

Description of Additional Supplementary Files:

Supplementary Data 1: A summary of clinical characteristics, sequencing, immunohistochemistry and FISH findings in all assessed osteoblastoma samples.

Supplementary Data 2: All substitutions and indels in 6 osteoblastoma genomes.

Supplementary Data 3: Substitutions and indels in 6 osteoblastoma genomes within genes.

Supplementary Data 4: Genome wide copy number changes of 6 osteoblastomas.

Supplementary Data 5: Structural variants in 6 osteoblastoma genomes.

Supplementary Data 6: DNA discordant reads spanning FOS and FOSB breakpoints, as appropriate to the sample. NB No matching Normal reads detected.

Supplementary Data 7: DNA split reads across the detected breakpoints in FOS, FOSB and their partners.

Supplementary Data 8: cDNA potentially split reads around detected FOS and FOSB breakpoints and their rearrangement partners.

Supplementary Data 9: Alignment QC and library statistics.

Supplementary Data 10: Amplification and Sanger sequencing primers for cDNA validation of FOS fusions.

Supplementary Data 11: FISH BAC Clones.