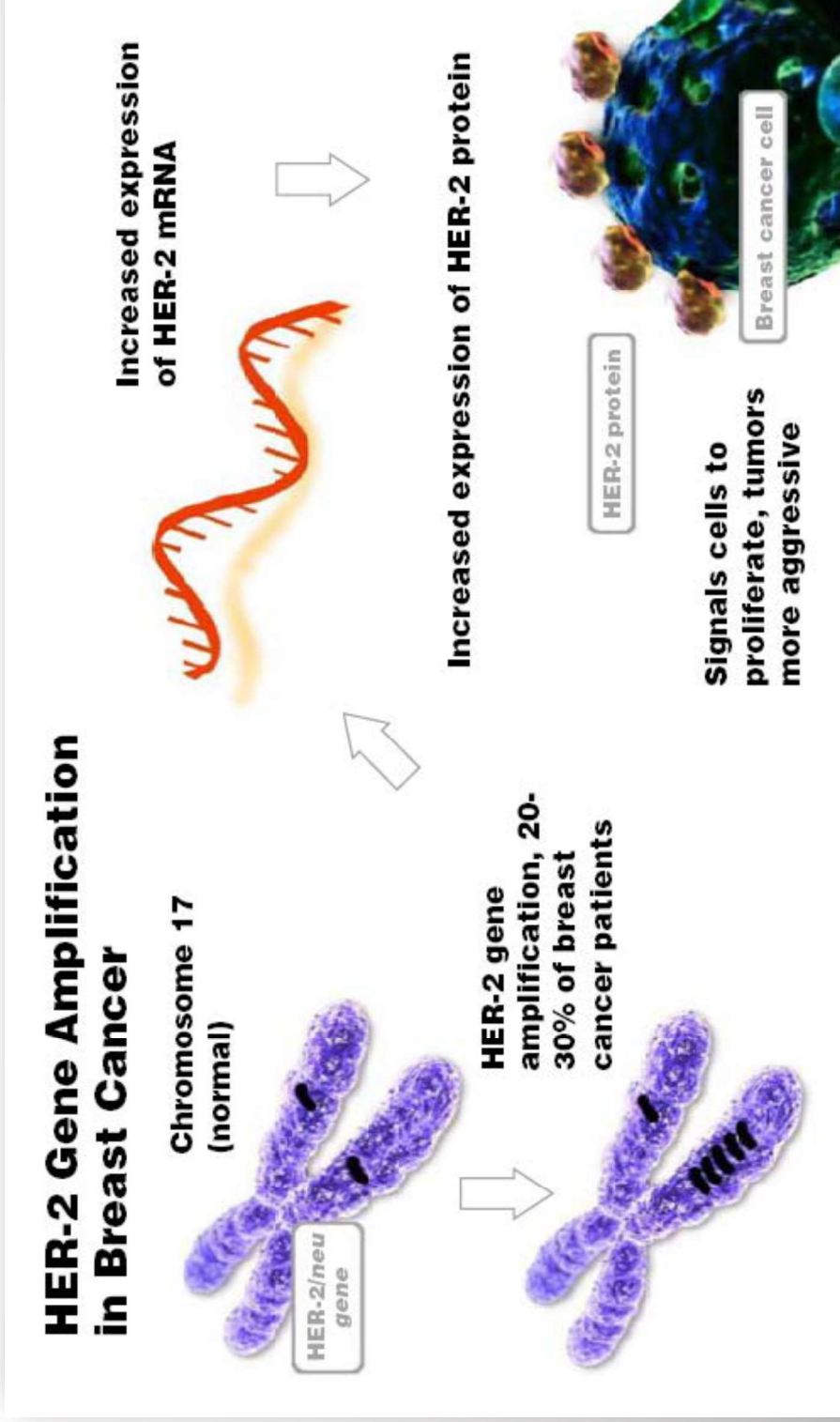
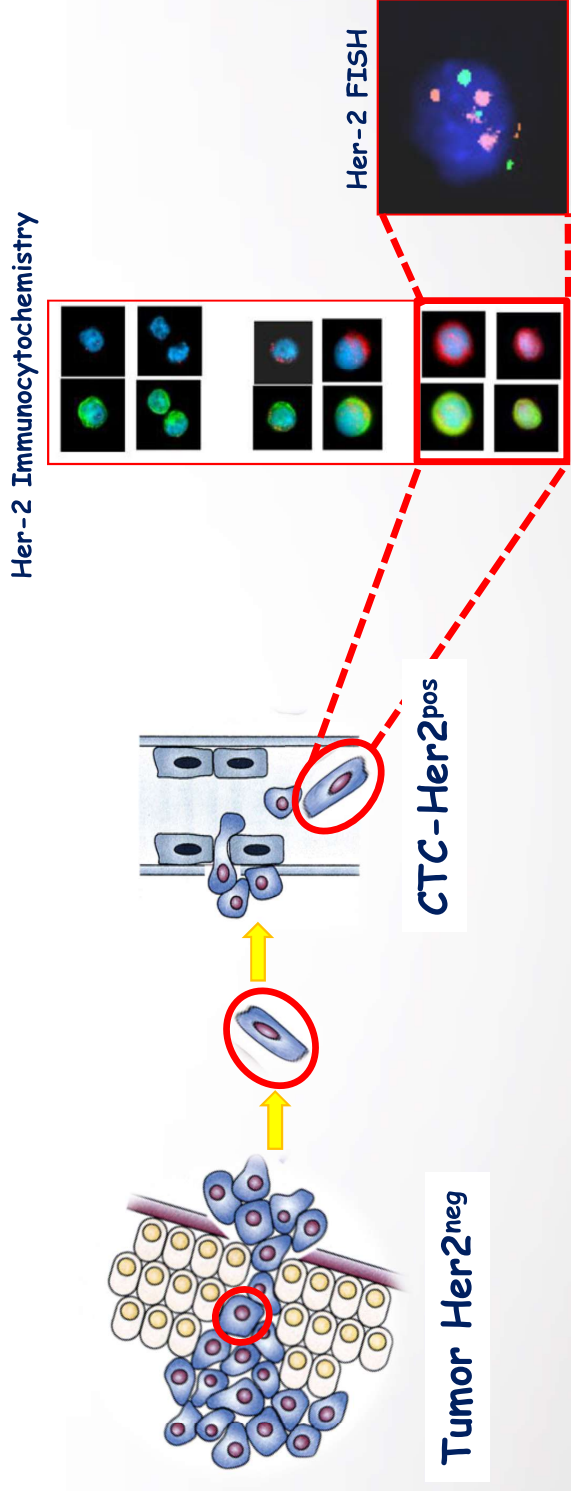


