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Dermatology

Review	
Title	Ex vivo confocal microscopy: revolution in fast pathology in dermatology
Results	Revolution in fast pathology dermatology
Study Design	A comprehensive review of 79 publications
Clinical partner (principal investigator)	Dept. of Dermatology, Hospital Clinic of Barcelona, IDIBAPS, University of Barcelona, Barcelona, Spain (Dr. S. Puig & Dr. J. Malvehy)

CLICK HERE
PMID: 32134506
(2020)

Book	
Title	Cutaneous Atlas of Ex Vivo Confocal Microscopy
Results	Ex Vivo confocal microscopy with VS2500
Study Design	A comprehensive resource to the applications of VS2500 in skin
Clinical partner (principal investigator)	Dept. of Dermatology, Hospital Clinic of Barcelona, IDIBAPS, University of Barcelona, Barcelona, Spain (Dr. J. Malvehy & Dr. J. Perez-Anker)

CLICK HERE
ISBN: 9783030893163,
3030893162
(2022)

BCC margin control	
Title	Routine application of ex vivo confocal laser scanning microscopy with digital staining for examination of surgical margins in basal cell carcinomas
Results	96.5% specificity and 73.6% sensitivity
Study Design	101 BCCs / 78 patients
Clinical partner (principal investigator)	Dept. of Dermatology, Venereology and Allergology, University Hospital Leipzig AoeR, Leipzig, Germany (Dr. S. Grunewald)

CLICK HERE
PMID: 33768732
(2021)

BCC subtypes	
Title	Basal cell carcinoma characterization using fusion ex vivo confocal microscopy: a promising change in conventional skin histopathology
Results	99% specificity and 88% sensitivity
Study Design	78 BCCs / 78 patients
Clinical partner (principal investigator)	Dept. of Dermatology, Hospital Clinic of Barcelona, IDIBAPS, University of Barcelona, Barcelona, Spain (Dr. J. Malvehy & Dr. J. Perez-Anker)

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PMID: 31220341
(2020)

BCC, SCC, Rare skin disease	
Title	Ex Vivo Confocal Laser Scanning Microscopy in Rare Skin Diseases
Results	Diagnosis of rare skin disease
Study Design	10 normal, 10 BCC, 10 SCC and 10 rare skin diseases
Clinical partner (principal investigator)	Dept. of Dermatology and Allergy, University Hospital, LMU Munich, Munich, Germany (Dr. Hartmann)

CLICK HERE
PMID: 38730676
(2024)

BCC margin control	
Title	Diagnosis of Basal Cell Carcinoma with Ex-vivo Confocal Laser Scanning Microscopy in a Real-life Setting
Results	94.8% specificity and 71.1% sensitivity
Study Design	53 patients
Clinical partner (principal investigator)	Dept. of Dermatology, University Hospital Tübingen, Germany (S. Forchhammer & H. Ogrzewalla)

CLICK HERE
PMID: 36994776
(2023)

BCC margin control	
Title	The introduction of bedside ex vivo confocal microscopy during Mohs surgery of basal cell carcinoma: Patient and specialist benefit in an optimized healthcare environment
Results	Expansion of Mohs surgeries (FTE) increased 155%, Capacity Cost Rate (CCR) decreased 57%, Avrage patients waiting time decreased 81%
Study Design	cost benefit study from 2016 to 2022, 385 high-risk BCC
Clinical partner (principal investigator)	Dept. of Dermatology, Universitair Ziekenhuis Brussel (UZB), Vrije Universiteit Brussel (VUB), SKIN Research Group, Brussels, Belgium

CLICK HERE
PMID: 38140742
(2024)

Oral leukoplakia	
Title	Feasibility and Implementation of Ex Vivo Fluorescence Confocal Microscopy for Diagnosis of Oral Leukoplakia: Preliminary Study
Results	92.3% specificity and 96.3% sensitivity
Study Design	27 oral lesions, 22 patients
Clinical partner (principal investigator)	Dept. of Oral and Maxillofacial Surgery, University Hospital Heidelberg, Heidelberg, Germany (Dr. V. Shavlokhova)

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PMID: 34073373
(2021)

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Dermatology

Oral squamous cell carcinomas (OSCCs)	
Title	Detection of oral squamous cell carcinoma with ex vivo fluorescence confocal microscopy: Sensitivity and specificity compared to histopathology
Results	95% specificity and 99% sensitivity
Study Design	70 oral lesions, 70 patients
Clinical partner (principal investigator)	Dept. of Oral and Maxillofacial Surgery, University Hospital Heidelberg, Heidelberg, Germany (Dr. V. Shavlokhova)

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PMID: 32418329
(2020)

