAG3:NM_001282716:exon10:c.A1031G:p.Y344C\x3bSTAG3:NM_001282717:exon10:c.A1031G:p.Y344C\x3bSTAG3:NM
19:9008269:C:T	MetaPanNET-7	MUC16	MUC16:NM_024690:exon41:c.G39283A:p.D13095N
3:48040176:T:A	MetaPanNET-14	MAP4	MAP4:NM_001134364:exon2:c.A175T:p.N59Y\x3bMAP4:NM_002375:exon2:c.A175T:p.N59Y\x3bMAP4:NM_030885:exon2:c.A175T:p.N59Y
1:84385413:C:T	MetaPanNET-7	TTLL7	TTLL7:NM_024686:exon13:c.G1469A:p.R490Q
1:95365066:G:T	MetaPanNET-17	CNN3	CNN3:NM_001286055:exon5:c.C371A:p.T124N\x3bCNN3:NM_001286056:exon6:c.C386A:p.T129N\x3bCNN3:NM_001839:exon6:c.C509A:p.T170N
3:142422729:C:T	MetaPanNET-8	PLS1	PLS1:NM_001145319:exon13:c.C1391T:p.A464V\x3bPLS1:NM_001172312:exon13:c.C1391T:p.A464V\x3bPLS1:NM_002670:exon13:c.C1391T:p.A464V
3:183824330:C:T	MetaPanNET-4	HTR3E	HTR3E:NM_001256614:exon7:c.C1298T:p.T433I\x3bHTR3E:NM_198314:exon7:c.C1220T:p.T407I\x3bHTR3E:NM_182589:exon8:c.C1265T:p.T422I\x3bHTR3E:NM_198313:exo
13:33332229:C:G	MetaPanNET-10	PDS5B	PDS5B:NM_015032:exon27:c.C3061G:p.L1021V
7:144095518:G:A	MetaPanNET-16	NOBOX	NOBOX:NM_001080413:exon9:c.C1631T:p.S544F
14:69791499:A:AGTGAAGAG	MetaPanNET-13	GALNT16	GALNT16:NM_001168368:exon3:c.426_427insGTGAAGAG:p.T142fs\x3bGALNT16:NM_020692:exon3:c.426_427insGTGAAGAG:p.T142fs
7:143929686:A:T	MetaPanNET-17	OR2A1\x3bOR2A42	OR2A42:NM_001001802:exon1:c.T251A:p.L84H\x3bOR2A1:NM_001005287:exon1:c.T251A:p.L84H
X:6451919:G:T	MetaPanNET-5	VCX3A	VCX3A:NM_016379:exon3:c.C428A:p.P143Q
16:2114357:C:T	MetaPanNET-4	TSC2	TSC2:NM_000548:exon15:c.C1528T:p.Q510X\x3bTSC2:NM_001077183:exon15:c.C1528T:p.Q510X\x3bTSC2:NM_001114382:exon15:c.C1528T:p.Q510X
6:69728393:T:A	MetaPanNET-4	ADGRB3	.
16:50711373:C:A	MetaPanNET-17	SNX20	SNX20:NM_001144972:exon2:c.G65T:p.R22M\x3bSNX20:NM_153337:exon2:c.G65T:p.R22M\x3bSNX20:NM_182854:exon2:c.G65T:p.R22M
10:70644274:G:T	MetaPanNET-5	STOX1	STOX1:NM_001130161:exon3:c.G722T:p.C241F\x3bSTOX1:NM_152709:exon3:c.G722T:p.C241F
12:91449301:C:A	MetaPanNET-17	KERA	KERA:NM_007035:exon2:c.G758T:p.G253V
10:99258106:AGGCGC:A	MetaPanNET-2	MMS19	MMS19:NM_001289403:exon1:c.31_35del:p.A11fs\x3bMMS19:NM_022362:exon1:c.31_35del:p.A11fs\x3bMMS19:NM_001289405:exon2:c.31_35del:p.A11fs
20:21213376:G:C	MetaPanNET-5	KIZ	UNKNOWN
3:195506482:G:T	MetaPanNET-15	MUC4	MUC4:NM_018406:exon2:c.C11969A:p.T3990N
3:10183738:CG:C	MetaPanNET-15	VHL	VHL:NM_000551:exon1:c.208delG:p.E70fs\x3bVHL:NM_198156:exon1:c.208delG:p.E70fs
3:195506434:G:A	MetaPanNET-1	MUC4	MUC4:NM_018406:exon2:c.C12017T:p.T4006I
6:168376881:T:G	MetaPanNET-2	HGC6.3	HGC6.3:NM_001129895:exon1:c.A452C:p.Q151P
2:43903409:A:G	MetaPanNET-10	LOC728819	LOC728819:NM_001101330:exon1:c.T53C:p.I18T
5:150506034:C:T	MetaPanNET-6	ANXA6	ANXA6:NM_001193544:exon13:c.G889A:p.G297S\x3bANXA6:NM_001155:exon14:c.G985A:p.G329S
6:151671826:C:T	MetaPanNET-16	AKAP12	AKAP12:NM_144497:exon2:c.C2006T:p.T669M\x3bAKAP12:NM_005100:exon4:c.C2300T:p.T767M
1:68912508:G:A	MetaPanNET-2	RPE65	RPE65:NM_000329:exon3:c.C130T:p.R44X
10:24874446:G:A	MetaPanNET-5	ARHGAP21	ARHGAP21:NM_020824:exon26:c.C4772T:p.S1591L

4:39851241:TC:T	MetaPanNET-14	PDS5A	PDS5A:NM_001100399:exon27:c.3117delG:p.M1039fs
17:4461704:A:C	MetaPanNET-12	GGT6	GGT6:NM_153338:exon3:c.T992G:p.L331R\x3bGGT6:NM_001122890:exon4:c.T1088G:p.L363R\x3bGGT6:NM_001288702:exon4:c.T1106G:p.L369R
16:2284604:C:A	MetaPanNET-20	E4F1	E4F1:NM_001288776:exon11:c.C1614A:p.F538L\x3bE4F1:NM_004424:exon11:c.C1614A:p.F538L
6:29054663:G:T	MetaPanNET-2	OR2B3	OR2B3:NM_001005226:exon1:c.C363A:p.D121E
3:195508667:T:C	MetaPanNET-1	MUC4	MUC4:NM_018406:exon2:c.A9784G:p.T3262A
7:100646952:G:C	MetaPanNET-10	MUC12	MUC12:NM_001164462:exon2:c.G13108C:p.A4370P
11:31703530:T:C	MetaPanNET-14	ELP4	ELP4:NM_001288726:exon10:c.T1339C:p.S447P
14:21899795:T:C	MetaPanNET-5	CHD8	CHD8:NM_001170629:exon1:c.A8G:p.D3G
1:28169731:G:A	MetaPanNET-14	PPP1R8	PPP1R8:NM_014110:exon5:c.G527A:p.R176Q\x3bPPP1R8:NM_138558:exon5:c.G101A:p.R34Q
1:27107161:CTG:C	MetaPanNET-14	ARID1A	ARID1A:NM_006015:exon20:c.6773_6774del:p.L2258fs\x3bARID1A:NM_139135:exon20:c.6122_6123del:p.L2041fs
11:128839196:G:C	MetaPanNET-5	ARHGAP32	ARHGAP32:NM_014715:exon13:c.C4823G:p.S1608C\x3bARHGAP32:NM_001142685:exon22:c.C5870G:p.S1957C
13:42874862:G:T	MetaPanNET-5	AKAP11	AKAP11:NM_016248:exon8:c.G1980T:p.M660I
3:10413630:G:A	MetaPanNET-14	ATP2B2	ATP2B2:NM_001683:exon9:c.C1387T:p.R463C\x3bATP2B2:NM_001001331:exon12:c.C1522T:p.R508C
1:181767512:G:A	MetaPanNET-17	CACNA1E	CACNA1E:NM_001205294:exon46:c.G6298A:p.V2100I\x3bCACNA1E:NM_000721:exon47:c.G6355A:p.V2119I\x3bCACNA1E:NM_001205293:exon48:c.G6484A:p.V2162I
16:23093853:C:T	MetaPanNET-2	USP31	USP31:NM_020718:exon12:c.G1856A:p.C619Y
14:24769849:A:AGAG	MetaPanNET-20	NOP9	NOP9:NM_001286367:exon2:c.483_484insGAG:p.A161delinsAE\x3bNOP9:NM_174913:exon2:c.483_484insGAG:p.A161delinsAE
3:50220158:G:A	MetaPanNET-4	SEMA3F	SEMA3F:NM_004186:exon9:c.G845A:p.R282Q
X:47102994:C:T	MetaPanNET-2	USP11	USP11:NM_004651:exon13:c.C1912T:p.R638W
16:11836430:G:A	MetaPanNET-13	TXNDC11	TXNDC11:NM_001303447:exon1:c.C157T:p.R53C\x3bTXNDC11:NM_015914:exon1:c.C157T:p.R53C
2:25037333:A:T	MetaPanNET-2	CENPO	CENPO:NM_001199803:exon3:c.A287T:p.K96I\x3bCENPO:NM_024322:exon4:c.A305T:p.K102I
7:23545827:G:C	MetaPanNET-8	TRA2A	TRA2A:NM_013293:exon6:c.C700G:p.R234G\x3bTRA2A:NM_001282757:exon7:c.C397G:p.R133G\x3bTRA2A:NM_001282758:exon7:c.C397G:p.R133G\x3bTRA2A:NM_00128
22:36697689:C:T	MetaPanNET-17	MYH9	MYH9:NM_002473:exon21:c.G2522A:p.S841N
17:16326860:C:A	MetaPanNET-5	TRPV2	TRPV2:NM_016113:exon5:c.C703A:p.P235T
2:98162173:G:A	MetaPanNET-2	ANKRD36B	ANKRD36B:NM_025190:exon24:c.C1637T:p.P546L
9:75263571:C:A	MetaPanNET-14	TMC1	TMC1:NM_138691:exon5:c.C7A:p.P3T
6:97578823:C:G	MetaPanNET-6	KLHL32	KLHL32:NM_001286251:exon7:c.C1397G:p.T466S\x3bKLHL32:NM_001286254:exon7:c.C212G:p.T71S\x3bKLHL32:NM_001286250:exon8:c.C1496G:p.T499S\x3bKLHL32:NM_
12:12870888:G:T	MetaPanNET-5	CDKN1B	CDKN1B:NM_004064:exon1:c.G115T:p.E39X
20:39831984:C:A	MetaPanNET-5	ZHX3	ZHX3:NM_015035:exon3:c.G1573T:p.E525X
7:100550206:A:G	MetaPanNET-5	MUC3A	MUC3A:NM_005960:exon2:c.A787G:p.I263V
9:109687130:C:A	MetaPanNET-1	ZNF462	ZNF462:NM_021224:exon3:c.C937A:p.P313T
4:2964931:T:C	MetaPanNET-7	NOP14	NOP14:NM_001291978:exon1:c.A116G:p.Q39R\x3bNOP14:NM_001291979:exon1:c.A116G:p.Q39R\x3bNOP14:NM_003703:exon1:c.A116G:p.Q39R
6:76376440:G:C	MetaPanNET-14	SENP6	SENP6:NM_001100409:exon9:c.G986C:p.S329T\x3bSENP6:NM_001304792:exon9:c.G986C:p.S329T\x3bSENP6:NM_015571:exon10:c.G1007C:p.S336T
3:195509052:C:G	MetaPanNET-11	MUC4	MUC4:NM_018406:exon2:c.G9399C:p.Q3133H
3:173999071:C:G	MetaPanNET-20	NLGN1	NLGN1:NM_014932:exon7:c.C2450G:p.S817X
10:37430895:C:T	MetaPanNET-5	ANKRD30A	ANKRD30A:NM_052997:exon7:c.C902T:p.T301I
1:202287362:C:A	MetaPanNET-5	LGR6	LGR6:NM_001017404:exon16:c.C1514A:p.A505D\x3bLGR6:NM_001017403:exon18:c.C1931A:p.A644D\x3bLGR6:NM_021636:exon18:c.C1775A:p.A592D
12:1299140:T:G	MetaPanNET-5	ERC1	ERC1:NM_001301248:exon11:c.T2273G:p.V758G\x3bERC1:NM_178039:exon11:c.T2189G:p.V730G\x3bERC1:NM_178040:exon12:c.T2273G:p.V758G
20:61981937:T:C	MetaPanNET-18	CHRNA4	CHRNA4:NM_000744:exon5:c.A826G:p.T276A\x3bCHRNA4:NM_001256573:exon5:c.A298G:p.T100A
6:110550059:T:A	MetaPanNET-2	CDC40	CDC40:NM_015891:exon14:c.T1442A:p.M481K
20:3262357:C:T	MetaPanNET-7	C20orf194	C20orf194:NM_001009984:exon28:c.G2542A:p.V848I
X:107979109:C:A	MetaPanNET-17	IRS4	IRS4:NM_003604:exon1:c.G466T:p.V156L
8:48794641:G:A	MetaPanNET-2	PRKDC	UNKNOWN
11:55655656:T:G	MetaPanNET-16	TRIM51	TRIM51:NM_032681:exon4:c.T656G:p.M219R
19:7754087:G:A	MetaPanNET-15	FCER2	FCER2:NM_001207019:exon10:c.C955T:p.H319Y\x3bFCER2:NM_001220500:exon11:c.C958T:p.H320Y\x3bFCER2:NM_002002:exon11:c.C958T:p.H320Y
6:33134509:C:A	MetaPanNET-5	COL11A2	COL11A2:NM_080679:exon56:c.G4005T:p.Q1335H\x3bCOL11A2:NM_080681:exon57:c.G4068T:p.Q1356H\x3bCOL11A2:NM_080680:exon59:c.G4326T:p.Q1442H
4:128565142:G:A	MetaPanNET-11	INTU	INTU:NM_015693:exon2:c.G613A:p.G205R
16:29001310:G:A	MetaPanNET-11	LAT	LAT:NM_014387:exon10:c.G766A:p.E256K\x3bLAT:NM_001014987:exon11:c.G679A:p.E227K\x3bLAT:NM_001014988:exon11:c.G676A:p.E226K\x3bLAT:NM_001014989:exo
X:101910295:C:T	MetaPanNET-5	GPRASP1	GPRASP1:NM_001099411:exon3:c.C1454T:p.S485F\x3bGPRASP1:NM_001099410:exon4:c.C1454T:p.S485F\x3bGPRASP1:NM_014710:exon5:c.C1454T:p.S485F\x3bGPRASP1:
15:43290419:C:T	MetaPanNET-20	UBR1	UBR1:NM_174916:exon33:c.G3704A:p.W1235X
20:20350263:C:T	MetaPanNET-17	INSM1	INSM1:NM_002196:exon1:c.C1352T:p.A451V
10:32581538:A:AT	MetaPanNET-18	EPC1	EPC1:NM_001272004:exon5:c.700dupA:p.M234fs\x3bEPC1:NM_001272019:exon5:c.487dupA:p.M163fs\x3bEPC1:NM_001282391:exon5:c.550dupA:p.M184fs\x3bEPC1:NM
17:56342168:C:A	MetaPanNET-12	LPO	LPO:NM_001160102:exon8:c.C1103A:p.S368Y\x3bLPO:NM_006151:exon10:c.C1352A:p.S451Y
7:128531033:G:T	MetaPanNET-14	KCP	UNKNOWN
2:237032726:A:ACCG	MetaPanNET-5	AGAP1	AGAP1:NM_014914:exon17:c.2375_2376insCCG:p.N792delinsNR\x3bAGAP1:NM_001037131:exon18:c.2534_2535insCCG:p.N845delinsNR
6:155458648:G:C	MetaPanNET-6	TIAM2	TIAM2:NM_012454:exon4:c.G1532C:p.G511A
3:195506444:C:G	MetaPanNET-5	MUC4	MUC4:NM_018406:exon2:c.G12007C:p.V4003L
22:19175205:A:T	MetaPanNET-2	CLTCL1	CLTCL1:NM_007098:exon29:c.T4470A:p.F1490L
8:99015988:A:T	MetaPanNET-6	MATN2	MATN2:NM_002380:exon8:c.A1304T:p.D435V\x3bMATN2:NM_030583:exon8:c.A1304T:p.D435V
2:152296553:A:T	MetaPanNET-16	RIF1	RIF1:NM_001177665:exon14:c.A1559T:p.E520V\x3bRIF1:NM_001177663:exon15:c.A1559T:p.E520V\x3bRIF1:NM_001177664:exon15:c.A1559T:p.E520V\x3bRIF1:NM_01815
7:6692737:C:T	MetaPanNET-8	ZNF316	ZNF316:NM_001278559:exon9:c.C1510T:p.R504X
17:7679371:G:A	MetaPanNET-5	DNAH2	DNAH2:NM_020877:exon31:c.G4851A:p.M1617I
5:137680592:C:G	MetaPanNET-5	FAM53C	FAM53C:NM_001135647:exon4:c.C215G:p.S72X\x3bFAM53C:NM_016605:exon4:c.C215G:p.S72X
3:195509641:A:G	MetaPanNET-10	MUC4	MUC4:NM_018406:exon2:c.T8810C:p.V2937A
12:40879667:A:G	MetaPanNET-2	MUC19	UNKNOWN
5:133945331:A:AT	MetaPanNET-14	SAR1B	SAR1B:NM_016103:exon5:c.277dupA:p.I93fs\x3bSAR1B:NM_001033503:exon6:c.277dupA:p.I93fs
19:9017484:C:T	MetaPanNET-9	MUC16	MUC16:NM_024690:exon26:c.G37840A:p.A12614T
1:160011760:G:A	MetaPanNET-7	KCNJ10	KCNJ10:NM_002241:exon2:c.C563T:p.A188V
8:30703608:T:C	MetaPanNET-4	TEX15	TEX15:NM_031271:exon1:c.A2926G:p.S976G
13:96508412:CT:C	MetaPanNET-1	UGGT2	UGGT2:NM_020121:exon34:c.4007delA:p.Q1336fs
7:106791406:G:T	MetaPanNET-5	PRKAR2B	PRKAR2B:NM_002736:exon7:c.G781T:p.A261S
11:62372598:G:C	MetaPanNET-5	EML3	EML3:NM_001300793:exon16:c.C1972G:p.L658V\x3bEML3:NM_001300794:exon16:c.C1969G:p.L657V\x3bEML3:NM_153265:exon16:c.C1969G:p.L657V
19:6720530:G:A	MetaPanNET-6	C3	C3:NM_000064:exon1:c.C71T:p.P24L
17:56833460:A:ACCCGAA	MetaPanNET-2	PPM1E	PPM1E:NM_014906:exon1:c.102_103insCCCGAA:p.E34delinsEPE
8:67513990:CTTTAA:C	MetaPanNET-9	MYBL1	MYBL1:NM_001080416:exon3:c.136_140del:p.L46fs\x3bMYBL1:NM_001144755:exon3:c.136_140del:p.L46fs\x3bMYBL1:NM_001294282:exon3:c.136_140del:p.L46fs
16:774755:G:A	MetaPanNET-3	CCDC78	CCDC78:NM_001031737:exon8:c.C691T:p.R231W
7:4965104:G:A	MetaPanNET-18	MMD2	MMD2:NM_001100600:exon2:c.C107T:p.A36V\x3bMMD2:NM_001270375:exon2:c.C107T:p.A36V\x3bMMD2:NM_198403:exon2:c.C107T:p.A36V
7:89901262:G:T	MetaPanNET-5	CFAP69	CFAP69:NM_001039706:exon8:c.G850T:p.E284X\x3bCFAP69:NM_001160138:exon8:c.G796T:p.E266X
6:76734962:A:T	MetaPanNET-16	IMPG1	IMPG1:NM_001282368:exon4:c.T277A:p.S93T\x3bIMPG1:NM_001563:exon5:c.T511A:p.S171T
19:50214040:C:T	MetaPanNET-15	CPT1C	CPT1C:NM_152359:exon15:c.C1792T:p.R598W\x3bCPT1C:NM_001136052:exon16:c.C1759T:p.R587W\x3bCPT1C:NM_001199752:exon16:c.C1792T:p.R598W\x3bCPT1C:NM_
10:97684080:C:A	MetaPanNET-7	C10orf131	C10orf131:NM_001130446:exon5:c.C83A:p.A28E
19:54822878:A:T	MetaPanNET-17	LILRA5	LILRA5:NM_181985:exon4:c.T482A:p.L161Q\x3bLILRA5:NM_181986:exon4:c.T482A:p.L161Q\x3bLILRA5:NM_021250:exon5:c.T518A:p.L173Q\x3bLILRA5:NM_181879:exon5:
3:195507564:C:G	MetaPanNET-2	MUC4	MUC4:NM_018406:exon2:c.G10887C:p.Q3629H
3:189586386:G:A	MetaPanNET-3	TP63	TP63:NM_001114980:exon6:c.G728A:p.R243Q\x3bTP63:NM_001114981:exon6:c.G728A:p.R243Q\x3bTP63:NM_001114982:exon6:c.G728A:p.R243Q\x3bTP63:NM_0011149
11:618713:C:T	MetaPanNET-8	CDHR5	CDHR5:NM_001171968:exon13:c.G1828A:p.G610S\x3bCDHR5:NM_021924:exon13:c.G1846A:p.G616S
11:120176369:C:T	MetaPanNET-13	POU2F3	POU2F3:NM_001244682:exon8:c.C650T:p.A217V\x3bPOU2F3:NM_014352:exon8:c.C644T:p.A215V
11:5655966:G:C	MetaPanNET-16	TRIM34\x3bTRIM6-TRIM34	TRIM34:NM_130390:exon3:c.G625C:p.E209Q\x3bTRIM34:NM_001003827:exon4:c.G625C:p.E209Q\x3bTRIM34:NM_021616:exon4:c.G625C:p.E209Q\x3bTRIM6-TRIM34:NM
14:64066395:C:T	MetaPanNET-9	WDR89	WDR89:NM_001258272:exon3:c.G266A:p.C89Y\x3bWDR89:NM_080666:exon3:c.G266A:p.C89Y\x3bWDR89:NM_001008726:exon4:c.G266A:p.C89Y
8:145735166:TG:T	MetaPanNET-14	MFSD3	MFSD3:NM_138431:exon1:c.451delG:p.G151fs
2:179496982:C:A	MetaPanNET-14	TTN	TTN:NM_003319:exon64:c.G16444T:p.E5482X\x3bTTN:NM_133432:exon65:c.G16819T:p.E5607X\x3bTTN:NM_133437:exon65:c.G17020T:p.E5674X\x3bTTN:NM_133378:exo
13:49794893:C:G	MetaPanNET-5	MLNR	MLNR:NM_001507:exon1:c.C420G:p.I140M
2:179574337:T:C	MetaPanNET-16	TTN	TTN:NM_133378:exon96:c.A24977G:p.N8326S\x3bTTN:NM_001256850:exon97:c.A27758G:p.N9253S\x3bTTN:NM_001267550:exon99:c.A28709G:p.N9570S
3:195508085:G:A	MetaPanNET-4	MUC4	MUC4:NM_018406:exon2:c.C10366T:p.P3456S
16:58750671:G:T	MetaPanNET-5	GOT2	GOT2:NM_001286220:exon6:c.C620A:p.A207D\x3bGOT2:NM_002080:exon7:c.C749A:p.A250D
15:51868357:T:A	MetaPanNET-17	DMXL2	DMXL2:NM_001174116:exon2:c.A109T:p.I37F\x3bDMXL2:NM_001174117:exon2:c.A109T:p.I37F\x3bDMXL2:NM_015263:exon2:c.A109T:p.I37F
19:55255357:G:C	MetaPanNET-4	KIR2DL3	KIR2DL3:NM_015868:exon4:c.G485C:p.R162T
11:17118666:C:T	MetaPanNET-7	PIK3C2A	PIK3C2A:NM_002645:exon26:c.G4264A:p.G1422S
1:201179420:T:G	MetaPanNET-4	IGFN1	IGFN1:NM_001164586:exon12:c.T5399G:p.F1800C
8:98900337:G:T	MetaPanNET-5	MATN2	MATN2:NM_002380:exon2:c.G9T:p.K3N\x3bMATN2:NM_030583:exon2:c.G9T:p.K3N
12:133446364:C:T	MetaPanNET-8	CHFR	CHFR:NM_001161344:exon6:c.G460A:p.G154R\x3bCHFR:NM_001161345:exon6:c.G460A:p.G154R\x3bCHFR:NM_001161346:exon6:c.G424A:p.G142R
19:1775288:G:T	MetaPanNET-18	ONECUT3	ONECUT3:NM_001080488:exon2:c.G1329T:p.M443I
6:29323536:G:A	MetaPanNET-16	OR5V1	OR5V1:NM_030876:exon1:c.C437T:p.A146V
10:112767337:A:G	MetaPanNET-17	SHOC2	SHOC2:NM_001269039:exon4:c.A1072G:p.M358V\x3bSHOC2:NM_007373:exon6:c.A1210G:p.M404V
17:5114137:C:T	MetaPanNET-5	SCIMP	SCIMP:NM_001271842:exon5:c.G376A:p.D126N\x3bSCIMP:NM_207103:exon5:c.G397A:p.D133N
2:74755988:CA:C	MetaPanNET-9	AUP1	AUP1:NM_181575:exon4:c.413delT:p.L138fs
6:90566821:G:A	MetaPanNET-2	CASP8AP2	CASP8AP2:NM_001137667:exon6:c.G319A:p.E107K\x3bCASP8AP2:NM_001137668:exon6:c.G319A:p.E107K\x3bCASP8AP2:NM_012115:exon6:c.G319A:p.E107K
19:56544024:C:A	MetaPanNET-14	NLRP5	NLRP5:NM_153447:exon8:c.C2324A:p.S775Y
17:7577545:T:C	MetaPanNET-1	TP53	TP53:NM_001126115:exon3:c.A340G:p.M114V\x3bTP53:NM_001126116:exon3:c.A340G:p.M114V\x3bTP53:NM_001126117:exon3:c.A340G:p.M114V\x3bTP53:NM_00127
7:121653377:A:G	MetaPanNET-12	PTPRZ1	PTPRZ1:NM_002851:exon12:c.A4277G:p.D1426G
1:146672787:G:T	MetaPanNET-11	FMO5	FMO5:NM_001144829:exon7:c.C1130A:p.A377D\x3bFMO5:NM_001461:exon7:c.C1130A:p.A377D
20:4848457:T:C	MetaPanNET-5	SLC23A2	SLC23A2:NM_005116:exon13:c.A1315G:p.T439A\x3bSLC23A2:NM_203327:exon13:c.A1315G:p.T439A
11:61117088:G:A	MetaPanNET-12	CYB561A3	CYB561A3:NM_001300763:exon7:c.C733T:p.R245W
7:73082349:A:T	MetaPanNET-3	VPS37D	VPS37D:NM_001077621:exon1:c.A61T:p.I21F
19:7677172:C:T	MetaPanNET-10	CAMSAP3	CAMSAP3:NM_020902:exon11:c.C1793T:p.S598L\x3bCAMSAP3:NM_001080429:exon13:c.C1874T:p.S625L
4:77661563:C:A	MetaPanNET-5	SHROOM3	SHROOM3:NM_020859:exon5:c.C2237A:p.P746H
19:42480585:C:G	MetaPanNET-7	ATP1A3	ATP1A3:NM_001256213:exon15:c.G2110C:p.E704Q\x3bATP1A3:NM_001256214:exon15:c.G2116C:p.E706Q\x3bATP1A3:NM_152296:exon15:c.G2077C:p.E693Q
10:27431328:G:A	MetaPanNET-5	YME1L1	YME1L1:NM_014263:exon4:c.C418T:p.Q140X\x3bYME1L1:NM_139312:exon5:c.C589T:p.Q197X
13:42335309:A:G	MetaPanNET-3	VWA8	VWA8:NM_001009814:exon21:c.T2381C:p.F794S\x3bVWA8:NM_015058:exon21:c.T2381C:p.F794S

