

Supplementary Materials

Table S1. Comparison of direct costs for NGS-based test and traditional platforms. A comparison of direct costs (including reagents, personnel hands-on time and consumables costs) for commonly tested markers like *BRAF*, *NRAS*, *KIT*, *JAK2* as analyzed by traditional platforms and a NGS test are listed below.

| Gene | Assay Technique | Direct Cost (\$) * |
|--|---|--------------------|
| <i>BRAF</i> | Pyrosequencing (Codon 600) | 245.00 |
| <i>NRAS</i> | Pyrosequencing (Codons 12,13 and 61) | 261.13 |
| <i>KIT</i> | Sanger Sequencing (Exons 9, 11, 13, 17) | 419.35 |
| <i>JAK2</i> (p. V617F) | Sanger Sequencing | 277.07 |
| <i>JAK2</i> (p. V617F) | Pyrosequencing | 208.16 |
| 50 gene panel (including <i>BRAF</i>, <i>NRAS</i>, <i>KIT</i>, <i>JAK2</i>) | NGS (Ion Torrent PGM) 50-cancer related genes Hotspot mutations | 574.20 |

* The direct costs include reagents, labor and consumables. They can vary -for each lab depending upon any discount rates extended by the vendor and personnel costs.

Table S2. Comparison of Analytical sensitivity of NGS to traditional sequencing and other NGS platforms. A comparison of the sensitivity of NGS platforms validated in our laboratory to other sequencing technologies as has been summarized.

| NGS Panel | NGS Sensitivity Compared to | | | | |
|--|-----------------------------|-----------------|-----------------------------|--------|------------------------|
| | Sanger Sequencing | Pyro Sequencing | Primer Extension-Mass Array | NGS | MIP & Array (for CNVs) |
| 46 gene (Ion Torrent-PGM) | 96% * | 100% | 100% | NA | NA |
| 53 gene panel (MiSeq) | 100% | 100% | NA | 100% # | NA |
| 409 gene panel (Ion Proton) | 100% | NA | NA | 95% \$ | 100% |

* Missed large insertions and deletions due to variant caller issues. Fixed by upgraded version of the software; # As compared to 46 gene panel on Ion Torrent PGM; \$ As compared to 46 gene panel using Ion Torrent PGM. Missed calls were due to failed sequencing or lack of sequencing coverage in the 409 gene panel; & MIP Array (OnoScan Molecular Inversion Probe array, Affymetrix).