

CATS  
(Cancer Genomic Test Standardized)  
Format

Synopsis

By Section of Genomic Data Management,  
C-CAT

v1.6~~5~~.0~~2~~

2026~~5~~/1~~0~~3/3~~1~~6

## I. Synopsis

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[shortVariants/copyNumberAlterations/structuralVariations/otherBiomarkers](#)

### Example1. Only shortVariants

```
{
  "metaData": {
    "schemaVersion": "1.65.02",
    Note: Describe the version of CATS Format used.
    "referenceGenome": {
      "grcRelease": "GRCh37.p13"
    }
  },
  "testInfo": {
    "testId": "12345678901231900001",
    "testType": "tumor and matched-normal",
    "panelName": "Multi-gene Panel A",
    "panelVersion": "v1.5.0"
  },
  "sequencingSamples": [
    {
      "itemId": "sample01-tumor-dna",
      "tumorOrNormal": "tumor",
      "nucleicAcid": "DNA"
    }
  ],
  "variants": {
    "shortVariants": [
      {
        "itemId": "shortVariant-1",
        "chromosome": "2",
        "position": 29445258,
        "referenceAllele": "C",
        "alternateAllele": "T",
```

Note: Describe "position" and "referenceAllele", "alternateAllele" according to the rules of VCF v4.5.

```
"alternateAlleleFrequency": 0.54,
"transcripts": [
  {
    "transcriptId": "ENST00000389048.4",
    "transcriptDatabaseName": "Ensembl",
    "geneSymbol": "ALK",
    "cdsChange": "c.3467G>A",
    "aminoAcidsChange": "p.C1156Y"
  }
],
"sampleItemId": "sample01-tumor-dna",
Note: Describe the "itemId" of a relevant sequencingSamples instance.
"variantOrigin": "somatic"
}
]
},
"alterationNotes": [
  {
    "itemId": "shortVariant-1",
    "reported": true
  }
]
}
```

## Example2. Only copyNumberAlterations

```
{
  "metaData": {
    "schemaVersion": "1.65.02",
    "referenceGenome": {
      "grcRelease": "GRCh37.p13"
    }
  },
  "testInfo": {
    "testId": "12345678901231900001",
    "testType": "tumor and matched-normal",
    "panelName": "Multi-gene Panel A",
    "panelVersion": "v1.5.0"
  },
  "sequencingSamples": [
    {
      "itemId": "sample01-tumor-dna",
      "tumorOrNormal": "tumor",
      "nucleicAcid": "DNA"
    }
  ],
  "variants": {
    "copyNumberAlterations": [
      {
        "itemId": "copyNumberAlteration-1",
        "chromosome": "8",
        "startPosition": 128706589,
        "endPosition": 128801451,
        "copyNumberMetrics": [
          {
            "value": 11,
            "unit": "copy number"
          }
        ],
        "copyNumberAlterationType": "amplification",
        "transcripts": [
          {
            "geneSymbol": "MYC"
          }
        ]
      }
    ]
  }
}
```

```
    ],  
    "sampleItemId": "sample01-tumor-dna",  
    "variantOrigin": "somatic"  
  }  
]  
},  
"alterationNotes": [  
  {  
    "itemId": "copyNumberAlteration-1",  
    "reported": true  
  }  
]  
}
```

Example3. Only structuralVariationsrearrangements

```
{
  "metaData": {
    "schemaVersion": "1.65.02",
    "referenceGenome": {
      "grcRelease": "GRCh37.p13"
    }
  },
  "testInfo": {
    "testId": "12345678901231900001",
    "testType": "tumor and matched-normal",
    "panelName": "Multi-gene Panel A",
    "panelVersion": "v1.5.0"
  },
  "sequencingSamples": [
    {
      "itemId": "sample01-tumor-dna",
      "tumorOrNormal": "tumor",
      "nucleicAcid": "DNA"
    }
  ],
  "variants": {
    "structuralVariationsrearrangements": [
      {
        "itemId": "structuralVariationrearrangement-1",
        "breakends": [
          Note: "breakends" has information on two breakpoints.
          {
            "chromosome": "2",
            "startPosition": 42510050,
            "endPosition": 42510050,
            "transcripts": [
              {
                "geneSymbol": "EML4"
              }
            ]
          }
        ],
        {
          "chromosome": "2",
```

```

        "startPosition": 29445240,
        "endPosition": 29445240,
        "transcripts": [
            {
                "geneSymbol": "ALK"
            }
        ]
    },
    ],
    "orderedGenePairs": [
        [
            "EML4",
            "ALK"
        ]
    ],
    "structuralVariationrearrangementType": "gene fusion",
    "sampleItemId": "sample01-tumor-dna",
    "variantOrigin": "somatic"
}
]
},
"alterationNotes": [
    {
        "itemId": "structuralVariationrearrangement-1",
        "reported": true
    }
]
}

