VIII SIMPOSIO NACIONAL
de ONCOLOGÍA de PRECISIÓN
Vigo, 19 y 20 de febrero de 2026

NGS: ¿ya para todos ya desde el diagnóstico?

Federico Rojo

CANCER DISCOVERY DECEMBER 2025

VIEWS

IN FOCUS

Precision Oncology: 2025 in Review

Nicholas Mai[1], Nicole Fernandez[2,3], Alexander Drilon[1], and Debyani Chakravarty[2,3]

Summary: This article discusses the specific advances made in precision oncology in 2025, in which we saw the approval of multiple new indications for known precision oncology agents and early promising data for novel agents that target either classical pathways or previously so-called undruggable targets. Additionally, we observed the continued development of antibody–drug conjugates and proteolysis-targeting chimeras, the advent of multiple blood-based methodologies for the early detection of cancer, the identification of non-traditional precision oncology biomarkers, and the growing presence of artificial intelligence technologies to generate precision oncology insights.

- As of late 2025, approximately 48 % of all FDA-approved oncology drugs require molecular profiling
- Precision oncology continues to expand, with biomarker-driven approvals and guideline updates shaping treatment strategies across cancer types.
- NGS-based assays, including tissue and blood-based, are central to identifying actionable genomic alterations.
- Blood-based methods are highlighted as emerging for early cancer detection and longitudinal disease monitoring.
- The landscape of precision oncology includes non-traditional biomarkers and complex genomic signatures beyond simple single-gene mutations.
- Expanded indications for targeted agents across tumour types underscore the need for comprehensive molecular profiling at diagnosis.

NGS as standard testing for advanced disease in NSCLC

ESMO GOOD SCIENCE BETTER MEDICINE BEST PRACTICE

ANNALS OF ONCOLOGY driving innovation in oncology

SPECIAL ARTICLE

Oncogene-addicted metastatic non-small-cell lung cancer: ESMO Clinical Practice Guideline for diagnosis, treatment and follow-up☆

L. E. Hendriks[1], K. M. Kerr[2], J. Menis[3], T. S. Mok[4], U. Nestle[5,6], A. Passaro[7], S. Peters[8], D. Planchard[9], E. F. Smit[10,11], B. J. Solomon[12], G. Veronesi[13,14] & M. Reck[15], on behalf of the ESMO Guidelines Committee*

- EGFR mutation [I, A]
- ALK rearrangements [I, A]
- ROS1 rearrangements [II, A]
- BRAF V600 mutation [II, A]
- NTRK rearrangements [II, A].
- MET ex14 skip mutations, MET amplifications, RET rearrangements, KRAS G12C and HER2 mutations [II, A].
- NGS for molecular testing are preferable [III, A].

NGS as standard testing for advanced disease. From NSCLC to other tumor types

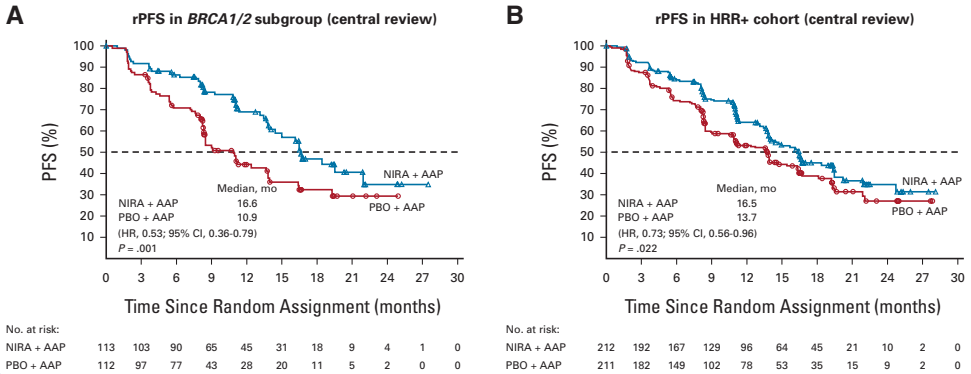
MAGNITUDE: Niriparib in combination with abiraterona in mCRPC

J Clin Oncol 41:3339-3351. © 2023

Journal of Clinical Oncology®

Niraparib and Abiraterone Acetate for Metastatic Castration-Resistant Prostate Cancer

Kim N. Chi, MD[1]; Dana Rathkopf, MD[2]; Matthew R. Smith, MD[3]; Eleni Efstathiou, MD[4]; Gerhardt Attard, MD[5]; David Olmos, MD[6]; Ji Youl Lee, MD[7]; Eric J. Small, MD[8]; Andrea J. Pereira de Santana Gomes, MD[9]; Guilhem Roubaud, MD[10]; Marniza Saad, MD[11]; Bogdan Zurawski, MD[12]; Valerii Sakalo, MD[13]; Gary E. Mason, MD[14]; Peter Francis, MD[15]; George Wang, MS, MAS[14]; Daphne Wu, PhD[16]; Brooke Diorio, PhD[17]; Angela Lopez-Gitlitz, MD[16]; and Shahneen Sandhu, MD[18]; on behalf of the MAGNITUDE Principal Investigators



TALAPRO-2 : Talazoparib in combination with enzalutamide in mCRPC

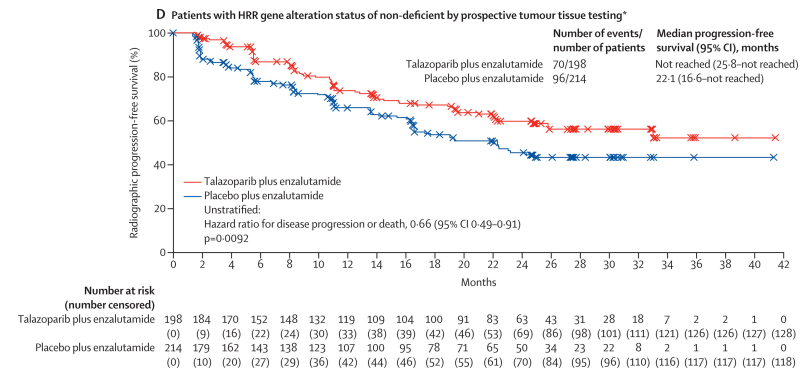
ELSEVIER

The Lancet Oncology

Volume 26, Issue 4, April 2025, Pages 481-490

Talazoparib plus enzalutamide in men with metastatic castration-resistant prostate cancer: final overall survival results from the randomised, placebo-controlled, phase 3 TALAPRO-2 trial

Prof Neeraj Agarwal, MD [a,†] · Prof Arun A Azad, MD [b] · Joan Carles, MD [c] · Prof André P Fay, MD [d] · Nobuaki Matsubara, MD [e] · Prof Cezary Szczylik, MD [f,g] · Ugo De Giorgi, MD [h] · Prof Jae Young Joung, MD [i] · Prof Peter C C Fong, MD [j,k] · Eric Voog, MD [l] · Prof Robert J Jones, MBChB [m] · Neal D Shore, MD [n] · Prof Fred Saad, MD [o] · Curtis Dunshee, MD [p] · Stefanie Zschäbitz, MD [q] · Prof Jan Oldenburg, MD [r] · Xun Lin, PhD [s] · Cynthia G Healy, BS [t] · Matko Kalac, MD [u] · Dana Kennedy, PharmD [v] · Prof Karim Fizazi, MD [w,†] Show less



NGS as standard testing for advanced disease. From NSCLC to other tumor types

Journal of Clinical Oncology®

Germline and Somatic Genomic Testing for Metastatic Prostate Cancer: ASCO Guideline

Evan Y. Yu, MD[1]; R. Bryan Rumble, MSc[2]; Neeraj Agarwal, MD[3]; Heather H. Cheng, MD, PhD[1]; Scott E. Eggener, MD[4]; Rhonda L. Bitting, MD[5]; Himisha Beltran, MD[6]; Veda N. Giri, MD[7]; Daniel Spratt, MD[8]; Brandon Mahal, MD[9]; Kevin Lu, MD[10]; Tony Crispino[11]; and Edouard J. Trabulsi, MD[12]

Who should receive somatic testing with NGS technologies?

