

**Supplementary Table 1. Hypothesized risk factors and their prevalence**

Risk Factor	PsA Cases	PsA Controls	Psoriasis Cases	Psoriasis Controls	RA Cases	RA controls	AS Cases	AS Controls
<b>BMI 25-30 (vs &lt;25)</b>	2117 (33.9%)	14915 (35.2%)	27982 (33.4%)	198033 (33.4%)	7987 (33.4%)	59875 (34.6%)	893 (36.4%)	5986 (36.2%)
<b>BMI &gt;=30 (vs &lt;25)</b>	2423 (38.8%)	12990 (30.6%)	24924 (29.7%)	162982 (27.5%)	6902 (28.9%)	49909 (28.8%)	608 (24.8%)	4758 (28.8%)
<b>Current Smoker (vs Nonsmoker)</b>	1351 (18.0%)	15301 (20.8%)	27074 (25.6%)	216628 (20.9%)	5222 (18.8%)	43523 (15.9%)	861 (27.3%)	7333 (23.6%)
<b>Past Smoker (vs Nonsmoker)</b>	2958 (39.4%)	22504 (30.6%)	35988 (34.0%)	301390 (29.0%)	11152 (40.2%)	95728 (34.9%)	927 (29.4%)	9137 (29.4%)
<b>Current Alcohol (vs Nondrinker)</b>	5099 (75.9%)	49973 (77.9%)	68716 (77.2%)	656368 (76.0%)	17078 (68.0%)	177785 (72.8%)	2093 (77.4%)	20801 (79.8%)
<b>Past Alcohol (vs Nondrinker)</b>	1263 (18.8%)	9476 (14.8%)	14057 (15.8%)	130886 (15.1%)	6293 (25.1%)	48577 (19.9%)	420 (15.5%)	3213 (12.3%)
<b>Substance Abuse</b>	48 (0.6%)	725 (1.0%)	944 (0.8%)	9446 (0.8%)	129 (0.5%)	1411 (0.5%)	26 (0.8%)	338 (1.0%)
<b>Trauma</b>	1657 (21.8%)	14991 (19.7%)	22029 (19.8%)	218073 (19.6%)	5555 (19.6%)	56939 (20.1%)	632 (19.4%)	6198 (19.1%)
<b>Trauma to Foot</b>	356 (4.7%)	2877 (3.8%)	4194 (3.8%)	40482 (3.6%)	1079 (3.8%)	9722 (3.4%)	106 (3.3%)	1153 (3.5%)
<b>Trauma to Hand</b>	269 (3.5%)	2182 (2.9%)	3467 (3.1%)	31973 (2.9%)	808 (2.9%)	6369 (2.2%)	110 (3.4%)	1049 (3.2%)

<b>Trauma to Joint</b>	856 (11.3%)	6339 (8.3%)	9215 (8.3%)	86342 (7.8%)	2584 (9.1%)	20562 (7.3%)	317 (9.7%)	2713 (8.3%)
<b>Trauma to Skin</b>	501 (6.6%)	4453 (5.9%)	7304 (6.6%)	66252 (6.0%)	1776 (6.3%)	17892 (6.3%)	176 (5.4%)	1835 (5.6%)
<b>Fracture</b>	637 (8.4%)	6940 (9.1%)	8858 (8.0%)	102218 (9.2%)	2205 (7.8%)	29216 (10.3%)	257 (7.9%)	2727 (8.4%)
<b>Osteoporosis</b>	116 (1.5%)	1111 (1.5%)	1200 (1.1%)	15737 (1.4%)	980 (3.5%)	8529 (3.0%)	50 (1.5%)	185 (0.6%)
<b>Menopause</b>	437 (5.8%)	4056 (5.3%)	4129 (3.7%)	40507 (3.6%)	1904 (6.7%)	18406 (6.5%)	70 (2.2%)	678 (2.1%)
<b>Hysterectomy</b>	215 (2.8%)	1298 (1.7%)	1772 (1.6%)	13295 (1.2%)	901 (3.2%)	5954 (2.1%)	34 (1.0%)	245 (0.8%)
<b>Thyroid Disease</b>	336 (4.4%)	2468 (3.3%)	3476 (3.1%)	32206 (2.9%)	1822 (6.4%)	13325 (4.7%)	66 (2.0%)	676 (2.1%)
<b>Acne</b>	269 (3.5%)	2495 (3.3%)	4996 (4.5%)	52202 (4.7%)	628 (2.2%)	6405 (2.3%)	155 (4.8%)	1233 (3.8%)
<b>Anemia</b>	349 (4.6%)	3130 (4.1%)	3169 (2.8%)	44953 (4.0%)	2111 (7.4%)	17694 (6.2%)	145 (4.5%)	901 (2.8%)
<b>Gout</b>	387 (5.1%)	1691 (2.2%)	2144 (1.9%)	23024 (2.1%)	1079 (3.8%)	7878 (2.8%)	55 (1.7%)	743 (2.3%)
<b>Diabetes</b>	633 (8.3%)	7373 (9.7%)	7914 (7.1%)	108244 (9.7%)	2813 (9.9%)	37738 (13.3%)	188 (5.8%)	2730 (8.4%)
<b>Hyperlipidemia</b>	511 (6.7%)	5633 (7.4%)	6204 (5.6%)	70866 (6.4%)	2206 (7.8%)	27504 (9.7%)	134 (4.1%)	1822 (5.6%)
<b>Statin Use</b>	1059 (13.9%)	15529 (20.5%)	13519 (12.1%)	206533 (18.6%)	5165 (18.2%)	86329 (30.5%)	308 (9.5%)	5382 (16.5%)
<b>Hypertension</b>	1189 (15.7%)	12024 (15.8%)	14453 (13.0%)	156474 (14.1%)	5950 (21.0%)	66227 (23.4%)	349 (10.7%)	3900 (12.0%)
<b>Myocardial Infarction</b>	76 (1.0%)	847 (1.1%)	1104 (1.0%)	12362 (1.1%)	438 (1.5%)	5261 (1.9%)	38 (1.2%)	338 (1.0%)
<b>Urethritis</b>	22 (0.3%)	181 (0.2%)	251 (0.2%)	2521 (0.2%)	87 (0.3%)	824 (0.3%)	8 (0.2%)	64 (0.2%)