Oral squamous cell carcinomas (OSCCs)	
Title	Features of oral squamous cell carcinoma in ex vivo fluorescence confocal microscopy
Results	High potential in rapid diagnosis and evaluation of the fresh excised OSCCs
Study Design	38 OSCCs, 35 patients
Clinical partner (principal investigator)	Dept. of Oral and Maxillofacial Surgery, University Hospital Heidelberg, Heidelberg, Germany (Dr. V. Shavlokhova)

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PMID: 33368199
(2021)

Inflammatory skin disease	
Title	Ex vivo confocal laser scanning microscopy with digital staining is able to map characteristic histopathological features and tissue reaction patterns of inflammatory skin diseases
Results	Inflammatory patterns were very well distinguished e.g. infiltrated lymphocytes and neutrophils
Study Design	6-mm punch biopsies, 33 patients
Clinical partner (principal investigator)	Dept. of Dermatology, Venerology and Allergology, University of Leipzig, Leipzig, Germany (Dr. S. Grunewald & J. Mentzel)

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PMID: 33085808
(2020)

Toxic epidermal necrolysis (TEN)	
Title	Fast, bedside diagnosis of toxic epidermal necrolysis using ex vivo confocal laser scanning microscopy: A retrospective study
Results	100% specificity and 87.5% sensitivity
Study Design	21 frozen skins of TEN, SSS and severe maculo-papular drug eruptions
Clinical partner (principal investigator)	Dept. of Dermatology and Venereology, Lausanne University Hospital and University of Lausanne, Lausanne, Switzerland (L Tonellotto & F Kuonen)

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PMID: 37593888
(2024)

Actinic keratoses	
Title	Intraoperative PRO Score Assessment of Actinic Keratosis with FCF Fast Green-Enhanced Ex Vivo Confocal Microscopy
Results	95.8% conformity with histopathologic examination using Fast Green FCF staining method
Study Design	48 confirmed actinic keratoses and 32 healthy control
Clinical partner (principal investigator)	Dept. of Dermatology and Allergy, University Hospital, LMU Munich, Munich, Germany (Dr. Hartmann)

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Appl. Sci.
(2024)

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for prostate margin
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Urology > Prostate

Margin control	
Title	Evaluation of margins during radical prostatectomy: confocal microscopy vs frozen section analysis
Results	91.8% specificity and 70.5% sensitivity
Study Design	54 margins in 45 patients
Clinical partner (principal investigator)	Dept. of Urology, European Institute of Oncology (IEO), IRCCS, Milan, Italy (G. Musi & S. Luzzago)

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PMID: 38890817
(2024)

Margin control	
Title	Real-time assessment of surgical margins during radical prostatectomy: a novel approach that uses fluorescence confocal microscopy for the evaluation of peri-prostatic soft tissue
Results	Cohen's K agreement was 94% for fatty tissue and 97.14% for mascular/vascular tissues
Study Design	41 prostate margins, 20 patients
Clinical partner (principal investigator)	Dept. of Urology, University of Modena and Reggio Emilia, Modena, Italy (Prof. R. Montironi & G. Pellacani)

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PMID: 31971342
(2020)

Margin control	
Title	Digital frozen section of the prostate surface during radical prostatectomy: a novel approach to evaluate surgical margins
Results	A novel approach to evaluate prostate margins
Study Design	8 prostate margins
Clinical partner (principal investigator)	Dept. of Urology, University of Modena and Reggio Emilia, Modena, Italy (Prof. R. Montironi & G. Pellacani)

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PPMID: 32401370
(2020)

Margin control method	
Title	Digital Frozen Sections with Fluorescence Confocal Microscopy During Robot-assisted Radical Prostatectomy: Surgical Technique
Results	All patients had negative margins at final histopathology report
Study Design	21 patients, Moh's Technique for shaving
Clinical partner (principal investigator)	Dept. of Urology, University of Modena and Reggio Emilia, Modena, Italy (Prof. R. Montironi & G. Pellacani)

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PMID: 33965288
(2021)

VIVASCOPE

Biopsy	
Title	Validation of real-time prostatic biopsies evaluation with fluorescence laser confocal microscopy
Results	Cohen's K agreement for tumor grades I, IV and V was 85%
Study Design	69 Biopsies, 3 Prostectomy, 23 Patients
Clinical partner (principal investigator)	Section of Pathology, Department of Diagnostic and Public Health, University of Verona, Verona, Italy (S. Gobbo & A. Antonelli)

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PMID: 37486217
(2023)

Biopsy	
Title	Feasibility study for ex vivo fluorescence confocal microscopy (FCM) on diagnostic prostate biopsies
Results	100% specificity and 79% sensitivity
Study Design	121 MRI-fused prostate biopsies, 10 patients
Clinical partner (principal investigator)	Dept. of Pathology, Klinikum Lippe GmbH, Detmold, Germany (Ulf Titze & Prof. K. Sievert)

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PMID: 33816171
(2021)