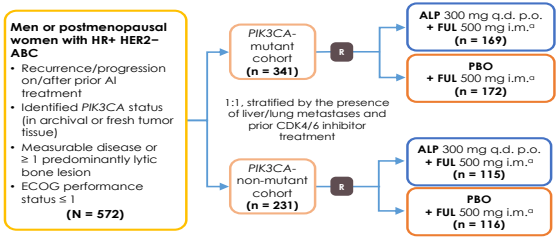
Those patients with metastatic prostate cancer (both CSPC and CRPC) should undergo somatic testing with NGS.

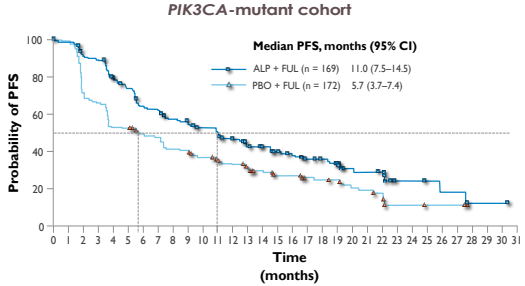
Evidence quality: **High**

Strength of recommendation: **Strong**

NGS as standard testing for advanced disease. From NSCLC to other tumor types

SOLAR-1: Alpelisib in 2L hormone-sensitive PI3KCAmut HR+ HER2- BC

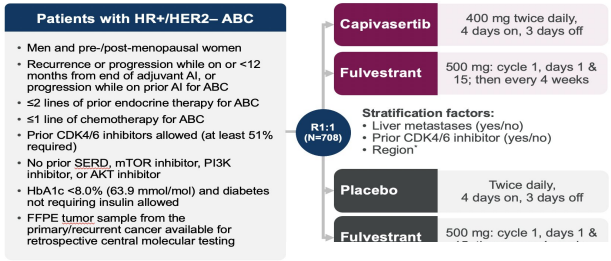


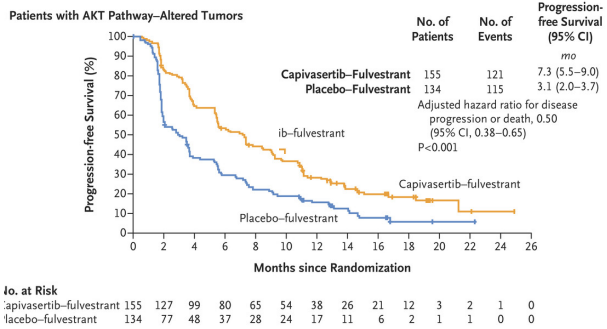


HR (95% CI)	**0.65 (0.50–0.85)**
p value	0.00065

André F, et al. N Engl J Med. 2019;380:1929-40.

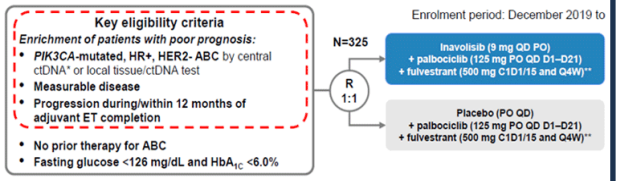
CAPITELLO291: Capivasertib in 2L hormone-sensitive PI3K/AKT/PTEN altered HR+ HER2- BC



