# Clinical, gene and mutation data of cancers with cryptic STMN2 events

## Cancers with STMN2 expression

```
STMN2_clinical |>
  ggplot(aes(x = fct_rev(fct_infreq(cancer_type)))) +
  geom_bar(aes(fill = cancer_type)) +
  coord_flip() +
  labs(
    x = "Cancer Type",
    y = "Number of Cases",
    title = "STMN2 events are found in mostly breast and brain cancers"
  ) +
  theme(legend.position = "none", plot.title = element_text(size=10))
```
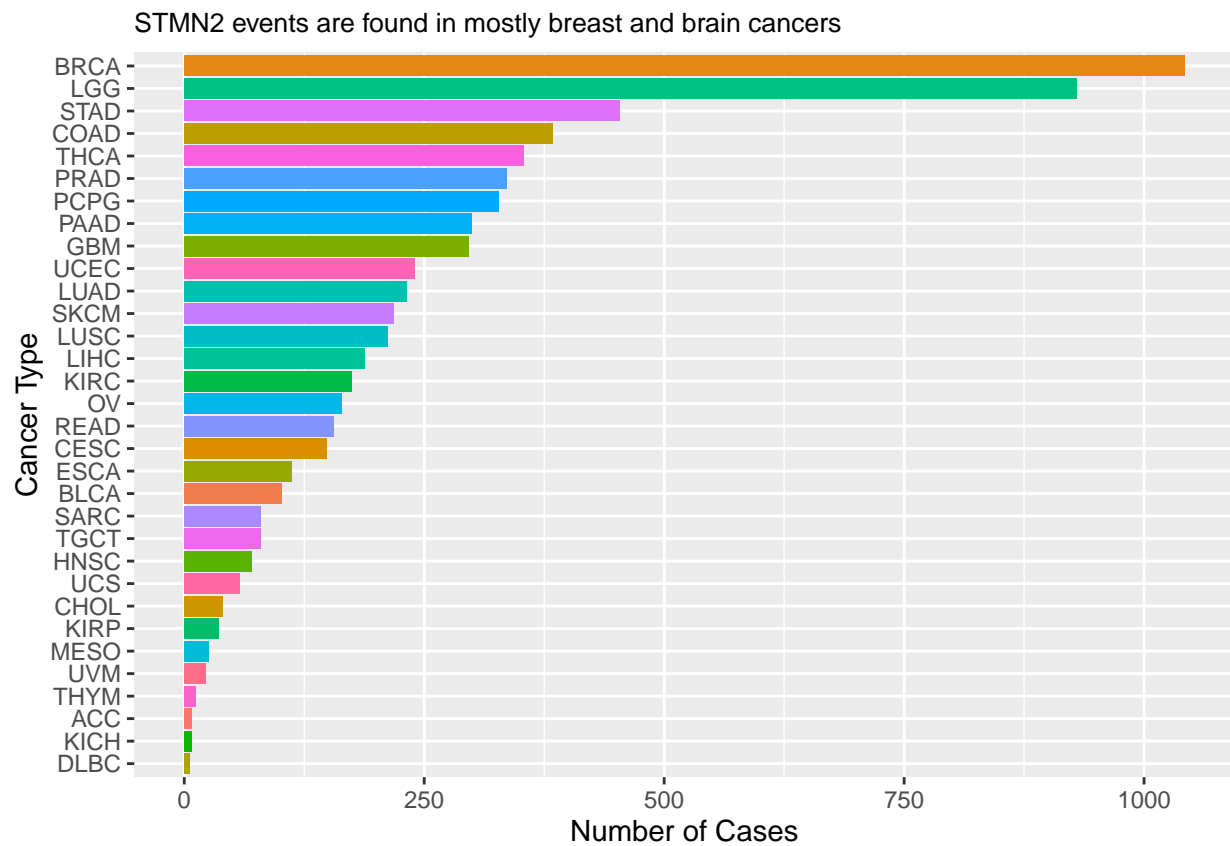


**Figure 1**: STMN2 events are found mostly in breast and brain cancer patients. BRCA = breast cancer; LGG = low-grade gliomas (brain tumours)

# Cancers with cryptic STMN2 expression

```
STMN2_clinical_jir_cryptic <- STMN2_clinical_jir |>
  filter(STMN2_cryptic_coverage > 2)
```

