

Los micro-ARN en Cáncer, Biomarcadores y Terapéuticos

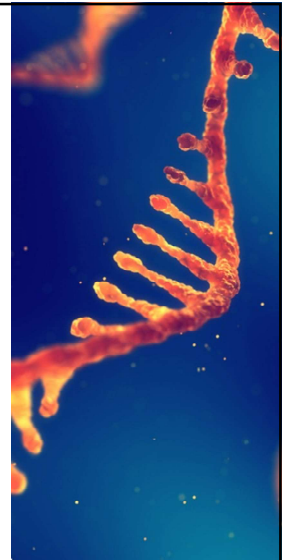
Neil Vásquez Araque
Biol. MSc. Dr en Biotecnología



Docente e Investigador UNAL – Med



EXOSOMAS



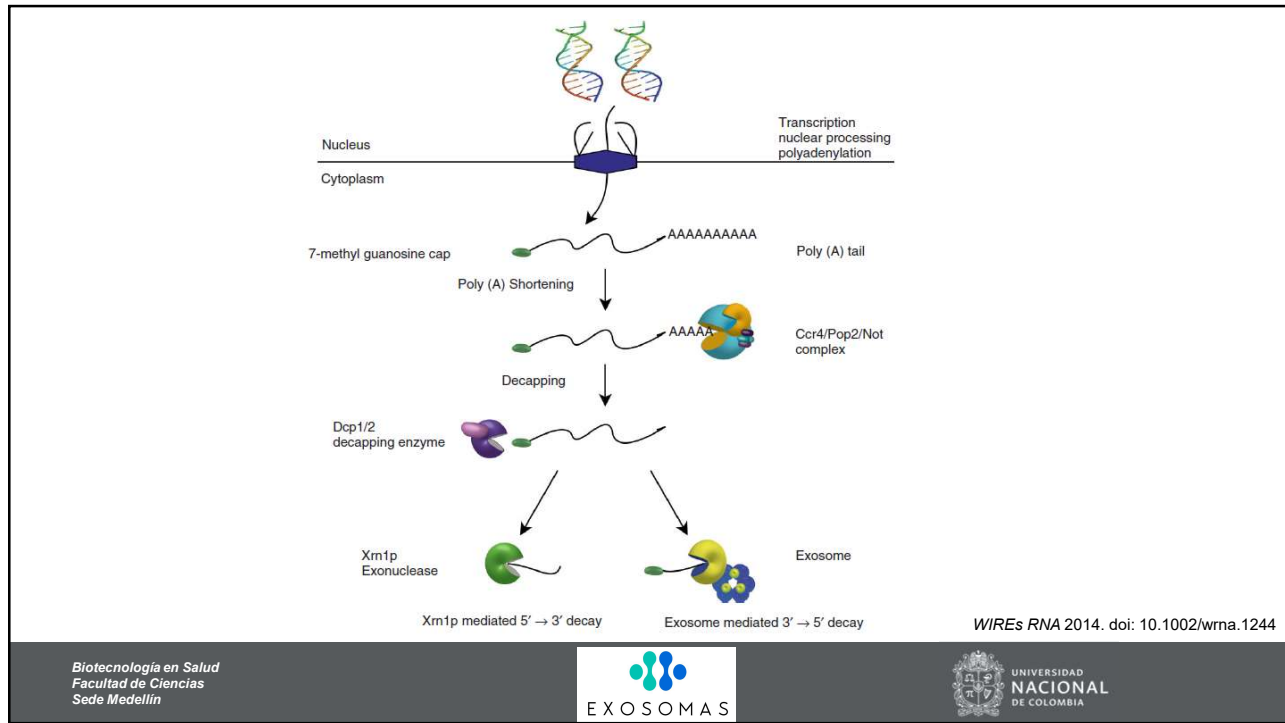
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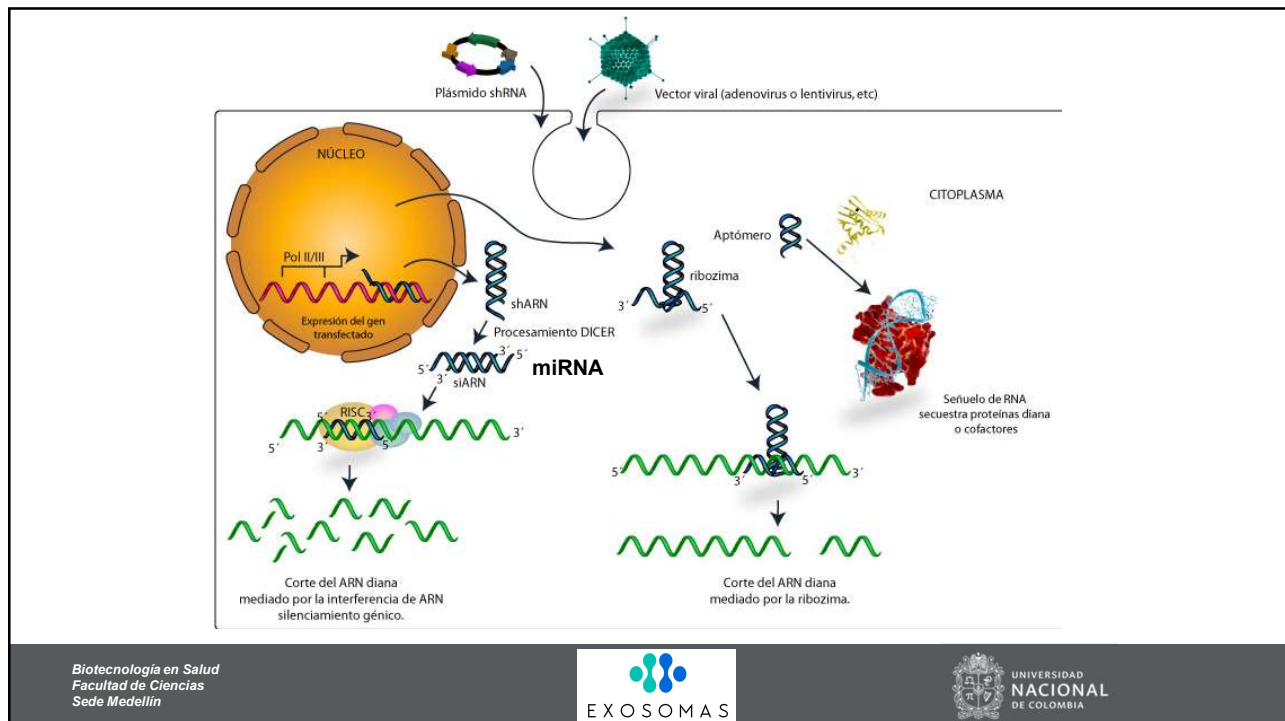