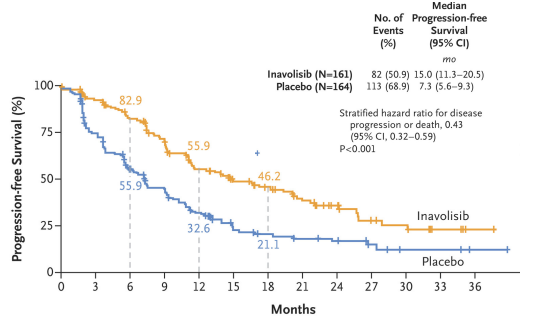


Turner, NC et al. NEJM 2023

INAVO120: Inavolisib in 1L hormone-resistant PI3KCAmut HR+ HER2- BC



Enrolment period: December 2019 to

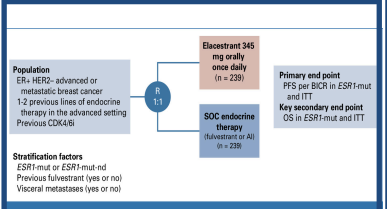


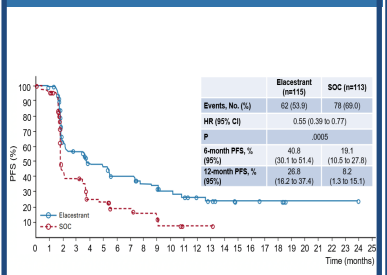
Turner, NC et al. NEJM 2024

NGS as standard testing for advanced disease. From NSCLC to other tumor types

Rationale to qualify *ESR1m* as a predictive biomarker for the use of SERDs

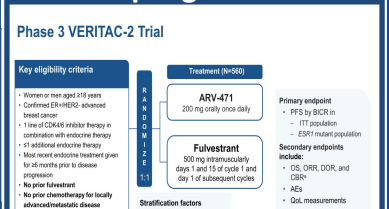
Emerald trial: Elacestrant

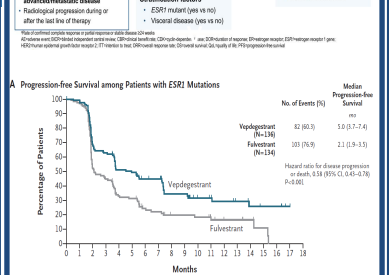




Bidard, FC et al. J Clin Oncol 2022

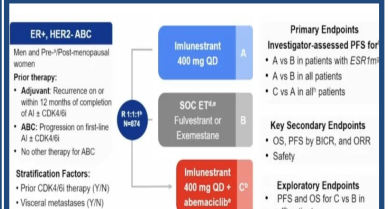
VERITAC2 trial: Vepdegestrant

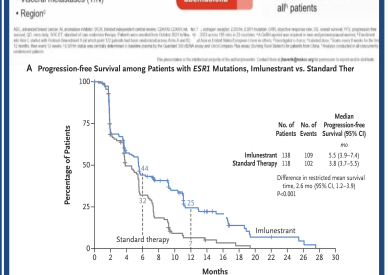




Campone, M et al. NEJM 2025

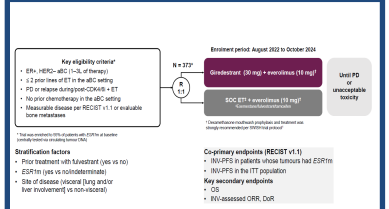
EMBER3 trial: Imlunestrant

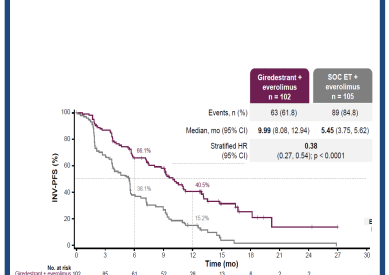




Jhaveri, KL et al. NEJM 2025

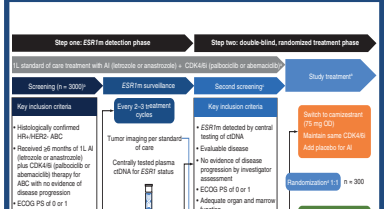
evERA trial: Giredestrant

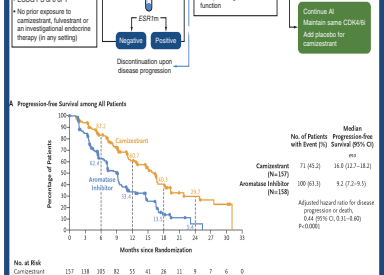




Mayer, EL et al. ESMO 2025

SERENA6 trial: Camizestrant





Bidard, FC et al. NEJM 2025

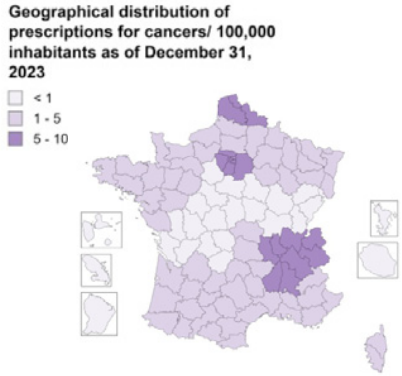
NGS as standard testing for advanced disease in NSCLC

Health Policy

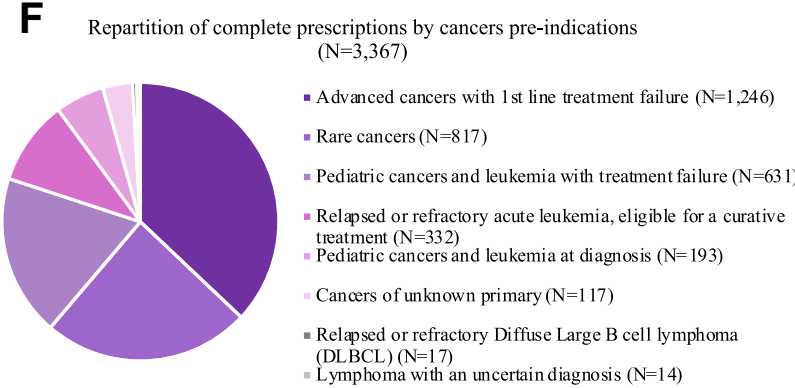
The Lancet Regional Health - Europe
2025;50: 101183

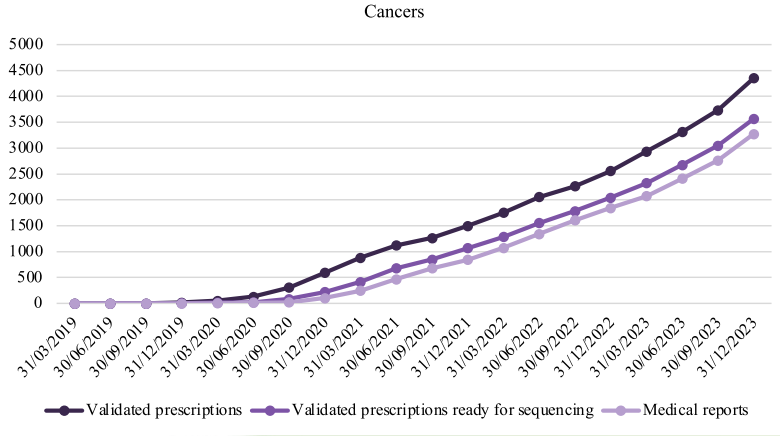
PFMG2025–integrating genomic medicine into the national healthcare system in France

PFMG2025 contributors[a]



- 3109 results were returned to prescribers, resulting in a rate of 92.3% on 2023.
- This number increased significantly between 2022-2023 (+45.4%).





Moving timing for NGS testing to early stage cancer

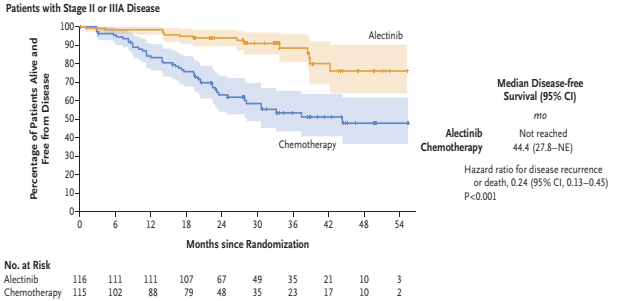
Perioperative NSCLC trials show early-stage outcomes are now biomarker- and timing-dependent

Alina trial

The NEW ENGLAND JOURNAL of MEDICINE
ESTABLISHED IN 1812 APRIL 11, 2024 VOL. 390 NO. 14

Alectinib in Resected *ALK*-Positive Non–Small-Cell Lung Cancer

Yi-Long Wu, M.D., Rafal Dziadziuszko, M.D., Ph.D., Jin Seok Ahn, M.D., Ph.D., Fabrice Barlesi, M.D., Ph.D., Makoto Nishio, M.D., Ph.D., Dae Ho Lee, M.D., Ph.D., Jong-Seok Lee, M.D., Ph.D., Wenzhao Zhong, M.D., Ph.D., Hidehito Horinouchi, M.D., Ph.D., Weimin Mao, M.D., Ph.D., Maximilian Hochmair, M.D., Filippo de Marinis, M.D., M. Rita Migliorino, M.D., Igor Bondarenko, M.D., Ph.D., Shun Lu, M.D., Qun Wang, M.D., Tania Ochi Lohmann, Ph.D., Tingting Xu, M.D., Andres Cardona, M.Sc., Thorsten Ruf, M.D., Johannes Noe, Ph.D., and Benjamin J. Solomon, M.B., B.S., Ph.D., for the ALINA Investigators*



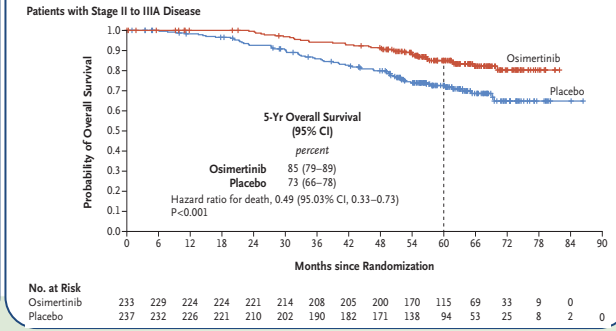
ADAURA trial

The NEW ENGLAND JOURNAL of MEDICINE
N Engl J Med 2023;389:137-47.

ORIGINAL ARTICLE

Overall Survival with Osimertinib in Resected *EGFR*-Mutated NSCLC

Masahiro Tsuboi, M.D., Roy S. Herbst, M.D., Ph.D., Thomas John, M.B., B.S., Ph.D., Terufumi Kato, M.D., Margarita Majem, M.D., Ph.D., Christian Grohé, M.D., Jie Wang, M.D., Ph.D., Jonathan W. Goldman, M.D., Shun Lu, M.D., Wu-Chou Su, M.D., Filippo de Marinis, M.D., Frances A. Shepherd, M.D., Ki Hyeong Lee, M.D., Ph.D., Nhieu Thi Le, M.D., Arunee Dechaphunkul, M.D., Dariusz Kowalski, M.D., Ph.D., Lynne Poole, M.Sc., Ana Bolanos, M.D., Yuri Rukazenkov, M.D., Ph.D., and Yi-Long Wu, M.D., for the ADAURA Investigators*



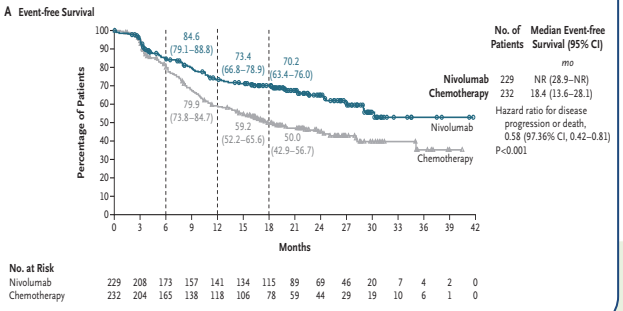
CheckMate 77T trial

The NEW ENGLAND JOURNAL of MEDICINE
N Engl J Med 2024;390:1756-69.

