



現代與未來精準醫療的展望

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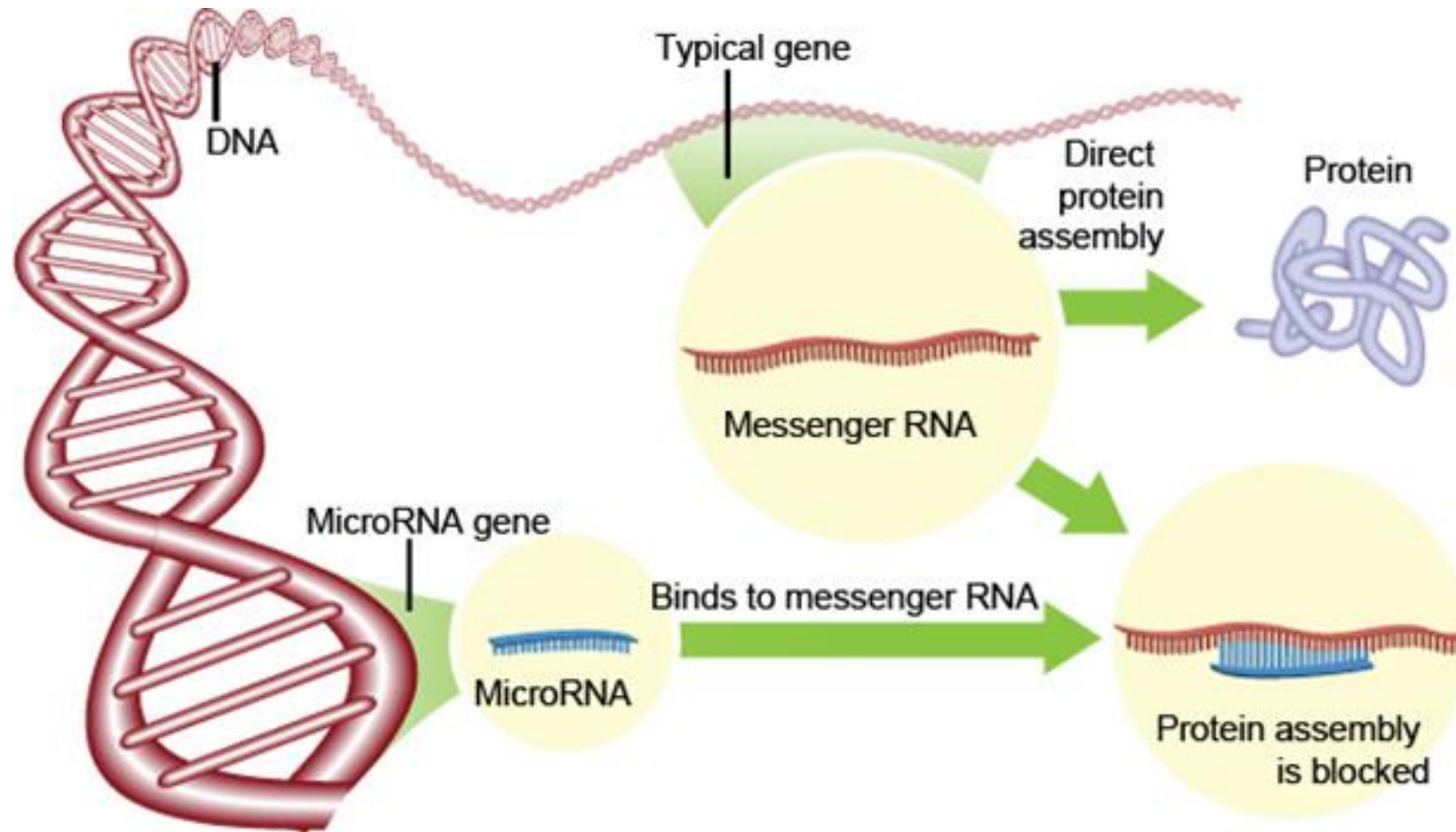
03/04/2018

Precision Medicine: <https://www.youtube.com/watch?v=HQKFgfMO5Sw>

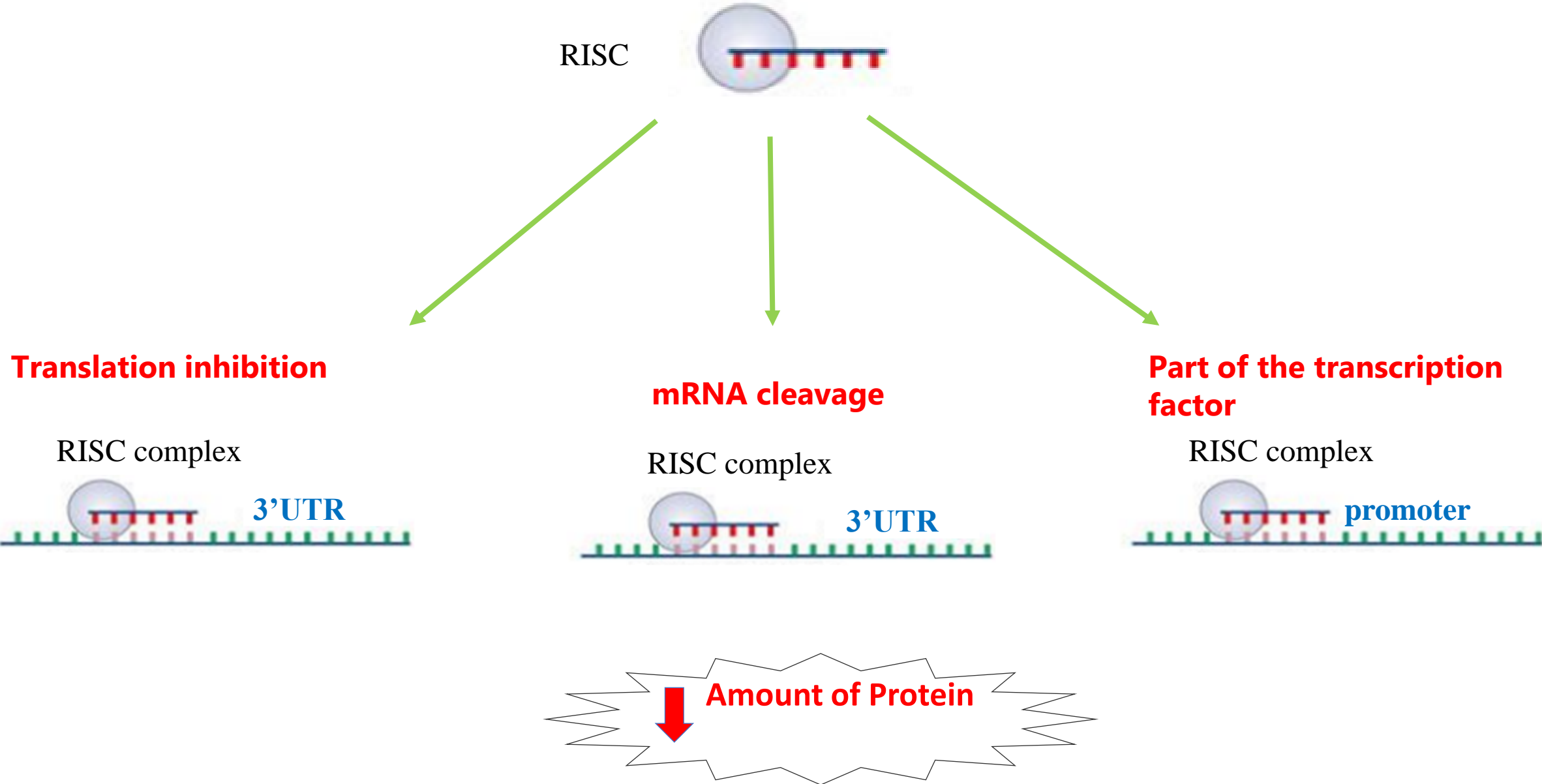
Biomarkers: <https://www.youtube.com/watch?v=7Ud1vsLcXag>

