

Table S2. Human and mouse scRNA-Seq GEO¹ and CZCELLxGENE² datasets obtained by analysing lung or bronchoalveolar cells from ARDS and COVID-19/SAR-Cov-2 patients or bleomycin-mediated ALI mouse models (up to 14 days post-bleomycin).

HUMAN		
GEO Accession³ or CZCELLxGEN web site⁴	Samples (Date on public)	Reference and PMID or title and filiation if not published
GSE263469	Sorted whole living cells in the bronchoalveolar lavage fluid (BALF) from severe and critical Omicron COVID-19 patients (Aug 26, 2024).	Wang M, Zhang D, Lei T, Zhou Y <i>et al.</i> Interferon-responsive neutrophils and macrophages extricate SARS-CoV-2 Omicron critical patients from the nasty fate of sepsis. <i>J Med Virol</i> 2024; 96:e29889. PMID: 39206862
GSE246128	Donor lungs from donation after brain death and unsuitable for transplantation. After transportation at 4°C, lungs were processed to ex vivo lung perfusion (EVLP), with or without virus nebulization. Lung biopsies were taken just before EVLP (0 h) or after 10 h EVLP (Jul 04, 2024).	Vu Manh TP, Gouin C, De Wolf J, Jouneau L <i>et al.</i> SARS-CoV2 infection in whole lung primarily targets macrophages that display subset-specific responses. <i>Cell Mol Life Sci</i> 2024;81:351. PMID: 39147987
GSE223793	Lung biopsy and peripheral blood samples were collected from a 10-year paediatric patient who survived ARDS (Jun 22, 2024).	Song L, Li K, Hong X, Xiao K <i>et al.</i> Transcriptomic evidence of lung repair in paediatric ARDS survival. <i>Clin Transl Med</i> 2023;13:e1366. PMID: 37592372
GSE228236	Comparison of bronchoalveolar cells from individuals with either inflammatory or fibrotic post-COVID lung disease (Jun 05, 2024).	Mehta P, Sanz-Magallón Duque de Estrada B, Denny EK, Foster K <i>et al.</i> Single-cell analysis of bronchoalveolar cells in inflammatory and fibrotic post-COVID lung disease. <i>Front Immunol</i> 2024;15:1372658. PMID: 38827740
GSE237109 GSE236030	Cells from whole-blood and tracheal aspirate of severely ill COVID-19 patients that were or were not treated with dexamethasone (May 05, 2024).	Neyton LPA, Patel RK, Sarma A, UCSF COMET Consortium <i>et al.</i> Distinct pulmonary and systemic effects of dexamethasone in severe COVID-19. <i>Nat Commun</i> 2024; 15:5483. PMID: 38942804
GSE216704	BAL samples of COVID-19, non-COVID-19 pulmonary infection, interstitial lung disease (ILD) and control non-infected individuals undergoing diagnostic bronchoscopy (Nov 03, 2022).	Bosteels C, Van Damme KFA, De Leeuw E, Declercq J <i>et al.</i> Loss of GM-CSF-dependent instruction of alveolar macrophages in COVID-19 provides a rationale for inhaled GM-CSF treatment. <i>Cell Rep Med</i> 2022; 3:100833. PMID: 36459994
GSE163426	Cells from tracheal aspirates in COVID-ARDS compared to Other-ARDS and controls (Dec 18, 2020).	Sarma A, Christenson SA, Byrne A, Mick E <i>et al.</i> Tracheal aspirate RNA sequencing identifies distinct immunological features of COVID-19 ARDS. <i>Nat Commun</i> 2021; 12:5152. PMID: 34446707
https://cellxgene.cziscience.com/collections/2a9a17c9-1f61-4877-b384-b8cd5ffa4085	Healthy human lung slices cultured ex vivo productively infected with SARS-CoV-2 distinguishing the cellular identities of human lung	Wu TT, Travaglini KJ, Rustagi A <i>et al.</i> Interstitial macrophages are a focus of viral takeover and inflammation in COVID-19 initiation in human lung. <i>J Exp Med.</i> 2024 221:e20232192. PMID: 38597954

