Evaluation of a Patient With Non-Myoinvasive Uterine Serous Carcinoma Confined to a Polyp and Positive Peritoneal Washings With Somatic ARHGAP35 and KRAS Mutations

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Abstract

Currently, the application of peritoneal washings as a diagnostic tool for endometrial cancer staging is not well defined. The case described aims to highlight the current ambiguity surrounding the use of peritoneal washings in clinical practice.

A 69-year-old G3P3003 presented to her gynecologist with complaints of new-onset heavy vaginal bleeding. The patient sought an endometrial biopsy, which suggested serous endometrial intraepithelial carcinoma (EIC) focally suspicious for invasive carcinoma, with the involvement of polyps. Based on these results, a robotic-assisted total laparoscopic hysterectomy, bilateral salpingo-oophorectomy, bilateral sentinel lymph node dissection, and omentectomy were performed. Results from her final pathology exhibited a stage IA uterine serous carcinoma (USC) involving a polyp (4.2 cm in greatest dimension) with no myometrial or lymphovascular invasion, but washings were positive for adenocarcinoma. Based on her family history of malignancy, the patient underwent germline panel testing. The patient’s somatic tumor testing demonstrated proficient DNA mismatch repair status, microsatellite stability, low tumor mutational burden (4 mut/Mb), low loss of heterozygosity (9%), amplification of the ERBB2 (HER2/neu) gene by both immunohistochemistry (5+, 20% positive) and fluorescence in-situ hybridization. Her tumor also had weakly positive estrogen receptor expression (1+, 10% positive); furthermore, some pathogenic variants in KRAS (c.37G>T), PIK3CA (c.263G>A), and TP53 (c.743G>A) were identified. Given the incongruent findings found with the positive peritoneal washing and negative lymph node involvement in addition to molecular testing, management for this patient was unclear.

Ultimately, this case highlights a number of advances within the field of gynecological oncology but also emphasizes the persistent ambiguity and incongruency in the management of patients with early-stage high-risk histologies. Moving forward it will become increasingly important to be able to develop a more standardized process to assess how these diagnostic tools should inform prognosis and treatment plans.

Introduction

Endometrial cancer represents the most common gynecologic cancer in the United States with around 66,570 new cases estimated to be diagnosed in 2021 [1]. Only about 10% of endometrial cancers are uterine serous carcinomas (USC), but they make up around 40% of deaths [2]. USC is high-grade by definition and more aggressive than most endometrioid endometrial adenocarcinomas [2]. USC has a propensity to invade local lymphatics and other intra-peritoneal structures, sometimes even in the absence of identifiable myometrial invasion, which is why many women are diagnosed with advanced-stage disease and have relatively poorer prognoses compared to women with endometrioid adenocarcinoma [5].

USC, like all endometrial cancers, is staged using the FIGO (Fédération Internationale de Gynécologie et d’Obstétrique) staging system which was revised in 2009. Prior to this time, peritoneal washings were considered an important component of endometrial cancer staging, in order to rule out the presence of malignant cells in the peritoneal cavity. Numerous studies questioned the significance of peritoneal cytology and upon investigation found little to no evidence that it was an independent prognostic factor [4-6]. These findings led to the 2009 revision of the FIGO staging system, removing peritoneal washings from the staging guidelines [7]. Despite this revision, providers have continued to use peritoneal washings as part of their diagnostic evaluation, and more recent studies have found positive results correlating with poorer prognosis [8-12]. While peritoneal cytology does not currently affect staging, FIGO, the American Joint Committee on Cancer, and the National Comprehensive Cancer Network continue to recommend obtaining...
washings because positive cytology may add to the effect of other poor prognostic factors and impact treatment decision-making [13].

We also have a new molecular understanding of USC based in part on work published by The Cancer Genome Atlas Network (TCGA) [14]. Where previously endometrial cancer was classified into two subgroups defined by clinical and pathologic features, comprehensive profiling by TCGA classified four separate endometrial cancer genomic signatures that could augment or replace this dualistic model and individualize treatment decision-making [15,16]. In the TCGA study, serous tumors were characterized by frequent mutations in TP53, extensive copy number alterations, and few methylation changes [14]. KRAS mutations were not common in this group (only 1%) of all USC cases whereas they were much more common in endometrioid cancer.

The following report demonstrates an interesting case of a woman with USC who had positive peritoneal washings despite non-invasive disease and was found on comprehensive tumor profiling to have a number of somatic tumor mutations which may have contributed to the aggressiveness of her disease.

**Case Presentation**

A 69-year-old G3P3003 presented to her gynecologist with complaints of new-onset heavy vaginal bleeding. She denied abdominal pain, dysuria, urinary frequency or urgency, weight loss, fevers, or recent injury or trauma. This was her first episode of bleeding since she became menopausal in her mid-50s. Her past medical history was significant for three spontaneous vaginal deliveries. She also had HER2/neu positive ductal carcinoma for which she had a lumpectomy and completed 10 years of anastrozole suppression and was in disease remission. Notably, the patient had a strong family history of cancer: the patient’s mother had breast and colon cancer, maternal grandmother had both breast and stomach cancer, maternal grandfather had pancreatic cancer, and a cousin had prostate cancer. Other than obesity (with a BMI of 36), she reported no other relevant medical history.

Her gynecologist performed an endometrial biopsy demonstrating at least serous endometrial intraepithelial carcinoma (EIC) focally suspicious for invasive carcinoma, with involvement of polyps. She had a normal CA125 (17.2 U/mL) and a CT scan of her chest abdomen and pelvis which showed a low-attenuating lesion in the central portion of the uterus but no lymphadenopathy or other evidence of metastatic disease. Based on these results, she was referred to a gynecologic oncologist who performed a robotic-assisted total laparoscopic hysterectomy, bilateral salpingo-oophorectomy, bilateral sentinel lymph node dissection, and omentectomy.

Her final pathology results showed a stage IA USC involving a polyp (4.2 cm in greatest dimension) with no myometrial invasion, no lymphovascular invasion, and three negative sentinel lymph nodes but washings positive for adenocarcinoma (Figures 1-3). Her immunohistochemical tests demonstrated intact expression of DNA mismatch repair proteins (MLH1, MSH2, MSH6, PMS2).
FIGURE 1: Hematoxylin and eosin stain demonstrating endometrial intraepithelial carcinoma involving a polyp. Original magnification x 100.

FIGURE 2: Hematoxylin and eosin stain demonstrating microscopic stromal invasion of the polyp by uterine serous carcinoma. Original magnification x 100.
FIGURE 3: Cytology from pelvic washings demonstrating positivity for adenocarcinoma. Original magnification x 400.

Based on her family history of malignancy, the patient underwent germline panel testing of 47 genes frequently associated with hereditary cancers via the Invitae Common Hereditary Cancer Panel (https://www.invitae.com/). Other than a variant of uncertain significance in BARD1 (c.1409A>G; p.ASN470Ser), she had no deleterious germline mutations identified. Additionally, an archival tumor block was sent for Caris Molecular Intelligence testing. This tumor profiling strategy combines whole-exome sequencing, whole transcriptomic sequencing, and immunohistochemistry to examine cancer-type relevant biomarkers. Details regarding this assay can be found at Caris Life Sciences: Comprehensive Molecular Profiling (https://www.carismolecularintelligence.com/comprehensivetumorprofiling/).

The patient’s somatic tumor testing was notable for proficient DNA mismatch repair status, microsatellite stability, low tumor mutational burden (4 mut/Mb), low loss of heterozygosity (9%), amplification of the ERBB2 (Her2/Neu) gene by both immunohistochemistry (3+, 20% positive) and fluorescence in-situ hybridization. Her tumor also had weakly positive estrogen receptor expression (1+, 10% positive) but negative progesterone receptor staining (0%). There were notable somatic pathogenic variants in KRAS (c.37G>T), PIK3CA (c.263G>A), and TP53 (c.743G>A).

Given the results from the molecular profiling along with the incongruent findings found with the positive peritoneal washing and negative lymph node involvement, the steps to manage this patient were not well defined. Ultimately, the patient was presented at the tumor board where it was decided that she would proceed with six cycles of carboplatin and paclitaxel followed by cuff brachytherapy. This case, however, created an opportunity to discuss the current space for peritoneal washings in informing treatment regimens, and the way molecular profiling can help direct the management of patients that present with early-stage USC.

Discussion

Our understanding of the prognostic value of peritoneal cytology has been evolving since the 2009 FIGO staging modifications [11]. An estimated 11% of women who undergo staging surgery for endometrial cancer will have positive peritoneal cytology, most commonly in the presence of extra-uterine disease. The prognostic significance of isolated peritoneal cytology in the absence of other risk factors is controversial and therefore it is not often used as a high-risk criterion in the formulation of adjuvant treatment planning.

Several recent studies have found peritoneal cytology to be an important prognostic for survival in women with early-stage endometrial cancer [9,10]. One study conducted by Matsuo et al. found that in a population of 1668 women with early-stage endometrioid cancer, the presence of abnormal peritoneal cytology (11% of their cohort) was independently associated with decreased disease-free survival (HR 3.07, P<0.001) and cause-specific survival (HR 3.42, P = 0.008) [9]. Another recent study out of Michigan examined a cohort of 148 women with USC and found that 22% of the cohort had positive washings. The presence of malignant
ARHGAP35 mutations often occur simultaneously with TP53 mutations in USC, molecular data from cancers in TCGA making it one of the most frequently mutated genes in this cancer type and a very rarely occurring KRAS variant. Mutations in ARHGAP35 were found in 18% of the uterine serous especially in early-stage HER2+ USC patients.

Highlight the significance of these molecular markers as both prognostic factors and therapeutic targets, efficacy of both WEE1, a key cell cycle regular, and PI3K/AKT/mTOR inhibitors. Both studies have already promised alternative therapeutic targets for USC. Currently, clinical trials are being conducted to assess the PIK3CA mutations using mouse models statistically significant increase in the prevalence of acquired trastuzumab resistance in the presence of mutations may serve as a mechanism by which resistance to trastuzumab is acquired. Black et al found a implicated in the efficacy of HER2-targeted therapy. Despite the promise of HER2 targeted therapy, PIK3CA mutations, specifically, have also been identified in patients with stage III-IV disease [23]. While only a handful of studies have been conducted in early-stage patients, they are starting to show promising results [25,27]. It remains unclear if the cost of this medication would be justifiable (or even beneficial) in women with early-stage, HER2 overexpressing disease.

This patient also had TP53 and PIK3CA mutations with a low mutation frequency and microsatellite stable. These results are not unusual for this patient population but do have implications on prognosis and treatment [28]. In one study it was found that individuals with both TP53 and PIK3CA mutations had worse survival prognoses than those with only TP53 mutation [29]. PIK3CA mutations, specifically, have also been implicated in the efficacy of HER2-targeted therapy. Despite the promise of HER2 targeted therapy, PIK3CA mutations may serve as a mechanism by which resistance to trastuzumab is acquired. Black et al found a statistically significant increase in the prevalence of acquired trastuzumab resistance in the presence of PIK3CA mutations using mouse models [30]. Nevertheless, both these mutations, TP53 and PIK3CA, offer promising alternative therapeutic targets for USC. Currently, clinical trials are being conducted to assess the efficacy of both WEE1, a key cell cycle regular, and PI3K/AKT/mTOR inhibitors. Both studies have already begun to report promising results when using these targeted therapies [25,31]. Overall, these studies highlight the significance of these molecular markers as both prognostic factors and therapeutic targets, especially in early-stage HER2+ USC patients.

This patient’s tumor also had several other mutations worth noting including a truncation in ARHGAP35 and a very rarely occurring KRAS variant. Mutations in ARHGAP35 were found in 18% of the uterine serous cancers in TCGA making it one of the most frequently mutated genes in this cancer type [32,33]. Whereas ARHGAP35 mutations often occur simultaneously with TP53 mutations in USC, molecular data from
carcinosarcomas demonstrate these mutations occur more commonly in tumors without TP53 mutations [34]. The role of ARHGAP35 mutations in carcinogenesis is still not completely understood [35]. This gene is associated with the regulation of RhoA, a transforming protein associated with the regulation of the cytoskeleton [36]. Despite the emergence of ARHGAP35 mutations as a new major cancer gene, few studies have investigated its implication for the prognosis and treatment of USC. The ARHGAP35 mutation in this study was a truncation (p.R617) suggesting loss of ARHGAP35 normal functions.

A KRAS G13C mutation was also identified in this patient’s tumor molecular data. While KRAS mutation is common in endometrioid endometrial cancers it is rare in uterine serous tumors occurring in less than 3% of cases. This particular mutation was not seen in any other serous case. Despite the rarity of this mutation, it could, however, make this patient eligible for pan-RAS inhibitors which target KRAS mutations. No studies, however, have examined this specific mutation in this population; therefore, more investigation is required in order to understand how these results should inform prognosis and treatment. In addition to ARHGAP35 and KRAS genes, several other mutations were noted including those in BARD1 (also noted in the hereditary cancer germline analysis described above), YYAP1 (YAP), POLH, and MLH3 among others. The complete list of detected variants, amplifications, and fusion events is described in the supplemental table provided in the appendix.

**Conclusions**

Ultimately, this case highlights some exciting changes that have occurred in our field over the past 10 years, but also hints at persistent ambiguity and confusion in managing patients with early-stage high-risk histologies. Moving forward it will become increasingly important to be able to, firstly, integrate the results of a patient’s histopathology with their molecular testing, secondly, reconcile how these findings impact prognosis, and thirdly, develop treatment plans based on those results.

