

Una iniciativa de:



ACADEMIA ESPAÑOLA
DE DERMATOLOGÍA
Y VENEREOLOGÍA



FUNDACIÓN
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Con el patrocinio de:



AEDV 35^a
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HIGHLIGHTS

Viena

30sep - 3oct
2026

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| Dermatooncología y cirugía II

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Estado actual de la biopsia líquida

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Biopsia liquida

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What is liquid biopsy?

Liquid biopsy is the analysis of tumor-derived material obtained from body fluids; most often peripheral blood, but also CSF, urine, pleural effusion or ascites.

- Minimally invasive and repeatable
- May better capture tumor heterogeneity than a single-site biopsy
- Short ctDNA half-life (minutes to ~2 h) makes it a highly dynamic marker
- cfDNA analysis is already routine in prenatal testing; fetal fraction is typically ~10 - 15%
- Bottleneck: how much tumor material is actually in the tube?

LIQUID BIOPSY

Blood · CSF · urine · effusions

Cell-free DNA (cfDNA)

Mostly derived from haematopoietic cells

Circulating tumor DNA (ctDNA)

Tumor-derived fraction

Often < 1 % of cfDNA in early-stage disease
Can exceed 10 % in high-burden metastatic disease

Diehl F et al., Nat. Med. (2008); Wan JCM et al., Nat. Rev. Cancer (2017); Moss J et al., Nat. Commun. (2018); Heitzer E et al., Clin. Chem. (2015); Deng & Liu, Front. Pediatr. (2022).

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Melanoma: the Tübingen data

For liquid biopsy in melanoma, the major early-detection opportunity is minimal residual disease and early relapse detection rather than detection of the primary tumor.

2019 J Immunother Cancer 2019;7:180
TMB and ctDNA under combined CTLA-4 / PD-1 blockade

2020 Onco Targets Ther 2020;13:5017-32
ctDNA and outcome under BRAF / MEK inhibition

2021 Lancet Oncol 2021;22:291-3
ctDNA in melanoma on targeted therapy

2022 J Dtsch Dermatol Ges 2022;20:867-71
Relapse detection under adjuvant anti-PD-1

2024 Nat Commun 2024;15:8750
PET/LIT: tumor-informed panels against PET/CT

Prospective PET/LIT study – Forschner A et al., Nat Commun 2024;15:8750

104 patients recruited; tumor-informed ctDNA analysis in 87 patients (321 liquid biopsies), monitoring up to 30 patient-specific variants.

76.9 % of relapsing adjuvant patients were ctDNA-positive (10/13)

0 of 9 relapse-free patients ever turned positive (31 samples)

133 days maximum lead time over scheduled imaging

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Main approaches and biomarkers

LIQUID BIOPSY ANALYTES

Established serum markers

S100B · LDH

- Reflect tumor burden only indirectly
- Limited sensitivity at low tumor burden
- No molecular information

ctDNA

Tumor-derived cfDNA; can be detected through mutations, methylation, fragmentation or CNAs. Quantitative, half-life of minutes; allele fraction correlates with tumor burden

Circulating tumor cells

Intact cells; allow protein and RNA phenotyping, but very low quantities.

cfRNA and miRNA

Transcript signatures; reflect tumor and host state.

Extracellular vesicles

Exosomal DNA, RNA and protein cargo; protected molecular cargo in plasma

Tumor-educated platelets

Platelet RNA reprogrammed by tumor contact.

