

Table S1 Main laser capture microdissection progress in lung setting

Year of publication	Authors	Title of papers	Summary
2004	Tangrea MA, Chuaqui RF, Gillespie JW, <i>et al.</i> (23)	Expression microdissection: operator-independent retrieval of cells for molecular profiling	Lung cancer immunoguided LCM with EVA membrane performed on FFPE cytomegalovirus (CMV) IHC positive cells from human lung tissue
2012	Chowdhuri SR, Xi L, Pham TH, <i>et al.</i> (8)	EGFR and KRAS mutation analysis in cytologic samples of lung adenocarcinoma enabled by laser capture microdissection	LCM enhanced sensitivity in EGFR and KRAS molecular evaluation in 19 cell block lung adenocarcinoma specimens
	Selamat SA, Chung BS, Girard L, <i>et al.</i> (20)	Genome-scale analysis of DNA methylation in lung adenocarcinoma and integration with mRNA expression	Genome-scale DNA methylation profiling on 59 matched lung adenocarcinoma/non-tumor lung pairs
	Roy Chowdhuri S, Hanson J, Cheng J, <i>et al.</i> (16)	Semiautomated laser capture microdissection of lung adenocarcinoma cytology samples	Semiautomated computer-guided LCM of a pleural effusion cell block specimen using spatially invariant vector quantization (SIVQ) and AutoScan
	Malapelle U, de Rosa N, Rocco D, <i>et al.</i> (12)	EGFR and KRAS mutations detection on lung cancer liquid-based cytology: a pilot study	NGS testing of EGFR and KRAS after LCM of 41 liquid-based cytology specimens
2013	Didelot A, Kotsopoulos SK, Lupo A, <i>et al.</i> (5)	Multiplex picoliter-droplet digital PCR for quantitative assessment of DNA integrity in clinical samples	Digital PCR for detection of DNA integrity and quantity from 12 FFPE laser dissected lung adenocarcinoma tissues
2015	Großerueschkamp F, Kallenbach-Thieltges A, Behrens T, <i>et al.</i> (28)	Marker-free automated histopathological annotation of lung tumour subtypes by FTIR imaging	Fully automated LCM coupled with label-free Fourier transform infrared (FTIR) imaging technique to distinguish lung tissue types and tumour subtypes through proteome analysis
2017	Grafen M, Hofmann TR, Scheel AH, <i>et al.</i> (19)	Optimized expression-based microdissection of formalin-fixed lung cancer tissue	Lung cancer immunoguided LCM with EVA membrane and Vektor Black as chromogen
2018	Pierobon M, Baldelli E, Hodge KA, <i>et al.</i> (37)	Development of a quantitative PD-L1 assay using laser capture microdissection (LCM)-based reverse phase protein microarray (RPPA) workflow: Implications for precision medicine	Combined LCM and Reverse Phase Protein Microarrays (RPPA) for an IHC-independent PDL-1 assessment
	Dong X, Shi M, Lee M, <i>et al.</i> (15)	Global, integrated analysis of methylomes and transcriptomes from laser capture microdissected bronchial and alveolar cells in human lung	Genome-wide bisulfite sequencing and RNA-seq of bronchial and alveolar cells isolated by LCM from 12 flash-frozen lung tissue samples
2019	Vu QD, Graham S, Kurc T, <i>et al.</i> (38)	Methods for Segmentation and Classification of Digital Microscopy Tissue Images.	Application of two computer algorithms for segmentation of nuclei and classification of whole slide NSCLC tissue images
	Mueller C, Davis JB, Liotta LA (40)	Combining the “Sibling Technologies” of Laser Capture Microdissection and Reverse Phase Protein Microarrays	Potential and pitfalls of LCM and Reverse phase protein microarrays (RPPA) combination
2020	Herrera JA, Mallikarjun V, Rosini S, <i>et al.</i> (29)	Laser capture microdissection coupled mass spectrometry (LCM-MS) for spatially resolved analysis of formalin-fixed and stained human lung tissues	LCM coupled to mass spectrometry (LCM-MS) to assess 1252 uniquely expressed proteins in three Idiopathic Pulmonary Fibrosis (IPF) specimens
	Wang S, Rong R, Yang DM, <i>et al.</i> [39]	Computational Staining of Pathology Images to Study the Tumor Microenvironment in Lung Cancer	Deep learning-based computation model to assess spatial organization of tumour microenvironment on H&E-stained tissue images in lung adenocarcinoma

Table S1 (continued)

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Year of publication	Authors	Title of papers	Summary
2021	Selbach L, Kowalski T, Gerwert K, <i>et al.</i> (13)	Shape decomposition algorithms for laser capture microdissection	Skeleton-based decomposition method for simple polygons as a novel approach to decompose disease-specific regions in NSCLC samples to optimize the amount of tissue obtained by LCM
	Mickler EA, Zhou H, Phang TL, <i>et al.</i> (32)	Low-Coverage Whole Genome Sequencing Using Laser Capture Microscopy with Combined Digital Droplet PCR: An Effective Tool to Study Copy Number and Kras Mutations in Early Lung Adenocarcinoma	Combination of LCM with digital droplet PCR (ddPCR) and low-coverage whole genome DNA sequencing (LC-WGS)

LCM: laser capture microdissection; EVA: ethylene-vinyl-acetate; FFPE: formalin fixed paraffin embedded; IHC: immunohistochemistry; EGFR: epidermal growth factor receptor; KRAS: Kirsten rat sarcoma viral oncogene homolog; NGS: next generation sequencing; NSCLC: non-small-cell lung cancer; H&E: hematoxylin and eosin.

Table S2 The detailed Medline search strategy

Step	Medline search strategy
#1	“lung cancer” AND “laser” [Title/Abstract]
#2	“laser capture microdissection” [Title/Abstract]
#3	“lung” AND “laser capture microdissection” [Title/Abstract]
#4	Inclusion criteria application (see Methods and <i>Table 1</i>)
#5	Exclusion criteria application (see Methods and <i>Table 1</i>)
#6	Secondary manual search from references of the primary search included papers by the application of the same #4 and #5 criteria
#7	Reviewers D.S. and F.P. consensus in case of doubts or disagreements