miRNA: <https://www.youtube.com/watch?v=t5jroSCBBwk>

MicroRNAs



The gene expression regulated by miRNAs



**miRNA is the conductor of
the orchestra of functional
proteins**



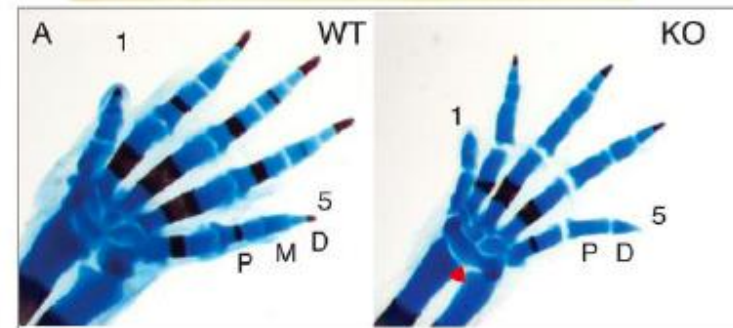
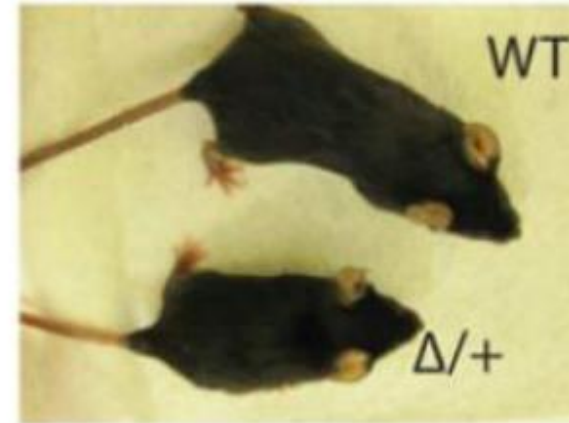
miRNA and inherited disease

miR-17-92 polycistron

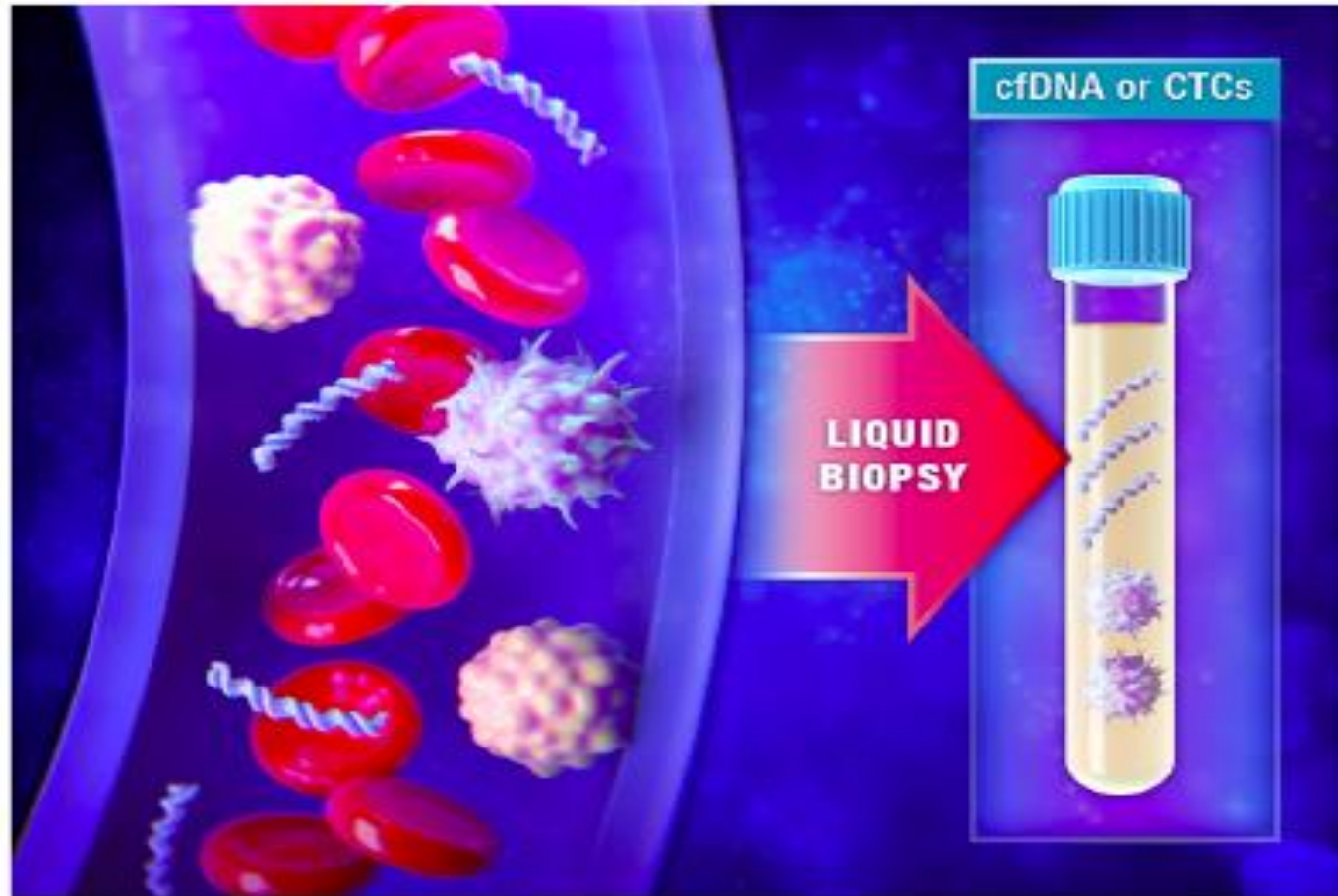
Example of miRNA mutation responsible for a developmental defect in humans
(de Pontual Nat Genet. 2011)