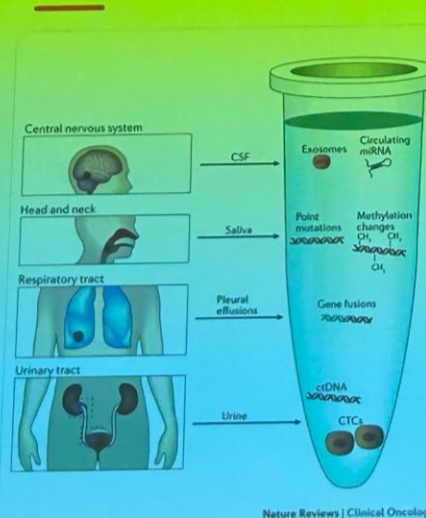
Four readouts from ctDNA

Point mutations · DNA methylation (tissue-specific) · Fragmentomics (size, end motifs, nucleosome footprints) · Copy-number alterations

Forschner A et al., Nat. Commun. (2024); Amaral T et al., Ann. Oncol. (2024); Deckers EA et al., Eur J Surg Oncol (2020); Best MG et al., Cancer Cell (2015); Lo YMD et al., Science (2021).

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Liquid biopsy is the extraction and analysis of tumor-derived molecular information



Examples of tumor-derived material:

- Circulating tumor cells (CTCs)
- RNA, miRNA
- Circulating DNA methylation signals
- Proteins
- Extracellular vesicles
- Circulating tumor (ctDNA)

Potential sources:

- Blood, CSF, Saliva, Pleural fluid, Urine

Potential applications:

- Prognostic marker, predictive marker, minimal residual disease monitoring, therapy response.

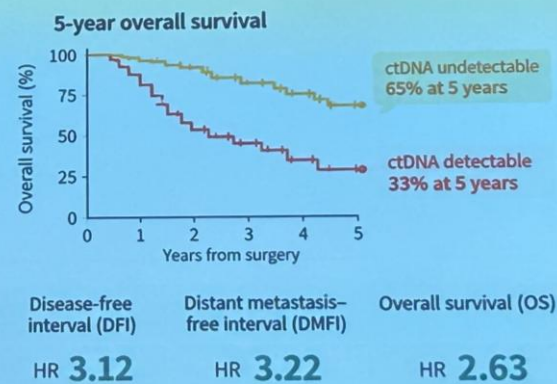
Circulating tumor DNA (ctDNA) is the most mature liquid biopsy analyte.

Mezzanotte-Sharpe et al., JAMA 2026, Krebs et al., JAMA Oncol 2022

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Post-operative ctDNA is associated with melanoma survival

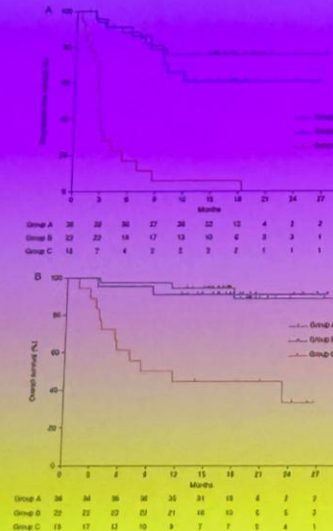
- Retrospective biomarker analysis of 161 patients from the AVAST-M trial. Stage IIB/IIC-III, BRAF V600E or NRAS Q61K/L-mutant.
- Single postoperative plasma sample ≤12 weeks after surgery
- Post-op ctDNA+ :
 - 5-yr OS: **33% vs. 65%**



Lee RJ et al. Ann Oncol. 2018;29:490-496.

