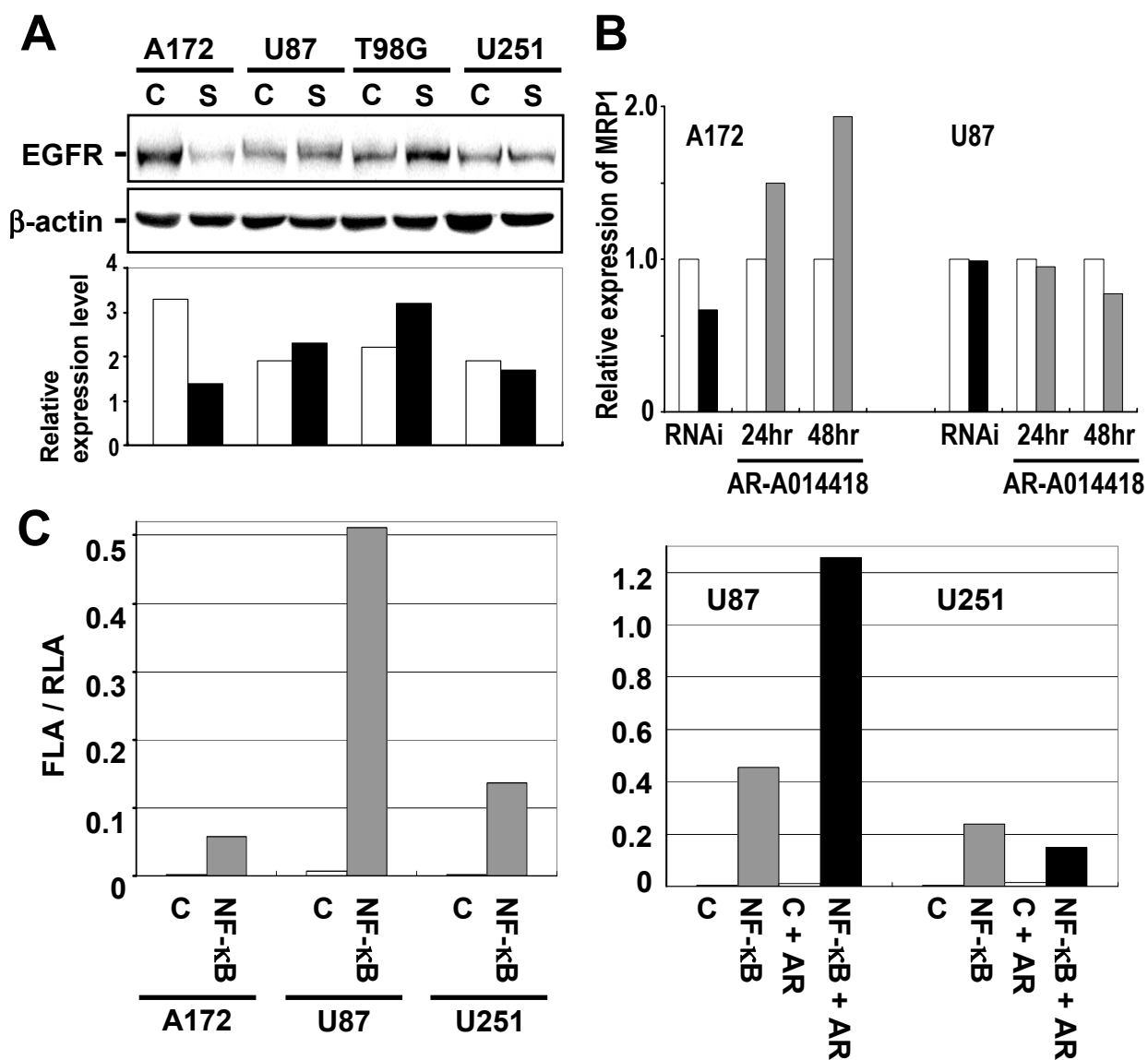