**Appendices**

| Biomarker  | Method | Analyte Description | Result                | Variant Detail | Variant Frequency (%) |
|------------|--------|---------------------|-----------------------|----------------|-----------------------|
| ABCB11     | Seq    | DNA-Tumor           | Mutation Not Detected |                |                       |
| ABL1       | Seq    | DNA-Tumor           | Mutation Not Detected |                |                       |
| ABL1       | Seq    | RNA-Tumor           | Fusion Not Detected   |                |                       |
| ABL2       | CNA-Seq| DNA-Tumor           | Amplification Not Detected |             |                       |
| ABL2       | Seq    | DNA-Tumor           | Mutation Not Detected |                |                       |
| ABRAXAS1   | Seq    | DNA-Tumor           | Mutation Not Detected |                |                       |
| ACD        | Seq    | DNA-Tumor           | Mutation Not Detected |                |                       |
| ACKR3      | Seq    | DNA-Tumor           | Mutation Not Detected |                |                       |
| ACSL3      | CNA-Seq| DNA-Tumor           | Amplification Not Detected |             |                       |
| ACSL3      | Seq    | DNA-Tumor           | Mutation Not Detected |                |                       |
| ACSL6      | CNA-Seq| DNA-Tumor           | Amplification Not Detected |             |                       |
| ACSL6      | Seq    | DNA-Tumor           | Mutation Not Detected |                |                       |
| ACVR1      | Seq    | DNA-Tumor           | Mutation Not Detected |                |                       |
| ACVR1B     | Seq    | DNA-Tumor           | Indeterminate         |                |                       |
| ADGRA2     | Seq    | DNA-Tumor           | Mutation Not Detected |                |                       |
| AFDN       | CNA-Seq| DNA-Tumor           | Amplification Not Detected |             |                       |
| AFDN       | Seq    | DNA-Tumor           | Mutation Not Detected |                |                       |
| AFF1       | CNA-Seq| DNA-Tumor           | Amplification Not Detected |             |                       |
| AFF1       | Seq    | DNA-Tumor           | Mutation Not Detected |                |                       |
| AFF3       | CNA-Seq| DNA-Tumor           | Amplification Not Detected |             |                       |
| AFF3       | Seq    | DNA-Tumor           | Mutation Not Detected |                |                       |
| AIP        | Seq    | DNA-Tumor           | Mutation Not Detected |                |                       |
| Gene     | Method | Tissue          | Result                           |
|----------|--------|-----------------|----------------------------------|
| AJUBA    | Seq    | DNA-Tumor       | Mutation Not Detected            |
| AKT1     | Seq    | DNA-Tumor       | Mutation Not Detected            |
| AKT2     | CNA-Seq| DNA-Tumor       | Amplification Not Detected       |
| AKT2     | Seq    | DNA-Tumor       | Mutation Not Detected            |
| AKT3     | CNA-Seq| DNA-Tumor       | Amplification Not Detected       |
| AKT3     | Seq    | DNA-Tumor       | Mutation Not Detected            |
| ALK      | CNA-Seq| DNA-Tumor       | Amplification Not Detected       |
| ALK      | Seq    | DNA-Tumor       | Mutation Not Detected            |
| ALOX12B  | Seq    | DNA-Tumor       | Mutation Not Detected            |
| AMER1    | Seq    | DNA-Tumor       | Mutation Not Detected            |
| ANKR2D6  | Seq    | DNA-Tumor       | Indeterminate                    |
| APC      | CNA-Seq| DNA-Tumor       | Amplification Not Detected       |
| APC      | Seq    | DNA-Tumor       | Mutation Not Detected            |
| APLNR    | Seq    | DNA-Tumor       | Mutation Not Detected            |
| AR       | Seq    | DNA-Tumor       | Mutation Not Detected            |
| AR       | Seq    | RNA-Tumor       | Variant Transcript Not Detected  |
| ARAF     | Seq    | DNA-Tumor       | Mutation Not Detected            |
| ARFRP1   | Seq    | DNA-Tumor       | Mutation Not Detected            |
| ARHGAP26 | Seq    | RNA-Tumor       | Fusion Not Detected              |
| ARHGAP35 | Seq    | DNA-Tumor       | Unclassified Variant             | Exon 1 | p.R617  | 41 |
| ARHGEF12 | Seq    | DNA-Tumor       | Indeterminate                    |
| ARID1A   | CNA-Seq| DNA-Tumor       | Amplification Not Detected       |
| ARID1A   | Seq    | DNA-Tumor       | Mutation Not Detected            |
| ARID1B   | Seq    | DNA-Tumor       | Mutation Not Detected            |
| ARID2    | CNA-Seq| DNA-Tumor       | Amplification Not Detected       |
| ARID2    | Seq    | DNA-Tumor       | Mutation Not Detected            |
| ARID5B   | Seq    | DNA-Tumor       | Mutation Not Detected            |
| ARNT     | CNA-Seq| DNA-Tumor       | Amplification Not Detected       |
| ARNT     | Seq    | DNA-Tumor       | Mutation Not Detected            |
| ASPSCR1  | Seq    | DNA-Tumor       | Unclassified Variant             | Exon 13 | p.A458T | 56 |
| ASXL1    | CNA-Seq| DNA-Tumor       | Amplification Not Detected       |
| ASXL1    | Seq    | DNA-Tumor       | Mutation Not Detected            |
| ASXL2    | Seq    | DNA-Tumor       | Indeterminate                    |
| ATF1     | CNA-Seq| DNA-Tumor       | Amplification Not Detected       |
| ATF1     | Seq    | DNA-Tumor       | Mutation Not Detected            |
| ATIC     | CNA-Seq| DNA-Tumor       | Amplification Not Detected       |
| ATIC     | Seq    | DNA-Tumor       | Mutation Not Detected            |
| Gene     | Method  | Tumor Type  | Result                  |
|----------|---------|-------------|-------------------------|
| ATM      | CNA-Seq | DNA-Tumor   | Amplification Not Detected |
| ATM      | Seq     | DNA-Tumor   | Mutation Not Detected   |
| ATP1A1   | CNA-Seq | DNA-Tumor   | Amplification Not Detected |
| ATP1A1   | Seq     | DNA-Tumor   | Mutation Not Detected   |
| ATR      | CNA-Seq | DNA-Tumor   | Amplification Not Detected |
| ATR      | Seq     | DNA-Tumor   | Mutation Not Detected   |
| ATRX     | Seq     | DNA-Tumor   | Mutation Not Detected   |
| AURKA    | Seq     | DNA-Tumor   | Indeterminate           |
| AURKB    | CNA-Seq | DNA-Tumor   | Amplification Not Detected |
| AXIN1    | Seq     | DNA-Tumor   | Mutation Not Detected   |
| AXIN2    | Seq     | DNA-Tumor   | Mutation Not Detected   |
| AXL      | Seq     | DNA-Tumor   | Mutation Not Detected   |
| AXL      | Seq     | RNA-Tumor   | Fusion Not Detected     |
| B2M      | Seq     | DNA-Tumor   | Mutation Not Detected   |
| BAP1     | CNA-Seq | DNA-Tumor   | Amplification Not Detected |
| BAP1     | Seq     | DNA-Tumor   | Mutation Not Detected   |
| BARD1    | CNA-Seq | DNA-Tumor   | Amplification Not Detected |
| BARD1    | Seq     | DNA-Tumor   | Unclassified Variant    | Exon 6 | p.N470S | 48 |
| BCL10    | Seq     | DNA-Tumor   | Mutation Not Detected   |
| BCL11A   | CNA-Seq | DNA-Tumor   | Amplification Not Detected |
| BCL11A   | Seq     | DNA-Tumor   | Mutation Not Detected   |
| BCL11B   | Seq     | DNA-Tumor   | Mutation Not Detected   |
| BCL2     | Seq     | DNA-Tumor   | Mutation Not Detected   |
| BCL2L1   | Seq     | DNA-Tumor   | Mutation Not Detected   |
| BCL2L11  | CNA-Seq | DNA-Tumor   | Amplification Not Detected |
| BCL2L11  | Seq     | DNA-Tumor   | Mutation Not Detected   |
| BCL2L12  | Seq     | DNA-Tumor   | Indeterminate           |
| BCL2L2   | Seq     | DNA-Tumor   | Mutation Not Detected   |
| BCL3     | CNA-Seq | DNA-Tumor   | Amplification Not Detected |
| BCL3     | Seq     | DNA-Tumor   | Indeterminate           |
| BCL6     | CNA-Seq | DNA-Tumor   | Amplification Not Detected |
| BCL6     | Seq     | DNA-Tumor   | Mutation Not Detected   |
| BCL9     | CNA-Seq | DNA-Tumor   | Amplification Not Detected |
| BCL9     | Seq     | DNA-Tumor   | Mutation Not Detected   |
| BCOR     | Seq     | DNA-Tumor   | Mutation Not Detected   |
| BCORL1   | Seq     | DNA-Tumor   | Mutation Not Detected   |
| BCR      | Seq     | RNA-Tumor   | Fusion Not Detected     |
| BIRC3    | Seq     | DNA-Tumor   | Indeterminate           |
| BLM      | CNA-Seq | DNA-Tumor   | Amplification Not Detected |
| Gene   | Method  | Type     | Result               |
|--------|---------|----------|----------------------|
| BLM    | Seq     | DNA-Tumor| Mutation Not Detected|
| BMPR1A | CNA-Seq | DNA-Tumor| Amplification Not Detected|
| BMPR1A | Seq     | DNA-Tumor| Mutation Not Detected|
| BRAF   | CNA-Seq | DNA-Tumor| Amplification Not Detected|
| BRAF   | Seq     | DNA-Tumor| Mutation Not Detected|
| BRAF   | Seq     | RNA-Tumor| Fusion Not Detected  |
| BRCA1  | CNA-Seq | DNA-Tumor| Amplification Not Detected|
| BRCA1  | Seq     | DNA-Tumor| Mutation Not Detected|
| BRCA2  | CNA-Seq | DNA-Tumor| Amplification Not Detected|
| BRCA2  | Seq     | DNA-Tumor| Mutation Not Detected|
| BRD3   | Seq     | DNA-Tumor| Mutation Not Detected|
| BRD3   | Seq     | RNA-Tumor| Fusion Not Detected  |
| BRD4   | Seq     | DNA-Tumor| Mutation Not Detected|
| BRD4   | Seq     | RNA-Tumor| Fusion Not Detected  |
| BRIP1  | CNA-Seq | DNA-Tumor| Amplification Not Detected|
| BRIP1  | Seq     | DNA-Tumor| Mutation Not Detected|
| BTG1   | Seq     | DNA-Tumor| Mutation Not Detected|
| BTG2   | Seq     | DNA-Tumor| Mutation Not Detected|
| BTK    | Seq     | DNA-Tumor| Mutation Not Detected|
| BUB1B  | Seq     | DNA-Tumor| Mutation Not Detected|
| C1orf65| Seq     | DNA-Tumor| Mutation Not Detected|
| CACNA1D| CNA-Seq | DNA-Tumor| Amplification Not Detected|
| CACNA1D| Seq     | DNA-Tumor| Mutation Not Detected|
| CALR   | CNA-Seq | DNA-Tumor| Amplification Not Detected|
| CALR   | Seq     | DNA-Tumor| Mutation Not Detected|
| CAMTA1 | CNA-Seq | DNA-Tumor| Amplification Not Detected|
| CAMTA1 | Seq     | DNA-Tumor| Indeterminate        |
| CARD11 | CNA-Seq | DNA-Tumor| Amplification Not Detected|
| CARD11 | Seq     | DNA-Tumor| Mutation Not Detected|
| CARS   | CNA-Seq | DNA-Tumor| Amplification Not Detected|
| CARS   | Seq     | DNA-Tumor| Mutation Not Detected|
| CASP8  | CNA-Seq | DNA-Tumor| Amplification Not Detected|
| CASP8  | Seq     | DNA-Tumor| Mutation Not Detected|
| CBFA2T3| Seq     | DNA-Tumor| Mutation Not Detected|
| CBFB   | CNA-Seq | DNA-Tumor| Amplification Not Detected|
| CBFB   | Seq     | DNA-Tumor| Mutation Not Detected|
| CBL    | CNA-Seq | DNA-Tumor| Amplification Not Detected|
| CBL    | Seq     | DNA-Tumor| Mutation Not Detected|
| CBLB   | Seq     | DNA-Tumor| Mutation Not Detected|
| Gene     | Analysis Method | Tumor Type | Amplification Status          | Mutation Status |
|----------|-----------------|------------|--------------------------------|-----------------|
| CCDC6    | CNA-Seq         | DNA-Tumor  | Amplification Not Detected    |                 |
| CCDC6    | Seq             | DNA-Tumor  | Mutation Not Detected         |                 |
| CCND1    | CNA-Seq         | DNA-Tumor  | Amplification Not Detected    |                 |
| CCND1    | Seq             | DNA-Tumor  | Mutation Not Detected         |                 |
| CCND2    | CNA-Seq         | DNA-Tumor  | Amplification Not Detected    |                 |
| CCND2    | Seq             | DNA-Tumor  | Mutation Not Detected         |                 |
| CCND3    | CNA-Seq         | DNA-Tumor  | Amplification Not Detected    |                 |
| CCND3    | Seq             | DNA-Tumor  | Mutation Not Detected         |                 |
| CCNE1    | CNA-Seq         | DNA-Tumor  | Intermediate                  |                 |
| CCNE1    | Seq             | DNA-Tumor  | Mutation Not Detected         |                 |
| CD22     | Seq             | DNA-Tumor  | Mutation Not Detected         |                 |
| CD274 (PD-L1) | CNA-Seq     | DNA-Tumor  | Amplification Not Detected    |                 |
| CD274 (PD-L1) | Seq          | DNA-Tumor  | Mutation Not Detected         |                 |
| CD70     | Seq             | DNA-Tumor  | Mutation Not Detected         |                 |
| CD74     | CNA-Seq         | DNA-Tumor  | Amplification Not Detected    |                 |
| CD74     | Seq             | DNA-Tumor  | Mutation Not Detected         |                 |
| CD79A    | CNA-Seq         | DNA-Tumor  | Amplification Not Detected    |                 |
| CD79A    | Seq             | DNA-Tumor  | Mutation Not Detected         |                 |
| CD79B    | Seq             | DNA-Tumor  | Mutation Not Detected         |                 |
| CDC73    | CNA-Seq         | DNA-Tumor  | Amplification Not Detected    |                 |
| CDC73    | Seq             | DNA-Tumor  | Mutation Not Detected         |                 |
| CDH1     | Seq             | DNA-Tumor  | Mutation Not Detected         |                 |
| CDH11    | CNA-Seq         | DNA-Tumor  | Amplification Not Detected    |                 |
| CDH11    | Seq             | DNA-Tumor  | Mutation Not Detected         |                 |
| CDH23    | Seq             | DNA-Tumor  | Mutation Not Detected         |                 |
| CDK12    | Seq             | DNA-Tumor  | Mutation Not Detected         |                 |
| CDK4     | CNA-Seq         | DNA-Tumor  | Amplification Not Detected    |                 |
| CDK4     | Seq             | DNA-Tumor  | Mutation Not Detected         |                 |
| CDK6     | CNA-Seq         | DNA-Tumor  | Amplification Not Detected    |                 |
| CDK6     | Seq             | DNA-Tumor  | Mutation Not Detected         |                 |
| CDK8     | CNA-Seq         | DNA-Tumor  | Amplification Not Detected    |                 |
| CDK8     | Seq             | DNA-Tumor  | Mutation Not Detected         |                 |