Study of the tumor state of HER-2



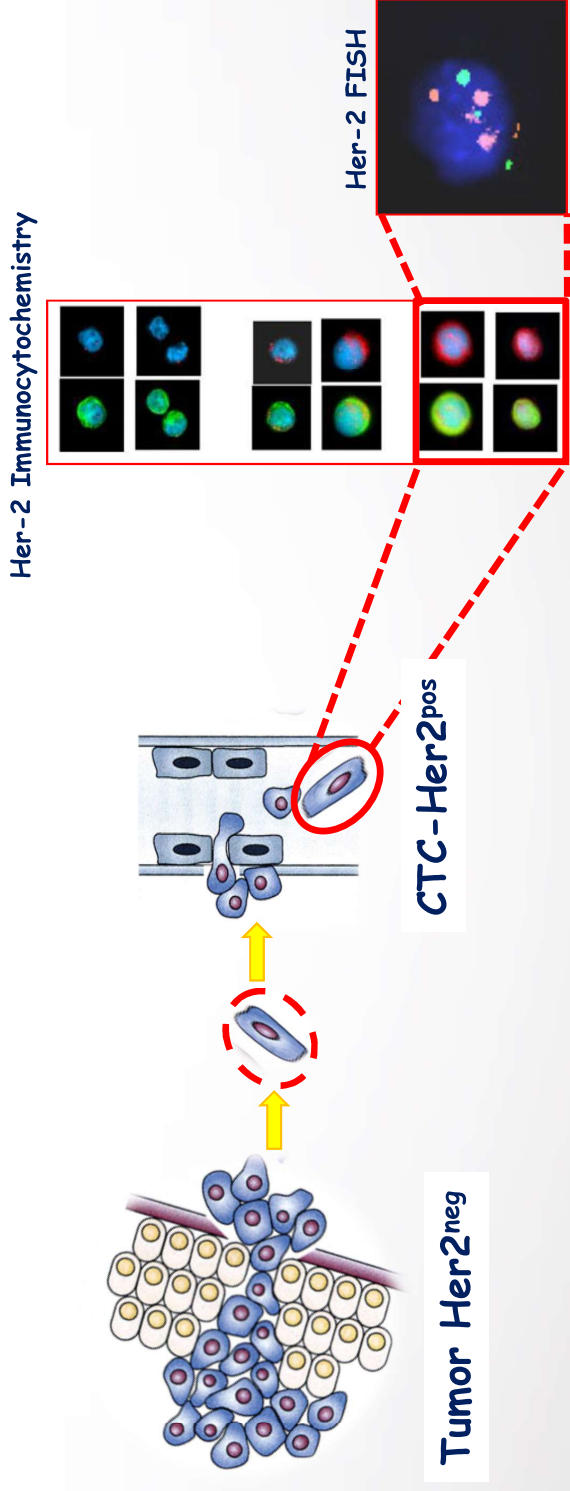
CHARACTERIZATION OF CTCs – HER2 STATUS



① Primary tumor: Overexpression of Her2 - only a very low number of cells are analyzed in routine for the Her2 status determination.

👉 Her2 Amplification pre-exist in the primary tumor

CHARACTERIZATION OF CTCs – HER2 STATUS



② Micrometastatic cells : Gain of Her2 → clone selection Her2^{pos}-CTC

(Meng et al. PNAS, 2004)

