

| Patient | Specimen Information | Ordered By |
|--------------------------------------|---|------------|
| Name: Christina Parks | Primary Tumor Site: Thyroid | |
| Date of Birth: 1975-01-13 | Specimen Site: Central and lateral cervical lymph nodes | |
| Sex: Female | Specimen ID: 8876 | |
| Case Number: 8345 | Specimen Collected: 2024-04-24 | |
| Diagnosis: Follicular thyroid cancer | Test Initiated: 2024-04-27 | |

| Biomarker | Method | Analyte | Result | Therapy association | | Biomarker level |
|-----------|--------|-----------|---------------------|---------------------|--|-----------------|
| ER | IHC | protein | Positive 3+, 100% | BENEFIT | abemaciclib, palbociclib, ribociclib, endocrine, therapy, everolimus | level 2 |
| PR | IHC | protein | Positive 2+, 95% | BENEFIT | abemaciclib, palbociclib, ribociclib, endocrine therapy | level 2 |
| TMB | seq | DNA tumor | 18 m/Mb High | BENEFIT | pembrolizumab | level 2 |
| ERBB2 | IHC | Protien | Negative 0 | LACK OF BENEFIT | trastuzumab, ado-trastuzumab emtansine, pertuzumab, fam-trastuzumab deruxtecan-nxki, lapatinib, neratinib, tucatinib | level 1 |

Cancer-Type Relevant Biomarkers

| BioMarker | Method | Analyte | Result |
|------------------------|--------|-----------|-----------------------|
| FBXW7 | Seq | RNA-Tumor | Mutation not detected |
| ER | IHC | Protien | Negative 1+, 82% |
| ABL1 | Seq | RNA-Tumor | Stable |
| Mismatch repair status | IHC | Protien | Negative 2+, 75% |
| ARID2 | Seq | RNA-Tumor | Stable |

| BioMarker | Method | Analyte | Result |
|-----------|--------|-----------|---------------------|
| TLR8 | Seq | DNA-Tumor | Stable |
| FOXL2 | Seq | DNA-Tumor | Fusion not detected |
| CTNNB1 | Seq | RNA-Tumor | Fusion not detected |
| CTNNB1 | Seq | DNA-Tumor | Stable |

Genomic Signatures

| BioMarker | Method | Analyte | Result |
|--------------------------------------|--------|-----------|---|
| Microsatellite instability | Seq | DNA tumor | Low |
| Tumor mutational burden | Seq | DNA tumor | 18 mutations/Mb High |
| Genomic loss of heterozygosity (LOH) | Seq | DNA tumor | High - 20% of tested genmoic segments exhibit LOH |

Genes Tested with Pathogenic Alterations or likely Pathogenic Alterations

| Gene | Method | Analyte | Variant Interpretation | Protien Alteration | Exon | DNA Alteration | Allele Frequency % |
|-------|--------|-----------|------------------------|--------------------|------|---------------------|--------------------|
| IKZF1 | Seq | DNA tumor | Benign | p.K659E | 14 | c.1144T>C | 20.52 |
| CD74 | Seq | DNA tumor | Likely Pathogenic | p.R132H | 11 | c.395_396inv | 28.0 |
| MYCN | Seq | DNA tumor | Likely Benign | p.K385I | 9 | c.1154_1155delinsTA | 29.11 |
| ERBB2 | Seq | DNA tumor | Likely Pathogenic | p.D140E | 17 | c.380G>C | 11.61 |

Gene Variants of Unknown Significance

| Gene | Method | Analyte | Variant Interpretation | Protien Alteration | Exon | DNA Alteration | Allele Frequency % |
|---------|--------|-----------|-----------------------------------|--------------------|------|----------------|--------------------|
| U2AF1 | Seq | DNA tumor | Variant of uncertain significance | p.Y623X | 14 | 1 | 17.94 |
| HSP90B1 | Seq | DNA tumor | Variant of uncertain significance | p.H362R | 12 | c.1085A>G | 23.3 |
| TOP2A | Seq | DNA tumor | Variant of uncertain significance | p.K385I | 19 | c.2525A>T | 6.1 |
| ERBB2 | Seq | DNA tumor | Variant of uncertain significance | p.I66T | 10 | 1 | 2.2 |
| MET | Seq | DNA tumor | Variant of uncertain significance | p.T367N | 16 | c.1100= | 7.67 |

Immunohistochemistry Results

| Biomarker | Result |
|-----------|-------------------|
| ER | Negative 1+, 4% |
| ERBB2 | Positive 3+, 37% |
| PMS2 | Negative 1+, 35% |
| MLH1 | Positive 1+, 69% |

Genes Tested with Indeterminate Results by Tumor DNA Sequencing

SRSF2 PTCH1 KIT NT5C2 EGFR

Specimen Information

Specimen ID: 8876

Specimen Collected: 2024-04-24

Specimen Recieved: 2024-04-27

Testing Initiated: 2024-04-27

Gross Description: 8876

Pathological Diagnosis:

Left breast, central, 12:00, suspicious mass, 12-gauge core needle biopsy: Infiltrating moderately-differentiated mammary carcinoma, grade 2, Nottingham score 6 (architectural grade 3, nuclear grade 2, mitotic figures 1).

Dissection Information:

Molecular testing of this specimen was performed after harvesting of targeted tissues with an approved manual microdissection technique. Candidate slides were examined under a microscope and areas containing tumor cells (and separately normal cells, when necessary for testing) were circled. A laboratory technician harvested targeted tissues for extraction from the marked areas using a dissection microscope.

Clinical Trials Connector

| CHEMOTHERAPY CLINICAL TRIALS | | | | |
|------------------------------|-----------|--------|-----------|---|
| Drug class | Biomarker | Method | Analyte | Investigational agents |
| Anti hormonal therapy | ER | IHC | protein | anastrozole, letrozole, exemestane, fulvestrant, tamoxifen, goserelin, leuprolide |
| Anti hormonal therapy | PR | IHC | protein | anastrozole, letrozole, exemestane, fulvestrant, tamoxifen, goserelin, leuprolide |
| Anti inflammatory agents | PIK3CA | NGS | DNA tumor | aspirin |

| TARGETED THERAPY CLINICAL TRIALS | | | | |
|----------------------------------|-----------|--------|-----------|--|
| Drug class | Biomarker | Method | Analyte | Investigational agents |
| Akt inhibitors | ARID1A | NGS | DNA tumor | AZD5363, MK-2206, ipataserib |
| immunomodulatory agents | TMB | NGS | DNA tumor | avelumab, atezolizumab, durvalumab, ipilimumab, nivolumab, pembrolizumab |
| PARP inhibitors | NBN | NGS | DNA tumor | BGB-290, BMN-673, olaparib, rucaparib, talazoparib |
| Akt/mTor inhibitors | PIK3CA | NGS | DNA tumor | AZD5363, BYL719, MK-2206, ipataserib, everolimus, temsirolimus |