16:16142123:C:T	MetaPanNET-4	ABCC1	ABCC1:NM_004996:exon10:c.C1343T:p.P448L
15:41865666:G:T	MetaPanNET-5	TYRO3	.
11:92620273:G:A	MetaPanNET-16	FAT3	FAT3:NM_001008781:exon24:c.G13045A:p.D4349N
10:15172214:C:T	MetaPanNET-10	NMT2	NMT2:NM_004808:exon7:c.G817A:p.V273M
12:70988358:G:GT	MetaPanNET-20	PTPRB	PTPRB:NM_001206971:exon4:c.750dupA:p.H251fs\x3bPTPRB:NM_001206972:exon4:c.750dupA:p.H251fs\x3bPTPRB:NM_002837:exon4:c.750dupA:p.H251fs\x3bPTPRB:NM
1:27089545:CCATG:C	MetaPanNET-10	ARID1A	ARID1A:NM_006015:exon8:c.2502_2505del:p.P834fs\x3bARID1A:NM_139135:exon8:c.2502_2505del:p.P834fs
3:195509027:T:G	MetaPanNET-8	MUC4	MUC4:NM_018406:exon2:c.A9424C:p.T3142P
14:64066367:A:T	MetaPanNET-9	WDR89	WDR89:NM_001258272:exon3:c.T294A:p.D98E\x3bWDR89:NM_080666:exon3:c.T294A:p.D98E\x3bWDR89:NM_001008726:exon4:c.T294A:p.D98E
3:195506405:G:A	MetaPanNET-17	MUC4	MUC4:NM_018406:exon2:c.C12046T:p.P4016S
8:142221662:G:A	MetaPanNET-12	SLC45A4	SLC45A4:NM_001080431:exon8:c.C2276T:p.T759M
14:24884539:C:A	MetaPanNET-5	NYNRIN	NYNRIN:NM_025081:exon9:c.C3584A:p.P1195H
2:171258111:G:T	MetaPanNET-2	MYO3B	MYO3B:NM_001083615:exon18:c.G2039T:p.R680L\x3bMYO3B:NM_138995:exon18:c.G2039T:p.R680L
10:18280083:C:G	MetaPanNET-18	SLC39A12	SLC39A12:NM_001282734:exon7:c.C871G:p.L291V\x3bSLC39A12:NM_001145195:exon8:c.C1273G:p.L425V\x3bSLC39A12:NM_001282733:exon8:c.C1273G:p.L425V\x3bSLC
1:118495155:A:T	MetaPanNET-17	WDR3	WDR3:NM_006784:exon19:c.A2021T:p.H674L
5:118810129:C:T	MetaPanNET-8	HSD17B4	HSD17B4:NM_001199292:exon3:c.C200T:p.T67I\x3bHSD17B4:NM_000414:exon4:c.C254T:p.T85I\x3bHSD17B4:NM_001199291:exon5:c.C329T:p.T110I\x3bHSD17B4:NM_00
13:103395507:C:A	MetaPanNET-5	CCDC168	CCDC168:NM_001146197:exon4:c.G7540T:p.E2514X
11:64571926:GT:G	MetaPanNET-4	MEN1	MEN1:NM_000244:exon10:c.1727delA:p.N576fs\x3bMEN1:NM_130799:exon10:c.1712delA:p.N571fs\x3bMEN1:NM_130800:exon10:c.1727delA:p.N576fs\x3bMEN1:NM_1
4:147431176:A:G	MetaPanNET-17	SLC10A7	SLC10A7:NM_001029998:exon3:c.T209C:p.L70P\x3bSLC10A7:NM_001300842:exon3:c.T209C:p.L70P\x3bSLC10A7:NM_032128:exon3:c.T209C:p.L70P
1:89448868:A:T	MetaPanNET-2	RBMXL1	RBMXL1:NM_019610:exon2:c.T642A:p.Y214X\x3bRBMXL1:NM_001162536:exon3:c.T642A:p.Y214X
9:33466390:A:G	MetaPanNET-2	NOL6	NOL6:NM_022917:exon17:c.T2125C:p.S709P
6:129920386:TC:T	MetaPanNET-16	ARHGAP18	ARHGAP18:NM_033515:exon12:c.1687delG:p.E563fs
20:20056259:G:A	MetaPanNET-10	CFAP61	CFAP61:NM_001167816:exon5:c.G566A:p.R189K\x3bCFAP61:NM_015585:exon6:c.G566A:p.R189K
7:150556076:C:A	MetaPanNET-8	AOC1	AOC1:NM_001091:exon3:c.C1796A:p.S599Y\x3bAOC1:NM_001272072:exon3:c.C1796A:p.S599Y
16:46764574:C:A	MetaPanNET-1	MYLK3	MYLK3:NM_182493:exon5:c.G1499T:p.R500L
1:12979757:A:T	MetaPanNET-4	PRAMEF7\x3bPRAMEF8	PRAMEF8:NM_001012276:exon4:c.A949T:p.S317C\x3bPRAMEF7:NM_001012277:exon4:c.A949T:p.S317C
16:69782169:G:A	MetaPanNET-16	NOB1	NOB1:NM_014062:exon7:c.C790T:p.R264W
3:44286601:A:G	MetaPanNET-13	TOPAZ1	TOPAZ1:NM_001145030:exon2:c.A2603G:p.Q868R
1:176564230:C:A	MetaPanNET-5	PAPPA2	PAPPA2:NM_020318:exon3:c.C1490A:p.P497Q\x3bPAPPA2:NM_021936:exon3:c.C1490A:p.P497Q
22:28293869:G:A	MetaPanNET-12	PITPNB	PITPNB:NM_001284277:exon4:c.C209T:p.A70V\x3bPITPNB:NM_001284278:exon4:c.C215T:p.A72V\x3bPITPNB:NM_012399:exon4:c.C209T:p.A70V
22:47069607:C:T	MetaPanNET-17	GRAMD4	GRAMD4:NM_015124:exon14:c.C1280T:p.P427L
X:153138104:A:T	MetaPanNET-18	L1CAM	L1CAM:NM_001143963:exon2:c.T125A:p.V42D\x3bL1CAM:NM_000425:exon3:c.T140A:p.V47D\x3bL1CAM:NM_024003:exon3:c.T140A:p.V47D\x3bL1CAM:NM_001278116:
3:41938322:A:G	MetaPanNET-17	ULK4	ULK4:NM_017886:exon15:c.T1522C:p.S508P
7:149479315:T:C	MetaPanNET-13	SSPO	SSPO:NM_198455:exon14:c.T1828C:p.C610R
7:131194993:A:G	MetaPanNET-7	PODXL	.
19:8998743:C:T	MetaPanNET-4	MUC16	MUC16:NM_024690:exon58:c.G40840A:p.D13614N
13:25670803:A:G	MetaPanNET-6	PABPC3	PABPC3:NM_030979:exon1:c.A467G:p.K156R
1:152280274:G:T	MetaPanNET-10	FLG	FLG:NM_002016:exon3:c.C7088A:p.S2363Y
7:2415125:G:A	MetaPanNET-15	EIF3B	EIF3B:NM_001037283:exon14:c.G1991A:p.R664H\x3bEIF3B:NM_003751:exon14:c.G1991A:p.R664H
7:6840612:TCA:T	MetaPanNET-11	CCZ1B	CCZ1B:NM_198097:exon14:c.1358_1359del:p.L453fs
1:155895524:C:G	MetaPanNET-5	KIAA0907	KIAA0907:NM_014949:exon7:c.G792C:p.Q264H
12:40882474:G:A	MetaPanNET-16	MUC19	UNKNOWN
19:49845809:G:C	MetaPanNET-1	TEAD2	TEAD2:NM_001256658:exon11:c.C1125G:p.Y375X\x3bTEAD2:NM_001256659:exon11:c.C1125G:p.Y375X\x3bTEAD2:NM_001256662:exon11:c.C732G:p.Y244X\x3bTEAD2:NM
11:47640416:G:GTCTTT	MetaPanNET-14	MTCH2	MTCH2:NM_014342:exon13:c.880_881insAAAGA:p.T294fs
11:64577203:TC:T	MetaPanNET-6	MEN1	MEN1:NM_000244:exon2:c.378delG:p.W126X\x3bMEN1:NM_130799:exon2:c.378delG:p.W126X\x3bMEN1:NM_130800:exon2:c.378delG:p.W126X\x3bMEN1:NM_130801:
X:53271069:C:T	MetaPanNET-5	IQSEC2	IQSEC2:NM_001111125:exon10:c.G2912A:p.R971Q\x3bIQSEC2:NM_015075:exon10:c.G2297A:p.R766Q
11:6549927:C:G	MetaPanNET-3	DNHD1	DNHD1:NM_144666:exon11:c.C2013G:p.Y671X
22:32275720:C:T	MetaPanNET-1	DEPDC5	DEPDC5:NM_001242897:exon35:c.C3715T:p.Q1239X\x3bDEPDC5:NM_014662:exon36:c.C3922T:p.Q1308X\x3bDEPDC5:NM_001136029:exon37:c.C3988T:p.Q1330X\x3bDEP
12:40877863:G:A	MetaPanNET-20	MUC19	UNKNOWN
3:75790860:C:T	MetaPanNET-2	ZNF717	ZNF717:NM_001128223:exon3:c.G85A:p.V29M\x3bZNF717:NM_001290208:exon3:c.G85A:p.V29M\x3bZNF717:NM_001290210:exon3:c.G85A:p.V29M
3:195508523:C:T	MetaPanNET-5	MUC4	MUC4:NM_018406:exon2:c.G9928A:p.A3310T
10:13231046:G:A	MetaPanNET-2	MCM10	MCM10:NM_018518:exon10:c.G1381A:p.G461R\x3bMCM10:NM_182751:exon10:c.G1384A:p.G462R
3:195509450:C:T	MetaPanNET-14	MUC4	MUC4:NM_018406:exon2:c.G9001A:p.A3001T
15:21071237:C:A	MetaPanNET-1	POTEB\x3bPOTEB2\x3bPOTEB3	POTEB2:NM_001277303:exon1:c.G374T:p.R125M\x3bPOTEB:NM_001277304:exon1:c.G374T:p.R125M\x3bPOTEB3:NM_207355:exon1:c.G374T:p.R125M
17:36997614:C:T	MetaPanNET-4	C17orf98	C17orf98:NM_001080465:exon1:c.G29A:p.R10Q
21:43708058:C:T	MetaPanNET-11	ABCG1	ABCG1:NM_004915:exon9:c.C1033T:p.R345W\x3bABCG1:NM_016818:exon9:c.C1033T:p.R345W\x3bABCG1:NM_207174:exon9:c.C1066T:p.R356W\x3bABCG1:NM_207629:
16:58577294:C:A	MetaPanNET-7	CNOT1	CNOT1:NM_206999:exon31:c.G4651T:p.V1551F
4:25390355:A:G	MetaPanNET-17	ANAPC4	ANAPC4:NM_001286756:exon6:c.A460G:p.K154E\x3bANAPC4:NM_013367:exon6:c.A460G:p.K154E
11:8414146:C:A	MetaPanNET-5	STK33	STK33:NM_001289059:exon11:c.G895T:p.E299X\x3bSTK33:NM_001289061:exon13:c.G1456T:p.E486X\x3bSTK33:NM_001289058:exon14:c.G1333T:p.E445X\x3bSTK33:NM_
19:36572402:A:T	MetaPanNET-6	WDR62	WDR62:NM_001083961:exon10:c.A1301T:p.D434V\x3bWDR62:NM_173636:exon10:c.A1301T:p.D434V
16:614234:C:T	MetaPanNET-1	PRR35	PRR35:NM_145270:exon2:c.C940T:p.R314X
1:215785170:C:T	MetaPanNET-2	KCTD3	KCTD3:NM_016121:exon15:c.C1469T:p.P490L
4:24833264:G:T	MetaPanNET-5	CCDC149	CCDC149:NM_001130726:exon9:c.C829A:p.L277M\x3bCCDC149:NM_173463:exon10:c.C829A:p.L277M
10:120830578:T:A	MetaPanNET-6	EIF3A	EIF3A:NM_003750:exon5:c.A561T:p.Q187H
1:109010126:G:C	MetaPanNET-5	NBPF6	NBPF6:NM_001143988:exon14:c.G1714C:p.D572H\x3bNBPF6:NM_001143987:exon15:c.G1801C:p.D601H
13:75860994:A:T	MetaPanNET-1	TBC1D4	TBC1D4:NM_001286659:exon19:c.T3642A:p.C1214X\x3bTBC1D4:NM_001286658:exon20:c.T3807A:p.C1269X\x3bTBC1D4:NM_014832:exon21:c.T3831A:p.C1277X
2:39505547:C:G	MetaPanNET-17	MAP4K3	.
15:81518009:G:A	MetaPanNET-17	IL16	IL16:NM_172217:exon1:c.G269A:p.G90E\x3bIL16:NM_001172128:exon2:c.G269A:p.G90E
5:178310658:G:T	MetaPanNET-7	ZNF354B	ZNF354B:NM_058230:exon5:c.G1205T:p.R402I
5:149429839:G:T	MetaPanNET-4	HMGXB3	HMGXB3:NM_014983:exon19:c.G3226T:p.V1076L
4:110791454:G:A	MetaPanNET-5	LRIT3	LRIT3:NM_198506:exon4:c.G1549A:p.V517M
1:93672689:G:A	MetaPanNET-20	CCDC18	CCDC18:NM_206886:exon9:c.G943A:p.G315R
1:147091264:C:T	MetaPanNET-14	BCL9	BCL9:NM_004326:exon8:c.C1303T:p.H435Y
2:192210998:CCT:C	MetaPanNET-5	MYO1B	MYO1B:NM_001130158:exon6:c.489_490del:p.S163fs\x3bMYO1B:NM_001161819:exon6:c.489_490del:p.S163fs\x3bMYO1B:NM_012223:exon6:c.489_490del:p.S163fs
16:2282548:C:T	MetaPanNET-17	E4F1	E4F1:NM_001288776:exon5:c.C701T:p.S234L\x3bE4F1:NM_001288778:exon5:c.C701T:p.S234L\x3bE4F1:NM_004424:exon5:c.C701T:p.S234L
2:160619448:G:C	MetaPanNET-15	42801	MARCH7:NM_001282806:exon7:c.G1783C:p.E595Q\x3bMARCH7:NM_001282807:exon7:c.G1837C:p.E613Q\x3bMARCH7:NM_022826:exon8:c.G1951C:p.E651Q\x3bMARCH
11:94533474:C:T	MetaPanNET-2	AMOTL1	AMOTL1:NM_001301007:exon2:c.C968T:p.T323M\x3bAMOTL1:NM_130847:exon3:c.C1118T:p.T373M
19:58908408:T:G	MetaPanNET-5	RNF225	RNF225:NM_001195135:exon1:c.T952G:p.W318G
13:76415806:C:T	MetaPanNET-15	LMO7	LMO7:NM_015842:exon21:c.C3019T:p.R1007W\x3bLMO7:NM_005358:exon23:c.C2872T:p.R958W
3:195507914:C:A	MetaPanNET-4	MUC4	MUC4:NM_018406:exon2:c.G10537T:p.A3513S
6:24480156:G:T	MetaPanNET-5	GPLD1	GPLD1:NM_001503:exon3:c.C185A:p.A62D
X:56591742:G:T	MetaPanNET-17	UBQLN2	UBQLN2:NM_013444:exon1:c.G1436T:p.G479V
19:8808925:C:T	MetaPanNET-1	ACTL9	ACTL9:NM_178525:exon1:c.G127A:p.D43N
X:11206999:G:T	MetaPanNET-9	ARHGAP6	ARHGAP6:NM_001287242:exon4:c.C386A:p.S129Y\x3bARHGAP6:NM_006125:exon4:c.C926A:p.S309Y\x3bARHGAP6:NM_013423:exon4:c.C317A:p.S106Y\x3bARHGAP6:NM_
1:152277227:T:A	MetaPanNET-14	FLG	FLG:NM_002016:exon3:c.A10135T:p.R3379W
2:61633064:ACTCT:A	MetaPanNET-13	USP34	USP34:NM_014709:exon3:c.327_330del:p.R109fs
6:29581187:C:T	MetaPanNET-16	GABBR1	GABBR1:NM_021903:exon7:c.G1048A:p.A350T\x3bGABBR1:NM_021904:exon11:c.G1213A:p.A405T\x3bGABBR1:NM_001470:exon12:c.G1399A:p.A467T
1:120166223:G:GC	MetaPanNET-16	ZNF697	ZNF697:NM_001080470:exon3:c.742dupG:p.A248fs
7:99158223:G:GGGTC	MetaPanNET-6	ZNF655	ZNF655:NM_001009958:exon2:c.41_42insGGTC:p.R14fs\x3bZNF655:NM_001009960:exon2:c.41_42insGGTC:p.R14fs\x3bZNF655:NM_001083956:exon2:c.41_42insGGTC:p.R
2:232457790:C:T	MetaPanNET-2	C2orf57	C2orf57:NM_152614:exon1:c.C128T:p.S43F
15:50535106:C:T	MetaPanNET-17	HDC	HDC:NM_002112:exon12:c.G1340A:p.R447H
15:23572430:C:T	MetaPanNET-9	GOLGA6L22	UNKNOWN
2:15519730:C:T	MetaPanNET-14	NBAS	NBAS:NM_015909:exon30:c.G3586A:p.A1196T
6:32489889:A:T	MetaPanNET-2	HLA-DRB5	HLA-DRB5:NM_002125:exon2:c.T163A:p.F55I
X:32366647:T:TA	MetaPanNET-20	DMD	.
9:73002821:C:A	MetaPanNET-4	KLF9	KLF9:NM_001206:exon2:c.G606T:p.Q202H
1:53925280:G:A	MetaPanNET-13	DMRTB1	DMRTB1:NM_033067:exon1:c.G154A:p.A52T
2:96961276:G:A	MetaPanNET-8	SNRNP200	SNRNP200:NM_014014:exon14:c.C1792T:p.R598C
7:95625303:C:A	MetaPanNET-5	DYNC1I1	DYNC1I1:NM_001135557:exon9:c.C827A:p.A276D\x3bDYNC1I1:NM_001278421:exon9:c.C878A:p.A293D\x3bDYNC1I1:NM_001278422:exon9:c.C827A:p.A276D\x3bDYNC1I1
4:9213053:C:T	MetaPanNET-20	USP17L10	USP17L10:NM_001256852:exon1:c.C671T:p.A224V
12:109954643:C:T	MetaPanNET-12	UBE3B	UBE3B:NM_130466:exon19:c.C2030T:p.S677F\x3bUBE3B:NM_183415:exon19:c.C2030T:p.S677F
8:37822996:A:C	MetaPanNET-6	ADRB3	ADRB3:NM_000025:exon1:c.T992G:p.L331R
19:23543203:C:T	MetaPanNET-9	ZNF91	ZNF91:NM_001300951:exon3:c.G2482A:p.G828S\x3bZNF91:NM_003430:exon4:c.G2578A:p.G860S
X:76778789:C:T	MetaPanNET-9	ATRX	ATRX:NM_138270:exon30:c.G6676A:p.E2226K\x3bATRX:NM_000489:exon31:c.G6790A:p.E2264K
7:12409653:G:T	MetaPanNET-5	VWDE	VWDE:NM_001135924:exon12:c.C2279A:p.P760H
17:5036838:G:A	MetaPanNET-9	USP6	USP6:NM_004505:exon6:c.G377A:p.R126K\x3bUSP6:NM_001304284:exon14:c.G377A:p.R126K
7:107756504:G:A	MetaPanNET-5	LAMB4	LAMB4:NM_007356:exon3:c.C137T:p.S46F
6:33645401:G:A	MetaPanNET-15	ITPR3	ITPR3:NM_002224:exon28:c.G3643A:p.D1215N
17:62149456:C:A	MetaPanNET-11	ERN1	ERN1:NM_001433:exon6:c.G363T:p.K121N
3:9804608:C:T	MetaPanNET-14	CAMK1	CAMK1:NM_003656:exon5:c.G419A:p.R140Q
X:31139994:C:A	MetaPanNET-15	DMD	DMD:NM_004018:exon16:c.G1825T:p.E609X\x3bDMD:NM_004016:exon17:c.G1864T:p.E622X\x3bDMD:NM_004023:exon31:c.G3358T:p.E1120X\x3bDMD:NM_004022:exor
9:95012139:C:T	MetaPanNET-16	IARS	.
16:28115956:A:C	MetaPanNET-1	XPO6	XPO6:NM_015171:exon21:c.T2857G:p.F953V\x3bXPO6:NM_001270940:exon22:c.T2815G:p.F939V
4:113199317:C:A	MetaPanNET-15	TIFA	TIFA:NM_052864:exon2:c.G256T:p.E86X
2:189910627:G:A	MetaPanNET-14	COL5A2	COL5A2:NM_000393:exon46:c.C3208T:p.R1070C
11:118067450:C:A	MetaPanNET-20	AMICA1	AMICA1:NM_001286570:exon8:c.G975T:p.M325I\x3bAMICA1:NM_001286571:exon8:c.G975T:p.M325I\x3bAMICA1:NM_153206:exon8:c.G1062T:p.M354I\x3bAMICA1:NM_
7:131128462:G:T	MetaPanNET-11	MKLN1	.
16:68225198:C:A	MetaPanNET-5	NFATC3	NFATC3:NM_004555:exon9:c.C2626A:p.L876M\x3bNFATC3:NM_173163:exon9:c.C2626A:p.L876M\x3bNFATC3:NM_173165:exon9:c.C2626A:p.L876M

