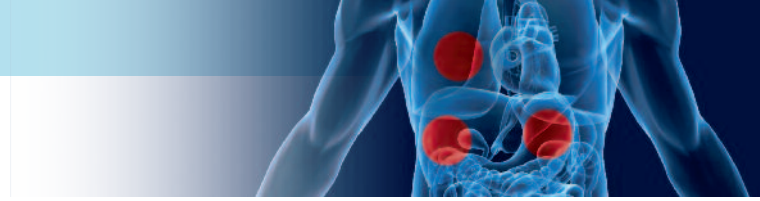


Tumor Markers on KRYPTOR Systems

Optimal follow-up of cancer patients

Excellent precision as essential factor in the serial determination of tumor markers • Establishing individual patient's baselines • Nobel Prize®-winning TRACE technology

Thermo
SCIENTIFIC



Exceptionally precise, fast, and easy

Tumor markers on KRYPTOR Systems

- **Extremely precise**²⁻⁷
- **Minimal interference**
due to TRACE technology^{8,9}
- **Broad measurement range**
due to “intelligent dilution”:
automated within-run dilution
in the first minutes of incubation
- Use of the well described
Fujirebio antibodies
(formerly Centocor)



Thermo Scientific
B·R·A·H·M·S KRYPTOR compact PLUS
Article number: 106172



Discover the Nobel Prize®-winning KRYPTOR technology at
[thermoscientific.com/kryptor](https://www.thermoscientific.com/kryptor)

Precision is essential

in the measurement of tumor markers,
especially at low levels

Tumor markers are a powerful tool in **therapy control** and **follow-up** of cancer patients, and precision is a critical parameter when choosing an assay method. **The course of a cancer disease is usually reflected by the individual course of tumor markers, and the individual course is**

derived from serial determinations of the leading tumor marker. The dynamics of these serial measurements are more important than the concentration of a single determination, therefore it is important to have reliable and precise measurement of the analyte.¹

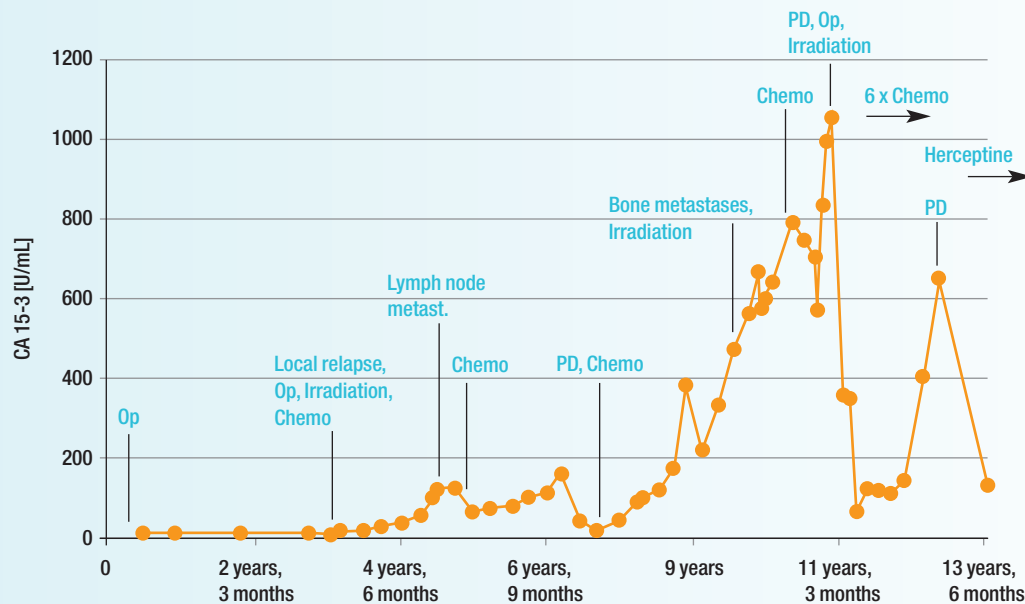


Figure 1 Example of an individual course of CA 15-3 in breast cancer (by courtesy of Dr. P. Stieber)

Establishing the **individual patient's baseline** is an important prerequisite for therapy control and follow-up; with **baseline** being the lowest measured marker level after primary therapy. In approximately 85% of cases, tumor marker levels decrease to those closer to the median concentration of healthy individuals after RO resection.

It should be noted that the median of the healthy population is usually much lower than the upper reference range limit (95th percentile), known as 'cut-off'!

	95 th percentile	Median of healthy
CA 19-9	30.6 U/mL	9.8 U/mL

Table 1 Example for the difference of cut-off and median of the healthy population

For therapy control and follow-up, the leading tumor marker has to be chosen. **A combination of at least two markers (marker of 1st and 2nd choice) is often useful** (table 2).