| CDKN1A   | Seq             | DNA-Tumor  | Mutation Not Detected         |                 |
| CDKN1B   | CNA-Seq         | DNA-Tumor  | Amplification Not Detected    |                 |
| CDKN1B   | Seq             | DNA-Tumor  | Mutation Not Detected         |                 |
| CDKN1C   | Seq             | DNA-Tumor  | Mutation Not Detected         |                 |
| CDKN2A   | CNA-Seq         | DNA-Tumor  | Amplification Not Detected    |                 |
| CDKN2A   | Seq             | DNA-Tumor  | Mutation Not Detected         |                 |
| CDKN2B   | Seq             | DNA-Tumor  | Mutation Not Detected         |                 |
| CDKN2C   | Seq             | DNA-Tumor  | Mutation Not Detected         |                 |
| Gene     | Method | Tumor Type | Result                          |
|----------|--------|------------|---------------------------------|
| CDX2     | CNA-Seq| DNA-Tumor  | Amplification Not Detected      |
| CDX2     | Seq    | DNA-Tumor  | Mutation Not Detected           |
| CEBPA    | Seq    | DNA-Tumor  | Mutation Not Detected           |
| CHD2     | Seq    | DNA-Tumor  | Indeterminate                   |
| CHD4     | Seq    | DNA-Tumor  | Mutation Not Detected           |
| CHEK1    | CNA-Seq| DNA-Tumor  | Amplification Not Detected      |
| CHEK1    | Seq    | DNA-Tumor  | Mutation Not Detected           |
| CHEK2    | CNA-Seq| DNA-Tumor  | Amplification Not Detected      |
| CHEK2    | Seq    | DNA-Tumor  | Mutation Not Detected           |
| CHIC2    | CNA-Seq| DNA-Tumor  | Amplification Not Detected      |
| CHIC2    | Seq    | DNA-Tumor  | Mutation Not Detected           |
| CHN1     | Seq    | DNA-Tumor  | Indeterminate                   |
| CIC      | CNA-Seq| DNA-Tumor  | Amplification Not Detected      |
| CIC      | Seq    | DNA-Tumor  | Unclassified Variant 55         |
| CIITA    | Seq    | DNA-Tumor  | Indeterminate                   |
| CLTCL1   | CNA-Seq| DNA-Tumor  | Amplification Not Detected      |
| CLTCL1   | Seq    | DNA-Tumor  | Mutation Not Detected           |
| CLYBL    | Seq    | DNA-Tumor  | Mutation Not Detected           |
| CNBP     | CNA-Seq| DNA-Tumor  | Amplification Not Detected      |
| CNBP     | Seq    | DNA-Tumor  | Mutation Not Detected           |
| CNOT3    | Seq    | DNA-Tumor  | Mutation Not Detected           |
| COX6C    | Seq    | DNA-Tumor  | Mutation Not Detected           |
| CREB1    | Seq    | DNA-Tumor  | Mutation Not Detected           |
| CREB3L1  | Seq    | DNA-Tumor  | Mutation Not Detected           |
| CREB3L2  | CNA-Seq| DNA-Tumor  | Amplification Not Detected      |
| CREB3L2  | Seq    | DNA-Tumor  | Unclassified Variant 55         |
| CREBBP   | CNA-Seq| DNA-Tumor  | Amplification Not Detected      |
| CREBBP   | Seq    | DNA-Tumor  | Mutation Not Detected           |
| CRKL     | CNA-Seq| DNA-Tumor  | Amplification Not Detected      |
| CRKL     | Seq    | DNA-Tumor  | Mutation Not Detected           |
| CRLF2    | Seq    | DNA-Tumor  | Indeterminate                   |
| CRTC1    | Seq    | DNA-Tumor  | Mutation Not Detected           |
| CRTC3    | CNA-Seq| DNA-Tumor  | Amplification Not Detected      |
| CRTC3    | Seq    | DNA-Tumor  | Mutation Not Detected           |
| CSF1R    | CNA-Seq| DNA-Tumor  | Amplification Not Detected      |
| CSF1R    | Seq    | DNA-Tumor  | Mutation Not Detected           |
| CSF3R    | Seq    | DNA-Tumor  | Mutation Not Detected           |
| CTCF     | CNA-Seq| DNA-Tumor  | Amplification Not Detected      |
| CTCF     | Seq    | DNA-Tumor  | Mutation Not Detected           |
| Gene      | Method | Tumor Type | Result               |
|-----------|--------|------------|----------------------|
| CTLA4     | Seq    | DNA-Tumor  | Mutation Not Detected |
| CTNNA1    | CNA-Seq| DNA-Tumor  | Amplification Not Detected |
| CTNNA1    | Seq    | DNA-Tumor  | Mutation Not Detected |
| CTNNB1    | CNA-Seq| DNA-Tumor  | Amplification Not Detected |
| CTNNB1    | Seq    | DNA-Tumor  | Mutation Not Detected |
| CUL3      | Seq    | DNA-Tumor  | Mutation Not Detected |
| CUL4A     | Seq    | DNA-Tumor  | Mutation Not Detected |
| CUX1      | Seq    | DNA-Tumor  | Mutation Not Detected |
| CXC4R4    | Seq    | DNA-Tumor  | Mutation Not Detected |
| CYLD      | CNA-Seq| DNA-Tumor  | Amplification Not Detected |
| CYLD      | Seq    | DNA-Tumor  | Mutation Not Detected |
| CYP17A1   | Seq    | DNA-Tumor  | Mutation Not Detected |
| CYPA      | Seq    | DNA-Tumor  | Mutation Not Detected |
| DAXX      | CNA-Seq| DNA-Tumor  | Amplification Not Detected |
| DAXX      | Seq    | DNA-Tumor  | Mutation Not Detected |
| DDR2      | CNA-Seq| DNA-Tumor  | Amplification Not Detected |
| DDR2      | Seq    | DNA-Tumor  | Mutation Not Detected |
| DDX3X     | Seq    | DNA-Tumor  | Mutation Not Detected |
| DDX41     | Seq    | DNA-Tumor  | Mutation Not Detected |
| DDX6      | CNA-Seq| DNA-Tumor  | Amplification Not Detected |
| DDX6      | Seq    | DNA-Tumor  | Mutation Not Detected |
| DEK       | CNA-Seq| DNA-Tumor  | Amplification Not Detected |
| DEK       | Seq    | DNA-Tumor  | Indeterminate         |
| DICER1    | CNA-Seq| DNA-Tumor  | Amplification Not Detected |
| DICER1    | Seq    | DNA-Tumor  | Mutation Not Detected |
| DIS3      | Seq    | DNA-Tumor  | Mutation Not Detected |
| DIS3L2    | Seq    | DNA-Tumor  | Mutation Not Detected |
| DKC1      | Seq    | DNA-Tumor  | Mutation Not Detected |
| DMC1      | Seq    | DNA-Tumor  | Mutation Not Detected |
| DNA2      | Seq    | DNA-Tumor  | Indeterminate         |
| DNAJB1    | Seq    | DNA-Tumor  | Mutation Not Detected |
| DNMT3A    | Seq    | DNA-Tumor  | Mutation Not Detected |
| DOT1L     | Seq    | DNA-Tumor  | Indeterminate         |
| EBF1      | CNA-Seq| DNA-Tumor  | Amplification Not Detected |
| EBF1      | Seq    | DNA-Tumor  | Mutation Not Detected |
| ECT2L     | CNA-Seq| DNA-Tumor  | Amplification Not Detected |
| ECT2L     | Seq    | DNA-Tumor  | Mutation Not Detected |
| Gene       | Method | Tissue       | Result                        |
|------------|--------|--------------|-------------------------------|
| EED        | Seq    | DNA-Tumor    | Mutation Not Detected         |
| EGFR       | CNA-Seq| DNA-Tumor    | Amplification Not Detected    |
| EGFR       | Seq    | DNA-Tumor    | Mutation Not Detected         |
| EGFRvIII   | Seq    | RNA-Tumor    | Fusion Not Detected           |
| EGLN1      | Seq    | DNA-Tumor    | Mutation Not Detected         |
| EIF1AX     | Seq    | DNA-Tumor    | Mutation Not Detected         |
| EIF4A2     | Seq    | DNA-Tumor    | Mutation Not Detected         |
| ELF3       | Seq    | DNA-Tumor    | Mutation Not Detected         |
| ELK4       | CNA-Seq| DNA-Tumor    | Amplification Not Detected    |
| ELK4       | Seq    | DNA-Tumor    | Mutation Not Detected         |
| ELOC       | Seq    | DNA-Tumor    | Indeterminate                 |
| EME1       | Seq    | DNA-Tumor    | Mutation Not Detected         |
| EME2       | Seq    | DNA-Tumor    | Mutation Not Detected         |
| EML4       | Seq    | DNA-Tumor    | Indeterminate                 |
| EMSY       | Seq    | DNA-Tumor    | Mutation Not Detected         |
| ENAH       | Seq    | RNA-Tumor    | Unclassified Fusion Detected  |
| ENAH:ACBD3 |        |              |                               |
| EP300      | CNA-Seq| DNA-Tumor    | Amplification Not Detected    |
| EP300      | Seq    | DNA-Tumor    | Mutation Not Detected         |
| EPCAM      | Seq    | DNA-Tumor    | Mutation Not Detected         |
| EPHA2      | Seq    | DNA-Tumor    | Mutation Not Detected         |
| EPHA3      | CNA-Seq| DNA-Tumor    | Amplification Not Detected    |
| EPHA3      | Seq    | DNA-Tumor    | Mutation Not Detected         |
| EPHA5      | Seq    | DNA-Tumor    | Mutation Not Detected         |
| EPHA7      | Seq    | DNA-Tumor    | Mutation Not Detected         |
| EPHB1      | Seq    | DNA-Tumor    | Mutation Not Detected         |
| EPHB4      | Seq    | DNA-Tumor    | Mutation Not Detected         |
| ER         | IHC    | Protein      | Positive | 1+, 10%                        |
| ERBB2 (Her2/Neu) | CISH | DNA-Tumor | Amplified |
| ERBB2 (Her2/Neu) | CNA-Seq | DNA-Tumor | Intermediate |
| ERBB2 (Her2/Neu) | IHC     | Protein      | Positive | 3+, 20%                        |
| ERBB2 (Her2/Neu) | Seq     | DNA-Tumor    | Mutation Not Detected         |
| ERBB3      | CNA-Seq| DNA-Tumor    | Amplification Not Detected    |
| ERBB3      | Seq    | DNA-Tumor    | Mutation Not Detected         |
| ERBB4      | CNA-Seq| DNA-Tumor    | Amplification Not Detected    |
| ERBB4      | Seq    | DNA-Tumor    | Mutation Not Detected         |
| ERC1       | Seq    | DNA-Tumor    | Mutation Not Detected         |
| ERCC1      | Seq    | DNA-Tumor    | Mutation Not Detected         |
| ERCC2      | CNA-Seq| DNA-Tumor    | Amplification Not Detected    |
| ERCC2      | Seq    | DNA-Tumor    | Mutation Not Detected         |
| Gene   | Method   | Tumor Type | Result                      |
|--------|----------|------------|-----------------------------|
| ERCC3  | CNA-Seq  | DNA-Tumor  | Amplification Not Detected  |
| ERCC3  | Seq      | DNA-Tumor  | Mutation Not Detected       |
| ERCC4  | Seq      | DNA-Tumor  | Mutation Not Detected       |
| ERCC5  | Seq      | DNA-Tumor  | Mutation Not Detected       |
| ERCC6  | Seq      | DNA-Tumor  | Mutation Not Detected       |
| EREG   | CNA-Seq  | DNA-Tumor  | Amplification Not Detected  |
| EREG   | Seq      | DNA-Tumor  | Mutation Not Detected       |
| EREG   | Seq      | RNA-Tumor  | Fusion Not Detected         |
| ERRFI1 | Seq      | DNA-Tumor  | Mutation Not Detected       |
| ESR1   | CNA-Seq  | DNA-Tumor  | Amplification Not Detected  |
| ESR1   | Seq      | DNA-Tumor  | Mutation Not Detected       |
| ESR1   | Seq      | RNA-Tumor  | Fusion Not Detected         |
| ETS1   | Seq      | DNA-Tumor  | Mutation Not Detected       |
| ETV1   | CNA-Seq  | DNA-Tumor  | Amplification Not Detected  |
| ETV1   | Seq      | DNA-Tumor  | Mutation Not Detected       |
| ETV1   | Seq      | RNA-Tumor  | Fusion Not Detected         |
| ETV4   | Seq      | DNA-Tumor  | Mutation Not Detected       |
| ETV5   | CNA-Seq  | DNA-Tumor  | Amplification Not Detected  |
| ETV5   | Seq      | DNA-Tumor  | Mutation Not Detected       |
| ETV5   | Seq      | RNA-Tumor  | Fusion Not Detected         |
| ETV6   | CNA-Seq  | DNA-Tumor  | Amplification Not Detected  |
| ETV6   | Seq      | DNA-Tumor  | Mutation Not Detected       |
| ETV6   | Seq      | RNA-Tumor  | Fusion Not Detected         |
| EWSR1  | CNA-Seq  | DNA-Tumor  | Amplification Not Detected  |
| EWSR1  | Seq      | DNA-Tumor  | Mutation Not Detected       |
| EWSR1  | Seq      | RNA-Tumor  | Fusion Not Detected         |
| EZF1   | Seq      | DNA-Tumor  | Mutation Not Detected       |
| EZF1   | CNA-Seq  | DNA-Tumor  | Amplification Not Detected  |
| EZF1   | Seq      | DNA-Tumor  | Mutation Not Detected       |
| EZF1   | Seq      | RNA-Tumor  | Fusion Not Detected         |
| EZF2   | CNA-Seq  | DNA-Tumor  | Amplification Not Detected  |
| EZF2   | Seq      | DNA-Tumor  | Mutation Not Detected       |
| FAM46C | Seq      | DNA-Tumor  | Mutation Not Detected       |
| FANCA  | CNA-Seq  | DNA-Tumor  | Amplification Not Detected  |
| FANCA  | Seq      | DNA-Tumor  | Mutation Not Detected       |
| Gene  | Method | Type        | Result                      |
|-------|--------|-------------|-----------------------------|
| FANCB | Seq    | DNA-Tumor   | Mutation Not Detected       |
| FANCC | CNA-Seq| DNA-Tumor   | Amplification Not Detected  |
| FANCC | Seq    | DNA-Tumor   | Mutation Not Detected       |
| FANCD2| CNA-Seq| DNA-Tumor   | Amplification Not Detected  |
| FANCD2| Seq    | DNA-Tumor   | Variant of Uncertain Significance | Exon 3 | p.Q26H | 39 |
| FANCE | CNA-Seq| DNA-Tumor   | Amplification Not Detected  |
| FANCE | Seq    | DNA-Tumor   | Mutation Not Detected       |
| FANCF | Seq    | DNA-Tumor   | Mutation Not Detected       |
| FANCG | CNA-Seq| DNA-Tumor   | Amplification Not Detected  |
| FANCI | Seq    | DNA-Tumor   | Mutation Not Detected       |
| FANCL | CNA-Seq| DNA-Tumor   | Amplification Not Detected  |
| FANCL | Seq    | DNA-Tumor   | Mutation Not Detected       |
| FANCM | Seq    | DNA-Tumor   | Mutation Not Detected       |
| FAS   | CNA-Seq| DNA-Tumor   | Amplification Not Detected  |
| FAS   | Seq    | DNA-Tumor   | Mutation Not Detected       |
| FAT1  | Seq    | DNA-Tumor   | Mutation Not Detected       |
| FAT3  | Seq    | DNA-Tumor   | Mutation Not Detected       |
| FBXO11| Seq    | DNA-Tumor   | Mutation Not Detected       |
| FBXW7 | CNA-Seq| DNA-Tumor   | Amplification Not Detected  |
| FBXW7 | Seq    | DNA-Tumor   | Mutation Not Detected       |
| FCRL4 | CNA-Seq| DNA-Tumor   | Amplification Not Detected  |
| FCRL4 | Seq    | DNA-Tumor   | Mutation Not Detected       |
| FEN1  | Seq    | DNA-Tumor   | Mutation Not Detected       |
| FGF10 | CNA-Seq| DNA-Tumor   | Amplification Not Detected  |
| FGF10 | Seq    | DNA-Tumor   | Mutation Not Detected       |
| FGF12 | Seq    | DNA-Tumor   | Mutation Not Detected       |
| FGF14 | Seq    | DNA-Tumor   | Mutation Not Detected       |
| FGF19 | CNA-Seq| DNA-Tumor   | Amplification Not Detected  |
| FGF19 | Seq    | DNA-Tumor   | Mutation Not Detected       |
| FGF23 | CNA-Seq| DNA-Tumor   | Amplification Not Detected  |
| FGF23 | Seq    | DNA-Tumor   | Mutation Not Detected       |
| FGF3  | CNA-Seq| DNA-Tumor   | Amplification Not Detected  |
| FGF3  | Seq    | DNA-Tumor   | Mutation Not Detected       |
| FGF4  | CNA-Seq| DNA-Tumor   | Amplification Not Detected  |
| FGF4  | Seq    | DNA-Tumor   | Mutation Not Detected       |
| FGF6  | Seq    | DNA-Tumor   | Mutation Not Detected       |
| FGF1  | CNA-Seq| DNA-Tumor   | Amplification Not Detected  |