ORIGINAL ARTICLE

Perioperative Nivolumab in Resectable Lung Cancer

T. Cascone, M.M. Awad, J.D. Spicer, J. He, S. Lu, B. Sepesi, F. Tanaka, J.M. Taube, R. Cornelissen, L. Havel,* N. Karaseva, J. Kuzdzal, L.B. Petruzelka, L. Wu, J.-L. Pujol, H. Ito, T.-E. Ciuleanu, L. de Oliveira Muniz Koch, A. Janssens, A. Alexandru, S. Bohnet, F.V. Moiseyenko, Y. Gao, Y. Watanabe, C. Coronado Erdmann, P. Sathyanarayana, S. Meadows-Shropshire, S.I. Blum, and M. Provencio Pulla, for the CheckMate 77T Investigators†



Moving timing for NGS testing to early stage cancer

ESMO GOOD SCIENCE BETTER MEDICINE BEST PRACTICE

ANNALS OF ONCOLOGY DRIVING INNOVATION IN ONCOLOGY

Volume 36 ■ Issue 11 ■ 2025

SPECIAL ARTICLE

Early and locally advanced non-small-cell lung cancer: ESMO Clinical Practice Guideline for diagnosis, treatment and follow-up☆

A. Zer[1], M.-J. Ahn[2], F. Barlesi[3], L. Bubendorf[4], D. De Ruysscher[5,6], P. Garrido[7], O. Gautschi[8,9], L. E. Hendriks[10], P. A. Jänne[11], K. M. Kerr[12], C. Mascaux[13], T. Mitsudomi[14], S. Peters[15], C. Rolfo[16], A. Sacher[17], S. Senan[18], P. Ugalde[19] & N. B. Leighl[17], on behalf of the ESMO Guidelines Committee*

- EGFR testing for stage IB-IIIC NSCLC [I-A].
- ALK testing for resectable stage II-IIIA NSCLC [I-A].
- PD-L1 testing for stage II-III NSCLC being considered for pre- or perioperative ChT—ICI [IV, A].
- Recommended biomarker testing should be carried out as soon as possible as part of the preoperative evaluation [IV, A].
- NGS testing can be recommended, if feasible [V, B].

Moving timing for NGS testing to early stage cancer

www.thelancet.com/oncology Vol 26 August 2025

Policy Review

ESGO–ESTRO–ESP guidelines for the management of patients with endometrial carcinoma: update 2025

Nicole Concin, Xavier Matias-Guiu, David Cibula, Nicoletta Colombo, Carien L Creutzberg, Jonathan Ledermann, Mansoor Raza Mirza, Ignace Vergote, Nadeem R Abu-Rustum, Tjalling Bosse, Cyrus Chargari, Sophie Espenel, Anna Fagotti, Christina Fotopoulou, Sonia Gatius, Antonio González-Martin, Sigurd Lax, Bar Levy, Domenica Lorusso, Gabriella Macchia, Christian Marth, Philippe Morice, Ana Oaknin, Maria Rosaria Raspollini, Richard Schwameis, Jalid Sehouli, Alina Sturdza, Alexandra Taylor, Anneke Westermann, Pauline Wimberger, François Planchamp, Remi A Nout

Molecular classification (POLE-mutated [POLEmut], mismatch repair deficient [MMRd], no specific molecular profile [NSMP], or p53-abnormal [p53abn] endometrial carcinomas) should be done for all types of endometrial carcinoma

Moving timing for NGS testing to early stage cancer

ctDNA guiding adjuvant immunotherapy in urothelial carcinoma

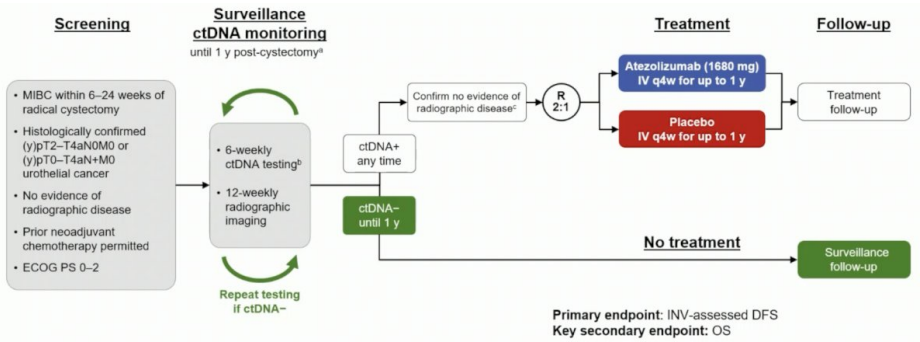
IMvigor011: adjuvant atezolizumab in high-risk ctDNA+ post-surgery MIBC

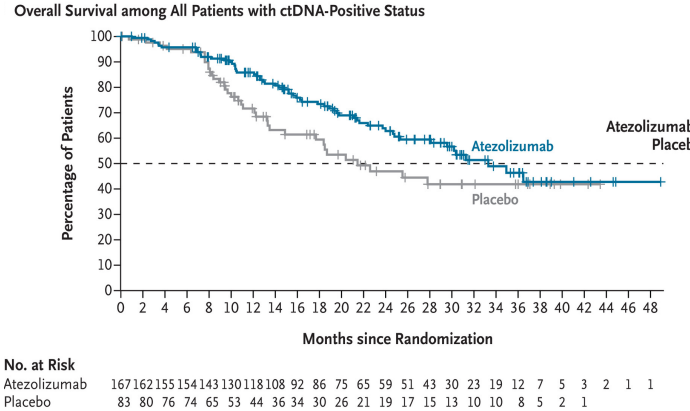
The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

ctDNA-Guided Adjuvant Atezolizumab in Muscle-Invasive Bladder Cancer

T. Powles,[1] A.G. Kann,[2] D. Castellano,[3] M. Gross-Goupil,[4] H. Nishiyama,[5] S. Bracarda,[6] J. Bjerggaard Jensen,[7] L. Makaroff,[8,9] S. Jiang,[10] J.H. Ku,[11] S.H. Park,[12] O. Reig Torras,[13] D. Ye,[14] M. Maruzzo,[15] A. Necchi,[16,17] R. Morales-Barrera,[18] E.F. Giunta,[19] J.L. Lee,[20] G. Tortora,[21,22] Y. Ürün,[23] L. Dolowy,[24] D. Erdem,[25] A. Pinto,[26] F. Grando,[27] W. Zou,[28] Z.J. Assaf,[28] J. Vuky,[28] V. Degaonkar,[6,28] E.E. Steinberg,[28] J. Bellmunt,[29] and J.E. Gschwend,[30] for the IMvigor011 Investigators*





	No. of Deaths (%)	Median Overall Survival (95% CI)
		mo
Atezolizumab (N=167)	60 (36)	32.8 (27.7–NE)
Placebo (N=83)	36 (43)	21.1 (14.7–NE)

