Table S1 SNPs included in forward MR analyses

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| --- |
| **EoE on IBD (FinnGen)** |
| **SNP** | **Chr** | **Pos** | **Nearest Gene** | **EA** | **OA** | **EAF** | **Beta. Exposure** | **Se.Exposure** | **Pval.Exposure** | **id.Outcome** | **Outcome** | **Beta.Outcome**  | **Se.Outcome**  | **Pval.outcome** |
| rs143457388 | 2 | 31402370 | CAPN14 | A | T | 0.0513  | 0.5710  | 0.115  | 2.69×10-16 | FinnGen-IBD | IBD | 0.0137  | 0.0344  | 0.6899  |
| rs887992 | 2 | 103524931 | TMEM182 | A | C | 0.6563  | -0.2877  | 0.031  | 4.43×10-10 | FinnGen-IBD | IBD | -0.0334  | 0.0155  | 0.0310  |
| rs1438673 | 5 | 110467499 | TSLP/WDR36 | T | C | 0.4983  | -0.3567  | 0.050  | 6.12×10-22 | FinnGen-IBD | IBD | -0.0075  | 0.0152  | 0.6199  |
| rs2106984 | 5 | 131953066 | RAD50 | A | T | 0.2031  | 0.2311  | 0.050  | 4.11×10-08 | FinnGen-IBD | IBD | 0.0027  | 0.0173  | 0.8750  |
| rs1620996 | 6 | 21602552 | SOX4 | C | T | 0.8915  | -0.3711  | 0.044  | 2.70×10-08 | FinnGen-IBD | IBD | 0.0337  | 0.0231  | 0.1450  |
| rs147702004 | 11 | 3865496 | RHOG | T | A | 0.0183  | 0.6678  | 0.180  | 1.15×10-08 | FinnGen-IBD | IBD | -0.0001  | 0.0455  | 0.9986  |
| rs61894547 | 11 | 76248630 | EMSY | T | C | 0.0233  | 0.5822  | 0.123  | 4.69×10-15 | FinnGen-IBD | IBD | 0.0248  | 0.0392  | 0.5276  |
| rs2279293 | 15 | 61057357 | RORA | G | C | 0.1449  | -0.3711  | 0.037  | 4.66×10-11 | FinnGen-IBD | IBD | -0.0564  | 0.0204  | 0.0058  |
| rs56062135 | 15 | 67455630 | SMAD3 | T | C | 0.2303  | 0.2546  | 0.050  | 3.79×10-10 | FinnGen-IBD | IBD | 0.0645  | 0.0170  | 0.0001  |
| rs35099084 | 16 | 11189617 | CLEC16A | T | C | 0.1977  | -0.3285  | 0.032  | 1.92×10-12 | FinnGen-IBD | IBD | -0.0442  | 0.0199  | 0.0260  |
| **EoE on UC (FinnGen)** |
| **SNP** | **Chr** | **Pos** | **Nearest Gene** | **EA** | **OA** | **EAF** | **Beta. Exposure** | **Se.Exposure** | **Pval.Exposure** | **id.Outcome** | **Outcome** | **Beta.Outcome** | **Se.Outcome** | **Pval.outcome** |
| rs143457388 | 2 | 31402370 | CAPN15 | A | T | 0.1300  | -0.0168  | 0.061  | 2.69×10-17 | FinnGen-UC | UC | 0.1015  | 0.0425  | 0.0169  |
| rs887992 | 2 | 103524931 | TMEM183 | A | C | 0.1007  | -0.0306  | 0.059  | 4.43×10-11 | FinnGen-UC | UC | -0.0303  | 0.0191  | 0.1116  |
| rs1438673 | 5 | 110467499 | TSLP/WDR37 | T | C | 0.0713  | -0.0444  | 0.057  | 6.12×10-23 | FinnGen-UC | UC | -0.0038  | 0.0187  | 0.8401  |
| rs2106984 | 5 | 131953066 | RAD51 | A | T | 0.0419  | -0.0583  | 0.055  | 4.11×10-09 | FinnGen-UC | UC | 0.0183  | 0.0213  | 0.3907  |
| rs1620996 | 6 | 21602552 | SOX5 | C | T | 0.0126  | -0.0721  | 0.053  | 2.70×10-09 | FinnGen-UC | UC | 0.0191  | 0.0285  | 0.5019  |
| rs147702004 | 11 | 3865496 | RHOG | T | A | -0.0168  | -0.0859  | 0.051  | 1.15×10-09 | FinnGen-UC | UC | 0.0164  | 0.0560  | 0.7695  |
| rs61894547 | 11 | 76248630 | EMSY | T | C | -0.0461  | -0.0997  | 0.049  | 4.69×10-16 | FinnGen-UC | UC | -0.0191  | 0.0483  | 0.6920  |
| rs2279293 | 15 | 61057357 | RORA | G | C | -0.0755  | -0.1135  | 0.047  | 4.66×10-12 | FinnGen-UC | UC | -0.0478  | 0.0249  | 0.0545  |
| rs56062135 | 15 | 67455630 | SMAD4 | T | C | -0.1048  | -0.1273  | 0.045  | 3.79×10-11 | FinnGen-UC | UC | 0.0639  | 0.0209  | 0.0022  |
| rs35099084 | 16 | 11189617 | CLEC17A | T | C | -0.1342  | -0.1411  | 0.043  | 1.92×10-13 | FinnGen-UC | UC | -0.0350  | 0.0244  | 0.1516  |
| **EoE on CD (FinnGen)** |
| **SNP** | **Chr** | **Pos** | **Nearest Gene** | **EA** | **OA** | **EAF** | **Beta. Exposure** | **Se.Exposure** | **Pval.Exposure** | **id.Outcome** | **Outcome** | **Beta.Outcome** | **Se.Outcome** | **Pval.outcome** |
| rs143457388 | 2 | 31402370 | CAPN14 | A | T | 0.0513  | 0.5710  | 0.115  | 2.69×10-16 | FinnGen-CD | CD | -0.1456  | 0.0722  | 0.0438  |
| rs887992 | 2 | 103524931 | TMEM182 | A | C | 0.6563  | -0.2877  | 0.031  | 4.43×10-10 | FinnGen-CD | CD | -0.0629  | 0.0324  | 0.0523  |
| rs1438673 | 5 | 110467499 | TSLP/WDR36 | T | C | 0.4983  | -0.3567  | 0.050  | 6.12×10-22 | FinnGen-CD | CD | -0.0053  | 0.0317  | 0.8678  |
| rs2106984 | 5 | 131953066 | RAD50 | A | T | 0.2031  | 0.2311  | 0.050  | 4.11×10-08 | FinnGen-CD | CD | -0.0231  | 0.0362  | 0.5232  |