	cells distributed across the major tissue compartments and define viral effects on host cell gene expression (Apr 10, 2024).	
https://cellxgene.cziscience.com/collections/2a9a17c9-1f61-4877-b384-b8cd5ffa4085	The integrated Human Lung Cell Atlas (HLCA). It includes 49 different datasets from normal donors and 35 further datasets from donors with various lung diseases, including COVID-19 (Jun 8, 2023).	Sikkema, L., Ramírez-Suástegui, C., Strobl, D.C. <i>et al.</i> An integrated cell atlas of the lung in health and disease. <i>Nat Med</i> 2023; 29:1563–1577. PMID: 37291214
https://cellxgene.cziscience.com/collections/03f821b4-87be-4ff4-b65a-b5fc00061da7 (GSE168215)	Matched nasal, tracheal, bronchial and blood samples from paediatric and adult patients with COVID-19 as well as healthy control individuals (total n = 93) (Dec 14, 2021).	Yoshida M, Worlock KB, Huang N, <i>et al.</i> Local and systemic responses to SARS-CoV-2 infection in children and adults. <i>Nature</i> . 2022; 602:321-327. PMID: 34937051
https://cellxgene.cziscience.com/collections/35d0b748-3eed-43a5-a1c4-1dade5ec5ca0	Masopharyngeal swabs from 58 healthy and COVID-19 participants (July 23, 2021).	Ziegler CGK, Miao VN, Owings AH <i>et al.</i> Impaired local intrinsic immunity to SARS-CoV-2 infection in severe COVID-19. <i>Cell</i> . 2021;184:4713-4733.e22. PMID: 34352228
https://cellxgene.cziscience.com/collections/e4c9ed14-e560-4900-a3bf-b0f8d2ce6a10 (GSE171524)	COVID-19 autopsy lungs and seven pre-pandemic controls (Apr 29, 2021)	Melms, J.C., Biermann, J., Huang, H. <i>et al.</i> A molecular single-cell lung atlas of lethal COVID-19. <i>Nature</i> 2021; 595:114–119. PMID: 33915568.
https://cellxgene.cziscience.com/collections/29f92179-ca10-4309-a32b-d383d80347c1	Endotracheal (airway) tube and blood samples from patients with severe COVID-19 relative to healthy controls (Mar 11, 2021)	Szabo PA, Dogra P, Gray JI <i>et al.</i> Longitudinal profiling of respiratory and systemic immune responses reveals myeloid cell-driven lung inflammation in severe COVID-19. <i>Immunity</i> . 2021; 54:797-814.e6. PMID: 33765436
https://cellxgene.cziscience.com/collections/0a839c4b-10d0-4d64-9272-684c49a2c8ba (GSE158055)	Sputum samples were collected from COVID-19 patients and controls using an oropharyngeal swab or hypertonic saline induction (Feb 3, 2021).	Ren X, Wen W, Fan X <i>et al.</i> COVID-19 immune features revealed by a large-scale single-cell transcriptome atlas. <i>Cell</i> 2021; 184:1895-1913.e19. PMID: 33657410
MOUSE		
GEO Accession⁵	Samples (Date on public)	Reference and PMID or title and affiliation if not published
GSE253453	Acta2 ⁺ cells from lungs of <i>Tg(Acta2-CreERT2), tdTomato^{fl}</i> mice following bleomycin treatment at the peak of fibrosis formation (day 14) as well as during resolution (day 60) (Feb 12, 2025).	Lingampally <i>et al.</i> Unraveling Alveolar Fibroblast and Activated Myofibroblast Heterogeneity and Differentiation Trajectories During Lung Fibrosis Development and Resolution in Young and Old Mice. <i>Aging Cell</i> 2025; 13:e14503. PMID: 39945330
GSE221402		Lingampally <i>et al.</i> Evidence for a lipofibroblast-to-Cthrc1 (+) myofibroblast reversible switch during ... lung fibrosis in young mice. <i>Eur Respir J</i> 2025; 65: 2300482. PMID: 39401861