Biopsy	
Title	Ex Vivo Fluorescence Confocal Microscopy (FCM) of Prostate Biopsies Rethought: Opportunities of Intraoperative Examinations of MRI-Guided Targeted Biopsies in Routine Diagnostics
Results	95% specificity and 93% sensitivity
Study Design	532 MRI-guided prostate biopsies, 34 patients
Clinical partner (principal investigator)	Dept. of Urology, University Hospital OWL, Campus Lippe, Detmold, Germany (Ulf Titze & K. Sievert)

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PMID: 35626301
(2022)

Biopsy	
Title	Ex vivo fluorescence confocal microscopy: the first application for real-time pathological examination of prostatic tissue
Results	93.5% specificity and 83.3% sensitivity
Study Design	89 punch biopsies of 18-G thikness, 13 patients
Clinical partner (principal investigator)	Dept. of Urology, University of Modena and Reggio Emilia, Modena, Italy (S. Puliatti & G. Pellacani)

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PMID: 30908852
(2019)

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Urology > Prostate

Biopsy	
Title	Ex vivo fluorescence confocal microscopy: prostatic and periprostatic tissues atlas and evaluation of the learning curve
Results	97.5% specificity and 88% sensitivity
Study Design	80 biopsies of 18-G thikness
Clinical partner (principal investigator)	Dept. of Surgical, Medical, Dental and Morphological Sciences, University of Modena and Reggio Emilia, Modena, Italy (R. Montironi & L Bertoni)

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PMID: 31907606
(2020)

Biopsy	
Title	Evaluation of Fluorescent Confocal Microscopy for Intraoperative Analysis of Prostate Biopsy Cores
Results	81% Cohen's K agreement
Study Design	182 MRI-guided core biopsies, 57 patients
Clinical partner (principal investigator)	Dept. of Urology, Fundacion Instituto Valenciano de Oncologia, Valencia, Spain (Dr. A. Calatrava & Dr. Jose Rubio)

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PMID: 32912840
(2021)

Biopsy	
Title	Digital Biopsy with Fluorescence Confocal Microscope for Effective Real-time Diagnosis of Prostate Cancer: A Prospective, Comparative Study
Results	97.2% specificity and 86.3% sensitivity
Study Design	427 core biopsies, 54 patients
Clinical partner (principal investigator)	Dept. of Urology, University of Modena and Reggio Emilia, Modena, Italy (R. Montironi & B. Rocco)

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PMID: 32952095
(2021)

Cryotherapy	
Title	Intraoperative Digital Analysis of Ablation Margins (DAAM) by Fluorescent Confocal Microscopy to Improve Partial Prostate Gland Cryoablation Outcomes
Results	reduces the risk of missing areas with prostate cancer during partial gland cryoablation
Study Design	MRI-fused core biopsies, 10 patients
Clinical partner (principal investigator)	Dept. of Urology and Renal Transplantation, University of Foggia, Foggia, Italy (O Selvaggio & G. Carrieri)

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PMID: 34503192
(2021)

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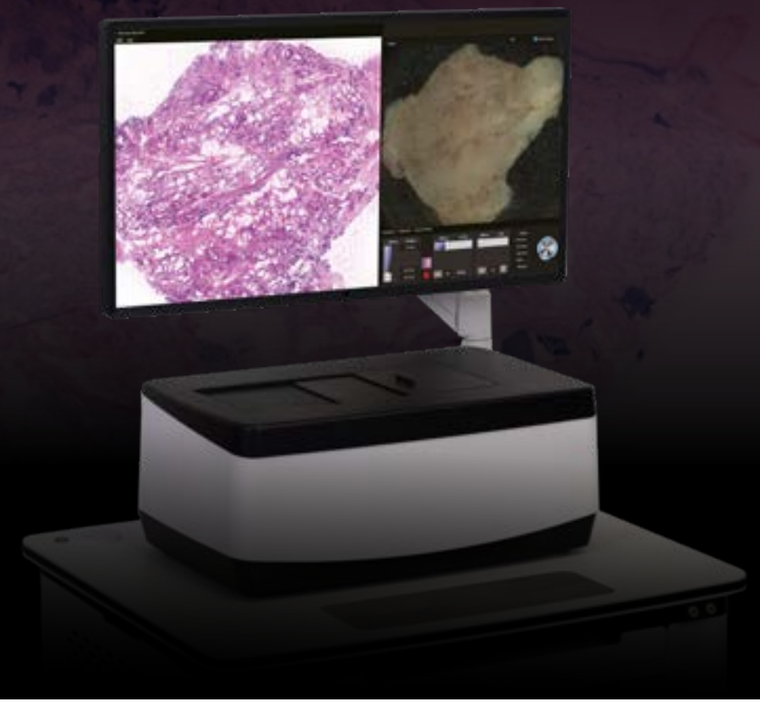