| rs1620996 | 6 | 21602552 | SOX4 | C | T | 0.8915  | -0.3711  | 0.044  | 2.70×10-08 | FinnGen-CD | CD | 0.0214  | 0.0485  | 0.6586  |
| rs147702004 | 11 | 3865496 | RHOG | T | A | 0.0183  | 0.6678  | 0.180  | 1.15×10-08 | FinnGen-CD | CD | -0.1561  | 0.0952  | 0.1011  |
| rs61894547 | 11 | 76248630 | EMSY | T | C | 0.0233  | 0.5822  | 0.123  | 4.69×10-15 | FinnGen-CD | CD | 0.0555  | 0.0816  | 0.4964  |
| rs2279293 | 15 | 61057357 | RORA | G | C | 0.1449  | -0.3711  | 0.037  | 4.66×10-11 | FinnGen-CD | CD | -0.0869  | 0.0423  | 0.0400  |
| rs56062135 | 15 | 67455630 | SMAD3 | T | C | 0.2303  | 0.2546  | 0.050  | 3.79×10-10 | FinnGen-CD | CD | 0.0814  | 0.0359  | 0.0233  |
| rs35099084 | 16 | 11189617 | CLEC16A | T | C | 0.1977  | -0.3285  | 0.032  | 1.92×10-12 | FinnGen-CD | CD | -0.0541  | 0.0414  | 0.1914  |
| **EoE on IBD (IIBDGC)** |
| **SNP** | **Chr** | **Pos** | **Nearest Gene** | **EA** | **OA** | **EAF** | **Beta. Exposure** | **Se.Exposure** | **Pval.Exposure** | **id.Outcome** | **Outcome** | **Beta.Outcome**  | **Se.Outcome**  | **Pval.outcome**  |
| rs143457388 | 2 | 31402370 | CAPN16 | A | T | -0.1636  | -0.1549  | 0.041  | 2.69×10-18 | ieu-e-31 | IBD | 0.0151  | 0.0406  | 0.7098  |
| rs887992 | 2 | 103524931 | TMEM184 | A | C | -0.1929  | -0.1688  | 0.039  | 4.43×10-12 | ieu-e-31 | IBD | 0.0022  | 0.0175  | 0.8989  |
| rs1438673 | 5 | 110467499 | TSLP/WDR38 | T | C | -0.2223  | -0.1826  | 0.037  | 6.12×10-24 | ieu-e-31 | IBD | -0.0163  | 0.0168  | 0.3319  |
| rs2106984 | 5 | 131953066 | RAD52 | A | T | -0.2516  | -0.1964  | 0.035  | 4.11×10-10 | ieu-e-31 | IBD | -0.0219  | 0.0205  | 0.2870  |
| rs1620996 | 6 | 21602552 | SOX6 | C | T | -0.2810  | -0.2102  | 0.033  | 2.70×10-10 | ieu-e-31 | IBD | 0.0370  | 0.0275  | 0.1785  |
| rs147702004 | 11 | 3865496 | RHOG | T | A | -0.3103  | -0.2240  | 0.031  | 1.15×10-10 | ieu-e-31 | IBD | 0.0110  | 0.0666  | 0.8694  |
| rs61894547 | 11 | 76248630 | EMSY | T | C | -0.3397  | -0.2378  | 0.029  | 4.69×10-17 | ieu-e-31 | IBD | 0.1375  | 0.0417  | 0.0010  |
| rs2279293 | 15 | 61057357 | RORA | G | C | -0.3691  | -0.2516  | 0.027  | 4.66×10-13 | ieu-e-31 | IBD | -0.0918  | 0.0247  | 0.0002  |
| rs56062135 | 15 | 67455630 | SMAD5 | T | C | -0.3984  | -0.2655  | 0.025  | 3.79×10-12 | ieu-e-31 | IBD | 0.1509  | 0.0198  | <0.0001 |
| rs35099084 | 16 | 11189617 | CLEC18A | T | C | -0.4278  | -0.2793  | 0.023  | 1.92×10-14 | ieu-e-31 | IBD | -0.0094  | 0.0205  | 0.6457  |
| **EoE on UC (IIBDGC)** |
| **SNP** | **Chr** | **Pos** | **Nearest Gene** | **EA** | **OA** | **EAF** | **Beta. Exposure** | **Se.Exposure** | **Pval.Exposure** | **id.Outcome** | **Outcome** | **Beta.Outcome**  | **Se.Outcome**  | **Pval.Outcome**  |
| rs143457388 | 2 | 31402370 | CAPN16 | A | T | -0.1636  | -0.1549  | 0.041  | 2.69×10-18 | ieu-a-32 | UC | 0.0167  | 0.0507  | 0.7426  |
| rs887992 | 2 | 103524931 | TMEM184 | A | C | -0.1929  | -0.1688  | 0.039  | 4.43×10-12 | ieu-a-32 | UC | -0.0091  | 0.0221  | 0.6795  |
| rs1438673 | 5 | 110467499 | TSLP/WDR38 | T | C | -0.2223  | -0.1826  | 0.037  | 6.12×10-24 | ieu-a-32 | UC | -0.0213  | 0.0213  | 0.3170  |
| rs2106984 | 5 | 131953066 | RAD52 | A | T | -0.2516  | -0.1964  | 0.035  | 4.11×10-10 | ieu-a-32 | UC | 0.0006  | 0.0258  | 0.9809  |
| rs1620996 | 6 | 21602552 | SOX6 | C | T | -0.2810  | -0.2102  | 0.033  | 2.70×10-10 | ieu-a-32 | UC | 0.0218  | 0.0347  | 0.5296  |
| rs147702004 | 11 | 3865496 | RHOG | T | A | -0.3103  | -0.2240  | 0.031  | 1.15×10-10 | ieu-a-32 | UC | 0.0779  | 0.0809  | 0.3354  |
| rs61894547 | 11 | 76248630 | EMSY | T | C | -0.3397  | -0.2378  | 0.029  | 4.69×10-17 | ieu-a-32 | UC | 0.1338  | 0.0520  | 0.0101  |
| rs2279293 | 15 | 61057357 | RORA | G | C | -0.3691  | -0.2516  | 0.027  | 4.66×10-13 | ieu-a-32 | UC | -0.0774  | 0.0311  | 0.0129  |
| rs56062135 | 15 | 67455630 | SMAD5 | T | C | -0.3984  | -0.2655  | 0.025  | 3.79×10-12 | ieu-a-32 | UC | 0.1105  | 0.0248  | 0.0000  |
| rs35099084 | 16 | 11189617 | CLEC18A | T | C | -0.4278  | -0.2793  | 0.023  | 1.92×10-14 | ieu-a-32 | UC | -0.0151  | 0.0259  | 0.5602  |
| **EoE on CD (IIBDGC)** |
| **SNP** | **Chr** | **Pos** | **Nearest Gene** | **EA** | **OA** | **EAF** | **Beta. Exposure** | **Se.Exposure** | **Pval.Exposure** | **id.Outcome** | **Outcome** | **Beta.Outcome**  | **Se.Outcome**  | **Pval.outcome**  |