→ Acquisition of Her2 amplification during invasion

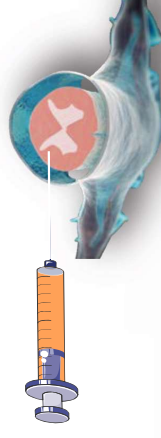


CellSearch

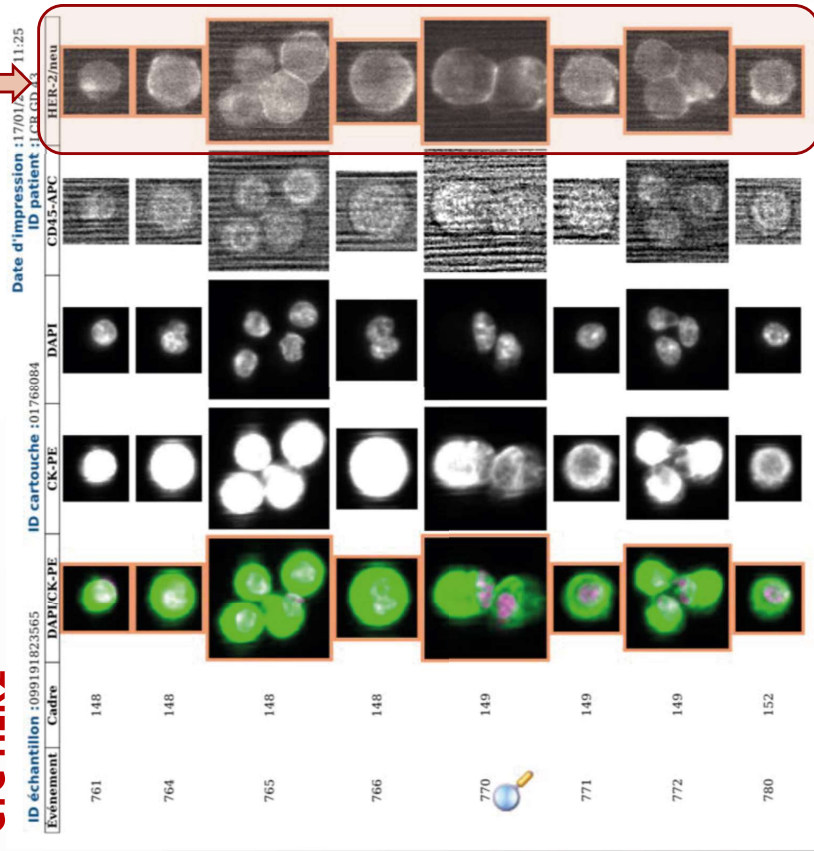
Breast CTCs in Cerebrospinal Fluid (CSF)



Leptomeningeal metastases in breast cancer

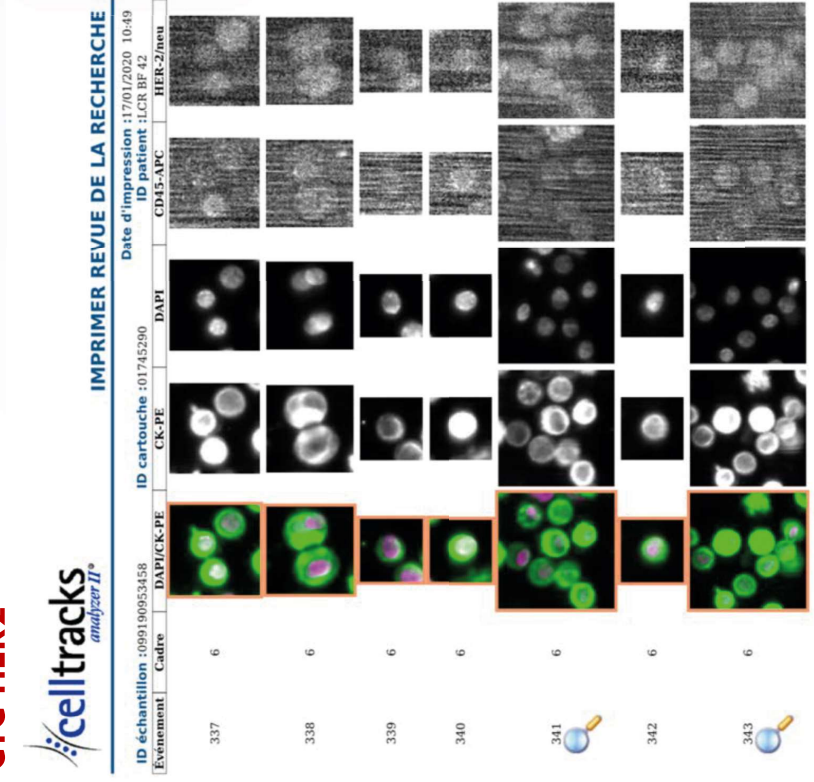


CTC-HER2(+)



Article in preparation

CTC-HER2(-)



