**Supplementary Figure 1.** Prevalence and distribution of P/LP germline mutations among 15 HRR genes.
### Supplementary Table 1. Clinicopathologic characteristics of patients in the total cohort and some major types in this study.

|                  | Overall (n = 23375) | Lung cancer (n = 17029) | Breast cancer (n = 1024) | Ovarian cancer (n = 656) | Pancreatic cancer (n = 269) | Patients with HRR germline mutations (n = 654) |
|------------------|---------------------|-------------------------|--------------------------|--------------------------|-----------------------------|-----------------------------------------------|
| **Gender**       |                     |                         |                          |                          |                             |                                               |
| Female           | 10929 (46.6%)       | 7509 (44.1%)            | 997 (97.4%)              | 604 (92.1%)              | 108 (40.1%)                 | 379 (58.0%)                                   |
| Male             | 11490 (49.0%)       | 8905 (52.3%)            | 0 (0.0%)                 | 0 (0.0%)                 | 153 (56.9%)                 | 246 (37.6%)                                   |
| Unknown          | 1046 (4.5%)         | 615 (3.6%)              | 27 (2.6%)                | 52 (7.9%)                | 8 (3.0%)                    | 29 (4.4%)                                     |
| **Age**          |                     |                         |                          |                          |                             |                                               |
| Age (Mean±SD)    | 59.45±12.16         | 60.97±11.35             | 50.09±10.88              | 54.52±11.00              | 60.24±11.35                 | 57.04±12.51                                   |
| **Stage**        |                     |                         |                          |                          |                             |                                               |
| I                | 1201 (5.1%)         | 903 (5.3%)              | 200 (19.5%)              | 13 (2.0%)                | 2 (0.7%)                    | 34 (5.2%)                                     |
| II               | 2175 (9.3%)         | 1438 (8.4%)             | 55 (5.4%)                | 118 (18.0%)              | 56 (20.8%)                  | 61 (9.3%)                                     |
| III              | 6848 (29.2%)        | 4790 (28.1%)            | 258 (25.2%)              | 286 (43.6%)              | 78 (29.0%)                  | 210 (32.1%)                                   |
| IV               | 12511 (53.3%)       | 9478 (55.7%)            | 464 (45.3%)              | 199 (30.3%)              | 132 (49.1%)                 | 323 (49.4%)                                   |
| Unknown          | 730 (3.1%)          | 420 (2.5%)              | 47 (4.6%)                | 40 (6.1%)                | 1 (0.4%)                    | 26 (4.0%)                                     |