Among therapy control and follow-up, several tumor markers can be helpful in screening, diagnosis and prognosis of selected tumor diseases (table 3).

Marker \ Tumor	CEA	AFP	CA 19-9	CA 125 II	CA 15-3	Chromogranin A	NSE	CYFRA 21-1	SCC	hCG+β	PSA	Calcitonin	hTG
Colon	●		●			●							
Pancreas	●		●			●							
Stomach	●		●										
Esophagus	●								●				
Liver (HCC)	○	●											
Biliary ducts			●										
Neuroendocrine tumors (NET)						●	●						
Breast	●				●								
Ovary				●									
Cervix	●								●				
Chorion										●			
Lung													
SCLC	●					○	●	●	●				
NSCLC													
Germ cell		●								●			
Prostate	○										●		
Bladder	○							●					
Thyroid	●												●
C-Cell	●					○						●	
ENT	●							●	●				

Table 2 Examples for the use of marker combinations (by courtesy of Dr. P. Stieber)

● 1st choice ● 2nd choice ○ 3rd choice

Marker	Screening	Diagnosis	Follow-up	Prognosis
CEA	c-cell carcinoma	c-cell carcinoma	colon, breast, lung (NSCLC), c-cell	colon, stomach, breast
AFP	risk group	germ cell, HCC	germ cell, HCC	germ cell
CA 19-9		pancreas	pancreas, biliary ducts	stomach, colon
CA 125 II			ovary serous	ovary serous
CA 15-3			breast	breast
Chromogranin A		confirmation of carcinoid syndrome	neuroendocrine tumors (NET)	[neuroendocrine tumors (NET)]
NSE		lung (SCLC)	lung (SCLC)	lung (SCLC)
CYFRA 21-1		lung (NSCLC)	lung (NSCLC), bladder	lung (NSCLC)
SCC			cervix, lung (NSCLC), ENT	cervix
hCG+β	risk group	germ cell, trophoblast tumors	germ cell, trophoblast tumors	germ cell, trophoblast tumors
PSA	prostate	prostate	prostate	
Calcitonin	c-cell carcinoma	c-cell carcinoma	c-cell carcinoma	c-cell carcinoma
hTG			diff. thyroid carcinoma	

Table 3 Indications for Thermo Scientific™ B-R-A-H-M-S™ tumor markers examples for the use of marker combinations (by courtesy of Dr. P. Stieber)



Tumor markers on KRYPTOR Systems

Excellent precision and reproducibility

The unique TRACE™ technology utilised by KRYPTOR™ Systems eliminates the need for washing and separation steps, which significantly reduces the imprecision and variability inherent in many other systems.⁴

It is this precise and consistent measurement of analyte concentration which makes tumor markers on KRYPTOR Systems an invaluable tool in the monitoring of cancer disease and in control of therapy.

Intra-assay precision			
Serum pool	N	Mean [ng/mL]	CV (%)
1	20	0.5	4.3
2	20	3.5	1.2
3	20	15	0.9
4	20	36.3	0.6
5	20	54.6	0.7

Intra-assay precision 3 calibrations, 2 kit lots, 2 calibrators, 20 days			
Serum pool	N	Mean [ng/mL]	CV (%)
1	40	3.5	2.3
2	40	8.1	2.4
3	40	15	2.1
4	40	36.3	2.2
5	40	54.6	1.9

Table 4 Data on tumor marker precision: Examples for Thermo Scientific B-R-A-H-M-S Total PSA KRYPTOR



