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| **Table 2. Clinical and molecular findings of HAPE patients studied via whole-exome sequencing.** | | | | | | | | | | |
| **No.** | **Patient ID** | **Gene** | **Locus** | **Ref mRNA** | **exon** | **Mutation** | **dbSNP** | **MAF** | **SuperPath** | **Function and  silico analysis** |
| **1** | **GF-18** | **NOS1** | **12: 117680472** | **NM\_001204218** | **exon21** | **c.3103C>T (p.R1035W)** | **rs755159260** | **8.28E-06** | **S1, S2, S3** | **†, ‡, §, ¶, ||** |
| 2 | APOB | 2: 21252534 | NM\_000384 | exon12 | c.1594C>T (p.R532W) | rs13306194 | 0.027 | - | †, ‡, § |
| 3 | CAD | 2: 27445103 | NM\_004341 | exon4 | c.394G>A (p.G132R) | rs145509871 | 0.0006 | S4 | †, ‡, § |
| 4 | DNAH8 | 6: 38840492 | NM\_001206927 | exon50 | c.7171G>T (p.A2391S) | rs61758417 | 0.048 | - | †, ‡, §, ¶ |
| 5 | NOTCH1 | 9: 139404411 | NM\_017617 | exon18 | c.2743C>G (p.P915A) | *novel* | - | S2, S5 | ‡, § |
| **6** | **GF-22** | **APOE** | **19: 45412053** | **NM\_001302688** | **exon4** | **c.578\_579insCCGCGATG  (p. L193Lfs\*85)** | ***novel*** | **-** | **S2, S4** | **†, ‡, §, ¶, ||** |
| 7 | ACO1 | 9: 32418455 | NM\_001278352 | exon7 | c.604G>A (p.V202M) | *novel* | - | S4 | ‡, § |
| 8 | APOB | 2: 21255280 | NM\_000384 | exon10 | c.1298C>T (p.A433V) | rs13306190 | 0.0002 | - | ‡, § |
| 9 | PAM | 5: 102338811 | NM\_001319943 | exon18 | c.1742A>G (p.D581G) | rs35658696 | 0.035 | - | †, ‡, § |
| 10 | TBXAS1 | 7: 139719829 | NM\_001130966 | exon17 | c.1535C>T (p.P512L) | rs13306050 | 0.018 | - | ‡, §, ¶ |
| 11 | GF-27 | ACVRL1 | 12: 52308249 | NM\_000020 | exon6 | c.652C>T (p.R218W) | rs199874575 | 0.0004 | - | †, ‡, § |
| 12 | GF-32 | BRCA1 | 17: 41244982 | NM\_007300 | exon10 | c.2566T>C (p.Y856H) | rs80356892 | 0.003 | S5, S6 | †, ‡, ¶ |
| 13 | DNAH8 | 6: 38840492 | NM\_001206927 | exon50 | c.7171G>T (p.A2391S) | rs61758417 | 0.048 | - | †, ‡, §, ¶ |
| 14 | PCK2 | 14: 24568323 | NM\_001308054 | exon5 | c.328C>T (p.R110W) | rs75497728 | 0.005 | S4, S5 | †, ‡, § |
| 15 | GF-54 | APOB | 2: 21252534 | NM\_000384 | exon12 | c.1594C>T (p.R532W) | rs13306194 | - | - | †, ‡, § |
| 16 | GNAS | 20: 57428744 | NM\_080425 | exon1 | c.424G>T (p.G142X) | *novel* | - | S3, S5 | †, ‡, §, || |
| 17 | GF-62 | KAT2B | 3: 20189472 | NM\_003884 | exon15 | c.2137C>A (p.P713T) | rs148960024 | 0.0077 | S6 | †, ‡, § |
| 18 | TBXAS1 | 7: 139719829 | NM\_001130966 | exon17 | c.1535C>T (p.P512L) | rs13306050 | 0.018 | - | ‡, §, ¶ |
| 19 | TNC | 9: 117848161 | NM\_002160 | exon3 | c.1849G>A (p.G617R) | rs146288119 | 0.0001 | S2, S5 | †, ‡, § |