<b>Uveitis</b>	85 (1.1%)	241 (0.3%)	409 (0.4%)	3170 (0.3%)	198 (0.7%)	1085 (0.4%)	336 (10.3%)	83 (0.3%)
<b>IBD</b>	62 (0.8%)	589 (0.8%)	785 (0.7%)	7091 (0.6%)	352 (1.2%)	2135 (0.8%)	137 (4.2%)	237 (0.7%)
<b>Diarrhea</b>	858 (11.3%)	7615 (10.0%)	10349 (9.3%)	110772 (9.9%)	3132 (11.1%)	33712 (11.9%)	310 (9.5%)	2736 (8.4%)
<b>GI Infection</b>	345 (4.5%)	2822 (3.7%)	4490 (4.0%)	42866 (3.9%)	1087 (3.8%)	10013 (3.5%)	150 (4.6%)	1111 (3.4%)
<b>GU Infection</b>	268 (3.5%)	2045 (2.7%)	3704 (3.3%)	30441 (2.7%)	784 (2.8%)	7290 (2.6%)	76 (2.3%)	641 (2.0%)
<b>Pharyngitis</b>	852 (11.2%)	6043 (8.0%)	13708 (12.3%)	108509 (9.7%)	2184 (7.7%)	16701 (5.9%)	330 (10.1%)	2699 (8.3%)
<b>Skin Infection</b>	1811 (23.8%)	13525 (17.8%)	22302 (20.0%)	198624 (17.8%)	5285 (18.6%)	54920 (19.4%)	456 (14.0%)	5042 (15.5%)
<b>Any Liver Disease</b>	77 (1.0%)	758 (1.0%)	623 (0.6%)	8365 (0.8%)	202 (0.7%)	2687 (0.9%)	27 (0.8%)	254 (0.8%)
<b>Depression</b>	1407 (18.5%)	11400 (15.0%)	15429 (13.9%)	147723 (13.3%)	4357 (15.4%)	39067 (13.8%)	438 (13.5%)	4004 (12.3%)
<b>Back Pain</b>	2211 (29.1%)	19677 (25.9%)	23515 (21.1%)	255801 (23.0%)	7538 (26.6%)	74946 (26.5%)	3234 (99.4%)	7116 (21.9%)

In this analysis, we only included risk factors with a prevalence of 1% in the control population.

**Abbreviations:** PsA: psoriatic arthritis; RA: rheumatoid arthritis; AS: ankylosing spondyloarthritis; BMI: body mass index; vs: versus; IBD: inflammatory bowel disease; GI: gastrointestinal; GU: genitourinary.