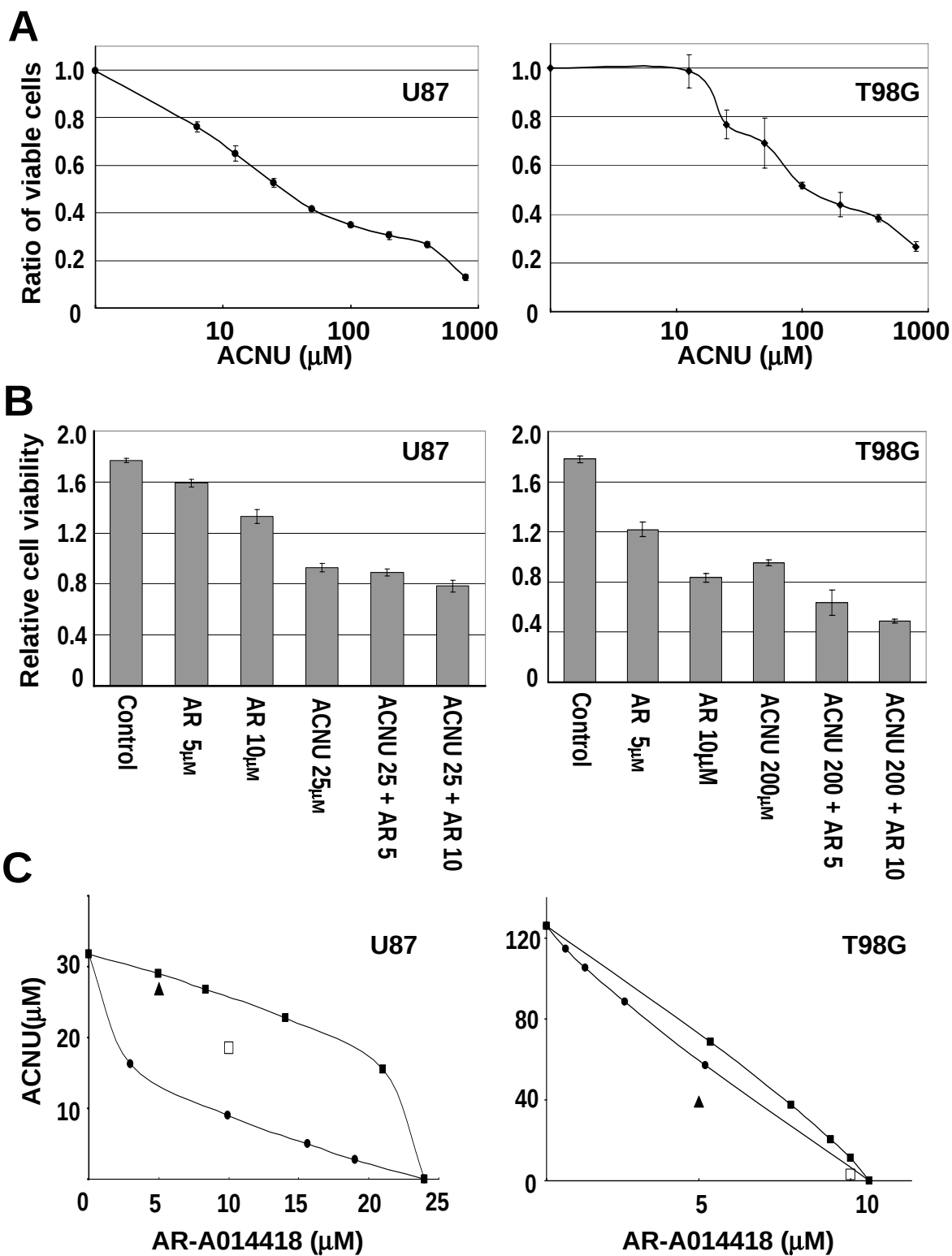