Urology > Kidney & Bladder

Transplantation/Biopsy	
Title	Ex vivo confocal microscopy performs real-time assessment of renal biopsy in non-neoplastic diseases
Results	K agreement was strong (1 to 0.97) for most tissue compartments
Study Design	24 renal autopsies were sampled with spring-loaded biopsy device
Clinical partner (principal investigator)	Nephrology and Renal Transplantation Dept., Hospital Clinic of Barcelona, University of Barcelona, Barcelona, Spain (J. Malvehy & A Garcia-Herrera)

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PMID: 32876939
(2021)

Biopsy	
Title	Ex-vivo confocal fluorescence microscopy for rapid evaluation of renal core biopsy
Results	Detection of tumor and normal tissue in 100% of cases
Study Design	8 ultrasound-guided core biopsies, 4 patients
Clinical partner (principal investigator)	Dept. of Urology, Fundacion Instituto Valenciano Oncologia, Valencia, Spain (M. Carmen Mir & J. Rubio)

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PMID: O31833726
(2019)

Biopsy	
Title	Ex vivo confocal microscopy detects basic patterns of acute and chronic lesions using fresh kidney samples
Results	K agreement was 88% for sclerosis, extracapillary proliferation and tubular damage
Study Design	Renal biopsies from 48 patient
Clinical partner (principal investigator)	Nephrology and Renal Transplantation Dept., Hospital Clinic of Barcelona, University of Barcelona, Barcelona, Spain (J. Malvehy & A Garcia-Herrera)

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PMID: 37260998
(2020)

Resection biopsies	
Title	Confocal Fluorescence Microscopy Platform Suitable for Rapid Evaluation of Small Fragments of Tissue in Surgical Pathology Practice
Results	97.3% specificity and 95,5% sensitivity
Study Design	39 small Kidney specimens
Clinical partner (principal investigator)	Division of Pathology and Laboratory Medicine, The University of Texas MD Anderson Cancer Center, Houston, USA (S. Krishnamurthy & S. Gupta)

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PMID: 30376375
(2018)

Tissue scraps biopsies	
Title	Feasibility of using digital confocal microscopy for cytopathological examination in clinical practice
Results	Clear diagnosis corresponding to standard histopathological images
Study Design	14 Kidney biopsies (1 benigne oncocytoma and 13 renal cell carcinoma)
Clinical partner (principal investigator)	Division of Pathology and Laboratory Medicine, The University of Texas MD Anderson Cancer Center, Houston, USA (S. Krishnamurthy)

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PMID: 34628480
(2022)

Core needle biopsies	
Title	Comparison of Real-Time Fluorescence Confocal Digital Microscopy With Hematoxylin-Eosin-Stained Sections of Core-Needle Biopsy Specimens
Results	97.3% specificity and 91.6% sensitivity
Study Design	8 core needle biopsies, 8 patients
Clinical partner (principal investigator)	Division of Pathology and Laboratory Medicine, The University of Texas MD Anderson Cancer Center, Houston, USA (S. Krishnamurthy & S. Gupta)

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PMID: 32134465
(2020)

TURBT & flexible-URS	
Title	Ex vivo fluorescence confocal microscopy in the assessment of urothelial carcinoma grading in bladder and ureter: Our preliminary experience
Results	100% agreement
Study Design	5 bladder and 1 ureter samples, 4 patients
Clinical partner (principal investigator)	Dept. of Urology, University of Modena and Reggio Emilia, Modena, Italy (G. Bianchi & B. Rocco)

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34th annual EAU congress
(2019)

TURBT	
Title	Abstracts des 72. Kongresses der Deutschen Gesellschaft für Urologie e.V.
Results	High sensitivity and specificity in agreement with the final histopathologic images
Study Design	50 TUR-bladder
Clinical partner (principal investigator)	Asklepios Clinic Barbek, Dept. of Urology, Hamburg, Germany (B. Becker & C. Netsch)

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72 congress of german society for Urology
(2020)

Urology > Kidney & Bladder

Bladder cancer margin control	
Title	Real-Time Urethral and Ureteral Assessment during Radical Cystectomy Using Ex-Vivo Optical Imaging: A Novel Technique for the Evaluation of Fresh Unfixed Surgical Margins
Results	Urethral: 97.5% specificity and 66.7% sensitivity Ureteral: 91% specificity and 54% sensitivity
Study Design	138 specimens from 46 patients with bladder cancer
Clinical partner (principal investigator)	Dept of Operative Endoscopy, Campus Bio-Medico University Hospital, Rome, Italy (F. Prata & A. Crescenzi)

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PMID: 36975472
(2020)