19:45565422:C:T	MetaPanNET-7	CLASRP	CLASRP:NM_001278439:exon10:c.C688T:p.R230X\x3bCLASRP:NM_007056:exon11:c.C874T:p.R292X
1:248458876:T:C	MetaPanNET-12	OR2T12	OR2T12:NM_001004692:exon1:c.A5G:p.E2G
10:95079758:GC:G	MetaPanNET-20	MYOF	MYOF:NM_133337:exon48:c.5429delG:p.G1810fs\x3bMYOF:NM_013451:exon49:c.5468delG:p.G1823fs
13:95839003:G:T	MetaPanNET-10	ABCC4	ABCC4:NM_001301830:exon10:c.C1272A:p.Y424X\x3bABCC4:NM_001105515:exon11:c.C1497A:p.Y499X\x3bABCC4:NM_001301829:exon11:c.C1497A:p.Y499X\x3bABCC4:N
17:40280352:G:A	MetaPanNET-2	RAB5C	RAB5C:NM_004583:exon4:c.C368T:p.A123V\x3bRAB5C:NM_001252039:exon5:c.C467T:p.A156V\x3bRAB5C:NM_201434:exon5:c.C368T:p.A123V
2:86434409:A:T	MetaPanNET-16	MRPL35	MRPL35:NM_016622:exon3:c.A337T:p.R113W\x3bMRPL35:NM_145644:exon3:c.A337T:p.R113W
17:74011161:C:A	MetaPanNET-5	EVPL	EVPL:NM_001988:exon17:c.G2058T:p.Q686H
3:197726165:A:G	MetaPanNET-14	LMLN	LMLN:NM_001136049:exon11:c.A1184G:p.Q395R\x3bLMLN:NM_033029:exon11:c.A1184G:p.Q395R
19:7974697:C:G	MetaPanNET-20	MAP2K7	MAP2K7:NM_001297556:exon2:c.C182G:p.S61C\x3bMAP2K7:NM_145185:exon2:c.C182G:p.S61C\x3bMAP2K7:NM_001297555:exon3:c.C230G:p.S77C
3:134670844:G:A	MetaPanNET-14	EPHB1	EPHB1:NM_004441:exon3:c.G755A:p.R252Q
16:84346700:G:C	MetaPanNET-6	WFDC1	WFDC1:NM_001282466:exon2:c.G278C:p.R93P\x3bWFDC1:NM_001282467:exon2:c.G278C:p.R93P\x3bWFDC1:NM_021197:exon2:c.G278C:p.R93P
9:130950165:A:G	MetaPanNET-7	CIZ1	CIZ1:NM_001257976:exon3:c.T32C:p.L11P\x3bCIZ1:NM_001131015:exon4:c.T335C:p.L112P\x3bCIZ1:NM_001131016:exon4:c.T335C:p.L112P\x3bCIZ1:NM_001131017:exon
3:191888300:T:C	MetaPanNET-12	FGF12	FGF12:NM_021032:exon4:c.A560G:p.N187S\x3bFGF12:NM_004113:exon5:c.A374G:p.N125S
12:40897325:T:C	MetaPanNET-9	MUC19	UNKNOWN
20:35390932:T:A	MetaPanNET-11	DSN1	DSN1:NM_001145317:exon5:c.A201T:p.E67D\x3bDSN1:NM_001145318:exon5:c.A474T:p.E158D\x3bDSN1:NM_001145315:exon6:c.A522T:p.E174D\x3bDSN1:NM_00114531
6:33288213:G:A	MetaPanNET-4	DAXX	DAXX:NM_001254717:exon3:c.C970T:p.Q324X\x3bDAXX:NM_001141969:exon4:c.C1195T:p.Q399X\x3bDAXX:NM_001141970:exon4:c.C1231T:p.Q411X\x3bDAXX:NM_0013
8:52320716:G:T	MetaPanNET-5	PXDNL	PXDNL:NM_144651:exon17:c.C3468A:p.F1156L
1:109860574:C:T	MetaPanNET-17	SORT1	SORT1:NM_001205228:exon16:c.G1631A:p.R544H\x3bSORT1:NM_002959:exon16:c.G2042A:p.R681H
16:15501896:G:A	MetaPanNET-11	MPV17L	MPV17L:NM_001128423:exon4:c.G518A:p.G173D
11:797701:C:T	MetaPanNET-15	PANO1	PANO1:NM_001293167:exon1:c.C76T:p.L26F
5:140503232:T:G	MetaPanNET-18	PCDHB4	PCDHB4:NM_018938:exon1:c.T1652G:p.L551R
13:25670797:C:G	MetaPanNET-6	PABPC3	PABPC3:NM_030979:exon1:c.C461G:p.A154G
6:154743710:C:T	MetaPanNET-15	CNKSR3	CNKSR3:NM_173515:exon9:c.G875A:p.R292H
1:110740127:TC:T	MetaPanNET-14	SLC6A17	SLC6A17:NM_001010898:exon11:c.1722delC:p.F574fs
8:131149247:C:T	MetaPanNET-6	ASAP1	ASAP1:NM_018482:exon14:c.G1118A:p.C373Y\x3bASAP1:NM_001247996:exon15:c.G1097A:p.C366Y
6:155450721:G:A	MetaPanNET-5	TIAM2	TIAM2:NM_012454:exon3:c.G364A:p.E122K
6:35773651:C:A	MetaPanNET-2	LHFPL5	LHFPL5:NM_182548:exon1:c.C204A:p.C68X
2:10095207:G:A	MetaPanNET-16	GRHL1	GRHL1:NM_198182:exon2:c.G184A:p.G62S
6:29911928:C:G	MetaPanNET-12	HLA-A	HLA-A:NM_001242758:exon4:c.C649G:p.P217A\x3bHLA-A:NM_002116:exon4:c.C649G:p.P217A
20:61050103:A:T	MetaPanNET-17	GATA5	GATA5:NM_080473:exon2:c.T475A:p.F159I
10:71684726:G:A	MetaPanNET-4	COL13A1	COL13A1:NM_080798:exon20:c.G1088A:p.R363H\x3bCOL13A1:NM_080805:exon21:c.G1106A:p.R369H\x3bCOL13A1:NM_080800:exon23:c.G1202A:p.R401H\x3bCOL13A1:N
1:247655327:G:T	MetaPanNET-18	OR2W5	OR2W5:NM_001004698:exon1:c.G898T:p.D300Y
1:248525639:A:T	MetaPanNET-6	OR2T4	OR2T4:NM_001004696:exon1:c.A757T:p.I253F
3:195510182:C:T	MetaPanNET-7	MUC4	MUC4:NM_018406:exon2:c.G8269A:p.D2757N
12:11506264:C:G	MetaPanNET-8	PRB1	PRB1:NM_199353:exon4:c.G374C:p.G125A\x3bPRB1:NM_199354:exon4:c.G314C:p.G105A
11:1212966:C:A	MetaPanNET-1	MUC5AC	UNKNOWN
7:104753293:C:T	MetaPanNET-5	KMT2E	KMT2E:NM_018682:exon26:c.C5090T:p.S1697F\x3bKMT2E:NM_182931:exon27:c.C5090T:p.S1697F
10:120828968:C:T	MetaPanNET-2	EIF3A	EIF3A:NM_003750:exon6:c.G940A:p.E314K
6:29911931:A:G	MetaPanNET-12	HLA-A	HLA-A:NM_001242758:exon4:c.A652G:p.I218V\x3bHLA-A:NM_002116:exon4:c.A652G:p.I218V
18:2771569:C:T	MetaPanNET-11	SMCHD1	SMCHD1:NM_015295:exon40:c.C5005T:p.R1669X
17:8926124:C:T	MetaPanNET-13	NTN1	NTN1:NM_004822:exon2:c.C434T:p.T145I
11:46456487:G:T	MetaPanNET-18	AMBRA1	AMBRA1:NM_001300731:exon12:c.C2553A:p.S851R\x3bAMBRA1:NM_001267783:exon13:c.C2376A:p.S792R\x3bAMBRA1:NM_017749:exon14:c.C2463A:p.S821R\x3bAMBR
1:205065819:G:A	MetaPanNET-9	RBBP5	RBBP5:NM_001193272:exon12:c.C1387T:p.P463S\x3bRBBP5:NM_001193273:exon12:c.C1006T:p.P336S\x3bRBBP5:NM_005057:exon12:c.C1387T:p.P463S
16:28989327:T:C	MetaPanNET-4	SPNS1	SPNS1:NM_001142449:exon2:c.T340C:p.S114P\x3bSPNS1:NM_001142451:exon3:c.T406C:p.S136P\x3bSPNS1:NM_032038:exon3:c.T406C:p.S136P\x3bSPNS1:NM_00114244
1:204511951:C:T	MetaPanNET-16	MDM4	MDM4:NM_001278517:exon5:c.C257T:p.S86F\x3bMDM4:NM_001204171:exon8:c.C551T:p.S184F\x3bMDM4:NM_002393:exon8:c.C551T:p.S184F
18:3253408:G:A	MetaPanNET-5	MYL12A	MYL12A:NM_001303048:exon2:c.G163A:p.D55N\x3bMYL12A:NM_001303049:exon2:c.G181A:p.D61N\x3bMYL12A:NM_006471:exon2:c.G163A:p.D55N\x3bMYL12A:NM_00
2:220107975:G:T	MetaPanNET-1	GLB1L	GLB1L:NM_001286427:exon2:c.C134A:p.P45Q\x3bGLB1L:NM_001286423:exon3:c.C134A:p.P45Q\x3bGLB1L:NM_024506:exon3:c.C134A:p.P45Q
14:21560642:G:A	MetaPanNET-5	ZNF219	ZNF219:NM_001101672:exon3:c.C814T:p.P272S\x3bZNF219:NM_001102454:exon3:c.C814T:p.P272S\x3bZNF219:NM_016423:exon3:c.C814T:p.P272S
3:174815077:T:A	MetaPanNET-20	NAALADL2	NAALADL2:NM_207015:exon2:c.T541A:p.F181I
X:76889133:C:T	MetaPanNET-10	ATRX	ATRX:NM_138270:exon17:c.G4763A:p.C1588Y\x3bATRX:NM_000489:exon18:c.G4877A:p.C1626Y
3:195508548:C:G	MetaPanNET-4	MUC4	MUC4:NM_018406:exon2:c.G9903C:p.E3301D
X:76918958:AT:A	MetaPanNET-11	ATRX	ATRX:NM_138270:exon11:c.3918delA:p.K1306fs\x3bATRX:NM_000489:exon12:c.4032delA:p.K1344fs
16:2131647:C:G	MetaPanNET-2	TSC2	TSC2:NM_001077183:exon30:c.C3530G:p.S1177W\x3bTSC2:NM_000548:exon31:c.C3662G:p.S1221W\x3bTSC2:NM_001114382:exon31:c.C3662G:p.S1221W
17:41477501:C:G	MetaPanNET-1	ARL4D	ARL4D:NM_001661:exon2:c.C401G:p.A134G
11:46903429:C:T	MetaPanNET-17	LRP4	LRP4:NM_002334:exon20:c.G2638A:p.A880T
2:133540288:T:A	MetaPanNET-2	NCKAP5	NCKAP5:NM_207363:exon14:c.A4096T:p.S1366C
21:45165993:G:A	MetaPanNET-17	PDXK	PDXK:NM_003681:exon5:c.G365A:p.G122D
3:53156559:C:A	MetaPanNET-7	RFT1	RFT1:NM_052859:exon4:c.G287T:p.W96L
12:29494741:G:A	MetaPanNET-16	ERGIC2	ERGIC2:NM_016570:exon13:c.C997T:p.H333Y
10:135020720:C:T	MetaPanNET-9	KNDC1	KNDC1:NM_152643:exon20:c.C3659T:p.T1220M
1:15987738:G:T	MetaPanNET-5	RSC1A1	RSC1A1:NM_006511:exon1:c.G1375T:p.G459C
12:56579985:A:G	MetaPanNET-13	SMARCC2	SMARCC2:NM_001130420:exon3:c.T271C:p.C91R\x3bSMARCC2:NM_003075:exon3:c.T271C:p.C91R\x3bSMARCC2:NM_139067:exon3:c.T271C:p.C91R
13:43659971:A:T	MetaPanNET-11	DNAJC15	DNAJC15:NM_013238:exon5:c.A379T:p.K127X
8:196247:G:C	MetaPanNET-13	ZNF596	ZNF596:NM_001042415:exon6:c.G1400C:p.R467T\x3bZNF596:NM_001042416:exon6:c.G1400C:p.R467T\x3bZNF596:NM_001287254:exon6:c.G1400C:p.R467T\x3bZNF596:N
22:39909758:C:G	MetaPanNET-11	MIEF1	MIEF1:NM_001304564:exon6:c.C822G:p.I274M\x3bMIEF1:NM_019008:exon6:c.C822G:p.I274M
7:4839014:G:A	MetaPanNET-13	RADIL	RADIL:NM_018059:exon15:c.C3223T:p.L1075F
19:10254467:T:C	MetaPanNET-7	DNMT1	DNMT1:NM_001379:exon28:c.A3043G:p.K1015E\x3bDNMT1:NM_001130823:exon29:c.A3091G:p.K1031E
1:186008969:G:C	MetaPanNET-11	HMCN1	HMCN1:NM_031935:exon39:c.G6138C:p.L2046F
3:47032902:G:A	MetaPanNET-2	NBEAL2	NBEAL2:NM_015175:exon8:c.G649A:p.G217R
16:30616673:G:A	MetaPanNET-14	ZNF689	ZNF689:NM_138447:exon3:c.C415T:p.R139X
11:1213159:C:A	MetaPanNET-3	MUC5AC	UNKNOWN
11:46786718:C:A	MetaPanNET-5	CKAP5	CKAP5:NM_001008938:exon28:c.G3500T:p.G1167V\x3bCKAP5:NM_014756:exon28:c.G3500T:p.G1167V
4:95204305:G:A	MetaPanNET-18	SMARCAD1	SMARCAD1:NM_001254949:exon14:c.G1470A:p.M490I\x3bSMARCAD1:NM_001128429:exon22:c.G2766A:p.M922I\x3bSMARCAD1:NM_001128430:exon22:c.G2766A:p.M9
19:56736055:T:C	MetaPanNET-15	ZSCAN5A	ZSCAN5A:NM_024303:exon2:c.A361G:p.N121D
4:79387478:G:C	MetaPanNET-17	FRAS1	FRAS1:NM_025074:exon50:c.G7146C:p.Q2382H
12:40897323:C:T	MetaPanNET-9	MUC19	UNKNOWN
15:43023149:C:T	MetaPanNET-17	CDAN1	CDAN1:NM_138477:exon13:c.G1981A:p.D661N
20:20552231:C:A	MetaPanNET-17	RALGAPA2	RALGAPA2:NM_020343:exon23:c.G3027T:p.K1009N
12:6601487:G:A	MetaPanNET-15	MRPL51	MRPL51:NM_016497:exon3:c.C337T:p.R113C
2:172809497:A:G	MetaPanNET-17	HAT1	HAT1:NM_003642:exon4:c.A287G:p.D96G
14:23548793:C:T	MetaPanNET-6	ACIN1	ACIN1:NM_001164815:exon5:c.G1805A:p.R602H\x3bACIN1:NM_001164814:exon6:c.G1925A:p.R642H\x3bACIN1:NM_014977:exon6:c.G1925A:p.R642H
5:140563608:C:T	MetaPanNET-5	PCDHB16	PCDHB16:NM_020957:exon1:c.C1474T:p.P492S
3:195506798:C:G	MetaPanNET-4	MUC4	MUC4:NM_018406:exon2:c.G11653C:p.D3885H
16:31153157:C:T	MetaPanNET-16	PRSS36	PRSS36:NM_001258290:exon11:c.G1631A:p.W544X\x3bPRSS36:NM_001258291:exon11:c.G1646A:p.W549X\x3bPRSS36:NM_173502:exon11:c.G1646A:p.W549X
3:183368598:C:T	MetaPanNET-14	KLHL24	KLHL24:NM_017644:exon3:c.C454T:p.R152C
18:29054302:G:A	MetaPanNET-5	DSG3	DSG3:NM_001944:exon15:c.G2320A:p.G774R
12:40884757:C:G	MetaPanNET-12	MUC19	UNKNOWN
7:107638828:A:C	MetaPanNET-18	LAMB1	LAMB1:NM_002291:exon4:c.T323G:p.L108R
6:7249073:C:T	MetaPanNET-14	RREB1	RREB1:NM_001003698:exon12:c.C4936T:p.Q1646X\x3bRREB1:NM_001003700:exon12:c.C4303T:p.Q1435X\x3bRREB1:NM_001168344:exon12:c.C4936T:p.Q1646X\x3bRREB
10:121652454:G:A	MetaPanNET-11	SEC23IP	SEC23IP:NM_007190:exon1:c.G160A:p.G54R
X:53591599:T:A	MetaPanNET-17	HUWE1	HUWE1:NM_031407:exon51:c.A6965T:p.E2322V
13:61985445:C:A	MetaPanNET-17	PCDH20	PCDH20:NM_022843:exon2:c.G2787T:p.Q929H
14:23057888:C:A	MetaPanNET-5	DAD1	DAD1:NM_001344:exon1:c.G176T:p.G59V
1:12776226:C:A	MetaPanNET-6	AADACL3	UNKNOWN
22:35480407:G:T	MetaPanNET-16	ISX	ISX:NM_001008494:exon3:c.G413T:p.R138L\x3bISX:NM_001303508:exon4:c.G413T:p.R138L
10:14939192:C:A	MetaPanNET-4	SUV39H2	SUV39H2:NM_024670:exon2:c.C345A:p.Y115X\x3bSUV39H2:NM_001193424:exon3:c.C525A:p.Y175X\x3bSUV39H2:NM_001193425:exon3:c.C345A:p.Y115X
11:76751604:T:C	MetaPanNET-16	B3GNT6	.
19:12154817:G:T	MetaPanNET-17	ZNF878	ZNF878:NM_001080404:exon4:c.C1399A:p.R467S
22:32100683:G:C	MetaPanNET-6	PRR14L	PRR14L:NM_173566:exon5:c.C5786G:p.P1929R
16:2136213:T:A	MetaPanNET-11	TSC2	TSC2:NM_001077183:exon35:c.T4481A:p.I1494N\x3bTSC2:NM_001114382:exon36:c.T4613A:p.I1538N\x3bTSC2:NM_000548:exon37:c.T4682A:p.I1561N
19:13049987:C:T	MetaPanNET-13	CALR	CALR:NM_004343:exon2:c.C131T:p.S44L
7:150820945:G:A	MetaPanNET-14	AGAP3	AGAP3:NM_001281300:exon9:c.G509A:p.G170E\x3bAGAP3:NM_031946:exon9:c.G1193A:p.G398E
10:120789386:A:C	MetaPanNET-12	NANOS1	NANOS1:NM_199461:exon1:c.A73C:p.S25R
10:49658575:G:A	MetaPanNET-5	ARHGAP22	ARHGAP22:NM_001256026:exon7:c.C1327T:p.R443C\x3bARHGAP22:NM_001256024:exon9:c.C1645T:p.R549C\x3bARHGAP22:NM_001256025:exon9:c.C1615T:p.R539C\x3b
19:11568904:G:A	MetaPanNET-8	ELAVL3	ELAVL3:NM_001420:exon5:c.C685T:p.P229S\x3bELAVL3:NM_032281:exon5:c.C685T:p.P229S
4:169282358:G:A	MetaPanNET-14	DDX60L	DDX60L:NM_001012967:exon37:c.C4933T:p.R1645C
9:34691113:G:T	MetaPanNET-18	CCL19	CCL19:NM_006274:exon1:c.C24A:p.S8R
15:42185626:T:A	MetaPanNET-13	SPTBN5	SPTBN5:NM_016642:exon2:c.A70T:p.T24S
7:150761807:C:T	MetaPanNET-20	SLC4A2	SLC4A2:NM_001199693:exon3:c.C385T:p.R129W\x3bSLC4A2:NM_001199694:exon3:c.C370T:p.R124W\x3bSLC4A2:NM_001199692:exon4:c.C412T:p.R138W\x3bSLC4A2:NM
6:109220989:G:C	MetaPanNET-20	ARMC2	ARMC2:NM_001286609:exon6:c.G346C:p.E116Q\x3bARMC2:NM_032131:exon7:c.G841C:p.E281Q
16:90015999:G:A	MetaPanNET-5	DEF8	DEF8:NM_207514:exon2:c.G126A:p.M42I
3:195510085:C:T	MetaPanNET-8	MUC4	MUC4:NM_018406:exon2:c.G8366A:p.S2789N
19:47969266:G:A	MetaPanNET-9	SLC8A2	SLC8A2:NM_015063:exon2:c.C395T:p.T132M
12:42499692:A:T	MetaPanNET-13	GXYLT1	GXYLT1:NM_001099650:exon4:c.T699A:p.Y233X\x3bGXYLT1:NM_173601:exon5:c.T792A:p.Y264X
12:40898784:T:A	MetaPanNET-3	MUC19	UNKNOWN
9:35381201:T:A	MetaPanNET-17	UNC13B	UNC13B:NM_006377:exon18:c.T2233A:p.C745S
16:2905707:C:T	MetaPanNET-17	PRSS22	PRSS22:NM_022119:exon4:c.G427A:p.A143T

4:154256104:C:T	MetaPanNET-10	TRIM2	TRIM2:NM_001130067:exon12:c.C2221T:p.R741X\x3bTRIM2:NM_015271:exon12:c.C2302T:p.R768X
14:21869217:A:T	MetaPanNET-7	CHD8	CHD8:NM_001170629:exon21:c.T4187A:p.I1396N\x3bCHD8:NM_020920:exon22:c.T3350A:p.I1117N
3:52474071:C:T	MetaPanNET-12	SEMA3G	SEMA3G:NM_020163:exon11:c.G1187A:p.S396N
14:36154147:G:A	MetaPanNET-17	RALGAPA1	RALGAPA1:NM_014990:exon19:c.C2764T:p.R922X\x3bRALGAPA1:NM_194301:exon19:c.C2764T:p.R922X\x3bRALGAPA1:NM_001283043:exon20:c.C2803T:p.R935X\x3bRAL(
15:41862356:T:C	MetaPanNET-17	TYRO3	.
21:34038272:C:T	MetaPanNET-16	SYNJ1	SYNJ1:NM_001160306:exon16:c.G2111A:p.R704Q\x3bSYNJ1:NM_001160302:exon17:c.G2126A:p.R709Q\x3bSYNJ1:NM_003895:exon17:c.G2243A:p.R748Q\x3bSYNJ1:NM_2
2:165365347:G:A	MetaPanNET-4	GRB14	GRB14:NM_001303422:exon6:c.C571T:p.Q191X\x3bGRB14:NM_004490:exon7:c.C832T:p.Q278X
9:104171726:A:T	MetaPanNET-9	ZNF189	ZNF189:NM_001278231:exon3:c.A1634T:p.Q545L\x3bZNF189:NM_001278232:exon3:c.A1631T:p.Q544L\x3bZNF189:NM_003452:exon3:c.A1676T:p.Q559L\x3bZNF189:NM_
3:150911398:C:G	MetaPanNET-12	MED12L	MED12L:NM_053002:exon14:c.C2090G:p.S697C
19:52658400:T:A	MetaPanNET-1	ZNF836	ZNF836:NM_001102657:exon5:c.A2536T:p.R846W
3:195507923:C:T	MetaPanNET-4	MUC4	MUC4:NM_018406:exon2:c.G10528A:p.A3510T
1:2106193:T:A	MetaPanNET-2	PRKCZ	PRKCZ:NM_001033581:exon12:c.T857A:p.V286E\x3bPRKCZ:NM_001033582:exon12:c.T857A:p.V286E\x3bPRKCZ:NM_001242874:exon12:c.T1094A:p.V365E\x3bPRKCZ:NM_(
11:126294894:C:T	MetaPanNET-4	KIRREL3	KIRREL3:NM_001301097:exon16:c.G1882A:p.V628I\x3bKIRREL3:NM_032531:exon17:c.G1918A:p.V640I
2:17699580:G:A	MetaPanNET-8	RAD51AP2	RAD51AP2:NM_001099218:exon1:c.C103T:p.R35W
7:143964428:G:A	MetaPanNET-10	CTAGE4\x3bCTAGE8	CTAGE8:NM_001278507:exon1:c.C1916T:p.P639L\x3bCTAGE4:NM_198495:exon1:c.C1916T:p.P639L
11:6190844:TTGTGC:T	MetaPanNET-17	OR52B2	OR52B2:NM_001004052:exon1:c.708_712del:p.R236fs
5:32379309:G:GCT	MetaPanNET-5	ZFR	ZFR:NM_016107:exon17:c.2746_2747insAG:p.A916fs
6:138582742:TC:T	MetaPanNET-16	ARFGEF3	ARFGEF3:NM_020340:exon11:c.1184delC:p.S395X
7:11457157:G:T	MetaPanNET-14	THSD7A	THSD7A:NM_015204:exon16:c.C3457A:p.L1153M
12:85500302:C:T	MetaPanNET-16	LRRIQ1	LRRIQ1:NM_001079910:exon15:c.C3286T:p.L1096F
19:2853252:G:T	MetaPanNET-5	ZNF555	ZNF555:NM_001172775:exon4:c.G1186T:p.E396X\x3bZNF555:NM_152791:exon4:c.G1189T:p.E397X
9:109689040:C:CA	MetaPanNET-10	ZNF462	ZNF462:NM_021224:exon3:c.2848dupA:p.P949fs
17:56833482:G:GAACCCG	MetaPanNET-7	PPM1E	PPM1E:NM_014906:exon1:c.124_125insAACCCG:p.E42delinsEPE
3:195509606:C:T	MetaPanNET-10	MUC4	MUC4:NM_018406:exon2:c.G8845A:p.D2949N
11:125765493:G:T	MetaPanNET-6	PUS3	PUS3:NM_031307:exon3:c.C570A:p.C190X
13:27827966:C:A	MetaPanNET-5	RPL21	RPL21:NM_000982:exon2:c.C53A:p.P18H
10:93407:G:A	MetaPanNET-8	TUBB8	TUBB8:NM_177987:exon4:c.C925T:p.R309C
3:195510083:G:T	MetaPanNET-8	MUC4	MUC4:NM_018406:exon2:c.C8368A:p.P2790T
6:91233416:C:T	MetaPanNET-15	MAP3K7	MAP3K7:NM_003188:exon13:c.G1362A:p.W454X\x3bMAP3K7:NM_145333:exon13:c.G1362A:p.W454X\x3bMAP3K7:NM_145331:exon14:c.G1443A:p.W481X\x3bMAP3K7:N
17:5036834:G:A	MetaPanNET-9	USP6	USP6:NM_004505:exon6:c.G373A:p.G125R\x3bUSP6:NM_001304284:exon14:c.G373A:p.G125R
9:376291:T:C	MetaPanNET-18	DOCK8	DOCK8:NM_001190458:exon18:c.T1987C:p.S663P\x3bDOCK8:NM_001193536:exon18:c.T1987C:p.S663P\x3bDOCK8:NM_203447:exon19:c.T2191C:p.S731P
3:195505772:C:G	MetaPanNET-5	MUC4	MUC4:NM_018406:exon2:c.G12679C:p.V4227L
1:201179158:G:T	MetaPanNET-6	IGFN1	IGFN1:NM_001164586:exon12:c.G5137T:p.D1713Y
14:59806831:CTTAAAG:C	MetaPanNET-6	DAAM1	DAAM1:NM_001270520:exon16:c.2009_2014del:p.670_672del\x3bDAAM1:NM_014992:exon16:c.2039_2044del:p.680_682del
18:12095271:C:T	MetaPanNET-5	ANKRD62	ANKRD62:NM_001277333:exon2:c.C320T:p.T107I
3:123135036:G:A	MetaPanNET-2	ADCY5	ADCY5:NM_001199642:exon1:c.C79T:p.R27W
11:6629395:C:T	MetaPanNET-9	ILK	ILK:NM_001014795:exon2:c.C209T:p.P70L\x3bILK:NM_001014794:exon3:c.C209T:p.P70L\x3bILK:NM_001278441:exon3:c.C209T:p.P70L\x3bILK:NM_004517:exon3:c.C209T:p
10:27054246:C:A	MetaPanNET-14	ABI1	ABI1:NM_001178125:exon5:c.G529T:p.G177X\x3bABI1:NM_001012752:exon6:c.G706T:p.G236X\x3bABI1:NM_001178121:exon6:c.G706T:p.G236X\x3bABI1:NM_001178124
10:93505:C:T	MetaPanNET-15	TUBB8	TUBB8:NM_177987:exon4:c.G827A:p.R276Q
3:195506459:C:T	MetaPanNET-2	MUC4	MUC4:NM_018406:exon2:c.G11992A:p.A3998T
1:165634348:T:C	MetaPanNET-14	ALDH9A1	ALDH9A1:NM_000696:exon10:c.A1369G:p.R457G
4:2709882:C:G	MetaPanNET-14	FAM193A	FAM193A:NM_001256666:exon18:c.C3509G:p.S1170W
15:23686228:G:T	MetaPanNET-3	GOLGA6L2	GOLGA6L2:NM_001304388:exon8:c.C1394A:p.T465K
12:100041953:A:G	MetaPanNET-1	FAM71C	FAM71C:NM_153364:exon1:c.A1G:p.M1V
2:99013339:G:A	MetaPanNET-10	CNGA3	CNGA3:NM_001079878:exon7:c.G1652A:p.R551H\x3bCNGA3:NM_001298:exon8:c.G1706A:p.R569H
14:54878232:T:G	MetaPanNET-12	CDKN3	CDKN3:NM_001130851:exon4:c.T104G:p.I35R\x3bCDKN3:NM_005192:exon5:c.T224G:p.I75R
3:48642106:CG:C	MetaPanNET-3	UQCRC1	UQCRC1:NM_003365:exon4:c.404delC:p.A135fs
9:96024997:G:T	MetaPanNET-16	WNK2	WNK2:NM_001282394:exon13:c.G3406T:p.E1136X\x3bWNK2:NM_006648:exon13:c.G3406T:p.E1136X
2:238289630:G:A	MetaPanNET-5	COL6A3	COL6A3:NM_057164:exon3:c.C604T:p.R202X\x3bCOL6A3:NM_057166:exon3:c.C604T:p.R202X\x3bCOL6A3:NM_057165:exon4:c.C1207T:p.R403X\x3bCOL6A3:NM_057167:e
19:10292752:G:A	MetaPanNET-16	DNMT1	DNMT1:NM_001130823:exon2:c.C82T:p.L28F\x3bDNMT1:NM_001379:exon2:c.C82T:p.L28F
7:48004957:G:C	MetaPanNET-16	HUS1	HUS1:NM_004507:exon8:c.C839G:p.S280C
X:108718983:C:T	MetaPanNET-7	GUCY2F	GUCY2F:NM_001522:exon2:c.G183A:p.W61X
11:1218779:C:T	MetaPanNET-4	MUC5AC	UNKNOWN
1:173950017:G:A	MetaPanNET-16	RC3H1	RC3H1:NM_001300850:exon5:c.C899T:p.P300L\x3bRC3H1:NM_001300851:exon5:c.C899T:p.P300L\x3bRC3H1:NM_001300852:exon5:c.C899T:p.P300L\x3bRC3H1:NM_1720
17:7294081:G:A	MetaPanNET-11	PLSCR3	PLSCR3:NM_001201576:exon7:c.C703T:p.R235C\x3bPLSCR3:NM_020360:exon7:c.C703T:p.R235C
14:47600972:C:A	MetaPanNET-5	MDGA2	MDGA2:NM_001113498:exon5:c.G663T:p.R221S
17:35605537:C:T	MetaPanNET-17	ACACA	ACACA:NM_198837:exon15:c.G1858A:p.G620R\x3bACACA:NM_198838:exon16:c.G1798A:p.G600R\x3bACACA:NM_198834:exon17:c.G2143A:p.G715R\x3bACACA:NM_1988
16:25258552:C:T	MetaPanNET-17	ZKSCAN2	ZKSCAN2:NM_001012981:exon5:c.G965A:p.G322E
11:34680236:A:G	MetaPanNET-6	EHF	EHF:NM_001206615:exon7:c.A695G:p.N232S\x3bEHF:NM_001206616:exon8:c.A830G:p.N277S\x3bEHF:NM_012153:exon8:c.A764G:p.N255S
19:49793395:A:T	MetaPanNET-16	SLC6A16	SLC6A16:NM_014037:exon12:c.T2196A:p.C732X
1:152128065:C:A	MetaPanNET-7	RPTN	RPTN:NM_001122965:exon3:c.G1510T:p.G504X
11:103797792:C:G	MetaPanNET-16	PDGFD	PDGFD:NM_025208:exon6:c.G835C:p.V279L\x3bPDGFD:NM_033135:exon6:c.G817C:p.V273L
20:47752369:C:A	MetaPanNET-10	STAU1	.
6:136913360:G:A	MetaPanNET-9	MAP3K5	MAP3K5:NM_005923:exon23:c.C3176T:p.T1059M
16:15045631:G:A	MetaPanNET-14	NPIPA1	NPIPA1:NM_006985:exon8:c.G802A:p.E268K
14:92537368:T:TGCTGCTGCTGCTGCTGCT	MetaPanNET-8	ATXN3	ATXN3:NM_001164782:exon2:c.53_54insAGCAGCAGCAGCAGCAGC:p.A18delinsAAAAAAA\x3bATXN3:NM_001164774:exon3:c.218_219insAGCAGCAGCAGCAGCAGC:p.A73de
12:14659169:G:A	MetaPanNET-17	PLBD1	PLBD1:NM_024829:exon10:c.C1406T:p.P469L
3:195506117:G:T	MetaPanNET-14	MUC4	MUC4:NM_018406:exon2:c.C12334A:p.P4112T
1:16914275:C:A	MetaPanNET-10	NBPF1	UNKNOWN
17:5036843:C:A	MetaPanNET-9	USP6	USP6:NM_004505:exon6:c.C382A:p.Q128K\x3bUSP6:NM_001304284:exon14:c.C382A:p.Q128K
X:76937667:A:AT	MetaPanNET-1	ATRX	ATRX:NM_138270:exon8:c.2966dupA:p.H989fs\x3bATRX:NM_000489:exon9:c.3080dupA:p.H1027fs
3:195507874:G:T	MetaPanNET-4	MUC4	MUC4:NM_018406:exon2:c.C10577A:p.T3526N
19:22155878:G:A	MetaPanNET-5	ZNF208	ZNF208:NM_007153:exon4:c.C1958T:p.T653I
3:195507854:G:C	MetaPanNET-10	MUC4	MUC4:NM_018406:exon2:c.C10597G:p.H3533D
15:40565184:A:C	MetaPanNET-13	PAK6	PAK6:NM_001276717:exon5:c.A1474C:p.I492L\x3bPAK6:NM_001128629:exon6:c.A1474C:p.I492L\x3bPAK6:NM_001128628:exon7:c.A1474C:p.I492L\x3bPAK6:NM_0012767
16:25251333:C:T	MetaPanNET-14	ZKSCAN2	ZKSCAN2:NM_001012981:exon7:c.G2708A:p.R903Q
17:41004895:C:A	MetaPanNET-5	AOC3	AOC3:NM_001277731:exon1:c.C1535A:p.S512X\x3bAOC3:NM_003734:exon1:c.C1535A:p.S512X
6:7899850:G:C	MetaPanNET-6	TXNDC5	TXNDC5:NM_001145549:exon3:c.C154G:p.L52V\x3bTXNDC5:NM_030810:exon3:c.C478G:p.L160V
6:46679342:G:A	MetaPanNET-16	PLA2G7	PLA2G7:NM_001168357:exon7:c.C554T:p.S185F\x3bPLA2G7:NM_005084:exon7:c.C554T:p.S185F
2:26800396:C:A	MetaPanNET-5	C2orf70	C2orf70:NM_001105519:exon3:c.C361A:p.H121N
4:1374685:G:C	MetaPanNET-5	UVSSA	UVSSA:NM_020894:exon12:c.G1770C:p.K590N
15:99500577:G:A	MetaPanNET-6	IGF1R	IGF1R:NM_000875:exon21:c.G4010A:p.R1337H\x3bIGF1R:NM_001291858:exon21:c.G4007A:p.R1336H
19:14561739:A:T	MetaPanNET-7	PKN1	PKN1:NM_002741:exon6:c.A788T:p.K263M\x3bPKN1:NM_213560:exon6:c.A806T:p.K269M
17:1673228:C:T	MetaPanNET-2	SERPINF1	SERPINF1:NM_002615:exon3:c.C167T:p.A56V
3:33114191:C:G	MetaPanNET-6	GLB1	GLB1:NM_000404:exon2:c.G90C:p.R30S\x3bGLB1:NM_001135602:exon2:c.G90C:p.R30S
15:32738694:G:A	MetaPanNET-14	GOLGA8O	GOLGA8O:NM_001277308:exon15:c.C1349T:p.P450L
3:10188214:C:G	MetaPanNET-15	VHL	VHL:NM_000551:exon2:c.C357G:p.F119L
11:64802405:A:G	MetaPanNET-18	SNX15	SNX15:NM_013306:exon4:c.A343G:p.N115D\x3bSNX15:NM_147777:exon4:c.A343G:p.N115D
12:42499645:G:A	MetaPanNET-11	GXYLT1	GXYLT1:NM_001099650:exon4:c.C746T:p.T249I\x3bGXYLT1:NM_173601:exon5:c.C839T:p.T280I
10:124351902:C:A	MetaPanNET-9	DMBT1	DMBT1:NM_017579:exon19:c.C2261A:p.T754N\x3bDMBT1:NM_007329:exon20:c.C2291A:p.T764N
17:3385077:G:A	MetaPanNET-3	ASPA	ASPA:NM_000049:exon2:c.G417A:p.M139I\x3bASPA:NM_001128085:exon3:c.G417A:p.M139I
17:18152713:T:C	MetaPanNET-9	FLII	FLII:NM_001256265:exon14:c.A1621G:p.N541D\x3bFLII:NM_001256264:exon15:c.A1753G:p.N585D\x3bFLII:NM_002018:exon15:c.A1786G:p.N596D
18:28669505:G:T	MetaPanNET-10	DSC2	DSC2:NM_004949:exon5:c.C527A:p.P176H\x3bDSC2:NM_024422:exon5:c.C527A:p.P176H
17:5036823:T:C	MetaPanNET-9	USP6	USP6:NM_004505:exon6:c.T362C:p.L121S\x3bUSP6:NM_001304284:exon14:c.T362C:p.L121S
1:201179181:G:A	MetaPanNET-4	IGFN1	IGFN1:NM_001164586:exon12:c.G5160A:p.M1720I
2:175287648:C:T	MetaPanNET-2	SCRN3	SCRN3:NM_001193528:exon6:c.C769T:p.R257X\x3bSCRN3:NM_024583:exon6:c.C790T:p.R264X
6:33383798:C:T	MetaPanNET-1	PHF1	PHF1:NM_024165:exon15:c.C1627T:p.R543W
15:45361101:G:C	MetaPanNET-13	SORD	SORD:NM_003104:exon7:c.G637C:p.A213P
2:97820410:A:T	MetaPanNET-8	ANKRD36	.
2:74300765:C:T	MetaPanNET-5	TET3	TET3:NM_001287491:exon4:c.C2584T:p.R862W
2:144903215:C:T	MetaPanNET-13	GTDC1	GTDC1:NM_001284233:exon3:c.G271A:p.E91K\x3bGTDC1:NM_001006636:exon5:c.G271A:p.E91K\x3bGTDC1:NM_001164629:exon5:c.G271A:p.E91K\x3bGTDC1:NM_00128
6:43029299:G:A	MetaPanNET-11	KLC4	KLC4:NM_001289034:exon2:c.G226A:p.E76K\x3bKLC4:NM_001289035:exon2:c.G226A:p.E76K\x3bKLC4:NM_138343:exon2:c.G226A:p.E76K\x3bKLC4:NM_201521:exon2:c.G
1:248802016:G:A	MetaPanNET-16	OR2T35	OR2T35:NM_001001827:exon1:c.C544T:p.P182S
X:76918959:T:A	MetaPanNET-11	ATRX	ATRX:NM_138270:exon11:c.A3918T:p.K1306N\x3bATRX:NM_000489:exon12:c.A4032T:p.K1344N
22:32111265:G:A	MetaPanNET-17	PRR14L	PRR14L:NM_173566:exon4:c.C2560T:p.Q854X
1:41579027:C:T	MetaPanNET-6	SCMH1	SCMH1:NM_001172220:exon7:c.G460A:p.D154N\x3bSCMH1:NM_001172221:exon7:c.G460A:p.D154N\x3bSCMH1:NM_001031694:exon8:c.G643A:p.D215N\x3bSCMH1:NM
3:56591281:G:GGTAAGCAGGG	MetaPanNET-12	CCDC66	CCDC66:NM_001141947:exon1:c.11_12insGTAAGCAGGG:p.G4_D5delinsGX
4:155460330:C:A	MetaPanNET-4	PLRG1	PLRG1:NM_001201564:exon12:c.G1051T:p.V351L\x3bPLRG1:NM_002669:exon12:c.G1078T:p.V360L
3:195511822:G:T	MetaPanNET-10	MUC4	MUC4:NM_018406:exon2:c.C6629A:p.P2210H
10:77159051:T:C	MetaPanNET-3	ZNF503	ZNF503:NM_032772:exon2:c.A1397G:p.Y466C
1:202911314:C:T	MetaPanNET-3	ADIPOR1	ADIPOR1:NM_001290553:exon7:c.G838A:p.V280M\x3bADIPOR1:NM_015999:exon7:c.G838A:p.V280M\x3bADIPOR1:NM_001290557:exon8:c.G838A:p.V280M\x3bADIPOR1
19:42911401:C:T	MetaPanNET-18	LIPE	LIPE:NM_005357:exon6:c.G2062A:p.E688K
15:55912965:C:A	MetaPanNET-17	PRTG	PRTG:NM_173814:exon19:c.G3094T:p.G1032X
3:47284551:G:A	MetaPanNET-15	KIF9	KIF9:NM_182902:exon16:c.C1699T:p.R567C\x3bKIF9:NM_001134878:exon17:c.C1699T:p.R567C
15:62306142:A:T	MetaPanNET-15	VPS13C	VPS13C:NM_017684:exon8:c.T605A:p.I202N\x3bVPS13C:NM_018080:exon8:c.T605A:p.I202N\x3bVPS13C:NM_001018088:exon10:c.T734A:p.I245N\x3bVPS13C:NM_020821
3:195509182:G:T	MetaPanNET-10	MUC4	MUC4:NM_018406:exon2:c.C9269A:p.P3090H
5:140720456:C:G	MetaPanNET-20	PCDHGA2	PCDHGA2:NM_018915:exon1:c.C1918G:p.Q640E\x3bPCDHGA2:NM_032009:exon1:c.C1918G:p.Q640E