| rs143457388 | 2 | 31402370 | CAPN15 | A | T | 0.1300  | -0.0168  | 0.061  | 2.69×10-17 | ieu-a-30 | CD | 0.0326  | 0.0562  | 0.5614  |
| rs887992 | 2 | 103524931 | TMEM183 | A | C | 0.1007  | -0.0306  | 0.059  | 4.43×10-11 | ieu-a-30 | CD | 0.0214  | 0.0238  | 0.3687  |
| rs1438673 | 5 | 110467499 | TSLP/WDR37 | T | C | 0.0713  | -0.0444  | 0.057  | 6.12×10-23 | ieu-a-30 | CD | 0.0021  | 0.0228  | 0.9267  |
| rs2106984 | 5 | 131953066 | RAD51 | A | T | 0.0419  | -0.0583  | 0.055  | 4.11×10-09 | ieu-a-30 | CD | -0.0393  | 0.0281  | 0.1622  |
| rs1620996 | 6 | 21602552 | SOX5 | C | T | 0.0126  | -0.0721  | 0.053  | 2.70×10-09 | ieu-a-30 | CD | 0.0527  | 0.0375  | 0.1598  |
| rs147702004 | 11 | 3865496 | RHOG | T | A | -0.0168  | -0.0859  | 0.051  | 1.15×10-09 | ieu-a-30 | CD | -0.1062  | 0.0945  | 0.2612  |
| rs61894547 | 11 | 76248630 | EMSY | T | C | -0.0461  | -0.0997  | 0.049  | 4.69×10-16 | ieu-a-30 | CD | 0.1320  | 0.0573  | 0.0212  |
| rs2279293 | 15 | 61057357 | RORA | G | C | -0.0755  | -0.1135  | 0.047  | 4.66×10-12 | ieu-a-30 | CD | -0.0654  | 0.0338  | 0.0531  |
| rs56062135 | 15 | 67455630 | SMAD4 | T | C | -0.1048  | -0.1273  | 0.045  | 3.79×10-11 | ieu-a-30 | CD | 0.1931  | 0.0269  | <0.0001 |
| rs35099084 | 16 | 11189617 | CLEC17A | T | C | -0.1342  | -0.1411  | 0.043  | 1.92×10-13 | ieu-a-30 | CD | 0.0127  | 0.0275  | 0.6450  |

MR: Mendelian randomization; SNP: single nucleotide polymorphism; Chr: chromosome; Pos: base-pair position; EA: effect allele; OA: other allele; EAF: effect allele frequency. EoE: eosinophilic esophagitis; IBD: inflammatory bowel disease; CD: Crohn’s disease; UC: ulcerative colitis; IIBDGC: International IBD Genetics Consortium.

Table S2 SNPs included in Reverse MR analyses

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| **IBD on EoE** |
| **SNP** | **Chr** | **Pos** | **EA** | **OA** | **id.Exposure** | **Exposure** | **EAF** | **Beta.Exposure** | **Se.Exposure** | **Pval.Exposure** | **Outcome** | **Beta.Outcome** | **Se.Outcome** | **Pval.Outcome** |
| rs10737481 | 1 | 19845021 | G | T | ieu-a-31 | IBD | 0.555  | 0.1411  | 0.0170  | 1.19E-16 | EoE | 0.0108  | 0.0350  | 0.7629  |
| rs10800314 | 1 | 161502999 | A | C | ieu-a-31 | IBD | 0.649  | -0.1431  | 0.0179  | 1.17E-15 | EoE | 0.0894  | 0.0390  | 0.0156  |
| rs11209026 | 1 | 67240275 | A | G | ieu-a-31 | IBD | 0.054  | -0.7263  | 0.0422  | 1.76E-66 | EoE | -0.1263  | 0.0604  | 0.0859  |
| rs1886731 | 1 | 2540642 | C | T | ieu-a-31 | IBD | 0.481  | -0.0971  | 0.0175  | 3.08E-08 | EoE | -0.0185  | 0.0349  | 0.6161  |
| rs3024493 | 1 | 206770623 | A | C | ieu-a-31 | IBD | 0.170  | 0.2130  | 0.0222  | 8.48E-22 | EoE | 0.0701  | 0.0499  | 0.1513  |
| rs35730213 | 1 | 200905101 | C | G | ieu-a-31 | IBD | 0.263  | -0.1514  | 0.0194  | 6.91E-15 | EoE | 0.0123  | 0.0392  | 0.7602  |
| rs7523335 | 1 | 8120150 | A | G | ieu-a-31 | IBD | 0.173  | -0.1405  | 0.0225  | 4.16E-10 | EoE | 0.0629  | 0.0479  | 0.1818  |
| rs112401990 | 2 | 60972192 | A | G | ieu-a-31 | IBD | 0.375  | 0.1422  | 0.0174  | 2.84E-16 | EoE | 0.1488  | 0.0416  | <0.0001 |
| rs112694524 | 2 | 43226582 | A | G | ieu-a-31 | IBD | 0.090  | 0.1883  | 0.0303  | 5.39E-10 | EoE | -0.0907  | 0.0621  | 0.2135  |
| rs11677953 | 2 | 218256940 | A | G | ieu-a-31 | IBD | 0.415  | 0.0976  | 0.0171  | 1.05E-08 | EoE | 0.0605  | 0.0370  | 0.0934  |
| rs2241878 | 2 | 233275072 | C | T | ieu-a-31 | IBD | 0.538  | 0.1480  | 0.0169  | 1.75E-18 | EoE | 0.0455  | 0.0365  | 0.2078  |
| rs4676408 | 2 | 240634984 | A | G | ieu-a-31 | IBD | 0.515  | 0.1181  | 0.0181  | 6.62E-11 | EoE | -0.0160  | 0.0343  | 0.6579  |
| rs4851586 | 2 | 102447804 | C | T | ieu-a-31 | IBD | 0.757  | -0.1224  | 0.0193  | 2.32E-10 | EoE | 0.0097  | 0.0407  | 0.8182  |
| rs1873625 | 3 | 49629531 | A | C | ieu-a-31 | IBD | 0.323  | 0.1773  | 0.0179  | 3.71E-23 | EoE | -0.0212  | 0.0370  | 0.5894  |
| rs45528737 | 4 | 122354400 | T | C | ieu-a-31 | IBD | 0.112  | 0.1668  | 0.0300  | 2.66E-08 | EoE | 0.0695  | 0.0628  | 0.2643  |
| rs6826501 | 4 | 36075054 | T | C | ieu-a-31 | IBD | 0.536  | -0.0928  | 0.0169  | 4.12E-08 | EoE | -0.0401  | 0.0333  | 0.2637  |
| rs10045431 | 5 | 159387525 | C | A | ieu-a-31 | IBD | 0.718  | 0.1774  | 0.0189  | 6.59E-21 | EoE | -0.0343  | 0.0363  | 0.3803  |
