

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

## VIEWS

## IN FOCUS

Precision Oncology: 2025 in Review Nicholas Mai<sup>1</sup>, Nicole Fernandez<sup>2,3</sup>, Alexander Drilon<sup>1</sup>, and Debyani Chakravarty<sup>2,3</sup>

**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



## SPECIAL ARTICLE

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

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

- 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

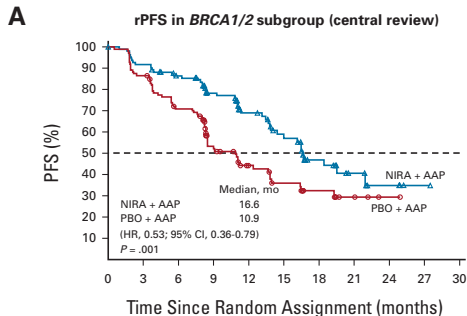
### MAGNITUDE: Niraparib in combination with abiraterona in mCRPC

J Clin Oncol 41:3339-3351. © 2023

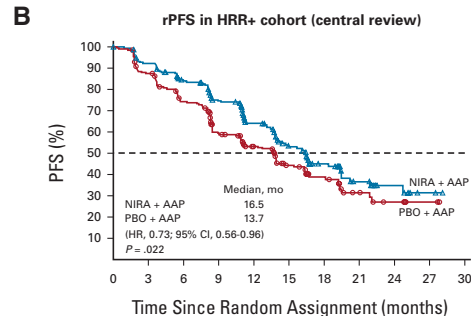
Journal of Clinical Oncology®

## Niraparib and Abiraterone Acetate for Metastatic Castration-Resistant Prostate Cancer

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



No. at risk:	0	3	6	9	12	15	18	21	24	27	30
NIRA + AAP	113	103	90	65	45	31	18	9	4	1	0
PBO + AAP	112	97	77	43	28	20	11	5	2	0	0



No. at risk:	0	3	6	9	12	15	18	21	24	27	30
NIRA + AAP	212	192	167	129	96	64	45	21	10	2	0
PBO + AAP	211	182	149	102	78	53	35	15	9	2	0

### TALAPRO-2 : Talazoparib in combination with enzalutamide in mCRPC



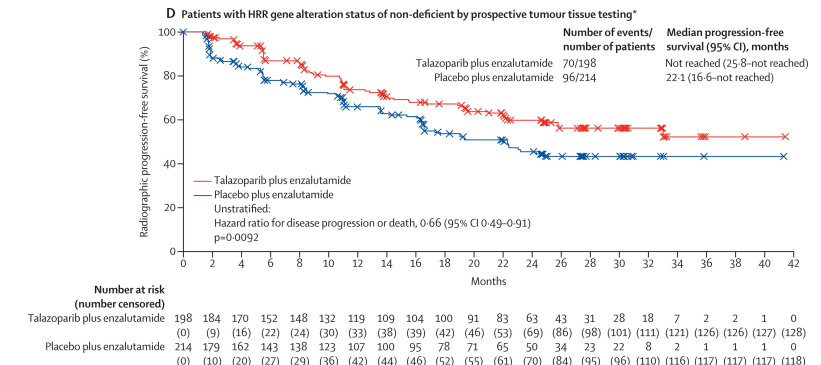
The Lancet Oncology

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



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

© 2025 by American Society of Clinical Oncology

Journal of Clinical Oncology®

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

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

### 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**

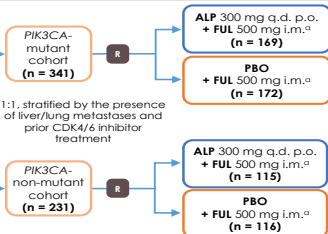
Strength of recommendation: **Strong**

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

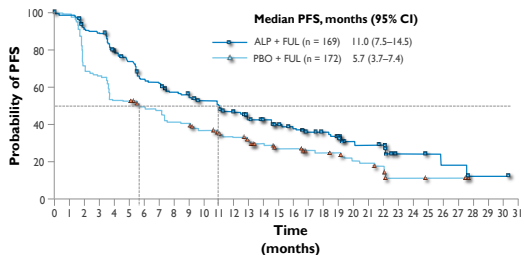
## SOLAR-1: Alpelisib in 2L hormone-sensitive PI3KCAmut HR+ HER2- BC

Men or postmenopausal women with HR+ HER2- ABC

- Recurrence/progression on/after prior AI treatment
  - Identified PI3KCA status (in archival or fresh tumor tissue)
  - Measurable disease or  $\geq 1$  predominantly lytic bone lesion
  - ECOG performance status  $\leq 1$
- (N = 572)



PI3KCA-mutant cohort



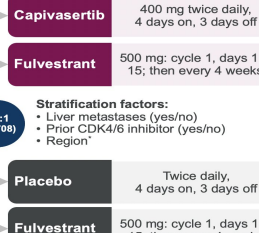
HR (95% CI) **0.65 (0.50-0.85)**  
p value **0.00065**

André F, et al. N Engl J Med. 2019;380:1929-29.