Hemizygous deletion –
Short stature and digital abnormalities



Hot topic : Liquid biosy-cf DNA or CTC



DIAGNOSIS:

Genotyping cfDNA in the blood to determine the tumor profile

RESPONSE AND FOLLOW UP:

Analysis of cfDNA and CTC for real time monitoring of response to treatment.

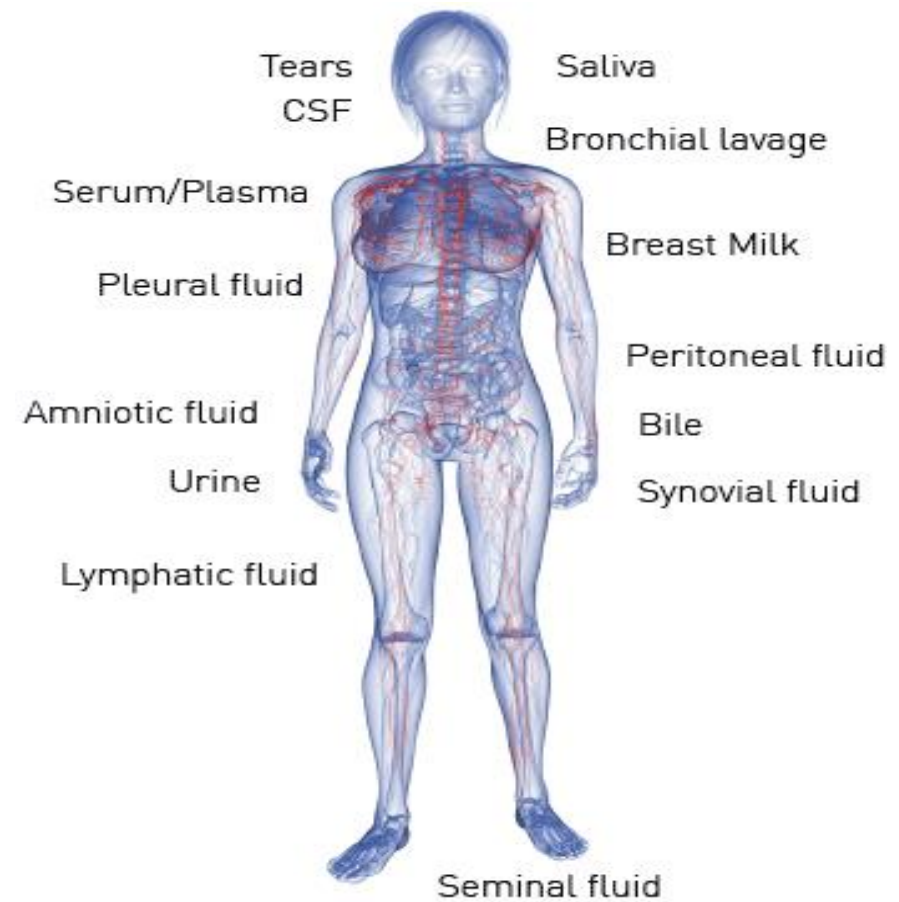
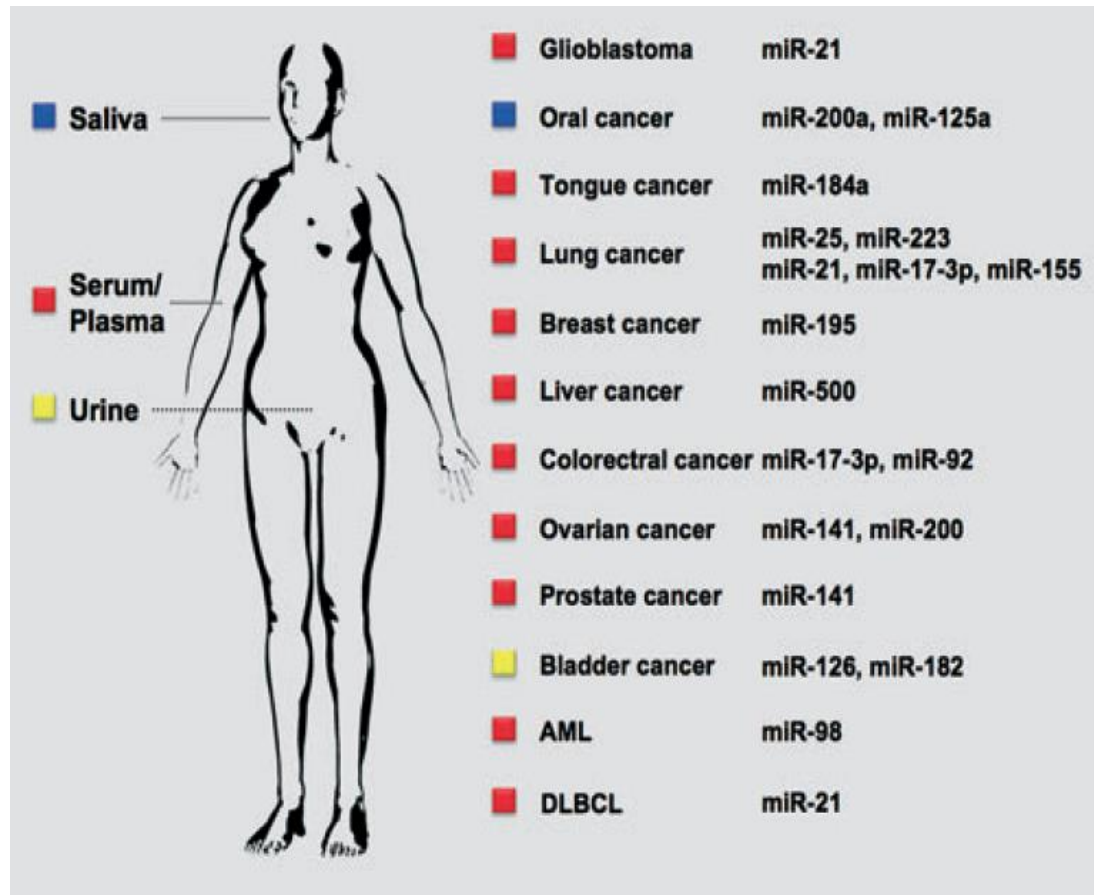
TUMOR EVOLUTION:

Emergence of molecular alterations associated with resistance to therapy

MINIMAL RESIDUAL DISEASE:

The presence of cfDNA or CTC in the circulation indicates that the disease is still present

➤ Circulating microRNAs in the body fluid: a new potential biomarker for cancer diagnosis and prognosis



Cancer Science 2010, vol.101, p2087-2092

Cancer Treatment

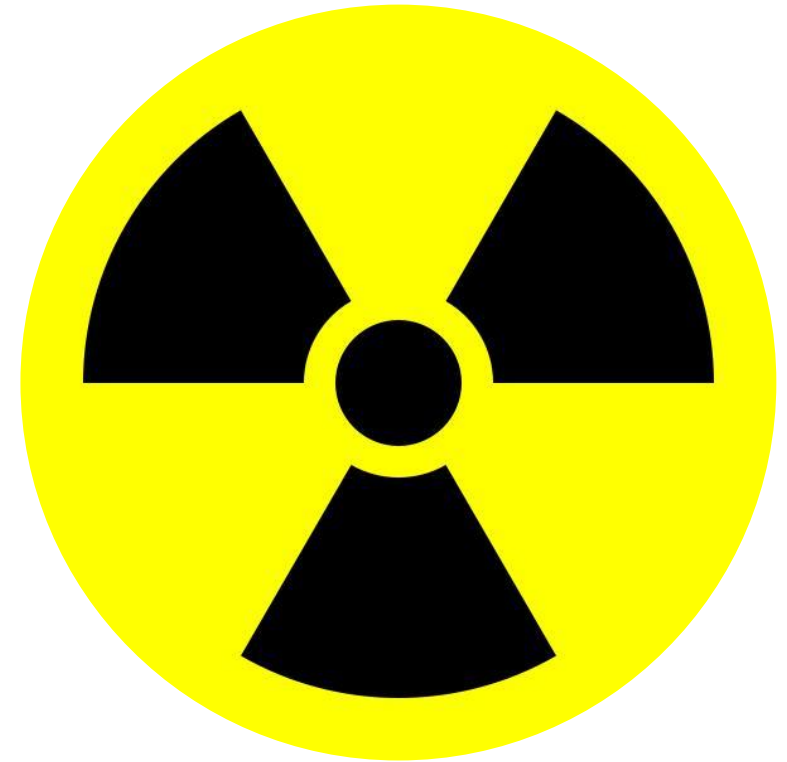
50%↑