| rs13178036 | 5 | 40218427 | C | G | ieu-a-31 | IBD | 0.342  | 0.1009  | 0.0184  | 4.13E-08 | EoE | 0.0202  | 0.0376  | 0.5983  |
| rs17800987 | 5 | 150943866 | G | A | ieu-a-31 | IBD | 0.089  | 0.2017  | 0.0305  | 3.71E-11 | EoE | 0.0656  | 0.0618  | 0.2855  |
| rs254560 | 5 | 135107916 | A | G | ieu-a-31 | IBD | 0.400  | 0.0995  | 0.0171  | 6.16E-09 | EoE | 0.0168  | 0.0358  | 0.6444  |
| rs35260072 | 5 | 132295159 | C | A | ieu-a-31 | IBD | 0.433  | 0.1422  | 0.0170  | 7.07E-17 | EoE | -0.0534  | 0.0332  | 0.1410  |
| rs6873866 | 5 | 96912106 | C | T | ieu-a-31 | IBD | 0.529  | -0.1070  | 0.0176  | 1.09E-09 | EoE | 0.0389  | 0.0362  | 0.2811  |
| rs6880778 | 5 | 40398994 | G | A | ieu-a-31 | IBD | 0.621  | 0.1878  | 0.0173  | 2.14E-27 | EoE | -0.0249  | 0.0344  | 0.4955  |
| rs148844907 | 6 | 31660620 | A | T | ieu-a-31 | IBD | 0.010  | 1.1375  | 0.0963  | 3.63E-32 | EoE | -0.0556  | 0.1489  | 0.7679  |
| rs34190331 | 6 | 111519617 | A | G | ieu-a-31 | IBD | 0.085  | 0.1769  | 0.0303  | 5.39E-09 | EoE | 0.0228  | 0.0649  | 0.7365  |
| rs444210 | 6 | 166976754 | G | A | ieu-a-31 | IBD | 0.546  | 0.1095  | 0.0168  | 7.39E-11 | EoE | -0.0004  | 0.0345  | 0.9918  |
| rs4712528 | 6 | 20678199 | C | G | ieu-a-31 | IBD | 0.788  | 0.1226  | 0.0207  | 3.07E-09 | EoE | 0.0697  | 0.0440  | 0.1031  |
| rs6911490 | 6 | 106074152 | C | T | ieu-a-31 | IBD | 0.779  | -0.1428  | 0.0208  | 6.82E-12 | EoE | 0.0080  | 0.0431  | 0.8579  |
| rs6927172 | 6 | 137681038 | G | C | ieu-a-31 | IBD | 0.214  | 0.1103  | 0.0202  | 4.65E-08 | EoE | -0.1089  | 0.0389  | 0.0164  |
| rs9370774 | 6 | 14721666 | C | T | ieu-a-31 | IBD | 0.201  | -0.1307  | 0.0219  | 2.54E-09 | EoE | -0.0880  | 0.0431  | 0.0750  |
| rs4730272 | 7 | 107837782 | G | A | ieu-a-31 | IBD | 0.513  | -0.1341  | 0.0178  | 4.50E-14 | EoE | -0.0249  | 0.0345  | 0.4967  |
| rs1551399 | 8 | 125527723 | C | A | ieu-a-31 | IBD | 0.616  | 0.1013  | 0.0173  | 5.01E-09 | EoE | 0.0256  | 0.0364  | 0.4854  |
| rs1887428 | 9 | 4984530 | C | G | ieu-a-31 | IBD | 0.619  | -0.1716  | 0.0178  | 6.65E-22 | EoE | 0.1538  | 0.0417  | <0.0001 |
| rs4077515 | 9 | 136372044 | T | C | ieu-a-31 | IBD | 0.424  | 0.1794  | 0.0172  | 1.50E-25 | EoE | 0.0528  | 0.0366  | 0.1416  |
| rs4246905 | 9 | 114790969 | C | T | ieu-a-31 | IBD | 0.730  | 0.1630  | 0.0197  | 1.42E-16 | EoE | -0.0259  | 0.0378  | 0.5204  |
| rs10761659 | 10 | 62685804 | G | A | ieu-a-31 | IBD | 0.554  | 0.1619  | 0.0172  | 4.07E-21 | EoE | -0.0224  | 0.0340  | 0.5332  |
| rs1250573 | 10 | 79282718 | A | G | ieu-a-31 | IBD | 0.296  | -0.1136  | 0.0190  | 2.21E-09 | EoE | 0.1067  | 0.0415  | 0.0059  |
| rs12764283 | 10 | 35241532 | A | G | ieu-a-31 | IBD | 0.337  | 0.1266  | 0.0179  | 1.57E-12 | EoE | 0.0231  | 0.0375  | 0.5436  |
| rs6584283 | 10 | 99530544 | C | T | ieu-a-31 | IBD | 0.511  | -0.1803  | 0.0169  | 1.70E-26 | EoE | 0.0161  | 0.0353  | 0.6538  |
| rs11236797 | 11 | 76588605 | A | C | ieu-a-31 | IBD | 0.470  | 0.1557  | 0.0170  | 4.75E-20 | EoE | 0.2537  | 0.0450  | <0.0001 |
| rs140892874 | 12 | 40430996 | C | T | ieu-a-31 | IBD | 0.027  | 0.4096  | 0.0512  | 1.28E-15 | EoE | -0.0908  | 0.0965  | 0.4430  |
| rs2193041 | 12 | 68108330 | G | A | ieu-a-31 | IBD | 0.389  | 0.1337  | 0.0172  | 6.91E-15 | EoE | -0.1007  | 0.0326  | 0.0071  |
| rs3850378 | 14 | 87951173 | C | T | ieu-a-31 | IBD | 0.096  | 0.1551  | 0.0282  | 3.80E-08 | EoE | 0.1802  | 0.0666  | 0.0022  |
| rs56062135 | 15 | 67163292 | T | C | ieu-a-31 | IBD | 0.237  | 0.1509  | 0.0198  | 2.64E-14 | EoE | 0.2523  | 0.0498  | <0.0001 |
| rs11548656 | 16 | 81883307 | G | A | ieu-a-31 | IBD | 0.034  | -0.2928  | 0.0507  | 7.72E-09 | EoE | -0.0600  | 0.0842  | 0.5416  |
| rs12446550 | 16 | 28532060 | A | G | ieu-a-31 | IBD | 0.410  | 0.1078  | 0.0171  | 2.78E-10 | EoE | -0.0316  | 0.0339  | 0.3835  |
| rs2076756 | 16 | 50722970 | G | A | ieu-a-31 | IBD | 0.271  | 0.1876  | 0.0186  | 5.59E-24 | EoE | 0.0715  | 0.0416  | 0.0756  |
| rs72798422 | 16 | 50833006 | C | T | ieu-a-31 | IBD | 0.042  | 0.2776  | 0.0431  | 1.19E-10 | EoE | 0.3352  | 0.1103  | <0.0001 |
| rs9934775 | 16 | 50349166 | T | C | ieu-a-31 | IBD | 0.161  | -0.1396  | 0.0232  | 1.71E-09 | EoE | 0.0055  | 0.0462  | 0.9096  |