Stratified hazard ratio for death, 0.59 (95% CI, 0.39–0.90)
P=0.01

Powles T, et al. N Engl J Med. 2025;393:2395-2408. doi:10.1056/NEJMoa2511885

Moving timing for NGS testing to early stage cancer

DYNAMIC trial: ctDNA-guided approach to adjuvant chemotherapy for stage II colon cancer

nature medicine

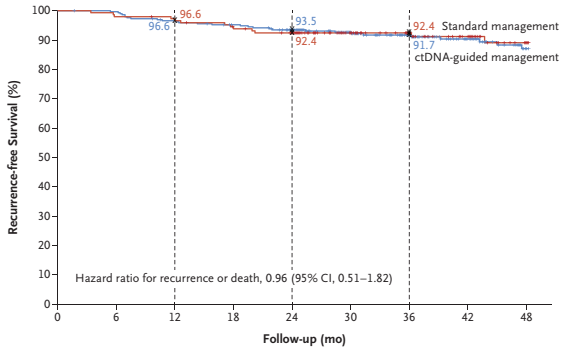
Accepted: 7 February 2025

Article

https://doi.org/10.1038/s41591-025-03579-w

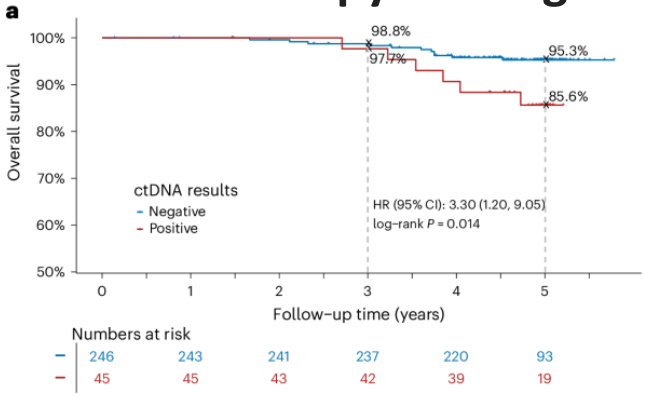
Circulating tumor DNA analysis guiding adjuvant therapy in stage II colon cancer: 5-year outcomes of the randomized DYNAMIC trial

B Kaplan–Meier Estimates of Recurrence-free Survival



No. at Risk									
Standard management	147	144	142	136	128	97	78	57	33
ctDNA-guided management	294	292	281	273	259	207	155	109	64

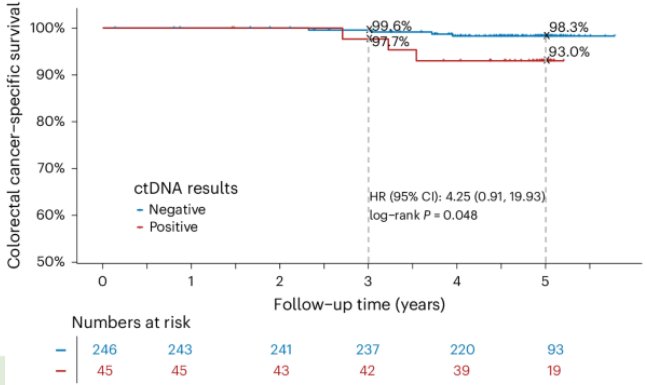
a



Numbers at risk

–	246	243	241	237	220	93
–	45	45	43	42	39	19

b



Numbers at risk

–	246	243	241	237	220	93
–	45	45	43	42	39	19

Moving timing for NGS testing to early stage cancer

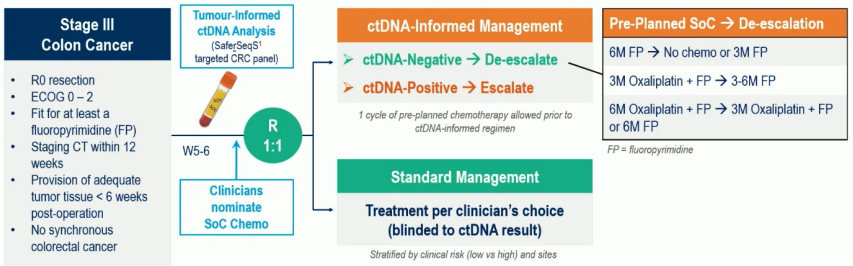
DYNAMIC-III trial: ctDNA-guided adjuvant therapy for locally advanced colon cancer

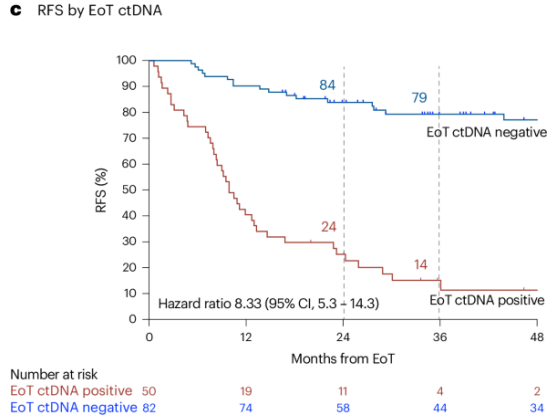
nature medicine

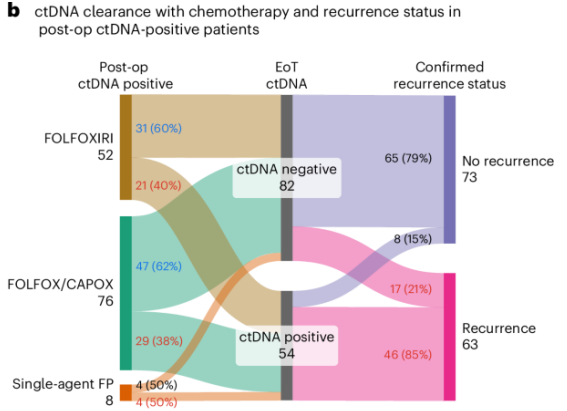
Article | Published: 20 October 2025

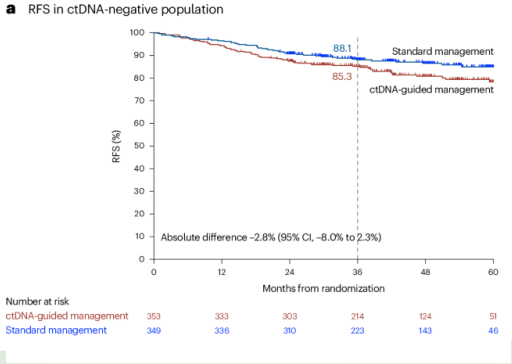
Circulating tumor DNA-guided adjuvant therapy in locally advanced colon cancer: the randomized phase 2/3 DYNAMIC-III trial

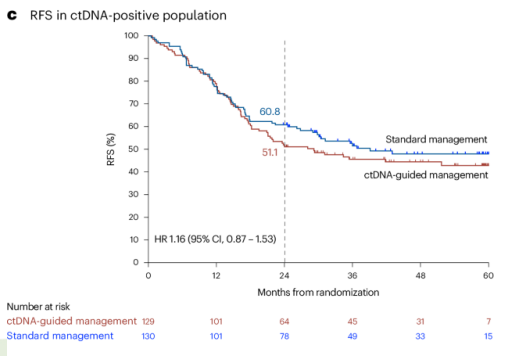
Jeanne Tie ✉, Yuxuan Wang, Jonathan M. Loree, Joshua D. Cohen, Rachel Wong, Timothy Price, Niall C. Tebbutt, Val Gebski, David Espinoza, Matthew Burge, Sam Harris, James Lynam, Belinda Lee, Margaret M. Lee, Daniel Breadner, Marlyse Debrincat, Siavash Foroughi, Lorraine Chantrill, Stephanie H. Lim, Sharlene Gill, Chris O'Callaghan, Janine Ptak, Natalie Silliman, Lisa Dobbyn, AGITG DYNAMIC-III Study Group (Intergroup Study of the Australasian Gastro-Intestinal Trials Group and Canadian Cancer Trials Group) + Show authors