## Primary sites of cancers

```
STMN2_clinical_jir_cryptic |>
  drop_na() |>
  ggplot(aes(x = fct_rev(fct_infreq(gdc_primary_site)))) +
  geom_bar(aes(fill = gdc_primary_site)) +
  coord_flip() +
  labs(
    x = "Primary Site of Cancer",
    y = "Number of Cases",
    title =
  "Primary sites of cancers with cryptic STMN2 events are mostly the adrenal gland and brain"
  ) +
  theme(legend.position = "none", plot.title = element_text(size=9))
```
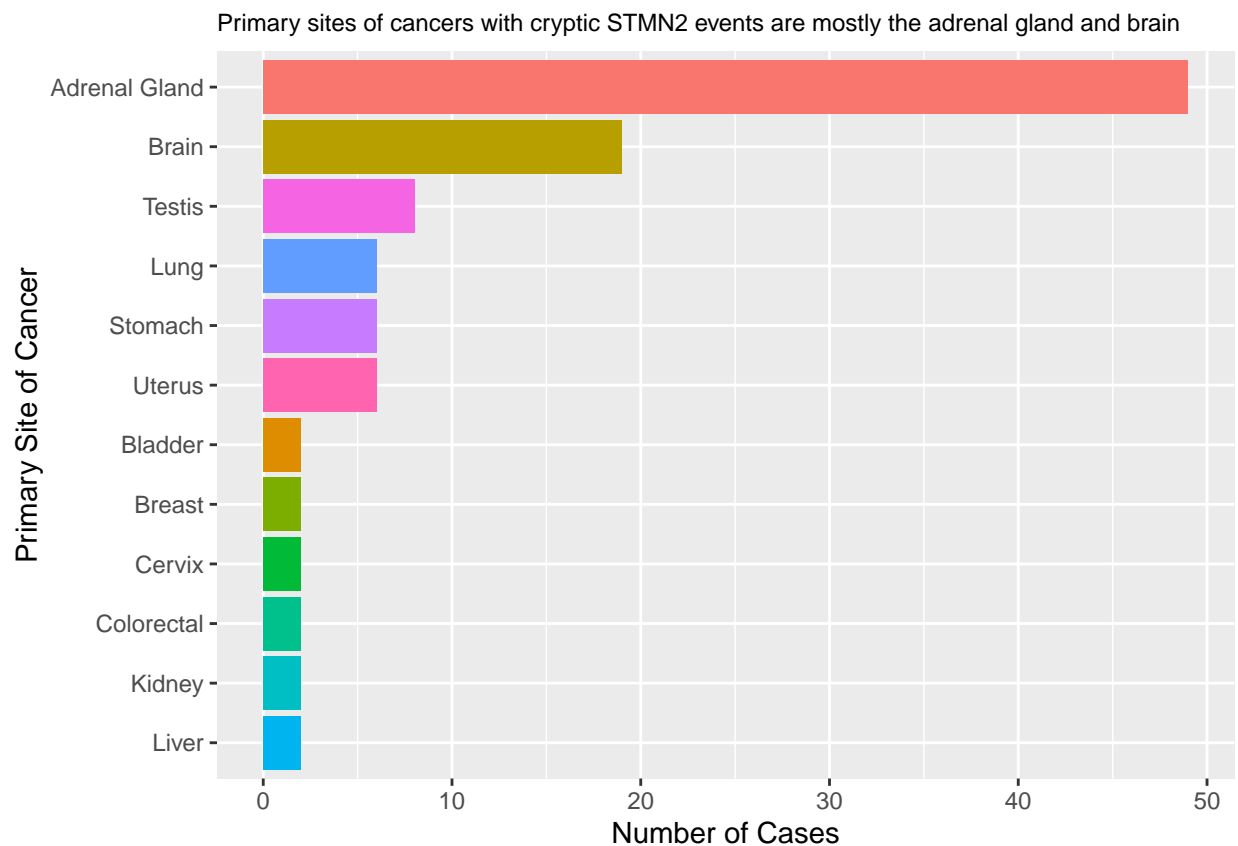
Primary sites of cancers with cryptic STMN2 events are mostly the adrenal gland and brain



**Figure 2**: Cryptic STMN2 events are found mostly in the adrenal gland and brain.

Interestingly, Figure 2 shows that cryptic STMN2 expression is low in the breast. Comparing this to Figure

1, this shows that the STMN2 events expressed in breast cancers may be mostly annotated non-cryptic events.