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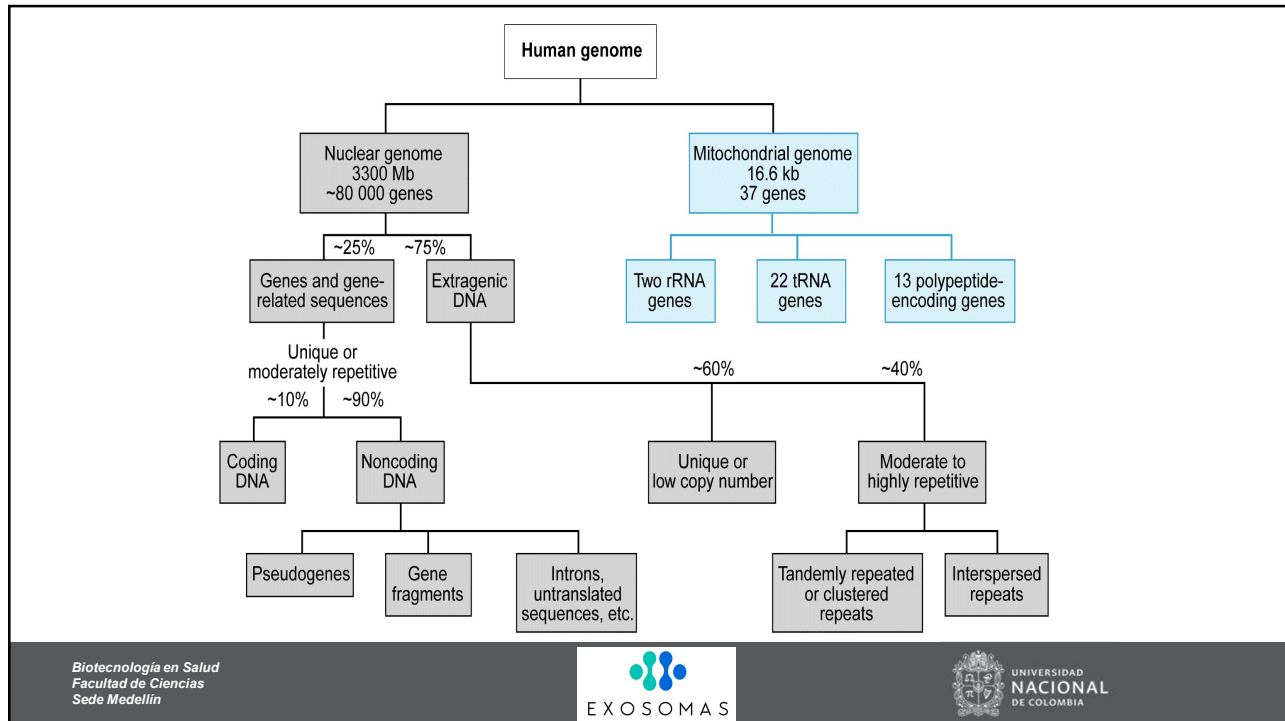
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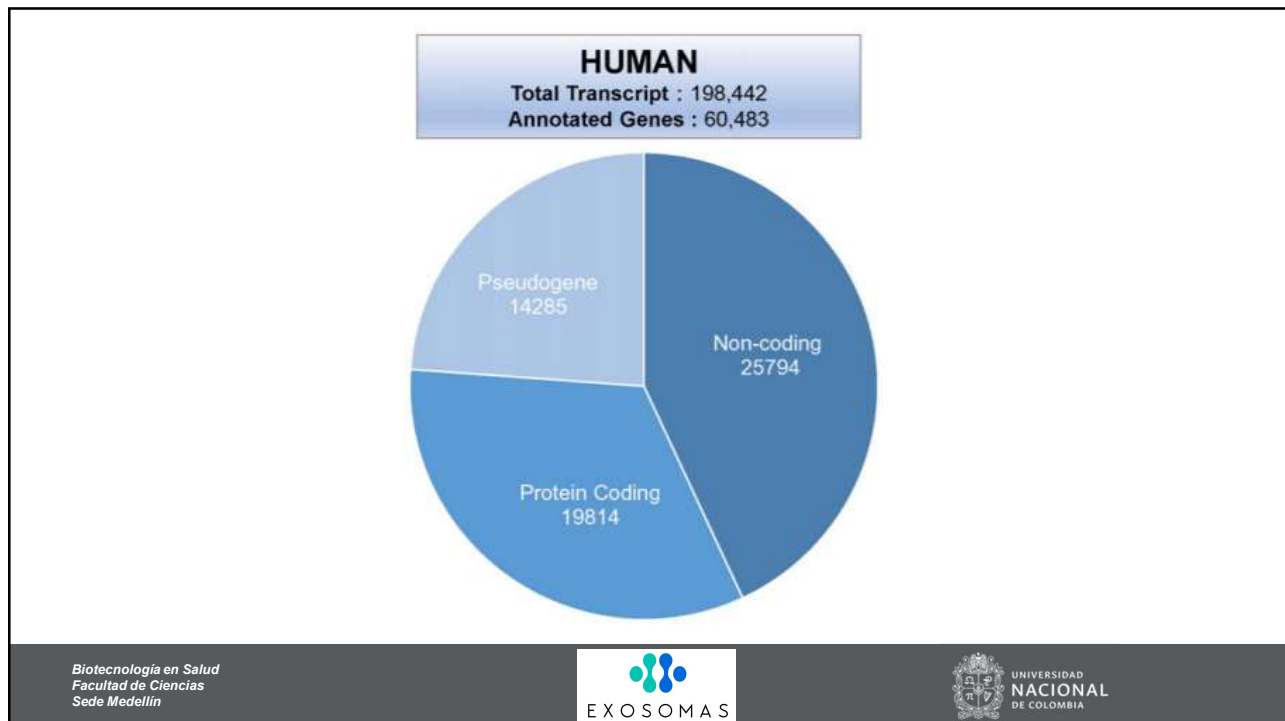
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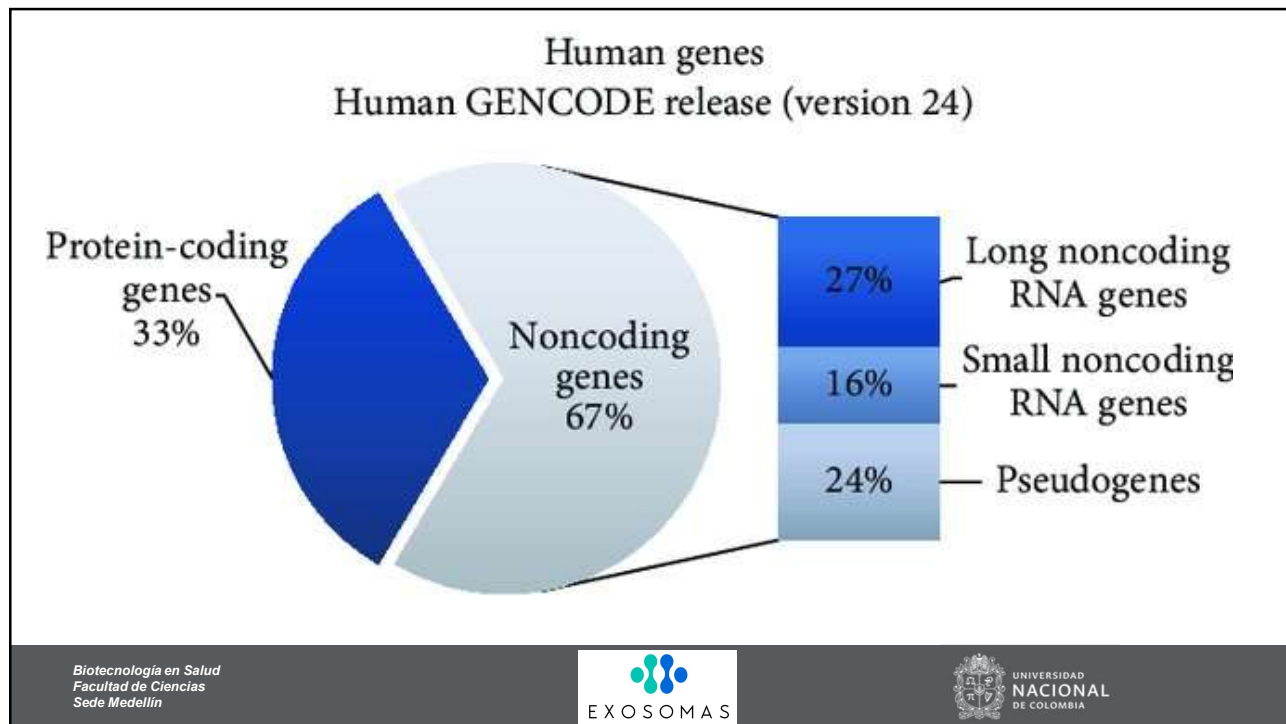