Surgery

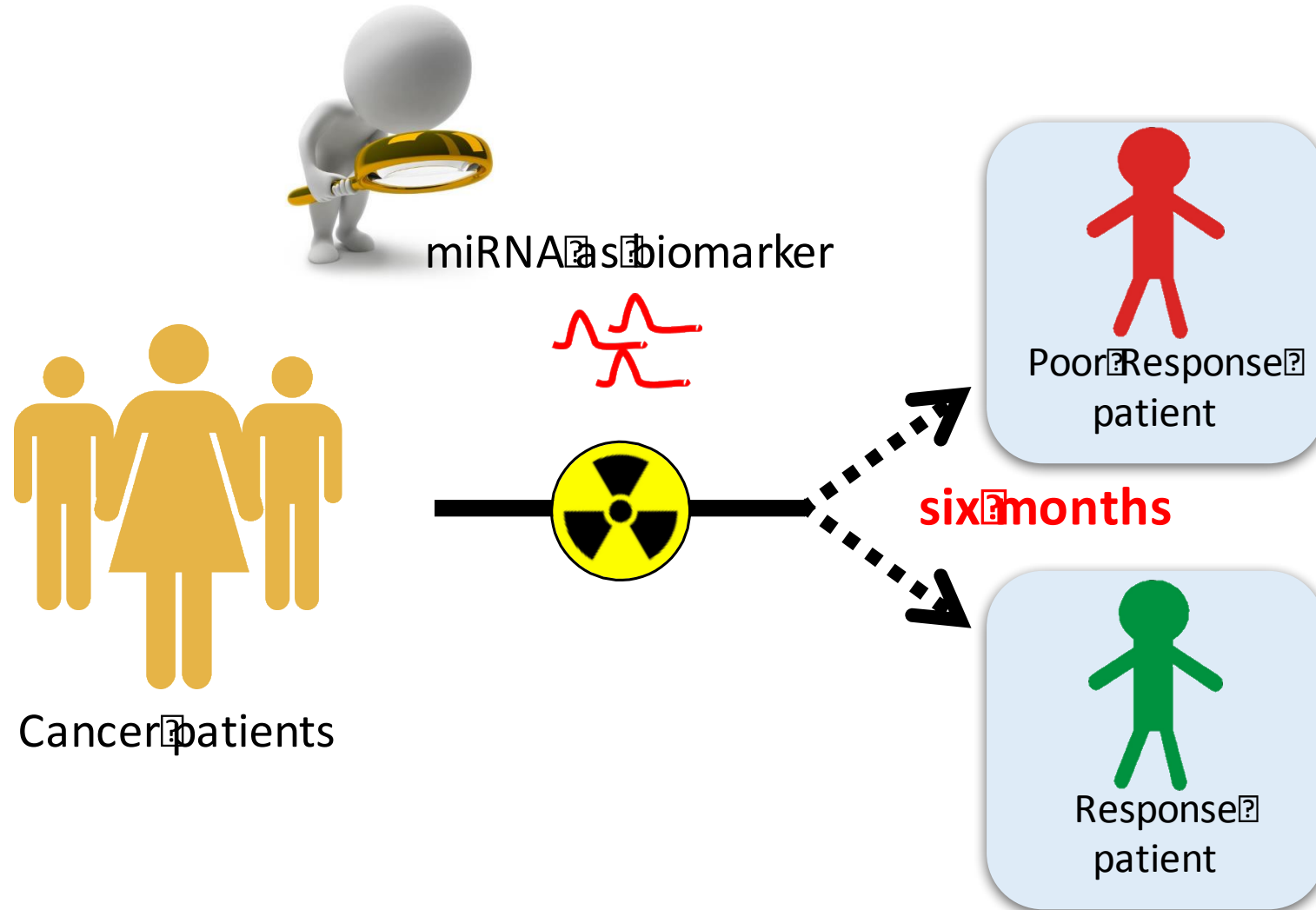


Chemotherapy



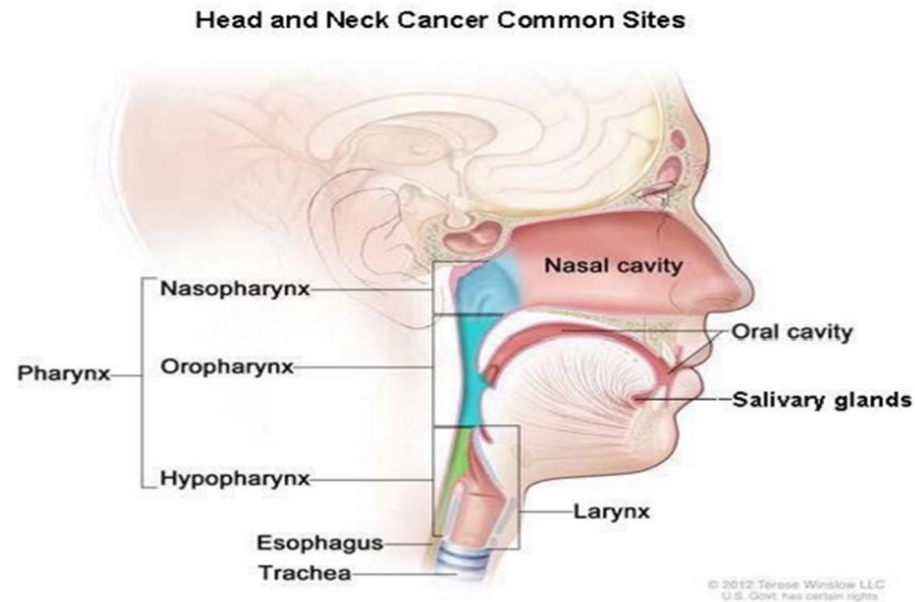
Radiation therapy

The purpose

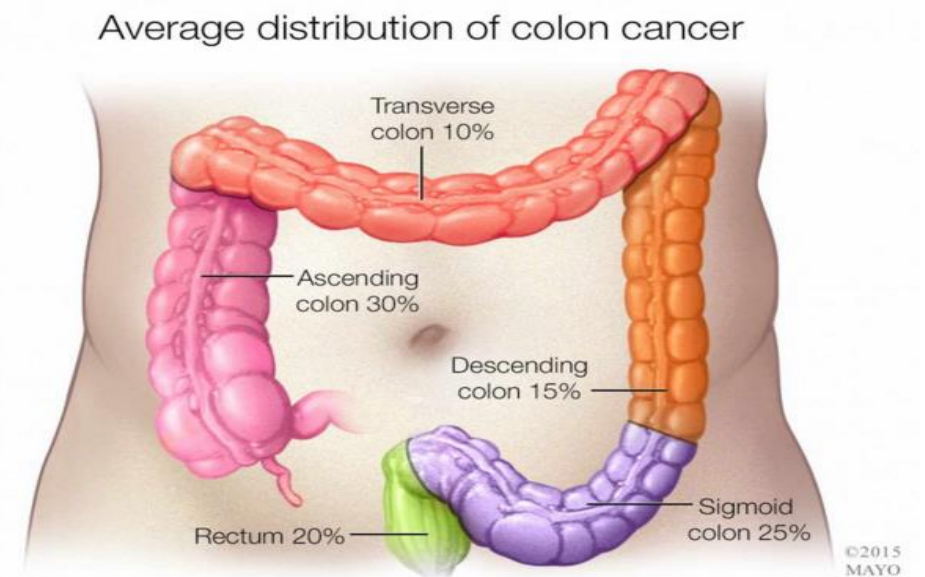


➤ The case of cancers:

➤ Head and Neck cancer (HNC)



➤ Rectal cancer.



Distribution of samples



Radiotherapy

Tracking

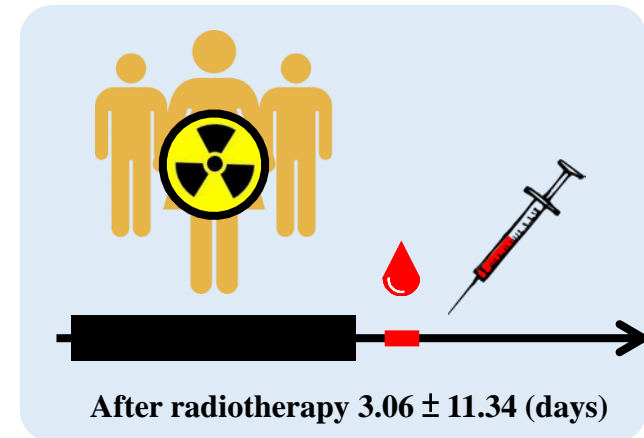
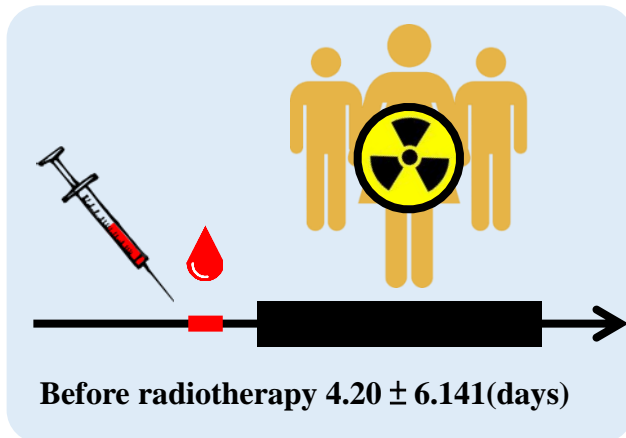
6 months
12 months