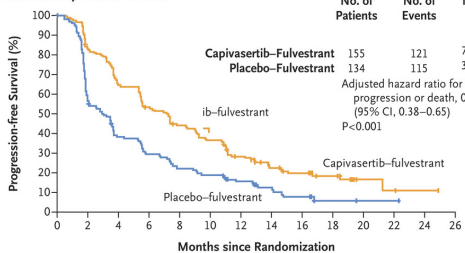
## CAPITELLO291: Capivasertib in 2L hormone-sensitive PI3K/AKT/PTEN altered HR+ HER2- BC

Patients with HR+/HER2- ABC

- Men and pre-/post-menopausal women
- Recurrence or progression while on or <12 months from end of adjuvant AI, or progression while on prior AI for ABC
- $\leq 2$  lines of prior endocrine therapy for ABC
- $\leq 1$  line of chemotherapy for ABC
- Prior CDK4/6 inhibitors allowed (at least 51% required)
- No prior SERD, mTOR inhibitor, PI3K inhibitor, or AKT inhibitor
- HbA1c <8.0% (63.9 mmol/mol) and diabetes not requiring insulin allowed
- FPPE tumor sample from the primary/recurrent cancer available for retrospective central molecular testing



Patients with AKT Pathway-Altered Tumors

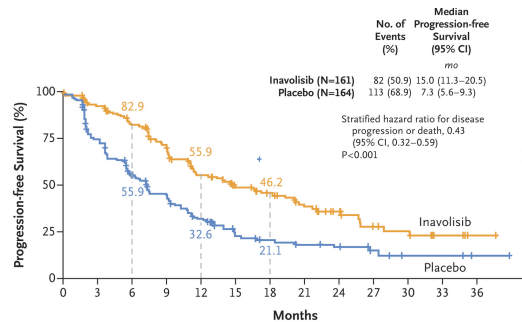
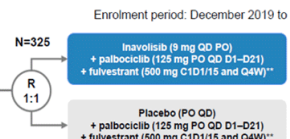


At Risk	155	127	99	80	65	54	38	26	21	12	3	2	1	0
Capivasertib-fulvestrant	155	127	99	80	65	54	38	26	21	12	3	2	1	0
Placebo-fulvestrant	134	77	48	37	28	24	17	11	6	2	1	1	0	0

Turner, NC et al. NEJM 2023

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

- Key eligibility criteria
- Enrichment of patients with poor prognosis: PI3KCA-mutated, HR+, HER2- ABC by central ctDNA\* or local tissue ctDNA test
  - Measurable disease
  - Progression during/within 12 months of adjuvant ET completion
  - No prior therapy for ABC
  - Fasting glucose <126 mg/dL and HbA<sub>1c</sub> <6.0%



No. at Risk	161	134	111	92	66	48	41	31	22	13	11	5	1
Inavolisib	161	134	111	92	66	48	41	31	22	13	11	5	1
Placebo	164	113	77	59	40	23	19	16	12	6	3	3	1

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

**Population:** ER+ HER2- advanced or metastatic breast cancer > 2 previous lines of endocrine therapy in the advanced setting. Previous CDK4/6.

**Elacestrant 345 mg orally once daily (n = 238)**

**SOC endocrine therapy (fulvestrant or AI) (n = 238)**

**Primary end point:** PFS by BCR in ESR1-mut and ITT

**Key secondary end point:** OS in ESR1-mut and ITT

**Stratification factors:** ESR1-mut or ESR1-wt, Previous fulvestrant (yes or no), Visceral metastases (yes or no)

	Elacestrant (n=115)	SOC (n=111)
Events, No. (%)	62 (53.9)	79 (69.0)
HR (95% CI)	0.55 (0.39 to 0.77)	
<b>P</b>	<b>0.0005</b>	
6-month PFS, % (95%)	40.8 (30.1 to 51.4)	19.1 (10.5 to 27.8)
18-month PFS, % (95%)	26.8 (16.2 to 37.4)	8.2 (1.3 to 15.1)

Bidard, FC et al. J Clin Oncol 2022

### VERITAC2 trial: Vepdegestrant

**Phase 3 VERITAC-2 Trial**

**Key eligibility criteria:**

- Women or men aged ≥18 years
- Confirmed ER+HER2- advanced breast cancer
- 1 line of CDK4/6 inhibitor therapy in combination with endocrine therapy
- ≥1 additional endocrine therapy
- Most recent endocrine treatment given for ≥6 months prior to disease progression
- No prior chemotherapy for locally advanced/metastatic disease
- Radiological progression during or after the last line of therapy

**Treatment (n=560):**

- ARV-471:** 200 mg orally once daily
- Fulvestrant:** 500 mg intramuscularly days 1 and 15 of cycle 1 and day 1 of subsequent cycles

**Primary end point:** PFS by BCR in ITT population

**Secondary end points include:** OS, ORR, DOR, and SRR; AEs; QoL measurements

**Stratification factors:** ESR1-mut (yes vs no); Visceral disease (yes vs no)

**A Progression-free Survival among Patients with ESR1 Mutations**

	Vepdegestrant (n=134)	Fulvestrant (n=134)
No. of Events (%)	82 (60.5)	110 (81.3)
Median Progression-free Survival, mo (95% CI)	11.0 (9.7-12.4)	7.1 (6.5-7.7)
HR (95% CI)	1.81 (1.51-2.15)	

Campane, M et al. NEJM 2025

### EMBER3 trial: Imlunestrant

**ER+, HER2-ABC**

**Men and Pre- (Post-)menopausal women**

**Prior therapy:**

- Adjuvant: Recurrence on or within 12 months of completion of AI ± CDK4/6
- ABC: Progression on first-line AI ± CDK4/6
- No other therapy for ABC