```

Example4.

shortVariants/copyNumberAlterations/structuralVariations~~rearrangements~~/otherBiomarkers

```
{
  "metaData": {
    "schemaVersion": "1.65.02",
    "referenceGenome": {
      "grcRelease": "GRCh37.p13"
    }
  },
  "testInfo": {
    "testId": "12345678901231900001",
    "testType": "tumor and matched-normal",
    "panelName": "Multi-gene Panel A",
    "panelVersion": "v1.5.0"
  },
  "sequencingSamples": [
    {
      "itemId": "sample01-tumor-dna",
      "tumorOrNormal": "tumor",
      "nucleicAcid": "DNA"
    }
  ],
  "variants": {
    "shortVariants": [
      {
        "itemId": "shortVariant-1",
        "chromosome": "2",
        "position": 29445258,
        "referenceAllele": "C",
        "alternateAllele": "T",
        "alternateAlleleFrequency": 0.54,
        "transcripts": [
          {
            "transcriptId": "ENST00000389048.4",
            "transcriptDatabaseName": "Ensembl",
            "geneSymbol": "ALK",
            "cdsChange": "c.3467G>A",
            "aminoAcidsChange": "p.C1156Y"
          }
        ]
      }
    ]
  }
}
```



```

    }
  ],
  "sampleItemId": "sample01-tumor-dna",
  "variantOrigin": "somatic"
}
],
"copyNumberAlterations": [
  {
    "itemId": "copyNumberAlteration-1",
    "chromosome": "8",
    "startPosition": 128706589,
    "endPosition": 128801451,
    "copyNumberMetrics": [
      {
        "value": 11,
        "unit": "copy number"
      }
    ],
    "copyNumberAlterationType": "amplification",
    "transcripts": [
      {
        "geneSymbol": "MYC"
      }
    ],
    "sampleItemId": "sample01-tumor-dna",
    "variantOrigin": "somatic"
  }
],
"structuralVariationsrearrangements": [
  {
    "itemId": "structuralVariationrearrangement-1",
    "breakends": [
      {
        "chromosome": "2",
        "startPosition": 42510050,
        "endPosition": 42510050,
        "transcripts": [
          {
            "geneSymbol": "EML4"
          }
        ]
      }
    ]
  }
]

```

```

        }
      ]
    },
    {
      "chromosome": "2",
      "startPosition": 29445240,
      "endPosition": 29445240,
      "transcripts": [
        {
          "geneSymbol": "ALK"
        }
      ]
    }
  ],
  "orderedGenePairs": [
    [
      "EML4",
      "ALK"
    ]
  ],
  "structuralVariationrearrangementType": "gene fusion",
  "sampleItemId": "sample01-tumor-dna",
  "variantOrigin": "somatic"
}
]
},
"otherBiomarkers": [
  {
    "itemId": "biomarker-1",
    "biomarkerType": "MSI",
    "biomarkerMetrics": [
      {
        "value": 5.15,
        "unit": "%",
        "type": "percentage of MSI sites"
      }
    ]
  },
  "state": "stable",
  "sampleItemId": "sequence-1-tumor-dna"
}

```

```

    },
    {
      "itemId": "biomarker-2",
      "biomarkerType": "TMB",
      "biomarkerMetrics": [
        {
          "value": 34.5680122,
          "unit": "Muts/Mb",
          "type": "Mutations per megabase"
        }
      ],
      "state": "high",
      "sampleItemId": "sequence-1-tumor-dna"
    }
  ],
  "alterationNotes": [
    {
      "itemId": "shortVariant-1",
      "reported": true
    },
    {
      "itemId": "copyNumberAlteration-1",
      "reported": true
    },
    {
      "itemId": "structuralVariationrearrangement-1",
      "reported": true
    },
    {
      "itemId": "biomarker-1",
      "reported": true
    },
    {
      "itemId": "biomarker-2",
      "reported": true
    }
  ]
}

```

