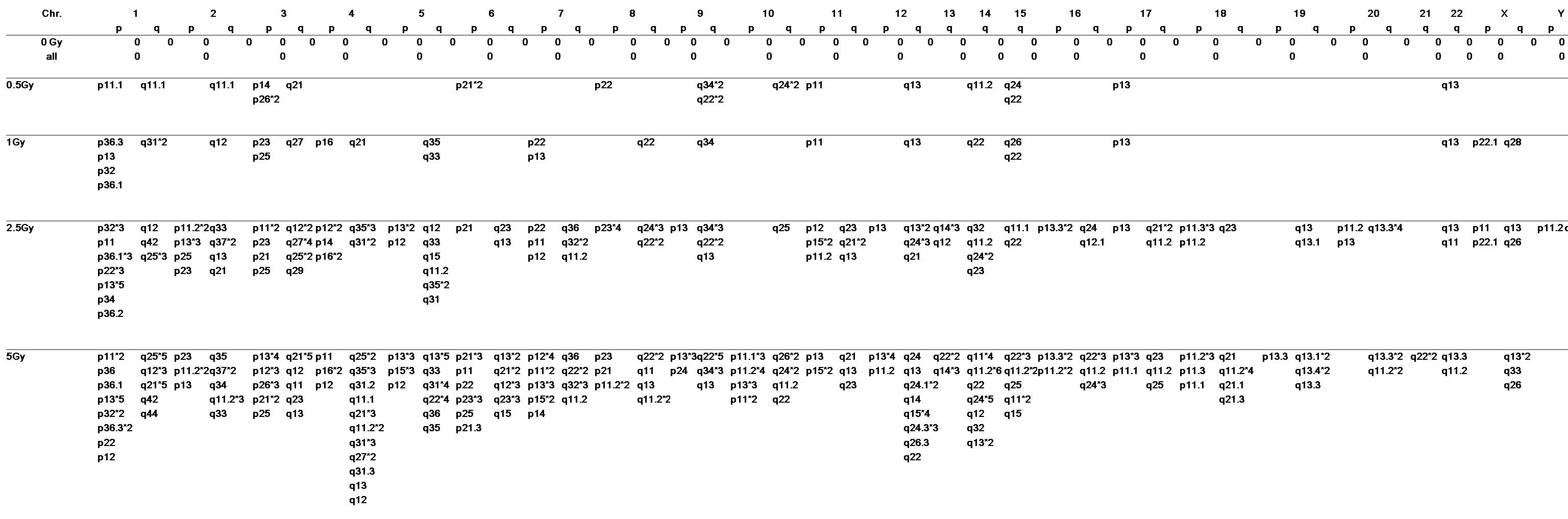
Supplementary Table 1. Distribution of chromosomal aberrations.

Supplementary Table 2. Genetic associations of diseases related to low-dose radiation exposure (< 1 Gy)

|  |  |  |  |
| --- | --- | --- | --- |
| **Gene** | **Genetic association disease** | **Disease class** | **OMIM disease** |
| **Up-regulation** | | | |
| *EPAS1* | Elite endurance, erythropoietin | Normal variation | Erythrocytosis, familial, 4 |
| **Down-regulation** | | | |
| *IKZF1* |  |  | Leukemia, acute lymphoblastic |
| *KLF6* | 1. Diabetes type 2 2. Lung cancer 3. Prostate cancer 4. Prostate cancer prostatic hyperplasia | Cancer, metabolic | 1. Gastric cancer, somatic 2. Prostate adenocarcinoma-1 3. Prostate cancer, somatic |
| *SMARCA2* | Schizophrenia |  |  |
| *F2R* | 1. Coronary heart disease 2. Platelet aggregation 3. Coagulation, platelet receptor density and the response to SFLLRN | 1. Cardiovascular 2. Hematological |  |
| *HLA-DRA* | 1. Arthritis 2. Rheumatoid 3. Carbamazepine hypersensitivity 4. Celiac disease 5. Crohn's disease 6. Diabetes type 1 7. Hepatitis 8. Fulminant non-A, non-B 9. HIV infection 10. IgA, IgD, IgG, IgM, latex-fruit syndrome 11. Multiple sclerosis 12. Myasthenia gravis 13. Oral lichen planus 14. Sarcoidosis 15. Spondyloarthropathies 16. Stroke 17. Ischemic | 1. Cardiovascular 2. Immune 3. Infection | 1. Risk alleles for multiple sclerosis identified by a genome-wide study 2. Sequence variants in IL10 3. ARPC2 and multiple other loci contribute to ulcerative colitis susceptibility |
| *SS18* |  |  | Sarcoma, synovial |
| *TNFSF10* | 1. HIV 2. Multiple sclerosis | 1. Immune 2. Infection | 1. Cytokine-cytokine receptor interaction 2. Apoptosis 3. Natural killer cell mediated cytotoxicity |
| *VPS13A* |  |  | Choreoacanthocytosis |

Notes: 1) Classification criteria were FC > 2 and *p* < 0.005; 2) Gene annotation enrichment analysis, functional annotation clustering, BioCarta & KEGG pathway mapping, gene-disease association, homolog matches, and similar analyses were assessed using DAVID Bioinformatics Resources 6.7.