**Stratification Factors:** Prior CDK4/6 therapy (YN); Visceral metastases (YN); Region

**Primary Endpoints:** Investigator-assessed PFS for A vs B in patients with ESR1m

**Key Secondary Endpoints:** OS, PFS by BCR, and ORR

**Exploratory Endpoints:** PFS and OS for C vs B in all patients

**Treatment:** Imlunestrant 400 mg QD (A), SOC ET\* (B), Imlunestrant 400 mg QD + abemaciclib\* (C)

**A Progression-free Survival among Patients with ESR1 Mutations, Imlunestrant vs. Standard Ther**

	Imlunestrant (n=118)	Standard therapy (n=118)
No. of Events (%)	109 (91.5)	132 (111.8)
Median Progression-free Survival, mo (95% CI)	11.0 (9.7-12.4)	8.1 (7.5-8.7)
HR (95% CI)	1.38 (1.12-1.68)	

Jhaveri, KL et al. NEJM 2025

### evERA trial: Giredestrant

**Key eligibility criteria\***

- ER+, HER2-ABC (N=1 of 100)
- ≥ 2 prior lines of ET in the ABC setting
- PD or relapse during PD-CDK4/6 + ET
- No prior chemotherapy in the ABC setting
- Measurable disease per RECIST v1.1 or evaluable tumor metastases

**Enrollment period:** August 2023 to October 2024

**Treatment:** Giredestrant (20 mg) + everolimus (10 mg) (A), SOC ET + everolimus (10 mg) (B)

**Primary Endpoints:** PFS by BCR in ITT population

**Key Secondary Endpoints:** OS, PFS by BCR, and ORR

**Exploratory Endpoints:** PFS and OS for C vs B in all patients

**A Progression-free Survival among All Patients**

	Giredestrant + everolimus (n=102)	SOC ET + everolimus (n=103)
Events, n (%)	63 (61.8)	89 (84.8)
Median, mo (95% CI)	9.99 (8.08, 12.94)	5.45 (3.75, 5.82)
Stratified HR (95% CI)	0.38 (0.27, 0.54); p < 0.0001	

Mayer, EL et al. ESMO 2025

### SERENA6 trial: Camizestrant

**Step one: ESR1m detector phase**

**Step two: double-blind, randomized treatment phase**

**Standard of care treatment with AI (tamoxifen or anastrozole) + CDK4/6 (palbociclib or abemaciclib) (75 mg QD)**

**Screening (n = 3002):** ESR1m surveillance

**Second screening:** ESR1m surveillance

**Study treatment:** Camizestrant (100 mg QD) + SOC CDK4/6 + Add placebo for AI

**Key inclusion criteria:** Historically confirmed ER+HER2-ABC; Received all months of 1L AI (tamoxifen or anastrozole) plus CDK4/6 (palbociclib or abemaciclib) therapy for ABC with evidence of disease progression; ECOG PS of 0 or 1

**Key exclusion criteria:** ESR1m detected by central testing of cDNA; Evaluable disease; No evidence of disease progression by investigator assessment; ECOG PS of 0 or 1; Adequate organ and marrow function

**Primary Endpoints:** PFS by BCR in ITT population

**Key Secondary Endpoints:** OS, PFS by BCR, and ORR

**Exploratory Endpoints:** PFS and OS for C vs B in all patients

**A Progression-free Survival among All Patients**

	Camizestrant (n=157)	Standard therapy (n=158)
No. of Events (%)	109 (69.4)	143 (90.5)
Median Progression-free Survival, mo (95% CI)	11.0 (9.7-12.4)	7.1 (6.5-7.7)
HR (95% CI)	1.81 (1.51-2.15)	

Bidard, FC et al. NEJM 2025

# NGS as standard testing for advanced disease in NSCLC

The Lancet Regional Health - Europe 2025;50: 101183

Health Policy

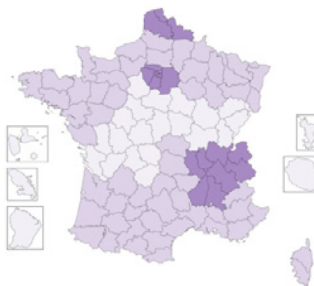
## PFMG2025—integrating genomic medicine into the national healthcare system in France

PFMG2025 contributors<sup>9</sup>



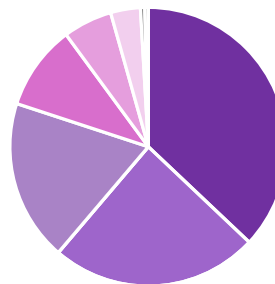
Geographical distribution of prescriptions for cancers/ 100,000 inhabitants as of December 31, 2023

< 1  
1 - 5  
5 - 10

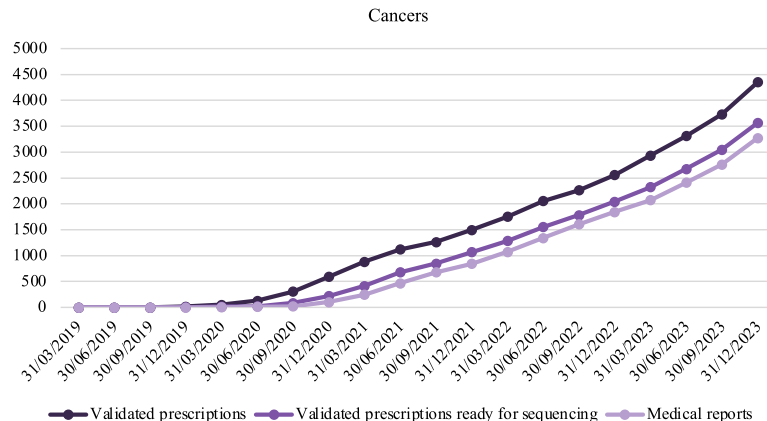


- 3109 results were returned to prescribers, resulting in a rate of 92.3% on 2023.
- This number increased significantly between 2022-2023 (+45.4%).

