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Reporting Summary

Nature Portfolio wishes to improve the reproducibility of the work that we publish. This form provides structure for consistency and transparency in reporting. For further information on Nature Portfolio policies, see our Editorial Policies and the Editorial Policy Checklist.

Statistics

For all statistical analyses, confirm that the following items are present in the figure legend, table legend, main text, or Methods section.

n/a	Confirmed	
☐	☒	The exact sample size (*n*) for each experimental group/condition, given as a discrete number and unit of measurement
☐	☒	A statement on whether measurements were taken from distinct samples or whether the same sample was measured repeatedly
☐	☒	The statistical test(s) used AND whether they are one- or two-sided *Only common tests should be described solely by name; describe more complex techniques in the Methods section.*
☐	☒	A description of all covariates tested
☐	☒	A description of any assumptions or corrections, such as tests of normality and adjustment for multiple comparisons
☐	☒	A full description of the statistical parameters including central tendency (e.g. means) or other basic estimates (e.g. regression coefficient) AND variation (e.g. standard deviation) or associated estimates of uncertainty (e.g. confidence intervals)
☒	☐	For null hypothesis testing, the test statistic (e.g. *F*, *t*, *r*) with confidence intervals, effect sizes, degrees of freedom and *P* value noted *Give P values as exact values whenever suitable.*
☒	☐	For Bayesian analysis, information on the choice of priors and Markov chain Monte Carlo settings
☒	☐	For hierarchical and complex designs, identification of the appropriate level for tests and full reporting of outcomes
☒	☐	Estimates of effect sizes (e.g. Cohen's *d*, Pearson's *r*), indicating how they were calculated

Our web collection on statistics for biologists contains articles on many of the points above.

Software and code

Policy information about availability of computer code

Data collection	SAS software was used to collect Taiwan's National Health Insurance Data.
Data analysis	FlowJo v10 was used to analyze flow cytometry data. Prism v8 was used to perform all statistical calculations. iDEP2.01 was used to analyze processed RNA-sequencing data. R v4.3.3 was used to preprocess RNA-sequencing data and analyze single-cell RNA sequencing data. ImageJ and CaseViewer was used to analyze histological slides. Zen (Black edition) system 2.3 was used to analyze immunofluorescent data.

For manuscripts utilizing custom algorithms or software that are central to the research but not yet described in published literature, software must be made available to editors and reviewers. We strongly encourage code deposition in a community repository (e.g. GitHub). See the Nature Portfolio guidelines for submitting code & software for further information.

Data

Policy information about availability of data

All manuscripts must include a data availability statement. This statement should provide the following information, where applicable:

- Accession codes, unique identifiers, or web links for publicly available datasets
- A description of any restrictions on data availability
- For clinical datasets or third party data, please ensure that the statement adheres to our policy

Publicly available dataset from the Gene Expression Omnibus database under accession number GSE222197, GSE151177, and GSE162183 were used. In this study, we deposited two datasets into the Gene Expression Omnibus database under accession number GSE274941 (evohcgwqhfqpjwr) and GSE274449 (cfopqwiyfhwdvot). Their access tokens are in brackets.

Research involving human participants, their data, or biological material

Policy information about studies with human participants or human data. See also policy information about sex, gender (identity/presentation), and sexual orientation and race, ethnicity and racism.

Reporting on sex and gender	Our study did not involve any reporting on sex and gender.
Reporting on race, ethnicity, or other socially relevant groupings	Our study did not involve any reporting on race, ethnicity, or other socially relevant groupings.
Population characteristics	Our study did not involve any reporting on population characteristics.
Recruitment	Our study used human data from Taiwan's National Health Insurance Depository. We used it for analysis only and at no point was any subject personally identified. We recruited 3 healthy patients to donate their healthy skin samples and 3 psoriatic patients to donate their lesioned psoriatic skin.
Ethics oversight	The collection of Taiwan's National Health Insurance Depository data was approved by Academia Sinica's Instituitional Review Board for Biomedical Science Research with IRB number (AS-IRB-BM-23014). The collection of skin samples was approved by Academia Sinica's Institutional Review Board for Biomedical Science Research with IRB number (AS-IRB-BM-20062).

Note that full information on the approval of the study protocol must also be provided in the manuscript.

Field-specific reporting

Please select the one below that is the best fit for your research. If you are not sure, read the appropriate sections before making your selection.

☒ Life sciences ☐ Behavioural & social sciences ☐ Ecological, evolutionary & environmental sciences

For a reference copy of the document with all sections, see nature.com/documents/nr-reporting-summary-flat.pdf

Life sciences study design

All studies must disclose on these points even when the disclosure is negative.

Sample size	The sample size for the respective figures is included in the figure legend.
Data exclusions	We did not exclude any data.
Replication	All experiments were repeated at least twice.
Randomization	The sex and age of mice was randomly assigned in this study.
Blinding	The investigator was not blinded in this study. However, we ensure our data is a representation of the biological conditions by ensuring our data measurements are repeatable.

Reporting for specific materials, systems and methods

We require information from authors about some types of materials, experimental systems and methods used in many studies. Here, indicate whether each material, system or method listed is relevant to your study. If you are not sure if a list item applies to your research, read the appropriate section before selecting a response.