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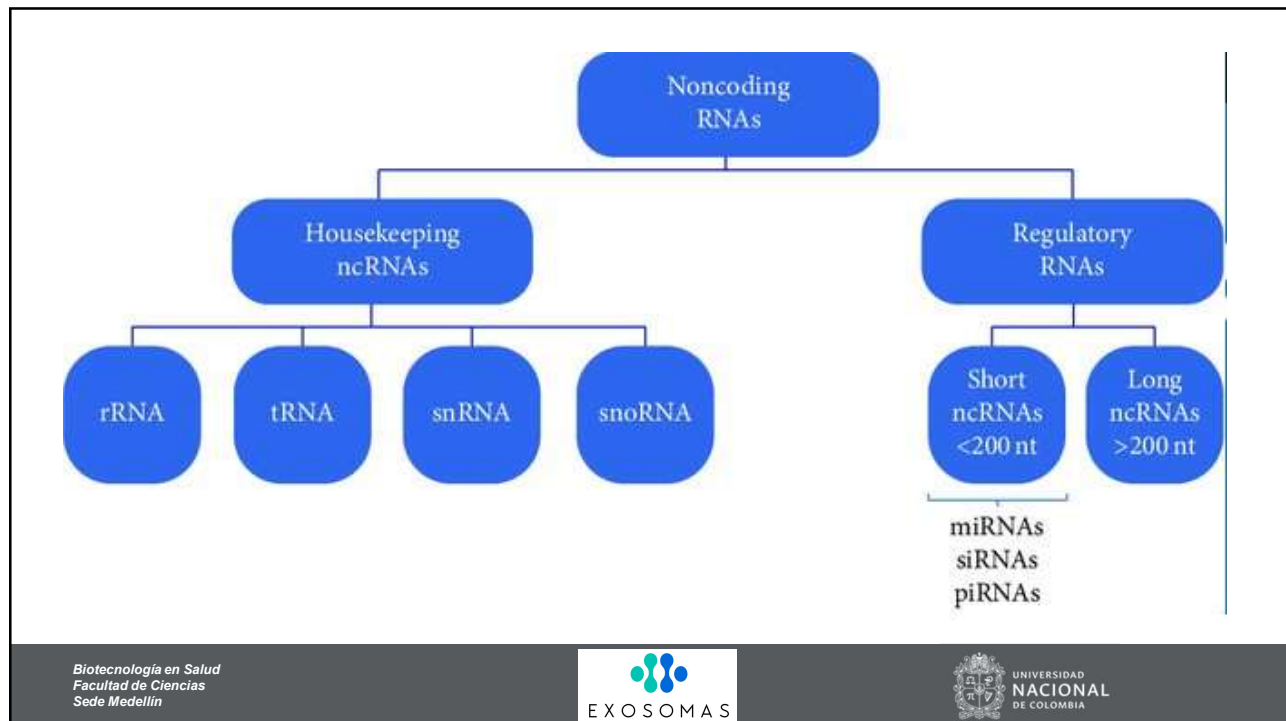
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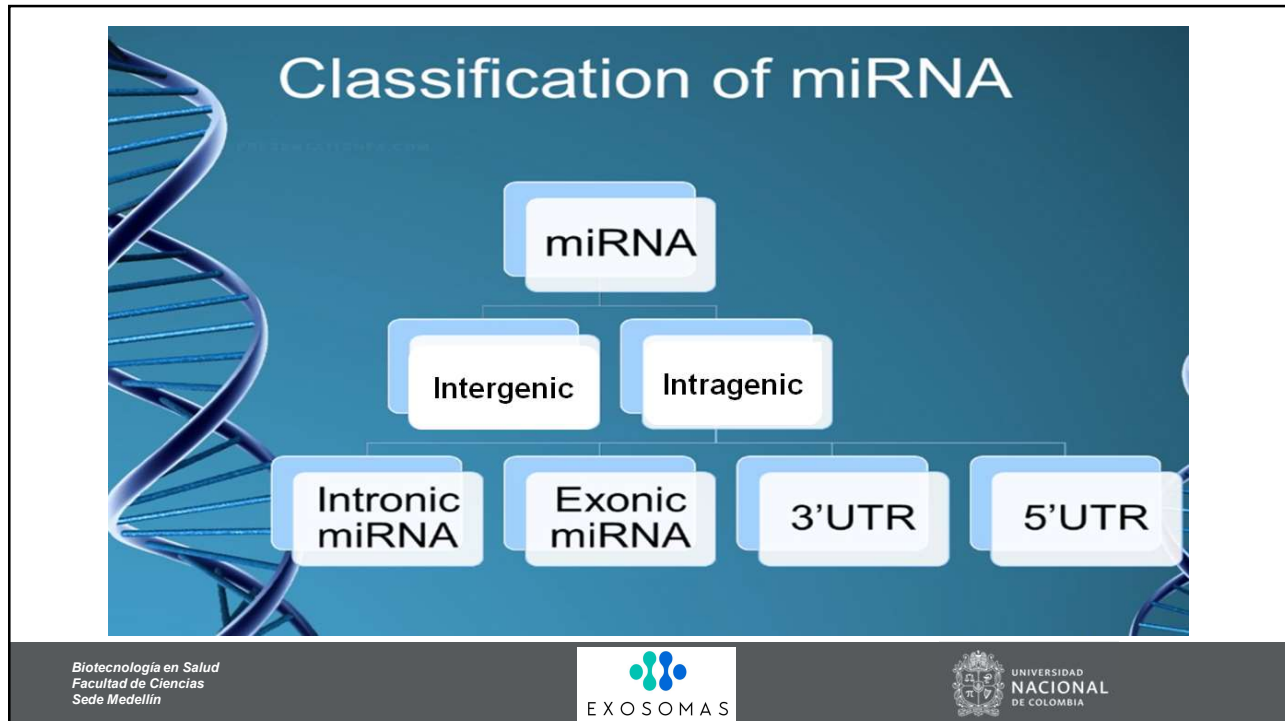
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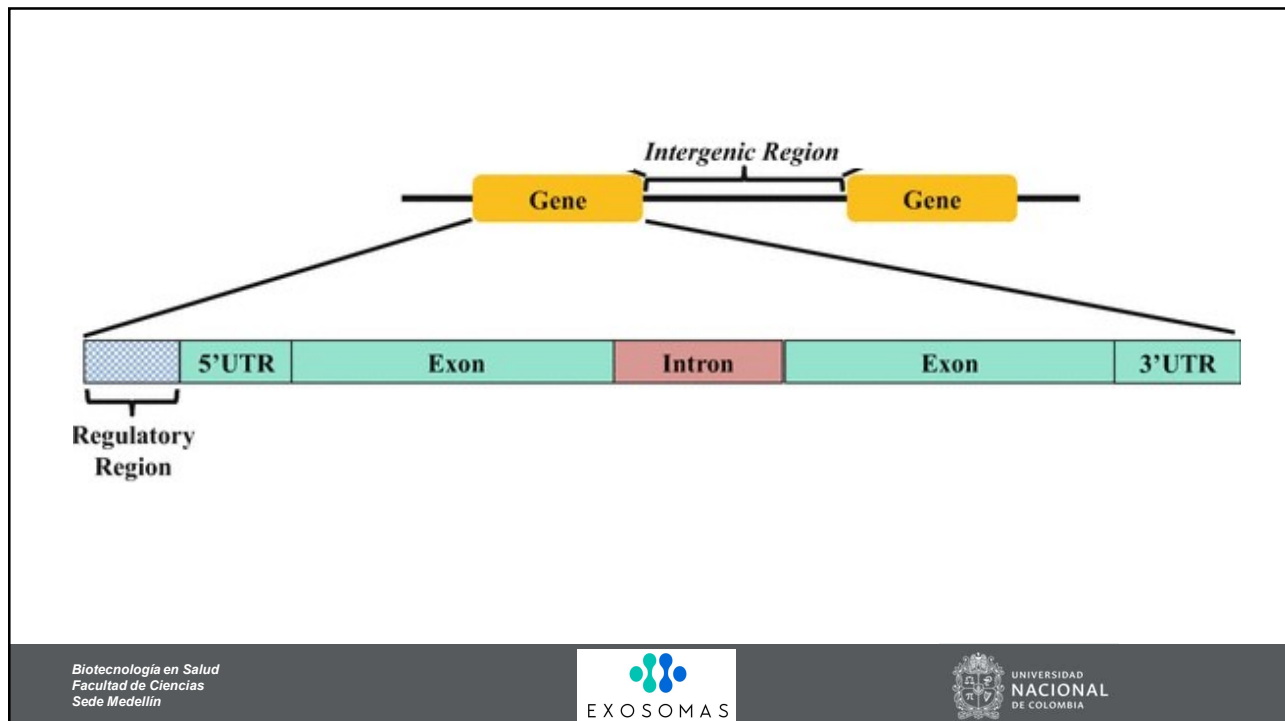
