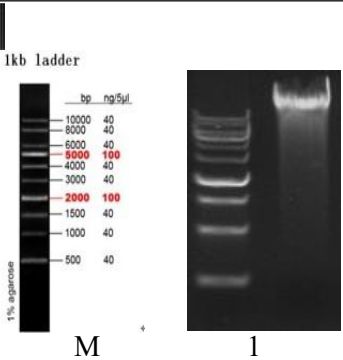


CERTIFICATE OF ANALYSIS

Product information

| | |
|---------------------|--|
| Name | Panel-Ref® gDNA Cocktail IV Reference Standard |
| Catalog No. | CBP90022 |
| Lot No. | CBFA23040501 |
| Format | Genomic DNA |
| Buffer | Tris-EDTA |
| Storage Conditions | 4°C |
| Date of Manufacture | 2023/04/05 |
| Expiry | 36 months from the date of manufacture |

Quality Control

| Test Items | Standard | Results | Passed | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--------------------------------------|---------------------|--|----------------|--------|--------|--------|--|--|--|--------|--------|--------|--------|--------|--------|--------|------|--------|--------|--|--|--|--|-------|--------|--------|--|--|--|--|--------|--------|--------|--------|--------|--------|--------|-------|--------|--------|--|--|--|--|------|--------|--------|--------|--|--|--|--------|--------|--------|--------|--------|--|--|------|--------|--------|--|--|--|--|------|--------|--------|--|--|--|--|--------|--------|--------|--|--|--|--|---|
| Quantity | 1.00 µg/vial*1 vial | 1.00 µg/vial*1 vial | √ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Concentration | 40.00 ng/uL±10% | 40.40 ng/uL by Qubit 3.0 detection | √ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| OD ₂₆₀ /OD ₂₈₀ | 1.7~2.1 | 1.90 by Nanodrop detection | √ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| DNA electrophoresis | No Degradation |  <p>M: Marker 1: Panel-Ref® gDNA Cocktail IV Reference Standard</p> | √ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| MSS/MSI status | MSI-H | MSI-H by PCR detection <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th colspan="7">CBP90011 MSI-H</th> </tr> <tr> <th>Marker</th> <th>Size 1</th> <th>Size 2</th> <th>Size 3</th> <th>Size 4</th> <th>Size 5</th> <th>Size 6</th> </tr> </thead> <tbody> <tr> <td>NR21</td> <td>122.49</td> <td>131.52</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Bat26</td> <td>164.07</td> <td>175.25</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>PentaC</td> <td>208.81</td> <td>219.19</td> <td>224.43</td> <td>229.56</td> <td>234.78</td> <td>240.00</td> </tr> <tr> <td>Bat25</td> <td>112.18</td> <td>117.81</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>NR27</td> <td>141.74</td> <td>146.23</td> <td>155.21</td> <td></td> <td></td> <td></td> </tr> <tr> <td>PentaD</td> <td>177.24</td> <td>181.77</td> <td>186.46</td> <td>196.15</td> <td></td> <td></td> </tr> <tr> <td>Amel</td> <td>106.82</td> <td>112.37</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>NR24</td> <td>123.14</td> <td>131.05</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Mono27</td> <td>163.28</td> <td>170.04</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> | CBP90011 MSI-H | | | | | | | Marker | Size 1 | Size 2 | Size 3 | Size 4 | Size 5 | Size 6 | NR21 | 122.49 | 131.52 | | | | | Bat26 | 164.07 | 175.25 | | | | | PentaC | 208.81 | 219.19 | 224.43 | 229.56 | 234.78 | 240.00 | Bat25 | 112.18 | 117.81 | | | | | NR27 | 141.74 | 146.23 | 155.21 | | | | PentaD | 177.24 | 181.77 | 186.46 | 196.15 | | | Amel | 106.82 | 112.37 | | | | | NR24 | 123.14 | 131.05 | | | | | Mono27 | 163.28 | 170.04 | | | | | √ |
| CBP90011 MSI-H | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Marker | Size 1 | Size 2 | Size 3 | Size 4 | Size 5 | Size 6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| NR21 | 122.49 | 131.52 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bat26 | 164.07 | 175.25 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PentaC | 208.81 | 219.19 | 224.43 | 229.56 | 234.78 | 240.00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bat25 | 112.18 | 117.81 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| NR27 | 141.74 | 146.23 | 155.21 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PentaD | 177.24 | 181.77 | 186.46 | 196.15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Amel | 106.82 | 112.37 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| NR24 | 123.14 | 131.05 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mono27 | 163.28 | 170.04 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| Gene | AA Change | CDS Change | Expected %AF | Measured %AF |
|------|-----------|------------------|--------------|--------------|
| EGFR | p.G719S | c.2155G>A | 5% | 4.66% |
| BRAF | p.V600K | c.1798_1799GT>AA | 5% | 4.49% |

| | | | | |
|--------------|-----------------|-------------------|------|---------|
| PIK3CA | p.H1047R | c.3140A>G | 5% | 5.09% |
| KRAS | p.G13D | c.38G>A | 5% | 5.98% |
| NRAS | p.G12D | c.35G>A | 5% | 4.37% |
| BRCA2 | p.I2675Dfs*6 | c.8021dup | 5% | 5.86% |
| SLC34A2-ROS1 | E4-E32 | DNA Translocation | 5% | 4.65% |
| EML4-ALK | E6-A20 | DNA Translocation | 5% | 5.67% |
| CCDC6-RET | E1-E12 | DNA Translocation | 5% | 5.48% |
| MET | Exon 14 Skippig | c.3082+1G>T | 5% | 5.09% |
| ERBB2 | CNV | Amplification | CN=6 | CN=5.23 |
| MYC | CNV | Amplification | CN=7 | CN=6.12 |

DdPCR Acceptance criteria

| Expected value | Acceptance criteria | Expected value | Acceptance criteria |
|----------------|----------------------|-------------------|----------------------|
| 0% | ≤0.1% | <5 copies | Expected value ± 30% |
| <1% | Expected value ± 50% | ≥5 and <10 copies | Expected value ± 20% |
| ≥1% and <5% | Expected value ± 30% | ≥10 copies | Expected value ± 15% |
| ≥5% and <10% | Expected value ± 20% | | |
| ≥10% | Expected value ± 10% | | |

Caution:

For research use only.

If you have any questions about the Certificate of Analysis, please contact us.

Certified by:  Date:****

 Date:****