**Supplementary Table S1**. Comparison of demographic, genetic, environmental, and disease characteristics between the training and validation sets.

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Training**  **(N=729)** | **Validation**  **(N=244)** | **P-value** |
| **Age** | 46.7 (0.6) | 46.3 (1.0) | 0.73 |
| **Gender (F/ % F)** | 334 (46%) | 103 (42%) | 0.60 |
| **Age of onset** | 28.6 (0.7) | 28.3 (1.1) | 0.85 |
| **BMI** | 27.1 (0.3) | 27.1 (0.6) | 0.99 |
| **Caucasian** | 360 (49%) | 112 (46%) | 0.65 |
| **Asian** | 164 (22%) | 64 (26%) |
| **Hispanic/Latino** | 56 (8%) | 20 (8%) |
| **Other race/ethnicity** | 149 (20%) | 48 (20%) |
| **PsA** | 132 (18%) | 43 (17%) | 0.67 |
| **HLA-Cw\*0602** | 213 (29%) | 66 (27%) | 0.60 |
| **HLA-B27** | 44 (6%) | 18 (7%) | 0.69 |
| **Family history of PsO** | 362 (50%) | 127 (52%) | 0.27 |
| **Severe PsO** | 256 (35%) | 100 (41%) | 0.12 |
| **Plaque** | 601 (82%) | 199 (82%) | 0.83 |
| **Guttate** | 196 (27%) | 75 (31%) | 0.28 |
| **Pustular** | 28 (4%) | 16 (7%) | 0.11 |
| **Erythrodermic** | 24 (3%) | 10 (4%) | 0.69 |
| **Inverse** | 59 (8%) | 17 (7%) | 0.67 |
| **Palmoplantar** | 41 (6%) | 9 (4%) | 0.31 |
| **Smoking** | 40 (5%) | 8 (3%) | 0.04\* |
| **Hypertension** | 198 (27%) | 64 (26%) | 0.84 |
| **Obesity** | 27 (4%) | 7 (3%) | 0.68 |
| **Diabetes** | 55 (8%) | 18 (7%) | 1.00 |
| **Hypercholesterolemia** | 186 (26%) | 51 (21%) | 0.17 |
| **Hypertriglyceridemia** | 56 (8%) | 16 (7%) | 0.66 |
| **CAD** | 28 (4%) | 10 (4%) | 1.00 |
| **Stroke** | 14 (2%) | 5 (2%) | 1.00 |

**Supplementary Table S2.** Results of the backward step-wise, multivariable variable regression model of confirmed vs. no psoriatic arthritis (using threshold of p<0.15 for inclusion in initial model).

|  |  |  |
| --- | --- | --- |
| **Variable** | **Odds ratio** | **p-value** |
| **Demographic characteristics** | | |
| **Age** | 1.03 | 0.029\* |
| **Age of onset** | 0.97 | 0.014\* |
| **Gender** | 1.15 | 0.686 |
| **BMI** | 0.98 | 0.425 |
| **Family history** | | |
| **Family history (continuous)** | 1.22 | 0.293 |
| **Lesion location** | | |
| **Trunk** | 0.67 | 0.330 |
| **Genitals** | 0.49 | 0.070 ƚ |
| **Nails** | 1.73 | 0.108 |
| **Folds** | 2.16 | 0.042\* |
| **Comorbidities** | | |
| **Diabetes, type 2** | 6.16 | 0.007\*\* |
| **CAD** | 0.46 | 0.426 |
| **Subtype** | | |
| **Plaque** | 2.86 | 0.074 ƚ |
| **Pustular** | 4.63 | 0.045\* |
| **Inverse** | 2.35 | 0.156 |
| **Severity** | | |
| **Severity overall** | --- | 0.395 |
| **Mild (reference)** | 1.00 | --- |
| **Mild-moderate** | 1.16 | 0.863 |
| **Moderate-severe** | 1.39 | 0.672 |
| **Severe** | 2.30 | 0.281 |

**Supplementary Table S3.** Results of the backward step-wise, multivariable variable regression model of confirmed vs. no psoriatic arthritis (using threshold of p<0.05 for inclusion in initial model).