Supplementary Table 3. Cancer-related genes in chromosome abnormality regions according to array data

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Genes implicated in cancer** | **Related function** | | **Related disease** | | **Reference** |
| **Down-regulated genes** | |  | |  | |
| *GPR113* | 1. Neuropeptide signaling pathway 2. Orphan receptor | | Non-small cell lung cancer | | Lee Y, *et al*. Carcinogenesis, 2013 |
| *CAGE1/(CTAG3)* | Protein-coding gene | | 1. Lung squamous cell carcinoma 2. Urinary bladder carcinomas | | Park S, *et al*. Biochim Biophys Acta, 2003  Kunze E, *et al*. Int J Mol Med, 2007 |
| *FEZ1* | Tumor suppressor gene | | 1. Ovarian cancer 2. Breast carcinoma 3. Lung cancer 4. Gastric carcinoma | | Califano D, *et al*. J Cell Physiol. 2010  Chen L, *et al*. Breast Cancer Res Treat. 2009  Toyooka S, *et al*. Clin Cancer Res. 2002  Y, Alder H, *et al*. Clin Cancer Res. 2001 |
| *POLR2F* | Responsible for synthesizing messenger | | 1. Colorectal cancer 2. Adenocarcinoma metastases | | Antonacopoulou AG, *et al*. Anticancer Res. 2008  Król M, *et al*. J Appl Genet. 2010 |
| *ZFHX3* | 1. Myogenic regulation 2. Neuronal differentiation 3. Negative regulation of c-Myb | | 1. Non-small cell lung cancer 2. Stomach cancers 3. Gastric and colorectal carcinomas 4. Skin cancer 5. Breast cancer | | Minamiya Y, *et al*. Cancer Biomark. 2012  An CH, *et al*. Pathology. 2010  Nishio E, *et al*. Acta Dermatovenerol Croat. 2012  Kai K, *et al*. BMC Cancer. 2008 |
| *FYB/(ADAP; PRO0823; SLAP-130)* | 1. Adapter for the FYN protein 2. LCP2 signaling cascades 3. Platelet activation 4. Controlling of interleukin-2 expression | | 1. Hemolytic disease 2. Acute promyelocytic leukemia | | Vescio LA, *et al*. Transfusion. 1987  Moog-Lutz C, *et al*. J Biol Chem. 2001 |
| *NMI* | 1. Interaction with NMYC and CMYC 2. STAT-mediated transcription in response to cytokines IL2 and IFN-gamma | | 1. Bladder cancer 2. Predicting progression of bladder urothelial carcinoma 3. Myeloid leukemia 4. T-cell acute lymphoblastic leukemia | | Serretta V, *et al*. Urologia. 2013  Rosenberg E, *et al*. BJU Int. 2013  Bao J, *et al*. Oncogene. 1996  Nagel S, *et al*. Leuk Lymphoma. 2011 |
| **Up-regulated genes** |  | |  | |  |
| *PHLDA1/(TDAG51)* | 1. Anti-apoptotic effects of insulin-like growth factor-1 2. Follicular stem cell marker | | 1. Oral squamous cell carcinomas 2. Basal cell carcinomas 3. Breast cancer 4. Desmoplastic trichoepithelioma | | Coutinho-Camillo CM, *et al*. Virchows Arch. 2013  Sellheyer K, *et al*. J Cutan Pathol. 2013  Johnson EO, *et al*. J Cell Sci. 2011  Sellheyer K, *et al*. Br J Dermatol. 2011 |
| *CMTM5/(CKLFSF5)* | 1. Exhibition of tumor suppressor activity 2. Inducing apoptosis | | 1. Ovarian cancer 2. Myeloid leukemia 3. Pancreatic cancer | | Li P, *et al*. Int J Gynecol Cancer. 2011  Niu J, *et al*. Leuk Res. 2011  Guo X, *et al*. Biochem Biophys Res Commun. 2009 |
| *PTCRA* | Regulation of early T-cell development | | T-cell leukemia | | Bellavia D, *et al*. Proc Natl Acad Sci U S A, 2002 |
| *SAPCD2*  (p42.3; C9orf140) | Tumor-specific and mitosis phase-dependent expression | | 1. Human colorectal cancer 2. Gastric cancer | | Yuan XS, *et al*. J Cancer Res Clin Oncol, 2013  Zhang J, *et al*. Theor Biol Med Model, 2012  Xu X, *et al*. Oncogene, 2007 |

Notes: 1) Screening criteria were FC > 4 and *p* < 0.005; 2) Identification of cancer-related genes was conducted using the Cancer Genetics Web, Atlas of Genetics and Cytogenetics in Oncology and Haematology database and the Tumor Gene Family of Databases.