GSE250398	Cells from mouse lungs at post-injury day 14 and post-injury day 35 (Jan 07, 2025)	Guo <i>et al.</i> Histological signatures map anti-fibrotic factors in mouse and human lungs. <i>Nature</i> 2025 Mar 19. PMID: 40108456
GSE270725	Mucosal-associated invariant T (MAIT) cells from lung of C57BL/6 mouse challenged on day 0 with PBS or day 3, day 7, day 14, day 21 and day 28 with bleomycin (Feb 04, 2025).	Zhang <i>et al.</i> MAIT cells protect against sterile lung injury. <i>Cell Rep</i> 2025; 44:115275. PMID: 39918959.
GSE278419	Sorted adult lung mesenchymal cells (Epcam-CD31 ⁻ CD45 ⁻) of saline control and bleomycin treated mice, harvested at day 14 post bleomycin administration (Nov 25, 2024).	RUNX2 promotes pulmonary fibrosis through the conversion of alveolar fibroblasts into pathological fibroblasts (Xu <i>et al.</i> University of California, San Diego, CA, USA)
GSE229523	Isolated Td-tomato ⁺ cells from <i>Lepr-Cre;Rosa26-tdTomato</i> mice treated with bleomycin or saline (Nov 25, 2024).	Fang Y, Chung SSW, Xu L, Xue C <i>et al.</i> RUNX2 promotes fibrosis via an alveolar-to-pathological fibroblast transition. <i>Nature</i> 2025; 640:221-230. PMID: 39910313
GSE267863	CD45 ⁺ cells sorted from naïve or bleomycin-injured lungs (day 15) of mice (Aug 19, 2024).	Okamoto <i>et al.</i> Tff1-expressing Tregs in lung prevent exacerbation of Bleomycin-induced pulmonary fibrosis. <i>Front Immunol</i> 2024;15:1440918. PMID: 39286257.
GSE261793	Mouse lung epithelial cell suspensions of uninjured or bleomycin injured <i>Sftpc-Cre;Il11ra1^{fl/fl}</i> or <i>Il11ra1^{+/-}</i> mice enriched by FACS sorting for live CD45 ⁻ CD31 ⁻ EpCAM ⁺ cells (Aug 12, 2024).	Ng <i>et al.</i> Interleukin-11 causes alveolar type 2 cell dysfunction and prevents alveolar regeneration. <i>Nat Commun</i> 2024; 15:8530. PMID: 39358385
GSE205815	After 1 week of bleomycin insitllation into <i>Pclaf</i> WT and <i>Pclaf</i> KO mice, lung epithelial cells (Cd31 ⁻ /Cd45 ⁻ /Epcam ⁺) isolated by FACS (May 31, 2024).	Kim <i>et al.</i> PCLAF-DREAM drives alveolar cell plasticity for lung regeneration. <i>Nat Commun</i> 2024; 15:9169. PMID: 39448571
GSE210341	Mesenchymal cells (CD31 ⁻ , CD45 ⁻ , EpCAM ⁺ , Ter119 ⁻) from the lungs of <i>Scube2-CreER/Rosa26-tdTomato</i> mice on day 0 , 7, 14, 21 after bleomycin treatment (Apr 18, 2024).	Tsukui T, Wolters PJ, Sheppard D. Alveolar fibroblast lineage orchestrates lung inflammation and fibrosis. <i>Nature</i> 2024; 631:627-634. PMID: 38987592
GSE183423	GFP ⁺ lung cells from <i>Pdgfra-GFP</i> reporter mice at day 14 post-exposure to bleomycin or PBS. (Oct 19, 2023).	Trempeus <i>et al.</i> Functional Pdgfra fibroblast heterogeneity in normal and fibrotic mouse lung. <i>JCI Insight</i> 2023; 8:e164380. PMID: 37824216.
GSE240134	Lung cells obtained from the control and fibrotic lungs in a mouse model on day 0 ,14 and 28 after bleomycin treatment (Aug 05, 2023).	Single-cell RNA sequencing reveals profibrotic roles of three kinds of cells in pulmonary fibrosis (Zhao <i>et al.</i> ; Affiliated Hospital of Shandong University of Traditional Chinese Medicine, Jinan, Sandong, China).