Poor Response
patient



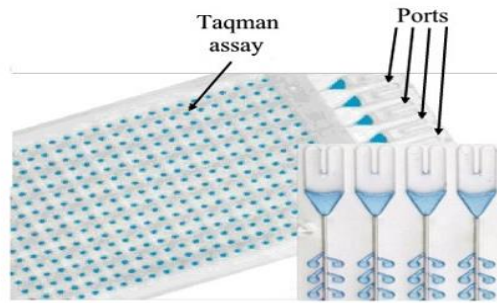
Response
patient



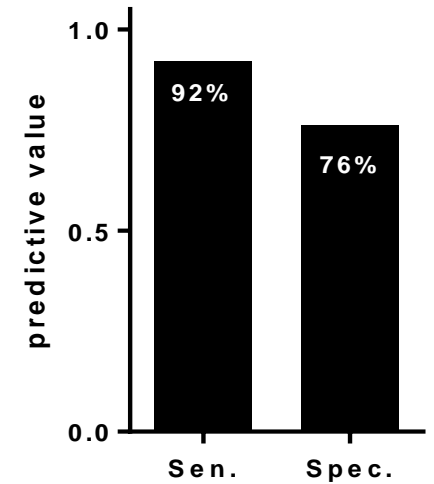
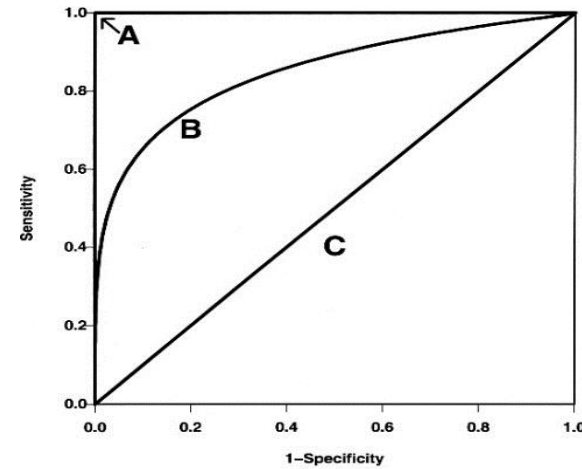
➤ Experimental design



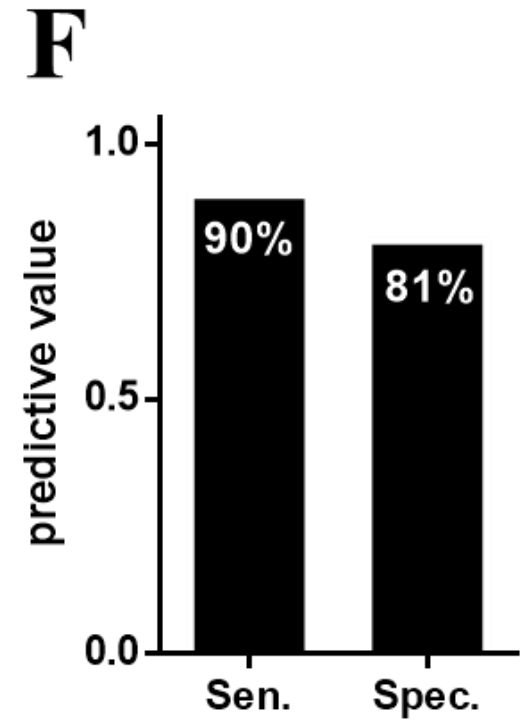
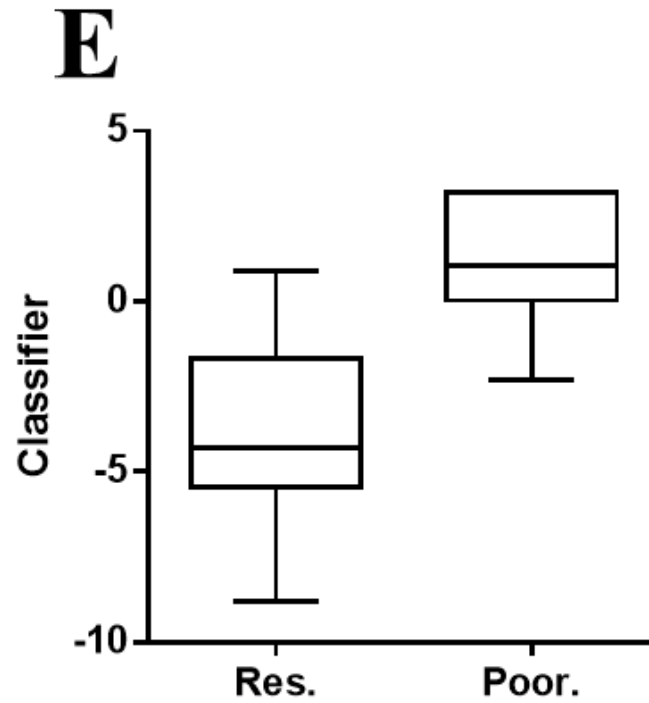
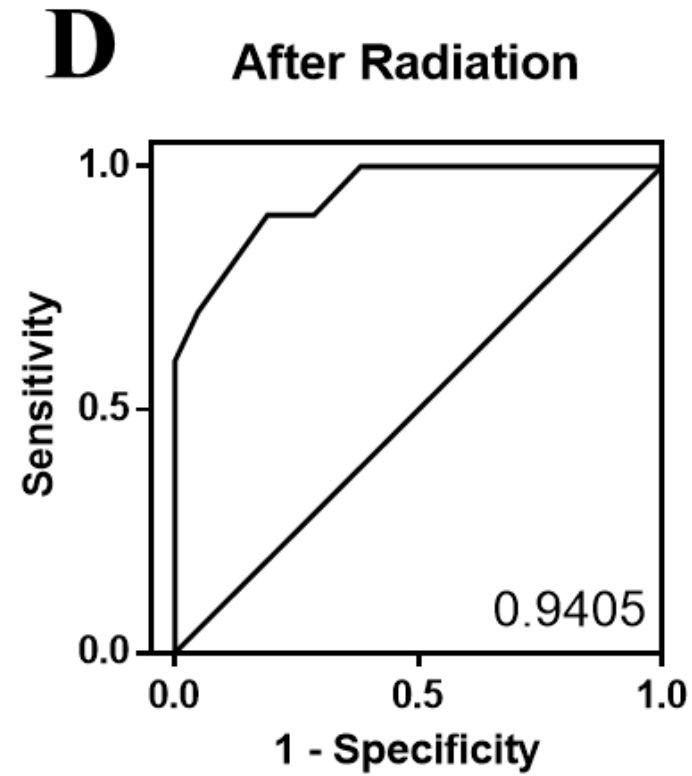
377 human microRNAs