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| Gene      | Method | Type       | Status                |
|-----------|--------|------------|-----------------------|
| FGFR1     | Seq    | DNA-Tumor  | Mutation Not Detected |
| FGFR1     | Seq    | RNA-Tumor  | Fusion Not Detected   |
| FGFR1OP   | CNA-Seq| DNA-Tumor  | Amplification Not Detected |
| FGFR2     | Seq    | DNA-Tumor  | Mutation Not Detected |
| FGFR2     | Seq    | RNA-Tumor  | Fusion Not Detected   |
| FGFR3     | CNA-Seq| DNA-Tumor  | Amplification Not Detected |
| FGFR3     | Seq    | DNA-Tumor  | Mutation Not Detected |
| FGFR3     | Seq    | RNA-Tumor  | Fusion Not Detected   |
| FGFR4     | CNA-Seq| DNA-Tumor  | Amplification Not Detected |
| FGFR4     | Seq    | DNA-Tumor  | Mutation Not Detected |
| FGFR4     | Seq    | DNA-Tumor  | Fusion Not Detected   |
| FGFR4     | Seq    | DNA-Tumor  | Mutation Not Detected |
| FGR       | Seq    | RNA-Tumor  | Fusion Not Detected   |
| FH        | CNA-Seq| DNA-Tumor  | Amplification Not Detected |
| FH        | Seq    | DNA-Tumor  | Mutation Not Detected |
| FHIT      | CNA-Seq| DNA-Tumor  | Amplification Not Detected |
| FHIT      | Seq    | DNA-Tumor  | Mutation Not Detected |
| FIP1L1    | Seq    | DNA-Tumor  | Mutation Not Detected |
| FLCN      | CNA-Seq| DNA-Tumor  | Amplification Not Detected |
| FLCN      | Seq    | DNA-Tumor  | Mutation Not Detected |
| FLI1      | CNA-Seq| DNA-Tumor  | Amplification Not Detected |
| FLI1      | Seq    | DNA-Tumor  | Mutation Not Detected |
| FLT1      | CNA-Seq| DNA-Tumor  | Amplification Not Detected |
| FLT1      | Seq    | DNA-Tumor  | Mutation Not Detected |
| FLT3      | CNA-Seq| DNA-Tumor  | Amplification Not Detected |
| FLT3      | Seq    | DNA-Tumor  | Mutation Not Detected |
| FLT4      | CNA-Seq| DNA-Tumor  | Amplification Not Detected |
| FLT4      | Seq    | DNA-Tumor  | Mutation Not Detected |
| FNBP1     | CNA-Seq| DNA-Tumor  | Amplification Not Detected |
| FNBP1     | Seq    | DNA-Tumor  | Mutation Not Detected |
| FOXA1     | CNA-Seq| DNA-Tumor  | Amplification Not Detected |
| FOXA1     | Seq    | DNA-Tumor  | Mutation Not Detected |
| FOXL2     | Seq    | DNA-Tumor  | Mutation Not Detected |
| FOXO1     | CNA-Seq| DNA-Tumor  | Amplification Not Detected |
| FOXO1     | Seq    | DNA-Tumor  | Mutation Not Detected |
| FOXO3     | Seq    | DNA-Tumor  | Mutation Not Detected |
| FOXO4     | Seq    | DNA-Tumor  | Mutation Not Detected |
| FOXP1     | CNA-Seq| DNA-Tumor  | Amplification Not Detected |
| FOXP1     | Seq    | DNA-Tumor  | Mutation Not Detected |
| FRS2      | Seq    | DNA-Tumor  | Mutation Not Detected |
| Gene   | Method  | Tumor Type      | Result                |
|--------|---------|-----------------|-----------------------|
| FSTL3  | Seq     | DNA-Tumor       | Mutation Not Detected |
| FUBP1  | CNA-Seq | DNA-Tumor       | Amplification Not Detected |
| FUBP1  | Seq     | DNA-Tumor       | Mutation Not Detected |
| FUS    | CNA-Seq | DNA-Tumor       | Amplification Not Detected |
| FUS    | Seq     | DNA-Tumor       | Mutation Not Detected |
| FYN    | Seq     | DNA-Tumor       | Mutation Not Detected |
| GABRA6 | Seq     | DNA-Tumor       | Mutation Not Detected |
| GALNT12| Seq     | DNA-Tumor       | Mutation Not Detected |
| GATA1  | Seq     | DNA-Tumor       | Mutation Not Detected |
| GATA2  | Seq     | DNA-Tumor       | Mutation Not Detected |
| GATA3  | CNA-Seq | DNA-Tumor       | Amplification Not Detected |
| GATA3  | Seq     | DNA-Tumor       | Mutation Not Detected |
| GATA4  | Seq     | DNA-Tumor       | Mutation Not Detected |
| GATA6  | Seq     | DNA-Tumor       | Mutation Not Detected |
| GEN1   | Seq     | DNA-Tumor       | Indeterminate         |
| Genomic LOH | Seq  | DNA-Tumor | Low | 0 |
| GID4   | CNA-Seq | DNA-Tumor       | Amplification Not Detected |
| GID4   | Seq     | DNA-Tumor       | Mutation Not Detected |
| GLI1   | Seq     | DNA-Tumor       | Indeterminate         |
| GLI2   | Seq     | DNA-Tumor       | Mutation Not Detected |
| GMPS   | CNA-Seq | DNA-Tumor       | Amplification Not Detected |
| GMPS   | Seq     | DNA-Tumor       | Unclassified Variant  | Exon 9 | p.G367S | 58 |
| GNA11  | Seq     | DNA-Tumor       | Mutation Not Detected |
| GNA13  | CNA-Seq | DNA-Tumor       | Amplification Not Detected |
| GNA13  | Seq     | DNA-Tumor       | Mutation Not Detected |
| GNAQ   | CNA-Seq | DNA-Tumor       | Amplification Not Detected |
| GNAQ   | Seq     | DNA-Tumor       | Mutation Not Detected |
| GNAS   | CNA-Seq | DNA-Tumor       | Amplification Not Detected |
| GNAS   | Seq     | DNA-Tumor       | Mutation Not Detected |
| GOPC   | Seq     | DNA-Tumor       | Indeterminate         |
| GPC3   | Seq     | DNA-Tumor       | Mutation Not Detected |
| GPCS2  | Seq     | DNA-Tumor       | Mutation Not Detected |
| GREM1  | Seq     | DNA-Tumor       | Mutation Not Detected |
| GRIN2A | CNA-Seq | DNA-Tumor       | Amplification Not Detected |
| GRIN2A | Seq     | DNA-Tumor       | Mutation Not Detected |
| GRM3   | Seq     | DNA-Tumor       | Mutation Not Detected |
| GSK3B  | Seq     | DNA-Tumor       | Mutation Not Detected |
| H2AFX  | Seq     | DNA-Tumor       | Mutation Not Detected |
| H3F3A  | CNA-Seq | DNA-Tumor       | Amplification Not Detected |
| H3F3A  | Seq     | DNA-Tumor       | Mutation Not Detected |
| Gene   | Technology | Tumor Type | Status                  |
|--------|------------|------------|-------------------------|
| H3F3B  | CNA-Seq    | DNA-Tumor  | Amplification Not Detected |
| H3F3B  | Seq        | DNA-Tumor  | Mutation Not Detected   |
| HDAC1  | Seq        | DNA-Tumor  | Mutation Not Detected   |
| HEY1   | Seq        | DNA-Tumor  | Mutation Not Detected   |
| HGF    | Seq        | DNA-Tumor  | Mutation Not Detected   |
| HIF1A  | Seq        | DNA-Tumor  | Mutation Not Detected   |
| HIST1H3B | Seq     | DNA-Tumor  | Mutation Not Detected   |
| HIST1H3C | Seq    | DNA-Tumor  | Mutation Not Detected   |
| HIST1H4I | Seq    | DNA-Tumor  | Mutation Not Detected   |
| HLF    | Seq        | DNA-Tumor  | Mutation Not Detected   |
| HMGA2  | CNA-Seq    | DNA-Tumor  | Amplification Not Detected |
| HMGA2  | Seq        | DNA-Tumor  | Mutation Not Detected   |
| HMGN2P46 | Seq     | DNA-Tumor  | Indeterminate          |
| HNF1A  | Seq        | DNA-Tumor  | Mutation Not Detected   |
| HOOK3  | CNA-Seq    | DNA-Tumor  | Amplification Not Detected |
| HOOK3  | Seq        | DNA-Tumor  | Mutation Not Detected   |
| HOXA11 | Seq        | DNA-Tumor  | Mutation Not Detected   |
| HOXA13 | Seq        | DNA-Tumor  | Mutation Not Detected   |
| HOX9   | Seq        | DNA-Tumor  | Mutation Not Detected   |
| HOXB13 | Seq        | DNA-Tumor  | Mutation Not Detected   |
| HOXD13 | Seq        | DNA-Tumor  | Mutation Not Detected   |
| HRAS   | Seq        | DNA-Tumor  | Mutation Not Detected   |
| HRG    | Seq        | DNA-Tumor  | Mutation Not Detected   |
| HSD3B1 | Seq        | DNA-Tumor  | Mutation Not Detected   |
| HSP90AA1 | CNA-Seq  | DNA-Tumor  | Amplification Not Detected |
| HSP90AA1 | Seq      | DNA-Tumor  | Mutation Not Detected   |
| HSP90AB1 | CNA-Seq | DNA-Tumor  | Amplification Not Detected |
| HSP90AB1 | Seq      | DNA-Tumor  | Mutation Not Detected   |
| ID2    | Seq        | DNA-Tumor  | Mutation Not Detected   |
| ID3    | Seq        | DNA-Tumor  | Mutation Not Detected   |
| IDH1   | CNA-Seq    | DNA-Tumor  | Amplification Not Detected |
| IDH1   | Seq        | DNA-Tumor  | Mutation Not Detected   |
| IDH2   | CNA-Seq    | DNA-Tumor  | Amplification Not Detected |
| IDH2   | Seq        | DNA-Tumor  | Mutation Not Detected   |
| IFNFR1 | Seq        | DNA-Tumor  | Mutation Not Detected   |
| IGF1R  | CNA-Seq    | DNA-Tumor  | Amplification Not Detected |
| IGF1R  | Seq        | DNA-Tumor  | Mutation Not Detected   |
| IGF2   | Seq        | DNA-Tumor  | Mutation Not Detected   |
| IKBKE  | Seq        | DNA-Tumor  | Unclassified Variant    | Exon 10 | p.S377N | 45
| Gene   | Method | Tissue Type | Result                  |
|--------|--------|-------------|-------------------------|
| IKZF1  | CNA-Seq| DNA-Tumor   | Amplification Not Detected |
| IKZF1  | Seq    | DNA-Tumor   | Mutation Not Detected   |
| IL7R   | CNA-Seq| DNA-Tumor   | Amplification Not Detected |
| IL7R   | Seq    | DNA-Tumor   | Mutation Not Detected   |
| INHBA  | Seq    | DNA-Tumor   | Mutation Not Detected   |
| INPP4B | Seq    | DNA-Tumor   | Mutation Not Detected   |
| INS   | Seq    | DNA-Tumor   | Fusion Not Detected     |
| IRF1   | Seq    | DNA-Tumor   | Mutation Not Detected   |
| IRF2   | Seq    | DNA-Tumor   | Mutation Not Detected   |
| IRF4   | CNA-Seq| DNA-Tumor   | Amplification Not Detected |
| IRF4   | Seq    | DNA-Tumor   | Mutation Not Detected   |
| IRS2   | Seq    | DNA-Tumor   | Mutation Not Detected   |
| ITK    | CNA-Seq| DNA-Tumor   | Amplification Not Detected |
| ITK    | Seq    | DNA-Tumor   | Mutation Not Detected   |
| JAK1   | CNA-Seq| DNA-Tumor   | Amplification Not Detected |
| JAK1   | Seq    | DNA-Tumor   | Mutation Not Detected   |
| JAK2   | CNA-Seq| DNA-Tumor   | Amplification Not Detected |
| JAK2   | Seq    | DNA-Tumor   | Mutation Not Detected   |
| JAK3   | CNA-Seq| DNA-Tumor   | Amplification Not Detected |
| JAK3   | Seq    | DNA-Tumor   | Mutation Not Detected   |
| JAZF1  | CNA-Seq| DNA-Tumor   | Amplification Not Detected |
| JAZF1  | Seq    | DNA-Tumor   | Mutation Not Detected   |
| JUN    | Seq    | DNA-Tumor   | Mutation Not Detected   |
| KAT6A  | Seq    | DNA-Tumor   | Mutation Not Detected   |
| KAT6B  | Seq    | DNA-Tumor   | Mutation Not Detected   |
| KCNJ5  | Seq    | DNA-Tumor   | Mutation Not Detected   |
| KDM5A  | Seq    | DNA-Tumor   | Mutation Not Detected   |
| KDM5C  | Seq    | DNA-Tumor   | Mutation Not Detected   |
| KDM6A  | Seq    | DNA-Tumor   | Mutation Not Detected   |
| KDR (VEGFR2) | CNA-Seq | DNA-Tumor | Amplification Not Detected |
| KDR (VEGFR2) | Seq    | DNA-Tumor   | Mutation Not Detected   |
| KDSR   | Seq    | DNA-Tumor   | Mutation Not Detected   |
| KEAP1  | CNA-Seq| DNA-Tumor   | Amplification Not Detected |
| KEAP1  | Seq    | DNA-Tumor   | Mutation Not Detected   |
| KEL    | Seq    | DNA-Tumor   | Mutation Not Detected   |
| KIAA1549| CNA-Seq| DNA-Tumor   | Amplification Not Detected |
| KIAA1549| Seq    | DNA-Tumor   | Indeterminate           |
| KIF1B  | Seq    | DNA-Tumor   | Mutation Not Detected   |
| KIF5B  | CNA-Seq| DNA-Tumor   | Amplification Not Detected |
| KIF5B  | Seq    | DNA-Tumor   | Mutation Not Detected   |
| Gene    | Method   | Tumor Type | Result                  |
|---------|----------|------------|-------------------------|
| KIT     | CNA-Seq  | DNA-Tumor  | Amplification Not Detected |
| KIT     | Seq      | DNA-Tumor  | Mutation Not Detected   |
| KLF4    | Seq      | DNA-Tumor  | Mutation Not Detected   |
| KLHL6   | CNA-Seq  | DNA-Tumor  | Amplification Not Detected |
| KLHL6   | Seq      | DNA-Tumor  | Mutation Not Detected   |
| KLK2    | Seq      | DNA-Tumor  | Mutation Not Detected   |
| KMT2A   | CNA-Seq  | DNA-Tumor  | Amplification Not Detected |
| KMT2A   | Seq      | DNA-Tumor  | Mutation Not Detected   |
| KMT2C   | CNA-Seq  | DNA-Tumor  | Amplification Not Detected |
| KMT2C   | Seq      | DNA-Tumor  | Mutation Not Detected   |
| KMT2D   | CNA-Seq  | DNA-Tumor  | Amplification Not Detected |
| KMT2D   | Seq      | DNA-Tumor  | Mutation Not Detected   |
| KRAS    | CNA-Seq  | DNA-Tumor  | Amplification Not Detected |
| KRAS    | Seq      | DNA-Tumor  | Pathogenic Variant      |
| LCK     | CNA-Seq  | DNA-Tumor  | Amplification Not Detected |
| LCK     | Seq      | DNA-Tumor  | Mutation Not Detected   |
| LDLR    | Seq      | DNA-Tumor  | Mutation Not Detected   |
| LHFPL6  | CNA-Seq  | DNA-Tumor  | Amplification Not Detected |
| LHFPL6  | Seq      | DNA-Tumor  | Mutation Not Detected   |
| LIFR    | CNA-Seq  | DNA-Tumor  | Amplification Not Detected |
| LIFR    | Seq      | DNA-Tumor  | Indeterminate           |
| LIG1    | Seq      | DNA-Tumor  | Mutation Not Detected   |
| LMNA    | Seq      | DNA-Tumor  | Mutation Not Detected   |
| LMO1    | Seq      | DNA-Tumor  | Mutation Not Detected   |
| LMO2    | Seq      | DNA-Tumor  | Indeterminate           |
| LPP     | CNA-Seq  | DNA-Tumor  | Amplification Not Detected |
| LPP     | Seq      | DNA-Tumor  | Mutation Not Detected   |
| LRP1B   | CNA-Seq  | DNA-Tumor  | Amplification Not Detected |
| LRP1B   | Seq      | DNA-Tumor  | Mutation Not Detected   |
| LTK     | Seq      | DNA-Tumor  | Indeterminate           |
| LYN     | Seq      | DNA-Tumor  | Mutation Not Detected   |
| LZTR1   | Seq      | DNA-Tumor  | Mutation Not Detected   |
| MAF     | CNA-Seq  | DNA-Tumor  | Amplification Not Detected |
| MAF     | Seq      | DNA-Tumor  | Mutation Not Detected   |
| MAFB    | Seq      | DNA-Tumor  | Mutation Not Detected   |
| MAGI2   | Seq      | DNA-Tumor  | Indeterminate           |
| MALT1   | Seq      | DNA-Tumor  | Indeterminate           |
| MAML2   | CNA-Seq  | DNA-Tumor  | Amplification Not Detected |
| MAML2   | Seq      | DNA-Tumor  | Mutation Not Detected   |
| Gene          | Method   | Type          | Status                  |
|--------------|----------|---------------|-------------------------|
| MAML2        | Seq      | RNA-Tumor     | Fusion Not Detected     |
| MAP2K1 (MEK1)| CNA-Seq  | DNA-Tumor     | Amplification Not Detected |
| MAP2K1 (MEK1)| Seq      | DNA-Tumor     | Mutation Not Detected   |
| MAP2K2 (MEK2)| CNA-Seq  | DNA-Tumor     | Amplification Not Detected |
| MAP2K2 (MEK2)| Seq      | DNA-Tumor     | Mutation Not Detected   |
| MAP2K4       | CNA-Seq  | DNA-Tumor     | Amplification Not Detected |