Comprehensive Genomic Profiling (CGP) as standard for NGS biomarker testing in cancer

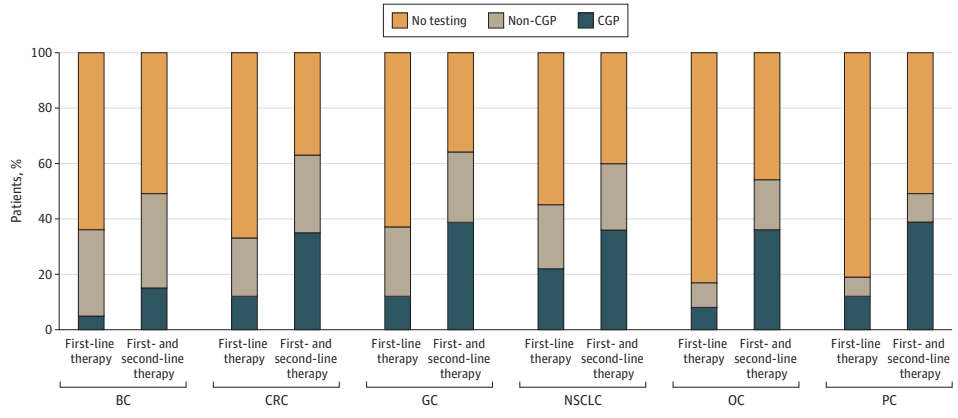
JAMA Network Open

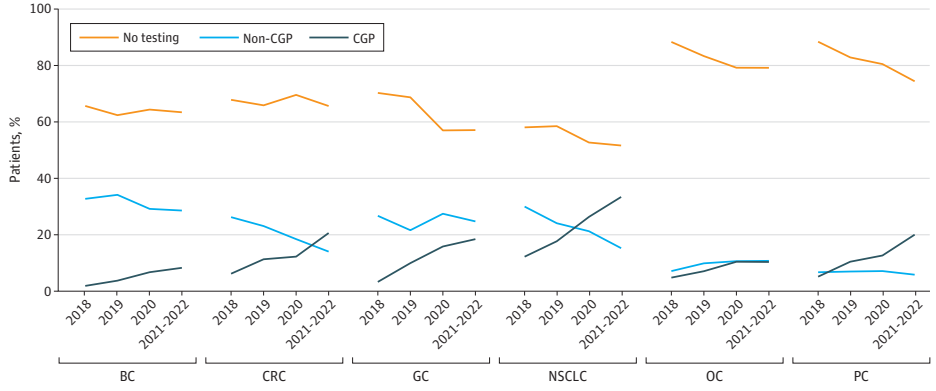
Original Investigation | Genetics and Genomics

Biomarker Testing Approaches, Treatment Selection, and Cost of Care Among Adults With Advanced Cancer

Stacey DaCosta Byfield, PhD, MPH; Bela Bapat, MS; Laura Becker, MS; Carolina Reyes, PhD; Ismini Chatzitheofilou, MS; Brock E. Schroeder, PhD; Damon Hostin, MA; John Fox, MD, MHA

- 26,311 patients
- Testing rates increased across time for most cancer types (from 32% in 2018 to 39% in 2021-22).
- NSCLC and CRC patients with CGP testing were more likely to receive targeted therapy (OR, 2.34) compared with patients who received non-CGP testing.
- Costs among patients with CGP testing were not different from those with non-CGP testing for breast, colorectal, gastric, NSCLC, ovarian, and pancreatic cancer.





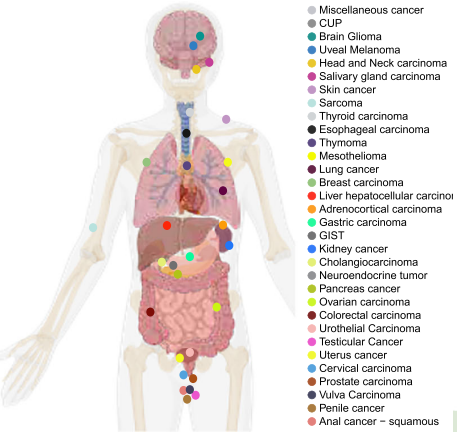
Comprehensive Genomic Profiling (CGP) as standard for NGS biomarker testing in cancer

npj | precision oncology (2025)9:66 Article

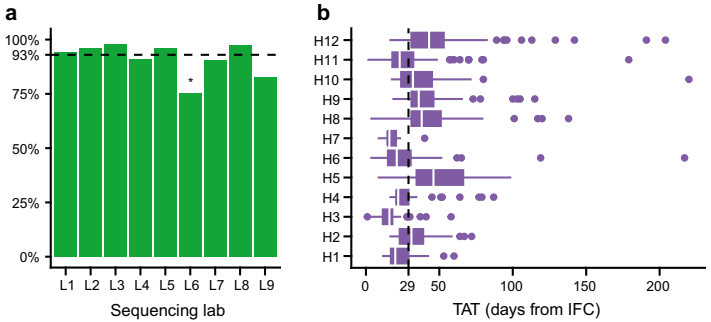
A nationwide comprehensive genomic profiling and molecular tumor board platform for patients with advanced cancer

Pieter-Jan Volders[1,2,3], Philippe Aftimos[4], Franceska Dedeurwaerdere[5], Geert Martens[6], Jean-Luc Canon[7], Gabriela Beniuga[8], Guy Froyen[1,2], Jacques Van Huysse[9], Rebecca De Pauw[10], Hans Prenen[11,12], Suzan Lambin[13], Lore Decoster[14,15], Freya Vaeyens[16], Sylvie Rottey[17], Pieter-Jan Van Dam[18], Lynn Decoster[19], Annemie Rutten[20], Max Schreuer[21], Siebe Loontiens[3,22,23], Joni Van der Meulen[3,22,23], Jeroen Mebis[2,24], Kristof Cuppens[2,25], Sabine Tejpar[26], Isabelle Vanden Bempt[27], Jacques De Grève[15,16], David Schröder[7], Cédric van Marcke[28,29], Marc Van Den Bulcke[30], Evandro de Azambuja[31], Kevin Punie[20] & Brigitte Maes[1,2] ✉

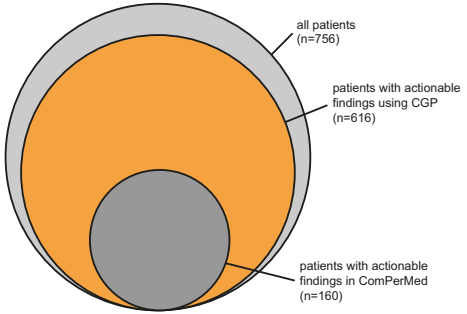
- 12 Belgian hospitals and nine laboratories
- BALLETT study using a decentralized 523-gene CGP panel
- CGP identified actionable genomic markers in 81% of patients, far exceeding the ~21% rate seen with small, nationally reimbursed panels.