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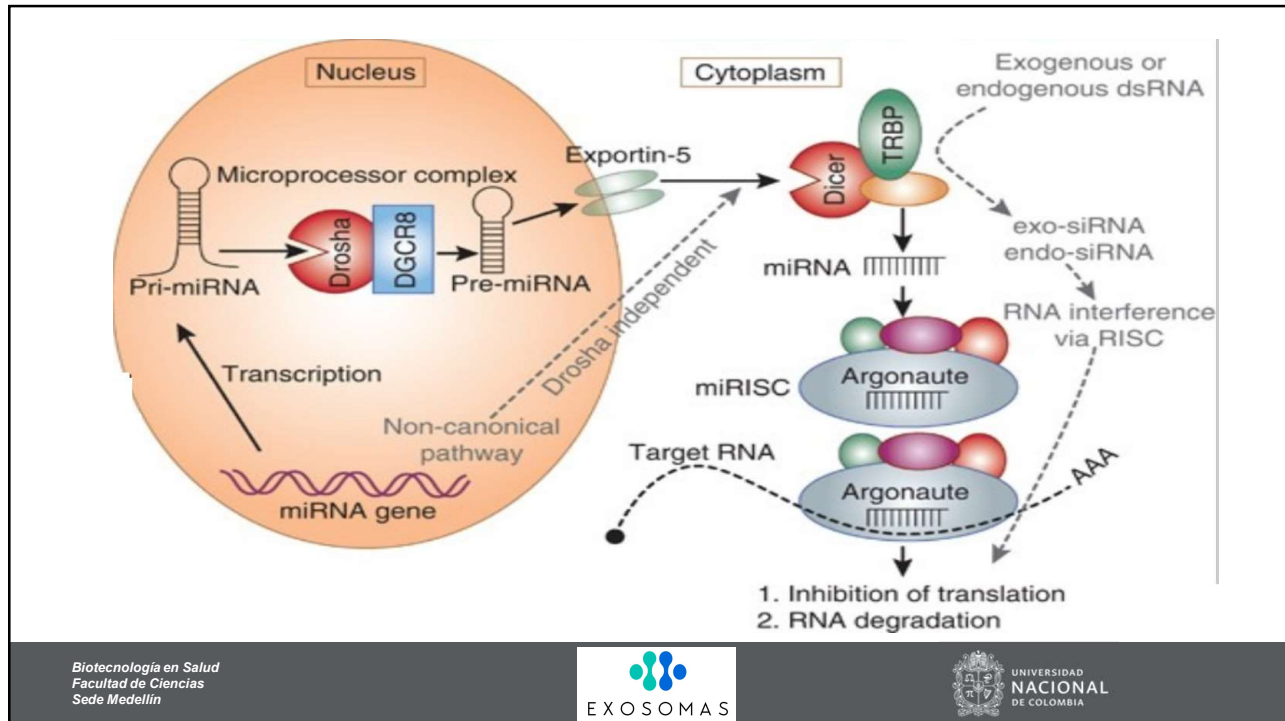
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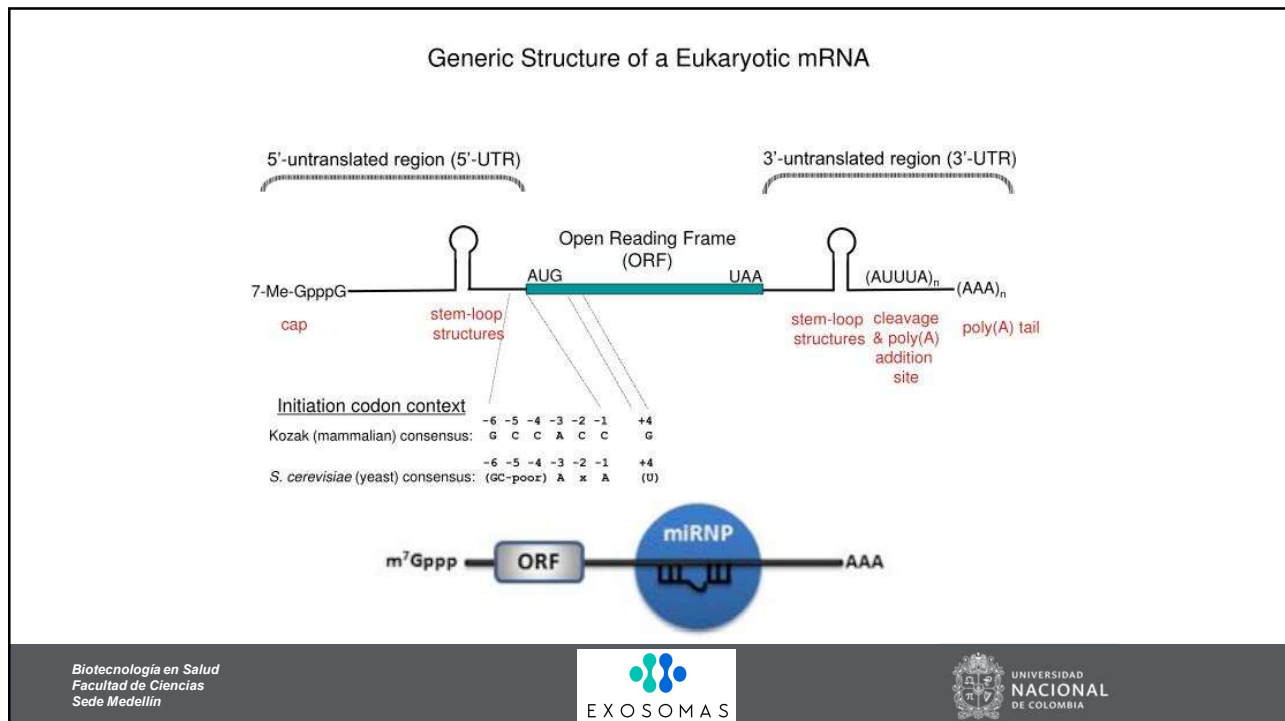
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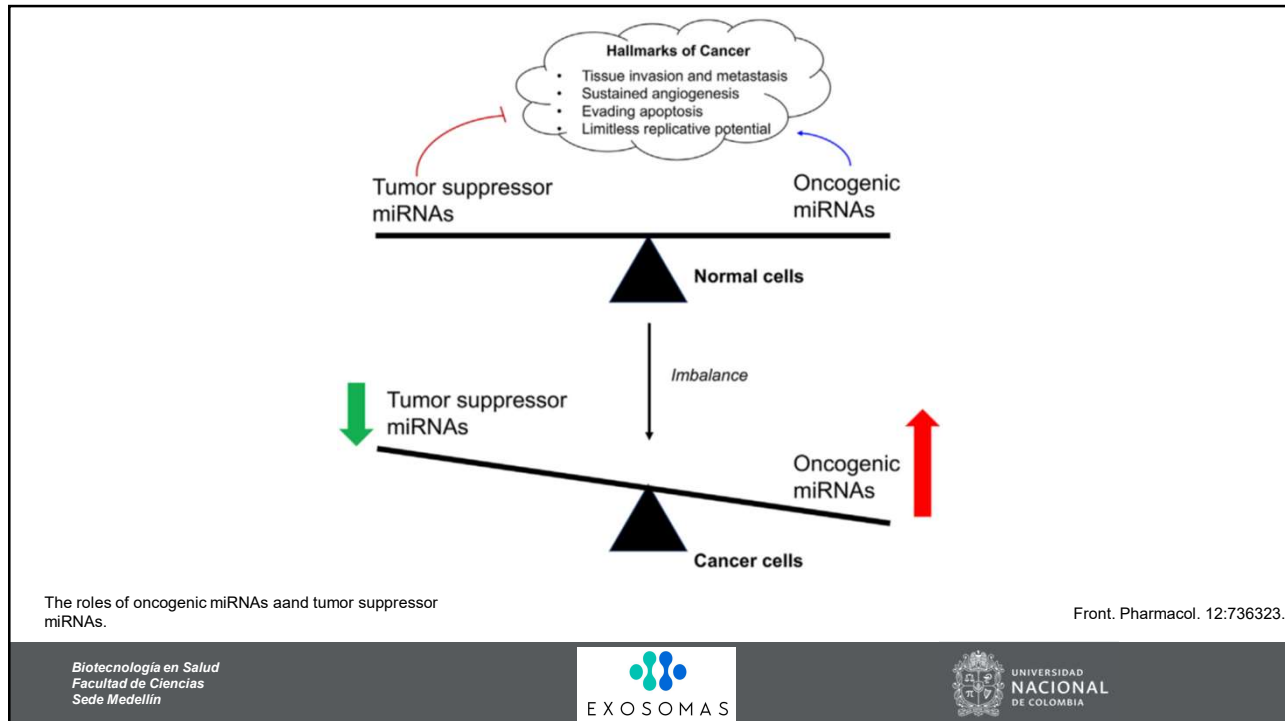