| MAP2K4       | Seq      | DNA-Tumor     | Mutation Not Detected   |
| MAP3K1       | CNA-Seq  | DNA-Tumor     | Amplification Not Detected |
| MAP3K1       | Seq      | DNA-Tumor     | Mutation Not Detected   |
| MAP3K13      | Seq      | DNA-Tumor     | Mutation Not Detected   |
| MAPK1        | Seq      | DNA-Tumor     | Mutation Not Detected   |
| MAPK3        | Seq      | DNA-Tumor     | Mutation Not Detected   |
| MAST1        | Seq      | RNA-Tumor     | Fusion Not Detected     |
| MAST2        | Seq      | RNA-Tumor     | Fusion Not Detected     |
| MAX          | Seq      | DNA-Tumor     | Mutation Not Detected   |
| MBD4         | Seq      | DNA-Tumor     | Mutation Not Detected   |
| MCL1         | CNA-Seq  | DNA-Tumor     | Amplification Not Detected |
| MCL1         | Seq      | DNA-Tumor     | Mutation Not Detected   |
| MDC1         | Seq      | DNA-Tumor     | Mutation Not Detected   |
| MDM2         | CNA-Seq  | DNA-Tumor     | Amplification Not Detected |
| MDM2         | Seq      | DNA-Tumor     | Mutation Not Detected   |
| MDM4         | CNA-Seq  | DNA-Tumor     | Amplification Not Detected |
| MDM4         | Seq      | DNA-Tumor     | Mutation Not Detected   |
| MDS2         | CNA-Seq  | DNA-Tumor     | Amplification Not Detected |
| MDS2         | Seq      | DNA-Tumor     | Mutation Not Detected   |
| MECOM        | Seq      | DNA-Tumor     | Mutation Not Detected   |
| MED12        | Seq      | DNA-Tumor     | Indeterminate           |
| MEF2B        | CNA-Seq  | DNA-Tumor     | Amplification Not Detected |
| MEF2B        | Seq      | DNA-Tumor     | Mutation Not Detected   |
| MEN1         | CNA-Seq  | DNA-Tumor     | Amplification Not Detected |
| MEN1         | Seq      | DNA-Tumor     | Mutation Not Detected   |
| MERTK        | Seq      | DNA-Tumor     | Mutation Not Detected   |
| MET          | CNA-Seq  | DNA-Tumor     | Amplification Not Detected |
| MET          | Seq      | DNA-Tumor     | Mutation Not Detected   |
| MET          | Seq      | RNA-Tumor     | Fusion Not Detected     |
| MET          | Seq      | RNA-Tumor     | Variant Transcript Not Detected |
| MGA          | Seq      | DNA-Tumor     | Mutation Not Detected   |
| MGMT         | Seq      | DNA-Tumor     | Mutation Not Detected   |
| Mismatch Repair Status | IHC | Protein | Proficient |
| Gene   | Technique | Tumor Type | Result                  |
|--------|-----------|------------|-------------------------|
| MITF   | CNA-Seq   | DNA-Tumor  | Amplification Not Detected |
| MITF   | Seq       | DNA-Tumor  | Mutation Not Detected   |
| MKNK1  | Seq       | DNA-Tumor  | Indeterminate           |
| MLF1   | CNA-Seq   | DNA-Tumor  | Amplification Not Detected |
| MLF1   | Seq       | DNA-Tumor  | Mutation Not Detected   |
| MLH1   | CNA-Seq   | DNA-Tumor  | Amplification Not Detected |
| MLH1   | IHC       | Protein    | Positive | 1+, 80%          |
| MLH1   | Seq       | DNA-Tumor  | Mutation Not Detected   |
| MLH3   | Seq       | DNA-Tumor  | Unclassified Variant Exon 2 | p.Q563R | 48 |
| MLLT10 | CNA-Seq   | DNA-Tumor  | Amplification Not Detected |
| MLLT10 | Seq       | DNA-Tumor  | Mutation Not Detected   |
| MLLT11 | Seq       | DNA-Tumor  | Mutation Not Detected   |
| MLLT3  | CNA-Seq   | DNA-Tumor  | Amplification Not Detected |
| MLLT3  | Seq       | DNA-Tumor  | Mutation Not Detected   |
| MN1    | Seq       | DNA-Tumor  | Mutation Not Detected   |
| MPL    | Seq       | DNA-Tumor  | Mutation Not Detected   |
| MRE11  | CNA-Seq   | DNA-Tumor  | Amplification Not Detected |
| MRE11  | Seq       | DNA-Tumor  | Mutation Not Detected   |
| MSH2   | CNA-Seq   | DNA-Tumor  | Amplification Not Detected |
| MSH2   | IHC       | Protein    | Positive | 2+, 95%          |
| MSH2   | Seq       | DNA-Tumor  | Mutation Not Detected   |
| MSH3   | Seq       | DNA-Tumor  | Mutation Not Detected   |
| MSH6   | CNA-Seq   | DNA-Tumor  | Amplification Not Detected |
| MSH6   | IHC       | Protein    | Positive | 2+, 95%          |
| MSH6   | Seq       | DNA-Tumor  | Mutation Not Detected   |
| MSI    | Seq       | DNA-Tumor  | Stable                  |
| MSI2   | CNA-Seq   | DNA-Tumor  | Amplification Not Detected |
| MSI2   | Seq       | DNA-Tumor  | Mutation Not Detected   |
| MSMB   | Seq       | RNA-Tumor  | Fusion Not Detected     |
| MST1R  | (RON)    | RNA-Tumor  | Fusion Not Detected     |
| MST1R  | Seq       | DNA-Tumor  | Mutation Not Detected   |
| MTAP   | Seq       | DNA-Tumor  | Mutation Not Detected   |
| MTCP1  | Seq       | DNA-Tumor  | Mutation Not Detected   |
| MTOH   | CNA-Seq   | DNA-Tumor  | Amplification Not Detected |
| MTOH   | Seq       | DNA-Tumor  | Mutation Not Detected   |
| MUC1   | Seq       | DNA-Tumor  | Mutation Not Detected   |
| MUS81  | Seq       | DNA-Tumor  | Mutation Not Detected   |
| MUSK   | Seq       | RNA-Tumor  | Fusion Not Detected     |
| MUTYH  | Seq       | DNA-Tumor  | Mutation Not Detected   |
| MYB    | CNA-Seq   | DNA-Tumor  | Amplification Not Detected |
| MYB    | Seq       | DNA-Tumor  | Indeterminate           |
| MSI2   | CNA-Seq   | DNA-Tumor  | Amplification Not Detected |
| MSI2   | Seq       | DNA-Tumor  | Mutation Not Detected   |
| MSMB   | Seq       | RNA-Tumor  | Fusion Not Detected     |
| MST1R  | (RON)    | RNA-Tumor  | Fusion Not Detected     |
| MTAP   | Seq       | DNA-Tumor  | Mutation Not Detected   |
| MTCP1  | Seq       | DNA-Tumor  | Mutation Not Detected   |
| MTOH   | CNA-Seq   | DNA-Tumor  | Amplification Not Detected |
| MTOH   | Seq       | DNA-Tumor  | Mutation Not Detected   |
| MUC1   | Seq       | DNA-Tumor  | Mutation Not Detected   |
| MUS81  | Seq       | DNA-Tumor  | Mutation Not Detected   |
| MUSK   | Seq       | RNA-Tumor  | Fusion Not Detected     |
| MUTYH  | Seq       | DNA-Tumor  | Mutation Not Detected   |
| MYB    | CNA-Seq   | DNA-Tumor  | Amplification Not Detected |
| MYB    | Seq       | DNA-Tumor  | Indeterminate           |
| Gene   | Test Type | Tumor Type | Result                  |
|--------|-----------|------------|-------------------------|
| MYB    | Seq       | RNA-Tumor  | Fusion Not Detected     |
| MYC    | CNA-Seq   | DNA-Tumor  | Amplification Not Detected |
| MYC    | Seq       | DNA-Tumor  | Mutation Not Detected   |
| MYCL   | Seq       | DNA-Tumor  | Mutation Not Detected   |
| MYCN   | CNA-Seq   | DNA-Tumor  | Amplification Not Detected |
| MYCN   | Seq       | DNA-Tumor  | Mutation Not Detected   |
| MYD88  | CNA-Seq   | DNA-Tumor  | Amplification Not Detected |
| MYD88  | Seq       | DNA-Tumor  | Mutation Not Detected   |
| MYH11  | Seq       | DNA-Tumor  | Mutation Not Detected   |
| MYH9   | Seq       | DNA-Tumor  | Mutation Not Detected   |
| NBN    | Seq       | DNA-Tumor  | Mutation Not Detected   |
| NCOA2  | CNA-Seq   | DNA-Tumor  | Amplification Not Detected |
| NCOA2  | Seq       | DNA-Tumor  | Mutation Not Detected   |
| NCOA3  | Seq       | DNA-Tumor  | Mutation Not Detected   |
| NCOA4  | Seq       | DNA-Tumor  | Mutation Not Detected   |
| NCOR1  | Seq       | DNA-Tumor  | Mutation Not Detected   |
| NDRG1  | Seq       | DNA-Tumor  | Mutation Not Detected   |
| NF1    | CNA-Seq   | DNA-Tumor  | Amplification Not Detected |
| NF1    | Seq       | DNA-Tumor  | Mutation Not Detected   |
| NF2    | CNA-Seq   | DNA-Tumor  | Amplification Not Detected |
| NF2    | Seq       | DNA-Tumor  | Mutation Not Detected   |
| NFE2L2 | CNA-Seq   | DNA-Tumor  | Amplification Not Detected |
| NFE2L2 | Seq       | DNA-Tumor  | Mutation Not Detected   |
| NFIB   | CNA-Seq   | DNA-Tumor  | Amplification Not Detected |
| NFIB   | Seq       | DNA-Tumor  | Mutation Not Detected   |
| NFKB2  | CNA-Seq   | DNA-Tumor  | Amplification Not Detected |
| NFKB2  | Seq       | DNA-Tumor  | Mutation Not Detected   |
| NFKBIA | CNA-Seq   | DNA-Tumor  | Amplification Not Detected |
| NFKBIA | Seq       | DNA-Tumor  | Mutation Not Detected   |
| NFKBIE | Seq       | DNA-Tumor  | Mutation Not Detected   |
| NIN    | CNA-Seq   | DNA-Tumor  | Amplification Not Detected |
| NIN    | Seq       | DNA-Tumor  | Mutation Not Detected   |
| NKO2-1 | Seq       | DNA-Tumor  | Mutation Not Detected   |
| NONO   | Seq       | DNA-Tumor  | Mutation Not Detected   |
| NOTCH1 | Seq       | DNA-Tumor  | Mutation Not Detected   |
| NOTCH1 | Seq       | RNA-Tumor  | Fusion Not Detected     |
| NOTCH2 | CNA-Seq   | DNA-Tumor  | Amplification Not Detected |
| NOTCH2 | Seq       | DNA-Tumor  | Mutation Not Detected   |
| NOTCH2 | Seq       | RNA-Tumor  | Fusion Not Detected     |
| NOTCH3 | Seq       | DNA-Tumor  | Indeterminate           |
| gene  | technology  | tissue   | result               |
|-------|-------------|---------|----------------------|
| NPM1  | CNA-Seq     | DNA-Tumor | Amplification Not Detected |
| NPM1  | Seq         | DNA-Tumor | Indeterminate         |
| NR4A3 | CNA-Seq     | DNA-Tumor | Amplification Not Detected |
| NR4A3 | Seq         | DNA-Tumor | Mutation Not Detected  |
| NRAS  | Seq         | DNA-Tumor | Mutation Not Detected  |
| NRG1  | Seq         | RNA-Tumor | Fusion Not Detected   |
| NSD1  | CNA-Seq     | DNA-Tumor | Amplification Not Detected |
| NSD1  | Seq         | DNA-Tumor | Mutation Not Detected  |
| NSD2  | Seq         | DNA-Tumor | Mutation Not Detected  |
| NSD3  | Seq         | DNA-Tumor | Mutation Not Detected  |
| NT5C2 | Seq         | DNA-Tumor | Mutation Not Detected  |
| NTHL1 | Seq         | DNA-Tumor | Mutation Not Detected  |
| NTRK1 | CNA-Seq     | DNA-Tumor | Amplification Not Detected |
| NTRK1 | Seq         | DNA-Tumor | Mutation Not Detected  |
| NTRK1 | Seq         | RNA-Tumor | Fusion Not Detected   |
| NTRK2 | CNA-Seq     | DNA-Tumor | Amplification Not Detected |
| NTRK2 | Seq         | DNA-Tumor | Mutation Not Detected  |
| NTRK2 | Seq         | RNA-Tumor | Fusion Not Detected   |
| NTRK3 | CNA-Seq     | DNA-Tumor | Amplification Not Detected |
| NTRK3 | Seq         | DNA-Tumor | Mutation Not Detected  |
| NTRK3 | Seq         | RNA-Tumor | Fusion Not Detected   |
| NUMBL | Seq         | RNA-Tumor | Fusion Not Detected   |
| NUP214| CNA-Seq     | DNA-Tumor | Amplification Not Detected |
| NUP214| Seq         | DNA-Tumor | Mutation Not Detected  |
| NUP93 | CNA-Seq     | DNA-Tumor | Amplification Not Detected |
| NUP93 | Seq         | DNA-Tumor | Mutation Not Detected  |
| NUP98 | CNA-Seq     | DNA-Tumor | Amplification Not Detected |
| NUP98 | Seq         | DNA-Tumor | Mutation Not Detected  |
| NUTM1 | CNA-Seq     | DNA-Tumor | Amplification Not Detected |
| NUTM1 | Seq         | DNA-Tumor | Mutation Not Detected  |
| NUTM1 | Seq         | RNA-Tumor | Fusion Not Detected   |
| OLIG2 | Seq         | DNA-Tumor | Mutation Not Detected  |
| P2RY8 | Seq         | DNA-Tumor | Mutation Not Detected  |
| PAFAH1B2 | Seq  | DNA-Tumor | Mutation Not Detected  |
| PAK1  | Seq         | DNA-Tumor | Mutation Not Detected  |
| PAK3  | Seq         | DNA-Tumor | Mutation Not Detected  |
| PALB2 | CNA-Seq     | DNA-Tumor | Amplification Not Detected |
| PALB2 | Seq         | DNA-Tumor | Mutation Not Detected  |
| PARP1 | Seq         | DNA-Tumor | Mutation Not Detected  |
| Gene   | Assay  | Type      | Result                          |
|--------|--------|-----------|---------------------------------|
| PARP2  | Seq    | DNA-Tumor | Mutation Not Detected           |
| PARP3  | Seq    | DNA-Tumor | Mutation Not Detected           |
| PAX3   | CNA-Seq | DNA-Tumor | Amplification Not Detected      |
| PAX3   | Seq    | DNA-Tumor | Mutation Not Detected           |
| PAX5   | CNA-Seq | DNA-Tumor | Amplification Not Detected      |
| PAX5   | Seq    | DNA-Tumor | Mutation Not Detected           |
| PAX7   | Seq    | DNA-Tumor | Mutation Not Detected           |
| PAX8   | Seq    | DNA-Tumor | Mutation Not Detected           |
| PBRM1  | CNA-Seq | DNA-Tumor | Amplification Not Detected      |
| PBRM1  | Seq    | DNA-Tumor | Mutation Not Detected           |
| PBX1   | CNA-Seq | DNA-Tumor | Amplification Not Detected      |
| PBX1   | Seq    | DNA-Tumor | Mutation Not Detected           |
| PCM1   | CNA-Seq | DNA-Tumor | Amplification Not Detected      |
| PCM1   | Seq    | DNA-Tumor | Mutation Not Detected           |
| PDCD1  | CNA-Seq | DNA-Tumor | Amplification Not Detected      |
| PDCD1  | Seq    | DNA-Tumor | Mutation Not Detected           |
| PDCD1LG2 | CNA-Seq | DNA-Tumor | Amplification Not Detected    |
| PDCD1LG2 | Seq    | DNA-Tumor | Mutation Not Detected         |
| PDE4DIP | Seq    | DNA-Tumor | Mutation Not Detected          |
| PDGFB  | Seq    | DNA-Tumor | Mutation Not Detected           |
| PDGFA  | CNA-Seq | DNA-Tumor | Amplification Not Detected      |
| PDGFA  | Seq    | DNA-Tumor | Mutation Not Detected           |
| PDGFRB | CNA-Seq | DNA-Tumor | Amplification Not Detected      |
| PDGFRB | Seq    | DNA-Tumor | Mutation Not Detected           |
| PDGFRB | Seq    | RNA-Tumor | Fusion Not Detected             |
| PDK1   | Seq    | DNA-Tumor | Mutation Not Detected           |
| PD-L1 (SP142) | IHC | Protein | Negative | 0.0% |
| PDZD8  | Seq    | RNA-Tumor | Unclassified Fusion Detected    |
| PER1   | CNA-Seq | DNA-Tumor | Amplification Not Detected      |
| PER1   | Seq    | DNA-Tumor | Mutation Not Detected           |
| PGAP3  | Seq    | RNA-Tumor | Unclassified Fusion Detected    |
| PHF6   | Seq    | RNA-Tumor | Unclassified Fusion Detected    |
| PHOX2B | Seq    | DNA-Tumor | Mutation Not Detected           |
| PIK3C2B| Seq    | DNA-Tumor | Mutation Not Detected           |
| PIK3C2G| Seq    | DNA-Tumor | Indeterminate                   |
| PIK3CA | CNA-Seq | DNA-Tumor | Amplification Not Detected      |
| PIK3CA | Seq    | DNA-Tumor | Pathogenic Variant              |
| PIK3CA | Seq    | RNA-Tumor | Fusion Not Detected             |