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Head & Neck

Biopsy and margin control	
Title	Potential Use of Vivascope for Real-Time Histological Evaluation in Endoscopic Laryngeal Surgery
Results	successful diagnosis of Larynx dysplasia, carcinoma types, surgical margin, and inflammations
Study Design	endoscopic laryngeal biopsies 8 patients
Clinical partner (principal investigator)	Unit of Integrated Therapies in Otolaryngology, Fondazione Policlinico Universitario Campus Bio-Medico, Via Alvaro del Portillo, 00128 Rome, Italy

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PMID: 37623502
(2024)

FNA Biopsies	
Title	Real-Time Evaluation of Thyroid Cytology Using New Digital Microscopy Allows for Sample Adequacy Assessment, Morphological Classification, and Supports Molecular Analysis
Results	All malignant cases were confirmed to be carcinomas (PPV 100%)
Study Design	Ultrasound-FNA biopsies from 20 patients
Clinical partner (principal investigator)	Unit of Endocrine Organs and Neuromuscular Pathology, Campus Bio-Medico University Hospital, Rome, Italy (Dr. Anna Crescenzi)

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PMID: 37686491
(2020)

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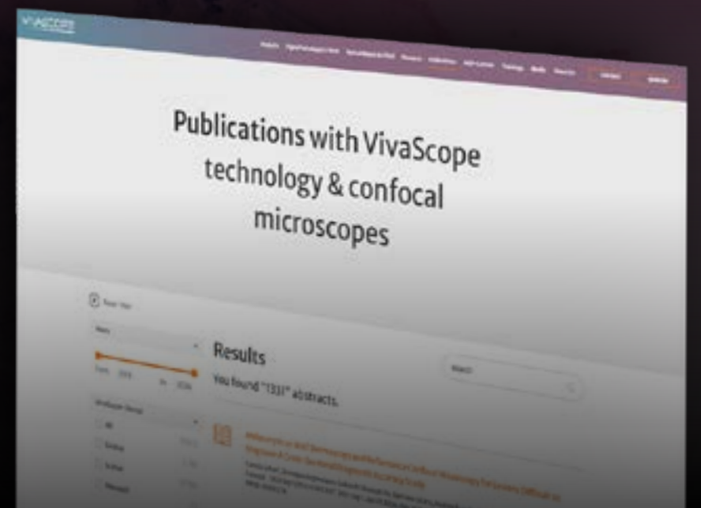

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Gastroenterology > Pancreas, Liver & Intestine

FNA/FNB Biopsies upper tract GI	
Title	Role of fluorescence confocal microscopy for rapid evaluation of EUS fine-needle biopsy sampling in pancreatic solid lesions
Results	Cohen's K agreement was 95% 100% sensitivity
Study Design	EUS-Fine needle biopsy samples, 81 patients
Clinical partner (principal investigator)	Dept of Operative Endoscopy, Campus Bio-Medico University Hospital, Rome, Italy (A. Crescenzi & F. M. Di Matteo)

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PMID: 33798539
(2021)

FNA/FNB Biopsies upper tract GI	
Title	New digital confocal laser microscopy may boost real-time evaluation of endoscopic ultrasound-guided fine-needle biopsy (EUS-FNB) from solid pancreatic lesions: Data from an international multicenter study
Results	100% positive predicted value Rapid on-site evaluation of the adequacy for all the EUS-FNBs
Study Design	EUS-Fine needle biopsies from 25 patients, Multicenter Study: 500 observations
Clinical partner (principal investigator)	Dept of Operative Endoscopy, Campus Bio-Medico University Hospital, Rome, Italy (A. Crescenzi)

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PMID: 36436280
(2022)

FNA/FNB Biopsies upper tract GI	
Title	Fluorescence confocal microscopy for rapid evaluation of EUS fine-needle biopsy in pancreatic solid lesions
Results	Showing (video) the EUS-FNB evaluation using CytoMatrix
Study Design	One EUS-FNB on CytoMatrix
Clinical partner (principal investigator)	Dept of Operative Endoscopy, Campus Bio-Medico University Hospital, Rome, Italy (A. Crescenzi)

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PMID: 36935810
(2023)

FNA/FNB Biopsies upper tract GI	
Title	A new tool for rapid evaluation of endoscopic ultrasound through the needle biopsy in pancreatic cystic neoplasm
Results	Diagnosis of Pancreatic cystic neoplasms (PCNs)
Study Design	Endoscopic needle biosies
Clinical partner (principal investigator)	Dept of Operative Endoscopy, Campus Bio-Medico University Hospital, Rome, Italy (A. Crescenzi)

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PMID: 37277287
(2020)

Biopsy	
Title	Ex Vivo Fluorescence Confocal Microscopy in Specimens of the Liver: A Proof-of-Concept Study
Results	Perfect suitability for tumor diagnosis (k = 1.00)
Study Design	39 biopsy, autopsy & surgical samples, 33 patients
Clinical partner (principal investigator)	Institute of Pathology, Campus Lippe, University Hospital OWL of the University of Bielefeld, 32756 Detmold, Germany (Ulf Titze)