CGP success rate, turnaround time



Actionability using CGP vs standard-of-care gene panels in Belgium



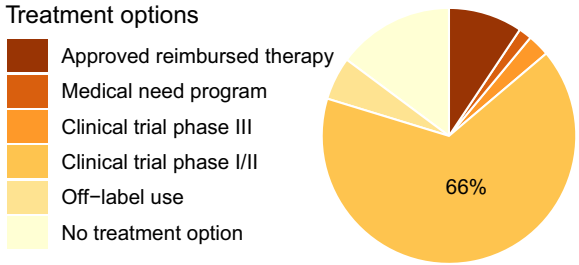
- *Successful in 93% of advanced cancer patients*
- *Median TAT of 29 days*

Comprehensive Genomic Profiling (CGP) as standard for NGS biomarker testing in cancer

npj | precision oncology (2025)9:66 Article

A nationwide comprehensive genomic profiling and molecular tumor board platform for patients with advanced cancer

Pieter-Jan Volders[1,2,3], Philippe Aftimos[4], Franceska Dedeurwaerdere[5], Geert Martens[6], Jean-Luc Canon[7], Gabriela Beniuga[8], Guy Froyen[1,2], Jacques Van Huysse[9], Rebecca De Pauw[10], Hans Prenen[11,12], Suzan Lambin[13], Lore Decoster[14,15], Freya Vaeyens[16], Sylvie Rottey[17], Pieter-Jan Van Dam[18], Lynn Decoster[19], Annemie Rutten[20], Max Schreuer[21], Siebe Loontiens[3,22,23], Joni Van der Meulen[3,22,23], Jeroen Mebis[2,24], Kristof Cuppens[2,25], Sabine Tejpar[26], Isabelle Vanden Bempt[27], Jacques De Grève[15,16], David Schröder[7], Cédric van Marcke[28,29], Marc Van Den Bulcke[30], Evandro de Azambuja[31], Kevin Punie[20] & Brigitte Maes[1,2] ✉



- A national MTB provided treatment recommendations for 69%, and 23% received matched therapies.
- CGP can uncover germline variants in ~15% of cases, informing genetic counseling

Comprehensive Genomic Profiling (CGP) as standard for NGS biomarker testing in cancer

JAMA Network Open

JAMA Network Open. 2025;8(12):e2548538.

Original Investigation | Health Policy

Economic Evaluation of Comprehensive Genomic Profiling in an Advanced Solid Cancer Population

Lucas F. van Schaik, MSc; Brigitte Maes, MD, PhD; Pieter-Jan Volders, PhD; Guy Froyen, PhD; Philippe Aftimos, MD, PhD; Evandro de Azambuja, MD, PhD; Hedwig M. Blommestein, PhD; Wim H. van Harten, MD, PhD; Valesca P. Retèl, PhD

- Lower cost per matched treatment in cancers with higher frequencies of actionable biomarkers (e.g., NSCLC) suggests **greater cost-effectiveness potential in certain tumor subgroups**
- Mean diagnostic cost per patient in the BALLETT cohort was approximately €2,147. Diagnostic costs to identify a patient with a matched therapy reached €14,249 (with individual tumor variation, e.g., ~€9,952 for lung, ~€20,377 for colon).
- These figures exceed common hypothetical willingness-to-pay thresholds (e.g., €5,000 per matched treatment), highlighting the cost challenges of CGP implementation.

Table. Base-Case and Scenario Analysis Results[a]

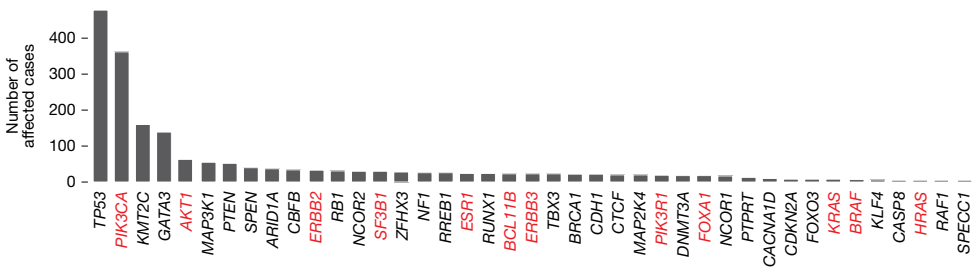
Variable	No. of patients	Diagnostic costs, €		Actionable targets, % (ICCR, €)	MTB recommendations, % (ICCR, €)	Total matched treatments, % (ICCR, €)	On-label matched treatments, %
		Mean diagnostic cost	Total diagnostic cost, €				
Base-case analysis CGP							
All tumor types	814	2147	1 747 684	76 (2816)	65 (3302)	15 (14 249)	4
Lung cancer	76	2095	159 232	87 (2413)	82 (2568)	21 (9952)	9
Breast cancer	120	2144	257 221	88 (2450)	73 (2923)	18 (11 846)	7
Colon cancer	86	2089	179 647	76 (2764)	63 (3327)	10 (20 377)	0
Sarcoma	53	2273	120 445	55 (4153)	40 (5735)	15 (15 568)	0
Scenario analysis							
Upfront SOC	814	429	349 235	37	NA	26	26
Upfront CGP	814	2152	1 751 943	81 (3925)	66 (NA)[b]	38 (13 936)[c]	27
Upfront SOC with indication for SOC diagnostics	422	828	349 235	51	NA	32	32
Upfront CGP with indication for SOC diagnostics	422	2157	910 307	85 (3857)	74 (NA)[b]	44 (10 483)[c]	33

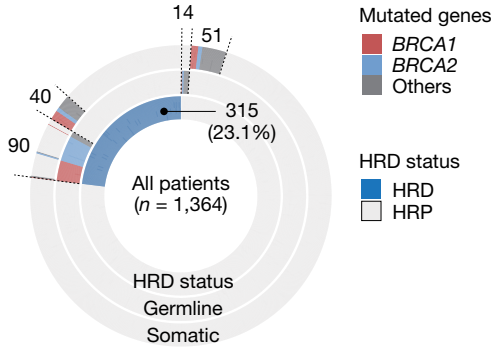
WGS as expanded genomic profiling in cancer

Whole-genome landscapes of 1,364 breast cancers

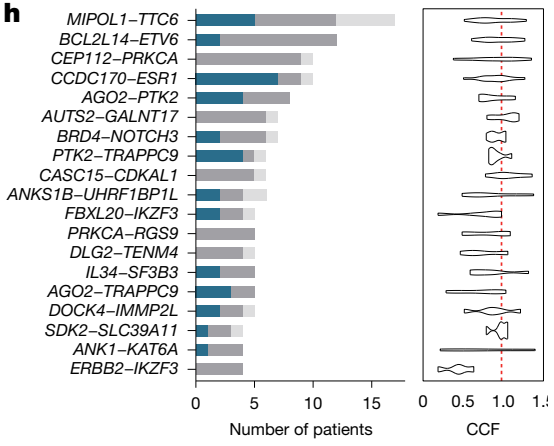
https://doi.org/10.1038/s41586-025-09812-3
Received: 15 September 2024
Accepted: 27 October 2025
Published online: 3 December 2025
Open access
Check for updates