**Notes:**
- PD-L1 (SP142) IHC: Protein Negative, 0.0%
- PDZD8:EFCAB5
- PDZD8: Unclassified Fusion Detected
- PGAP3:IKZF3
- PGAP3: Unclassified Fusion Detected
- PIK3CA: Pathogenic Variant, Exon 2 | p.R88Q | 45
| Gene   | Method  | Tumor Type | Result                                      |
|--------|---------|------------|---------------------------------------------|
| PIK3CB | Seq     | DNA-Tumor  | Indeterminate                               |
| PIK3CD | Seq     | DNA-Tumor  | Mutation Not Detected                       |
| PIK3CG | Seq     | DNA-Tumor  | Mutation Not Detected                       |
| PIK3R1 | CNA-Seq | DNA-Tumor  | Amplification Not Detected                  |
| PIK3R1 | Seq     | DNA-Tumor  | Mutation Not Detected                       |
| PIK3R2 | Seq     | DNA-Tumor  | Indeterminate                               |
| PIM1   | CNA-Seq | DNA-Tumor  | Amplification Not Detected                  |
| PIM1   | Seq     | DNA-Tumor  | Mutation Not Detected                       |
| PITPNC1| Seq     | RNA-Tumor  | Unclassified Fusion Detected                |
|        |         |            | PITPNC1:CACNG4                              |
| PKN1   | Seq     | RNA-Tumor  | Fusion Not Detected                         |
| PLAG1  | Seq     | DNA-Tumor  | Mutation Not Detected                       |
| PLCG2  | Seq     | DNA-Tumor  | Mutation Not Detected                       |
| PML    | Seq     | DNA-Tumor  | Mutation Not Detected                       |
| PMS1   | Seq     | DNA-Tumor  | Mutation Not Detected                       |
| PMS2   | CNA-Seq | DNA-Tumor  | Amplification Not Detected                  |
| PMS2   | IHC     | Protein    | Positive | 1+, 70%                                     |
| PMS2   | Seq     | DNA-Tumor  | Mutation Not Detected                       |
| POLD1  | Seq     | DNA-Tumor  | Mutation Not Detected                       |
| POLD2  | Seq     | DNA-Tumor  | Mutation Not Detected                       |
| POLD3  | Seq     | DNA-Tumor  | Mutation Not Detected                       |
| POLD4  | Seq     | DNA-Tumor  | Mutation Not Detected                       |
| POLE   | CNA-Seq | DNA-Tumor  | Amplification Not Detected                  |
| POLE   | Seq     | DNA-Tumor  | Mutation Not Detected                       |
| POLH   | Seq     | DNA-Tumor  | Unclassified Variant                        |
|        |         |            | Exon 11 | p.E495K                                     |
|        |         |            | 51                                                             |
| POLH   | Seq     | DNA-Tumor  | Unclassified Variant                        |
|        |         |            | Exon 4 | p.G153D                                     |
|        |         |            | 48                                                             |
| POLQ   | Seq     | DNA-Tumor  | Mutation Not Detected                       |
| POT1   | CNA-Seq | DNA-Tumor  | Amplification Not Detected                  |
| POT1   | Seq     | DNA-Tumor  | Mutation Not Detected                       |
| POU2AF1 | CNA-Seq | DNA-Tumor  | Amplification Not Detected                  |
| POU2AF1| Seq     | DNA-Tumor  | Mutation Not Detected                       |
| PPARG  | CNA-Seq | DNA-Tumor  | Amplification Not Detected                  |
| PPARG  | Seq     | DNA-Tumor  | Mutation Not Detected                       |
| PPARG  | Seq     | DNA-Tumor  | Mutation Not Detected                       |
| PPM1D  | Seq     | DNA-Tumor  | Mutation Not Detected                       |
| PPP2R1A| Seq     | DNA-Tumor  | Mutation Not Detected                       |
| PPP2R2A| Seq     | DNA-Tumor  | Mutation Not Detected                       |
| PPP6C  | Seq     | DNA-Tumor  | Mutation Not Detected                       |
| PR     | IHC     | Protein    | Negative | 0, 100%                                    |
| PRCC   | CNA-Seq | DNA-Tumor  | Amplification Not Detected                  |
| PRCC   | Seq     | DNA-Tumor  | Mutation Not Detected                       |
| Gene   | Method  | Tissue          | Status                  |
|--------|---------|-----------------|-------------------------|
| PRDM1  | CNA-Seq | DNA-Tumor       | Amplification Not Detected |
| PRDM1  | Seq     | DNA-Tumor       | Mutation Not Detected   |
| PREX2  | Seq     | DNA-Tumor       | Mutation Not Detected   |
| PRF1   | Seq     | DNA-Tumor       | Mutation Not Detected   |
| PRKACA | Seq     | DNA-Tumor       | Indeterminate           |
| PRKAR1A| CNA-Seq | DNA-Tumor       | Amplification Not Detected |
| PRKAR1A| Seq     | DNA-Tumor       | Mutation Not Detected   |
| PRKCA  | Seq     | RNA-Tumor       | Fusion Not Detected     |
| PRKCB  | Seq     | RNA-Tumor       | Fusion Not Detected     |
| PRKCH  | Seq     | DNA-Tumor       | Mutation Not Detected   |
| PRKCI  | Seq     | DNA-Tumor       | Mutation Not Detected   |
| PRKDC  | Seq     | DNA-Tumor       | Mutation Not Detected   |
| PRKN   | Seq     | DNA-Tumor       | Mutation Not Detected   |
| PRRX1  | CNA-Seq | DNA-Tumor       | Amplification Not Detected |
| PRRX1  | Seq     | DNA-Tumor       | Mutation Not Detected   |
| PRSS8  | Seq     | DNA-Tumor       | Mutation Not Detected   |
| PTCH1  | CNA-Seq | DNA-Tumor       | Amplification Not Detected |
| PTCH1  | Seq     | DNA-Tumor       | Mutation Not Detected   |
| PTCH2  | Seq     | DNA-Tumor       | Mutation Not Detected   |
| PTEN   | CNA-Seq | DNA-Tumor       | Amplification Not Detected |
| PTEN   | IHC     | Protein         | Positive | 2+, 90% |
| PTEN   | Seq     | DNA-Tumor       | Mutation Not Detected   |
| PTK2B  | Seq     | DNA-Tumor       | Indeterminate           |
| PTPN11 | CNA-Seq | DNA-Tumor       | Amplification Not Detected |
| PTPN11 | Seq     | DNA-Tumor       | Indeterminate           |
| PTPR22 | Seq     | DNA-Tumor       | Indeterminate           |
| PTPRC  | CNA-Seq | DNA-Tumor       | Amplification Not Detected |
| PTPRDC | Seq     | DNA-Tumor       | Mutation Not Detected   |
| PTPRD  | Seq     | DNA-Tumor       | Indeterminate           |
| PTPRO  | Seq     | DNA-Tumor       | Indeterminate           |
| PTPT   | Seq     | DNA-Tumor       | Indeterminate           |
| QKI    | Seq     | DNA-Tumor       | Mutation Not Detected   |
| RABL3  | Seq     | DNA-Tumor       | Mutation Not Detected   |
| RAC1   | CNA-Seq | DNA-Tumor       | Amplification Not Detected |
| RAC1   | Seq     | DNA-Tumor       | Indeterminate           |
| RAD21  | Seq     | DNA-Tumor       | Mutation Not Detected   |
| RAD50  | CNA-Seq | DNA-Tumor       | Amplification Not Detected |
| RAD50  | Seq     | DNA-Tumor       | Mutation Not Detected   |
| RAD51  | Seq     | DNA-Tumor       | Mutation Not Detected   |
| Gene  | Method | Tissue          | Result                  |
|-------|--------|-----------------|-------------------------|
| RAD51B| Seq    | DNA-Tumor       | Mutation Not Detected   |
| RAD51C| Seq    | DNA-Tumor       | Mutation Not Detected   |
| RAD51D| Seq    | DNA-Tumor       | Mutation Not Detected   |
| RAD52 | Seq    | DNA-Tumor       | Mutation Not Detected   |
| RAD54B| Seq    | DNA-Tumor       | Mutation Not Detected   |
| RAD54L| Seq    | DNA-Tumor       | Mutation Not Detected   |
| RAF1  | CNA-Seq| DNA-Tumor       | Amplification Not Detected |
| RAF1  | Seq    | DNA-Tumor       | Mutation Not Detected   |
| RAF1  | Seq    | RNA-Tumor       | Fusion Not Detected     |
| RANBP2| Seq    | DNA-Tumor       | Mutation Not Detected   |
| RARA  | Seq    | DNA-Tumor       | Mutation Not Detected   |
| RASA1 | Seq    | DNA-Tumor       | Indeterminate           |
| RB1   | CNA-Seq| DNA-Tumor       | Amplification Not Detected |
| RB1   | Seq    | DNA-Tumor       | Indeterminate           |
| RBBP8 | Seq    | DNA-Tumor       | Mutation Not Detected   |
| RBM10 | Seq    | DNA-Tumor       | Mutation Not Detected   |
| RCAN1 | Seq    | DNA-Tumor       | Mutation Not Detected   |
| RECQL4| Seq    | DNA-Tumor       | Mutation Not Detected   |
| REL   | Seq    | DNA-Tumor       | Mutation Not Detected   |
| RELA  | Seq    | DNA-Tumor       | Indeterminate           |
| RELA  | Seq    | RNA-Tumor       | Fusion Not Detected     |
| RET   | CNA-Seq| DNA-Tumor       | Amplification Not Detected |
| RET   | Seq    | DNA-Tumor       | Mutation Not Detected   |
| RET   | Seq    | RNA-Tumor       | Fusion Not Detected     |
| RHEB  | Seq    | DNA-Tumor       | Mutation Not Detected   |
| RHOA  | Seq    | DNA-Tumor       | Mutation Not Detected   |
| RHOH  | Seq    | DNA-Tumor       | Mutation Not Detected   |
| RICTOR| CNA-Seq| DNA-Tumor       | Amplification Not Detected |
| RICTOR| Seq    | DNA-Tumor       | Mutation Not Detected   |
| RINT1 | Seq    | DNA-Tumor       | Mutation Not Detected   |
| RIT1  | Seq    | DNA-Tumor       | Mutation Not Detected   |
| RMI2  | Seq    | DNA-Tumor       | Mutation Not Detected   |
| RNF43 | CNA-Seq| DNA-Tumor       | Amplification Not Detected |
| RNF43 | Seq    | DNA-Tumor       | Mutation Not Detected   |
| ROS1  | CNA-Seq| DNA-Tumor       | Amplification Not Detected |
| ROS1  | Seq    | DNA-Tumor       | Mutation Not Detected   |
| ROS1  | Seq    | RNA-Tumor       | Fusion Not Detected     |
| RPA1  | Seq    | DNA-Tumor       | Indeterminate           |
| RPA2  | Seq    | DNA-Tumor       | Mutation Not Detected   |
| RPA3  | Seq    | DNA-Tumor       | Mutation Not Detected   |
| Gene  | Method | Tissue  | Status              |
|-------|--------|---------|---------------------|
| RPA4  | Seq    | DNA-Tumor | Mutation Not Detected |
| RPL10 | Seq    | DNA-Tumor | Mutation Not Detected |
| RPL22 | CNA-Seq | DNA-Tumor | Amplification Not Detected |
| RPL22 | Seq    | DNA-Tumor | Mutation Not Detected |
| RPL5  | Seq    | DNA-Tumor | Mutation Not Detected |
| RPN1  | CNA-Seq | DNA-Tumor | Amplification Not Detected |
| RPN1  | Seq    | DNA-Tumor | Mutation Not Detected |
| RPTOR | Seq    | DNA-Tumor | Mutation Not Detected |
| RRAS2 | Seq    | DNA-Tumor | Mutation Not Detected |
| RSPO1 | Seq    | DNA-Tumor | Mutation Not Detected |
| RSPO2 | Seq    | DNA-Tumor | Mutation Not Detected |
| RSPO3 | Seq    | DNA-Tumor | Mutation Not Detected |
| RSPO3 | Seq    | RNA-Tumor | Fusion Not Detected  |
| RUNX1 | CNA-Seq | DNA-Tumor | Amplification Not Detected |
| RUNX1 | Seq    | DNA-Tumor | Mutation Not Detected |
| RUNx1T1 | CNA-Seq | DNA-Tumor | Amplification Not Detected |
| RUNx1T1 | Seq    | DNA-Tumor | Mutation Not Detected |
| SBDS  | CNA-Seq | DNA-Tumor | Amplification Not Detected |
| SBDS  | Seq    | DNA-Tumor | Mutation Not Detected |
| SDC4  | CNA-Seq | DNA-Tumor | Amplification Not Detected |
| SDC4  | Seq    | DNA-Tumor | Mutation Not Detected |
| SDHA  | Seq    | DNA-Tumor | Mutation Not Detected |
| SDHAF2| CNA-Seq | DNA-Tumor | Amplification Not Detected |
| SDHAF2| Seq    | DNA-Tumor | Mutation Not Detected |
| SDHB  | CNA-Seq | DNA-Tumor | Amplification Not Detected |
| SDHB  | Seq    | DNA-Tumor | Mutation Not Detected |
| SDHC  | CNA-Seq | DNA-Tumor | Amplification Not Detected |
| SDHC  | Seq    | DNA-Tumor | Mutation Not Detected |
| SDHD  | CNA-Seq | DNA-Tumor | Amplification Not Detected |
| SDHD  | Seq    | DNA-Tumor | Mutation Not Detected |
| SEM1  | Seq    | DNA-Tumor | Mutation Not Detected |
| SERPINB3| Seq   | DNA-Tumor | Mutation Not Detected |
| SET   | Seq    | DNA-Tumor | Indeterminate       |
| SETBP1| CNA-Seq | DNA-Tumor | Amplification Not Detected |
| SETBP1| Seq    | DNA-Tumor | Mutation Not Detected |
| SETD2 | CNA-Seq | DNA-Tumor | Amplification Not Detected |
| SETD2 | Seq    | DNA-Tumor | Mutation Not Detected |
| SF3B1 | CNA-Seq | DNA-Tumor | Amplification Not Detected |
| Gene   | Method | Tumor Type | Result                          |
|--------|--------|------------|---------------------------------|
| SF3B1  | Seq    | DNA        | Mutation Not Detected           |
| SFQ    | Seq    | DNA        | Mutation Not Detected           |
| SGK1   | Seq    | DNA        | Mutation Not Detected           |
| SH2B3  | Seq    | DNA        | Mutation Not Detected           |
| SLC34A2| CNA-Seq| DNA        | Amplification Not Detected      |
| SLC34A2| Seq    | DNA        | Mutation Not Detected           |
| SLIT2  | Seq    | DNA        | Mutation Not Detected           |
| SLX4   | Seq    | DNA        | Mutation Not Detected           |
| SMAD2  | CNA-Seq| DNA        | Amplification Not Detected      |
| SMAD2  | Seq    | DNA        | Mutation Not Detected           |
| SMAD3  | Seq    | DNA        | Mutation Not Detected           |
| SMAD4  | CNA-Seq| DNA        | Amplification Not Detected      |
| SMAD4  | Seq    | DNA        | Mutation Not Detected           |
| SMARCA1| Seq    | DNA        | Indeterminate                   |
| SMARCA4| Seq    | DNA        | Mutation Not Detected           |
| SMARCB1| CNA-Seq| DNA        | Amplification Not Detected      |
| SMARCB1| Seq    | DNA        | Mutation Not Detected           |
| SMARCE1| CNA-Seq| DNA        | Amplification Not Detected      |
| SMARCE1| Seq    | DNA        | Mutation Not Detected           |
| SMC3   | Seq    | DNA        | Mutation Not Detected           |
| SMO    | CNA-Seq| DNA        | Amplification Not Detected      |
| SMO    | Seq    | DNA        | Mutation Not Detected           |
| SNCAIP | Seq    | DNA        | Indeterminate                   |
| SNORD50A| Seq    | RNA        | Unclassified Fusion Detected    |
| SNX29  | CNA-Seq| DNA        | Amplification Not Detected      |
| SNX29  | Seq    | DNA        | Mutation Not Detected           |
| SOCS1  | Seq    | DNA        | Mutation Not Detected           |
| SOS1   | Seq    | DNA        | Mutation Not Detected           |
| SOX10  | CNA-Seq| DNA        | Amplification Not Detected      |
| SOX10  | Seq    | DNA        | Mutation Not Detected           |
| SOX9   | Seq    | DNA        | Mutation Not Detected           |
| SPECC1 | CNA-Seq| DNA        | Amplification Not Detected      |
| SPECC1 | Seq    | DNA        | Mutation Not Detected           |
| SPEN   | CNA-Seq| DNA        | Amplification Not Detected      |
| SPEN   | Seq    | DNA        | Mutation Not Detected           |
| SPRED1 | Seq    | DNA        | Mutation Not Detected           |
| SPTA1  | Seq    | DNA        | Mutation Not Detected           |
| SRC    | Seq    | DNA        | Mutation Not Detected           |
| Gene   | Method | Type     | Result               |
|--------|--------|----------|----------------------|
| SRGAP3 | CNA-Seq| DNA-Tumor| Amplification Not Detected |
| SRGAP3 | Seq    | DNA-Tumor| Mutation Not Detected |
| SRSF2  | CNA-Seq| DNA-Tumor| Amplification Not Detected |
| SRSF2  | Seq    | DNA-Tumor| Mutation Not Detected |
| SRSF3  | CNA-Seq| DNA-Tumor| Amplification Not Detected |
| SRSF3  | Seq    | DNA-Tumor| Mutation Not Detected |
| SS18   | Seq    | DNA-Tumor| Mutation Not Detected |
| SSBP1  | Seq    | DNA-Tumor| Mutation Not Detected |
| STAG2  | Seq    | DNA-Tumor| Indeterminate         |
| STAT3  | CNA-Seq| DNA-Tumor| Amplification Not Detected |
| STAT3  | Seq    | DNA-Tumor| Mutation Not Detected |
| STAT4  | Seq    | DNA-Tumor| Mutation Not Detected |
| STAT5B | CNA-Seq| DNA-Tumor| Amplification Not Detected |
| STAT5B | Seq    | DNA-Tumor| Mutation Not Detected |
| STAT6  | Seq    | DNA-Tumor| Mutation Not Detected |
| STIL   | CNA-Seq| DNA-Tumor| Amplification Not Detected |
| STIL   | Seq    | DNA-Tumor| Mutation Not Detected |
| STK11  | CNA-Seq| DNA-Tumor| Amplification Not Detected |
| STK11  | Seq    | DNA-Tumor| Mutation Not Detected |
| SUFU   | CNA-Seq| DNA-Tumor| Amplification Not Detected |
| SUFU   | Seq    | DNA-Tumor| Mutation Not Detected |
| SUZ12  | CNA-Seq| DNA-Tumor| Amplification Not Detected |
| SUZ12  | Seq    | DNA-Tumor| Mutation Not Detected |
| SYK    | CNA-Seq| DNA-Tumor| Amplification Not Detected |
| SYK    | Seq    | DNA-Tumor| Mutation Not Detected |
| TAF1   | Seq    | DNA-Tumor| Mutation Not Detected |
| TAF15  | CNA-Seq| DNA-Tumor| Amplification Not Detected |
| TAF15  | Seq    | DNA-Tumor| Mutation Not Detected |
| TAL1   | Seq    | DNA-Tumor| Mutation Not Detected |
| TAL2   | Seq    | DNA-Tumor| Mutation Not Detected |
| TBX3   | Seq    | DNA-Tumor| Mutation Not Detected |
| TBTXT  | Seq    | DNA-Tumor| Mutation Not Detected |
| TCEA1  | Seq    | DNA-Tumor| Mutation Not Detected |
| TCF3   | Seq    | DNA-Tumor| Mutation Not Detected |
| TCF7L2 | CNA-Seq| DNA-Tumor| Amplification Not Detected |
| TCF7L2 | Seq    | DNA-Tumor| Mutation Not Detected |
| TEK    | Seq    | DNA-Tumor| Mutation Not Detected |
| TERC   | Seq    | DNA-Tumor| Mutation Not Detected |
| TERF2IP| Seq    | DNA-Tumor| Mutation Not Detected |
| Gene   | Test Type | Tumor Type | Result                  |
|--------|-----------|------------|-------------------------|
| TERT   | Seq       | DNA-Tumor  | Indeterminate           |
| TERT   |           | RNA-Tumor  | Fusion Not Detected     |
| TET1   | CNA-Seq   | DNA-Tumor  | Amplification Not Detected |
| TET1   |           | DNA-Tumor  | Mutation Not Detected   |
| TET2   | Seq       | DNA-Tumor  | Mutation Not Detected   |
| TFE3   | Seq       | DNA-Tumor  | Mutation Not Detected   |
| TFE3   |           | RNA-Tumor  | Fusion Not Detected     |
| TFEB   |           | DNA-Tumor  | Mutation Not Detected   |
| TFEB   |           | RNA-Tumor  | Fusion Not Detected     |
| TFG    |           | DNA-Tumor  | Mutation Not Detected   |
| TFRC   | CNA-Seq   | DNA-Tumor  | Amplification Not Detected |
| TFGFR1 |           | DNA-Tumor  | Mutation Not Detected   |
| TGFBR2 | CNA-Seq   | DNA-Tumor  | Amplification Not Detected |
| TGFBR2 |           | DNA-Tumor  | Mutation Not Detected   |
| THADA  |           | RNA-Tumor  | Fusion Not Detected     |
| THRAP3 |           | DNA-Tumor  | Mutation Not Detected   |
| TIPARP |           | DNA-Tumor  | Mutation Not Detected   |
| TLX3   |           | DNA-Tumor  | Mutation Not Detected   |
| TMB    |           | DNA-Tumor  | Low                      |
| TMEM127|           | DNA-Tumor  | Mutation Not Detected   |
| TMPRSS2|           | RNA-Tumor  | Fusion Not Detected     |
| TNF    |           | DNA-Tumor  | Mutation Not Detected   |
| TNFAIP3| CNA-Seq   | DNA-Tumor  | Amplification Not Detected |
| TNFAIP3|           | DNA-Tumor  | Mutation Not Detected   |
| TNFRSF14| CNA-Seq      | DNA-Tumor  | Amplification Not Detected |
| TNFRSF14|           | DNA-Tumor  | Mutation Not Detected   |
| TOP1   | CNA-Seq   | DNA-Tumor  | Amplification Not Detected |
| TOP1   |           | DNA-Tumor  | Mutation Not Detected   |
| TOP2A  |           | DNA-Tumor  | Mutation Not Detected   |
| TOP3A  |           | DNA-Tumor  | Mutation Not Detected   |
| TOP3B  |           | DNA-Tumor  | Mutation Not Detected   |
| TP53   | CNA-Seq   | DNA-Tumor  | Amplification Not Detected |
| TP53   |           | DNA-Tumor  | Pathogenic Variant: Exon 7 | p.R248Q | 38 |
| TPM3   | CNA-Seq   | DNA-Tumor  | Amplification Not Detected |
| TPM3   |           | DNA-Tumor  | Mutation Not Detected   |
| TPM4   | CNA-Seq   | DNA-Tumor  | Amplification Not Detected |
| TPM4   |           | DNA-Tumor  | Mutation Not Detected   |
| TRAF3  |           | DNA-Tumor  | Mutation Not Detected   |
| TRAF7  |           | DNA-Tumor  | Indeterminate           |
| Gene   | Method | Tissue   | Result               |
|--------|--------|----------|----------------------|
| TRIM27 | CNA-Seq| DNA-Tumor| Amplification Not Detected |
| TRIM27 | Seq    | DNA-Tumor| Mutation Not Detected  |
| TRRAP  | CNA-Seq| DNA-Tumor| Amplification Not Detected |
| TRRAP  | Seq    | DNA-Tumor| Mutation Not Detected  |
| TSC1   | CNA-Seq| DNA-Tumor| Amplification Not Detected |
| TSC1   | Seq    | DNA-Tumor| Mutation Not Detected  |
| TSC2   | CNA-Seq| DNA-Tumor| Amplification Not Detected |
| TSC2   | Seq    | DNA-Tumor| Mutation Not Detected  |
| TSHR   | CNA-Seq| DNA-Tumor| Amplification Not Detected |
| TSHR   | Seq    | DNA-Tumor| Indeterminate         |
| TSHZ3  | Seq    | DNA-Tumor| Mutation Not Detected  |
| TYK2   | Seq    | DNA-Tumor| Mutation Not Detected  |
| TYRO3  | Seq    | DNA-Tumor| Indeterminate         |
| U2AF1  | CNA-Seq| DNA-Tumor| Amplification Not Detected |
| U2AF1  | Seq    | DNA-Tumor| Mutation Not Detected  |
| UBE2T  | Seq    | DNA-Tumor| Mutation Not Detected  |
| UBR5   | Seq    | DNA-Tumor| Mutation Not Detected  |
| USP6   | CNA-Seq| DNA-Tumor| Amplification Not Detected |
| USP6   | Seq    | DNA-Tumor| Mutation Not Detected  |
| VEGFA  | Seq    | DNA-Tumor| Mutation Not Detected  |
| VHL    | Seq    | DNA-Tumor| Mutation Not Detected  |
| VTI1A  | CNA-Seq| DNA-Tumor| Amplification Not Detected |
| VTI1A  | Seq    | DNA-Tumor| Mutation Not Detected  |
| WAS    | Seq    | DNA-Tumor| Mutation Not Detected  |
| WDCP   | CNA-Seq| DNA-Tumor| Amplification Not Detected |
| WDCP   | Seq    | DNA-Tumor| Mutation Not Detected  |
| WIS3   | CNA-Seq| DNA-Tumor| Amplification Not Detected |
| WIS3   | Seq    | DNA-Tumor| Mutation Not Detected  |
| WRN    | CNA-Seq| DNA-Tumor| Amplification Not Detected |
| WRN    | Seq    | DNA-Tumor| Mutation Not Detected  |
| WT1    | CNA-Seq| DNA-Tumor| Amplification Not Detected |
| WT1    | Seq    | DNA-Tumor| Mutation Not Detected  |
| WWTR1  | CNA-Seq| DNA-Tumor| Amplification Not Detected |
| WWTR1  | Seq    | DNA-Tumor| Mutation Not Detected  |
| XPA    | Seq    | DNA-Tumor| Mutation Not Detected  |
| XPC    | CNA-Seq| DNA-Tumor| Amplification Not Detected |
| XPC    | Seq    | DNA-Tumor| Mutation Not Detected  |
| XPC1   | Seq    | DNA-Tumor| Mutation Not Detected  |
| XRC2   | Seq    | DNA-Tumor| Indeterminate         |
TABLE 1: Complete list of detected variants, amplifications, and fusion events identified in the patient's tumor