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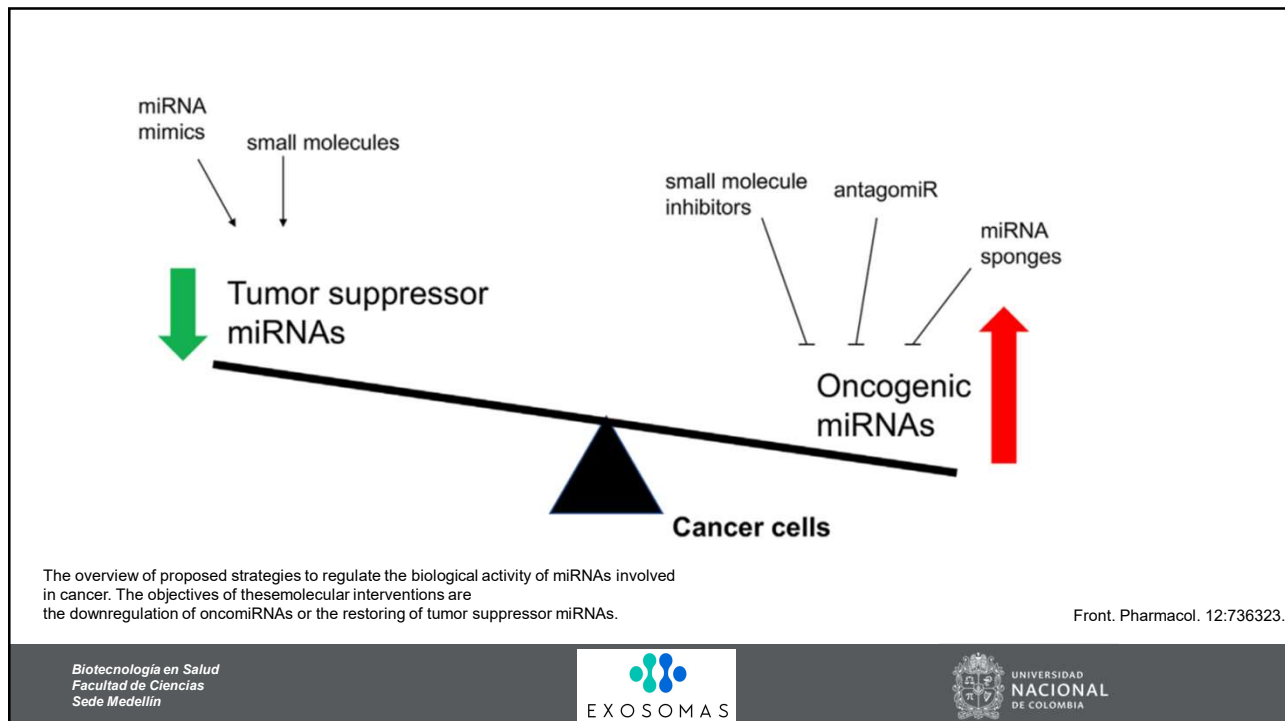
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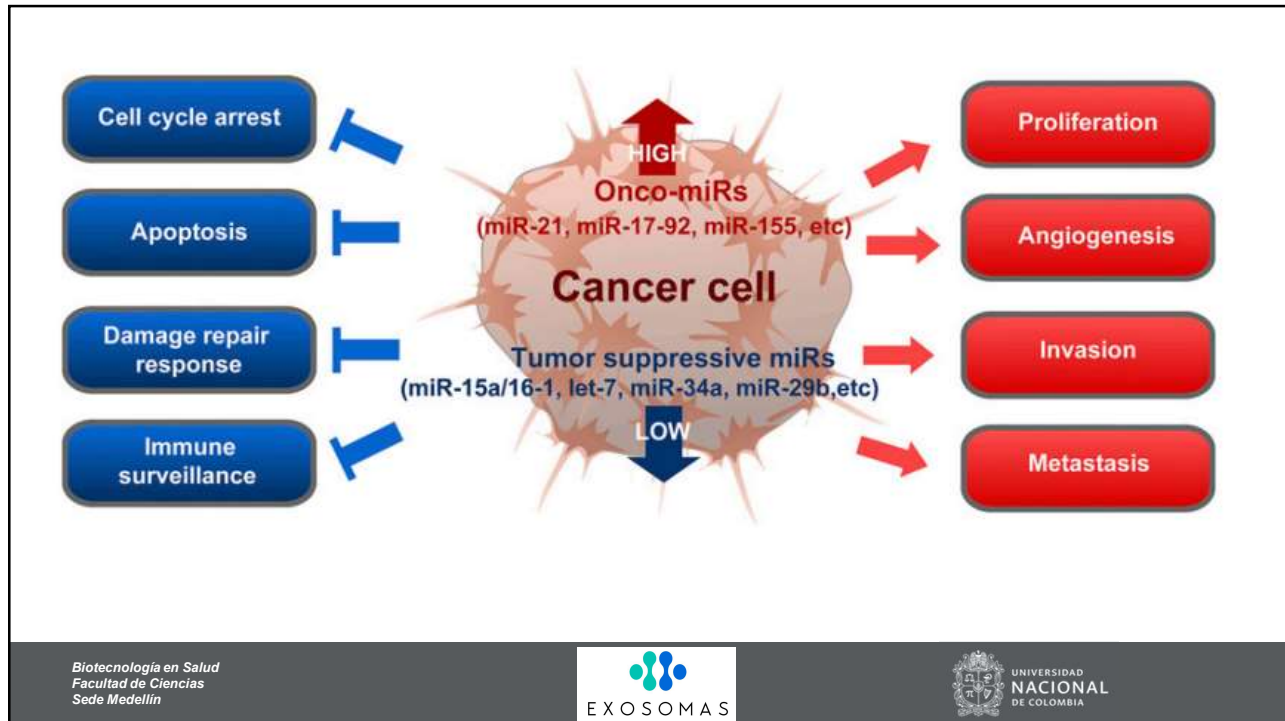
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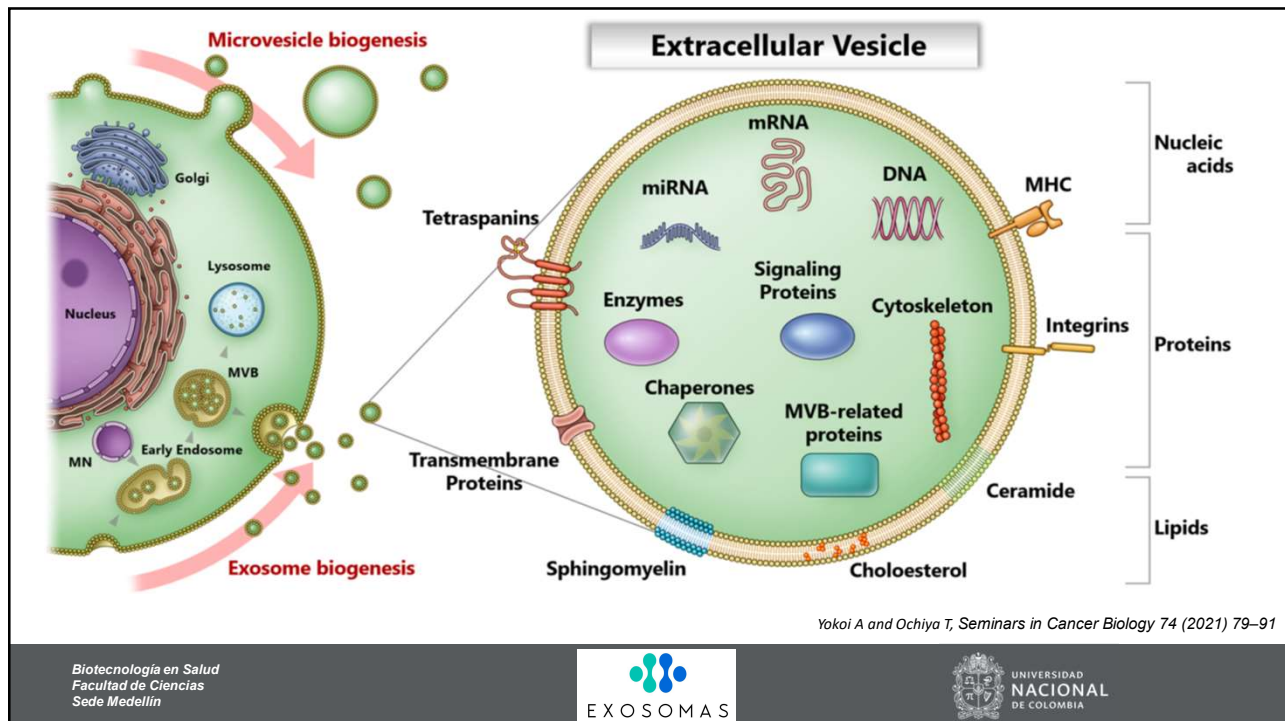