14:31782251:C:A	MetaPanNET-5	HEATR5A	HEATR5A:NM_015473:exon28:c.G4364T:p.R1455I
2:233633259:G:A	MetaPanNET-2	KCNJ13	KCNJ13:NM_001172417:exon3:c.C485T:p.T162M\x3bKCNJ13:NM_002242:exon3:c.C725T:p.T242M
14:94420789:C:A	MetaPanNET-5	ASB2	ASB2:NM_016150:exon2:c.G208T:p.E70X\x3bASB2:NM_001202429:exon4:c.G352T:p.E118X
3:195508476:G:C	MetaPanNET-4	MUC4	MUC4:NM_018406:exon2:c.C9975G:p.H3325Q
3:194147849:CA:C	MetaPanNET-5	ATP13A3	ATP13A3:NM_024524:exon28:c.3079delT:p.W1027fs
3:195512690:G:C	MetaPanNET-4	MUC4	MUC4:NM_018406:exon2:c.C5761G:p.L1921V
X:155169442:C:A	MetaPanNET-5	VAMP7	VAMP7:NM_001185183:exon6:c.C511A:p.H171N
20:33734701:TGTC:T	MetaPanNET-13	EDEM2	EDEM2:NM_018217:exon2:c.142_144del:p.48_48del
18:11752923:G:T	MetaPanNET-8	GNAL	GNAL:NM_182978:exon2:c.G448T:p.E150X\x3bGNAL:NM_001142339:exon3:c.G217T:p.E73X\x3bGNAL:NM_001261443:exon3:c.G217T:p.E73X
17:47895308:C:T	MetaPanNET-13	KAT7	KAT7:NM_001199158:exon6:c.C583T:p.R195C\x3bKAT7:NM_001199156:exon7:c.C673T:p.R225C\x3bKAT7:NM_001199157:exon7:c.C760T:p.R254C\x3bKAT7:NM_00119915
16:68324373:T:A	MetaPanNET-16	SLC7A6	SLC7A6:NM_003983:exon5:c.T724A:p.S242T\x3bSLC7A6:NM_001076785:exon6:c.T724A:p.S242T
19:4512315:C:T	MetaPanNET-2	PLIN4	PLIN4:NM_001080400:exon3:c.G1615A:p.G539S
3:195506363:C:T	MetaPanNET-15	MUC4	MUC4:NM_018406:exon2:c.G12088A:p.A4030T
21:46924434:A:C	MetaPanNET-2	COL18A1	.
6:33287156:C:A	MetaPanNET-8	DAXX	.
3:126740965:G:A	MetaPanNET-4	PLXNA1	PLXNA1:NM_032242:exon21:c.G4076A:p.G1359E
17:74160838:C:G	MetaPanNET-14	RNF157	RNF157:NM_052916:exon8:c.G711C:p.Q237H
1:3416277:C:A	MetaPanNET-11	MEGF6	MEGF6:NM_001409:exon23:c.G2840T:p.C947F
12:113730807:C:T	MetaPanNET-20	TPCN1	TPCN1:NM_001301214:exon25:c.C1978T:p.R660W\x3bTPCN1:NM_017901:exon26:c.C2182T:p.R728W\x3bTPCN1:NM_001143819:exon27:c.C2398T:p.R800W
19:54080841:G:A	MetaPanNET-5	ZNF331	ZNF331:NM_001253801:exon5:c.G1027A:p.V343I\x3bZNF331:NM_001079906:exon6:c.G1027A:p.V343I\x3bZNF331:NM_001079907:exon6:c.G1027A:p.V343I\x3bZNF331:NI
3:195509108:T:A	MetaPanNET-4	MUC4	MUC4:NM_018406:exon2:c.A9343T:p.T3115S
16:71483578:A:G	MetaPanNET-18	ZNF23	ZNF23:NM_001304494:exon3:c.T176C:p.V59A\x3bZNF23:NM_001304492:exon5:c.T350C:p.V117A\x3bZNF23:NM_145911:exon6:c.T350C:p.V117A\x3bZNF23:NM_00130449
12:22063235:A:T	MetaPanNET-1	ABCC9	ABCC9:NM_005691:exon8:c.T1176A:p.Y392X\x3bABCC9:NM_020297:exon8:c.T1176A:p.Y392X
5:140482562:C:T	MetaPanNET-5	PCDHB3	PCDHB3:NM_018937:exon1:c.C2329T:p.Q777X
6:32609297:T:G	MetaPanNET-16	HLA-DQA1	HLA-DQA1:NM_002122:exon2:c.T293G:p.I98S
11:64572060:G:A	MetaPanNET-3	MEN1	MEN1:NM_000244:exon10:c.C1594T:p.R532X\x3bMEN1:NM_130799:exon10:c.C1579T:p.R527X\x3bMEN1:NM_130800:exon10:c.C1594T:p.R532X\x3bMEN1:NM_130801:ex
22:29885602:A:C	MetaPanNET-13	NEFH	NEFH:NM_021076:exon4:c.A1973C:p.E658A
X:150349560:C:T	MetaPanNET-4	GPR50	GPR50:NM_004224:exon2:c.C1505T:p.T502I
3:195511534:T:A	MetaPanNET-5	MUC4	MUC4:NM_018406:exon2:c.A6917T:p.H2306L
13:25479645:G:C	MetaPanNET-17	CENPJ	CENPJ:NM_018451:exon7:c.C2531G:p.P844R
11:64577422:TGACGCGGTTGA:T	MetaPanNET-5	MEN1	MEN1:NM_000244:exon2:c.149_159del:p.V50fs\x3bMEN1:NM_130799:exon2:c.149_159del:p.V50fs\x3bMEN1:NM_130800:exon2:c.149_159del:p.V50fs\x3bMEN1:NM_13(
1:17086088:G:C	MetaPanNET-6	MST1L	MST1L:NM_001271733:exon7:c.C809G:p.A270G
12:132834310:C:A	MetaPanNET-17	GALNT9	GALNT9:NM_001122636:exon5:c.G877T:p.G293C
6:109282798:G:A	MetaPanNET-5	ARMC2	ARMC2:NM_001286609:exon13:c.G1444A:p.E482K\x3bARMC2:NM_032131:exon14:c.G1939A:p.E647K
9:2081911:A:G	MetaPanNET-12	SMARCA2	SMARCA2:NM_001289396:exon15:c.A2264G:p.K755R\x3bSMARCA2:NM_001289397:exon15:c.A2264G:p.K755R\x3bSMARCA2:NM_003070:exon15:c.A2264G:p.K755R\x3bSI
3:58090867:TG:T	MetaPanNET-6	FLNB	FLNB:NM_001164317:exon11:c.1672delG:p.G558fs\x3bFLNB:NM_001164318:exon11:c.1672delG:p.G558fs\x3bFLNB:NM_001164319:exon11:c.1672delG:p.G558fs\x3bFLNB:
10:55996618:G:T	MetaPanNET-17	PCDH15	PCDH15:NM_001142767:exon8:c.C839A:p.S280X\x3bPCDH15:NM_001142768:exon8:c.C884A:p.S295X\x3bPCDH15:NM_001142773:exon8:c.C884A:p.S295X\x3bPCDH15:NM
17:74395806:T:A	MetaPanNET-18	UBE2O	UBE2O:NM_022066:exon9:c.A1352T:p.E451V
3:195515052:G:C	MetaPanNET-12	MUC4	MUC4:NM_018406:exon2:c.C3399G:p.H1133Q
5:140789433:G:T	MetaPanNET-5	PCDHGB6	PCDHGB6:NM_018926:exon1:c.G1664T:p.R555L\x3bPCDHGB6:NM_032100:exon1:c.G1664T:p.R555L
3:195508668:G:C	MetaPanNET-1	MUC4	MUC4:NM_018406:exon2:c.C9783G:p.D3261E
19:11130283:G:T	MetaPanNET-5	SMARCA4	SMARCA4:NM_001128845:exon17:c.G2522T:p.R841I\x3bSMARCA4:NM_001128846:exon17:c.G2522T:p.R841I\x3bSMARCA4:NM_001128847:exon17:c.G2522T:p.R841I\x3b!
7:100550510:A:T	MetaPanNET-13	MUC3A	MUC3A:NM_005960:exon2:c.A1091T:p.E364V
3:184104310:G:A	MetaPanNET-18	CHRD	CHRD:NM_001304472:exon16:c.G1963A:p.G655R\x3bCHRD:NM_001304474:exon16:c.G853A:p.G285R\x3bCHRD:NM_003741:exon16:c.G1963A:p.G655R\x3bCHRD:NM_001
20:36488419:G:T	MetaPanNET-5	CTNNBL1	CTNNBL1:NM_030877:exon14:c.G1511T:p.C504F\x3bCTNNBL1:NM_001281495:exon15:c.G1430T:p.C477F
10:7614318:C:A	MetaPanNET-2	ITIH5	ITIH5:NM_001001851:exon12:c.G2076T:p.M692I
2:214727222:C:T	MetaPanNET-11	SPAG16	SPAG16:NM_024532:exon11:c.C1084T:p.P362S
10:35928806:C:A	MetaPanNET-11	FZD8	FZD8:NM_031866:exon1:c.G1552T:p.D518Y
21:11058316:G:T	MetaPanNET-5	BAGE2\x3bBAGE3	BAGE3:NM_182481:exon3:c.C124A:p.H42N\x3bBAGE2:NM_182482:exon3:c.C124A:p.H42N
19:40541423:CTACA:C	MetaPanNET-15	ZNF780B	ZNF780B:NM_001005851:exon5:c.1339_1342del:p.C447fs
4:6925490:G:A	MetaPanNET-16	TBC1D14	TBC1D14:NM_001113361:exon2:c.G374A:p.R125H\x3bTBC1D14:NM_020773:exon2:c.G374A:p.R125H
6:86328541:A:AT	MetaPanNET-4	SYNCRIP	SYNCRIP:NM_001159673:exon9:c.980dupA:p.N327fs\x3bSYNCRIP:NM_001159675:exon9:c.1169dupA:p.N390fs\x3bSYNCRIP:NM_001159676:exon9:c.1274dupA:p.N425fs\x3
11:30033412:C:G	MetaPanNET-17	KCNA4	KCNA4:NM_002233:exon2:c.G814C:p.D272H
2:152515622:G:A	MetaPanNET-3	NEB	NEB:NM_001164507:exon47:c.C6032T:p.P2011L\x3bNEB:NM_001164508:exon47:c.C6032T:p.P2011L\x3bNEB:NM_001271208:exon47:c.C6032T:p.P2011L\x3bNEB:NM_004!
X:1585081:C:T	MetaPanNET-17	P2RY8	P2RY8:NM_178129:exon2:c.G371A:p.G124E
22:38529021:C:A	MetaPanNET-5	PLA2G6	.
1:234593420:C:T	MetaPanNET-2	TARBP1	TARBP1:NM_005646:exon9:c.G1715A:p.W572X
11:85375244:T:C	MetaPanNET-8	CREBZF	CREBZF:NM_001039618:exon1:c.A676G:p.K226E
6:168376927:G:C	MetaPanNET-13	HGC6.3	HGC6.3:NM_001129895:exon1:c.C406G:p.P136A
13:77818083:G:C	MetaPanNET-4	MYCBP2	MYCBP2:NM_015057:exon16:c.C2385G:p.I795M
7:101988845:C:A	MetaPanNET-12	SPDYE6	SPDYE6:NM_001146210:exon6:c.G1028T:p.R343L
6:36981534:G:A	MetaPanNET-3	FGD2	FGD2:NM_173558:exon5:c.G677A:p.R226H
11:72404474:G:A	MetaPanNET-16	ARAP1	ARAP1:NM_001135190:exon26:c.C2932T:p.R978C\x3bARAP1:NM_015242:exon27:c.C3115T:p.R1039C\x3bARAP1:NM_001040118:exon29:c.C3850T:p.R1284C
X:230875:C:G	MetaPanNET-10	GTPBP6	UNKNOWN
X:76778789:CTTCTTCTTTGTG:C	MetaPanNET-7	ATRX	ATRX:NM_138270:exon30:c.6664_6675del:p.2222_2225del\x3bATRX:NM_000489:exon31:c.6778_6789del:p.2260_2263del
2:212295786:C:A	MetaPanNET-2	ERBB4	ERBB4:NM_001042599:exon21:c.G2527T:p.D843Y\x3bERBB4:NM_005235:exon21:c.G2527T:p.D843Y
3:183951501:C:G	MetaPanNET-20	VWA5B2	VWA5B2:NM_138345:exon4:c.C668G:p.T223S
11:64111357:C:A	MetaPanNET-3	CCDC88B	CCDC88B:NM_032251:exon13:c.C1426A:p.Q476K
17:78061517:C:T	MetaPanNET-11	CCDC40	CCDC40:NM_001243342:exon15:c.C2561T:p.S854L\x3bCCDC40:NM_017950:exon15:c.C2561T:p.S854L
19:11943243:C:G	MetaPanNET-12	ZNF440	ZNF440:NM_152357:exon4:c.C1252G:p.H418D
16:1550157:C:A	MetaPanNET-5	TELO2	TELO2:NM_016111:exon7:c.C994A:p.L332M
1:45796870:G:A	MetaPanNET-5	MUTYH	MUTYH:NM_001048171:exon14:c.C1418T:p.S473F\x3bMUTYH:NM_001048172:exon14:c.C1379T:p.S460F\x3bMUTYH:NM_001048173:exon14:c.C1376T:p.S459F\x3bMUTYH
12:53682047:G:A	MetaPanNET-5	ESPL1	ESPL1:NM_012291:exon19:c.G4468A:p.E1490K
2:26461999:C:T	MetaPanNET-16	HADHA	HADHA:NM_000182:exon2:c.G80A:p.R27H
3:4768820:C:A	MetaPanNET-5	ITPR1	ITPR1:NM_001168272:exon41:c.C5138A:p.P1713Q
12:122246114:G:T	MetaPanNET-17	SETD1B	SETD1B:NM_015048:exon4:c.G545T:p.G182V
16:52497943:G:A	MetaPanNET-5	TOX3	TOX3:NM_001080430:exon3:c.C311T:p.P104L\x3bTOX3:NM_001146188:exon4:c.C296T:p.P99L
15:48773869:C:T	MetaPanNET-5	FBN1	FBN1:NM_000138:exon32:c.G3947A:p.G1316E
12:30906324:C:A	MetaPanNET-12	CAPRIN2	CAPRIN2:NM_001002259:exon1:c.G374T:p.G125V\x3bCAPRIN2:NM_001206856:exon1:c.G374T:p.G125V\x3bCAPRIN2:NM_023925:exon1:c.G374T:p.G125V\x3bCAPRIN2:NM
6:152680550:G:A	MetaPanNET-18	SYNE1	SYNE1:NM_033071:exon65:c.C10364T:p.T3455I\x3bSYNE1:NM_182961:exon65:c.C10343T:p.T3448I
16:68267908:C:A	MetaPanNET-20	ESRP2	ESRP2:NM_024939:exon3:c.G430T:p.A144S
18:19348598:C:T	MetaPanNET-1	MIB1	MIB1:NM_020774:exon3:c.C416T:p.S139F
1:173604925:G:A	MetaPanNET-2	LOC730159	LOC730159:NM_001195190:exon1:c.G265A:p.V89I
12:46244018:A:T	MetaPanNET-9	ARID2	ARID2:NM_152641:exon15:c.A2112T:p.Q704H
3:77576567:T:A	MetaPanNET-14	ROBO2	.
6:78538672:CAG:C	MetaPanNET-1	MEI4	MEI4:NM_001282136:exon3:c.794_795del:p.Q265fs
12:40882545:C:T	MetaPanNET-15	MUC19	UNKNOWN
6:109771594:G:A	MetaPanNET-3	MICAL1	MICAL1:NM_001286613:exon8:c.C1157T:p.T386M\x3bMICAL1:NM_022765:exon8:c.C1100T:p.T367M
12:9312546:TG:T	MetaPanNET-16	PZP	PZP:NM_002864:exon25:c.3124delC:p.Q1042fs
10:35437325:A:T	MetaPanNET-17	CREM	CREM:NM_001881:exon2:c.A26T:p.Q9L\x3bCREM:NM_183011:exon2:c.A74T:p.Q25L\x3bCREM:NM_183012:exon2:c.A74T:p.Q25L\x3bCREM:NM_183060:exon2:c.A26T:p.Q9
12:50482334:C:T	MetaPanNET-16	SMARCD1	SMARCD1:NM_003076:exon6:c.C685T:p.Q229X\x3bSMARCD1:NM_139071:exon6:c.C685T:p.Q229X
19:46915764:C:A	MetaPanNET-5	CCDC8	CCDC8:NM_032040:exon1:c.G304T:p.A102S
22:18379121:A:T	MetaPanNET-5	MICAL3	MICAL3:NM_001122731:exon8:c.T1213A:p.W405R\x3bMICAL3:NM_001136004:exon8:c.T1213A:p.W405R\x3bMICAL3:NM_015241:exon9:c.T1213A:p.W405R
4:79205558:G:C	MetaPanNET-13	FRAS1	.
3:121200635:C:T	MetaPanNET-6	POLQ	POLQ:NM_199420:exon19:c.G5995A:p.D1999N
4:79455668:C:T	MetaPanNET-20	FRAS1	FRAS1:NM_025074:exon71:c.C10991T:p.T3664I
6:160211646:GTT:G	MetaPanNET-1	MRPL18	MRPL18:NM_014161:exon1:c.28_29del:p.L10fs
16:85953731:T:A	MetaPanNET-8	IRF8	IRF8:NM_002163:exon8:c.T1005A:p.Y335X
11:92087299:G:T	MetaPanNET-14	FAT3	FAT3:NM_001008781:exon1:c.G2021T:p.G674V
3:121527787:C:T	MetaPanNET-6	IQCB1	IQCB1:NM_001023570:exon6:c.G463A:p.G155S\x3bIQCB1:NM_001023571:exon6:c.G463A:p.G155S
4:171009578:T:A	MetaPanNET-3	AADAT	AADAT:NM_016228:exon2:c.A205T:p.K69X\x3bAADAT:NM_001286682:exon3:c.A217T:p.K73X\x3bAADAT:NM_001286683:exon3:c.A205T:p.K69X\x3bAADAT:NM_182662:ex
10:71018637:A:G	MetaPanNET-16	HKDC1	HKDC1:NM_025130:exon15:c.A2138G:p.D713G
6:112671532:G:A	MetaPanNET-17	RFPL4B	RFPL4B:NM_001013734:exon3:c.G622A:p.G208R
8:24157580:C:A	MetaPanNET-14	ADAM28	ADAM28:NM_001304351:exon2:c.C140A:p.P47Q\x3bADAM28:NM_014265:exon2:c.C140A:p.P47Q\x3bADAM28:NM_021777:exon2:c.C140A:p.P47Q
17:26684392:T:C	MetaPanNET-5	POLDIP2	UNKNOWN
4:74853310:AG:A	MetaPanNET-10	PPBP	PPBP:NM_002704:exon2:c.207delC:p.T69fs
X:96167385:C:T	MetaPanNET-6	DIAPH2	DIAPH2:NM_006729:exon6:c.C646T:p.L216F\x3bDIAPH2:NM_007309:exon6:c.C646T:p.L216F
10:90767463:G:C	MetaPanNET-14	FAS	FAS:NM_000043:exon3:c.G203C:p.R68T\x3bFAS:NM_152871:exon3:c.G203C:p.R68T\x3bFAS:NM_152872:exon3:c.G203C:p.R68T
2:27306220:G:A	MetaPanNET-15	EMILIN1	EMILIN1:NM_007046:exon4:c.G1781A:p.R594H
1:190423810:A:T	MetaPanNET-15	BRINP3	BRINP3:NM_199051:exon2:c.T211A:p.F71I
6:136593131:A:C	MetaPanNET-18	BCLAF1	.
X:10176292:C:T	MetaPanNET-17	CLCN4	CLCN4:NM_001256944:exon7:c.C769T:p.R257C\x3bCLCN4:NM_001830:exon9:c.C1051T:p.R351C
20:58470634:C:G	MetaPanNET-11	SYCP2	SYCP2:NM_014258:exon19:c.G1523C:p.R508T
9:140331068:G:A	MetaPanNET-12	ENTPD8	ENTPD8:NM_001033113:exon6:c.C691T:p.R231C\x3bENTPD8:NM_198585:exon6:c.C691T:p.R231C
11:124500714:C:CTGAT	MetaPanNET-18	TBRG1	TBRG1:NM_032811:exon7:c.910_911insTGAT:p.L304fs
12:13715788:G:A	MetaPanNET-8	GRIN2B	GRIN2B:NM_000834:exon13:c.C4384T:p.P1462S
6:85446652:G:C	MetaPanNET-9	TBX18	TBX18:NM_001080508:exon8:c.C1575G:p.S525R