| Gene   | Method  | Tumor Type     | Description                             | Exon | Mutation   |
|--------|---------|----------------|-----------------------------------------|------|------------|
| XRCC3  | Seq     | DNA-Tumor      | Mutation Not Detected                   |      |            |
| YAP1   | Seq     | DNA-Tumor      | Unclassified Variant                    |      |            |
| YES1   | Seq     | DNA-Tumor      | Mutation Not Detected                   |      |            |
| YWHAE  | CNA-Seq | DNA-Tumor      | Amplification Not Detected              |      |            |
| YWHAE  | Seq     | DNA-Tumor      | Mutation Not Detected                   |      |            |
| ZBTB16 | Seq     | DNA-Tumor      | Mutation Not Detected                   |      |            |
| ZBTB2  | Seq     | DNA-Tumor      | Mutation Not Detected                   |      |            |
| ZFH3   | Seq     | DNA-Tumor      | Mutation Not Detected                   |      |            |
| ZNF217 | CNA-Seq | DNA-Tumor      | Amplification Not Detected              |      |            |
| ZNF217 | Seq     | DNA-Tumor      | Mutation Not Detected                   |      |            |
| ZNF331 | CNA-Seq | DNA-Tumor      | Amplification Not Detected              |      |            |
| ZNF331 | Seq     | DNA-Tumor      | Mutation Not Detected                   |      |            |
| ZNF384 | CNA-Seq | DNA-Tumor      | Amplification Not Detected              |      |            |
| ZNF384 | Seq     | DNA-Tumor      | Mutation Not Detected                   |      |            |
| ZNF521 | CNA-Seq | DNA-Tumor      | Amplification Not Detected              |      |            |
| ZNF521 | Seq     | DNA-Tumor      | Mutation Not Detected                   |      |            |
| ZNF703 | Seq     | DNA-Tumor      | Mutation Not Detected                   |      |            |
| ZNRF3  | Seq     | DNA-Tumor      | Mutation Not Detected                   |      |            |
| ZRSR2  | Seq     | DNA-Tumor      | Indeterminate                            |      |            |

