**Table S1**. Germline and somatic mutations in 18 patients with familial cancers other than FBCs and heterozygous germline *PALB2* mutations.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **ID** | **Cancer type** | **germline mutation** |  | **Somatic mutations** |
| **PALB2** | ***BRCA1/2*** |  | ***TP53*** | **Other** |
| 1 | Stomach carcinoma | c.3114-2A>G[splicing] **Ϯ** | . |  | c.536A>G[p.H179R] | *KRAS/IGFR1/PTCH2* |
| 2 | Pancreatic carcinoma | c.2108T>A[p.L703\*] **Ϯ Ϯ** |  |  |  | *SMAD2/IDH1/PTCH1* |
| 3 | Cholangiocarcinoma | c.2594C>G[p.S865\*] **Ϯ Ϯ** |  |  | c.818G>A[p.R273H] | *KRAS* |
| 4 | Colon Adenocarcinoma | c.2257C>T[p.R753\*] **Ϯ** |  |  | c.811G>A[p.E271K] | *PIK3CA/KRAS/APC* |
| 5 | Colon Adenocarcinoma | c.2297\_2298dupCA[p.V767Qfs\*85] **Ϯ Ϯ** |  |  |  | *PIK3CA/KRAS/APC* |
| 6 | Rectal Adenocarcinoma | c.2693G>A[p.W898\*] **Ϯ Ϯ** |  |  | c.534C>A[p.H178Q] |

|  |
| --- |
| *PALB2[*c.1834\_1843del(p.F612Lfs\*13)]**ϮϮ** |

*/PIK3R2/PTEN* |
| 7 | Rectal Adenocarcinoma | c.2869A>T[p.K957\*] **Ϯ Ϯ** |  |  |  | *APC/BRAF/MAP2K4* |
| 8 | Rectal Adenocarcinoma | c.2968G>T[p.E990\*] **Ϯ Ϯ** |  |  | c.707A>G[p.Y236C] | *APC/XRCC2/TCF7L2* |
| 9 | Pulmonary Carcinoma | c.7G>T[p.E3\*] **Ϯ Ϯ** |  |  |  | *AKT2/ BRCA2/NRAS/RB1* |
| 10 | Pulmonary Carcinoma | c.751C>T[p.Q251\*] **Ϯ Ϯ** |  |  | c.815T>G[p.V272G] | *CDKN2A* |
| 11 | Pulmonary Carcinoma | c.1037\_1041delAAGAA[p.K346Tfs\*13] **Ϯ Ϯ** |  |  | c.155\_164del[p.Q52Lfs\*68] | *EGFR* |
| 12 | Pulmonary Carcinoma | c.2167\_2168delAT[p.M723Vfs\*21] **Ϯ** |  |  |  | *EGFR/BRCA2/AR* |
| 13 | Pulmonary Carcinoma | c.2167\_2168delAT[p.M723Vfs\*21] **Ϯ** |  |  | c.949C>T[p.Q317\*] | *EGFR/ERBB3/PDGFRA* |
| 14 | Pulmonary Carcinoma | c.2257C>T[p.R753\*] **Ϯ** |  |  | c.277\_278delCT[p.L93Vfs\*55 | *NOTCH1* |
| 15 | Pulmonary Carcinoma | c.2760dupA[p.Q921Tfs\*7] **Ϯ Ϯ** |  |  | c.412G>C[p.A138P] | *EGFR* |
| 16 | Pulmonary Carcinoma | c.2968G>T[p.E990\*] **Ϯ Ϯ** |  |  |  | *ESR1/CHEK1* |
| 17 | Prostate cancer | c.472delC[p.Q158Rfs\*19] **Ϯ Ϯ** | *BRCA2*: 8474\_8487del[p.A2825Vfs\*15] |  |  | *CDH11/FOXA1* |
| 18 | Prostate cancer | c.2968G>T[p.E990\*] **Ϯ Ϯ** |  |  |  | *AR/PDGFRA* |

Note: Key somatic mutations were highlighted in red color; patients with mono-allelic *PALB2* germline mutation and without any other accompanied mutations were highlighted in yellow color.

**Ϯ** indicated reported mutations while **Ϯ Ϯ** indicated the novel mutations.