**Supplementary Table 2.** Univariable logistic regression models by disease

Risk Factor	PsA OR (95%CI)	Psoriasis OR (95%CI)	RA OR (95%CI)	AS OR (95%CI)
<b>BMI 25-30 (vs &lt;25)</b>	1.21 (1.13, 1.30)**	1.06 (1.04, 1.08)**	0.94 (0.91, 0.97)**	0.90 (0.82, 1.00)
<b>BMI &gt;=30 (vs &lt;25)</b>	1.59 (1.49, 1.70)**	1.15 (1.13, 1.17)**	0.97 (0.94, 1.01)	0.77 (0.69, 0.86)**
<b>Current Smoker (vs Nonsmoker)</b>	0.99 (0.92, 1.06)	1.53 (1.50, 1.55)**	1.43 (1.38, 1.48)**	1.25 (1.15, 1.37)**
<b>Past Smoker (vs Nonsmoker)</b>	1.47 (1.40, 1.55)**	1.46 (1.44, 1.48)**	1.39 (1.35, 1.42)**	1.08 (0.99, 1.18)
<b>Current Alcohol (vs Nondrinker)</b>	1.34 (1.20, 1.50)**	1.28 (1.25, 1.32)**	0.99 (0.94, 1.04)	1.08 (0.92, 1.26)
<b>Past Alcohol (vs Nondrinker)</b>	1.75 (1.55, 1.98)**	1.32 (1.28, 1.36)**	1.34 (1.26, 1.41)**	1.40 (1.17, 1.68)**
<b>Substance Abuse</b>	0.66 (0.49, 0.89)*	1.00 (0.94, 1.07)	0.91 (0.76, 1.09)	0.77 (0.51, 1.15)
<b>Trauma</b>	1.13 (1.07, 1.20)**	1.01 (1.00, 1.03)	0.97 (0.94, 1.00)	1.02 (0.94, 1.12)
<b>Trauma to Foot</b>	1.25 (1.12, 1.40)**	1.04 (1.00, 1.07)	1.11 (1.04, 1.19)**	0.92 (0.75, 1.12)
<b>Trauma to Hand</b>	1.24 (1.09, 1.41)**	1.09 (1.05, 1.13)**	1.28 (1.18, 1.37)**	1.05 (0.86, 1.28)
<b>Trauma to Joint</b>	1.40 (1.29, 1.51)**	1.07 (1.05, 1.10)**	1.28 (1.23, 1.34)**	1.19 (1.05, 1.34)**
<b>Trauma to Skin</b>	1.13 (1.03, 1.25)*	1.11 (1.08, 1.14)**	0.99 (0.94, 1.04)	0.96 (0.82, 1.12)
<b>Fracture</b>	0.91 (0.84, 0.99)	0.85 (0.84, 0.87)**	0.73 (0.70, 0.77)**	0.94 (0.82, 1.07)
<b>Osteoporosis</b>	1.05 (0.86, 1.27)	0.76 (0.72, 0.81)**	1.15 (1.08, 1.23)**	2.73 (1.99, 3.74)**
<b>Menopause</b>	1.15 (1.01, 1.32)*	1.08 (1.03, 1.13)**	1.24 (1.16, 1.33)**	0.92 (0.64, 1.33)
<b>Hysterectomy</b>	1.68 (1.45, 1.94)**	1.34 (1.27, 1.41)**	1.53 (1.42, 1.64)**	1.39 (0.97, 2.00)
<b>Thyroid Disease</b>	1.38 (1.23, 1.55)**	1.08 (1.04, 1.12)**	1.39 (1.32, 1.46)**	0.98 (0.76, 1.26)