<http://moleculardiagnosicscore.dana-farber.org/step-4-taqman-reaction.html>



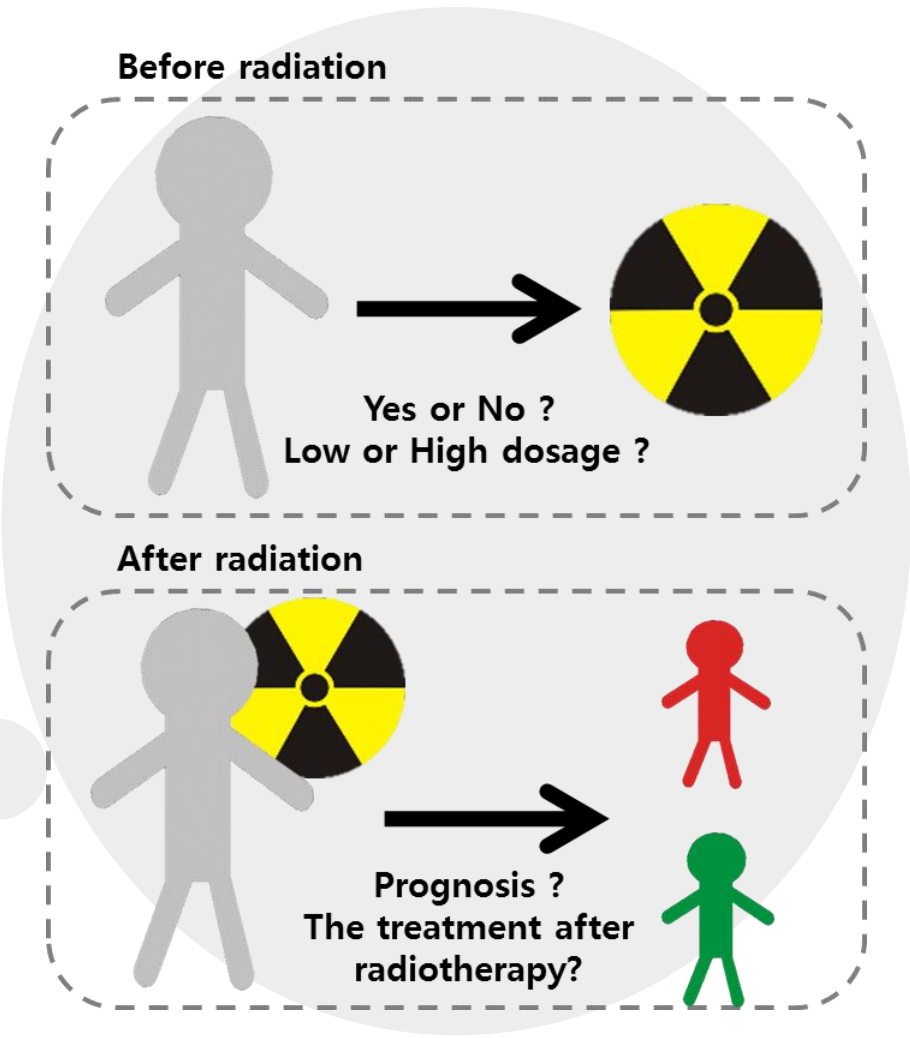
After Radiation



Applications



Cancer patients



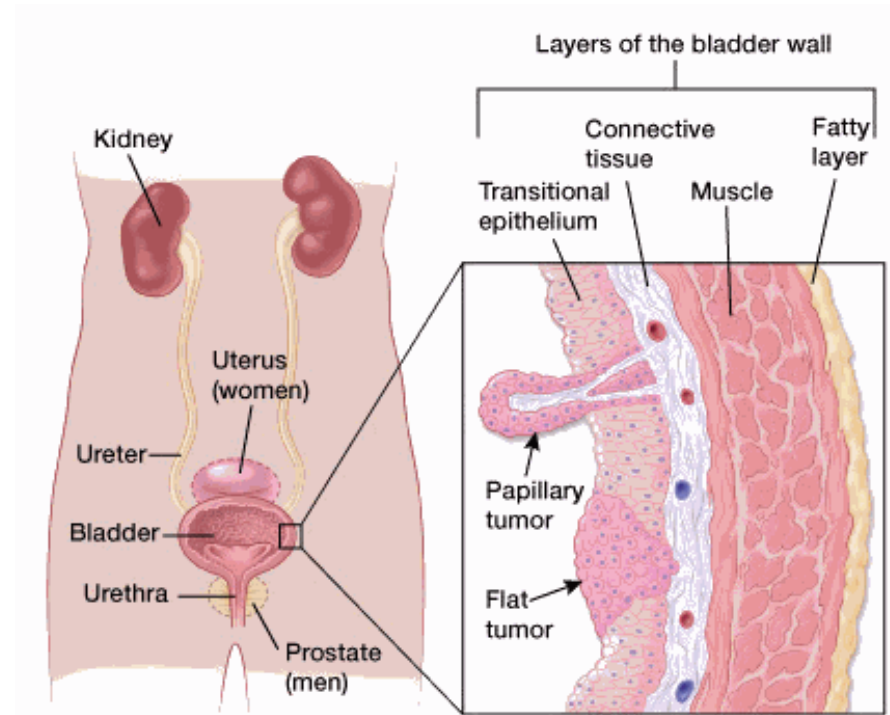
microRNAs as biomarkers in urine

- 中國醫藥大學附設醫院/壢新醫院
臺灣人體生物資料庫

CKD: chronic kidney disease

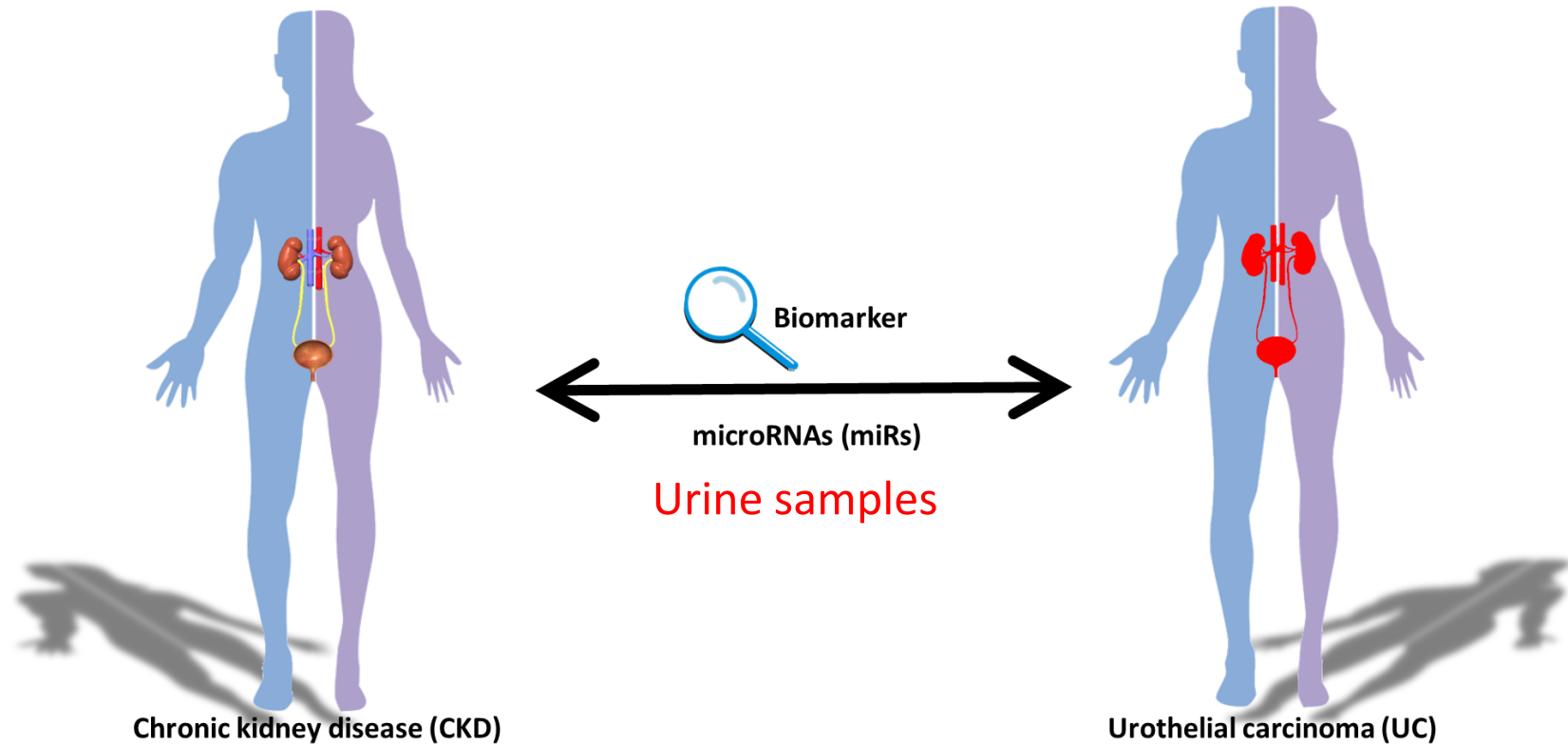


UC: urothelial cancer