18:11689658:C:CG	MetaPanNET-8	GNAL	GNAL:NM_182978:exon1:c.97dupG:p.P32fs
3:121351328:G:GGCTCAGGCTCAG	MetaPanNET-7	HCLS1	HCLS1:NM_001292041:exon11:c.979_980insCTGAGCCTGAGC:p.P327delinsPEPEP\x3bHCLS1:NM_005335:exon12:c.1090_1091insCTGAGCCTGAGC:p.P364delinsPEPEP
3:47142949:C:A	MetaPanNET-17	SETD2	SETD2:NM_014159:exon8:c.G5014T:p.G1672X
3:112358744:C:G	MetaPanNET-5	CCDC80	CCDC80:NM_199511:exon2:c.G9C:p.W3C\x3bCCDC80:NM_199512:exon2:c.G9C:p.W3C
19:45888874:C:A	MetaPanNET-5	PPP1R13L	PPP1R13L:NM_001142502:exon11:c.G2194T:p.E732X\x3bPPP1R13L:NM_006663:exon11:c.G2194T:p.E732X
19:9021161:C:T	MetaPanNET-7	MUC16	MUC16:NM_024690:exon19:c.G37162A:p.V12388I
9:37518180:T:C	MetaPanNET-17	FBXO10	FBXO10:NM_012166:exon9:c.A2456G:p.N819S
1:103352377:G:T	MetaPanNET-7	COL11A1	COL11A1:NM_080630:exon61:c.C4496A:p.P1499H\x3bCOL11A1:NM_001190709:exon62:c.C4727A:p.P1576H\x3bCOL11A1:NM_001854:exon63:c.C4844A:p.P1615H\x3bCOL
16:1272793:C:T	MetaPanNET-13	TPSG1	TPSG1:NM_012467:exon4:c.G370A:p.G124R
1:67889976:AT:A	MetaPanNET-14	SERBP1	SERBP1:NM_001018067:exon5:c.724delA:p.I242fs\x3bSERBP1:NM_001018068:exon5:c.706delA:p.I236fs
3:164905688:G:C	MetaPanNET-6	SLITRK3	SLITRK3:NM_014926:exon2:c.C2931G:p.F977L
19:55174472:T:C	MetaPanNET-13	LILRB4	LILRB4:NM_001278429:exon1:c.T110C:p.L37P
5:126676229:T:G	MetaPanNET-13	MEGF10	MEGF10:NM_001256545:exon4:c.T226G:p.Y76D\x3bMEGF10:NM_032446:exon5:c.T226G:p.Y76D
20:60897149:C:T	MetaPanNET-6	LAMA5	LAMA5:NM_005560:exon48:c.G6422A:p.R2141H
2:97818241:T:G	MetaPanNET-13	ANKRD36	ANKRD36:NM_001164315:exon14:c.T1163G:p.V388G
12:121175264:G:A	MetaPanNET-15	ACADS	ACADS:NM_000017:exon4:c.G466A:p.E156K\x3bACADS:NM_001302554:exon4:c.G466A:p.E156K
13:113201818:G:GTGCGTGGGAAAGACG	MetaPanNET-12	TUBGCP3	TUBGCP3:NM_001286279:exon10:c.1283_1284insCGTCTTTCCCACGCA:p.R428delinsRVFPTH
1:173949981:G:C	MetaPanNET-11	RC3H1	RC3H1:NM_001300850:exon5:c.C935G:p.S312C\x3bRC3H1:NM_001300851:exon5:c.C935G:p.S312C\x3bRC3H1:NM_001300852:exon5:c.C935G:p.S312C\x3bRC3H1:NM_172
4:186065977:T:G	MetaPanNET-17	SLC25A4	SLC25A4:NM_001151:exon2:c.T171G:p.C57W
7:93516654:C:A	MetaPanNET-10	TFPI2	TFPI2:NM_001271003:exon4:c.G517T:p.D173Y\x3bTFPI2:NM_006528:exon4:c.G550T:p.D184Y
16:22086950:T:G	MetaPanNET-17	C16orf52	C16orf52:NM_001164579:exon2:c.T249G:p.C83W
8:145639801:G:T	MetaPanNET-5	SLC39A4	SLC39A4:NM_017767:exon5:c.C919A:p.L307M\x3bSLC39A4:NM_130849:exon6:c.C994A:p.L332M
20:36776488:C:A	MetaPanNET-5	TGM2	TGM2:NM_004613:exon5:c.G556T:p.E186X\x3bTGM2:NM_198951:exon5:c.G556T:p.E186X
3:195509717:G:T	MetaPanNET-12	MUC4	MUC4:NM_018406:exon2:c.C8734A:p.P2912T
15:23685913:G:C	MetaPanNET-7	GOLGA6L2	GOLGA6L2:NM_001304388:exon8:c.C1709G:p.A570G
1:200881035:C:T	MetaPanNET-20	C1orf106	C1orf106:NM_001142569:exon9:c.C1414T:p.R472C\x3bC1orf106:NM_018265:exon9:c.C1711T:p.R571C
13:46629986:T:G	MetaPanNET-10	CPB2	.
12:56092630:C:T	MetaPanNET-11	ITGA7	ITGA7:NM_001144996:exon6:c.G874A:p.A292T\x3bITGA7:NM_001144997:exon6:c.G583A:p.A195T\x3bITGA7:NM_002206:exon6:c.G862A:p.A288T
18:30804860:C:T	MetaPanNET-18	CCDC178	CCDC178:NM_001105528:exon16:c.G1697A:p.R566Q\x3bCCDC178:NM_198995:exon17:c.G1697A:p.R566Q
7:129939153:A:G	MetaPanNET-9	CPA4	CPA4:NM_001163446:exon3:c.A194G:p.D65G\x3bCPA4:NM_016352:exon3:c.A194G:p.D65G
16:22153010:G:A	MetaPanNET-12	VWA3A	VWA3A:NM_173615:exon24:c.G2491A:p.V831M
1:207680071:G:A	MetaPanNET-12	CR1	CR1:NM_000573:exon3:c.G314A:p.R105H\x3bCR1:NM_000651:exon3:c.G314A:p.R105H
5:87492126:G:A	MetaPanNET-7	TMEM161B	TMEM161B:NM_153354:exon12:c.C1366T:p.R456X\x3bTMEM161B:NM_001289008:exon13:c.C1333T:p.R445X
19:56953985:T:A	MetaPanNET-2	ZNF667	ZNF667:NM_022103:exon5:c.A379T:p.K127X
1:201179721:A:G	MetaPanNET-4	IGFN1	IGFN1:NM_001164586:exon12:c.A5700G:p.I1900M
3:130427138:G:A	MetaPanNET-4	PIK3R4	PIK3R4:NM_014602:exon10:c.C2530T:p.R844W
2:88879037:T:A	MetaPanNET-9	EIF2AK3	EIF2AK3:NM_004836:exon11:c.A1885T:p.R629W
16:81242149:T:C	MetaPanNET-17	PKD1L2	PKD1L2:NM_001076780:exon4:c.A707G:p.N236S
12:124856848:G:A	MetaPanNET-11	NCOR2	NCOR2:NM_001077261:exon21:c.C2473T:p.Q825X\x3bNCOR2:NM_001206654:exon21:c.C2473T:p.Q825X\x3bNCOR2:NM_006312:exon22:c.C2527T:p.Q843X
11:47660301:T:A	MetaPanNET-3	MTCH2	MTCH2:NM_014342:exon3:c.A229T:p.R77X
X:73641827:A:C	MetaPanNET-7	SLC16A2	SLC16A2:NM_006517:exon1:c.A355C:p.N119H
11:1017195:A:T	MetaPanNET-12	MUC6	MUC6:NM_005961:exon31:c.T5606A:p.I1869N
3:47098559:G:A	MetaPanNET-1	SETD2	SETD2:NM_014159:exon15:c.C6715T:p.Q2239X
7:135258432:C:T	MetaPanNET-13	NUP205	NUP205:NM_015135:exon3:c.C202T:p.Q68X
20:49510244:G:T	MetaPanNET-20	ADNP	ADNP:NM_001282532:exon4:c.C1007A:p.S336Y\x3bADNP:NM_181442:exon4:c.C1007A:p.S336Y\x3bADNP:NM_015339:exon5:c.C1007A:p.S336Y\x3bADNP:NM_001282531:
2:171687556:G:A	MetaPanNET-12	GAD1	GAD1:NM_000817:exon5:c.G401A:p.R134H\x3bGAD1:NM_013445:exon5:c.G401A:p.R134H
16:80638380:C:T	MetaPanNET-17	CDYL2	CDYL2:NM_152342:exon7:c.G1426A:p.E476K
12:102130837:C:G	MetaPanNET-5	SYCP3	SYCP3:NM_001177948:exon4:c.G213C:p.Q71H\x3bSYCP3:NM_001177949:exon4:c.G213C:p.Q71H\x3bSYCP3:NM_153694:exon4:c.G213C:p.Q71H
X:71351047:T:G	MetaPanNET-12	RGAG4	RGAG4:NM_001024455:exon1:c.A344C:p.D115A
6:56496189:T:A	MetaPanNET-6	DST	.
X:50350982:G:A	MetaPanNET-5	SHROOM4	SHROOM4:NM_020717:exon6:c.C3160T:p.R1054C
1:156255543:G:A	MetaPanNET-5	TMEM79	TMEM79:NM_032323:exon2:c.G526A:p.E176K
5:154307037:CT:C	MetaPanNET-14	GEMIN5	GEMIN5:NM_001252156:exon7:c.984delA:p.E328fs\x3bGEMIN5:NM_015465:exon7:c.987delA:p.E329fs
2:120861676:C:T	MetaPanNET-16	EPB41L5	EPB41L5:NM_001184938:exon17:c.C1378T:p.Q460X\x3bEPB41L5:NM_001184939:exon17:c.C1378T:p.Q460X
3:39544220:A:T	MetaPanNET-8	MOBP	MOBP:NM_001278323:exon2:c.A401T:p.E134V\x3bMOBP:NM_001278322:exon4:c.A473T:p.E158V
7:101988863:C:T	MetaPanNET-15	SPDYE6	SPDYE6:NM_001146210:exon6:c.G1010A:p.R337H
4:144442640:A:G	MetaPanNET-12	SMARCA5	SMARCA5:NM_003601:exon3:c.A311G:p.H104R
2:86682301:C:A	MetaPanNET-5	KDM3A	KDM3A:NM_001146688:exon5:c.C547A:p.L183I\x3bKDM3A:NM_018433:exon5:c.C547A:p.L183I
1:148025797:T:A	MetaPanNET-7	NBPF8	NBPF8:NM_001037501:exon7:c.A1055T:p.K352M
4:27009169:GA:G	MetaPanNET-9	STIM2	STIM2:NM_001169117:exon8:c.997delA:p.K333fs\x3bSTIM2:NM_001169118:exon8:c.997delA:p.K333fs\x3bSTIM2:NM_020860:exon8:c.997delA:p.K333fs
15:24921522:G:T	MetaPanNET-15	NPAP1	NPAP1:NM_018958:exon1:c.G508T:p.E170X
1:42654419:T:C	MetaPanNET-9	FOXJ3	FOXJ3:NM_001198852:exon10:c.A1532G:p.H511R\x3bFOXJ3:NM_001198850:exon11:c.A1634G:p.H545R\x3bFOXJ3:NM_014947:exon11:c.A1634G:p.H545R\x3bFOXJ3:NM_
3:14565935:A:C	MetaPanNET-9	GRIP2	UNKNOWN
12:40882402:G:C	MetaPanNET-4	MUC19	UNKNOWN
1:89599108:C:G	MetaPanNET-14	GBP7	GBP7:NM_207398:exon10:c.G1495C:p.E499Q
5:94876520:C:T	MetaPanNET-10	TTC37	TTC37:NM_014639:exon8:c.G417A:p.W139X
1:186024779:G:A	MetaPanNET-18	HMCN1	HMCN1:NM_031935:exon45:c.G7117A:p.D2373N
3:126360948:C:A	MetaPanNET-12	TXNRD3	UNKNOWN
11:56409729:T:A	MetaPanNET-10	OR5AP2	OR5AP2:NM_001002925:exon1:c.A187T:p.T63S
1:240370952:C:T	MetaPanNET-4	FMN2	FMN2:NM_020066:exon5:c.C2840T:p.P947L\x3bFMN2:NM_001305424:exon6:c.C2852T:p.P951L
11:1269557:C:T	MetaPanNET-16	MUC5B	MUC5B:NM_002458:exon31:c.C11447T:p.T3816M
1:103544290:GA:G	MetaPanNET-10	COL11A1	COL11A1:NM_001190709:exon3:c.411delT:p.F137fs\x3bCOL11A1:NM_001854:exon3:c.411delT:p.F137fs\x3bCOL11A1:NM_080629:exon3:c.411delT:p.F137fs\x3bCOL11A1:N
2:207824388:C:T	MetaPanNET-16	CPO	CPO:NM_173077:exon5:c.C406T:p.R136C
5:148563113:CACA:C	MetaPanNET-2	ABLIM3	ABLIM3:NM_001301015:exon2:c.113_115del:p.38_39del\x3bABLIM3:NM_001301018:exon2:c.113_115del:p.38_39del\x3bABLIM3:NM_001301027:exon2:c.58_60del:p.20_
15:23685043:A:G	MetaPanNET-12	GOLGA6L2	GOLGA6L2:NM_001304388:exon8:c.T2579C:p.V860A
7:100550552:A:T	MetaPanNET-3	MUC3A	MUC3A:NM_005960:exon2:c.A1133T:p.E378V
3:47747992:C:A	MetaPanNET-5	SMARCC1	SMARCC1:NM_003074:exon10:c.G947T:p.R316I
11:66392438:C:T	MetaPanNET-10	RBM14	RBM14:NM_006328:exon2:c.C1091T:p.S364F
19:34843769:C:A	MetaPanNET-18	KIAA0355	KIAA0355:NM_014686:exon14:c.C3122A:p.P1041Q
22:32180858:G:A	MetaPanNET-11	DEPDC5	DEPDC5:NM_001136029:exon9:c.G621A:p.W207X\x3bDEPDC5:NM_014662:exon9:c.G621A:p.W207X\x3bDEPDC5:NM_001007188:exon10:c.G621A:p.W207X\x3bDEPDC5:N
10:117849387:C:A	MetaPanNET-17	GFRA1	GFRA1:NM_145793:exon7:c.G1047T:p.W349C\x3bGFRA1:NM_001145453:exon8:c.G1047T:p.W349C\x3bGFRA1:NM_005264:exon9:c.G1062T:p.W354C
2:228884219:C:T	MetaPanNET-17	SPHKAP	SPHKAP:NM_001142644:exon7:c.G1351A:p.V451I\x3bSPHKAP:NM_030623:exon7:c.G1351A:p.V451I
12:40881029:A:G	MetaPanNET-2	MUC19	UNKNOWN
6:38831681:G:T	MetaPanNET-17	DNAH8	DNAH8:NM_001206927:exon45:c.G6343T:p.D2115Y
16:30745279:G:A	MetaPanNET-17	SRCAP	SRCAP:NM_006662:exon30:c.G6559A:p.G2187R
20:23016500:G:A	MetaPanNET-5	SSTR4	SSTR4:NM_001052:exon1:c.G380A:p.G127D
4:103645126:T:TA	MetaPanNET-8	MANBA	.
11:6621951:C:T	MetaPanNET-5	RRP8	RRP8:NM_015324:exon5:c.G1102A:p.G368R
12:44167781:C:T	MetaPanNET-16	IRAK4	IRAK4:NM_001145258:exon4:c.C293T:p.T98I\x3bIRAK4:NM_001145257:exon5:c.C293T:p.T98I\x3bIRAK4:NM_001145256:exon6:c.C293T:p.T98I\x3bIRAK4:NM_016123:exon
7:80456740:C:G	MetaPanNET-12	SEMA3C	.
3:195513874:A:G	MetaPanNET-6	MUC4	MUC4:NM_018406:exon2:c.T4577C:p.L1526P
9:136219616:G:T	MetaPanNET-5	SURF1	SURF1:NM_001280787:exon5:c.C194A:p.T65N\x3bSURF1:NM_003172:exon6:c.C521A:p.T174N
16:22545743:TTCCACCCTCAGC:T	MetaPanNET-1	NPIPB5	NPIPB5:NM_001135865:exon7:c.1440_1451del:p.480_484del
4:86871:G:T	MetaPanNET-17	ZNF595	UNKNOWN
4:81188120:C:T	MetaPanNET-14	FGF5	FGF5:NM_004464:exon1:c.C142T:p.Q48X\x3bFGF5:NM_033143:exon1:c.C142T:p.Q48X
1:151337465:C:T	MetaPanNET-4	SELENBP1	SELENBP1:NM_001258288:exon10:c.G1007A:p.R336H\x3bSELENBP1:NM_001258289:exon11:c.G1319A:p.R440H\x3bSELENBP1:NM_003944:exon11:c.G1193A:p.R398H
12:81064150:T:C	MetaPanNET-16	PTPRQ	PTPRQ:NM_001145026:exon39:c.T5965C:p.C1989R
20:44333165:A:G	MetaPanNET-17	WFDC10B\x3bWFDC13	WFDC10B:NM_172131:exon2:c.T110C:p.L37P
6:33288701:G:C	MetaPanNET-3	DAXX	DAXX:NM_001254717:exon2:c.C626G:p.P209R\x3bDAXX:NM_001141969:exon3:c.C851G:p.P284R\x3bDAXX:NM_001141970:exon3:c.C887G:p.P296R\x3bDAXX:NM_001350:
15:52194098:T:A	MetaPanNET-10	TMOD3	TMOD3:NM_014547:exon9:c.T889A:p.L297M
1:19632579:T:C	MetaPanNET-15	AKR7A2	AKR7A2:NM_003689:exon6:c.A851G:p.Y284C
5:42807036:A:G	MetaPanNET-11	SEPP1	UNKNOWN
21:30433870:C:T	MetaPanNET-16	CCT8	CCT8:NM_001282909:exon11:c.G1012A:p.G338R\x3bCCT8:NM_001282908:exon12:c.G1078A:p.G360R\x3bCCT8:NM_006585:exon12:c.G1231A:p.G411R\x3bCCT8:NM_0012
13:75863164:G:T	MetaPanNET-5	TBC1D4	TBC1D4:NM_001286659:exon18:c.C3380A:p.S1127X\x3bTBC1D4:NM_001286658:exon19:c.C3545A:p.S1182X\x3bTBC1D4:NM_014832:exon20:c.C3569A:p.S1190X
22:24724831:C:T	MetaPanNET-2	SPECC1L	SPECC1L:NM_001145468:exon6:c.C2164T:p.Q722X\x3bSPECC1L:NM_001254732:exon6:c.C2164T:p.Q722X\x3bSPECC1L:NM_015330:exon7:c.C2164T:p.Q722X
11:133792574:A:G	MetaPanNET-5	IGSF9B	IGSF9B:NM_001277285:exon16:c.T2171C:p.L724P
6:82933900:T:C	MetaPanNET-17	IBTK	IBTK:NM_001300906:exon7:c.A828G:p.I276M\x3bIBTK:NM_015525:exon7:c.A828G:p.I276M
20:45910894:C:A	MetaPanNET-17	ZMYND8	ZMYND8:NM_001281771:exon10:c.G875T:p.R292M\x3bZMYND8:NM_001281775:exon10:c.G950T:p.R317M\x3bZMYND8:NM_001281776:exon10:c.G950T:p.R317M\x3bZM
7:150761678:C:T	MetaPanNET-8	SLC4A2	SLC4A2:NM_001199693:exon3:c.C256T:p.R86C\x3bSLC4A2:NM_001199694:exon3:c.C241T:p.R81C\x3bSLC4A2:NM_001199692:exon4:c.C283T:p.R95C\x3bSLC4A2:NM_0030
17:16675914:G:C	MetaPanNET-11	CCDC144A	CCDC144A:NM_014695:exon17:c.G4142C:p.G1381A
9:37887862:A:C	MetaPanNET-18	SLC25A51	SLC25A51:NM_033412:exon3:c.T686G:p.F229C
1:152082539:C:T	MetaPanNET-4	TCHH	TCHH:NM_007113:exon3:c.G3154A:p.E1052K
8:57224835:C:T	MetaPanNET-2	SDR16C5	SDR16C5:NM_138969:exon3:c.G346A:p.V116I
2:136680485:G:A	MetaPanNET-2	DARS	DARS:NM_001293312:exon8:c.C380T:p.A127V\x3bDARS:NM_001349:exon9:c.C680T:p.A227V
22:26272162:C:T	MetaPanNET-8	MYO18B	MYO18B:NM_032608:exon24:c.C4087T:p.R1363X
22:20940854:G:T	MetaPanNET-13	MED15	.
11:121986579:G:C	MetaPanNET-3	BLID	BLID:NM_001001786:exon1:c.C52G:p.L18V