IMPRIMER REVUE DE LA RECHERCHE

Date d'impression : 17/01/2020 10:49

ID patient : LCN BF 42

ID cartouche : 01745290

CD45-AFC

HER-2/neu

DAPI

CK-PE

DAPI/CK-PE

Événement

Cadre

ID échantillon : 009190053458

Événement

Cadre

DAPI/CK-PE

CK-PE

DAPI

CD45-AFC

HER-2/neu



Amélie Darlix





2022

Breast Cancer

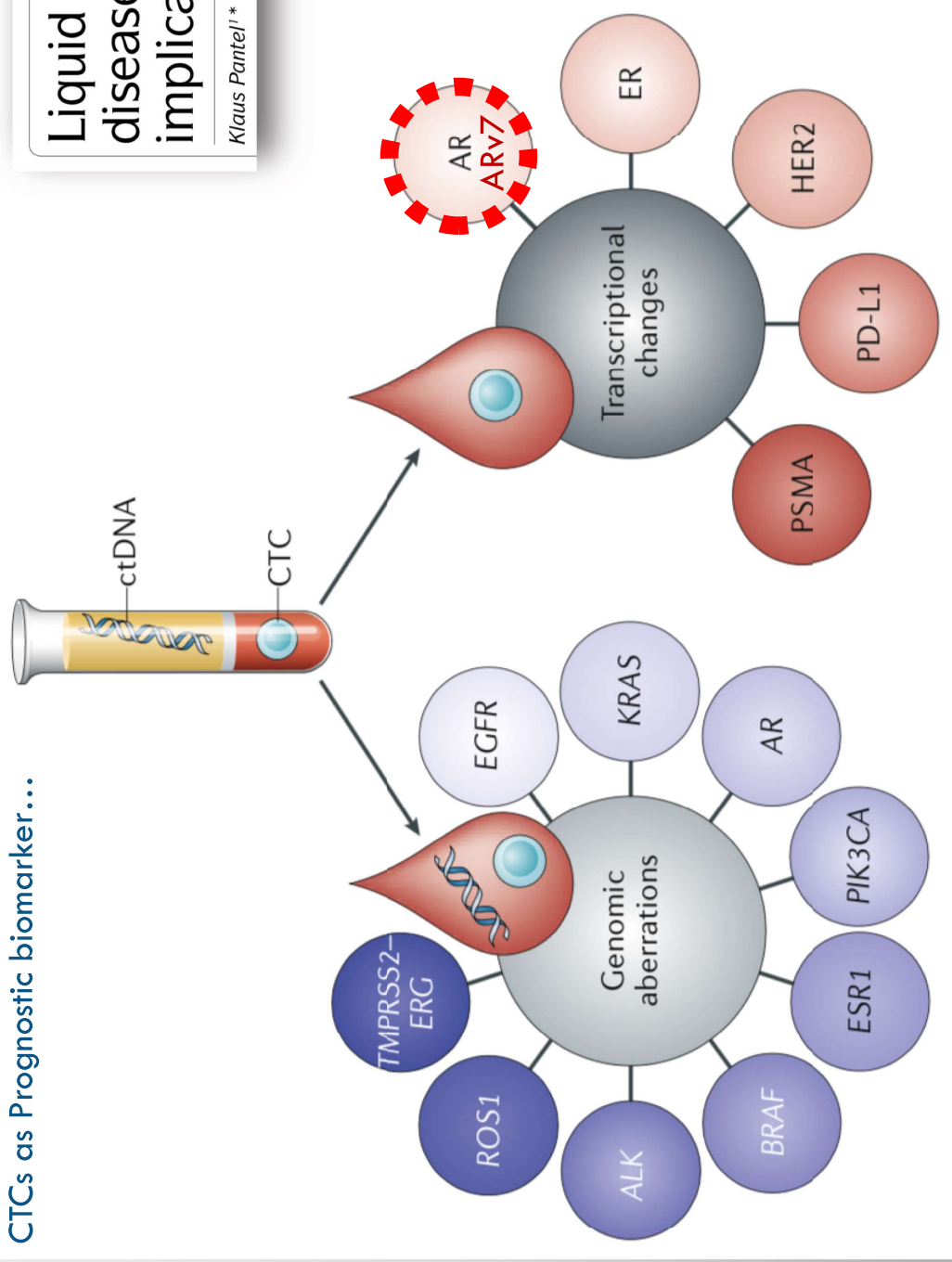
Single HER2-positive tumor cells are detected in initially HER2-negative breast carcinomas using the DEPAarray™-HER2-FISH workflow

Lisa Grüntkemeier¹ · Aditi Khurana² · Farideh Zamanian Bischoff³ · Oliver Hoffmann¹ · Rainer Kimmig¹ · Mathew Moore² · Philip Cotter² · Sabine Kasimir-Bauer¹ 

New DEPAarray™-HER2-FISH workflow was established to potentially overcome HER2 discordance and to identify single HER2-pos tumor cells in HER2-neg primary tumor tissue.

Therapeutic targets and resistance mechanisms

CTCs as Prognostic biomarker...



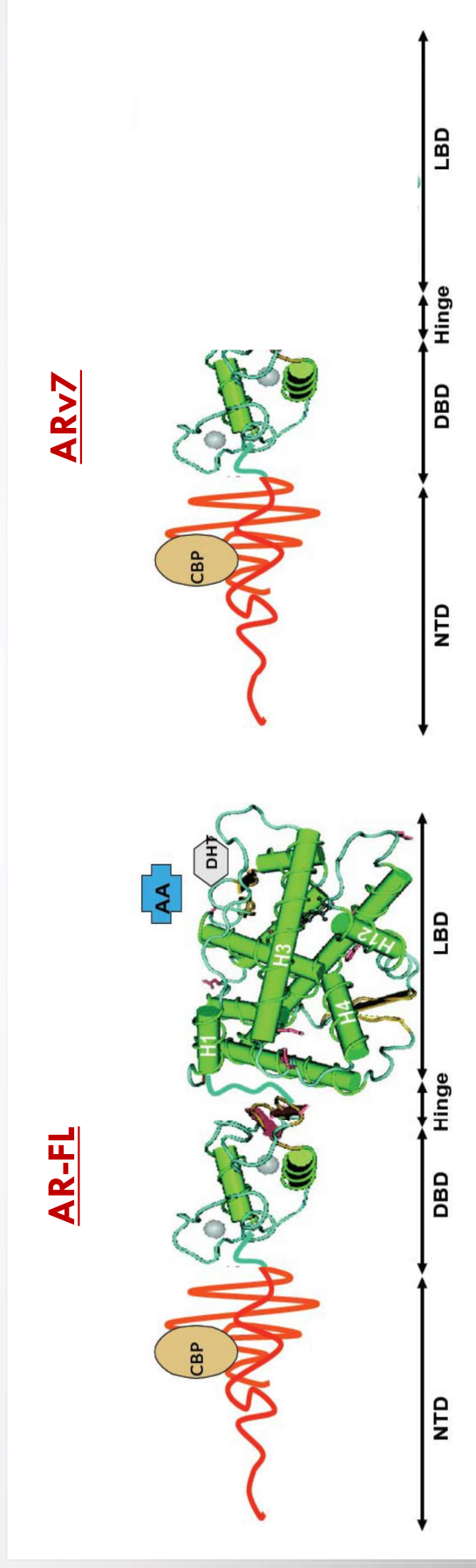
Liquid biopsy and minimal residual disease — latest advances and implications for cure