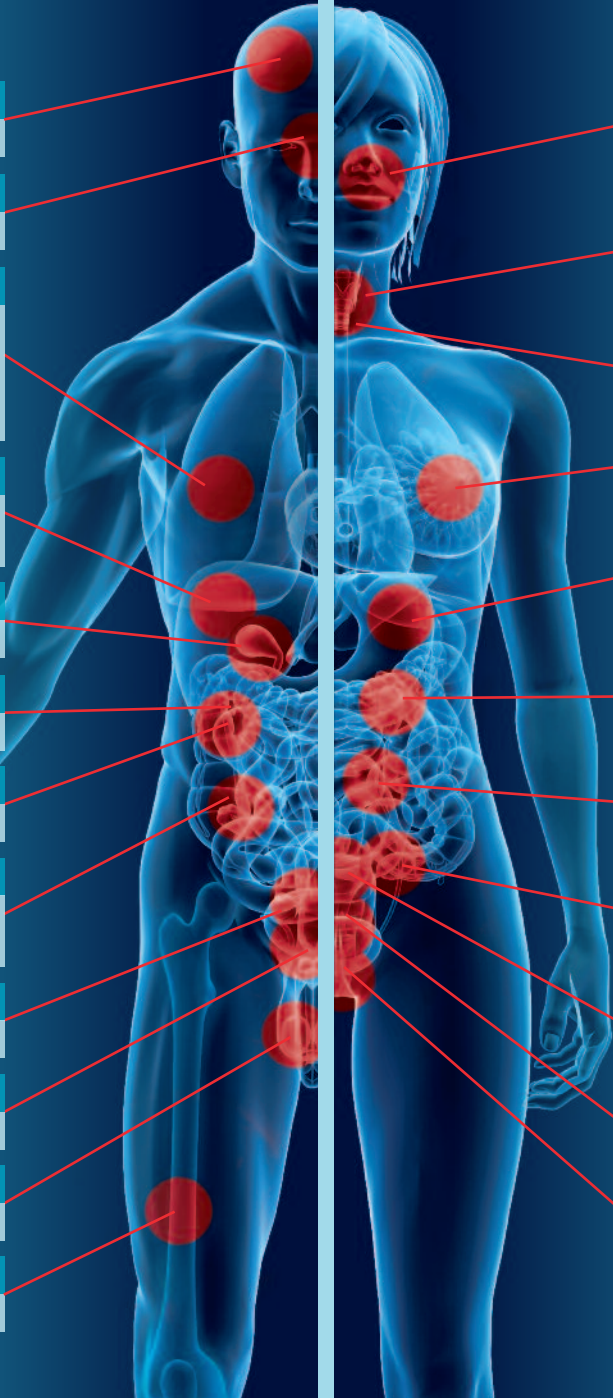
References

- 1 Thomas L. *Clinical Laboratory Diagnostics*. TM-Books Verlagsgesellschaft Frankfurt/Main, 938
- 2 Gruber C. et al. *Methodical and clinical evaluation of the TRACE Kryptor® NSE-Test in Lung Cancer*. *Tumor Biology* 2003; 24, S1: 94
- 3 Hubl W. et al. *A Multi-Center Quality Control Study of Different CA 15-3 Immunoassays*. *Clin Lab* 2005; 51: 641-645
- 4 Mathis G. *Rare earth cryptates and homogeneous fluoroimmunoassays with human sera*. *Clin Chem* 1993; 39: 1953-1959
- 5 Spencer K. *Evaluation of effect of analytical imprecision in maternal serum screening for Down's syndrome*. *Ann Clin Biochem* 2001; 38: 413-414
- 6 Stern P. et al. *Comparability of Eight Immunoassay Procedures for the Determination of CA 15-3 and Related Markers*. *Clin Chem Lab Med* 2003; 41: 1087-1094
- 7 *Results of the survey "Oncocheck"*, distributed by the University of Lyon
- 8 Bjerner J. et al. *Testing and validating a homogeneous immunometric assay for interference*. *Clin Chem Lab Med* 2004; 42(2): 208-214
- 9 Warren D.J. et al. *Use of an In Vivo Biotinylated Single-Chain Antibody as Capture Reagent in an Immunometric Assay to Decrease the Incidence of Interference from Heterophilic Antibodies*. *Clin Chem* 2005; 51(5): 830-838

Thermo Scientific Tumor Markers

A broad range of markers available

Brain	NSE, CEA
Pituitary Gland	Prolactin
Lung	SCLC: NSE, CYFRA 21-1, Chromogranin A NSCLC: SCC, CYFRA 21-1, CEA
Liver	AFP, CEA, CA 19-9, Chromogranin A
Gallbladder	CA 19-9, CEA
Adrenal Gland	Chromogranin A
Kidney	CEA, NSE
Colon	CEA, CA 19-9, Chromogranin A
Bladder	CYFRA 21-1, CEA, NSE
Prostate	Total PSA, Free PSA
Testicle	AFP, hCG+ β
Bone Metastases	Osteocalcin



ENT (Ear, Nose, and Throat)	SCC, CYFRA 21-1, CEA
Thyroid	MTC: Calcitonin, Chromogranin A, CEA DTC: Thyroglobulin, CEA
Esophagus	SCC, CYFRA 21-1, CEA
Breast	CA 15-3, CEA
Stomach	CEA, CA 19-9, Chromogranin A
Pancreas	CA 19-9, CEA, Chromogranin A
Neuroendocrine Tumors	Chromogranin A, NSE
Ovary	CA 125 II, CEA, AFP, hCG+ β
Uterus	SCC, hCG+ β , CYFRA 21-1
Cervix	SCC, CYFRA 21-1, CEA
Vagina, vulva	SCC

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