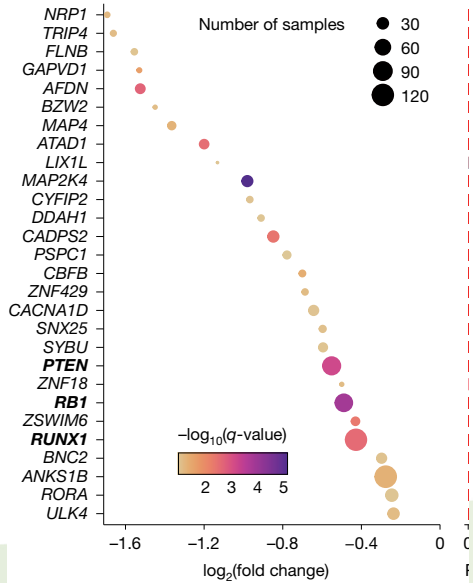
Ryul Kim[1,12], Jonghan Yu[2,12], Joonoh Lim[1], Brian Baek-Lok Oh[1], Seok Jin Nam[2], Seok Won Kim[2], Jeong Eon Lee[2], Byung Joo Chae[2], Ji-Yeon Kim[3], Ga Eun Park[4], Bong Joo Kang[4], Pill Sun Paik[5], Soo Yeon Bae[6], Chang Ik Yoon[6], Young Joo Lee[6], Dooreh Kim[6], Kabsoo Shin[7], Ji Eun Lee[7], Jun Kang[8], Ahwon Lee[8], Erin Connolly-Strong[1], Sangmoon Lee[1], Bo Rahm Lee[1], Yuna Lee[1], Ki Jong Yi[1], Young Oh Kwon[1], In Hwan Chun[1], Junggil Park[1], Jihye Kim[1], Chahyun Choi[1], Jong Yeon Shin[1], Hyungjung Lee[1], Minji Kim[1], Hansol Park[1], Ilecheon Jeong[1], Boram Yi[1], Won-Chul Lee[1], Jeong Seok Lee[1,9], Woo Chan Park[6], Sung Hun Kim[4], Yoon-La Choi[10], Jeongmin Lee[4,11] ✉, Young Seok Ju[1,9] ✉ & Yeon Hee Park[3] ✉





WGS in 1,364 BCs identified recurrent gene fusions, SNV and CNAs, increasing the classical mutational repertory in this tumor





Ultrasensitive NGS in ctDNA for early NSCLC prediction

Cell

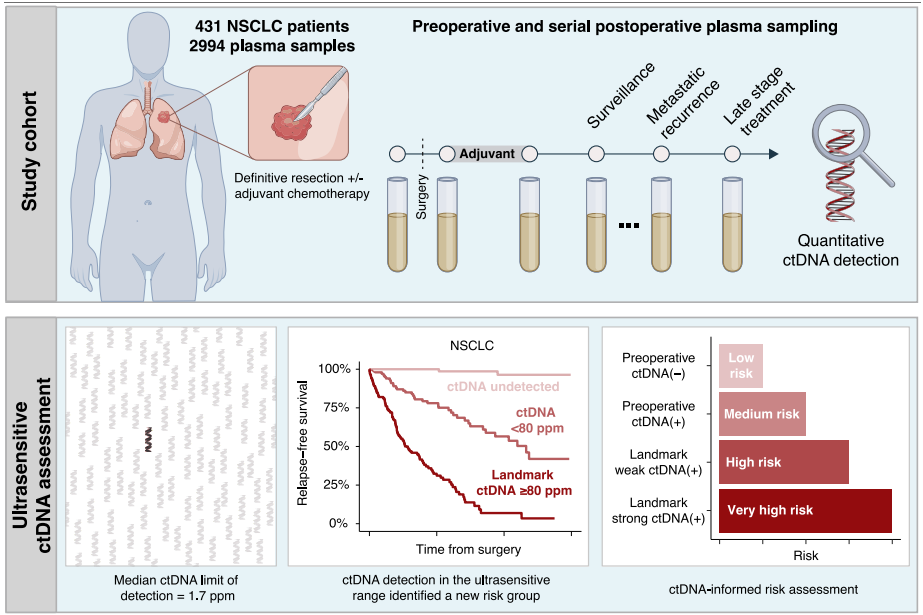
Cell *188*, 7083–7098, December 11, 2025

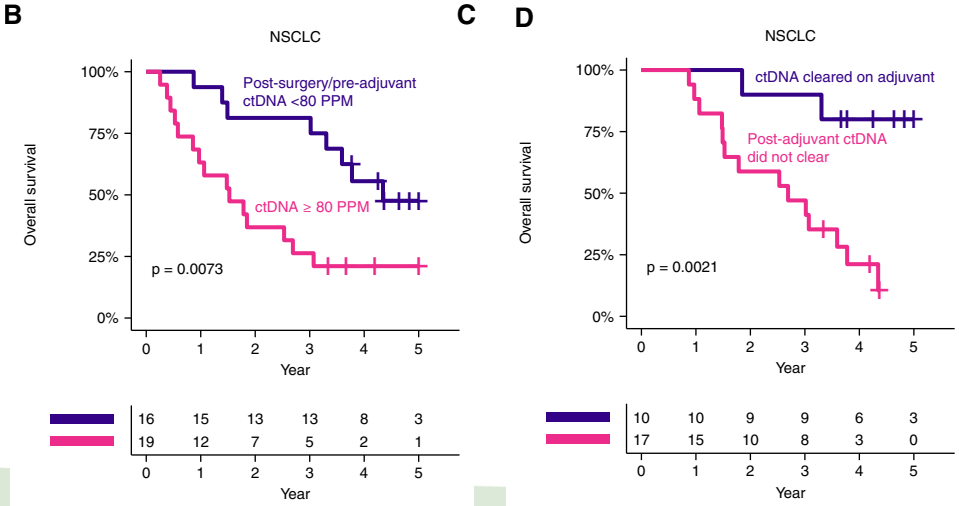
CellPress
OPEN ACCESS

Article

Longitudinal ultrasensitive ctDNA monitoring for high-resolution lung cancer risk prediction

James R.M. Black,[1,2,18] Takahiro Karasaki,[1,2,3,18] Charles W. Abbott,[4,18] Bailiang Li,[4,18] Selvaraju Veeriah,[1,2] Maise Al Bakir,[1,2,5] Wing Kin Liu,[6] Ariana Huebner,[1,2] Carlos Martínez-Ruiz,[1,2] Piotr Pawlik,[7] David A. Moore,[1,2,8] Daniele Marinelli,[9] Oliver Shutkever,[1,6] Cian Murphy,[1,2] Lydia Y. Liu,[1,2] Charlotte Grieco,[1,2] Karen Grimes,[1,7] Fabio C.P. Navarro,[4] Rachel Marty Pyke,[4] Gabor Bartha,[4] Kathleen C. Keough,[4] Steven Dea,[4] Neeraja Ravi,[4] John Lyle,[4] Jason Harris,[4] Katherine D. Brown,[10,11] Fiona H. Blackhall,[10,11] Fatemah Hassani,[12] Dean A. Fennell,[12,13] Nicholas McGranahan,[1,7] Jacqui A. Shaw,[13,14] Christopher Abbosh,[2,15] TRACERx Consortium, Allan Hackshaw,[16] Mariam Jamal-Hanjani,[1,5,6] Alexander M. Frankell,[1,2,17] Sean M. Boyle,[4,19] Richard O. Chen,[4,19] and Charles Swanton[1,2,5,19,20,*]





NGS: ¿ya para todos ya desde el diagnóstico?

Nivel A	**Refleja en todos los pacientes, independientemente de estadio**	NGS dirigida (50-70 genes, con detección de fusiones)	NSCLC (+PD-L1)
		MMR/MSI, POLE y RAS/BRAF/HER2, según escenario de probabilidad de metastásico	Endometrio CRC
Nivel B	**Refleja en todos los pacientes metastásicos, según protocolo del centro**	NGS dirigida (50-70 genes, con detección de fusiones)	NSCLC (+PD-L1) CRC Próstata Tiroides Ovario (+HRD) Colangiocarcinoma y Páncreas Urotelial Sarcoma Mama luminal
		ctDNA NGS (mutaciones emergentes: ESR1, MET, RET, ALK…)	
Nivel C	**Pacientes candidatos a ensayo**	NGS CGP (300-600 genes)	Tumores con alta probabilidad de dianas
Nivel D	**MRD/ctDNA “programable”**	Tumor-informed ctDNA NGS	CRC, estadio II-III Urotelial MIC