| 20 | GF-65 | KCNH2 | 7: 150654531 | NM\_000238 | exon5 | c.976C>G (p.R326G) | *novel* | - | S4 | †, ‡ |
| 21 | XDH | 2: 31569660 | NM\_000379 | exon30 | c.3326A>C (p.N1109T) | rs45547640 | 0.0054 | S1 | §, ¶ |
| 22 | GF-68 | ADORA2B | 17: 15878168 | NM\_000676 | exon2 | c.511T>G (p.C171G) | *novel* | - | S3 | ‡, § |
| 23 | BARD1 | 2: 215645503 | NM\_000465 | exon4 | c.1075\_1095del  (p.359\_365del) | rs28997575 | 0.0293 | S6 | † |
| 24 | TKT | 3: 53269096 | NM\_001135055 | exon5 | c.532C>T (p.L178F) | *novel* | - | S4 | ‡, §, ¶ |
| 25 | TNFAIP3 | 6: 138195991 | NM\_001270508 | exon3 | c.305A>G (p.N102S) | rs146534657 | 0.013 | - | ‡, §, ¶ |
| 26 | GF-77 | THBS1 | 15: 39881204 | NM\_003246 | exon11 | c.1690A>G (p.S564G) | rs200366954 | 0.0002 | S5 | ‡ |
| 27 | GF-92 | CAPN1 | 11: 64955466 | NM\_001198868 | exon8 | c.884G>A (p.R295Q) | rs756205995 | 9.01E-05 | S2 | †, ‡, § |
| 28 | DCD | 12: 55040931 | NM\_001300854 | exon2 | c.71C>T (p.A24V) | *novel* | - | - | §, ¶ |
| 29 | DNAH8 | 6: 38840492 | NM\_001206927 | exon50 | c.7171G>T (p.A2391S) | rs61758417 | 0.048 | - | †, ‡, §, ¶ |
| 30 | PCK2 | 14: 24568323 | NM\_001308054 | exon5 | c.328C>T (p.R110W) | rs75497728 | 0.005 | S4, S5 | †, ‡, § |
| 31 | TBXAS1 | 7: 139719829 | NM\_001130966 | exon17 | c.1535C>T (p.P512L) | rs13306050 | 0.018 | - | ‡, §, ¶ |
| 32 | GF-98 | ADRA1D | 20: 4229061 | NM\_000678 | exon1 | c.544G>A (p.A182T) | rs201907164 | 0.0004 | S3 | †, ‡, § |
| 33 | ALMS1 | 2: 73676008 | NM\_015120 | exon8 | c.2351A>G (p.E784G) | rs17848880 | 0.0068 | - | †, ‡ |
| 34 | BRCA1 | 17: 41244982 | NM\_007300 | exon10 | c.2566T>C (p.Y856H) | rs80356892 | 0.003 | S5, S6 | †, ‡, ¶ |
| 35 | DNAH8 | 6: 38840492 | NM\_001206927 | exon50 | c.7171G>T (p.A2391S) | rs61758417 | 0.048 | - | †, ‡, §, ¶ |
| 36 | TBXAS1 | 7: 139719829 | NM\_001130966 | exon17 | c.1535C>T (p.P512L) | rs13306050 | 0.018 | - | ‡, §, ¶ |
| HAPE, high altitude pulmonary edema; Ref, reference; "-", Not existing;  MAF, minor allele frequency < 0.05, including Exome Aggregation Consortium (ExAC); 1000 Genomes Project (1000G); Exome Sequencing Project (ESP); SuperPath, S1, Effects of Nitric Oxide; S2, Neuroscience; S3, Calcium signaling pathway; S4, Glucose-Energy Metabolism; S5, PI3K-Akt signaling pathway; S6, Metalloprotease DUBs; Function and silico analysis, †, physicochemical properties' change; ‡, homologous sequencs alignment conservatism; §, locating in the function domain; ¶, gene expression of transcripts' altering from GSE52209; ||, affecting the protein structure predicted by I-Tasser. | | | | | | | | | | |