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PMID: 35158859
(2020)

Transplantation biopsies	
Title	Fluorescence confocal microscopy on liver specimens for full digitization of transplant pathology
Results	Almost perfect agreement for cholangitis, fibrosis, and malignancy (κ = 0.81 to 0.88)
Study Design	50 liver specimens (Biopsies, donor transplant and surgical specimens)
Clinical partner (principal investigator)	Dept of Internal Medicine I, University Hospital Frankfurt, Goethe University Frankfurt am Main, Germany (Peter J Wild)

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PMID: 37016761
(2023)

Colonoscopy biopsy lower tract GI	
Title	Ex vivo Fusion Confocal Microscopy of Colorectal Polyps: A Fast Turnaround Time of Pathological Diagnosis
Results	Diagnostic agreement among pathologists (92% to 97%) Discern adenomatous in polyps (97% to 100%)
Study Design	36 colorectal polyps, 22 patients
Clinical partner (principal investigator)	Endoscopy Unit, Dept. Of Gastroenterology, Hospital Clinic of Barcelona, IDIBAPS, University of Barcelona, Barcelona, Spain (J. Malvehy & Miriam Cuatrecasas)

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PMID: 34407541
(2021)

Colonoscopy biopsy lower tract GI	
Title	Colonic perforation after piecemeal mucosectomy diagnosed by confocal microscopy
Results	Immediate diagnosis of tubular adenoma with high-grade dysplasia
Study Design	Case report
Clinical partner (principal investigator)	Melanoma Unit, Dept. of Dermatology, Hospital Clinic of Barcelona, IDIBAPS, University of Barcelona, Barcelona, Spain (J. Malvehy & Miriam Cuatrecasas)

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PMID: 32376329
(2020)

Lung

EUS/EBUS FNA Biopsies	
Title	New Instant Digital Pathology for EUS/EBUS Samples: The Last Advance in Bedside Diagnostics for Lung Carcinoma
Results	100% agreement with final Cytohistological evaluation for malignant diagnosis and defination of adeqacy
Study Design	32 EUS/EBUS FNA from Lung masses and lymph node staging, 32 patients
Clinical partner (principal investigator)	Dept of Operative Endoscopy, Campus Bio-Medico University Hospital, Rome, Italy (Dr. A. Crescenzi)

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PMID: 39682201
(2024)

EBUS Cryobiopsies	
Title	Rapid On-Site Digital Histopatholocal Evaluation (RODE) on Endobronchial Ultrasound (EBUS) Mediastinal Lymph Node Cryobiopsy Sampling Using Confocal Laser Microscopy-A Proof-Of-Concept Study
Results	The microscope is a better alternative to ROSE and conventional histopathology decreasing the time to diagnosis
Study Design	4 case reports, 4 patients
Clinical partner (principal investigator)	Division of Interventional Pulmonology, Yashoda Hospitals, Hyderabad, India (Dr. Hari K. Gonuguntla)

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PMID: 39897622
(2025)

Margin control	
Title	Ex Vivo Fluorescence Confocal Microscopy for intraoperative evaluations of staple lines and surgical margins in specimens of the lung - a proof-of-concept study
Results	First time intraoperative visualization of the lung stapled margins 97 to 100% specificity and 75% sensitivity
Study Design	79 surgical margins (71 staple lines and 8 open margins) 52 Lung surgical sample from 51 patients
Clinical partner (principal investigator)	Bielefeld University, Medical School and University Medical Center OWL, Lung Cancer Center Lippe, Dept. of Pathology, Detmold, Germany (Dr. Ulf Titze)

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PMID: 39863111
(2025)

Resection biopsies	
Title	Confocal Fluorescence Microscopy Platform Suitable for Rapid Evaluation of Small Fragments of Tissue in Surgical Pathology Practice
Results	97.3% specificity and 95,5% sensitivity
Study Design	22 lung resections, Normal, Adenocarcinoma and SCC
Clinical partner (principal investigator)	Division of Pathology and Laboratory Medicine, The University of Texas MD Anderson Cancer Center, Houston, USA (S. Krishnamurthy & S. Gupta)

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PMID: 30376375
(2019)

Resection biopsies	
Title	Ex Vivo Fluorescence Confocal Microscopy for Intraoperative Examinations of Lung Tumors as Alternative to Frozen Sections-A Proof-of-Concept Study
Results	93% specificity and 98% sensitivity
Study Design	59 lung surgical specimens, 57 patients
Clinical partner (principal investigator)	Dept of Pathology, Medical School and University Medical Center OWL, Lung Cancer Center Lippe, Bielefeld University, Detmold, Germany (Dr. Ulf Titze)