11:47663986:C:T	MetaPanNET-12	MTCH2	MTCH2:NM_014342:exon1:c.G32A:p.G11D
19:51918330:A:C	MetaPanNET-6	SIGLEC10	SIGLEC10:NM_001171156:exon8:c.T1189G:p.W397G\x3bSIGLEC10:NM_033130:exon8:c.T1363G:p.W455G
6:51889842:C:A	MetaPanNET-9	PKHD1	PKHD1:NM_138694:exon32:c.G4766T:p.S1589I\x3bPKHD1:NM_170724:exon32:c.G4766T:p.S1589I
11:34378329:C:T	MetaPanNET-17	ABTB2	ABTB2:NM_145804:exon1:c.G802A:p.E268K
14:20019785:C:T	MetaPanNET-16	POTEM	POTEM:NM_001145442:exon1:c.G436A:p.A146T
6:10898243:C:T	MetaPanNET-16	SYCP2L	.
3:122146516:G:A	MetaPanNET-2	KPNA1	KPNA1:NM_002264:exon13:c.C1298T:p.T433M
6:165832238:C:T	MetaPanNET-5	PDE10A	PDE10A:NM_001130690:exon11:c.G883A:p.D295N
6:90396692:G:A	MetaPanNET-5	MDN1	MDN1:NM_014611:exon69:c.C11501T:p.S3834F
1:22142500:C:A	MetaPanNET-17	LDLRAD2	LDLRAD2:NM_001013693:exon3:c.C576A:p.D192E
7:76019622:C:T	MetaPanNET-17	SSC4D	SSC4D:NM_080744:exon11:c.G1482A:p.W494X
1:215848261:T:G	MetaPanNET-18	USH2A	USH2A:NM_206933:exon63:c.A12992C:p.Y4331S
10:97393282:G:T	MetaPanNET-17	ALDH18A1	ALDH18A1:NM_001017423:exon6:c.C683A:p.P228Q\x3bALDH18A1:NM_002860:exon6:c.C683A:p.P228Q
4:104062166:CT:C	MetaPanNET-5	CENPE	CENPE:NM_001286734:exon35:c.5483delA:p.K1828fs\x3bCENPE:NM_001813:exon36:c.5558delA:p.K1853fs
2:132021879:G:A	MetaPanNET-12	POTEE	POTEE:NM_001083538:exon15:c.G2851A:p.G951S
11:5719707:C:A	MetaPanNET-1	TRIM22	TRIM22:NM_001199573:exon4:c.C670A:p.Q224K\x3bTRIM22:NM_006074:exon4:c.C682A:p.Q228K
15:23019808:A:G	MetaPanNET-12	NIPA2	NIPA2:NM_001008892:exon3:c.T188C:p.L63P\x3bNIPA2:NM_001008860:exon4:c.T188C:p.L63P\x3bNIPA2:NM_030922:exon5:c.T188C:p.L63P\x3bNIPA2:NM_001184889:exo
15:41794229:G:A	MetaPanNET-5	ITPKA	ITPKA:NM_002220:exon4:c.G838A:p.E280K
1:29481388:G:C	MetaPanNET-14	SRSF4	SRSF4:NM_005626:exon4:c.C398G:p.A133G
11:18722651:C:T	MetaPanNET-7	TMEM86A	TMEM86A:NM_153347:exon2:c.C193T:p.H65Y
3:195506542:G:A	MetaPanNET-10	MUC4	MUC4:NM_018406:exon2:c.C11909T:p.P3970L
11:47660295:A:G	MetaPanNET-3	MTCH2	MTCH2:NM_014342:exon3:c.T235C:p.C79R
22:29704130:C:A	MetaPanNET-1	GAS2L1	GAS2L1:NM_001278730:exon2:c.C35A:p.A12E
2:97909665:G:A	MetaPanNET-13	ANKRD36	ANKRD36:NM_001164315:exon70:c.G4468A:p.E1490K
5:140516686:C:T	MetaPanNET-1	PCDHB5	PCDHB5:NM_015669:exon1:c.C1670T:p.S557L
2:220041507:G:C	MetaPanNET-5	CNPPD1	CNPPD1:NM_015680:exon1:c.C44G:p.S15C
17:5365713:G:A	MetaPanNET-16	DHX33	DHX33:NM_001199699:exon2:c.C85T:p.H29Y\x3bDHX33:NM_020162:exon3:c.C604T:p.H202Y
3:195508262:T:C	MetaPanNET-4	MUC4	MUC4:NM_018406:exon2:c.A10189G:p.N3397D
12:119588952:C:A	MetaPanNET-8	SRRM4	SRRM4:NM_194286:exon10:c.C1207A:p.H403N
17:43898765:C:T	MetaPanNET-20	CRHR1	CRHR1:NM_001145147:exon3:c.C166T:p.R56C\x3bCRHR1:NM_001145146:exon4:c.C286T:p.R96C\x3bCRHR1:NM_001145148:exon4:c.C286T:p.R96C\x3bCRHR1:NM_004382
17:45471412:A:T	MetaPanNET-16	EFCAB13	EFCAB13:NM_001195192:exon14:c.A1460T:p.K487I\x3bEFCAB13:NM_152347:exon16:c.A1748T:p.K583I
7:99627887:G:T	MetaPanNET-6	ZKSCAN1	ZKSCAN1:NM_001287055:exon3:c.G49T:p.E17X\x3bZKSCAN1:NM_003439:exon5:c.G688T:p.E230X\x3bZKSCAN1:NM_001287054:exon7:c.G580T:p.E194X
1:35658609:AC:A	MetaPanNET-8	SFPQ	SFPQ:NM_005066:exon1:c.41delG:p.G14fs
2:32341220:G:A	MetaPanNET-14	SPAST	SPAST:NM_199436:exon6:c.G941A:p.G314D\x3bSPAST:NM_014946:exon7:c.G1037A:p.G346D
2:85531096:A:C	MetaPanNET-12	TCF7L1	TCF7L1:NM_031283:exon6:c.A737C:p.H246P
10:72505048:C:T	MetaPanNET-6	ADAMTS14	ADAMTS14:NM_080722:exon15:c.C2249T:p.S750F\x3bADAMTS14:NM_139155:exon15:c.C2258T:p.S753F
17:45471411:A:T	MetaPanNET-16	EFCAB13	EFCAB13:NM_001195192:exon14:c.A1459T:p.K487X\x3bEFCAB13:NM_152347:exon16:c.A1747T:p.K583X
2:165948993:T:A	MetaPanNET-17	SCN3A	SCN3A:NM_001081676:exon27:c.A4431T:p.Q1477H\x3bSCN3A:NM_001081677:exon27:c.A4431T:p.Q1477H\x3bSCN3A:NM_006922:exon27:c.A4578T:p.Q1526H
3:195509585:C:T	MetaPanNET-10	MUC4	MUC4:NM_018406:exon2:c.G8866A:p.G2956S
7:100240879:TTTCGCTCCACGCACTGC:T	MetaPanNET-10	ACTL6B	ACTL6B:NM_016188:exon14:c.1254_1270del:p.K418fs
7:100550893:A:G	MetaPanNET-18	MUC3A	MUC3A:NM_005960:exon2:c.A1474G:p.T492A
2:233408003:C:T	MetaPanNET-16	CHRNG	CHRNG:NM_005199:exon8:c.C824T:p.T275I
6:99858745:C:G	MetaPanNET-5	PNISR	PNISR:NM_015491:exon4:c.G373C:p.D125H\x3bPNISR:NM_032870:exon5:c.G373C:p.D125H
6:17601040:G:A	MetaPanNET-10	FAM8A1	FAM8A1:NM_016255:exon1:c.G400A:p.G134S
3:62261557:C:G	MetaPanNET-7	PTPRG	PTPRG:NM_002841:exon24:c.C3475G:p.Q1159E
16:66997798:G:C	MetaPanNET-3	CES3	CES3:NM_001185177:exon4:c.G520C:p.V174L\x3bCES3:NM_024922:exon4:c.G520C:p.V174L
19:35829110:C:T	MetaPanNET-8	CD22	CD22:NM_001278417:exon5:c.C509T:p.P170L\x3bCD22:NM_001185100:exon6:c.C1025T:p.P342L\x3bCD22:NM_001771:exon6:c.C1025T:p.P342L
22:32302263:C:T	MetaPanNET-2	DEPDC5	DEPDC5:NM_001242897:exon40:c.C4292T:p.T1431I\x3bDEPDC5:NM_014662:exon41:c.C4499T:p.T1500I\x3bDEPDC5:NM_001136029:exon42:c.C4565T:p.T1522I\x3bDEPDC5
12:40880786:G:A	MetaPanNET-9	MUC19	UNKNOWN
17:16664882:G:C	MetaPanNET-16	CCDC144A	CCDC144A:NM_014695:exon13:c.G3516C:p.K1172N
11:71729917:C:T	MetaPanNET-2	NUMA1	NUMA1:NM_006185:exon10:c.G694A:p.E232K\x3bNUMA1:NM_001286561:exon11:c.G694A:p.E232K
16:2326757:T:C	MetaPanNET-11	ABCA3	ABCA3:NM_001089:exon33:c.A5033G:p.Y1678C
21:41559904:G:A	MetaPanNET-16	DSCAM	DSCAM:NM_001271534:exon13:c.C2564T:p.T855I\x3bDSCAM:NM_001389:exon13:c.C2564T:p.T855I
15:45401106:C:G	MetaPanNET-13	DUOX2	DUOX2:NM_014080:exon12:c.G1279C:p.A427P
11:26538457:T:A	MetaPanNET-16	ANO3	ANO3:NM_031418:exon6:c.T675A:p.N225K
2:55040442:G:T	MetaPanNET-10	EML6	EML6:NM_001039753:exon2:c.G271T:p.D91Y
10:37430872:G:T	MetaPanNET-5	ANKRD30A	ANKRD30A:NM_052997:exon7:c.G879T:p.K293N
3:48663784:G:A	MetaPanNET-11	SLC26A6	SLC26A6:NM_001281733:exon18:c.C1808T:p.P603L\x3bSLC26A6:NM_001040454:exon19:c.C2069T:p.P690L\x3bSLC26A6:NM_001281732:exon19:c.C2024T:p.P675L\x3bSLC2
19:9059536:C:A	MetaPanNET-5	MUC16	MUC16:NM_024690:exon3:c.G27910T:p.E9304X
12:11285924:C:T	MetaPanNET-17	TAS2R30	TAS2R30:NM_001097643:exon1:c.G920A:p.R307H
6:31910754:T:A	MetaPanNET-4	C2	C2:NM_001178063:exon6:c.T596A:p.V199E\x3bC2:NM_001282457:exon6:c.T500A:p.V167E\x3bC2:NM_001145903:exon8:c.T842A:p.V281E\x3bC2:NM_000063:exon10:c.T1
12:49523492:G:A	MetaPanNET-5	TUBA1B	TUBA1B:NM_006082:exon2:c.C17T:p.S6F
3:195506410:G:A	MetaPanNET-1	MUC4	MUC4:NM_018406:exon2:c.C12041T:p.A4014V
19:22574788:G:A	MetaPanNET-1	ZNF98	ZNF98:NM_001098626:exon4:c.C1249T:p.R417W
2:95541468:C:G	MetaPanNET-20	TEKT4	TEKT4:NM_001286559:exon5:c.C526G:p.R176G\x3bTEKT4:NM_144705:exon5:c.C1072G:p.R358G
1:171251116:G:T	MetaPanNET-5	FMO1	.
5:160033966:G:T	MetaPanNET-5	ATP10B	ATP10B:NM_025153:exon19:c.C2966A:p.A989D
3:195509123:G:T	MetaPanNET-4	MUC4	MUC4:NM_018406:exon2:c.C9328A:p.P3110T
2:189953493:A:C	MetaPanNET-14	COL5A2	COL5A2:NM_000393:exon8:c.T573G:p.F191L
19:45293292:C:G	MetaPanNET-9	CBLC	CBLC:NM_001130852:exon5:c.C811G:p.P271A\x3bCBLC:NM_012116:exon6:c.C949G:p.P317A
8:52733110:C:T	MetaPanNET-13	PCMTD1	PCMTD1:NM_001286782:exon4:c.G647A:p.G216D\x3bPCMTD1:NM_001286783:exon6:c.G347A:p.G116D\x3bPCMTD1:NM_052937:exon6:c.G875A:p.G292D
10:27486370:T:A	MetaPanNET-14	ACBD5	ACBD5:NM_001301254:exon10:c.A1036T:p.K346X\x3bACBD5:NM_001301252:exon11:c.A1240T:p.K414X\x3bACBD5:NM_001271512:exon12:c.A1561T:p.K521X\x3bACBD5:N
13:28498771:CG:C	MetaPanNET-16	PDX1	PDX1:NM_000209:exon2:c.786delG:p.P262fs
12:43821250:C:T	MetaPanNET-16	ADAMTS20	ADAMTS20:NM_025003:exon27:c.G3968A:p.G1323D
5:1422012:C:A	MetaPanNET-5	SLC6A3	SLC6A3:NM_001044:exon5:c.G771T:p.K257N
8:67803183:AT:A	MetaPanNET-4	MCMDC2	MCMDC2:NM_001136160:exon10:c.1158delT:p.N386fs\x3bMCMDC2:NM_001136161:exon10:c.1158delT:p.N386fs\x3bMCMDC2:NM_173518:exon10:c.1158delT:p.N386fs
16:3860767:C:A	MetaPanNET-17	CREBBP	CREBBP:NM_001079846:exon3:c.G812T:p.G271V\x3bCREBBP:NM_004380:exon3:c.G812T:p.G271V
4:110932525:G:A	MetaPanNET-6	EGF	EGF:NM_001178130:exon23:c.G3415A:p.E1139K\x3bEGF:NM_001178131:exon23:c.G3412A:p.E1138K\x3bEGF:NM_001963:exon24:c.G3538A:p.E1180K
16:31927294:C:T	MetaPanNET-16	ZNF267	ZNF267:NM_003414:exon4:c.C1724T:p.P575L\x3bZNF267:NM_001265588:exon5:c.C1628T:p.P543L
10:37430873:T:A	MetaPanNET-5	ANKRD30A	ANKRD30A:NM_052997:exon7:c.T880A:p.F294I
3:47125790:C:T	MetaPanNET-5	SETD2	SETD2:NM_014159:exon12:c.G5480A:p.W1827X
2:85769850:T:A	MetaPanNET-15	MAT2A	MAT2A:NM_005911:exon7:c.T931A:p.C311S
6:32489883:G:T	MetaPanNET-2	HLA-DRB5	HLA-DRB5:NM_002125:exon2:c.C169A:p.H57N
10:14991066:C:T	MetaPanNET-13	DCLRE1C	DCLRE1C:NM_001033855:exon2:c.G130A:p.A44T
2:1687498:A:T	MetaPanNET-16	PXDN	PXDN:NM_012293:exon6:c.T490A:p.F164I
12:114384190:T:C	MetaPanNET-4	RBM19	RBM19:NM_001146698:exon12:c.A1498G:p.K500E\x3bRBM19:NM_001146699:exon12:c.A1498G:p.K500E\x3bRBM19:NM_016196:exon12:c.A1498G:p.K500E
6:170002346:C:T	MetaPanNET-15	WDR27	WDR27:NM_001202550:exon20:c.G2012A:p.R671Q\x3bWDR27:NM_182552:exon23:c.G2393A:p.R798Q
9:112629808:G:A	MetaPanNET-16	PALM2\x3bPALM2-AKAP2	PALM2-AKAP2:NM_007203:exon2:c.G83A:p.R28Q\x3bPALM2:NM_053016:exon2:c.G83A:p.R28Q\x3bPALM2-AKAP2:NM_147150:exon2:c.G83A:p.R28Q\x3bPALM2:NM_001
19:8998763:A:G	MetaPanNET-4	MUC16	MUC16:NM_024690:exon58:c.T40820C:p.I13607T
1:874817:C:T	MetaPanNET-11	SAMD11	SAMD11:NM_152486:exon7:c.C683T:p.P228L
X:40552085:T:A	MetaPanNET-7	MED14	MED14:NM_004229:exon14:c.A1720T:p.N574Y
10:135204942:C:A	MetaPanNET-17	PAOX	PAOX:NM_207128:exon6:c.C1361A:p.A454D\x3bPAOX:NM_152911:exon7:c.C1519A:p.P507T
15:93595605:C:T	MetaPanNET-17	RGMA	RGMA:NM_001166286:exon2:c.G215A:p.R72Q\x3bRGMA:NM_001166283:exon3:c.G287A:p.R96Q\x3bRGMA:NM_001166287:exon3:c.G215A:p.R72Q\x3bRGMA:NM_00116
10:12204278:G:T	MetaPanNET-2	SEC61A2	SEC61A2:NM_001142628:exon10:c.G1168T:p.E390X\x3bSEC61A2:NM_001142627:exon11:c.G1234T:p.E412X\x3bSEC61A2:NM_018144:exon11:c.G1234T:p.E412X
5:52355728:G:A	MetaPanNET-17	ITGA2	ITGA2:NM_002203:exon11:c.G1198A:p.G400R
2:105977768:A:G	MetaPanNET-5	FHL2	FHL2:NM_001450:exon6:c.T812C:p.L271P\x3bFHL2:NM_201557:exon6:c.T812C:p.L271P\x3bFHL2:NM_001039492:exon7:c.T812C:p.L271P\x3bFHL2:NM_201555:exon8:c.T8
19:50939920:G:A	MetaPanNET-14	MYBPC2	MYBPC2:NM_004533:exon5:c.G392A:p.R131H
X:152037625:G:A	MetaPanNET-16	NSDHL	NSDHL:NM_015922:exon8:c.G1087A:p.V363M\x3bNSDHL:NM_001129765:exon9:c.G1087A:p.V363M
2:207170988:C:G	MetaPanNET-5	ZDBF2	ZDBF2:NM_020923:exon5:c.C1736G:p.S579C\x3bZDBF2:NM_001285549:exon7:c.C1730G:p.S577C
X:73960473:C:A	MetaPanNET-5	KIAA2022	KIAA2022:NM_001008537:exon3:c.G3919T:p.D1307Y
18:46798585:G:A	MetaPanNET-14	DYM	DYM:NM_017653:exon11:c.C1214T:p.T405M
13:41639406:G:C	MetaPanNET-18	WBP4	WBP4:NM_007187:exon4:c.G245C:p.R82T
21:45970774:G:A	MetaPanNET-7	KRTAP10-2	KRTAP10-2:NM_198693:exon1:c.C568T:p.P190S
11:31349708:A:T	MetaPanNET-16	DCDC1	DCDC1:NM_181807:exon3:c.T120A:p.N40K
16:23203794:T:A	MetaPanNET-14	SCNN1G	SCNN1G:NM_001039:exon4:c.T740A:p.I247N
X:89177262:G:A	MetaPanNET-20	TGIF2LX	TGIF2LX:NM_138960:exon2:c.G178A:p.E60K
4:140280971:C:G	MetaPanNET-5	NAA15	NAA15:NM_057175:exon12:c.C1332G:p.I444M
6:56047385:A:T	MetaPanNET-4	COL21A1	COL21A1:NM_030820:exon2:c.T32A:p.V11D
17:64125887:G:A	MetaPanNET-15	CEP112	CEP112:NM_001199165:exon6:c.C619T:p.R207C\x3bCEP112:NM_001302891:exon6:c.C619T:p.R207C\x3bCEP112:NM_145036:exon6:c.C619T:p.R207C
17:79614936:C:T	MetaPanNET-17	TSPAN10	.
2:16742269:C:T	MetaPanNET-2	FAM49A	FAM49A:NM_030797:exon9:c.G699A:p.M233I
3:195514318:G:T	MetaPanNET-4	MUC4	MUC4:NM_018406:exon2:c.C4133A:p.P1378H
5:162900454:G:C	MetaPanNET-12	HMMR	HMMR:NM_001142557:exon6:c.G534C:p.K178N\x3bHMMR:NM_012485:exon8:c.G747C:p.K249N\x3bHMMR:NM_001142556:exon9:c.G795C:p.K265N\x3bHMMR:NM_0124
3:195506005:A:C	MetaPanNET-10	MUC4	MUC4:NM_018406:exon2:c.T12446G:p.I4149S
6:36190010:G:T	MetaPanNET-11	BRPF3	BRPF3:NM_015695:exon10:c.G3149T:p.G1050V
6:109854641:C:A	MetaPanNET-9	AK9	AK9:NM_001145128:exon28:c.G3383T:p.R1128L
5:171484431:C:G	MetaPanNET-5	STK10	STK10:NM_005990:exon15:c.G2259C:p.E753D

15:23685955:T:C	MetaPanNET-15	GOLGA6L2	GOLGA6L2:NM_001304388:exon8:c.A1667G:p.E556G
9:112018754:C:G	MetaPanNET-5	EPB41L4B	EPB41L4B:NM_018424:exon8:c.G759C:p.K253N\x3bEPB41L4B:NM_019114:exon8:c.G759C:p.K253N
3:195513900:G:C	MetaPanNET-12	MUC4	MUC4:NM_018406:exon2:c.C4551G:p.H1517Q
18:29104778:C:A	MetaPanNET-13	DSG2	DSG2:NM_001943:exon8:c.C941A:p.S314X
3:195509287:T:G	MetaPanNET-10	MUC4	MUC4:NM_018406:exon2:c.A9164C:p.N3055T
12:3702281:C:T	MetaPanNET-18	PRMT8	PRMT8:NM_001256536:exon10:c.C1091T:p.T364I\x3bPRMT8:NM_019854:exon10:c.C1118T:p.T373I
6:30954749:G:A	MetaPanNET-10	MUC21	MUC21:NM_001010909:exon2:c.G797A:p.G266E
X:1720309:G:C	MetaPanNET-17	AKAP17A	AKAP17A:NM_005088:exon5:c.G1910C:p.R637P
14:39771451:TAGGTATTAAGTC:T	MetaPanNET-4	CTAGE5	CTAGE5:NM_001247988:exon10:c.828_829del:p.L276fs\x3bCTAGE5:NM_001247989:exon10:c.930_931del:p.L310fs\x3bCTAGE5:NM_001247990:exon10:c.690_691del:p.L23
4:190878552:G:A	MetaPanNET-17	FRG1	.
10:102763900:G:A	MetaPanNET-5	LZTS2	LZTS2:NM_032429:exon3:c.G1045A:p.E349K
1:8927177:G:A	MetaPanNET-2	ENO1	ENO1:NM_001201483:exon3:c.C164T:p.P55L\x3bENO1:NM_001428:exon6:c.C443T:p.P148L
6:33373174:C:G	MetaPanNET-18	KIFC1	KIFC1:NM_002263:exon7:c.C1302G:p.I434M
1:236305962:G:C	MetaPanNET-14	GPR137B	GPR137B:NM_003272:exon1:c.G40C:p.G14R
17:47875679:A:T	MetaPanNET-14	KAT7	.
X:152913718:C:T	MetaPanNET-8	DUSP9	DUSP9:NM_001395:exon2:c.C311T:p.S104L
1:16902957:G:A	MetaPanNET-2	NBPF1	UNKNOWN
3:195505979:T:C	MetaPanNET-10	MUC4	MUC4:NM_018406:exon2:c.A12472G:p.T4158A
4:338130:C:G	MetaPanNET-18	ZNF141	ZNF141:NM_003441:exon3:c.C137G:p.A46G
2:231742224:G:A	MetaPanNET-16	ITM2C	ITM2C:NM_001012514:exon4:c.G530A:p.G177E\x3bITM2C:NM_001012516:exon4:c.G560A:p.G187E\x3bITM2C:NM_001287240:exon5:c.G485A:p.G162E\x3bITM2C:NM_030
13:73482676:C:T	MetaPanNET-16	PIBF1	PIBF1:NM_006346:exon12:c.C1496T:p.T499I
5:90144485:G:C	MetaPanNET-1	ADGRV1	ADGRV1:NM_032119:exon79:c.G17051C:p.S5684T
13:21357994:C:G	MetaPanNET-11	XPO4	XPO4:NM_022459:exon23:c.G3323C:p.R1108T
1:16902915:G:A	MetaPanNET-2	NBPF1	UNKNOWN
3:51430895:C:T	MetaPanNET-2	RBM15B	RBM15B:NM_013286:exon1:c.C2065T:p.R689W
3:195511513:G:A	MetaPanNET-4	MUC4	MUC4:NM_018406:exon2:c.C6938T:p.A2313V
12:68647197:A:G	MetaPanNET-15	IL22	IL22:NM_020525:exon1:c.T32C:p.F11S
10:93773506:A:G	MetaPanNET-14	BTAF1	BTAF1:NM_003972:exon31:c.A4394G:p.Y1465C
11:7110515:C:T	MetaPanNET-14	RBMXL2	RBMXL2:NM_014469:exon1:c.C164T:p.T55I
19:53572327:C:T	MetaPanNET-12	ZNF160	ZNF160:NM_033288:exon6:c.G1460A:p.S487N\x3bZNF160:NM_001102603:exon7:c.G1460A:p.S487N\x3bZNF160:NM_198893:exon7:c.G1460A:p.S487N
16:22086951:G:T	MetaPanNET-17	C16orf52	C16orf52:NM_001164579:exon2:c.G250T:p.G84C
5:75428011:G:A	MetaPanNET-2	SV2C	SV2C:NM_001297716:exon2:c.G436A:p.G146S\x3bSV2C:NM_014979:exon2:c.G436A:p.G146S
13:25670801:T:TG	MetaPanNET-6	PABPC3	PABPC3:NM_030979:exon1:c.465_466insG:p.I155fs
19:9086088:A:T	MetaPanNET-5	MUC16	MUC16:NM_024690:exon1:c.T5727A:p.H1909Q
2:131976077:C:A	MetaPanNET-17	POTEE	POTEE:NM_001083538:exon1:c.C102A:p.C34X
22:40042787:G:A	MetaPanNET-7	CACNA1I	CACNA1I:NM_001003406:exon8:c.G1363A:p.G455S\x3bCACNA1I:NM_021096:exon8:c.G1363A:p.G455S
17:56833466:A:ACCCGAA	MetaPanNET-16	PPM1E	PPM1E:NM_014906:exon1:c.108_109insCCCGAA:p.E36delinsEPE
19:22171651:C:T	MetaPanNET-5	ZNF208	ZNF208:NM_007153:exon2:c.G64A:p.D22N
1:247201695:C:A	MetaPanNET-5	ZNF670	ZNF670:NM_001204220:exon4:c.G223T:p.E75X\x3bZNF670:NM_033213:exon4:c.G226T:p.E76X
10:7772046:G:A	MetaPanNET-17	ITIH2	ITIH2:NM_002216:exon12:c.G1411A:p.G471R
11:40136012:CTGT:C	MetaPanNET-1	LRRC4C	LRRC4C:NM_020929:exon5:c.1828_1830del:p.610_610del\x3bLRRC4C:NM_001258419:exon7:c.1828_1830del:p.610_610del
6:33287320:AT:A	MetaPanNET-12	DAXX	DAXX:NM_001254717:exon5:c.1551delA:p.Q517fs\x3bDAXX:NM_001141969:exon6:c.1776delA:p.Q592fs\x3bDAXX:NM_001141970:exon6:c.1812delA:p.Q604fs\x3bDAXX:NI
7:75130916:C:G	MetaPanNET-5	SPDYE5	SPDYE5:NM_001099435:exon6:c.C791G:p.S264C
1:152800275:C:A	MetaPanNET-5	LCE1A	LCE1A:NM_178348:exon1:c.C327A:p.C109X
18:24442266:C:G	MetaPanNET-5	AQP4	AQP4:NM_004028:exon1:c.G261C:p.K87N\x3bAQP4:NM_001650:exon2:c.G327C:p.K109N
3:52469819:C:T	MetaPanNET-18	SEMA3G	SEMA3G:NM_020163:exon16:c.G2149A:p.A717T
7:44047183:G:C	MetaPanNET-5	SPDYE1	SPDYE1:NM_175064:exon5:c.G949C:p.E317Q
10:106982894:C:T	MetaPanNET-14	SORCS3	SORCS3:NM_014978:exon20:c.C2755T:p.L919F
16:72923651:T:A	MetaPanNET-14	ZFHX3	ZFHX3:NM_001164766:exon3:c.A685T:p.R229W\x3bZFHX3:NM_006885:exon4:c.A3427T:p.R1143W
17:7705319:C:A	MetaPanNET-4	DNAH2	DNAH2:NM_020877:exon58:c.C8956A:p.L2986M
15:72020908:C:T	MetaPanNET-8	THSD4	THSD4:NM_001286429:exon3:c.C298T:p.R100C\x3bTHSD4:NM_024817:exon8:c.C1378T:p.R460C
X:51075941:C:T	MetaPanNET-18	NUDT10	NUDT10:NM_001304963:exon1:c.C124T:p.P42S\x3bNUDT10:NM_153183:exon2:c.C124T:p.P42S
15:79586392:G:A	MetaPanNET-5	ANKRD34C	ANKRD34C:NM_001146341:exon2:c.G766A:p.G256S
8:53045633:C:G	MetaPanNET-2	ST18	ST18:NM_014682:exon21:c.G2428C:p.E810Q
1:36563637:C:T	MetaPanNET-10	COL8A2	COL8A2:NM_001294347:exon4:c.G1450A:p.G484S\x3bCOL8A2:NM_005202:exon4:c.G1645A:p.G549S
21:38852962:G:A	MetaPanNET-14	DYRK1A	DYRK1A:NM_001396:exon4:c.G350A:p.R117Q\x3bDYRK1A:NM_130436:exon4:c.G323A:p.R108Q\x3bDYRK1A:NM_130438:exon4:c.G350A:p.R117Q\x3bDYRK1A:NM_101395
7:139662031:A:G	MetaPanNET-10	TBXAS1	TBXAS1:NM_001061:exon9:c.A1136G:p.H379R\x3bTBXAS1:NM_030984:exon9:c.A1136G:p.H379R\x3bTBXAS1:NM_001166253:exon10:c.A1274G:p.H425R\x3bTBXAS1:NM_0
5:149546722:C:T	MetaPanNET-14	CDX1	CDX1:NM_001804:exon1:c.C283T:p.P95S
3:172163142:A:T	MetaPanNET-2	GHSR	GHSR:NM_198407:exon2:c.T910A:p.C304S
9:78686749:G:T	MetaPanNET-18	PCSK5	PCSK5:NM_001190482:exon7:c.G829T:p.D277Y\x3bPCSK5:NM_006200:exon7:c.G829T:p.D277Y
11:64577329:TAGAC:T	MetaPanNET-7	MEN1	MEN1:NM_000244:exon2:c.249_252del:p.L83fs\x3bMEN1:NM_130799:exon2:c.249_252del:p.L83fs\x3bMEN1:NM_130800:exon2:c.249_252del:p.L83fs\x3bMEN1:NM_1308
22:36682805:T:A	MetaPanNET-16	MYH9	MYH9:NM_002473:exon35:c.A5020T:p.K1674X
2:201873697:G:A	MetaPanNET-5	FAM126B	FAM126B:NM_173822:exon7:c.C529T:p.R177W
1:201176138:G:A	MetaPanNET-14	IGFN1	IGFN1:NM_001164586:exon12:c.G2117A:p.G706E
8:124141459:G:A	MetaPanNET-12	TBC1D31	.
16:74443490:C:T	MetaPanNET-16	CLEC18B	CLEC18B:NM_001011880:exon12:c.G1288A:p.D430N
1:145298247:C:T	MetaPanNET-15	NBPF10	NBPF10:NM_001039703:exon5:c.C659T:p.S220F\x3bNBPF10:NM_001302371:exon5:c.C659T:p.S220F
3:195508654:G:T	MetaPanNET-3	MUC4	MUC4:NM_018406:exon2:c.C9797A:p.P3266H
11:118361922:C:T	MetaPanNET-5	KMT2A	KMT2A:NM_001197104:exon14:c.C4708T:p.P1570S\x3bKMT2A:NM_005933:exon14:c.C4708T:p.P1570S
12:53185087:G:A	MetaPanNET-14	KRT3	KRT3:NM_057088:exon7:c.C1438T:p.R480W
19:37835599:C:T	MetaPanNET-1	HKR1	HKR1:NM_181786:exon3:c.C13T:p.H5Y
8:126075778:C:T	MetaPanNET-5	KIAA0196	KIAA0196:NM_014846:exon11:c.G1394A:p.R465K
1:100133298:A:C	MetaPanNET-14	PALMD	PALMD:NM_017734:exon3:c.A227C:p.Q76P
3:47163437:GAGTT:G	MetaPanNET-13	SETD2	SETD2:NM_014159:exon3:c.2685_2688del:p.L895fs
6:160509083:C:T	MetaPanNET-2	IGF2R	IGF2R:NM_000876:exon42:c.C6224T:p.T2075M
2:70047943:C:T	MetaPanNET-14	ANXA4	ANXA4:NM_001153:exon12:c.C896T:p.S299L
3:195506761:G:A	MetaPanNET-14	MUC4	MUC4:NM_018406:exon2:c.C11690T:p.A3897V
1:117142707:C:G	MetaPanNET-12	IGSF3	IGSF3:NM_001007237:exon7:c.C1885T:p.R629C\x3bIGSF3:NM_001542:exon7:c.C1945T:p.R649C
11:64083293:G:T	MetaPanNET-9	ESRRA	ESRRA:NM_001282450:exon7:c.G1127T:p.R376L\x3bESRRA:NM_001282451:exon7:c.G1124T:p.R375L\x3bESRRA:NM_004451:exon7:c.G1127T:p.R376L
4:190878608:G:A	MetaPanNET-15	FRG1	FRG1:NM_004477:exon6:c.G488A:p.G163E
22:22036804:A:T	MetaPanNET-9	PPIL2	PPIL2:NM_014337:exon8:c.A466T:p.I156F\x3bPPIL2:NM_148175:exon8:c.A466T:p.I156F\x3bPPIL2:NM_148176:exon8:c.A466T:p.I156F
11:34904971:A:T	MetaPanNET-16	APIP	APIP:NM_015957:exon6:c.T542A:p.M181K
15:23685920:A:C	MetaPanNET-17	GOLGA6L2	GOLGA6L2:NM_001304388:exon8:c.T1702G:p.S568A
12:40879080:C:T	MetaPanNET-17	MUC19	UNKNOWN
16:27476823:G:T	MetaPanNET-5	GTF3C1	GTF3C1:NM_001286242:exon33:c.C5113A:p.L1705I\x3bGTF3C1:NM_001520:exon33:c.C5113A:p.L1705I
2:71840511:G:T	MetaPanNET-14	DYSF	DYSF:NM_001130976:exon39:c.G4339T:p.D1447Y\x3bDYSF:NM_001130977:exon39:c.G4339T:p.D1447Y\x3bDYSF:NM_001130984:exon39:c.G4342T:p.D1448Y\x3bDYSF:NM
3:9424966:T:C	MetaPanNET-12	THUMPD3	THUMPD3:NM_001114092:exon8:c.T1208C:p.I403T\x3bTHUMPD3:NM_015453:exon8:c.T1208C:p.I403T
18:52895577:G:T	MetaPanNET-17	TCF4	TCF4:NM_001243234:exon12:c.C1415A:p.P472Q\x3bTCF4:NM_001243235:exon12:c.C1403A:p.P468Q\x3bTCF4:NM_001243236:exon12:c.C1403A:p.P468Q\x3bTCF4:NM_00
17:7319307:C:CT	MetaPanNET-13	NLGN2	NLGN2:NM_020795:exon6:c.1516dupT:p.P505fs
8:52733102:G:A	MetaPanNET-9	PCMTD1	PCMTD1:NM_001286782:exon4:c.C655T:p.L219F\x3bPCMTD1:NM_001286783:exon6:c.C355T:p.L119F\x3bPCMTD1:NM_052937:exon6:c.C883T:p.L295F
13:77459959:C:T	MetaPanNET-5	KCTD12	KCTD12:NM_138444:exon1:c.G325A:p.E109K
1:52289446:G:A	MetaPanNET-6	NRD1	NRD1:NM_001101662:exon7:c.C1049T:p.T350M\x3bNRD1:NM_001242361:exon9:c.C857T:p.T286M\x3bNRD1:NM_002525:exon9:c.C1253T:p.T418M
6:24289090:G:C	MetaPanNET-13	DCDC2	DCDC2:NM_016356:exon6:c.C749G:p.S250C\x3bDCDC2:NM_001195610:exon7:c.C749G:p.S250C
16:2301430:C:T	MetaPanNET-5	ECI1	ECI1:NM_001178029:exon2:c.G53A:p.G18E\x3bECI1:NM_001919:exon2:c.G53A:p.G18E
22:32100659:G:C	MetaPanNET-8	PRR14L	PRR14L:NM_173566:exon5:c.C5810G:p.T1937S
12:40884121:C:A	MetaPanNET-19	MUC19	UNKNOWN
3:195508903:G:A	MetaPanNET-19	MUC4	MUC4:NM_018406:exon2:c.C9548T:p.T3183M
1:169580892:C:CTT	MetaPanNET-19	SELP	SELP:NM_003005:exon7:c.984_985insAA:p.A329fs
9:42410368:T:C	MetaPanNET-19	ANKRD20A2\x3bANKRD20A3	ANKRD20A3:NM_001012419:exon15:c.T2357C:p.M786T\x3bANKRD20A2:NM_001012421:exon15:c.T2357C:p.M786T
1:51735781:GA:G	MetaPanNET-19	RNF11	RNF11:NM_014372:exon2:c.278delA:p.E93fs
3:10018733:G:C	MetaPanNET-19	EMC3	EMC3:NM_018447:exon3:c.C215G:p.S72C
15:74174052:C:A	MetaPanNET-19	TBC1D21	TBC1D21:NM_001286434:exon2:c.C128A:p.S43Y\x3bTBC1D21:NM_153356:exon3:c.C236A:p.S79Y
14:103429476:C:T	MetaPanNET-19	CDC42BPB	CDC42BPB:NM_006035:exon20:c.G2743A:p.E915K
8:7320252:G:T	MetaPanNET-19	SPAG11B	SPAG11B:NM_016512:exon2:c.C191A:p.P64Q\x3bSPAG11B:NM_058200:exon2:c.C191A:p.P64Q\x3bSPAG11B:NM_058201:exon2:c.C191A:p.P64Q\x3bSPAG11B:NM_058202
19:15273370:T:A	MetaPanNET-19	NOTCH3	NOTCH3:NM_000435:exon32:c.A5819T:p.K1940I
7:100550696:C:T	MetaPanNET-19	MUC3A	MUC3A:NM_005960:exon2:c.C1277T:p.T426I
15:23685904:A:G	MetaPanNET-19	GOLGA6L2	GOLGA6L2:NM_001304388:exon8:c.T1718C:p.V573A
6:32713061:C:A	MetaPanNET-19	HLA-DQA2	HLA-DQA2:NM_020056:exon2:c.C208A:p.Q70K
3:195506844:G:C	MetaPanNET-19	MUC4	MUC4:NM_018406:exon2:c.C11607G:p.H3869Q
1:4772582:G:GCCA	MetaPanNET-19	AJAP1	AJAP1:NM_001042478:exon2:c.652_653insCCA:p.A218delinsAT\x3bAJAP1:NM_018836:exon2:c.652_653insCCA:p.A218delinsAT
5:140953360:C:G	MetaPanNET-19	DIAPH1	DIAPH1:NM_001079812:exon15:c.G2030C:p.R677T\x3bDIAPH1:NM_005219:exon16:c.G2057C:p.R686T