## Cryptic STMN2 junction coverage in different sites of cancers

```
STMN2_clinical_jir_cryptic |>
  drop_na() |>
  filter(cgc_primary_site != "") |>
  ggplot(aes(x = junction_avg_coverage, y = fct_reorder(gdc_primary_site,
                                             junction_avg_coverage, median))) +
  geom_boxplot(aes(fill = gdc_primary_site)) +
  labs(
    x = "Junction Average Coverage",
    y = "Primary Site of Cancer",
  ) +
  theme(legend.position = "none", plot.title = element_text(size=10)) +
  geom_signif(comparisons = list(c("Stomach", "Breast"), c("Stomach", "Brain")),
              map_signif_level = TRUE,
              y_position = c(75, 80))
```
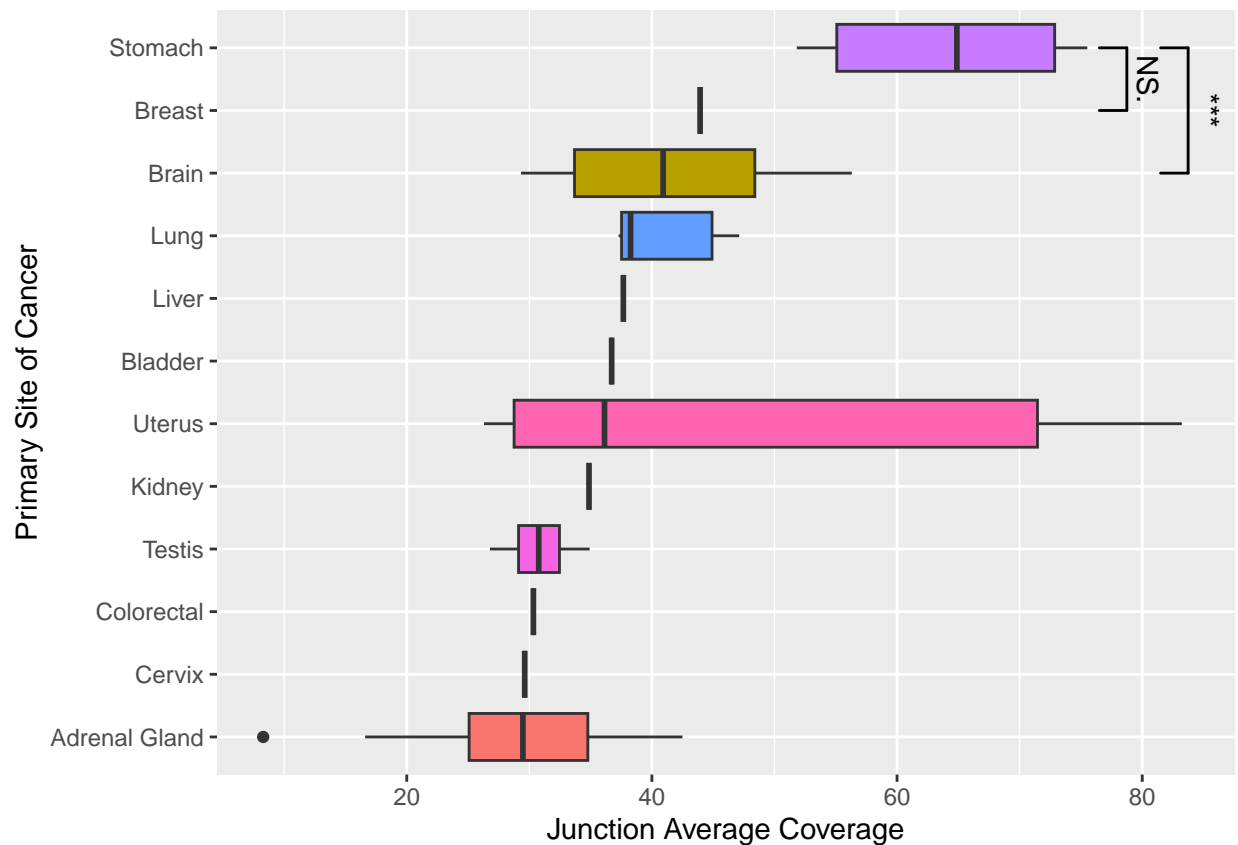


**Figure 3**: Stomach and breast cancers have the greatest STMN2 coverage.

On average, cancers in the stomach and breast have the greatest number of reads supporting cryptic STMN2 events. Cancers of the brain have significantly fewer reads surpporting cryptic events.

## Which cancers have the most cryptic STMN2 events?

Table 1: Breast and brain cancers have high cryptic STMN2 expression.

| cancer_type | n | percent |
| --- | --- | --- |
| Pheochromocytoma and Paraganglioma | 49 | 0.4622642 |
| Glioblastoma Multiforme | 15 | 0.1415094 |
| Testicular Germ Cell Tumors | 8 | 0.0754717 |
| Stomach Adenocarcinoma | 6 | 0.0566038 |
| Brain Lower Grade Glioma | 4 | 0.0377358 |
| Lung Squamous Cell Carcinoma | 4 | 0.0377358 |
| Uterine Corpus Endometrial Carcinoma | 4 | 0.0377358 |
| Bladder Urothelial Carcinoma | 2 | 0.0188679 |
| Breast Invasive Carcinoma | 2 | 0.0188679 |
| Cervical Squamous Cell Carcinoma and Endocervical Adenocarcinoma | 2 | 0.0188679 |
| Kidney Renal Clear Cell Carcinoma | 2 | 0.0188679 |
| Liver Hepatocellular Carcinoma | 2 | 0.0188679 |
| Lung Adenocarcinoma | 2 | 0.0188679 |
| Rectum Adenocarcinoma | 2 | 0.0188679 |
| Uterine Carcinosarcoma | 2 | 0.0188679 |

## Where are the cancers with cryptic STMN2 events located?

Table 2: Cancers with cryptic STMN2 events are found primarily in the adrenal gland and brain

| gdc_primary_site | n | percent |
| --- | --- | --- |
| Adrenal Gland | 49 | 0.4622642 |
| Brain | 19 | 0.1792453 |
| Testis | 8 | 0.0754717 |
| Lung | 6 | 0.0566038 |
| Stomach | 6 | 0.0566038 |
| Uterus | 6 | 0.0566038 |
| Bladder | 2 | 0.0188679 |
| Breast | 2 | 0.0188679 |
| Cervix | 2 | 0.0188679 |
| Colorectal | 2 | 0.0188679 |
| Kidney | 2 | 0.0188679 |
| Liver | 2 | 0.0188679 |