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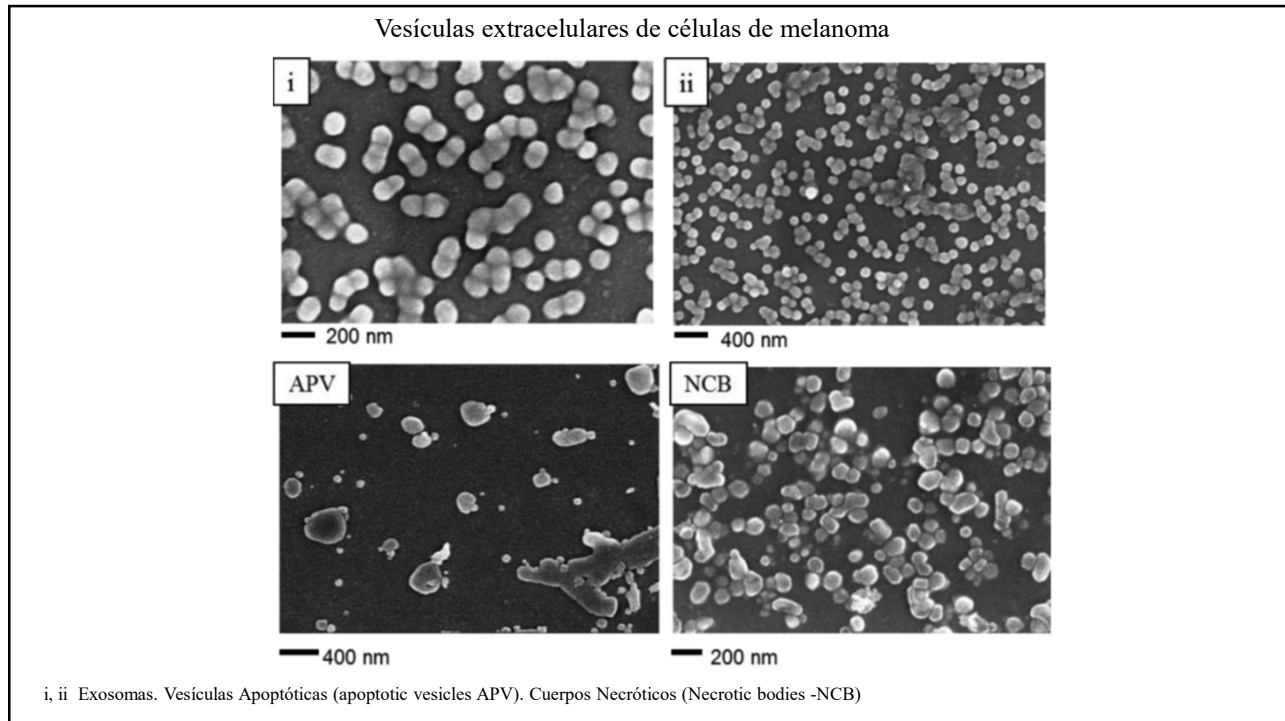
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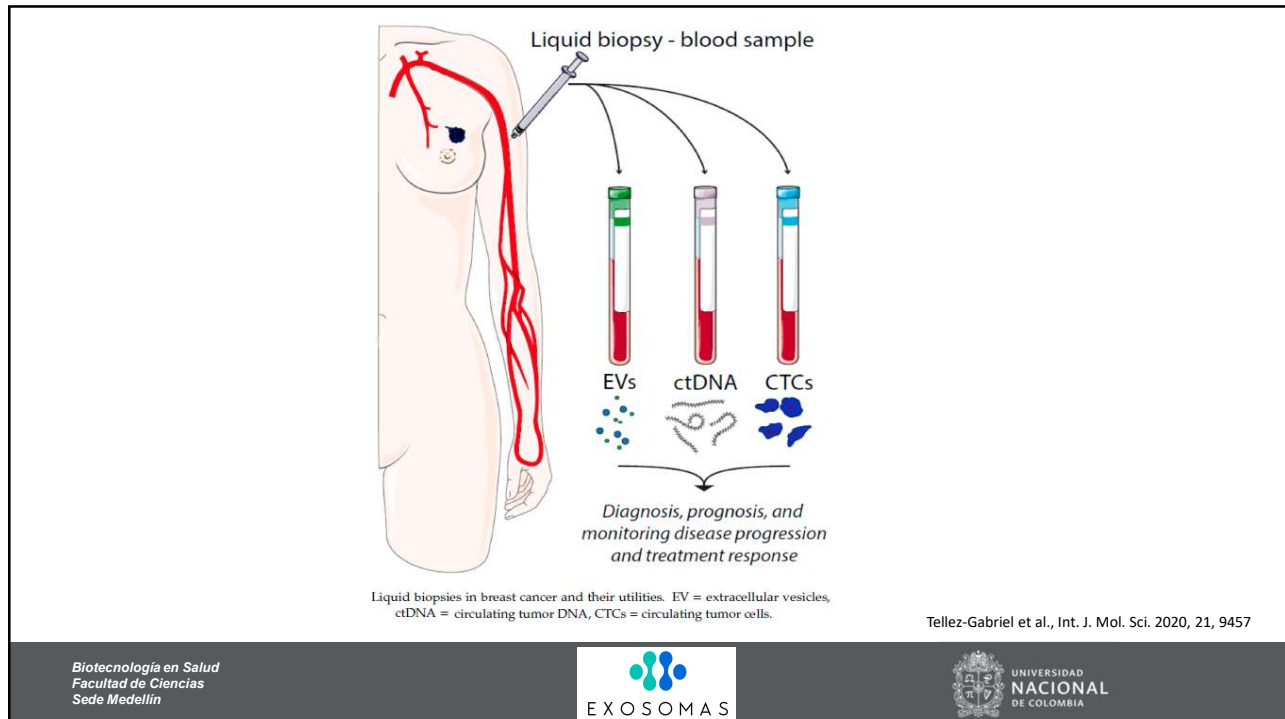
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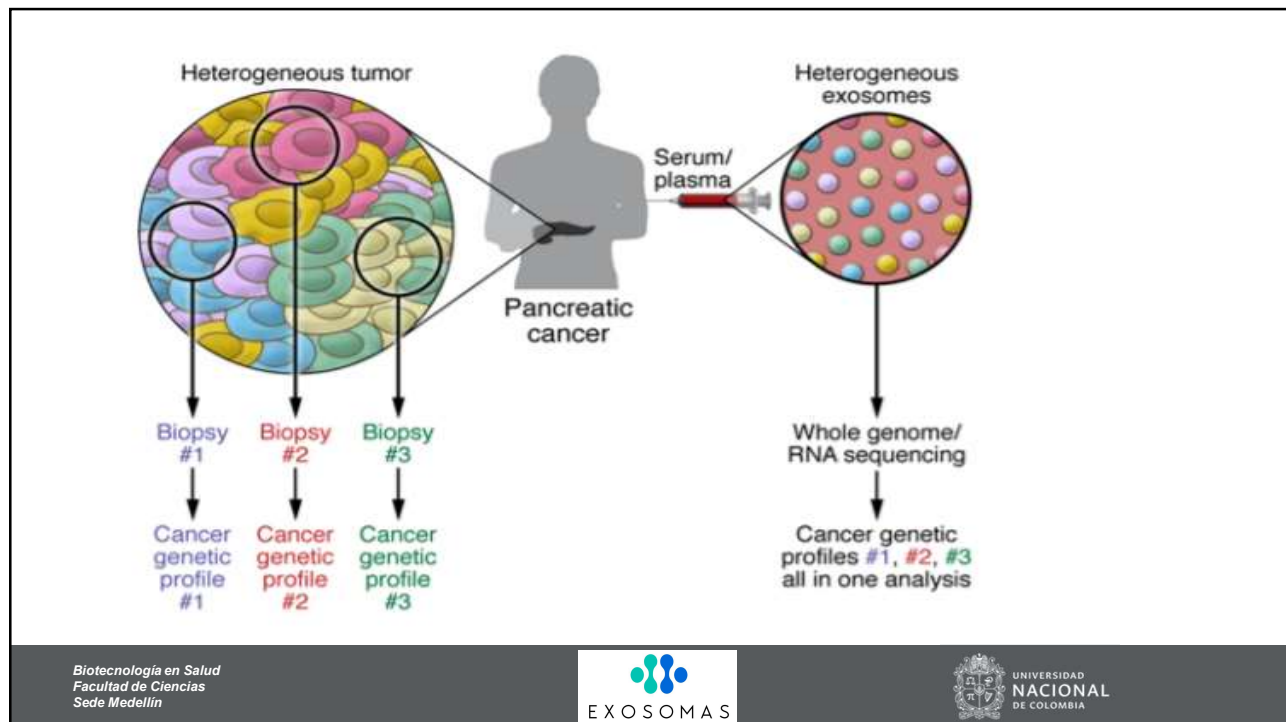