Klaus Pantel* and Catherine Alix-Panabières²

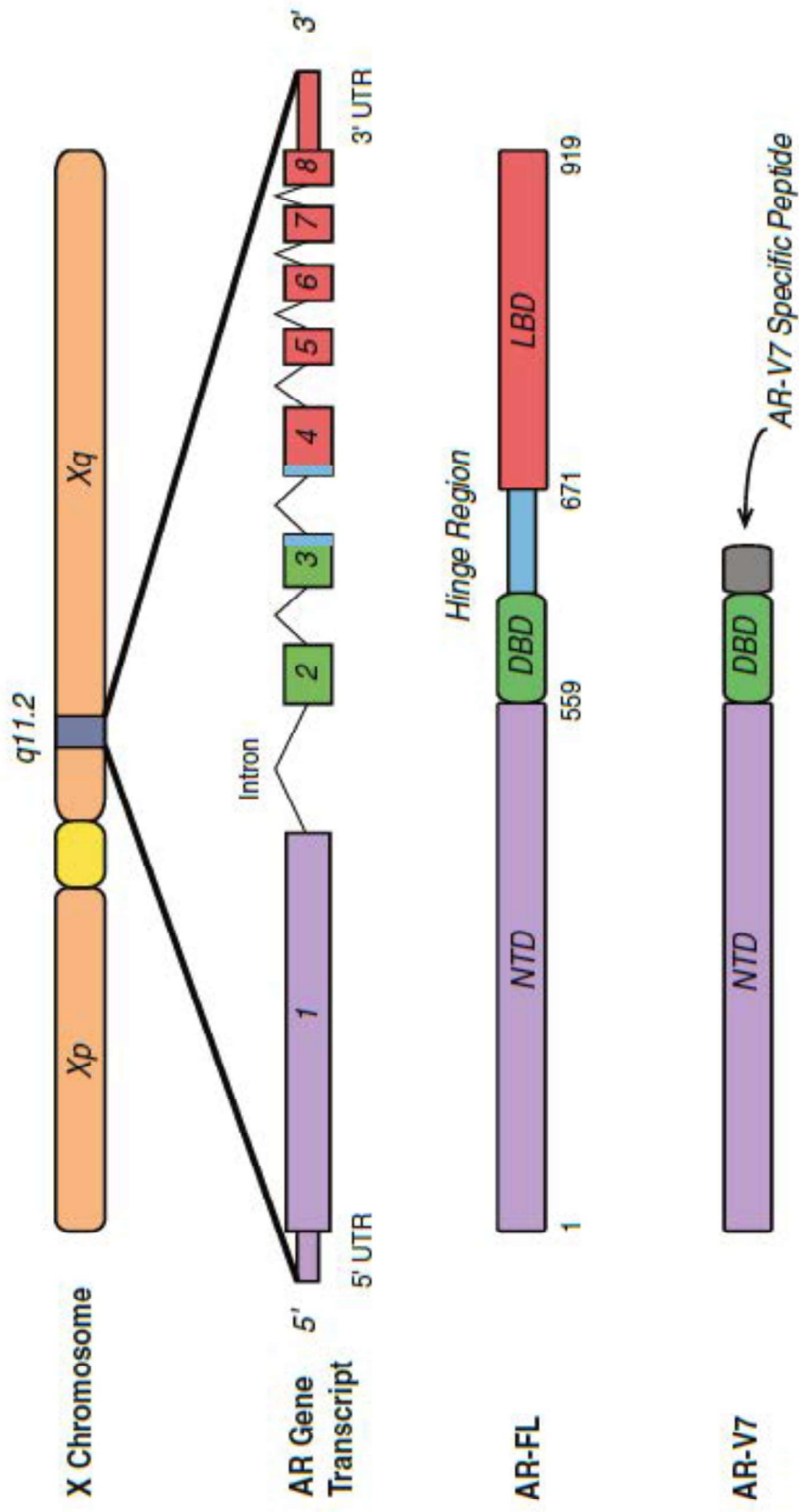
nature
REVIEWS
CLINICAL ONCOLOGY 2019

ARv7 in CTCs of MCRPC

Androgen receptor variant-7 (ARv7) is a truncated form of the AR that lacks the Ligand Binding Domain (LBD), the target of abiraterone and enzalutamide, but remains constitutively active as a transcription factor