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PMID: 38927926
(2024)

Tissue scraps biopsies	
Title	Feasibility of using digital confocal microscopy for cytopathological examination in clinical practice
Results	Clear diagnosis corresponding to standard histopathological images
Study Design	23 lung biopsies (2 SCC, 8 adenocarcinoma, 3 PDNSCLC, 2 Neuroendocrine and 8 SCMT)
Clinical partner (principal investigator)	Division of Pathology and Laboratory Medicine, The University of Texas MD Anderson Cancer Center, Houston, USA (S. Krishnamurthy)

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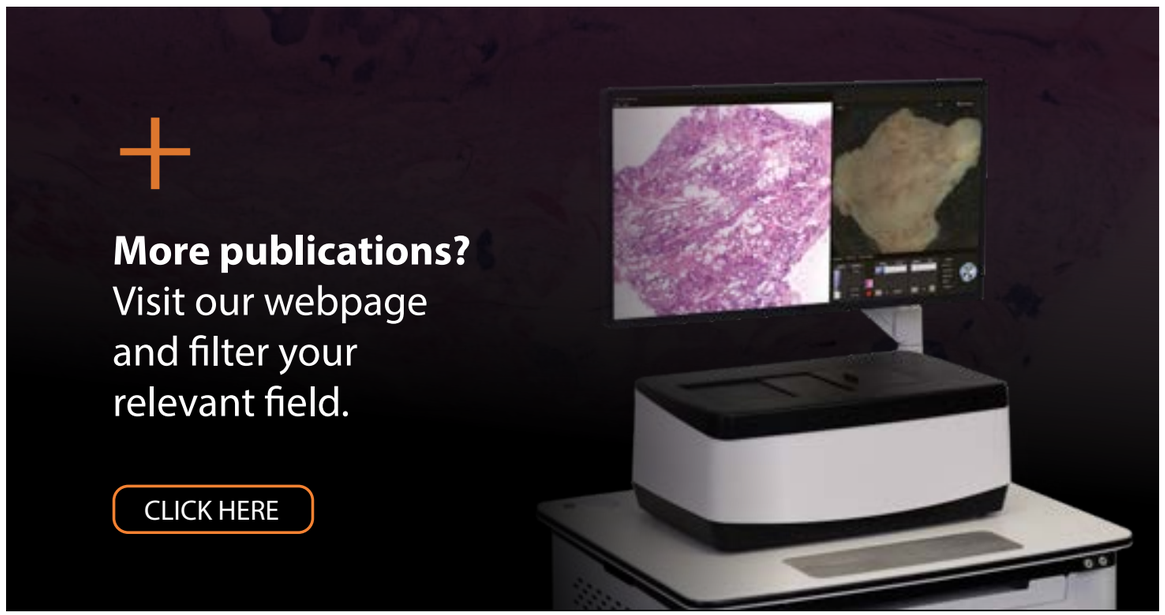
PMID: 34628480
(2022)



Breast

Margin control	
Title	Ex-vivo fusion confocal microscopy for margin assessment in breast cancer surgery
Results	100% accuracy rate for evaluators familiar with technology
Study Design	Assess the diagnostic potential of microscope in breast cancer (proof of principle)
Clinical partner (principal investigator)	Dept of General and Digestive Surgery, Hospital Universitari Germans Trias I Pujol, Barcelona, Spain.

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PMID: 37992254
(2024)

Margin control	
Title	Unveiling a Surgical Revolution: The Use of Conventional Histology versus Ex Vivo Fusion Confocal Microscopy in Breast Cancer Surgery
Results	Experienced pathologist detected neoplasia with a 100% sensitivity and specificity
Study Design	36 frozen breast tissue samples
Clinical partner (principal investigator)	Dept of General and Digestive Surgery, Hospital Universitari Germans Trias I Pujol, Barcelona, Spain.

CLICK HERE
PMID: 39451210
(2024)

Biopsy & Margin control	
Title	Ex vivo fluorescence confocal microscopy: chances and changes in the analysis of breast tissue
Results	High rate of tumor diagnosis (16 out of 17)
Study Design	17 biopsies & surgical samples
Clinical partner (principal investigator)	Dept of Pathology, Medical University of Vienna, Vienna, Austria (Dr. Heinz Regele)

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PMID: 35765032
(2022)

Core Needle Biopsies	
Title	Immediate Diagnosis of Breast Carcinoma on Core Needle Biopsy Using Ex Vivo Fluorescence Confocal Microscopy: Feasibility in a One-Stop Breast Clinic Workflow
Results	Diagnosis was 100% on all the 30 Malignant cases when suspicious cases were included
Study Design	50 Core needle biopsies from, 50 Women with breast masses
Clinical partner (principal investigator)	Surgery and Pathology Photonic Imaging Group, Gustave Roussy, 94805 Villejuif, France (Dr. Muriel Abbaci)