| rs12936409 | 17 | 39887396 | T | C | ieu-a-31 | IBD | 0.476  | 0.1457  | 0.0168  | 3.87E-18 | EoE | -0.0104  | 0.0345  | 0.7729  |
| rs744166 | 17 | 42362183 | G | A | ieu-a-31 | IBD | 0.410  | -0.1207  | 0.0172  | 2.16E-12 | EoE | 0.0373  | 0.0362  | 0.3022  |
| rs2542147 | 18 | 12775852 | T | G | ieu-a-31 | IBD | 0.837  | -0.1513  | 0.0227  | 2.78E-11 | EoE | 0.0021  | 0.0477  | 0.9659  |
| rs10408351 | 19 | 33263138 | A | G | ieu-a-31 | IBD | 0.238  | 0.1378  | 0.0221  | 4.23E-10 | EoE | -0.0913  | 0.0390  | 0.0410  |
| rs142770866 | 19 | 10414696 | A | G | ieu-a-31 | IBD | 0.081  | 0.2300  | 0.0337  | 8.14E-12 | EoE | -0.0667  | 0.0587  | 0.3189  |
| rs6062496 | 20 | 63697746 | A | G | ieu-a-31 | IBD | 0.578  | 0.1650  | 0.0180  | 5.48E-20 | EoE | -0.0040  | 0.0355  | 0.9133  |
| rs1736161 | 21 | 15460903 | A | G | ieu-a-31 | IBD | 0.429  | -0.1233  | 0.0174  | 1.34E-12 | EoE | -0.0656  | 0.0333  | 0.0746  |
| rs2836882 | 21 | 39094644 | A | G | ieu-a-31 | IBD | 0.258  | -0.1963  | 0.0201  | 1.49E-22 | EoE | 0.0919  | 0.0423  | 0.0219  |
| rs1003342 | 22 | 30174033 | G | A | ieu-a-31 | IBD | 0.531  | -0.0950  | 0.0168  | 1.67E-08 | EoE | -0.0299  | 0.0336  | 0.4040  |
| rs7285952 | 22 | 39337091 | G | T | ieu-a-31 | IBD | 0.157  | -0.1760  | 0.0235  | 7.60E-14 | EoE | -0.0442  | 0.0450  | 0.3704  |
| **CD on EoE** |
| **SNP** | **Chr** | **Pos** | **EA** | **OA** | **id.Exposure** | **Exposure** | **EAF** | **Beta.Exposure** | **Se.Exposure** | **Pval.Exposure** | **Outcome** | **Beta.Outcome** | **Se.Outcome** | **Pval.Outcome** |
| rs11209026 | 1 | 67240275 | A | G | ieu-a-30 | CD | 0.056  | -0.9952  | 0.0639  | 1.05E-54 | EoE | -0.1263  | 0.0604  | 0.0859  |
| rs3024505 | 1 | 206766559 | A | G | ieu-a-30 | CD | 0.162  | 0.1779  | 0.0302  | 3.90E-09 | EoE | 0.0703  | 0.0499  | 0.1492  |
| rs6588243 | 1 | 67137700 | C | A | ieu-a-30 | CD | 0.590  | 0.1317  | 0.0234  | 1.78E-08 | EoE | -0.1368  | 0.0309  | 0.0002  |
| rs6704109 | 1 | 172887910 | T | C | ieu-a-30 | CD | 0.256  | 0.2020  | 0.0256  | 2.77E-15 | EoE | -0.0114  | 0.0392  | 0.7818  |
| rs697693 | 1 | 7826364 | A | G | ieu-a-30 | CD | 0.201  | 0.1723  | 0.0281  | 8.36E-10 | EoE | -0.0329  | 0.0422  | 0.4710  |
| rs7543234 | 1 | 155283517 | T | C | ieu-a-30 | CD | 0.239  | 0.1555  | 0.0267  | 6.10E-09 | EoE | 0.0464  | 0.0411  | 0.2559  |
| rs112401990 | 2 | 60972192 | A | G | ieu-a-30 | CD | 0.373  | 0.1322  | 0.0237  | 2.35E-08 | EoE | 0.1488  | 0.0416  | <0.0001 |
| rs12692254 | 2 | 233252565 | T | A | ieu-a-30 | CD | 0.543  | 0.3014  | 0.0232  | 1.86E-38 | EoE | 0.0373  | 0.0363  | 0.3035  |
| rs4851586 | 2 | 102447804 | C | T | ieu-a-30 | CD | 0.760  | -0.1689  | 0.0261  | 9.94E-11 | EoE | 0.0097  | 0.0407  | 0.8182  |
| rs78487399 | 2 | 43582208 | C | G | ieu-a-30 | CD | 0.101  | 0.2259  | 0.0370  | 1.03E-09 | EoE | -0.0659  | 0.0540  | 0.2820  |
| rs1873625 | 3 | 49629531 | A | C | ieu-a-30 | CD | 0.320  | 0.1807  | 0.0243  | 1.09E-13 | EoE | -0.0212  | 0.0370  | 0.5894  |
| rs13135092 | 4 | 102276925 | G | A | ieu-a-30 | CD | 0.095  | 0.2215  | 0.0389  | 1.21E-08 | EoE | 0.0966  | 0.0620  | 0.1056  |
| rs12717899 | 5 | 142102776 | T | G | ieu-a-30 | CD | 0.794  | 0.1592  | 0.0289  | 3.59E-08 | EoE | -0.1594  | 0.0372  | 0.0005  |
| rs147018773 | 5 | 150858959 | T | C | ieu-a-30 | CD | 0.097  | 0.3217  | 0.0375  | 8.89E-18 | EoE | 0.0273  | 0.0609  | 0.6645  |
| rs2188962 | 5 | 132435113 | T | C | ieu-a-30 | CD | 0.440  | 0.2124  | 0.0228  | 1.36E-20 | EoE | -0.0764  | 0.0325  | 0.0354  |
| rs4921497 | 5 | 159421245 | G | C | ieu-a-30 | CD | 0.329  | 0.1603  | 0.0244  | 5.49E-11 | EoE | -0.0555  | 0.0354  | 0.1537  |
| rs6873866 | 5 | 96912106 | C | T | ieu-a-30 | CD | 0.535  | -0.1681  | 0.0239  | 2.06E-12 | EoE | 0.0389  | 0.0362  | 0.2811  |
| rs7713270 | 5 | 40439961 | T | C | ieu-a-30 | CD | 0.624  | 0.2966  | 0.0241  | 6.97E-35 | EoE | -0.0250  | 0.0345  | 0.4951  |
| rs114607072 | 6 | 31384163 | T | G | ieu-a-30 | CD | 0.040  | 0.4418  | 0.0629  | 2.20E-12 | EoE | -0.0655  | 0.0817  | 0.4938  |
| rs12194825 | 6 | 20835029 | A | T | ieu-a-30 | CD | 0.186  | -0.1719  | 0.0298  | 8.00E-09 | EoE | 0.0502  | 0.0452  | 0.2644  |