<b>Acne</b>	1.08 (0.95, 1.23)	0.96 (0.93, 0.98)*	0.98 (0.90, 1.06)	1.27 (1.07, 1.51)**
<b>Anemia</b>	1.12 (1.00, 1.25)	0.70 (0.67, 0.72)**	1.21 (1.15, 1.27)**	1.64 (1.37, 1.96)**
<b>Gout</b>	2.36 (2.11, 2.64)**	0.93 (0.89, 0.97)*	1.38 (1.30, 1.48)**	0.74 (0.56, 0.97)
<b>Diabetes</b>	0.85 (0.78, 0.92)**	0.71 (0.69, 0.73)**	0.72 (0.69, 0.75)**	0.67 (0.57, 0.78)**
<b>Hyperlipidemia</b>	0.90 (0.82, 0.99)	0.87 (0.84, 0.89)**	0.78 (0.75, 0.82)**	0.72 (0.61, 0.87)**
<b>Statin Use</b>	0.63 (0.59, 0.67)**	0.61 (0.60, 0.62)**	0.51 (0.49, 0.52)**	0.53 (0.47, 0.60)**
<b>Hypertension</b>	0.99 (0.92, 1.05)	0.91 (0.90, 0.93)**	0.87 (0.85, 0.90)**	0.88 (0.79, 0.99)
<b>Myocardial Infarction</b>	0.90 (0.71, 1.13)	0.89 (0.84, 0.95)**	0.83 (0.75, 0.92)**	1.13 (0.80, 1.58)
<b>Urethritis</b>	1.22 (0.78, 1.89)	1.00 (0.87, 1.13)	1.06 (0.85, 1.32)	1.25 (0.60, 2.61)
<b>Uveitis</b>	3.56 (2.78, 4.56)**	1.29 (1.16, 1.43)**	1.83 (1.57, 2.13)**	45.00 (35.29, 57.39)**
<b>IBD</b>	1.05 (0.81, 1.37)	1.11 (1.03, 1.19)*	1.66 (1.48, 1.85)**	5.99 (4.84, 7.42)**
<b>Diarrhea</b>	1.14 (1.06, 1.23)**	0.93 (0.91, 0.95)**	0.92 (0.88, 0.96)**	1.15 (1.01, 1.30)*
<b>GI Infection</b>	1.23 (1.10, 1.38)**	1.05 (1.02, 1.08)**	1.09 (1.02, 1.16)*	1.37 (1.15, 1.63)**
<b>GU Infection</b>	1.32 (1.16, 1.51)**	1.22 (1.18, 1.27)**	1.08 (1.00, 1.16)	1.19 (0.94, 1.51)
<b>Pharyngitis</b>	1.46 (1.35, 1.58)**	1.30 (1.28, 1.32)**	1.33 (1.27, 1.40)**	1.25 (1.11, 1.41)**
<b>Skin Infection</b>	1.44 (1.37, 1.53)**	1.15 (1.14, 1.17)**	0.95 (0.92, 0.98)**	0.89 (0.80, 0.99)
<b>Any Liver Disease</b>	1.02 (0.80, 1.29)	0.74 (0.69, 0.81)**	0.75 (0.65, 0.87)**	1.07 (0.72, 1.59)
<b>Depression</b>	1.29 (1.21, 1.37)**	1.05 (1.03, 1.07)**	1.14 (1.10, 1.17)**	1.11 (1.00, 1.23)
<b>Back Pain</b>	1.17 (1.11, 1.24)**	0.90 (0.88, 0.91)**	1.01 (0.98, 1.04)	606.83 (386.41, 952)**

In this analysis, we only included risk factors with a prevalence of 1% in the control population. Highlighted in yellow are risk factors with an effect size >1.25 and a significant association with p-value<0.01. Highlighted in blue are risk factors with an effect size of <.8 and a significant association with p-value<0.01.

\*/\*\* P-values <0.001 have two asterisks and <0.02 have one asterisk.

**Abbreviations:** PsA: psoriatic arthritis; OR: odds ratio; CI: confidence interval; RA: rheumatoid arthritis; AS: ankylosing spondyloarthritis; BMI: body mass index; vs: versus; IBD: inflammatory bowel disease; GI: gastrointestinal; GU: genitourinary.

**Supplementary Table 3. Multivariable stepwise regression models generated separately by sex**

		All	Women	Men
		HR (95% CI)	HR (95% CI)	HR (95% CI)
PSA	<b>Current Smoker</b>	1.01 (0.93, 1.09)	1.34 (1.20, 1.49)	0.68 (0.60, 0.76)
	<b>Ex-Smoker</b>	1.53 (1.43, 1.63)	1.58 (1.45, 1.73)	1.45 (1.32, 1.59)
	<b>Hand Trauma</b>	1.22 (1.03, 1.44)	1.40 (1.11, 1.77)	
	<b>Joint Trauma</b>	1.21 (1.10, 1.32)		1.47 (1.22, 1.76)
	<b>Uveitis</b>	3.79 (2.77, 5.18)	3.17 (2.07, 4.85)	4.93 (3.09, 7.89)
Psoriasis	<b>Current smoker</b>	1.45 (1.42, 1.48)	1.52 (1.48, 1.56)	1.33 (1.29, 1.38)
	<b>Ex-smoker</b>	1.60 (1.58, 1.63)	1.56 (1.53, 1.60)	1.65 (1.60, 1.69)
	<b>Gut Infection</b>	1.09 (1.05, 1.14)		1.58 (1.44, 1.73)
RA	<b>Current smoker</b>	1.43 (1.37, 1.49)	1.34 (1.27, 1.41)	1.58 (1.47, 1.71)
	<b>Ex-smoker</b>	1.56 (1.51, 1.61)	1.48 (1.42, 1.54)	1.72 (1.61, 1.83)
	<b>Hand Trauma</b>	1.37 (1.25, 1.50)	1.38 (1.23, 1.54)	1.26 (1.07, 1.48)
AS	<b>Anemia</b>	1.57 (1.25, 1.98)		1.83 (1.32, 2.55)
	<b>Uveitis</b>	37.97 (27.42, 52.58)	29.86 (18.45, 48.32)	46.25 (29.66, 72.13)

**Abbreviations:** HR: hazard ratio; CI: confidence interval; PsA: psoriatic arthritis; RA: rheumatoid arthritis; AS: ankylosing spondylitis.