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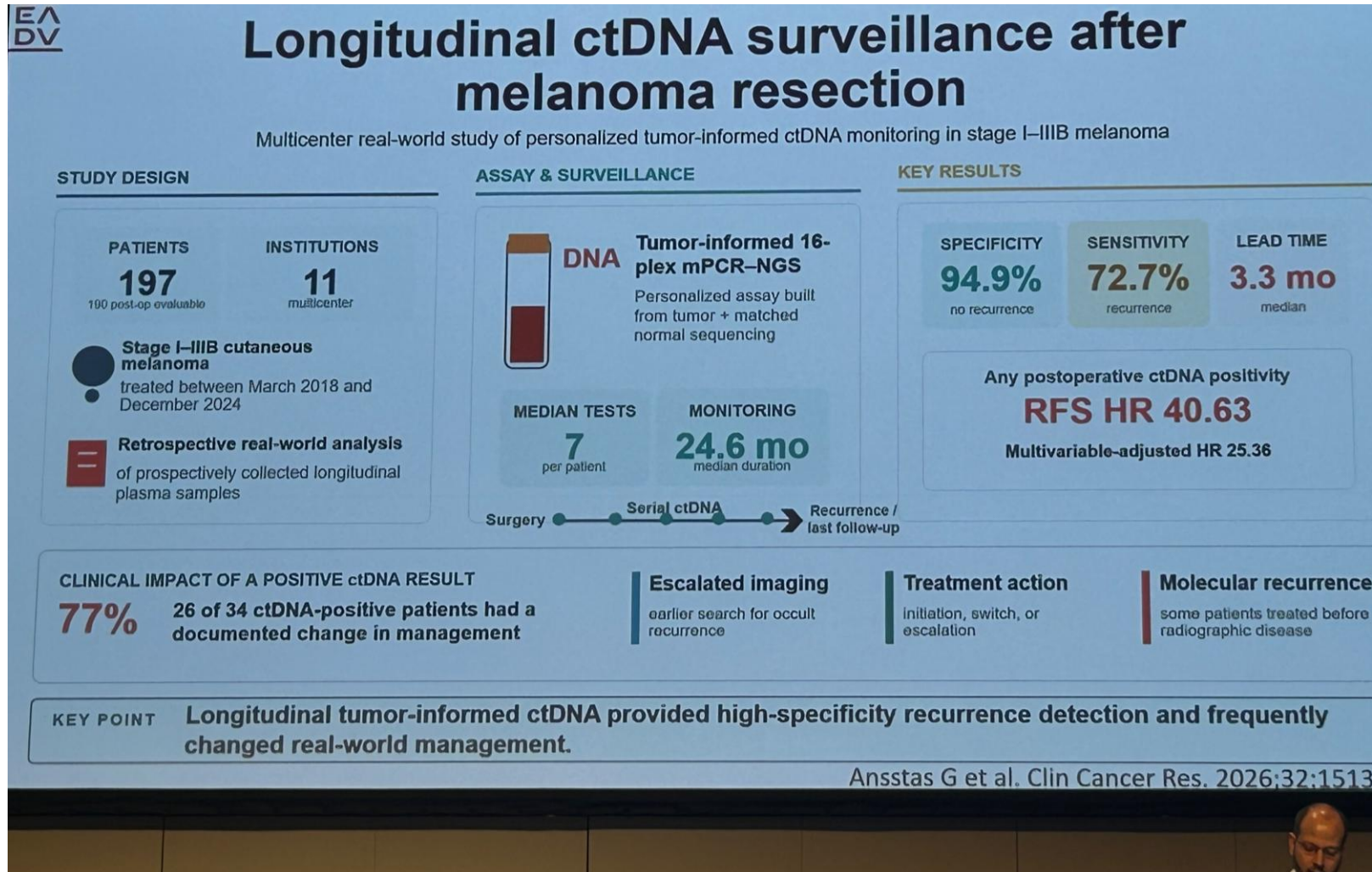
Longitudinal ctDNA is associated with response to aPD-1 therapy in melanoma



Key results

	Group A (undetectable)	Group B (cleared)	Group C (persistent)
Response rate	72%	77%	6%
PFS (median)	Not reached	Not reached	2.7 months
PFS HR vs Group C	0.09	0.16	—
OS (median)	Not reached	Not reached	9.2 months
OS HR vs Group C	0.02	0.14	—

Lee et al. Ann Oncol 2017



EA DV	Game changing ≠ perfect	
What ctDNA already does well		Current limitations
High specificity when positive		Low sensitivity in low-volume disease
Can detect molecular disease before radiographic recurrence		A negative test does not exclude residual disease
Serial, minimally invasive monitoring		Poor detection of isolated CNS disease
Useful to rule in recurrence risk and enrich risk-adapted trials		Assay/platform heterogeneity and need for standardization *
Best used to complement—not replace—imaging and clinical follow-up		No randomized proof yet that ctDNA-guided intervention improves survival

