

Table S1. Bivariate analysis for testing rate.

| | ALK | | | EGFR | | | PD-L1 | | | ROS1 | | |
|--|-----|------|----------|------|------|----------|-------|------|----------|------|------|----------|
| | No | Yes | p-value | No | Yes | p-value | No | Yes | p-value | No | Yes | p-value |
| Sample type | | | | | | | | | | | | |
| Biopsy (CNB/bronchial/transbronchial) | 259 | 1600 | p <0.001 | 183 | 1676 | p =0.002 | 568 | 1291 | p <0.001 | 720 | 1139 | p <0.001 |
| Cellular block | 56 | 292 | | 25 | 323 | | 173 | 175 | | 157 | 191 | |
| FNA (extensions) | 96 | 97 | | 7 | 186 | | 180 | 13 | | 141 | 52 | |
| Surgical piece | 108 | 444 | | 50 | 502 | | 232 | 320 | | 217 | 335 | |
| Blood | 84 | 0 | | 0 | 84 | | 84 | 0 | | 84 | 0 | |
| Others | 40 | 150 | | 13 | 177 | | 114 | 76 | | 95 | 95 | |
| Histology | | | | | | | | | | | | |
| Adenocarcinoma | 583 | 2368 | p =0.459 | 256 | 2695 | p =0.788 | 1244 | 1707 | p =0.327 | 1281 | 1670 | p =0.128 |
| NSCLC-NOS | 60 | 215 | | 22 | 253 | | 107 | 168 | | 133 | 142 | |
| Testing rate ALK | | | | | | | | | | | | |
| No | | | | 200 | 443 | p <0.001 | 434 | 209 | p <0.001 | 629 | 14 | p <0.001 |
| Yes | | | | 78 | 2505 | | 917 | 1666 | | 785 | 1798 | |
| Testing rate EGFR | | | | | | | | | | | | |
| No | | | | | | | 66 | 212 | p <0.001 | 238 | 40 | p <0.001 |
| Yes | | | | | | | 1285 | 1663 | | 1176 | 1772 | |
| Testing rate PD-L1 | | | | | | | | | | | | |
| No | | | | | | | | | | 815 | 536 | p <0.001 |
| Yes | | | | | | | | | | 599 | 1276 | |

CNB: core needle biopsy; FNPA: fine-needle aspiration; NSCLC-NOS: non-small cell lung cancer-not otherwise specified

Table S2. Bivariate analysis for positivity rate.

| | ALK | | | EGFR | | | PD-L1 | | | ROS1 | | |
|---------------------------------------|------|-----|---------|------|-----|---------|-------|-----|---------|------|-----|---------|
| | No | Yes | p-value | No | Yes | p-value | No | Yes | p-value | No | Yes | p-value |
| Sample type | | | | | | | | | | | | |
| Biopsy (CNB/bronchial/transbronchial) | 1505 | 50 | p=0.582 | 1426 | 214 | p=0.265 | 638 | 640 | p=0.358 | 1078 | 22 | p=0.12 |
| Cellular block | 275 | 7 | | 278 | 40 | | 86 | 86 | | 181 | 0 | |
| FNA (extensions) | 88 | 5 | | 156 | 26 | | 7 | 6 | | 51 | 0 | |
| Surgical piece | 422 | 16 | | 435 | 66 | | 178 | 141 | | 316 | 10 | |
| Blood | 0 | 0 | | 66 | 16 | | 0 | 0 | | 0 | 0 | |
| Others | 142 | 7 | | 144 | 32 | | 34 | 40 | | 91 | 3 | |
| Histology | | | | | | | | | | | | |
| Adenocarcinoma | 2232 | 79 | p=0.854 | 2261 | 387 | p<0.001 | 866 | 822 | p=0.204 | 1585 | 33 | p=0.909 |
| NSCLC-NOS | 200 | 6 | | 244 | 7 | | 77 | 91 | | 132 | 2 | |
| Positivity ALK | | | | | | | | | | | | |
| No | | | | 2079 | 254 | p=0.009 | 816 | 750 | p=0.103 | 1643 | 34 | p=0.628 |
| Yes | | | | 81 | 1 | | 22 | 33 | | 49 | 0 | |
| Positivity EGFR | | | | | | | | | | | | |
| No | | | | | | | 739 | 709 | p=0.031 | 1487 | 27 | p=0.133 |
| Yes | | | | | | | 105 | 70 | | 182 | 7 | |
| Positivity PD-L1 | | | | | | | | | | | | |
| No | | | | | | | | | | 621 | 12 | p=0.917 |
| Yes | | | | | | | | | | 594 | 10 | |

CNB: core needle biopsy; FNA: fine-needle aspiration; NSCLC-NOS: non-small cell lung cancer-not otherwise specified