Supplementary Figure 3A

Fig.1A

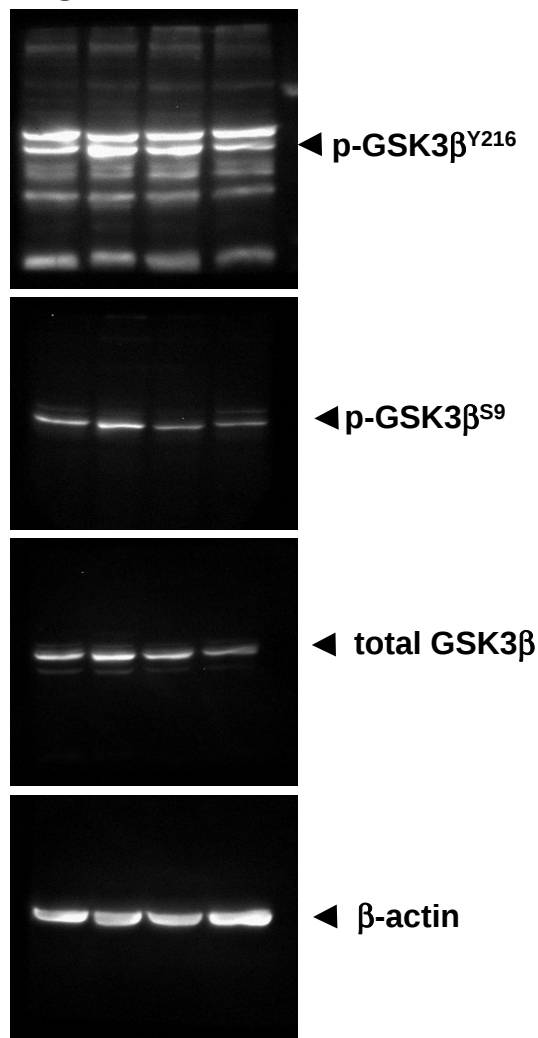


Fig 1B

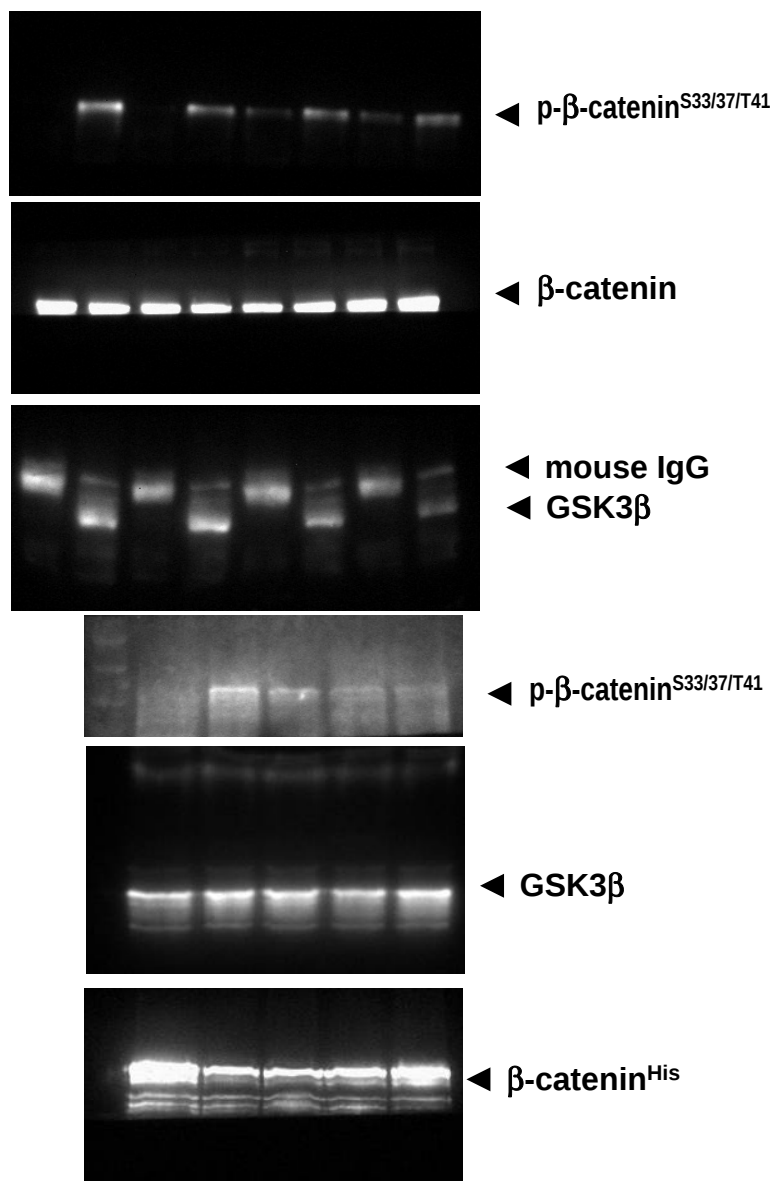