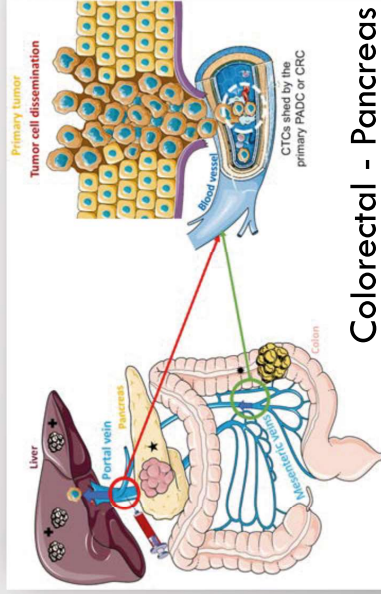
AR mRNA Splice Variants



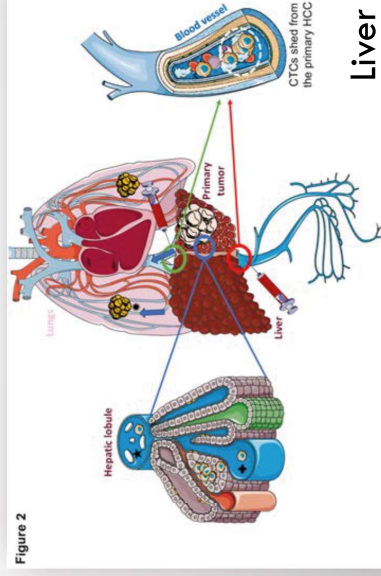


Tumor-proximal liquid biopsy to improve diagnostic and prognostic performances of circulating tumor cells

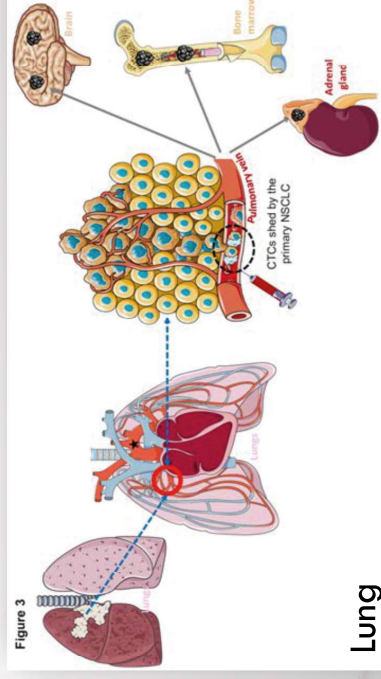
Etienne Buscail, Laurence Chiche, Christophe Laurent, Véronique Vendrely, Quentin Denost, Jérôme Denis, Matthieu Thumerel, Jean-Marc Lacorte, Aurélie Bedel, François Moreau-Gaudry, Sandrine Dabernat, Catherine Alix-Panabières ... See fewer authors



Colorectal - Pancreas



Liver



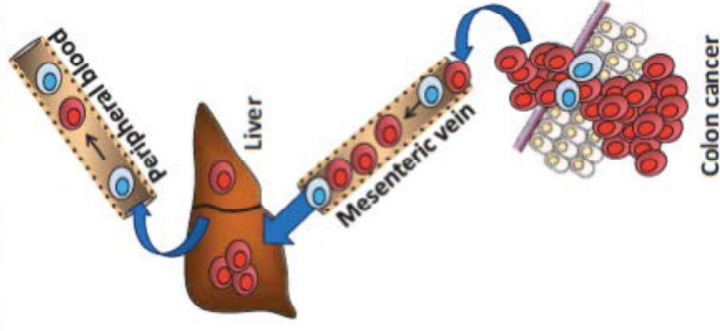
Lung

Capture of Viable Circulating Tumor Cells in the Liver of Colorectal Cancer Patients

Eric Denève,¹ Sabine Riethdorf,² Jeanne Ramos,³ David Nocca,¹ Amandine Coffy,⁴ Jean-Pierre Daurès,⁴
Thierry Maudelonde,⁵ Jean-Michel Fabre,¹ Klaus Pantel,² and Catherine Alix-Panabières^{4,5,6*}