Materials & experimental systems

n/a	Involved in the study
[ ]	[x] Antibodies
[x]	[ ] Eukaryotic cell lines
[x]	[ ] Palaeontology and archaeology
[x]	[ ] Animals and other organisms
[ ]	[x] Clinical data
[x]	[ ] Dual use research of concern
[x]	[ ] Plants

Methods

n/a	Involved in the study
[x]	[ ] ChIP-seq
[ ]	[x] Flow cytometry
[x]	[ ] MRI-based neuroimaging

Antibodies

Antibodies used

PE/Dazzle594 anti-mouse CD45 Antibody Biolegend Cat# 103146; RRID: AB_2564003
APC/Cy7 anti-mouse CD4 Antibody Biolegend Cat# 100414; RRID: AB_312699
APC anti-mouse gd TCR Antibody Biolegend Cat# 118115; RRID: AB_1731824
PE/Cy7 anti-mouse CD3 Antibody Biolegend Cat# 100220; RRID: AB_1732057
PerCP eFluor710 anti-mouse IL-22 Antibody Invitrogen Cat# 46-7222-82; RRID: AB_2573839
PE anti-mouse CD11b Antibody Biolegend Cat# 101208; RRID: AB_312791
Alexa Fluor 488 anti-mouse Gr-1 Antibody Biolegend Cat# 108417; RRID: AB_389309
FITC anti-mouse CD3 Antibody Biolegend Cat# 100306; RRID: AB_312671
PE/Cy7 anti-mouse gdTCR Antibody Invitrogen Cat# 25-5711-82; RRID: AB_2573464
eFluor 506 anti-mouse IL-17A Antibody Invitrogen Cat# 69-7177-82; RRID: AB_2637303
Alexa Fluor 647 anti-mouse Ly6G Antibody Biolegend Cat# 127610; RRID: AB_1134159
FITC anti-mouse CD45.1 Antibody Biolegend Cat# 110706; RRID: AB_313495
APC-eFluor 780 anti-mouse MHC II Antibody Invitrogen Cat# 47-5321-82; RRID: AB_1548783
eFluor 506 anti-mouse CD11c Antibody Invitrogen Cat# 69-0114-80; RRID: AB_2637426
PerCP/cy5.5 anti-mouse CD11b Antibody Invitrogen Cat# 45-0112-80; RRID: AB_953560
eFluor 450 anti-mouse CD103 Antibody Invitrogen Cat# 48-1031-80; RRID: AB_2574032
PE anti-mouse CD207 Antibody Biolegend Cat# 144204; RRID: AB_2561499
Alexa Fluor 647 anti-mouse CD317 Antibody Biolegend Cat# 127014; RRID: AB_1953289
BV421 anti-mouse Vg4 Antibody BD Cat# 742308; RRID: AB_2740689
APC anti-mouse CD11b Antibody Biolegend Cat# 101212; RRID: AB_312795
PE anti-mouse Gr1 Antibody eBioscience Cat# 12-5931-82; RRID: AB_466045
BV421 anti-mouse I-A/I-E Antibody Biolegend Cat# 107632; RRID: AB_2650896
BV650 anti-mouse XCR1 Antibody Biolegend Cat# 148220; RRID: AB_2566410
APC eFluor 780 anti-mouse CD64 Antibody Invitrogen Cat# 47-0641-80; RRID: AB_2735011
PerCP/eFluor710 anti-mouse MerTK Antibody Invitrogen Cat# 46-5751-80; RRID: AB_2688093
BV786 anti-mouse CCR2 Antibody BD Cat# 747966; RRID: AB_2872427
APC anti-mouse Ly6G Antibody Biolegend Cat# 127613; RRID: AB_1877163
Alexa Fluor 700 anti-mouse Ly6C Antibody Biolegend Cat# 128024; RRID: AB_10643270
Alexa Fluor 488 anti-mouse IL-23 Antibody Invitrogen Cat# 53-7023-82; RRID: AB_2574435
BV605 anti-mouse CD3 Antibody Biolegend Cat# 100306; RRID: AB_312671
Anti-mouse CD16/32 Antibody Biolegend Cat# 101302; RRID: AB_312801
eFluor 506 Fixable Viability Dye eBioscience Cat# 65-0866-14
Live/Dead Fixable Blue Invitrogen Cat# L23105
Anti-mouse IL-23r Antibody R and D Systems Cat# MAB1686; RRID: AB_2124650
Rat IgG2b In Vivo Isotype Control Ichor Bio Cat# ICH2243; RRID: AB_2921378
Anti-mouse phospho-NF-kB p65 (Ser536) Antibody Affinity Biosciences Cat# AF2006; RRID: AB_2834435
Anti-mouse NFkB2 p100/p52 Antibody 4882 Cell Signaling Cat# 4888; RRID: AB_915969
Anti-mouse RelB (C1E4) Rabbit mAb 4922 Cell Signaling Cat# 4888; RRID: AB_915969
beta-Actin (ACTB) Monoclonal Antibody (ACTB/2370) Thermo Scientific Cat# MA5-15739; RRID: AB_10979409
GAPDH Loading Control Monoclonal Antibody (GA1R) Invitrogen Cat# MA5-15738; RRID: AB_10977387
Purified anti-mouse CD40 Antibody Biolegend Cat# 102901 (HM40-3); RRID: AB_312944
Anti-Serotonin Antibody [YC5/45] Abcam Cat# AB6336; RRID: AB_449517
Anti-human CD1a Antibody R&D Systems Cat# MAB7076; RRID: AB_10973620
Anti-human HTR2A Antibody biorbyt Cat# Orb10009; RRID: AB_10750020
Goat anti-mouse FITC Jackson Immunoresearch Cat# 115-095-006; RRID: AB_2338590
Goat anti-rabbit RFP Jackson Immunoresearch Cat# 111-025-006; RRID: AB_2337927
Goat anti-rabbit IgG (H+L) Secondary Antibody HRP Thermo Scientific Cat# 31460; RRID: AB_228341
Goat anti-mouse IgG (H+L) Secondary Antibody HRP Thermo Scientific Cat# 31430; RRID: AB_228307