Fig.1C

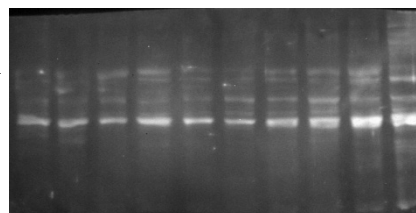
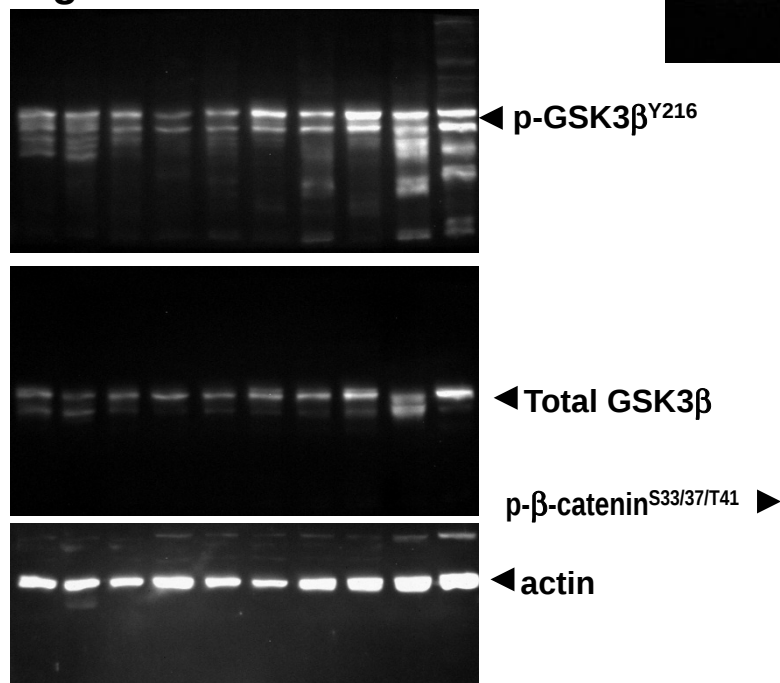