Supplementary Table 2. Pathologic findings and immunohistochemical/FISH status of 347 pancreatic neuroendocrine tumors.

Patient	Tumor size (cm)	Histologic grade	ALT status	ATRX expression	DAXX expression	H3K36me3 expression	ARID1A expression	*CDKN2A* / *CEP9* ratio
1	0.6	G1	Negative	Preserved	Preserved	Preserved	Preserved	0.99 (Wild type)
2	0.6	G2	Negative	Preserved	Preserved	Preserved	Preserved	1.18 (Wild type)
3	0.6	G1	Negative	Preserved	Preserved	Preserved	Preserved	0.96 (Wild type)
4	0.6	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.05 (Wild type)
5	0.6	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.06 (Wild type)
6	0.7	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.03 (Wild type)
7	0.7	G1	Negative	Preserved	Preserved	Preserved	Preserved	0.97 (Wild type)
8	0.7	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.00 (Wild type)
9	0.7	G1	Negative	Preserved	Preserved	Preserved	Preserved	0.96 (Wild type)
10	0.7	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.00 (Wild type)
11	0.8	G1	Negative	Preserved	Preserved	Preserved	Preserved	0.96 (Wild type)
12	0.8	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.02 (Wild type)
13	0.8	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.00 (Wild type)
14	0.8	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.12 (Wild type)
15	0.8	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.00 (Wild type)
16	0.9	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.00 (Wild type)
17	0.9	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.02 (Wild type)
18	0.9	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.00 (Wild type)
19	0.9	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.13 (Wild type)
20	0.9	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.02 (Wild type)
21	1.0	G1	Positive	Loss	Preserved	Preserved	Preserved	1.11 (Wild type)
22	1.0	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.02 (Wild type)
23	1.0	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.00 (Wild type)
24	1.0	G1	Negative	Preserved	Preserved	Preserved	Preserved	0.97 (Wild type)
25	1.0	G2	Negative	Preserved	Preserved	Preserved	Preserved	1.01 (Wild type)
26	1.0	G1	Negative	Preserved	Preserved	Preserved	Preserved	0.89 (Wild type)
27	1.0	G2	Negative	Preserved	Preserved	Preserved	Preserved	1.02 (Wild type)
28	1.0	G2	Negative	Preserved	Preserved	Preserved	Preserved	1.01 (Wild type)
29	1.0	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.00 (Wild type)

30	1.0	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.02 (Wild type)
31	1.0	G2	Negative	Preserved	Preserved	Preserved	Preserved	1.00 (Wild type)
32	1.0	G1	Negative	Preserved	Preserved	Preserved	Preserved	0.99 (Wild type)
33	1.0	G1	Negative	Preserved	Preserved	Preserved	Preserved	0.99 (Wild type)
34	1.0	G1	Negative	Preserved	Preserved	Preserved	Preserved	0.96 (Wild type)
35	1.0	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.00 (Wild type)
36	1.1	G1	Negative	Preserved	Preserved	Preserved	Preserved	0.98 (Wild type)
37	1.1	G2	Negative	Preserved	Preserved	Preserved	Preserved	1.02 (Wild type)
38	1.1	G1	Negative	Preserved	Preserved	Preserved	Preserved	0.99 (Wild type)
39	1.1	G2	Negative	Preserved	Preserved	Preserved	Preserved	0.98 (Wild type)
40	1.1	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.00 (Wild type)
41	1.1	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.01 (Wild type)
42	1.2	G2	Positive	Loss	Preserved	Loss	Preserved	1.00 (Wild type)
43	1.2	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.00 (Wild type)
44	1.2	G2	Negative	Preserved	Preserved	Preserved	Preserved	1.03 (Wild type)
45	1.2	G1	Negative	Preserved	Preserved	Preserved	Preserved	0.93 (Wild type)
46	1.2	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.05 (Wild type)
47	1.2	G1	Negative	Preserved	Preserved	Preserved	Preserved	0.91 (Wild type)
48	1.2	G2	Negative	Preserved	Preserved	Preserved	Preserved	0.95 (Wild type)
49	1.3	G1	Negative	Preserved	Preserved	Loss	Preserved	1.07 (Wild type)
50	1.3	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.11 (Wild type)
51	1.3	G1	Negative	Preserved	Preserved	Preserved	Preserved	0.96 (Wild type)
52	1.3	G2	Negative	Preserved	Preserved	Preserved	Preserved	1.01 (Wild type)
53	1.3	G2	Negative	Preserved	Preserved	Preserved	Preserved	1.01 (Wild type)
54	1.3	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.04 (Wild type)
55	1.3	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.06 (Wild type)
56	1.3	G1	Negative	Preserved	Preserved	Preserved	Preserved	0.98 (Wild type)
57	1.3	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.02 (Wild type)
58	1.3	G1	Negative	Preserved	Preserved	Preserved	Preserved	0.99 (Wild type)
59	1.3	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.06 (Wild type)
60	1.4	G1	Negative	Preserved	Preserved	Preserved	Preserved	0.96 (Wild type)
61	1.4	G2	Negative	Preserved	Preserved	Preserved	Preserved	0.99 (Wild type)
62	1.4	G2	Negative	Preserved	Preserved	Preserved	Preserved	0.92 (Wild type)

63	1.4	G2	Negative	Preserved	Preserved	Preserved	Preserved	1.00 (Wild type)
64	1.4	G1	Negative	Preserved	Preserved	Preserved	Preserved	0.98 (Wild type)
65	1.4	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.02 (Wild type)
66	1.4	G1	Negative	Preserved	Preserved	Preserved	Preserved	0.99 (Wild type)
67	1.5	G2	Negative	Preserved	Preserved	Loss	Preserved	1.00 (Wild type)
68	1.5	G1	Positive	Preserved	Loss	Preserved	Preserved	0.95 (Wild type)
69	1.5	G1	Negative	Preserved	Preserved	Preserved	Preserved	0.88 (Wild type)
70	1.5	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.00 (Wild type)
71	1.5	G1	Negative	Preserved	Preserved	Preserved	Preserved	0.99 (Wild type)
72	1.5	G1	Negative	Preserved	Preserved	Preserved	Preserved	0.98 (Wild type)
73	1.5	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.02 (Wild type)
74	1.5	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.05 (Wild type)
75	1.5	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.06 (Wild type)
76	1.5	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.04 (Wild type)
77	1.5	G1	Negative	Preserved	Preserved	Preserved	Preserved	0.97 (Wild type)
78	1.5	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.03 (Wild type)
79	1.5	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.07 (Wild type)
80	1.5	G2	Negative	Preserved	Preserved	Preserved	Preserved	1.22 (Wild type)
81	1.5	G2	Negative	Preserved	Preserved	Preserved	Preserved	1.01 (Wild type)
82	1.5	G2	Negative	Preserved	Preserved	Preserved	Preserved	1.06 (Wild type)
83	1.5	G1	Negative	Preserved	Preserved	Preserved	Preserved	0.99 (Wild type)
84	1.5	G2	Negative	Preserved	Preserved	Preserved	Preserved	0.96 (Wild type)
85	1.5	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.03 (Wild type)
86	1.5	G1	Negative	Preserved	Preserved	Preserved	Preserved	0.99 (Wild type)
87	1.5	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.05 (Wild type)
88	1.5	G1	Negative	Preserved	Preserved	Preserved	Preserved	0.99 (Wild type)
89	1.5	G1	Negative	Preserved	Preserved	Preserved	Preserved	0.98 (Wild type)
90	1.5	G1	Negative	Preserved	Preserved	Preserved	Preserved	0.95 (Wild type)
91	1.5	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.19 (Wild type)
92	1.5	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.04 (Wild type)
93	1.5	G1	Negative	Preserved	Preserved	Preserved	Preserved	0.99 (Wild type)
94	1.5	G1	Negative	Preserved	Preserved	Preserved	Preserved	0.98 (Wild type)
95	1.6	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.08 (Wild type)

96	1.6	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.23 (Wild type)
97	1.6	G2	Negative	Preserved	Preserved	Preserved	Preserved	1.00 (Wild type)
98	1.6	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.10 (Wild type)
99	1.7	G2	Positive	Preserved	Loss	Preserved	Loss	1.07 (Wild type)
100	1.7	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.16 (Wild type)
101	1.7	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.00 (Wild type)
102	1.7	G2	Negative	Preserved	Preserved	Preserved	Preserved	1.05 (Wild type)
103	1.7	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.03 (Wild type)
104	1.7	G1	Negative	Preserved	Preserved	Preserved	Preserved	0.98 (Wild type)
105	1.7	G1	Negative	Preserved	Preserved	Preserved	Preserved	0.85 (Wild type)
106	1.8	G2	Positive	Preserved	Preserved	Preserved	Preserved	0.95 (Wild type)
107	1.8	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.04 (Wild type)
108	1.8	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.00 (Wild type)
109	1.8	G2	Negative	Preserved	Preserved	Preserved	Preserved	1.08 (Wild type)
110	1.8	G1	Negative	Preserved	Preserved	Preserved	Preserved	0.99 (Wild type)
111	1.8	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.04 (Wild type)
112	1.8	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.23 (Wild type)
113	1.9	G1	Negative	Preserved	Preserved	Preserved	Preserved	0.96 (Wild type)
114	2.0	G2	Positive	Loss	Preserved	Preserved	Preserved	0.46 (Deletion)
115	2.0	G2	Positive	Loss	Loss	Preserved	Preserved	0.65 (Deletion)
116	2.0	G2	Negative	Preserved	Preserved	Loss	Preserved	1.01 (Wild type)
117	2.0	G2	Positive	Preserved	Loss	Preserved	Preserved	0.98 (Wild type)
118	2.0	G1	Positive	Loss	Loss	Preserved	Preserved	1.04 (Wild type)
119	2.0	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.04 (Wild type)
120	2.0	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.00 (Wild type)
121	2.0	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.10 (Wild type)
122	2.0	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.00 (Wild type)
123	2.0	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.15 (Wild type)
124	2.0	G2	Negative	Preserved	Preserved	Preserved	Preserved	1.03 (Wild type)
125	2.0	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.04 (Wild type)
126	2.0	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.01 (Wild type)
127	2.0	G2	Negative	Preserved	Preserved	Preserved	Preserved	1.01 (Wild type)
128	2.0	G2	Negative	Preserved	Preserved	Preserved	Preserved	0.96 (Wild type)

129	2.0	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.07 (Wild type)
130	2.0	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.01 (Wild type)
131	2.1	G1	Negative	Preserved	Preserved	Preserved	Preserved	0.96 (Wild type)
132	2.1	G1	Negative	Preserved	Preserved	Preserved	Preserved	0.97 (Wild type)
133	2.1	G2	Negative	Preserved	Preserved	Preserved	Preserved	0.94 (Wild type)
134	2.1	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.03 (Wild type)
135	2.1	G2	Negative	Preserved	Preserved	Preserved	Preserved	1.05 (Wild type)
136	2.1	G1	Negative	Preserved	Preserved	Preserved	Preserved	0.98 (Wild type)
137	2.1	G2	Negative	Preserved	Preserved	Preserved	Preserved	1.11 (Wild type)
138	2.2	G1	Positive	Preserved	Loss	Preserved	Preserved	1.02 (Wild type)
139	2.2	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.00 (Wild type)
140	2.2	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.17 (Wild type)
141	2.2	G1	Negative	Preserved	Preserved	Preserved	Preserved	0.96 (Wild type)
142	2.2	G1	Negative	Preserved	Preserved	Preserved	Preserved	0.94 (Wild type)
143	2.2	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.02 (Wild type)
144	2.2	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.01 (Wild type)
145	2.2	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.00 (Wild type)
146	2.3	G1	Negative	Preserved	Preserved	Preserved	Preserved	0.98 (Wild type)
147	2.3	G2	Negative	Preserved	Preserved	Preserved	Preserved	1.15 (Wild type)
148	2.4	G1	Positive	Preserved	Loss	Preserved	Preserved	0.97 (Wild type)
149	2.4	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.04 (Wild type)
150	2.4	G1	Negative	Preserved	Preserved	Preserved	Preserved	0.97 (Wild type)
151	2.4	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.00 (Wild type)
152	2.4	G1	Negative	Preserved	Preserved	Preserved	Preserved	0.97 (Wild type)
153	2.4	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.19 (Wild type)
154	2.4	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.16 (Wild type)
155	2.5	G1	Positive	Loss	Preserved	Preserved	Preserved	0.66 (Deletion)
156	2.5	G2	Positive	Preserved	Preserved	Preserved	Preserved	0.55 (Deletion)
157	2.5	G2	Negative	Preserved	Preserved	Preserved	Loss	0.46 (Deletion)
158	2.5	G1	Positive	Preserved	Loss	Loss	Preserved	1.00 (Wild type)
159	2.5	G2	Positive	Preserved	Loss	Preserved	Preserved	1.00 (Wild type)
160	2.5	G2	Positive	Loss	Loss	Preserved	Preserved	1.06 (Wild type)
161	2.5	G2	Positive	Loss	Loss	Preserved	Preserved	0.96 (Wild type)

162	2.5	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.02 (Wild type)
163	2.5	G2	Negative	Preserved	Preserved	Preserved	Preserved	1.10 (Wild type)
164	2.5	G2	Negative	Preserved	Preserved	Preserved	Preserved	0.88 (Wild type)
165	2.5	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.00 (Wild type)
166	2.5	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.04 (Wild type)
167	2.5	G1	Negative	Preserved	Preserved	Preserved	Preserved	0.99 (Wild type)
168	2.5	G2	Negative	Preserved	Preserved	Preserved	Preserved	1.13 (Wild type)
169	2.5	G1	Negative	Preserved	Preserved	Preserved	Preserved	0.99 (Wild type)
170	2.5	G1	Negative	Preserved	Preserved	Preserved	Preserved	0.96 (Wild type)
171	2.5	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.04 (Wild type)
172	2.5	G1	Negative	Preserved	Preserved	Preserved	Preserved	0.97 (Wild type)
173	2.5	G1	Negative	Preserved	Preserved	Preserved	Preserved	0.98 (Wild type)
174	2.5	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.08 (Wild type)
175	2.5	G3	Negative	Preserved	Preserved	Preserved	Preserved	1.04 (Wild type)
176	2.6	G2	Negative	Preserved	Preserved	Preserved	Preserved	0.99 (Wild type)
177	2.7	G1	Negative	Preserved	Preserved	Loss	Preserved	0.67 (Deletion)
178	2.7	G1	Positive	Loss	Loss	Preserved	Preserved	0.96 (Wild type)
179	2.7	G1	Negative	Preserved	Preserved	Preserved	Preserved	0.96 (Wild type)
180	2.7	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.00 (Wild type)
181	2.7	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.19 (Wild type)
182	2.8	G1	Negative	Preserved	Preserved	Preserved	Preserved	0.59 (Deletion)
183	2.8	G2	Positive	Loss	Loss	Loss	Preserved	1.06 (Wild type)
184	2.8	G1	Positive	Loss	Preserved	Preserved	Preserved	1.01 (Wild type)
185	2.8	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.00 (Wild type)
186	2.8	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.00 (Wild type)
187	2.8	G1	Negative	Preserved	Preserved	Preserved	Preserved	0.99 (Wild type)
188	2.8	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.00 (Wild type)
189	2.8	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.00 (Wild type)
190	2.8	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.00 (Wild type)
191	2.9	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.05 (Wild type)
192	3.0	G2	Positive	Loss	Preserved	Preserved	Preserved	0.35 (Deletion)
193	3.0	G1	Negative	Preserved	Preserved	Preserved	Preserved	0.70 (Deletion)
194	3.0	G1	Negative	Preserved	Preserved	Preserved	Preserved	0.43 (Deletion)

195	3.0	G2	Positive	Loss	Loss	Loss	Preserved	1.11 (Wild type)
196	3.0	G2	Positive	Loss	Preserved	Preserved	Preserved	1.01 (Wild type)
197	3.0	G2	Positive	Preserved	Loss	Preserved	Preserved	1.00 (Wild type)
198	3.0	G1	Positive	Loss	Loss	Preserved	Preserved	1.01 (Wild type)
199	3.0	G2	Positive	Preserved	Preserved	Preserved	Preserved	0.99 (Wild type)
200	3.0	G2	Negative	Preserved	Preserved	Preserved	Preserved	1.08 (Wild type)
201	3.0	G2	Negative	Preserved	Preserved	Preserved	Preserved	1.00 (Wild type)
202	3.0	G2	Negative	Preserved	Preserved	Preserved	Preserved	0.89 (Wild type)
203	3.0	G1	Negative	Preserved	Preserved	Preserved	Preserved	0.99 (Wild type)
204	3.0	G1	Negative	Preserved	Preserved	Preserved	Preserved	0.96 (Wild type)
205	3.0	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.06 (Wild type)
206	3.0	G2	Negative	Preserved	Preserved	Preserved	Preserved	1.00 (Wild type)
207	3.1	G1	Positive	Loss	Preserved	Preserved	Preserved	1.00 (Wild type)
208	3.1	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.00 (Wild type)
209	3.2	G1	Positive	Loss	Preserved	Preserved	Preserved	1.11 (Wild type)
210	3.2	G1	Negative	Preserved	Preserved	Preserved	Preserved	0.92 (Wild type)
211	3.2	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.01 (Wild type)
212	3.3	G1	Negative	Preserved	Preserved	Preserved	Preserved	0.84 (Wild type)
213	3.4	G2	Positive	Preserved	Preserved	Preserved	Preserved	1.02 (Wild type)
214	3.5	G1	Positive	Loss	Preserved	Loss	Preserved	0.65 (Deletion)
215	3.5	G1	Negative	Preserved	Preserved	Preserved	Preserved	0.74 (Deletion)
216	3.5	G1	Positive	Preserved	Loss	Preserved	Loss	1.02 (Wild type)
217	3.5	G2	Positive	Preserved	Loss	Loss	Preserved	0.97 (Wild type)
218	3.5	G2	Negative	Preserved	Preserved	Loss	Preserved	1.12 (Wild type)
219	3.5	G1	Negative	Preserved	Preserved	Loss	Preserved	0.99 (Wild type)
220	3.5	G1	Negative	Preserved	Preserved	Loss	Preserved	1.10 (Wild type)
221	3.5	G2	Positive	Loss	Loss	Preserved	Preserved	1.01 (Wild type)
222	3.5	G2	Positive	Preserved	Loss	Preserved	Preserved	1.00 (Wild type)
223	3.5	G2	Positive	Loss	Preserved	Preserved	Preserved	1.02 (Wild type)
224	3.5	G2	Positive	Loss	Preserved	Preserved	Preserved	1.14 (Wild type)
225	3.5	G1	Positive	Loss	Preserved	Preserved	Preserved	1.02 (Wild type)
226	3.5	G2	Positive	Loss	Preserved	Preserved	Preserved	1.19 (Wild type)
227	3.5	G1	Positive	Preserved	Preserved	Preserved	Preserved	0.98 (Wild type)

228	3.5	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.07 (Wild type)
229	3.5	G2	Negative	Preserved	Preserved	Preserved	Preserved	1.06 (Wild type)
230	3.5	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.01 (Wild type)
231	3.5	G1	Negative	Preserved	Preserved	Preserved	Preserved	0.97 (Wild type)
232	3.6	G2	Negative	Preserved	Preserved	Preserved	Preserved	0.97 (Wild type)
233	3.6	G1	Negative	Preserved	Preserved	Preserved	Preserved	0.95 (Wild type)
234	3.6	G2	Negative	Preserved	Preserved	Preserved	Preserved	1.03 (Wild type)
235	3.7	G1	Positive	Loss	Preserved	Preserved	Preserved	0.65 (Deletion)
236	3.7	G3	Positive	Preserved	Loss	Preserved	Preserved	0.97 (Wild type)
237	3.8	G2	Positive	Preserved	Loss	Preserved	Preserved	0.97 (Wild type)
238	3.8	G1	Negative	Preserved	Preserved	Preserved	Preserved	0.99 (Wild type)
239	3.8	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.09 (Wild type)
240	4.0	G1	Positive	Preserved	Loss	Loss	Preserved	0.98 (Wild type)
241	4.0	G1	Positive	Preserved	Preserved	Loss	Preserved	1.08 (Wild type)
242	4.0	G2	Negative	Preserved	Preserved	Preserved	Loss	1.06 (Wild type)
243	4.0	G1	Positive	Preserved	Loss	Preserved	Preserved	1.08 (Wild type)
244	4.0	G2	Positive	Preserved	Loss	Preserved	Preserved	0.97 (Wild type)
245	4.0	G2	Positive	Preserved	Loss	Preserved	Preserved	0.85 (Wild type)
246	4.0	G2	Negative	Preserved	Preserved	Preserved	Preserved	1.02 (Wild type)
247	4.0	G2	Negative	Preserved	Preserved	Preserved	Preserved	0.92 (Wild type)
248	4.0	G1	Negative	Preserved	Preserved	Preserved	Preserved	0.90 (Wild type)
249	4.0	G2	Negative	Preserved	Preserved	Preserved	Preserved	1.06 (Wild type)
250	4.0	G2	Negative	Preserved	Preserved	Preserved	Preserved	1.17 (Wild type)
251	4.0	G2	Negative	Preserved	Preserved	Preserved	Preserved	0.97 (Wild type)
252	4.0	G2	Negative	Preserved	Preserved	Preserved	Preserved	0.89 (Wild type)
253	4.0	G2	Negative	Preserved	Preserved	Preserved	Preserved	1.03 (Wild type)
254	4.2	G2	Positive	Loss	Loss	Preserved	Preserved	0.29 (Deletion)
255	4.2	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.03 (Wild type)
256	4.2	G1	Negative	Preserved	Preserved	Preserved	Preserved	0.99 (Wild type)
257	4.2	G3	Negative	Preserved	Preserved	Preserved	Preserved	0.99 (Wild type)
258	4.2	G2	Negative	Preserved	Preserved	Preserved	Preserved	0.98 (Wild type)
259	4.4	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.04 (Wild type)
260	4.5	G3	Negative	Preserved	Preserved	Preserved	Preserved	0.67 (Deletion)