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19



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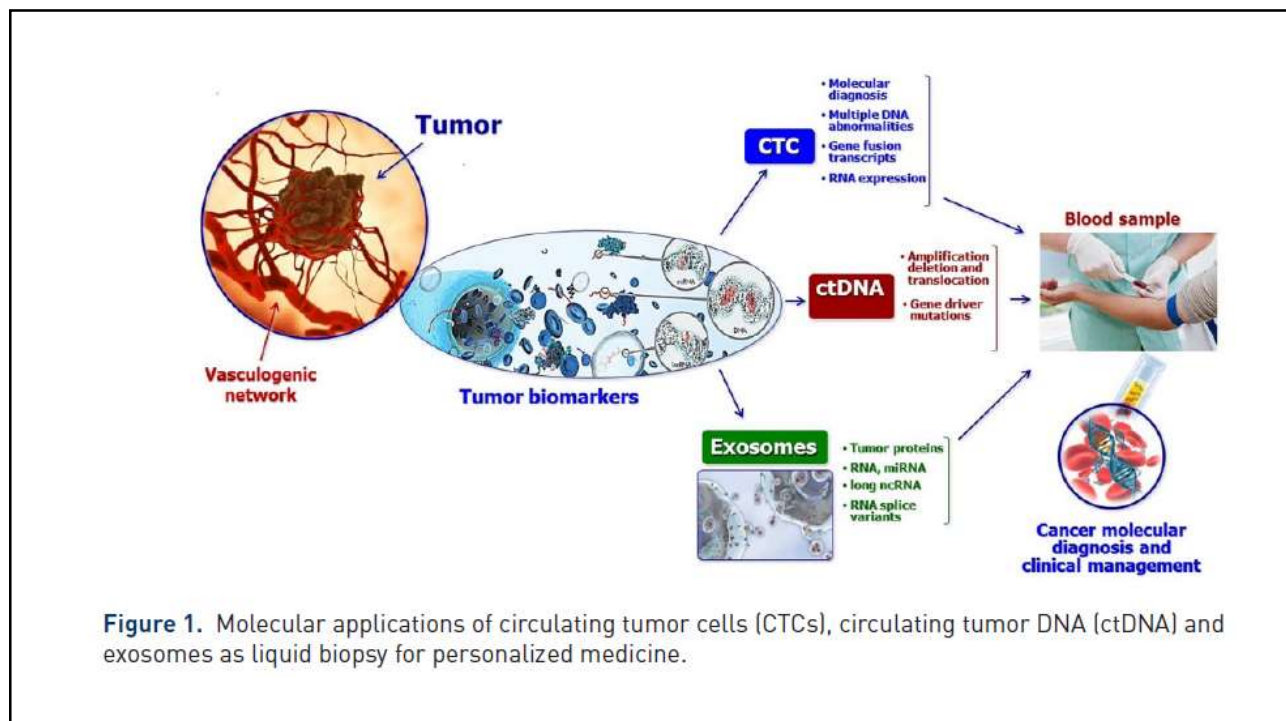


Figure 1. Molecular applications of circulating tumor cells (CTCs), circulating tumor DNA (ctDNA) and exosomes as liquid biopsy for personalized medicine.