| rs140054334 | 6 | 31619265 | T | C | ieu-a-30 | CD | 0.038  | 0.3498  | 0.0628  | 2.57E-08 | EoE | -0.1582  | 0.0884  | 0.1720  |
| rs148844907 | 6 | 31660620 | A | T | ieu-a-30 | CD | 0.008  | 0.9580  | 0.1419  | 1.47E-11 | EoE | -0.0556  | 0.1489  | 0.7679  |
| rs28701841 | 6 | 106082455 | A | G | ieu-a-30 | CD | 0.117  | 0.2243  | 0.0373  | 1.85E-09 | EoE | -0.0261  | 0.0546  | 0.6603  |
| rs444210 | 6 | 166976754 | G | A | ieu-a-30 | CD | 0.547  | 0.1634  | 0.0229  | 1.02E-12 | EoE | -0.0004  | 0.0345  | 0.9918  |
| rs1456896 | 7 | 50264865 | T | C | ieu-a-30 | CD | 0.698  | 0.1393  | 0.0251  | 2.90E-08 | EoE | 0.0119  | 0.0374  | 0.7566  |
| rs921720 | 8 | 125522429 | G | A | ieu-a-30 | CD | 0.619  | 0.1629  | 0.0237  | 6.40E-12 | EoE | 0.0114  | 0.0359  | 0.7573  |
| rs1887428 | 9 | 4984530 | C | G | ieu-a-30 | CD | 0.623  | -0.1681  | 0.0243  | 4.22E-12 | EoE | 0.1538  | 0.0417  | <0.0001 |
| rs3810936 | 9 | 114790605 | C | T | ieu-a-30 | CD | 0.698  | 0.2078  | 0.0263  | 2.46E-15 | EoE | -0.0416  | 0.0363  | 0.2899  |
| rs4077515 | 9 | 136372044 | T | C | ieu-a-30 | CD | 0.420  | 0.2159  | 0.0235  | 4.37E-20 | EoE | 0.0528  | 0.0366  | 0.1416  |
| rs10761659 | 10 | 62685804 | G | A | ieu-a-30 | CD | 0.553  | 0.2120  | 0.0237  | 3.42E-19 | EoE | -0.0224  | 0.0340  | 0.5332  |
| rs1250573 | 10 | 79282718 | A | G | ieu-a-30 | CD | 0.287  | -0.1709  | 0.0264  | 9.01E-11 | EoE | 0.1067  | 0.0415  | 0.0059  |
| rs1332099 | 10 | 99538694 | C | T | ieu-a-30 | CD | 0.515  | -0.2116  | 0.0231  | 4.36E-20 | EoE | 0.0478  | 0.0364  | 0.1834  |
| rs2505640 | 10 | 35170569 | G | A | ieu-a-30 | CD | 0.644  | -0.1457  | 0.0237  | 7.61E-10 | EoE | 0.0096  | 0.0365  | 0.7986  |
| rs11236797 | 11 | 76588605 | A | C | ieu-a-30 | CD | 0.473  | 0.1811  | 0.0231  | 4.85E-15 | EoE | 0.2537  | 0.0450  | <0.0001 |
| rs11564236 | 12 | 40434504 | T | A | ieu-a-30 | CD | 0.034  | 0.5191  | 0.0595  | 2.85E-18 | EoE | -0.0748  | 0.0972  | 0.5235  |
| rs1932990 | 13 | 43886106 | T | C | ieu-a-30 | CD | 0.254  | 0.1529  | 0.0263  | 6.02E-09 | EoE | 0.1335  | 0.0447  | 0.0010  |
| rs4902642 | 14 | 68743482 | A | G | ieu-a-30 | CD | 0.409  | -0.1292  | 0.0236  | 4.34E-08 | EoE | 0.0199  | 0.0357  | 0.5829  |
| rs56062135 | 15 | 67163292 | T | C | ieu-a-30 | CD | 0.234  | 0.1931  | 0.0269  | 7.45E-13 | EoE | 0.2523  | 0.0498  | <0.0001 |
| rs147684209 | 16 | 28855740 | C | T | ieu-a-30 | CD | 0.369  | 0.1549  | 0.0244  | 2.34E-10 | EoE | 0.0139  | 0.0360  | 0.7068  |
| rs2076756 | 16 | 50722970 | G | A | ieu-a-30 | CD | 0.284  | 0.3998  | 0.0242  | 3.24E-61 | EoE | 0.0715  | 0.0416  | 0.0756  |
| rs72798422 | 16 | 50833006 | C | T | ieu-a-30 | CD | 0.048  | 0.5904  | 0.0508  | 3.19E-31 | EoE | 0.3352  | 0.1103  | <0.0001 |
| rs3091315 | 17 | 34266646 | G | A | ieu-a-30 | CD | 0.266  | -0.1795  | 0.0263  | 9.52E-12 | EoE | -0.0324  | 0.0378  | 0.4254  |
| rs744166 | 17 | 42362183 | G | A | ieu-a-30 | CD | 0.408  | -0.1293  | 0.0233  | 2.92E-08 | EoE | 0.0373  | 0.0362  | 0.3022  |
| rs907092 | 17 | 39766006 | A | G | ieu-a-30 | CD | 0.471  | 0.1304  | 0.0228  | 1.01E-08 | EoE | -0.0163  | 0.0344  | 0.6525  |
| rs80262450 | 18 | 12818923 | A | G | ieu-a-30 | CD | 0.113  | 0.2831  | 0.0353  | 1.08E-15 | EoE | 0.0295  | 0.0559  | 0.6072  |
| rs2129944 | 19 | 10405522 | G | T | ieu-a-30 | CD | 0.291  | -0.1562  | 0.0271  | 7.81E-09 | EoE | 0.0067  | 0.0390  | 0.8677  |
| rs281379 | 19 | 48711017 | A | G | ieu-a-30 | CD | 0.489  | 0.1398  | 0.0238  | 4.26E-09 | EoE | -0.0049  | 0.0349  | 0.8925  |
| rs8178977 | 19 | 1106478 | C | G | ieu-a-30 | CD | 0.239  | 0.1928  | 0.0274  | 2.06E-12 | EoE | 0.0317  | 0.0426  | 0.4618  |
| rs1056441 | 20 | 63738996 | C | T | ieu-a-30 | CD | 0.698  | 0.1670  | 0.0255  | 5.44E-11 | EoE | 0.0142  | 0.0385  | 0.7187  |
| rs1297271 | 21 | 15450844 | T | C | ieu-a-30 | CD | 0.430  | -0.1549  | 0.0237  | 6.28E-11 | EoE | -0.0694  | 0.0331  | 0.0591  |
| rs151314883 | 22 | 39339082 | A | G | ieu-a-30 | CD | 0.158  | -0.2240  | 0.0327  | 7.12E-12 | EoE | -0.0451  | 0.0452  | 0.3628  |
| rs8137950 | 22 | 21615351 | C | T | ieu-a-30 | CD | 0.200  | 0.1740  | 0.0286  | 1.17E-09 | EoE | -0.0207  | 0.0436  | 0.6571  |
| **UC on EoE** |
| **SNP** | **Chr** | **Pos** | **EA** | **OA** | **id.Exposure** | **Exposure** | **EAF** | **Beta.Exposure** | **Se.Exposure** | **Pval.Exposure** | **Outcome** | **Beta.Outcome** | **Se.Outcome** | **Pval.Outcome** |