|  |  |  |
| --- | --- | --- |
| **Variable** | **Odds ratio** | **p-value** |
| **Demographic characteristics** | | |
| **Age** | 1.02 | 0.087 ƚ |
| **Age of onset** | 0.97 | 0.030\*\* |
| **Gender** | 1.28 | 0.448 |
| **BMI** | 0.98 | 0.516 |
| **Family history** | | |
| **Family history (continuous)** | 1.19 | 0.358 |
| **Lesion location** | | |
| **Scalp** | 1.16 | 0.763 |
| **Elbows/Knees** | 0.92 | 0.852 |
| **Nails** | 1.53 | 0.210 |
| **Folds** | 1.63 | 0.148 |
| **Comorbidities** | | |
| **Hypertension** | 1.31 | 0.519 |
| **Diabetes, type 2** | 5.30 | 0.015\* |
| **CAD** | 0.57 | 0.546 |
| **Subtype** | | |
| **Plaque** | 2.21 | 0.149 |
| **Erythrodermic** | 3.49 | 0.070 ƚ |
| **Severity** | | |
| **Severity overall** | --- | 0.734 |
| **Mild (reference)** | 1.00 | --- |
| **Mild-moderate** | 1.25 | 0.784 |
| **Moderate-severe** | 1.28 | 0.741 |
| **Severe** | 1.78 | 0.428 |

**Supplementary Table S4.** Summary of sensitivity analyses with alternate variable definitions (four level ordinal definition of severity, family history defined as a discrete variable equal to the number of first degree relatives with psoriatic disease) at different p-value thresholds of entry.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Variable** | **Model with threshold p<0.25** | **Model with threshold p<0.15** | **Model with threshold p<0.05** | **Model with threshold p<0.25** | **Model with threshold p<0.15** | **Model with threshold p<0.05** |
| **Demographic characteristics** | | | | | | |
| **Age** | 0.204 | 0.029\* | 0.087 ƚ | 0.194 | 0.081 ƚ | 0.152 |
| **Age of onset** | 0.144 | 0.014\* | 0.030\*\* | 0.173 | 0.116 | 0.177 |
| **Gender** | 0.507 | 0.686 | 0.448 | 0.490 | 0.520 | 0.313 |
| **BMI** | 0.940 | 0.425 | 0.516 | 0.933 | 0.971 | 0.866 |
| **Family history/Environmental factors** | | | | | | |
| **Family history (discrete)** | --- | 0.293 | 0.358 | --- | --- | --- |
| **Family history (binary)** | --- | --- | --- | --- | --- | --- |
| **Smoking** | 0.040\* | --- | --- | 0.035\* | --- | --- |
| **Lesion location** | | | | | | |
| **Scalp** | --- | --- | 0.763 | --- | 0.545 | 0.808 |
| **Ears** | --- | --- | --- | --- | --- | --- |
| **Elbow/Knees** | --- | --- | 0.852 | 0.455 | --- | 0.960 |
| **Arms/Legs** | --- | --- | --- | --- | --- | --- |
| **Trunk** | 0.280 | 0.330 | --- | 0.261 | 0.171 | --- |
| **Face** | --- | --- | --- | --- | --- | --- |
| **Genitals** | 0.223 | 0.070 ƚ | --- | 0.208 | 0.206 | --- |
| **Nails** | 0.013\* | 0.108 | 0.210 | 0.015\* | 0.037\* | 0.045\* |
| **Palms** | --- | --- | --- | --- | --- | --- |
| **Soles** | 0.259 | --- | --- | --- | --- | --- |
| **Folds** | 0.004\*\* | 0.042\* | 0.148 | 0.004\*\* | 0.028\* | 0.074 ƚ |
| **Glut** | --- | --- | --- | --- | --- |  |
| **Comorbidities** | | | | | | |
| **Hypertension** | --- | --- | 0.519 | --- | 0.699 | 0.599 |
| **Diabetes, type 2** | 0.092 ƚ | 0.007\*\* | 0.015\* | 0.091 ƚ | 0.161 | 0.140 |
| **CAD** | --- | 0.426 | 0.546 | --- | --- | 0.896 |
| **Subtype** | | | | | | |
| **Plaque** | 0.080 ƚ | 0.074 ƚ | 0.149 | 0.099 ƚ | 0.259 | 0.366 |
| **Guttate** | --- | --- | --- | --- | --- | --- |
| **Pustular** | 0.078 ƚ | 0.045\* | --- | 0.078 ƚ | 0.042\* | --- |
| **Erythrodermic** | --- | --- | 0.070 ƚ | --- | --- | 0.130 |
| **Palmoplantar** | 0.004\*\* | --- | --- | 0.004\*\* | --- | --- |
| **Inverse** | --- | 0.156 | --- | --- | 0.323 | --- |
| **Severity** | | | | | | |
| **Severity overall** | 0.455 | 0.395 | 0.734 | 0.534 | 0.417 | 0.747 |
| **Mild (reference)** | --- | --- | --- | --- | --- | --- |
| **Mild-moderate** | 0.836 | 0.863 | 0.784 | 0.841 | 0.711 | 0.732 |
| **Moderate-severe** | 0.886 | 0.672 | 0.741 | 0.912 | 0.567 | 0.707 |
| **Severe** | 0.460 | 0.281 | 0.428 | 0.507 | 0.222 | 0.402 |