F Repartition of complete prescriptions by cancers pre-indications (N=3,367)



- Advanced cancers with 1st line treatment failure (N=1,246)
- Rare cancers (N=817)
- Pediatric cancers and leukemia with treatment failure (N=631)
- Relapsed or refractory acute leukemia, eligible for a curative treatment (N=332)
- Pediatric cancers and leukemia at diagnosis (N=193)
- Cancers of unknown primary (N=117)
- Relapsed or refractory Diffuse Large B cell lymphoma (DLBCL) (N=17)
- Lymphoma with an uncertain diagnosis (N=14)



# Moving timing for NGS testing to early stage cancer

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

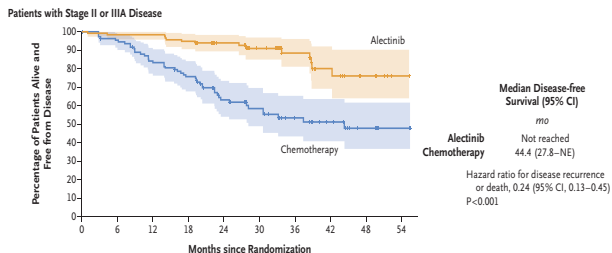
## Alina trial

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\*



No. at Risk	0	6	12	18	24	30	36	42	48	54
Alectinib	116	111	111	107	67	49	35	21	10	3
Chemotherapy	115	102	88	79	48	35	23	17	10	2

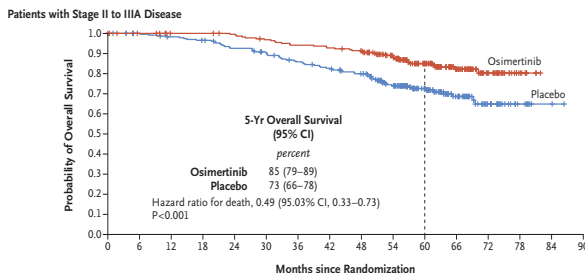
## ADAURA trial

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 Hyeon 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 Rukazenzov, M.D., Ph.D., and Yi-Long Wu, M.D., for the ADAURA Investigators\*



No. at Risk	0	6	12	18	24	30	36	42	48	54	60	66	72	78	84	90
Osimertinib	233	229	224	224	221	214	208	205	200	170	115	69	33	9	0	0
Placebo	237	232	226	221	210	202	190	182	171	138	94	53	25	8	2	0

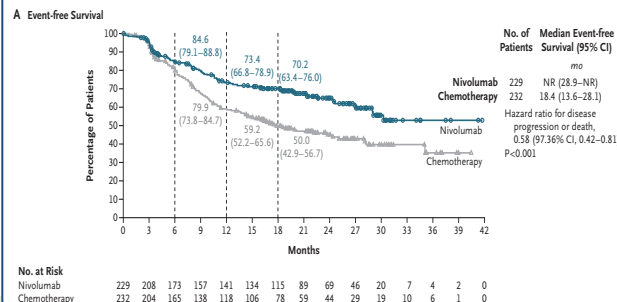
## CheckMate 77T trial

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. Petruzella, 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\*



No. at Risk	0	3	6	9	12	15	18	21	24	27	30	33	36	39	42
Nivolumab	229	208	173	157	141	134	115	89	69	46	20	7	4	2	0
Chemotherapy	232	204	165	138	118	106	78	59	44	29	19	10	6	1	0

# Moving timing for NGS testing to early stage cancer



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<sup>☆</sup>

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

- 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

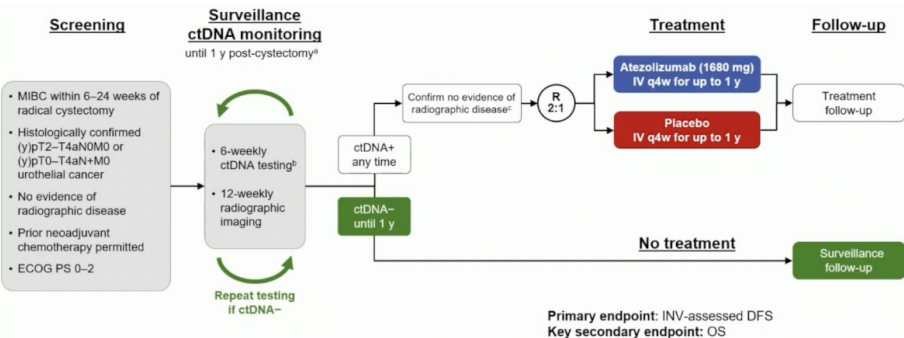
### IMvigor011: adjuvant atezolizumab in high-risk ctDNA+ post-surgery MIBC

The NEW ENGLAND JOURNAL of MEDICINE

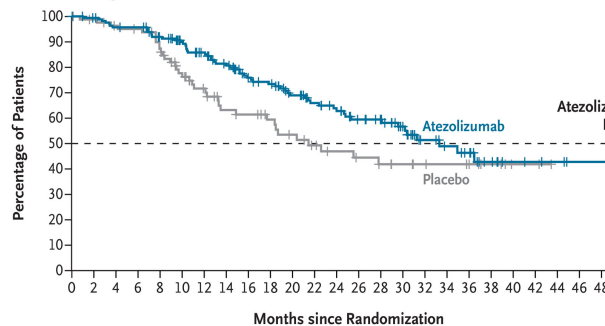
ORIGINAL ARTICLE

#### ctDNA-Guided Adjuvant Atezolizumab in Muscle-Invasive Bladder Cancer

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



Overall Survival among All Patients with ctDNA-Positive Status



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

No. at Risk	167	162	155	154	143	130	118	108	92	86	75	65	59	51	43	30	23	19	12	7	5	3	2	1	1
Atezolizumab	167	162	155	154	143	130	118	108	92	86	75	65	59	51	43	30	23	19	12	7	5	3	2	1	1
Placebo	83	80	76	74	65	53	44	36	34	30	26	21	19	17	15	13	10	10	8	5	2	1			