261	4.5	G2	Negative	Preserved	Preserved	Preserved	Loss	0.53 (Deletion)
262	4.5	G2	Positive	Loss	Preserved	Loss	Preserved	0.96 (Wild type)
263	4.5	G3	Negative	Preserved	Preserved	Preserved	Loss	1.01 (Wild type)
264	4.5	G2	Positive	Loss	Preserved	Preserved	Preserved	0.93 (Wild type)
265	4.5	G2	Positive	Preserved	Loss	Preserved	Preserved	0.98 (Wild type)
266	4.5	G2	Positive	Preserved	Loss	Preserved	Preserved	0.99 (Wild type)
267	4.5	G1	Negative	Preserved	Preserved	Preserved	Preserved	0.95 (Wild type)
268	4.5	G1	Negative	Preserved	Preserved	Preserved	Preserved	0.97 (Wild type)
269	4.5	G1	Negative	Preserved	Preserved	Preserved	Preserved	0.96 (Wild type)
270	4.5	G1	Negative	Preserved	Preserved	Preserved	Preserved	0.99 (Wild type)
271	4.5	G1	Negative	Preserved	Preserved	Preserved	Preserved	0.99 (Wild type)
272	4.5	G2	Negative	Preserved	Preserved	Preserved	Preserved	0.86 (Wild type)
273	4.6	G2	Positive	Preserved	Preserved	Preserved	Preserved	0.99 (Wild type)
274	4.6	G2	Negative	Preserved	Preserved	Preserved	Preserved	0.98 (Wild type)
275	4.6	G2	Negative	Preserved	Preserved	Preserved	Preserved	0.99 (Wild type)
276	4.8	G1	Positive	Loss	Loss	Preserved	Preserved	0.97 (Wild type)
277	4.9	G2	Positive	Preserved	Loss	Preserved	Preserved	0.69 (Deletion)
278	5.0	G2	Negative	Preserved	Preserved	Loss	Preserved	1.01 (Wild type)
279	5.0	G2	Positive	Preserved	Loss	Preserved	Preserved	1.00 (Wild type)
280	5.0	G2	Negative	Preserved	Preserved	Preserved	Preserved	1.01 (Wild type)
281	5.0	G3	Negative	Preserved	Preserved	Preserved	Preserved	1.01 (Wild type)
282	5.0	G1	Negative	Preserved	Preserved	Preserved	Preserved	0.96 (Wild type)
283	5.0	G1	Negative	Preserved	Preserved	Preserved	Preserved	1.00 (Wild type)
284	5.1	G1	Negative	Preserved	Preserved	Preserved	Preserved	0.96 (Wild type)
285	5.3	G2	Positive	Preserved	Loss	Preserved	Preserved	1.03 (Wild type)
286	5.5	G2	Positive	Loss	Preserved	Preserved	Preserved	0.95 (Wild type)
287	5.5	G2	Positive	Loss	Loss	Preserved	Preserved	0.97 (Wild type)
288	5.5	G2	Positive	Preserved	Loss	Preserved	Preserved	0.99 (Wild type)
289	5.5	G2	Positive	Preserved	Loss	Preserved	Preserved	0.99 (Wild type)
290	5.5	G2	Negative	Preserved	Preserved	Preserved	Preserved	0.88 (Wild type)
291	5.6	G2	Positive	Loss	Preserved	Preserved	Preserved	1.01 (Wild type)
292	5.7	G1	Positive	Loss	Preserved	Preserved	Preserved	0.95 (Wild type)
293	5.8	G1	Positive	Preserved	Preserved	Preserved	Preserved	0.90 (Wild type)

294	6.0	G2	Positive	Preserved	Loss	Preserved	Preserved	0.77 (Deletion)
295	6.0	G2	Negative	Preserved	Preserved	Preserved	Loss	0.95 (Wild type)
296	6.0	G2	Negative	Preserved	Preserved	Loss	Preserved	1.00 (Wild type)
297	6.0	G2	Negative	Preserved	Preserved	Loss	Preserved	1.00 (Wild type)
298	6.0	G2	Negative	Preserved	Preserved	Loss	Preserved	0.89 (Wild type)
299	6.0	G2	Positive	Preserved	Loss	Preserved	Preserved	0.97 (Wild type)
300	6.0	G2	Positive	Loss	Preserved	Preserved	Preserved	0.98 (Wild type)
301	6.0	G1	Positive	Loss	Preserved	Preserved	Preserved	1.02 (Wild type)
302	6.0	G2	Positive	Preserved	Loss	Preserved	Preserved	0.99 (Wild type)
303	6.0	G1	Positive	Preserved	Loss	Preserved	Preserved	0.96 (Wild type)
304	6.0	G2	Negative	Preserved	Preserved	Preserved	Preserved	0.96 (Wild type)
305	6.0	G1	Negative	Preserved	Preserved	Preserved	Preserved	0.94 (Wild type)
306	6.0	G2	Negative	Preserved	Preserved	Preserved	Preserved	0.84 (Wild type)
307	6.4	G2	Negative	Preserved	Preserved	Loss	Preserved	0.48 (Deletion)
308	6.5	G3	Positive	Loss	Loss	Preserved	Preserved	0.66 (Deletion)
309	6.5	G2	Positive	Preserved	Loss	Loss	Preserved	0.98 (Wild type)
310	6.5	G2	Negative	Preserved	Preserved	Preserved	Preserved	1.03 (Wild type)
311	6.5	G2	Negative	Preserved	Preserved	Preserved	Preserved	1.00 (Wild type)
312	6.5	G2	Negative	Preserved	Preserved	Preserved	Preserved	0.91 (Wild type)
313	6.8	G2	Positive	Preserved	Loss	Preserved	Preserved	0.98 (Wild type)
314	7.0	G2	Positive	Preserved	Loss	Preserved	Preserved	1.01 (Wild type)
315	7.0	G1	Positive	Loss	Preserved	Preserved	Preserved	0.93 (Wild type)
316	7.0	G2	Positive	Loss	Preserved	Preserved	Preserved	0.95 (Wild type)
317	7.0	G1	Negative	Preserved	Preserved	Preserved	Preserved	0.97 (Wild type)
318	7.0	G2	Negative	Preserved	Preserved	Preserved	Preserved	0.98 (Wild type)
319	7.0	G2	Negative	Preserved	Preserved	Preserved	Preserved	0.92 (Wild type)
320	7.5	G2	Positive	Preserved	Loss	Preserved	Preserved	0.24 (Deletion)
321	7.5	G2	Positive	Preserved	Preserved	Preserved	Preserved	0.72 (Deletion)
322	7.5	G2	Positive	Preserved	Loss	Preserved	Loss	0.97 (Wild type)
323	7.5	G2	Positive	Preserved	Preserved	Preserved	Preserved	0.98 (Wild type)
324	7.5	G2	Negative	Preserved	Preserved	Preserved	Preserved	1.00 (Wild type)
325	7.5	G1	Negative	Preserved	Preserved	Preserved	Preserved	0.95 (Wild type)
326	7.5	G1	Negative	Preserved	Preserved	Preserved	Preserved	0.95 (Wild type)

327	8.0	G2	Positive	Preserved	Loss	Preserved	Preserved	0.88 (Wild type)
328	8.5	G2	Negative	Preserved	Preserved	Loss	Preserved	1.01 (Wild type)
329	8.5	G2	Positive	Loss	Preserved	Preserved	Preserved	0.95 (Wild type)
330	8.5	G2	Negative	Preserved	Preserved	Preserved	Preserved	0.97 (Wild type)
331	9.0	G2	Positive	Loss	Loss	Loss	Preserved	0.99 (Wild type)
332	9.0	G3	Positive	Preserved	Preserved	Loss	Preserved	0.84 (Wild type)
333	9.0	G1	Negative	Preserved	Preserved	Preserved	Loss	0.95 (Wild type)
334	9.0	G1	Negative	Preserved	Preserved	Preserved	Preserved	0.98 (Wild type)
335	9.5	G2	Positive	Preserved	Preserved	Loss	Preserved	0.88 (Wild type)
336	10.0	G2	Positive	Preserved	Loss	Preserved	Preserved	0.56 (Deletion)
337	10.0	G2	Positive	Preserved	Preserved	Preserved	Preserved	0.53 (Deletion)
338	10.0	G2	Positive	Loss	Preserved	Loss	Preserved	0.94 (Wild type)
339	10.0	G1	Negative	Preserved	Preserved	Preserved	Preserved	0.96 (Wild type)
340	10.0	G2	Negative	Preserved	Preserved	Preserved	Preserved	0.99 (Wild type)
341	12.0	G2	Positive	Loss	Preserved	Preserved	Preserved	1.00 (Wild type)
342	12.2	G2	Positive	Preserved	Loss	Preserved	Preserved	0.96 (Wild type)
343	14.0	G1	Positive	Preserved	Loss	Preserved	Preserved	0.19 (Deletion)
344	15.0	G2	Positive	Loss	Preserved	Preserved	Preserved	0.95 (Wild type)
345	15.0	G2	Positive	Loss	Preserved	Preserved	Preserved	0.95 (Wild type)
346	17.0	G2	Negative	Preserved	Preserved	Preserved	Loss	0.94 (Wild type)
347	18.0	G2	Positive	Preserved	Preserved	Loss	Preserved	0.93 (Wild type)

Abbreviations: ALT, alternative lengthening of telomeres

Supplementary Table 3. Clinical and pathologic comparison of DAXX/ATRX, H3K36me3, ARID1A and *CDKN2A* status in non-syndromic well-differentiated PanNETs.

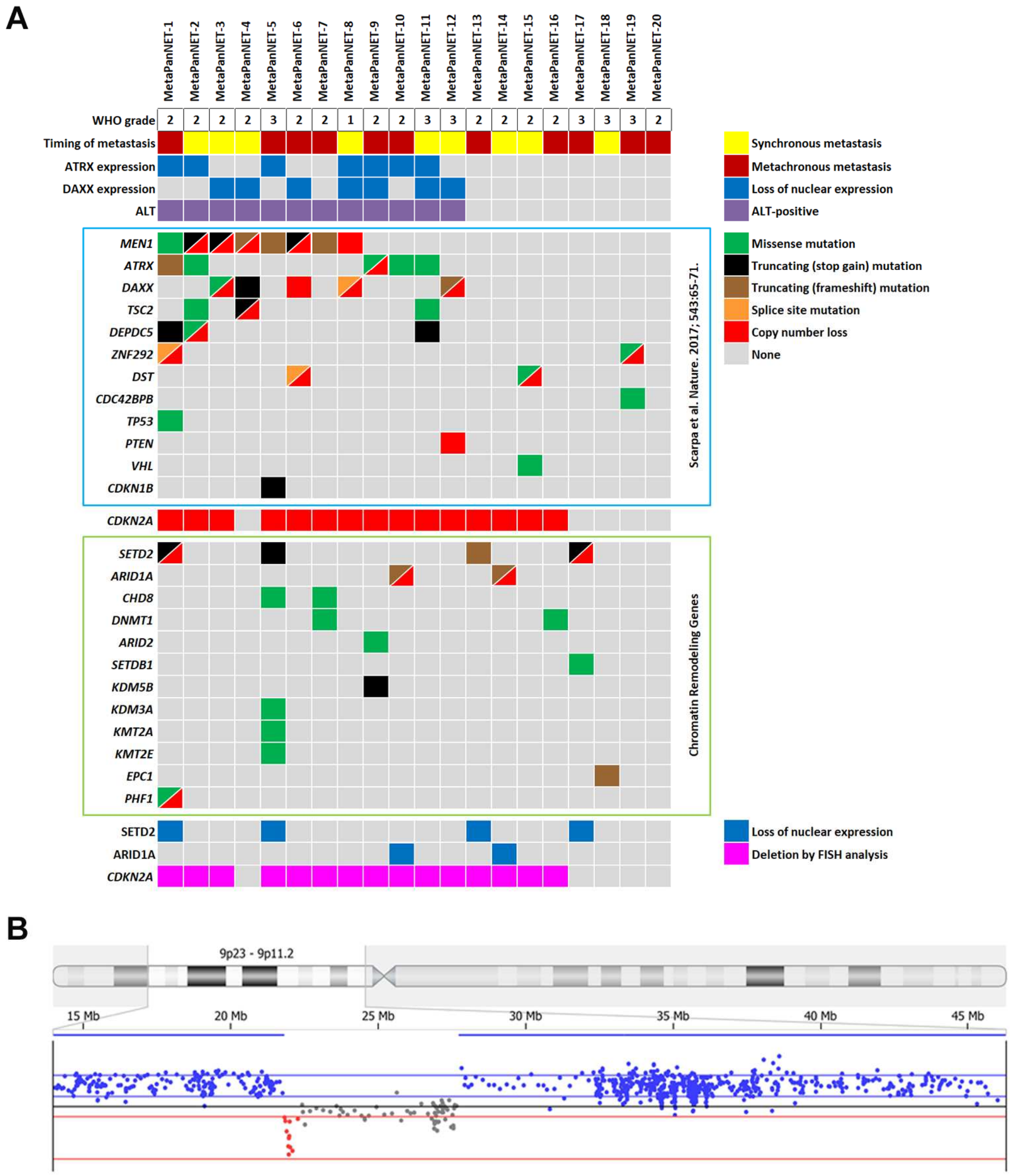
Patient or Tumor Characteristics	DAXX/ATRX		*p*	H3K36me3		*p*	ARID1A		*p*	*CDKN2A*		*p*	DAXX/ATRX/H3K36me3/ARID1A/*CDKN2A*		*p*
	Preserved	Loss		Preserved	Loss		Preserved	Loss		Wildtype	Deletion		Preserved/Wildtype	Loss/Deletion	
Gender															
Female	139 (84%)	27 (16%)	0.005	155 (93%)	11 (7%)	0.431	161 (97%)	5 (3%)	1.000	154 (93%)	12 (7%)	1.000	124 (75%)	42 (25%)	0.008
Male	128 (71%)	53 (29%)		164 (91%)	17 (9%)		176 (97%)	5 (3%)		168 (93%)	13 (7%)		111 (61%)	70 (39%)	
Mean age (range), years	58.3 (26 - 85)	61.3 (31 - 83)	0.057	59.1 (26 - 85)	57.6 (32 - 82)	0.546	59.1 (26 - 83)	57.3 (37 - 85)	0.679	58.8 (26 - 85)	61.8 (37 - 80)	0.241	58.4 (26 - 83)	60.4 (31 - 85)	0.162
Mean tumor size (range), cm	3.0 (0.6 - 18.0)	5.0 (1.0 - 15.0)	< 0.001	3.3 (0.6 - 17.0)	5.3 (1.2 - 18.0)	< 0.001	3.3 (0.6 - 18.0)	6.0 (1.7 - 17.0)	0.002	3.3 (0.6 - 18.0)	4.9 (2.0 - 14.0)	0.004	2.6 (0.6 - 10.0)	5.2 (1.0 - 18.0)	< 0.001
Functional*	33 (92%)	3 (8%)	0.034	36 (100%)	0 (0%)	0.096	36 (100%)	0 (0%)	0.607	36 (100%)	0 (0%)	0.091	33 (92%)	3 (8%)	0.001
Insulinoma	21 (100%)	0 (0%)		21 (100%)	0 (0%)		21 (100%)	0 (0%)		21 (100%)	0 (0%)		21 (100%)	0 (0%)	
Gastrinoma	7 (88%)	1 (12%)		8 (100%)	0 (0%)		8 (100%)	0 (0%)		8 (100%)	0 (0%)		7 (88%)	1 (12%)	
Glucagonoma	4 (100%)	0 (0%)		4 (100%)	0 (0%)		4 (100%)	0 (0%)		4 (100%)	0 (0%)		4 (100%)	0 (0%)	
Somatostatinoma	0 (0%)	1 (100%)		1 (100%)	0 (0%)		1 (100%)	0 (0%)		1 (100%)	0 (0%)		0 (0%)	1 (100%)	
VIPoma	1 (100%)	0 (0%)		1 (100%)	0 (0%)		1 (100%)	0 (0%)		1 (100%)	0 (0%)		1 (100%)	0 (0%)	
ACTH-producing	0 (0%)	1 (100%)		1 (100%)	0 (0%)		1 (100%)	0 (0%)		1 (100%)	0 (0%)		0 (0%)	1 (100%)	
Location															
Head and uncinate	104 (79%)	27 (21%)	0.432	113 (86%)	18 (14%)	0.004	128 (98%)	3 (2%)	0.748	120 (92%)	11 (8%)	0.526	88 (67%)	43 (33%)	0.906
Body and tail	163 (75%)	53 (25%)		206 (95%)	10 (5%)		209 (97%)	7 (3%)		202 (94%)	14 (6%)		147 (68%)	69 (32%)	
WHO grade															
Low (G1)	175 (88%)	24 (12%)	< 0.001	191 (96%)	8 (4%)	0.004	197 (99%)	2 (1%)	0.026	190 (95%)	9 (5%)	0.033	165 (83%)	34 (17%)	< 0.001
Intermediate (G2)	86 (61%)	54 (39%)		121 (86%)	19 (14%)		133 (95%)	7 (5%)		126 (90%)	14 (10%)		67 (48%)	73 (52%)	
High (G3)	6 (75%)	2 (25%)		7 (88%)	1 (12%)		7 (88%)	1 (12%)		6 (75%)	2 (25%)		3 (38%)	5 (62%)	
Lymphovascular invasion	93 (61%)	60 (39%)	< 0.001	133 (87%)	20 (13%)	0.003	143 (93%)	10 (7%)	< 0.001	131 (86%)	22 (14%)	< 0.001	67 (44%)	86 (56%)	< 0.001
Perineural invasion	59 (65%)	32 (25%)	0.002	77 (85%)	14 (15%)	0.006	86 (95%)	5 (5%)	0.136	78 (86%)	13 (14%)	0.004	42 (46%)	49 (54%)	< 0.001
Primary tumor (pT) stage															
T1	115 (95%)	6 (5%)	< 0.001	118 (98%)	3 (2%)	0.001	120 (99%)	1 (1%)	0.001	120 (99%)	1 (1%)	< 0.001	113 (93%)	8 (7%)	< 0.001
T2	80 (75%)	26 (25%)		99 (93%)	7 (7%)		106 (100%)	0 (0%)		99 (93%)	7 (7%)		74 (70%)	32 (30%)	
T3	72 (60%)	48 (40%)		102 (85%)	18 (15%)		111 (93%)	9 (7%)		103 (86%)	17 (14%)		48 (40%)	72 (60%)	
Lymph node metastases (n = 294)**	62 (56%)	48 (44%)	< 0.001	98 (89%)	12 (11%)	0.397	103 (94%)	7 (6%)	0.044	94 (85%)	16 (15%)	0.003	45 (41%)	65 (59%)	< 0.001
Synchronous metastases	28 (51%)	27 (49%)	< 0.001	44 (80%)	11 (20%)	0.002	50 (91%)	5 (9%)	0.011	45 (82%)	10 (18%)	0.002	14 (25%)	41 (75%)	< 0.001
Metachronous metastases (n = 282)***	17 (38%)	28 (62%)	< 0.001	36 (80%)	9 (20%)	< 0.001	42 (93%)	3 (7%)	0.027	33 (73%)	12 (27%)	< 0.001	5 (11%)	40 (89%)	< 0.001
Presence of ALT (n = 94)	14 (15%)	80 (85%)	< 0.001	79 (84%)	15 (16%)	0.003	91 (97%)	3 (3%)	0.734	78 (83%)	16 (17%)	< 0.001	7 (7%)	87 (93%)	< 0.001
Loss of DAXX/ATRX (n = 80)				69 (86%)	11 (14%)	0.058	77 (96%)	3 (4%)	0.702	67 (84%)	13 (16%)	0.001			
Loss of H3K36me3 (n = 28)	17 (61%)	11 (39%)	0.058				28 (100%)	0 (0%)	1.000	25 (89%)	3 (11%)	0.440			
Loss of ARID1A (n = 10)	7 (70%)	3 (30%)	0.702	10 (100%)	0 (0%)	1.000				8 (80%)	2 (20%)	0.157			
Deletion in *CDKN2A* (n = 25)	12 (48%)	13 (52%)	0.001	22 (88%)	3 (12%)	0.440	23 (92%)	2 (8%)	0.157						

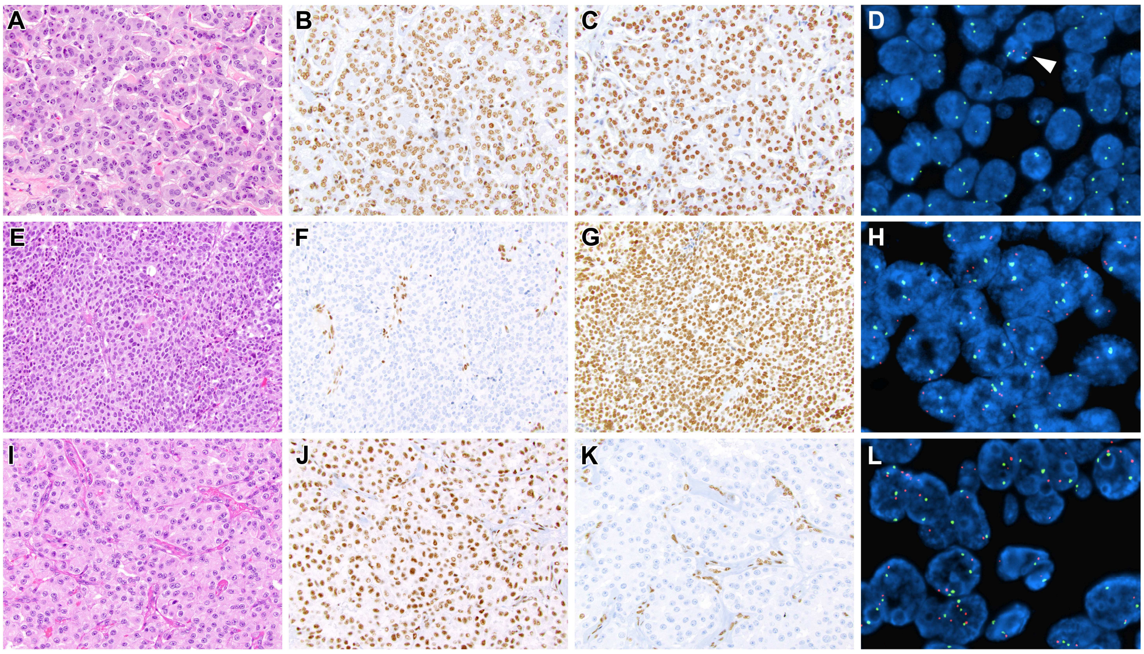
Abbreviations: ALT, alternative lengthening of telomeres

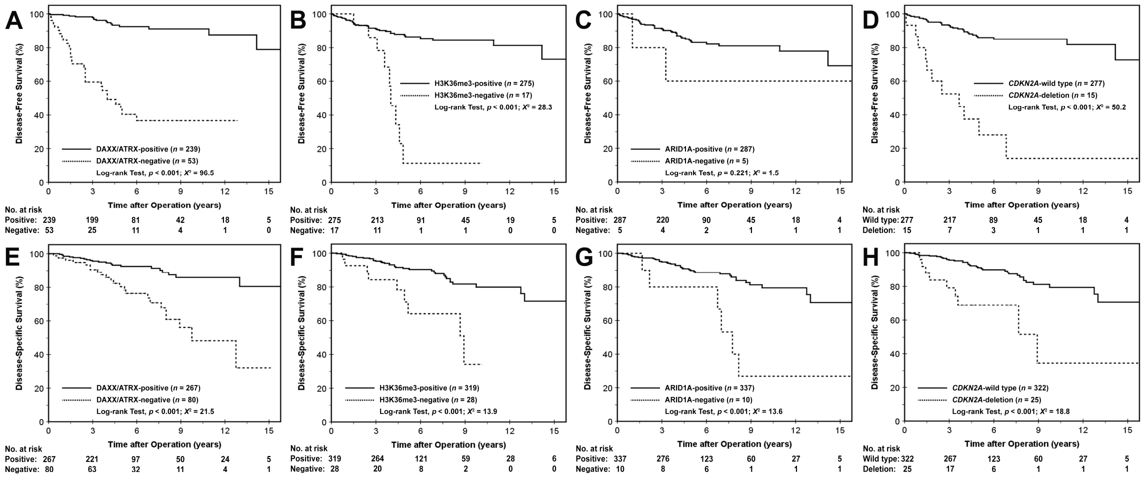
*Statistical analysis as reported is based on the presence or absence of functionality and not functional subtype.

**Regional lymph nodes were present for evaluation in 294 cases.

***The presence of metachronous metastasis was evaluated in patients that had not presented with synchronous metastases (n = 282).


A
MetaPanNET-1
MetaPanNET-2
MetaPanNET-3
MetaPanNET-4
MetaPanNET-5
MetaPanNET-6
MetaPanNET-7
MetaPanNET-8
MetaPanNET-9
MetaPanNET-10
MetaPanNET-11
MetaPanNET-12
MetaPanNET-13
MetaPanNET-14
MetaPanNET-15
MetaPanNET-16
MetaPanNET-17
MetaPanNET-18
MetaPanNET-19
MetaPanNET-20
WHO grade
2 2 2 2 3 2 2 1 2 2 3 3 2 2 2 2 3 3 3 2
Timing of metastasis
ATRX expression
DAXX expression
ALT
MEN1
ATRX
DAXX
TSC2
DEPDC5
ZNF292
DST
CDC42BPB
TP53
PTEN
VHL
CDKN1B
Scarpa et al. Nature. 2017; 543:65-71.
CDKN2A
SETD2
ARID1A
CHD8
DNMT1
ARID2
SETDB1
KDM5B
KDM3A
KMT2A
KMT2E
EPC1
PHF1
Chromatin Remodeling Genes
SETD2
ARID1A
CDKN2A
Synchronous metastasis
Metachronous metastasis
Loss of nuclear expression
ALT-positive
Missense mutation
Truncating (stop gain) mutation
Truncating (frameshift) mutation
Splice site mutation
Copy number loss
None
Loss of nuclear expression
Deletion by FISH analysis
B
9p23 - 9p11.2
15 Mb
20 Mb
25 Mb
30 Mb
35 Mb
40 Mb
45 Mb


A
B
C
D
E
F
G
H
I
J
K
L


A
B
C
D
E
F
G
H
Disease-Free Survival (%)
Disease-Specific Survival (%)
Time after Operation (years)
DAXX/ATRX-positive (n = 239)
DAXX/ATRX-negative (n = 53)
Log-rank Test, p < 0.001; X² = 96.5
H3K36me3-positive (n = 275)
H3K36me3-negative (n = 17)
Log-rank Test, p < 0.001; X² = 28.3
ARID1A-positive (n = 287)
ARID1A-negative (n = 5)
Log-rank Test, p = 0.221; X² = 1.5
CDKN2A-wild type (n = 277)
CDKN2A-deletion (n = 15)
Log-rank Test, p < 0.001; X² = 50.2
DAXX/ATRX-positive (n = 267)
DAXX/ATRX-negative (n = 80)
Log-rank Test, p < 0.001; X² = 21.5
H3K36me3-positive (n = 319)
H3K36me3-negative (n = 28)
Log-rank Test, p < 0.001; X² = 13.9
ARID1A-positive (n = 337)
ARID1A-negative (n = 10)
Log-rank Test, p < 0.001; X² = 13.6
CDKN2A-wild type (n = 322)
CDKN2A-deletion (n = 25)
Log-rank Test, p < 0.001; X² = 18.8
No. at risk
Positive: 239 199 81 42 18 5
Negative: 53 25 11 4 1 0
Positive: 275 213 91 45 19 5
Negative: 17 11 1 1 0 0
Positive: 287 220 90 45 18 4
Negative: 5 4 2 1 1 1
Wild type: 277 217 89 45 18 4
Deletion: 15 7 3 1 1 1
Positive: 267 221 97 50 24 5
Negative: 80 63 32 11 4 1
Positive: 319 264 121 59 28 6
Negative: 28 20 8 2 0 0
Positive: 337 276 123 60 27 5
Negative: 10 8 6 1 1 1
Wild type: 322 267 123 60 27 5
Deletion: 25 17 6 1 1 1