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Cirugía

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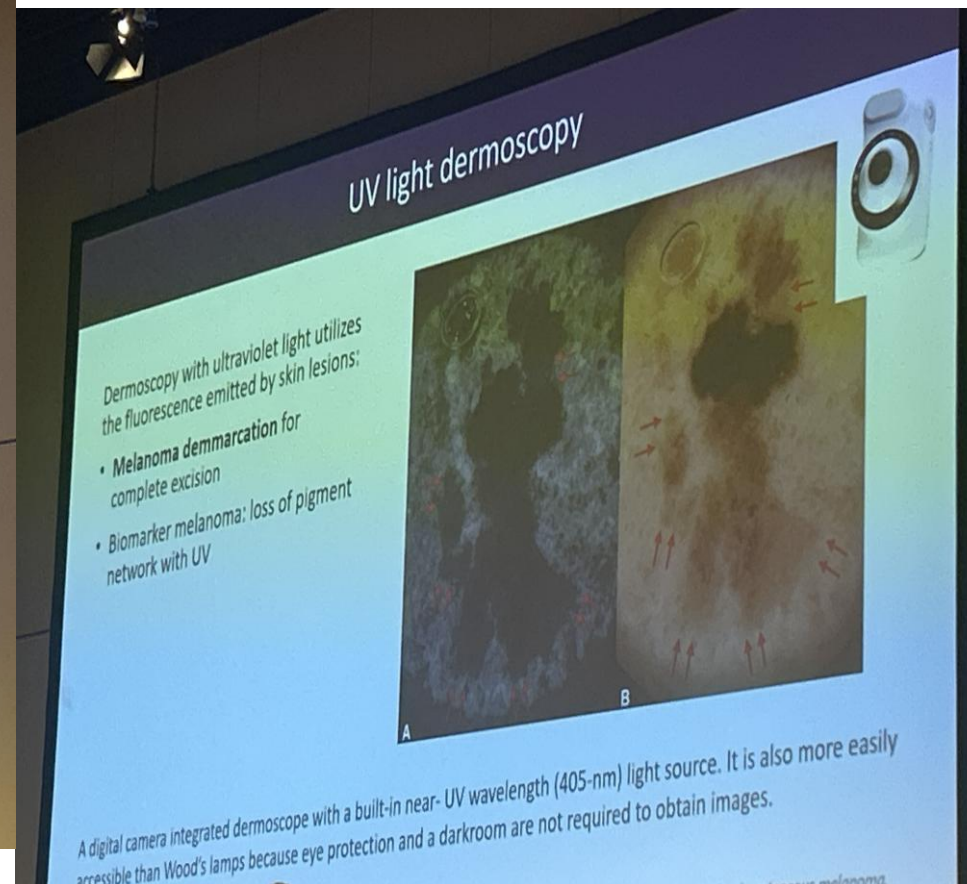
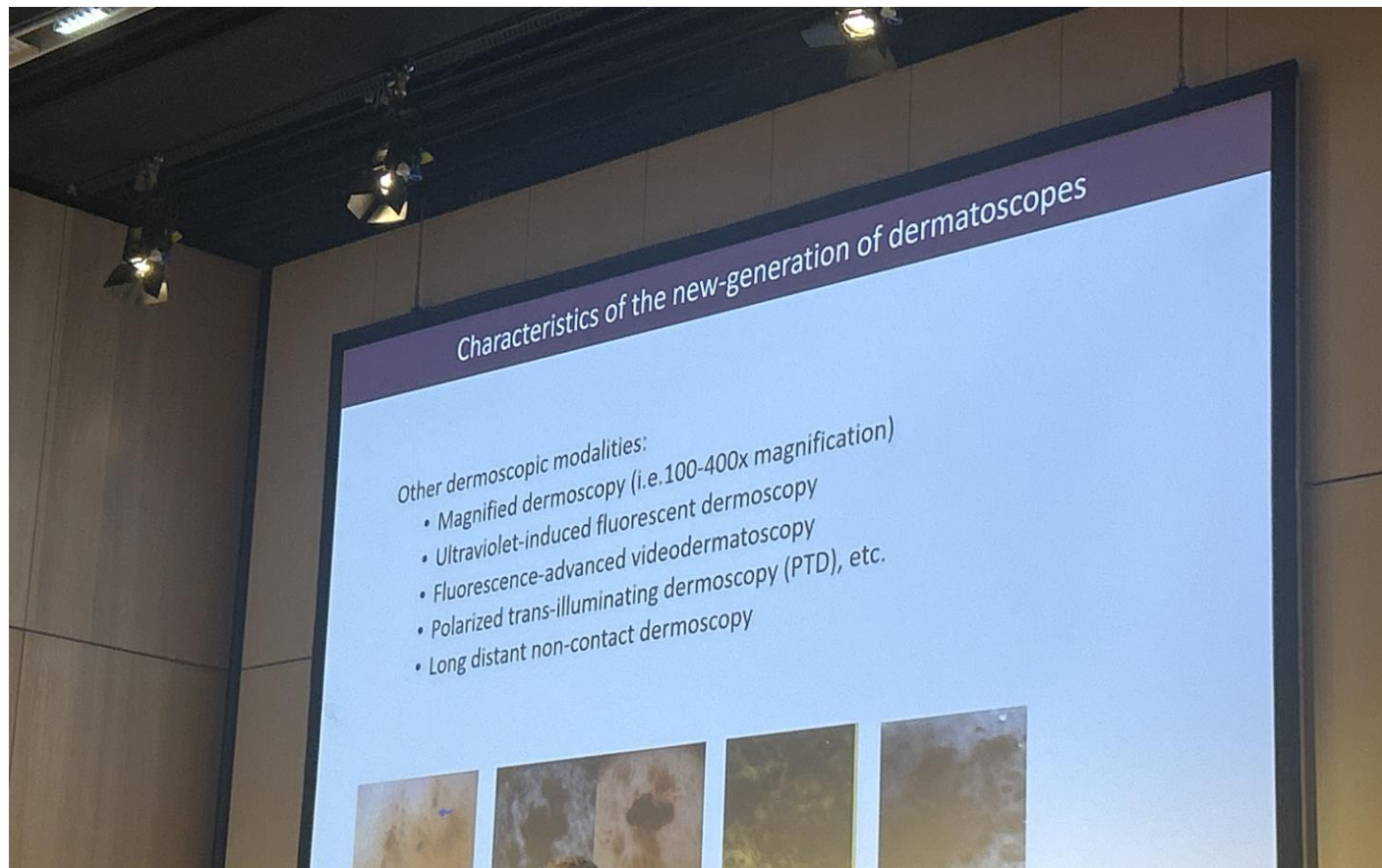
INTERNATIONAL CONSORTIUM OF MOHS SURGERY

Connecting Mohs surgeons worldwide.

The International Consortium of Mohs Surgery (ICMS) is a global community of dermatologic surgeons dedicated to advancing Mohs micrographic surgery and cutaneous oncology through education, research, collaboration, and the highest standards of patient care.

ICMS is an educational and collaborative society. It does **not** function as a certifying or accrediting body; formal qualifications remain the purview of national and regional organizations.







Baja implementación.

Potencial de reducir
pases de Mohs

- 1. El uso de la biopsia líquida con ctDNA puede ser ya una herramienta adicional de consulta
- 2. La necesidad de disponer de tecnología no invasiva
- 3. El crecimiento de la cirugía de Mohs en Europa.

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La Academia Española de Dermatología y Venereología expresa su agradecimiento al patrocinador UCB, por su especial apoyo y contribución con la actividad formativa Highlights 2026.

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GRACIAS