# Moving timing for NGS testing to early stage cancer

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

nature medicine

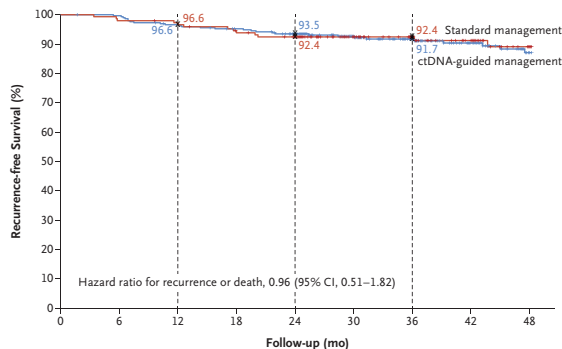
Accepted: 7 February 2025

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

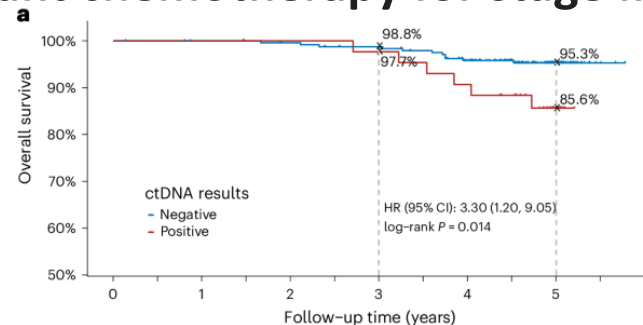


No. at Risk

Standard management

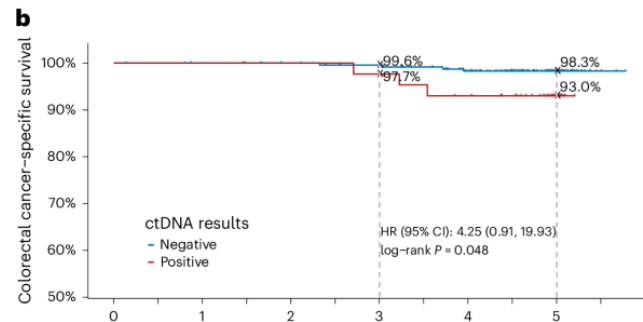
ctDNA-guided management

147	144	142	136	128	97	78	57	33
294	292	281	273	259	207	155	109	64



Numbers at risk

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



Numbers at risk

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

# Moving timing for NGS testing to early stage cancer

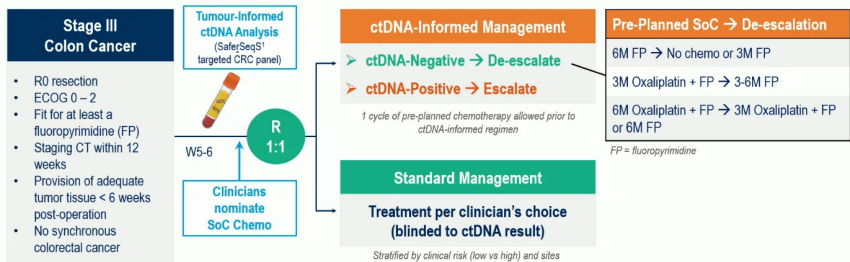
## DYNAMIC-III trial: ctDNA-guided adjuvant therapy for locally advanced colon cancer

naturemedicine

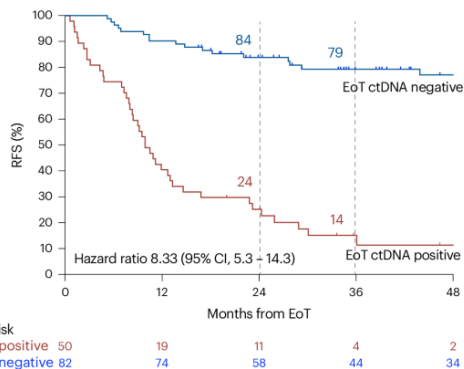
Article | Published: 20 October 2025

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

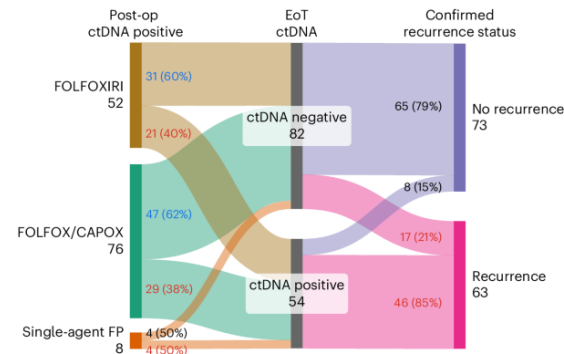
Jeanne Tie, Yuxuan Wang, Jonathan M. Loree, Joshua D. Cohen, Rachel Wong, Timothy Price, Niall C. Tebbutt, Val GebSKI, David Espinoza, Matthew Burge, Sam Harris, James Lynam, Belinda Lee, Margaret M. Lee, Daniel Breadner, Marlyse Debrincat, Siavash Foroughi, Lorraine Chantrill, Stephanie H. Lim, Sharlene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