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PMID: 39598183
(2024)

Resection biopsies	
Title	Confocal Fluorescence Microscopy Platform Suitable for Rapid Evaluation of Small Fragments of Tissue in Surgical Pathology Practice
Results	97.3% specificity and 95,5% sensitivity
Study Design	40 Breast specimens (25 benign, 2 DC in situe, 9 invasive DC and 4 lobular/micropapillary/metaplastic)
Clinical partner (principal investigator)	Division of Pathology and Laboratory Medicine, The University of Texas MD Anderson Cancer Center, Houston, USA (S. Krishnamurthy & S. Gupta)

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PMID: 30376375
(2019)

Tissue scraps biopsies	
Title	Feasibility of using digital confocal microscopy for cytopathological examination in clinical practice
Results	Clear diagnosis corresponding to standard histopathological images
Study Design	27 Breast biopsies (26 Ductal carcinoma, 1 Spindle and epithelioid tumor)
Clinical partner (principal investigator)	Division of Pathology and Laboratory Medicine, The University of Texas MD Anderson Cancer Center, Houston, USA (S. Krishnamurthy)

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PMID: 34628480
(2022)

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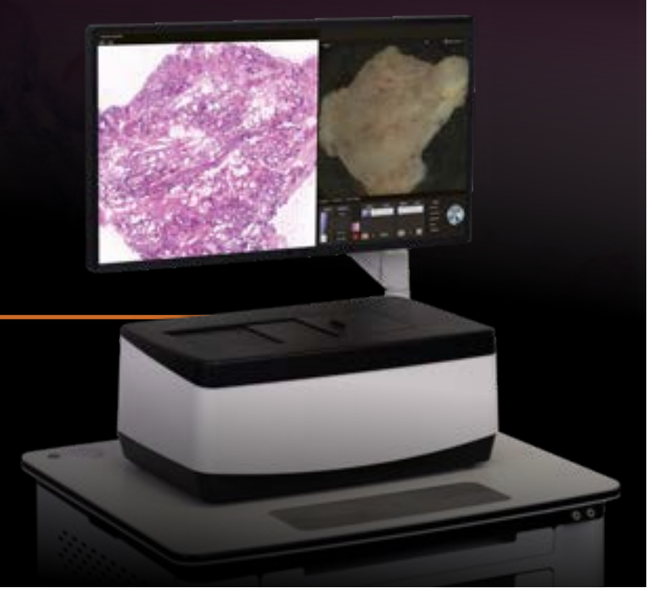

Transplantation

Transplantation biopsies	
Title	Ex vivo confocal microscopy performs real-time assessment of renal biopsy in non-neoplastic diseases
Results	K agreement was strong (1 to 0.97) for most tissue compartments
Study Design	24 renal autopsies were sampled with spring-loaded biopsy device
Clinical partner (principal investigator)	Nephrology and Renal Transplantation Dept., Hospital Clinic of Barcelona, University of Barcelona, Barcelona, Spain (Dr. J. Malvehy & Dr. A Garcia-Herrera)

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PMID: 32876939
(2021)

Transplantation	
Title	Fluorescence confocal microscopy on liver specimens for full digitization of transplant pathology
Results	Almost perfect agreement for cholangitis, fibrosis, and malignancy (κ = 0.81 to 0.88)
Study Design	50 liver specimens (Biopsies, donor transplant and surgical specimens)
Clinical partner (principal investigator)	Dept of Internal Medicine I, University Hospital Frankfurt, Goethe University Frankfurt am Main, Germany (Dr. Peter J Wild)

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PMID: 37016761
(2023)

Biobanking

Tumor Biobanking and cell culture	
Title	Fluorescence confocal microscopy for evaluation of fresh surgical specimens and consecutive tumor cell isolation in rare pediatric tumors
Results	Evaluation of fresh tumor vitality and adequacy for cell culture
Study Design	13 pediatric tumors, 11 patients
Clinical partner (principal investigator)	Goethe University Frankfurt, University Hospital, Dr. Senckenberg Institute of Pathology, Theodor-Stern-Kai 6, 60590, Frankfurt Am Main, Germany.

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PMID: 38980338
(2024)

Tumor Biobanking	
Title	Ex Vivo Fluorescence Confocal Microscopy (FCM) Ensures Representative Tissue in Prostate Cancer Biobanking: A Feasibility Study
Results	Cohen's K agreement for tumor detection was 96.8%
Study Design	127 punch biopsies from the prostatectomies, 40 patients
Clinical partner (principal investigator)	Dept. of Urology, University Hospital OWL, Campus Lippe, Detmold, Germany (Ulf Titze, Torsten Hansen & Prof. K. Sievert)

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PMID: 36292970
(2022)

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