| rs10737481 | 1 | 19845021 | G | T | ieu-a-32 | UC | 0.556  | 0.2501  | 0.0216  | 4.37E-31 | EoE | 0.0108  | 0.5565  | 0.7629  |
| rs10917545 | 1 | 19801684 | A | G | ieu-a-32 | UC | 0.882  | -0.1851  | 0.0335  | 3.29E-08 | EoE | -0.0591  | 0.8822  | 0.3361  |
| rs11209026 | 1 | 67240275 | A | G | ieu-a-32 | UC | 0.059  | -0.5617  | 0.0517  | 1.58E-27 | EoE | -0.1263  | 0.0589  | 0.0859  |
| rs1801274 | 1 | 161509955 | G | A | ieu-a-32 | UC | 0.483  | -0.1829  | 0.0217  | 3.78E-17 | EoE | 0.0899  | 0.4831  | 0.0123  |
| rs1886731 | 1 | 2540642 | C | T | ieu-a-32 | UC | 0.481  | -0.1405  | 0.0221  | 2.25E-10 | EoE | -0.0185  | 0.4806  | 0.6161  |
| rs3024493 | 1 | 206770623 | A | C | ieu-a-32 | UC | 0.168  | 0.2363  | 0.0276  | 1.09E-17 | EoE | 0.0701  | 0.1681  | 0.1513  |
| rs35730213 | 1 | 200905101 | C | G | ieu-a-32 | UC | 0.267  | -0.1670  | 0.0245  | 8.81E-12 | EoE | 0.0123  | 0.2666  | 0.7602  |
| rs7523335 | 1 | 8120150 | A | G | ieu-a-32 | UC | 0.177  | -0.1704  | 0.0285  | 2.29E-09 | EoE | 0.0629  | 0.1767  | 0.1818  |
| rs10182512 | 2 | 60962334 | A | G | ieu-a-32 | UC | 0.350  | 0.1608  | 0.0223  | 5.19E-13 | EoE | 0.1604  | 0.3499  | <0.0001 |
| rs12612675 | 2 | 218268414 | G | A | ieu-a-32 | UC | 0.403  | 0.1229  | 0.0219  | 1.98E-08 | EoE | 0.0618  | 0.4028  | 0.0868  |
| rs4676410 | 2 | 240624322 | A | G | ieu-a-32 | UC | 0.197  | 0.2078  | 0.0284  | 2.46E-13 | EoE | 0.0172  | 0.1971  | 0.7035  |
| rs9823546 | 3 | 49668079 | A | T | ieu-a-32 | UC | 0.310  | 0.1769  | 0.0223  | 2.29E-15 | EoE | -0.0208  | 0.3104  | 0.5985  |
| rs114152040 | 5 | 40444884 | A | G | ieu-a-32 | UC | 0.032  | 0.3396  | 0.0623  | 4.95E-08 | EoE | 0.1864  | 0.0317  | 0.0450  |
| rs254559 | 5 | 135109292 | A | C | ieu-a-32 | UC | 0.404  | 0.1243  | 0.0215  | 7.63E-09 | EoE | 0.0067  | 0.4041  | 0.8546  |
| rs56167332 | 5 | 159400761 | A | C | ieu-a-32 | UC | 0.342  | 0.1516  | 0.0231  | 5.30E-11 | EoE | -0.0353  | 0.3416  | 0.3742  |
| rs148844907 | 6 | 31660620 | A | T | ieu-a-32 | UC | 0.010  | 1.3413  | 0.1089  | 7.17E-35 | EoE | -0.0556  | 0.0102  | 0.7679  |
| rs6933404 | 6 | 137638098 | C | T | ieu-a-32 | UC | 0.216  | 0.1668  | 0.0252  | 3.68E-11 | EoE | -0.1042  | 0.2156  | 0.0211  |
| rs7752873 | 6 | 106131457 | T | C | ieu-a-32 | UC | 0.137  | 0.1823  | 0.0303  | 1.83E-09 | EoE | 0.0212  | 0.1368  | 0.6824  |
| rs10272963 | 7 | 107846457 | T | C | ieu-a-32 | UC | 0.426  | -0.1719  | 0.0216  | 1.69E-15 | EoE | -0.0217  | 0.4261  | 0.5461  |
| rs798502 | 7 | 2750246 | C | A | ieu-a-32 | UC | 0.283  | -0.1365  | 0.0239  | 1.21E-08 | EoE | -0.0146  | 0.2831  | 0.7128  |
| rs989960 | 7 | 107805282 | T | C | ieu-a-32 | UC | 0.425  | -0.1291  | 0.0215  | 1.77E-09 | EoE | 0.0215  | 0.4249  | 0.5551  |
| rs1887428 | 9 | 4984530 | C | G | ieu-a-32 | UC | 0.623  | -0.1767  | 0.0224  | 3.36E-15 | EoE | 0.1538  | 0.6229  | <0.0001 |
| rs3829111 | 9 | 136375031 | A | G | ieu-a-32 | UC | 0.417  | 0.1563  | 0.0214  | 2.89E-13 | EoE | 0.0592  | 0.4167  | 0.1020  |
| rs4574921 | 9 | 114776054 | T | C | ieu-a-32 | UC | 0.741  | 0.1506  | 0.0256  | 4.24E-09 | EoE | -0.0168  | 0.7408  | 0.6848  |
| rs7911680 | 10 | 99533711 | C | A | ieu-a-32 | UC | 0.490  | -0.1718  | 0.0213  | 8.27E-16 | EoE | 0.0333  | 0.4901  | 0.4651  |
| rs2212434 | 11 | 76570549 | T | C | ieu-a-32 | UC | 0.460  | 0.1419  | 0.0213  | 2.46E-11 | EoE | 0.2579  | 0.4596  | <0.0001 |
| rs483905 | 11 | 96290263 | A | G | ieu-a-32 | UC | 0.294  | 0.1289  | 0.0228  | 1.57E-08 | EoE | 0.0601  | 0.2943  | 0.1248  |
| rs484356 | 11 | 114535917 | G | C | ieu-a-32 | UC | 0.328  | -0.1342  | 0.0228  | 3.95E-09 | EoE | -0.0422  | 0.3277  | 0.2695  |
| rs12817473 | 12 | 68103628 | G | A | ieu-a-32 | UC | 0.382  | 0.1907  | 0.0217  | 1.71E-18 | EoE | -0.0878  | 0.3822  | 0.0192  |
| rs1359946 | 13 | 26962835 | A | G | ieu-a-32 | UC | 0.196  | 0.1583  | 0.0269  | 3.84E-09 | EoE | -0.0891  | 0.1961  | 0.0609  |
| rs9891174 | 17 | 39875549 | A | T | ieu-a-32 | UC | 0.470  | 0.1452  | 0.0212  | 7.17E-12 | EoE | -0.0057  | 0.4704  | 0.8747  |
| rs6017342 | 20 | 44436388 | C | A | ieu-a-32 | UC | 0.538  | 0.1913  | 0.0240  | 1.38E-15 | EoE | 0.0152  | 0.5377  | 0.6863  |