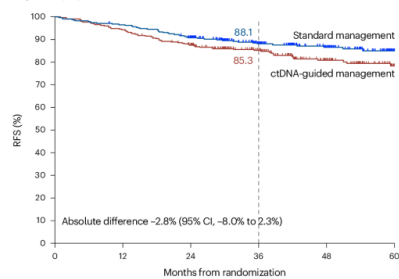
c RFS by EoT ctDNA



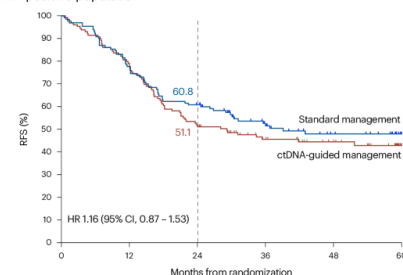
b ctDNA clearance with chemotherapy and recurrence status in post-op ctDNA-positive patients



a RFS in ctDNA-negative population



c RFS in ctDNA-positive population



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

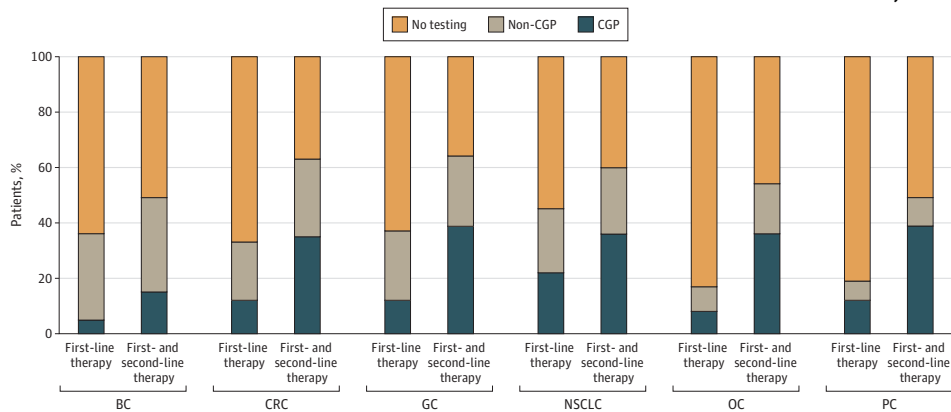


Original Investigation | Genetics and Genomics

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

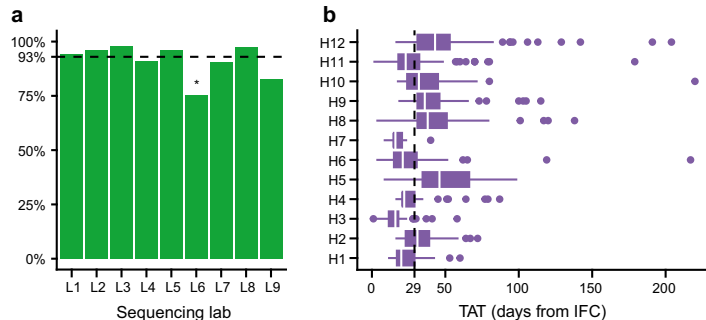
Article

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

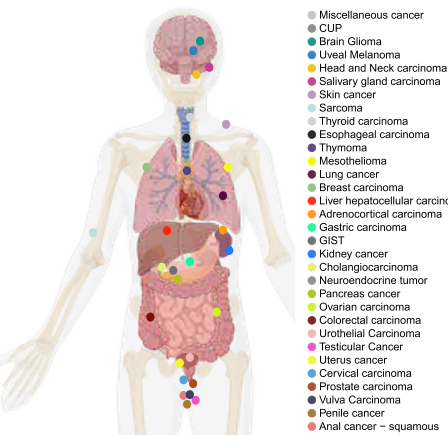
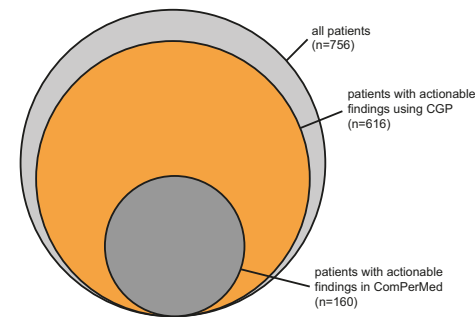
Pieter-Jan Volders<sup>1,2,3</sup>, Philippe Aftimos<sup>4</sup>, Franceska Dedeurwaerdere<sup>5</sup>, Geert Martens<sup>6</sup>, Jean-Luc Canon<sup>7</sup>, Gabriela Beniuga<sup>8</sup>, Guy Froyen<sup>1,4</sup>, Jacques Van Huysse<sup>9</sup>, Rebecca De Pauw<sup>10</sup>, Hans Prenen<sup>11,12</sup>,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