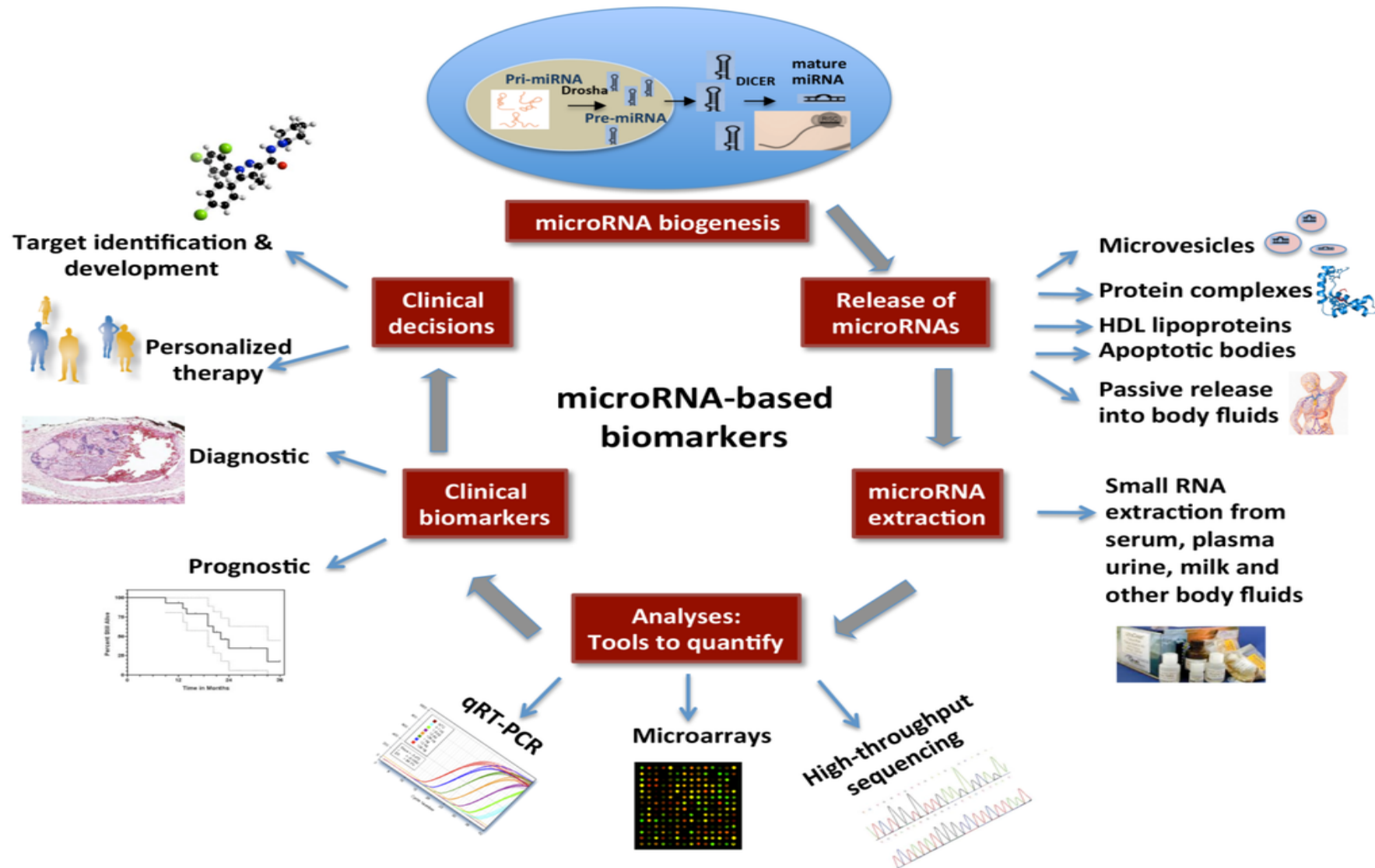
(www.cancer.org/cancer/bladdercancer)

Are miRs profiles different between CKD and UC patients?



Summary

➤ microRNA在個人化醫學及精準醫學的應用



Acknowledgements

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系統分子醫學實驗室



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- 中研院: 呂仁副研究員

Thank You!!!

ANY Questions?

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