**Suppl 5.** Additional gene mutations and treatment recommendation referred to OncoKB therapeutic evidence

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| --- | --- | --- | --- | --- | --- |
| **Gene** | **Mutation** | **Nominated Drug** | **OncoKB therapeutic evidence level** | **Treatment recommendation** | **Sample number** |
| *ERBB2* | p.R143Q | Neratinib | None | Not recommend | #9, #10, #11, #13, #35 |
| *ERBB2* | p.D769Y | Neratinib | Level 3 | Not recommend | #15 |
| *ERBB2* | p.D1144H | Neratinib | None | Not recommend | #12 |
| *ESR1* | p.G145S | Elacestrant | None | Not recommend | #18 |
| *ESR1* | p.F461V | Elacestrant | Level 3 | Not recommend | #7 |
| *ESR1* | p.D538V | Elacestrant | Level 1 | Recommend | #8 |
| *PIK3CA* | p.V344M | Alpelisib  Capivasertib | Level 2  Level 2 | Not recommend  Not recommend | #20 |
| *PIK3CA* | p.E542Q | Alpelisib  Capivasertib | None  None | Not recommend  Not recommend | #15 |
| *PIK3CA* | p.E542K | Alpelisib  Capivasertib | Level 1  Level 1 | Recommend  Recommend | #18, #19, #28 |
| *PIK3CA* | p.H1047L | Alpelisib  Capivasertib | Level 1  Level 1 | Recommend  Recommend | #17 |
| *PIK3CA* | p.H1047R | Alpelisib  Capivasertib | Level 1  Level 1 | Recommend  Recommend | #20 |
| *AKT1* | p.L52R | Capivasertib | Level 2 | Not recommend | #8 |
| *PTEN* | p.C21Wfs⋆25 | Capivasertib | Level 1 | Recommend | #6 |
| *PTEN* | p.A103V | Capivasertib | None | Not recommend | #39 |
| *PTEN* | p.K128E | Capivasertib | None | Not recommend | #23 |
| *PTEN* | p.Y138C | Capivasertib | None | Not recommend | #5 |
| *PTEN* | p.Y311C | Capivasertib | None | Not recommend | #5 |
| *PTEN* | p.T319⋆ | Capivasertib | Level 1 | Recommended | #7 |

ERBB2, erb-b2 receptor tyrosine kinase 2; ESR1, estrogen receptor 1; PIK3CA, phosphatidylinositol-4,5-bisphosphate 3-kinase catalytic subunit alpha;AKT1, serine/threonine kinase 1; PTEN, phosphatase and tensin homolog.