- 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

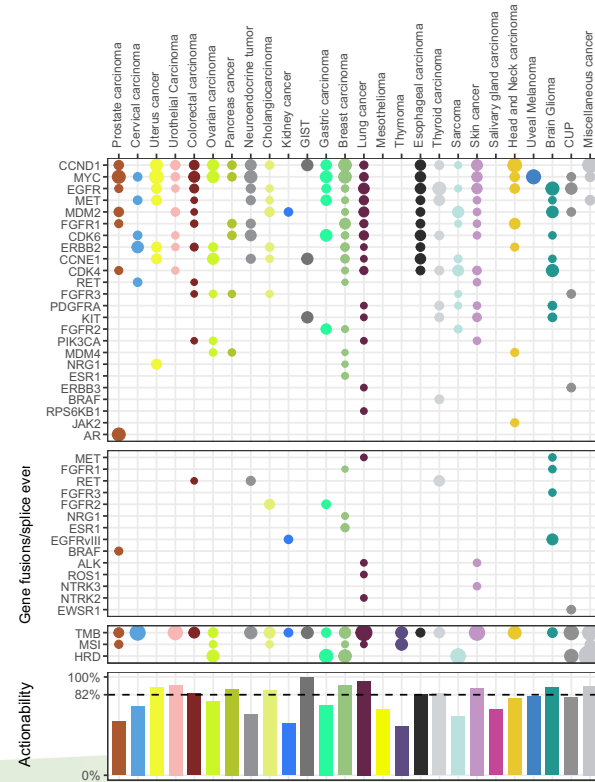
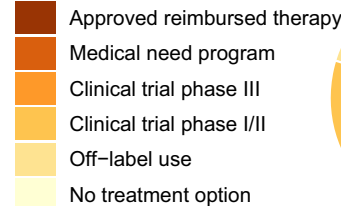
npj | precision oncology (2025)9:66

Article

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

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

### Treatment options



- 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. 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<sup>a</sup>

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) <sup>b</sup>	38 (13 936) <sup>c</sup>	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) <sup>b</sup>	44 (10 483) <sup>c</sup>	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

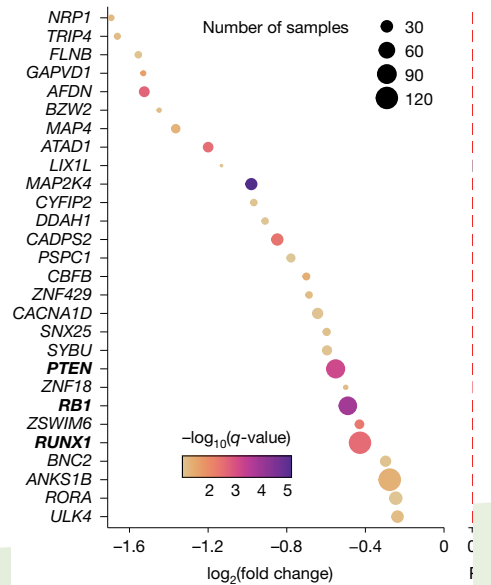
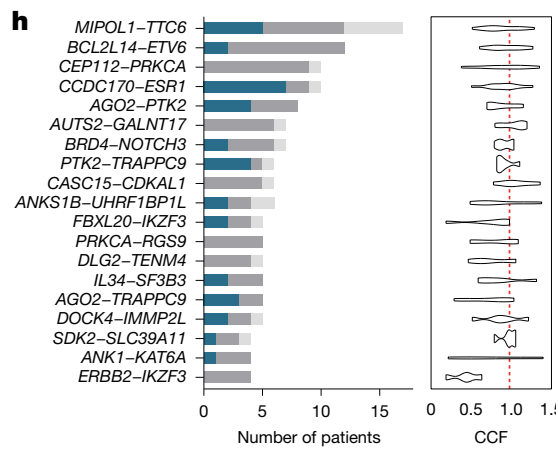
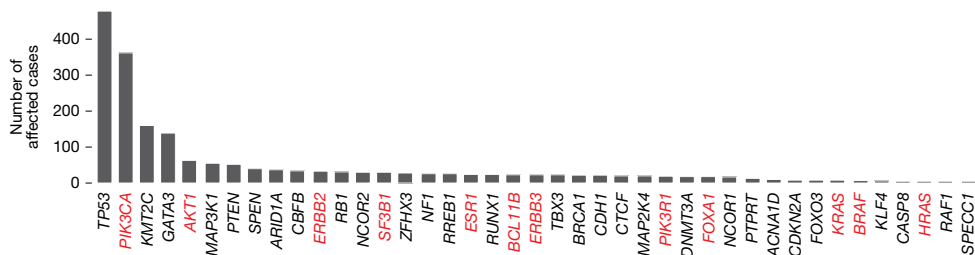
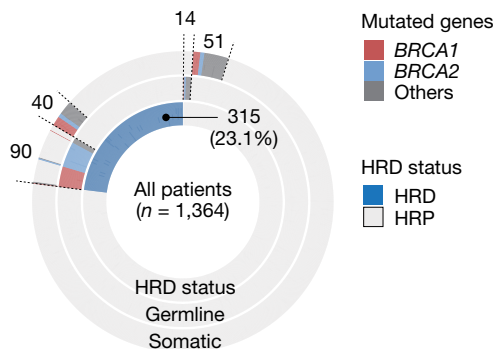
Accepted: 27 October 2025

