# Breast Sample
# Cameron Moore

Diagnosis
**Invasive ductal carcinoma**

Accession No.
**7333**

xT

Date of Birth
**1986-04-08**

Sex
**Female**

Physician
**Dr. Troy Sosa**

Institution
**Cline Inc**

Tumor specimen:
source Breast
CollectedDate 2023-09-07
ReceivedDate 2023-09-08
TumorPercentage 93%

Normal specimen:
source Blood
CollectedDate 2023-09-12
ReceivedDate 2023-09-12

## GENOMIC VARIANTS

| Somatic - Potentially Actionable | | variant allele fraction |
|---|---|---|
| B2M | c.2T>G p.M1R Stopgain-LOF | 17.61% |

| Somatic - Biologically Relevant | | |
|---|---|---|
| HBB | c.364G>C p.E7K Spliceregionvariant-LOF | 27.4% |
| NOTCH1 | c.7398del p.E122K Spliceregionvariant-GOF | 23.28% |
| CCND3 | c.766_776del11 p.E27K Spliceregionvariant-GOF | 24.74% |
| HDAC2 | c.3113A>G p.R256fs*64 Frameshift-LOF | 5.19% |
| ERCC2 | c.3113A>G p.E7V Stopgain-LOF | 9.61% |

**Germline - Pathogenic**

No Germline - Pathogenic variants were found in the limited set of genes on which we report.

**Pertinent Negatives**

EZH2 PTCH1 SRSF2 STAT5B

## IMMUNOTHERAPY MARKERS

**Tumor Mutational Burden**

29 m/Mb 46%

**Microsatellite Instability Status**

Stable Equivocal **High**

## FDA-APPROVED THERAPIES, Current Diagnosis

| | | |
|---|---|---|
| KRAS G12C Inhibitors | **Sotorasib** | NCCN, Consensus, Non-Small Cell Lung Cancer<br>MSK OncoKB, Level 1<br>KRASp.G12C G12C-GOF |

## FDA-APPROVED THERAPIES, Other Indications

| | | |
|---|---|---|
| KRAS G12C Inhibitors | **Sotorasib** | NCCN, Consensus, Non-Small Cell Lung Cancer<br>MSK OncoKB, Level 1<br>KRASp.G12C G12C-GOF |

## ADDITIONAL INDICATORS

| | |
|---|---|
| **Unfavorable Prognosis** | NCCN, Consensus, Non-Small Cell Lung Cancer<br>KRASp.G12C Gain-of-function |

## CLINICAL TRIALS

| | |
|---|---|
| A Study of VS-6766 v. VS-6766 + Defactinib in Recurrent G12V, Other KRAS and BRAF Non-Small Cell Lung Cancer | **Phase 2**<br>City, state - x mi<br>**KRAS mutation** |
| A Phase 1/2 Study of MRTX849 in Patients With Cancer Having a KRAS G12C Mutation KRYSTAL-1 | **Phase 1/2**<br>City, state - x mi<br>**KRAS mutation**<br>**STK11 mutation** |
| First-in-human Study of DRP-104 (Sirpiglenastat) as Single Agent and in Combination With Atezolizumab in Patients With Advanced Solid Tumors. (NCT04471415) | **Phase 1/2**<br>City, state - x mi<br>**NFE2L2 mutation**<br>**STK11 mutation** |

## VARIANTS OF UNKNOWN SIGNIFICANCE

| **Somatic** | **Mutation effect** | **Variant allele fraction** |
|---|---|---|
| EZH2 | c.1936T>A p.Y646H Spliceregionvariant-LOF<br>NM_001011645 | 3.67% |
| MAPK1 | c.964G>A p.E322K Frameshift-LOF<br>NM_001011645 | 8.93% |
| SDHD | c.34G>A p.G12S Frameshift-LOF<br>NM_001011645 | 10.67% |
| BTK | c.3113A>G p.C481X Nonsense-GOF<br>NM_001011645 | 7.56% |
| EZH2 | c.1937A>G p.Y646C Nonsense-GOF<br>NM_001011645 | 6.35% |
| NTRK1 | c.1792C>T p.G607V Nonsense-GOF<br>NM_001011645 | 4.79% |
| **Germline** | **Mutation effect** | **Condition** |
| CTNNB1 | c.134C>T p.D32N Missensevariant(exon2)-GOF<br>NM_001011645 | care |

## LOW COVERAGE REGIONS

U2AF1 IDH2

## SOMATIC VARIANT DETAILS - POTENTIALLY ACTIONABLE

**B2M** c.2T>G p.M1R Stopgain-LOF VAF: 17.61%

STK11 (LKB1) encodes an enzyme in the serine/threonine kinase family that is responsible for maintaining energy metabolism and cellular polarization through the activation of AMP-activated protein kinase and other members of the AMPK family. The enzyme also acts as a tumor suppressor by regulating cell growth. Loss of function mutations, copy number loss, epigenetic variation, and underexpression of STK11 are associated with cancer progression.

## SOMATIC VARIANT DETAILS - BIOLOGICALLY RELEVANT

**HBB** c.364G>C p.E7K Spliceregionvariant-LOF VAF: 27.4%

NFE2L2 acts as a transcription factor for proteins that contain an antioxidant response element (ARE) within their promoter sequence. Genes that contain ARE are involved in injury and inflammation response. Activating mutations and overexpression of NFE2L2 are associated with cancer progression.

**NOTCH1** c.7398del p.E122K Spliceregionvariant-GOF VAF: 23.28%

STK11 (LKB1) encodes an enzyme in the serine/threonine kinase family that is responsible for maintaining energy metabolism and cellular polarization through the activation of AMP-activated protein kinase and other members of the AMPK family. The enzyme also acts as a tumor suppressor by regulating cell growth. Loss of function mutations, copy number loss, epigenetic variation, and underexpression of STK11 are associated with cancer progression.

**CCND3** c.766_776del11 p.E27K Spliceregionvariant-GOF VAF: 24.74%

NFE2L2 acts as a transcription factor for proteins that contain an antioxidant response element (ARE) within their promoter sequence. Genes that contain ARE are involved in injury and inflammation response. Activating mutations and overexpression of NFE2L2 are associated with cancer progression.

**HDAC2** c.3113A>G p.R256fs*64 Frameshift-LOF VAF: 5.19%

PTEN encodes a phosphatase that acts as a tumor suppressor by negatively regulating the PI3K-AKT-mTOR pathway. Loss of function mutations, copy number loss, and underexpression of PTEN are associated with cancer progression.

**ERCC2** c.3113A>G p.E7V Stopgain-LOF VAF: 9.61%

PTEN encodes a phosphatase that acts as a tumor suppressor by negatively regulating the PI3K-AKT-mTOR pathway. Loss of function mutations, copy number loss, and underexpression of PTEN are associated with cancer progression.

## CLINICAL HISTORY

Diagnosed on

2023-08-31