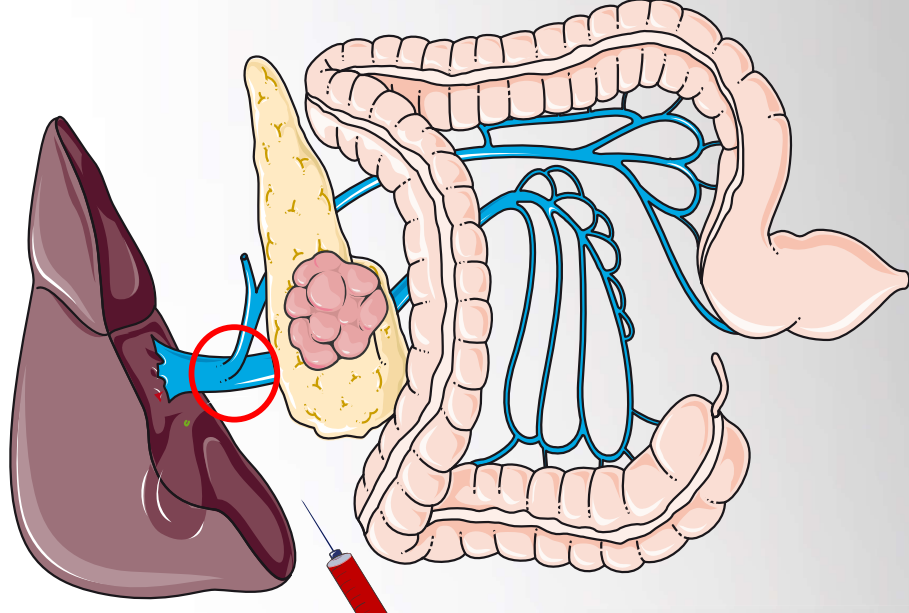
Patients

N=75
- 60 M₀
- 15 M₁



LIQUID BIOPSY AND PORTAL VEIN

LOCALIZED PANCREATIC CANCER



Portal blood

Peripheral blood



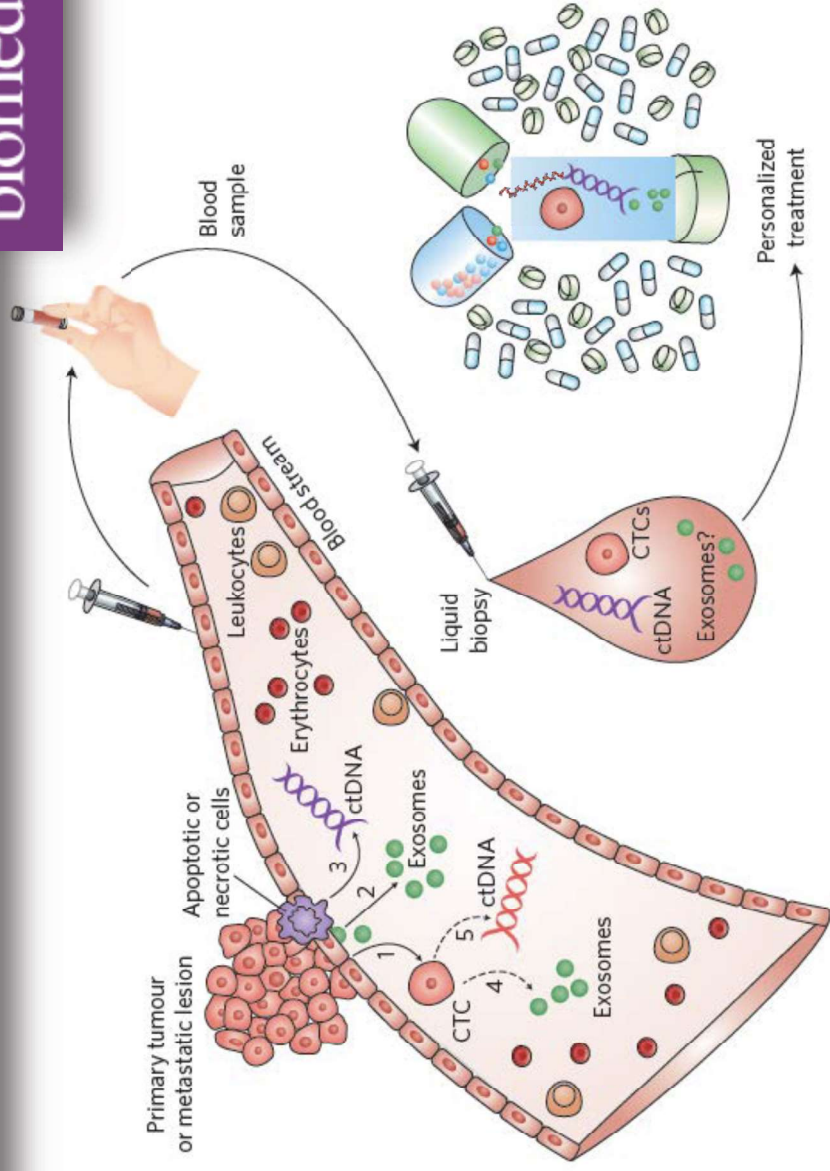
0 CTCs / 7.5 ml peripheral blood

DAPI/CK-PE	CK-PE	DAPI	CD45-APC

300 CTCs and clusters / 7.5 ml portal blood

Clinical prospects of liquid biopsies

Catherine Aïx-Panabières and Klaus Pantel



CTCs
ctDNA
miRNA
Evs (exosomes)
Proteins
Immune cells
Tumor-educated
platelets



George Calin

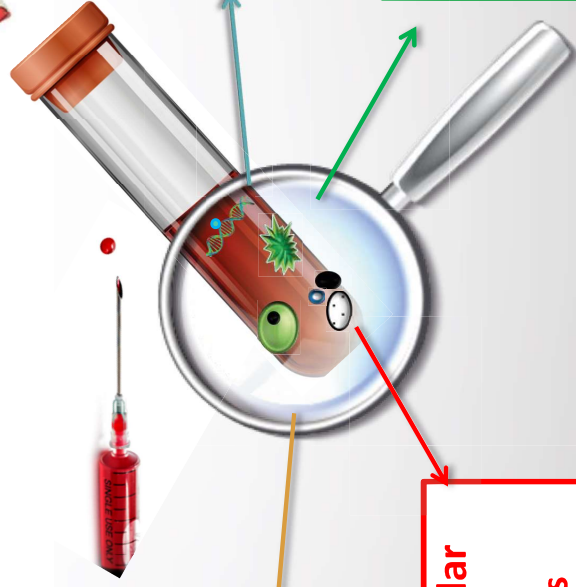


Tom Würdinger



Bruno Costa

European Liquid biopsy academy (ELBA)