Fig. 3B

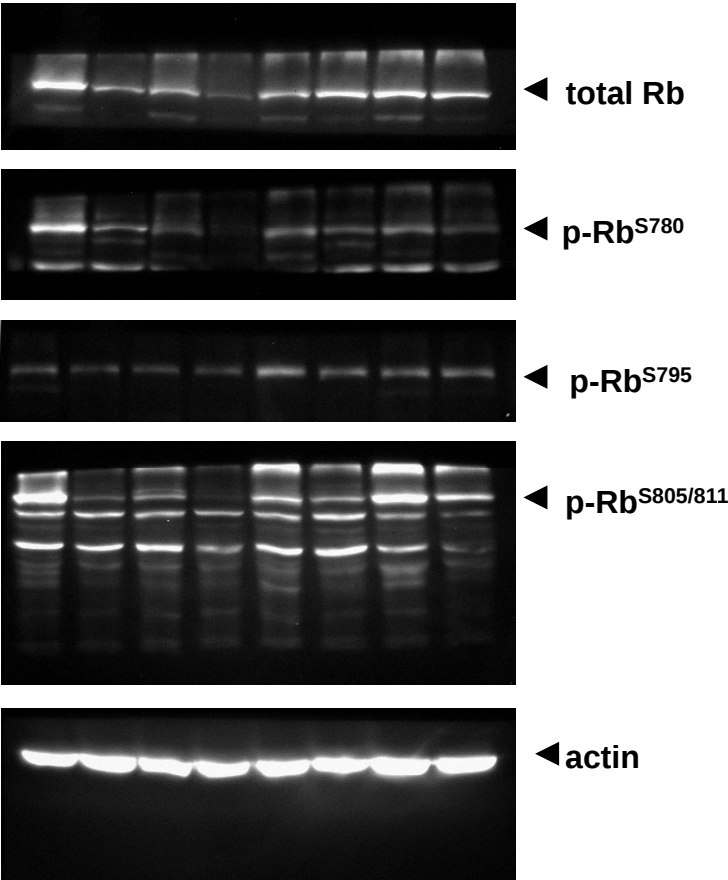
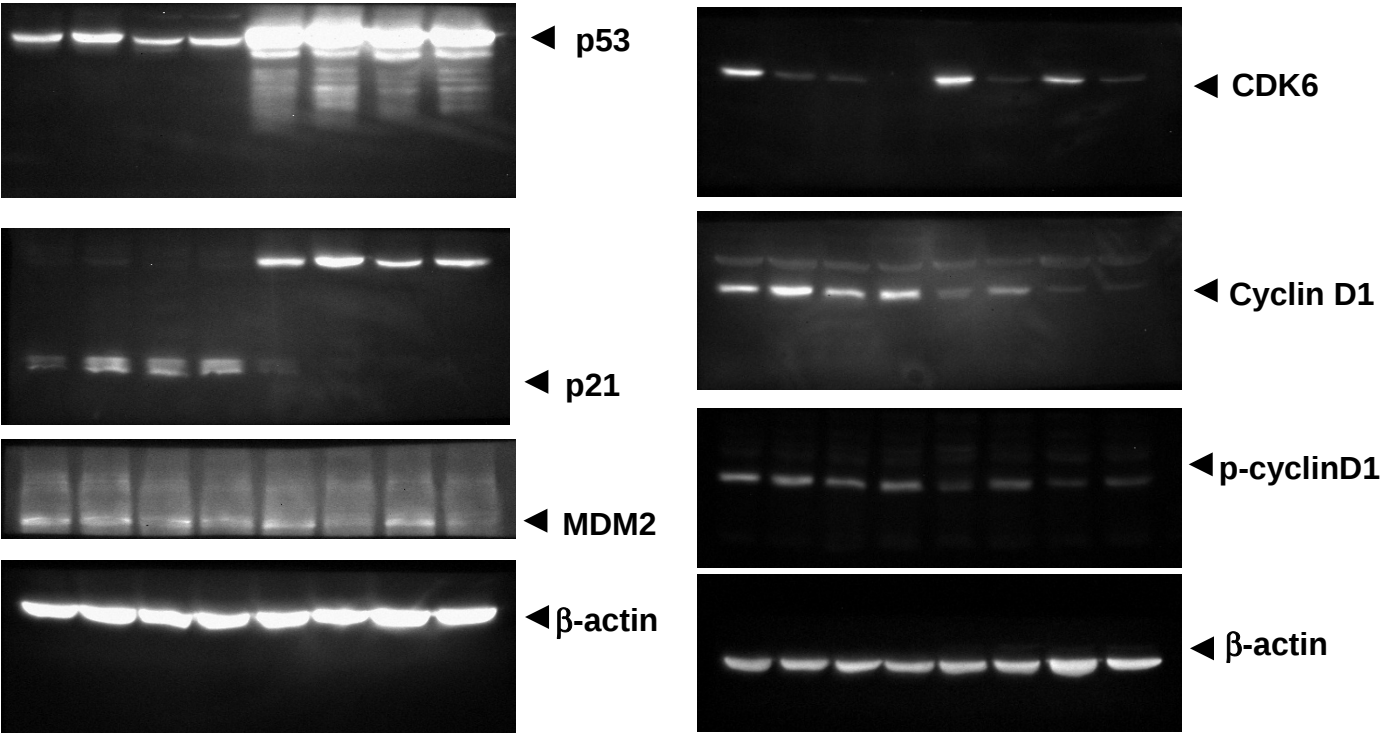
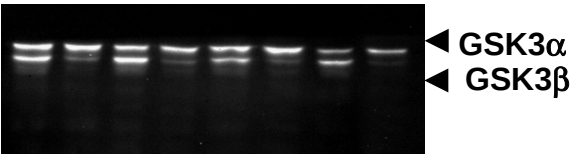
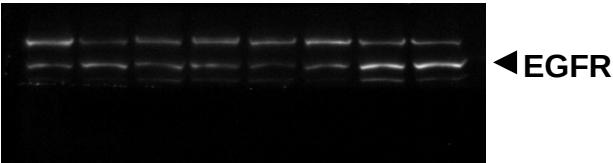