Published online: 3 December 2025

Open access

Check for updates

Ryul Kim<sup>1,2</sup>, Jonghan Yu<sup>2,3</sup>, Joonoh Lim<sup>1</sup>, Brian Baek-Loh Ok<sup>4</sup>, Seok Jin Nam<sup>2</sup>, Seok Won Kim<sup>2</sup>, Jeong Eon Lee<sup>2</sup>, Byung Joo Chae<sup>2</sup>, Ji-Yeon Kim<sup>2</sup>, Ga Eun Park<sup>2</sup>, Bong Joo Kang<sup>5</sup>, Pill Sun Paik<sup>2</sup>, Soo Yeon Bae<sup>6</sup>, Chang Ik Yoon<sup>2</sup>, Young Joo Lee<sup>2</sup>, Dooreh Kim<sup>2</sup>, Kabsoo Shin<sup>1</sup>, Ji Eun Lee<sup>2</sup>, Jun Kang<sup>8</sup>, Ahwon Lee<sup>2</sup>, Erin Connolly-Strong<sup>7</sup>, Sangmoon Lee<sup>1</sup>, Bo Rahm Lee<sup>1</sup>, Yuna Lee<sup>2</sup>, Ki Jong Yi<sup>1</sup>, Young Oh Kwon<sup>1</sup>, In Hwan Chun<sup>1</sup>, Junggil Park<sup>1</sup>, Jihe Kim<sup>1</sup>, Chahyun Choi<sup>1</sup>, Jong Yeon Shin<sup>1</sup>, Hyungjung Lee<sup>1</sup>, Minji Kim<sup>1</sup>, Hansol Park<sup>1</sup>, Ilcheon Jeong<sup>1</sup>, Boram Yi<sup>1</sup>, Won-Chul Lee<sup>1</sup>, Jeong Seok Lee<sup>1,9</sup>, Woo Chan Park<sup>2</sup>, Sung Hun Kim<sup>2</sup>, Yoon-La Choi<sup>10</sup>, Jeongmin Lee<sup>11,12</sup>, Young Seok Ju<sup>13,14</sup> & Yeon Hee Park<sup>1,15</sup>



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

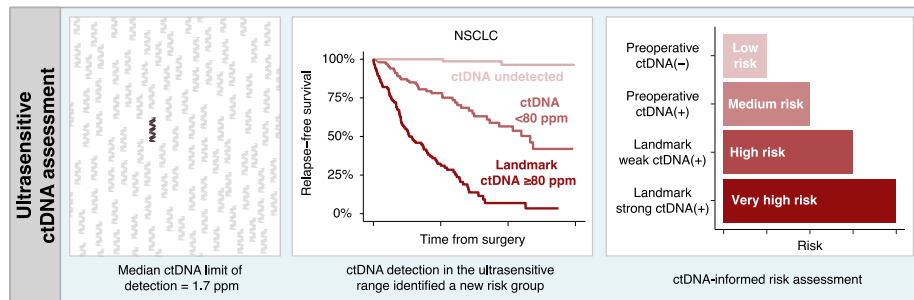
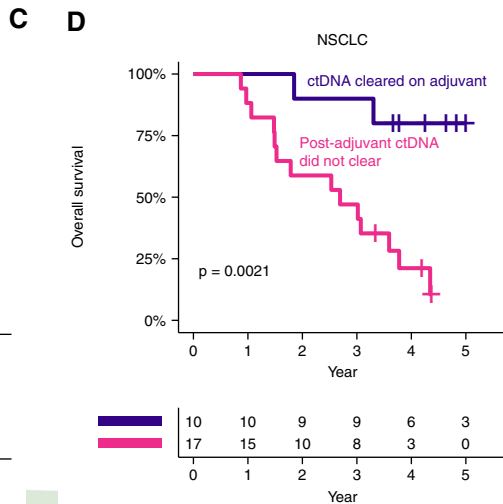
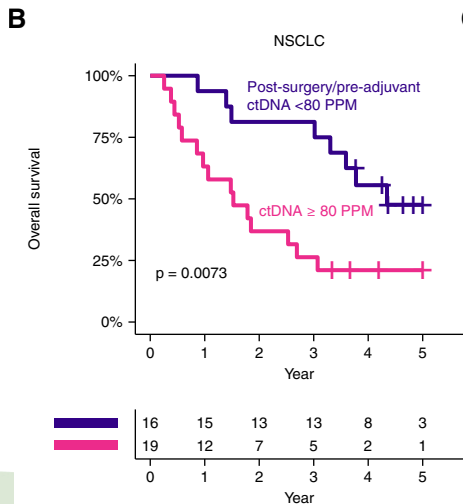
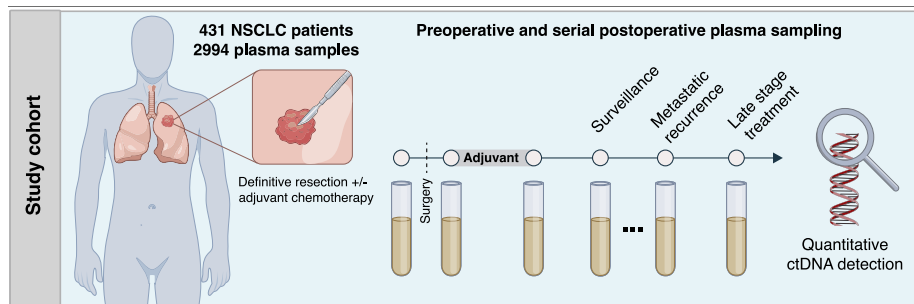
Cell 188, 7083–7098, December 11, 2025

CellPress  
OPEN ACCESS

Article

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

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



# NGS: ¿ya para todos ya desde el diagnóstico?

<b>Nivel A</b>	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
<b>Nivel B</b>	Refleja en todos los pacientes metastásicos, según protocolo del centro	<p>NGS dirigida (50-70 genes, con detección de fusiones)</p> <p>ctDNA NGS (mutaciones emergentes: ESR1, MET, RET, ALK...)</p>	<p>NSCLC (+PD-L1)</p> <p>CRC</p> <p>Próstata</p> <p>Tiroides</p> <p>Ovario (+HRD)</p> <p>Colangiocarcinoma y Páncreas</p> <p>Urotelial</p> <p>Sarcoma</p> <p>Mama luminal</p>
<b>Nivel C</b>	Pacientes candidatos a ensayo	NGS CGP (300-600 genes)	Tumores con alta probabilidad de dianas
<b>Nivel D</b>	MRD/ctDNA "programable"	Tumor-informed ctDNA NGS	CRC, estadio II-III Urotelial MIC