**Additional Information**

**Disclosures**

**Human subjects:** Consent was obtained or waived by all participants in this study. Human Research Protection Program issued approval 2022-066. PROTOCOL TITLE: A Case of Non-Invasive Uterine Serous Carcinoma Confined to a Polyp and Positive Peritoneal Washings. On March 10, 2022, the above referenced project was reviewed and determined that the proposed activity does not meet the definition of human subjects research as defined by DHHS or FDA regulations. Therefore, it does not require review by the Spectrum Health IRB. This determination applies only to the activities described in the submission referenced above. If changes to this project occur that require review of this determination, submit a new request for determination to the IRB for a review. It is your responsibility to ensure all necessary institutional permissions are obtained prior to beginning this project. This includes, but is not limited to, ensuring all contracts have been executed, any necessary Data Use Agreements and Material Transfer Agreements have been signed, documentation of support from the Department Chief has been obtained, and any other outstanding items are completed (i.e. CMS device coverage approval letters, material shipment arrangements, etc.). Institutional Review Board, Spectrum Health. **Conflicts of interest:** In compliance with the ICMJE uniform disclosure form, all authors declare the following: **Payment/services info:** All authors have declared that no financial support was received from any organization for the submitted work. **Financial relationships:** All authors have declared that they have no financial relationships at present or within the previous three years with any organizations that might have an interest in the submitted work. **Other relationships:** All authors have declared that there are no other relationships or activities that could appear to have influenced the submitted work.

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Data and study material are available upon request.

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