Fig. 2B



Suppl. Fig. 1A



**Supplementary Table 1.** Clinical and molecular characteristics of the patients with glioblastoma

| Patient No. | Age/Sex | Treatment    |                | Response* to treatment | Survival time (month) | Immunoblotting |                               |
|-------------|---------|--------------|----------------|------------------------|-----------------------|----------------|-------------------------------|
|             |         | chemotherapy | radiation dose |                        |                       | GSK3 $\beta$   | pGSK3 $\beta$ <sup>Y216</sup> |
| 1           | 70/M    | ND           | 60Gy           | SD                     | 10                    | Tr             | Tr                            |
| 2           | 5/M     | ACNU         | 60Gy           | PD                     | 8                     | ++             | ++                            |
| 3           | 34/M    | ND           | 60Gy           | PD                     | 10                    | ++             | ++                            |
| 4           | 52/M    | ACNU         | 60Gy           | PD                     | 10                    | Tr             | Tr                            |
| 5           | 72/M    | ND           | 60Gy           | SD                     | 12                    | +              | Tr                            |
| 6           | 51/F    | ND           | 60Gy           | PD                     | 11                    | +              | +                             |
| 7           | 44/F    | ACNU         | 60Gy           | SD                     | 13                    | +              | +                             |
| 8           | 59/M    | ACNU         | 60Gy           | SD                     | 20                    | ++             | ++                            |
| 9           | 68/M    | ND           | 60Gy           | PD                     | 3                     | ++             | ++                            |
| 10          | 48/M    | ACNU         | 60Gy           | SD                     | 24                    | +              | +                             |
| 11          | 71/M    | ACNU         | 60Gy           | PD                     | 9                     | +              | +                             |
| 12          | 51/F    | ACNU         | 60Gy           | SD                     | 18                    | +              | +                             |
| 13          | 54/F    | ACNU         | 60Gy           | SD                     | 55                    | Tr             | Tr                            |
| 14          | 60/M    | ACNU         | 60Gy           | SD                     | 13                    | +              | +                             |
| 15          | 74/F    | ACNU         | 54Gy           | SD                     | 7                     | Tr             | Tr                            |
| 16          | 47/M    | ND           | 60Gy           | SD                     | 25                    | +              | +                             |
| 17          | 35/M    | ACNU         | 60Gy           | PD                     | 11                    | +              | +                             |
| 18          | 12/M    | ND           | 54Gy           | SD                     | alive (32)            | ++             | ++                            |
| 19          | 68/F    | ND           | 60Gy           | SD                     | 40                    | Tr             | Tr                            |

ACNU, 1-(4-amino-2-methyl-5-pyrimidinyl)methyl-3-(2-chloroethyl)-3-nitrosourea; F, female; Gy, gray; M, male; ND, not done; Tr: trace expression; PD, progressive disease; SD, stable disease

\*Response to treatment was determined according to the RECIST (Response Evaluation Criteria in Solid Tumors) guideline (<http://ctep.cancer.gov/guidelines/recist.html>).

**Supplementary Table 2.** Sequences of the primers used for RT-PCR.

| Genes                         | Sense primer (5' to 3')          | Anti-sense primer (5' to 3')     | Product size (bp) |
|-------------------------------|----------------------------------|----------------------------------|-------------------|
| <i>GSK3<math>\beta</math></i> | 5'-GCCAGACACTATAGTCGAGCCAAAC-3'  | 5'-ATCCCGATGGCAGATTCCAA-3'       | 117               |
| <i>p53</i>                    | 5'-CATAGTGTGGTGGTGCCCTATGAG-3'   | 5'-CAAAGCTGTTCCGTCCTCCAGTAGA-3'  | 172               |
| <i>p21</i>                    | 5'-AAGACVCATGTGGACCTGTCACTGT-3'  | 5'-CAAGATCAGCCGGCGTTTG-3'        | 155               |
| <i>Mdm2</i>                   | 5'-GGAACCTGGTAGTAGTCAATCAGCA-3'  | 5'-CACAGATGTACCTGAGTCCGATC-3     | 53                |
| <i>CDK4</i>                   | 5'-TGCCAGCCGAAACGATCA-3'         | 5'-CGGGTGTAAGTGCCATCTGGTAG-3'    | 186               |
| <i>CDK6</i>                   | 5'-GATCTCTGGAGTGTTGGCTGCATA-3'   | 5'-GGCAACATCTCTCTAGGCCAGTCTTC-3' | 144               |
| <i>Rb</i>                     | 5'-CTCTAATGCACCCAAAGAGTCAAGGA-3' | 5'-TAGCGTTCATGGACAGAAATTGGA-3'   | 97                |
| <i>EGFR</i>                   | 5'-GTGGCGGGACATAGTCAGCA-3'       | 5'-CCCATTGGGACAGCTTGGA-3'        | 103               |
| <i>EGF</i>                    | 5'-CAACCAGTGGCTGGTGAGGA-3'       | 5'-GAGCCCTTATCACTGGATACTGGAA-3'  | 134               |
| <i>B-actin</i>                | 5'-ATTGCCGACAGGATGCAGA-3'        | 5'-GAGTACTTGCGCTCAGGAGGA-3'      | 89                |

Abbreviations: GSK3 $\beta$ , glycogen synthase kinase 3 $\beta$ ; Mdm2, mouse double minute 2; CDK, cyclin-dependent kinase; Rb, retinoblastoma; EGF, epidermal growth factor; EGFR, EGF receptor.