GSE235135	Primary lung cells isolated from <i>RCS-21</i> and control-treated mice 14 days after bleomycin (Jul 12, 2023).	Beck <i>et al.</i> Trimannose-coupled antimiR-21 for macrophage-targeted inhalation treatment of acute inflammatory lung damage. <i>Nat Commun</i> 2023;14:4564. PMID: 37507393
GSE225187	tdT ⁺ and tdT ⁻ lung epithelial cell of the p63 ⁻ <i>CreER</i> ; <i>R26-tdT</i> mice isolated by FACS (Feb 20, 2023)	Airway-derived p63 ⁺ facultative progenitors contribute to alveolar regeneration after lung injury (Lv <i>et al.</i> Center for Excellence in Molecular Cell Science; Shanghai, China).
GSE183545	Pulmonary mesenchymal cells (MSC, CD31 ⁻ CD45 ⁻ CD326 ⁻) were sorted by flow cytometry from fresh lung tissues on the 21st day after bleo induction (Oct 20, 2021)	Geng Y, Li L, Yan J, Liu K <i>et al.</i> PEAR1 regulates expansion of activated fibroblasts and deposition of extracellular matrix in pulmonary fibrosis. <i>Nat Commun</i> 2022;13:7114. PMID: 36402779.
GSE132771	GFP ⁺ cells and GFP ⁻ cells obtained from lungs of <i>Col1a1-GFP</i> reported mice on day 14 after treatment with bleomycin. Untreated mice were used as control (Jan 30, 2020).	Tsukui T, Sun KH, Wetter JB, Wilson-Kanamori JR <i>et al.</i> Collagen-producing lung cell atlas identifies multiple subsets with distinct localization and relevance to fibrosis. <i>Nat Commun</i> 2020;11:1920. PMID: 32317643
GSE141259 (https://github.com/theislab/LungInjuryRegeneration ; https://github.com/theislab/2019_Strunz)	Cells from mouse lungs upon bleomycin-induced injury and followed over time. Samples were taken at days 3, 7, 10, 14, 21 and 28. Control samples were administered saline at day 0 (Dec 02, 2019).	Strunz M, Simon LM, Ansari M, Kathiriya JJ <i>et al.</i> Alveolar regeneration through a Krt8 ⁺ transitional stem cell state that persists in human lung fibrosis. <i>Nat Commun</i> 2020;11:3559. PMID: 32678092
GSE132042 ⁶ (https://tabula-muris.sf.czbiohub.org/)	scRNA-seq across 20 tissues of normal mice, including lung (Oct 3, 2018)	<i>Tabula Muris Consortium</i> , Overall coordination, Logistical coordination, Organ collection and processing <i>et al.</i> Single-cell transcriptomics of 20 mouse organs creates a Tabula Muris. <i>Nature</i> 2018 Oct;562(7727):367-372. PMID: 30283141

¹GEO web page www.ncbi.nlm.nih.gov/geo

²CZCELLXGENE web page: <https://cellxgene.cziscience.com/datasets>

³Search term combinations for human datasets: “ARDS” “COVID-19” “SARS-CoV-2” “human” “lung” “scRNASeq”.

⁴Search filters: disease “COVID-19”; Tissue “respiratory system”.

⁵Search term combinations for mouse datasets: “bleomycin” “mouse” “lung” “acute” “injury” “scRNASeq”.

⁶It does not include bleomycin-challenged mice, only normal.