Validation

We did not develop any primary antibody.

Clinical data

Policy information about clinical studies

All manuscripts should comply with the ICMJEguidelines for publication of clinical research and a completedCONSORT checklist must be included with all submissions.

Clinical trial registration	IRB number AS-IRB-BM-20062 was used for collection of skin samples. IRB number AS-IRB-BM-23014 was used to analyze data from Taiwan's National Health Insurance Depository.
Study protocol	For AS-IRB-BM-20062, we collected 3 skin samples from healthy donors and psoriatic patients respectively. The skin sample was halved, with one half being treated with DOI and the other half serving as a control. For AS-IRB-BM-23014, we identified psoriatic patients using the codes 696.1 and 696.8 in the International Classification of Diseases 9 (ICD9). We then checked for SSRI and anti-psychotic exposure. Those with SSRI exposure were categorized under SSRI, those with anti-psychotic exposure were categorized under anti-psychotic, and those with no exposure were categorized under control. Patients with both SSRI and anti-psychotic use were excluded.
Data collection	For AS-IRB-BM-20062, we accessed data from Taiwan's National Health Insurance Depository. For AS-IRB-BM-23014, we collaborated with doctors from the Department of Dermatology, National Taiwan University Hospital and Department of Dermatology, Taipei Medical University-Shuang Ho Hospital to collect skin samples.
Outcomes	For AS-IRB-BM-20062, we looked at changes in transcriptome. Differentially expressed genes (DEGs) between healthy non-treated and lesioned non-treated are considered psoriatic genes. We then looked at DEGs of lesioned treated versus lesioned non-treated and compared it with psoriatic genes to determine if there are any overlap. The overlapped genes are psoriatic genes affected by serotonin 2A receptor. For AS-IRB-BM-23014, treatment received was divided into 4 different categories, Topical, Systemic, Combination, and Biologics with Topical being the mildest and Biologics being the most severe according to Taiwan Dermatological Association. We then tracked changes in treatment received for 6 months as a surrogate for psoriatic severity. For example, if a patient has to change from using Topical treatment to Biologics treatment, this is considered a worsening of psoriatic symptoms.

Plants

Seed stocks	N/A
Novel plant genotypes	N/A
Authentication	N/A

Flow Cytometry

Plots

Confirm that:

☒ The axis labels state the marker and fluorochrome used (e.g. CD4-FITC).

☒ The axis scales are clearly visible. Include numbers along axes only for bottom left plot of group (a 'group' is an analysis of identical markers).

☒ All plots are contour plots with outliers or pseudocolor plots.

☒ A numerical value for number of cells or percentage (with statistics) is provided.

Methodology

Sample preparation	Cells were isolated from the ears by incubating overnight at 37oC with Dispase II (Thermo Scientific). The next day, the ear is then cut by scissors into small pieces and then immersed in RPMI (Gibco) containing Collagenase IV (Gibco) and DNase I (Bio Basic) for 90 minutes. The sample is then filtered using a 70um cell strainer. The isolated single cells were then stained directly with fluorescent antibodies or treated with PMA (Merck), Ionomycin (BioGems), and GolgiStop (BD) if intracellular cytokine staining was required.
Instrument	BD® LSR II Flow Cytometer
Software	FlowJo v10
Cell population abundance	For Vg4 T cells, there are at least 100 cells per sample for all figures. For neutrophils, there are at least 1000 cells per sample for all figures. For IL23+ cells in Figure 5C, there are at least 100 cells per cell type. For Figure 5I, there are around 100 IL23+

moLCs in the control group and around 30 IL23+ moLCs in the DOI-treated group.

Gating strategy

Our gating strategy for IL17+ IL22+ Vg4 T cells and neutrophils are as Supplementary Figure S2. Our gating strategy for sorted moLCs are as Supplementary Figure S6. Our gating strategy for Figure 5C are as supplementary Figure S7.

☒ Tick this box to confirm that a figure exemplifying the gating strategy is provided in the Supplementary Information.