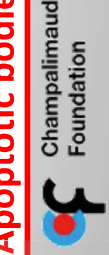


Circulating Tumor Cells (CTCs)

Circulating Tumor DNA (ctDNA)

Extracellular vesicles
Exosomes
microvesicles
Apoptotic bodies

Tumor-educated platelets (TEPs)



Zahra Eslami



Luis Cortes

Perspective: The future of liquid biopsy

Nature | Vol 579 | 26 March 2020

Catherine Alix-Panabières

Cancer diagnosis

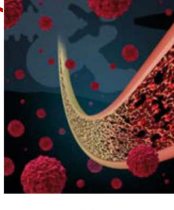
nature

JAMA Oncology | Original Investigation 2020

Efficacy of Circulating Tumor Cell Count-Driven vs Clinician-Driven First-line Therapy Choice in Hormone Receptor-Positive, ERBB2-Negative Metastatic Breast Cancer
The STIC CTC Randomized Clinical Trial

François-Clément Bidard, MD, PhD; William Jacot, MD, PhD; Nicolas Klavue, MBBS; Sylvain Dureau, PharmD; Amir Kadi, PhD; Etienne Brain, MD, PhD; Thomas Bachelot, MD; Hugues Bourgeois, MD; Anthony Gonçalves, MD, PhD; Sylvain Ladoire, MD, PhD; Hervé Naman, MD; Florence Dalenc, MD, PhD; Joseph Gligorov, MD, PhD; Marc Espié, MD; George Emile, MD; Jean-Marc Ferrero, MD; Delphine Lohat, MD, PhD; Sophie Frank, MD; Luc Cabel, MD; Véronique Diéras, MD; Laure Cayrefourcq, MSc; Cécile Simondi, MSc; Frédérique Berger, MSc; Catherine Alix-Panabières, PhD; Jean-Yves Pierga, MD, PhD

→ Clinical utility

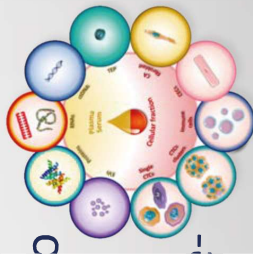


- To push liquid biopsy into widespread use, **more intervention studies are needed**;
- To develop **an algorithm** that can **combine different circulating biomarkers** to obtain a precise tumour profile;
- To **define guidelines and SOP** for *liquid biopsy*: technical variability in the pre-analytical and analytical steps

→ **Big consortia to achieve these goals : e.g. ELBS**

International Liquid Biopsy Standardization Alliance (ILSA)

THE EUROPEAN
LIQUID BIOPSY
SOCIETY





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Jean-Michel Fabre
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Olivier Dereure
Vincent Foulongne
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Rodolphe Thuret
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Laurent Meunier
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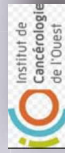
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Paul Hofman
NICE



Dominique Heymann
NANTES



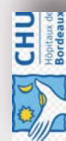
William Jacot
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Xavier Quentin
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Edith Bonnelye
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LYON



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BORDEAUX



Frédéric Thomas
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Jessica Gobbo
DIJON



Jean-Marc Lacorte
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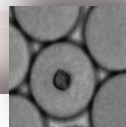
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François-Clément Bidard
Sandrine Moutel
Franck Perez
PARIS



Fabienne Thomas
Etienne Chatelut
Jean-Pierre Delord
TOULOUSE



Jérôme Bibette
Jean Baudry
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UKF
Klaus Pantel
HAMBURG



Tom Würdinger
AMSTERDAM



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Bruno Costa
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Angel Carracedo
Ceres Fernandez Rozadilla
Jesus Hita Millan

Laura Muinelo-R
Diaz-Lagares

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Qihui Shi
SHANGHAI



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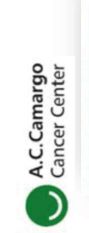



Qihui Shi
SHANGHAI



Ludmila
CHINEN

COLLABORATIONS





**FONDATION ARC
POUR LA RECHERCHE
SUR LE CANCER**
Recherche et soins personnalisés

Transcan 'PROLIPSY'

Prostate Cancer
(CTCs, ctDNA & exosomes)



**CONTRE
LE CANCER
LA LIGUE
des comités**


Merkel Carcinoma
(CTCs, circulating nucleic acids)



**Ministère des Solidarités
et de la Santé**

Prostate Cancer
(CTCs)

PHRC - TACTIK

**European
Liquid
Biopsies
Academy**

Marie Curie

Lung Cancer
(CTCs, ctDNA, miRNA, exosomes, platelets)



Gviieson
alliance nationale
pour les sciences de la vie et de la santé

ITMO Cancer

MECA-CTC


Breast & Colon Cancer



**INSTITUT
NATIONAL
du CANCER**

CIRCUTEc

Head & Neck Cancer
(CTCs)



**CANCER
ID**

IMI CALL

Breast & lung Cancers
(CTCs, ctDNA, exosomes)

**THE EUROPEAN
LIQUID BIOPSY
SOCIETY**



**INSTITUT
NATIONAL
du CANCER**

COLOSPOT

Colon Cancer
(CTCs)



GRANTS