| rs6062496 | 20 | 63697746 | A | G | ieu-a-32 | UC | 0.573  | 0.1585  | 0.0224  | 1.47E-12 | EoE | -0.0040  | 0.5726  | 0.9133  |
| rs9977672 | 21 | 39091357 | A | G | ieu-a-32 | UC | 0.251  | -0.2450  | 0.0261  | 6.21E-21 | EoE | 0.1000  | 0.2513  | 0.0142  |
| rs137845 | 22 | 50001001 | G | A | ieu-a-32 | UC | 0.515  | 0.1182  | 0.0212  | 2.38E-08 | EoE | -0.0558  | 0.5149  | 0.2255  |

MR: Mendelian randomization; SNP: single nucleotide polymorphism; Chr: chromosome; Pos: base-pair position; EA: effect allele; OA: other allele; EAF: effect allele frequency. EoE: eosinophilic esophagitis; IBD: inflammatory bowel disease; CD: Crohn’s disease; UC: ulcerative colitis.

**Table S3 Sensitivity analyses results**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Primary result, OR [95% CI] | SA-A, OR [95% CI] | SNPs excluded in SA-A | SA-B, OR [95% CI] | SNPs excluded in SA-B | SA-C, OR [95% CI] |
| **Forward MR analyses**  |
| EoE on IBD | FinnGen | 1.07 [1.02, 1.13] | 1.05 [1.00-1.10] |  rs56062135 | 1.07 [1.02-1.11] | rs1620996, rs56062135 | 1.07 [1.02-1.11] |
| IIBDGC | 1.10 [0.98-1.23] | 1.05 [0.94-1.14] | rs56062135 | 1.08 [0.93-1.25] | rs2279293, rs61894547, rs1620996 | 1.01 [0.96-1.07] |
| EoE on UC | FinnGen | 1.08 [1.02, 1.14] | NA | NA | NA | NA | NA |
| IIBDGC | 1.11 [1.02-1.20] | 1.08 [1.02-1.14] | rs56062135 | 1.08 [1.02-1.14] | rs56062135 | 1.08 [1.02-1.14] |
| EoE on CD  | FinnGen | 1.05 [0.94, 1.18] | NA | NA | 1.12 [1.02, 1.23] | rs147702004, rs143457388 | 1.12 [1.02, 1.23] |
| IIBDGC | 1.06 [0.91-1.23] | 1.00 [0.92-1.09] | rs56062135 | 1.01 [0.93-1.11] | rs1620966 | 1.01 [0.93-1.11] |
| **Reverse MR analyses** |
| IBD on EoE | 1.04 [0.92-1.16] | 0.99 [0.90-1.09] | rs11236797, rs112401990, rs1873625, rs56062135 | 1.05 [0.98-1.13] | rs11236797, rs112401990, rs56062135, rs72798422, rs3850378, rs2836882, rs10800314, rs10408351, rs1250573, rs6927172, rs2193041, rs1887428 | 1.06 [0.99-1.14] |
| UC on EoE | 0.98 [0.89-1.08] | 1.02 [0.95-1.09] | rs10182512, rs1887428, rs2212434 | 1.01 [0.95-1.07] | rs10182512, rs1887428, rs2212434, rs12817473, rs1359946, rs9977672, rs1801274, rs6933404, rs11209026 | 1.01 [0.95-1.07] |
| CD on EoE | 1.02 [0.92-1.12] | 0.98 [0.89-1.08] | rs11236797, rs112401990, rs12717899, rs1887428, rs1932990, rs56062135, rs6588243 | 1.05 [0.97-1.15] | rs11236797, rs112401990, rs12717899, rs1887428, rs1932990, rs56062135, rs72798422, rs1932900, rs1297271, rs2188962, rs1250573, rs6588243 | 1.05 [0.97-1.15] |

SA-A: sensitivity analysis A, which removed pleiotropic outliers detected by the MR-PRESSO method SA-B: sensitivity analysis B, which removed heterogenous outliers detected by the MR-Radial method. SA-C: sensitivity analysis A, which removed outliers detected by either methods. MR: Mendelian randomization; SNP: single nucleotide polymorphism; EoE: eosinophilic esophagitis; IBD: inflammatory bowel disease; CD: Crohn’s disease; UC: ulcerative colitis. OR: odds ratio; CI: confidence interval. ; IIBDGC: International IBD Genetics Consortium.



**Figure S1.** Effect size of SNPs for EoE on IBD based on outcome database of FinnGen (A) and IIBDGC (B), EoE on CD based on outcome database of FinnGen (C) and IIBDGC (D), EoE on UC based on outcome database of FinnGen (E) and IIBDGC (F) as well as IBD on EoE (G), UC on EoE (H) and CD on EoE (I). SNP: single nucleotide polymorphisms; EoE: eosinophilic esophagitis; IBD: inflammatory bowel disease; CD: Crohn’s disease; UC: ulcerative colitis; IIBDGC: International IBD Genetics Consortium.



**Figure S2**. Results of leave-one-out sensitivity analyses for EoE on IBD based on outcome database of FinnGen (A) and IIBDGC (B), EoE on CD based on outcome database of FinnGen (C) and IIBDGC (D), EoE on UC based on outcome database of FinnGen(E) and IIBDGC (F). MR: Mendelian randomization; EoE: eosinophilic esophagitis; IBD: inflammatory bowel disease; CD: Crohn’s disease; UC: ulcerative colitis; IIBDGC: International IBD Genetics Consortium.



**Figure S3.** Results of leave-one-out sensitivity analyses for IBD on EoE (A), UC on EoE (B) and CD on EoE (C). MR: Mendelian randomization; EoE: eosinophilic esophagitis; IBD: inflammatory bowel disease; CD: Crohn’s disease; UC: ulcerative colitis.