22

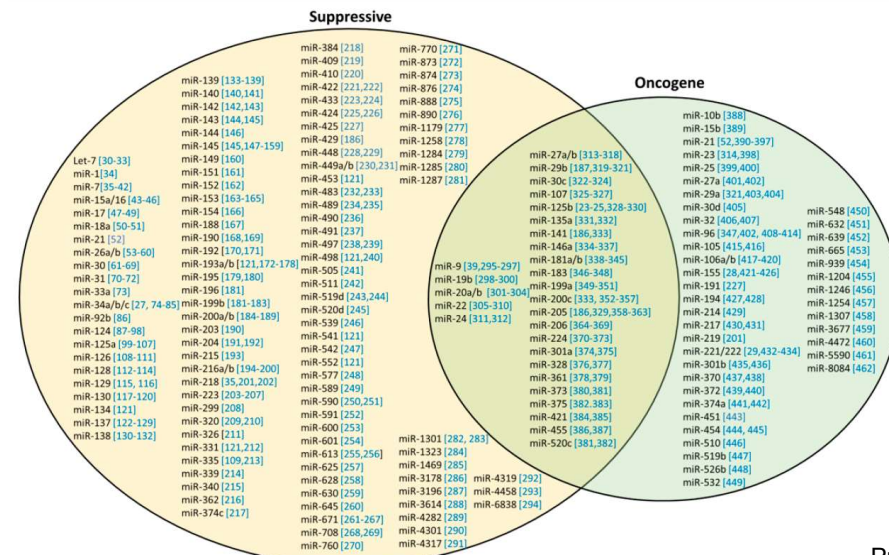
Examples of exosomal-derived potential biomarkers with clinical significance published in the last three years.

Exosomal miRNAs as Cancer Biomarkers			
miRNA	Cancer type	Clinical value	Biofluid
Let-7b-5p, -122-5p, -146b-5p, -210-3p, -215-5p	Breast cancer	Diagnosis	Plasma
miR-224	Hepatocellular carcinoma	Diagnosis/Prognosis	Serum
miR-106b, miR-1269a	Lung cancer	Diagnosis/Prognosis	Serum
miR-375, -1307	Ovarian cancer	Diagnosis	Serum
Exosomal lncRNAs as Cancer Biomarkers			
lncRNA	Cancer type	Clinical value	Biofluid
PCAT-1, UBCL1 and SNHG16	Bladder cancer	Diagnosis/Prognosis	Urine
MALAT-1	Lung cancer	Diagnosis	Serum
Exosomal mRNA as Cancer Biomarkers			
mRNA	Cancer type	Clinical value	Biofluid
BRAF, KRAS (mutant)	Colorectal cancer	Diagnosis	Serum
Exosomal mutated DNA as Cancer Biomarkers			
DNA	Cancer type	Clinical value	Biofluid
IDH1	Glioblastoma	Diagnosis/Prognosis	Plasma
EGFR	Lung cancer	Diagnosis/Prognosis	Plasma/Bronchioalveolar lavage
BRAF	Melanoma	Therapeutic monitoring	Plasma
KRAS, P53	Pancreatic cancer	Diagnosis/Prognosis	Serum/Plasma
MYC, P53, MLH1, PTEN, AR	Prostate cancer	Diagnosis/Prognosis	Plasma
Exosomal proteins as Cancer Biomarkers			
Protein	Cancer type	Clinical value	Biofluid
PDL-1	Melanoma	Prognosis	Plasma

Valencia and Montuenga. Exosomes in Liquid Biopsy Cancers 2021, 13, 2147 8

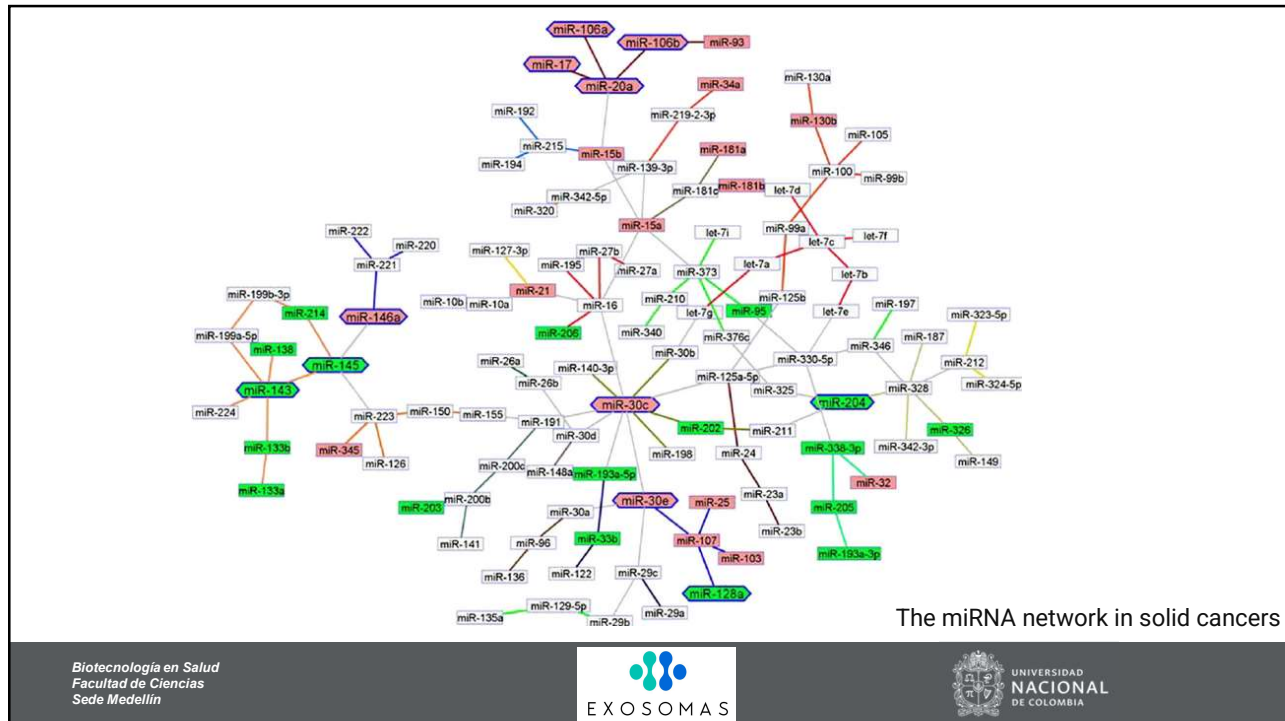
23

Roles of miRNAs

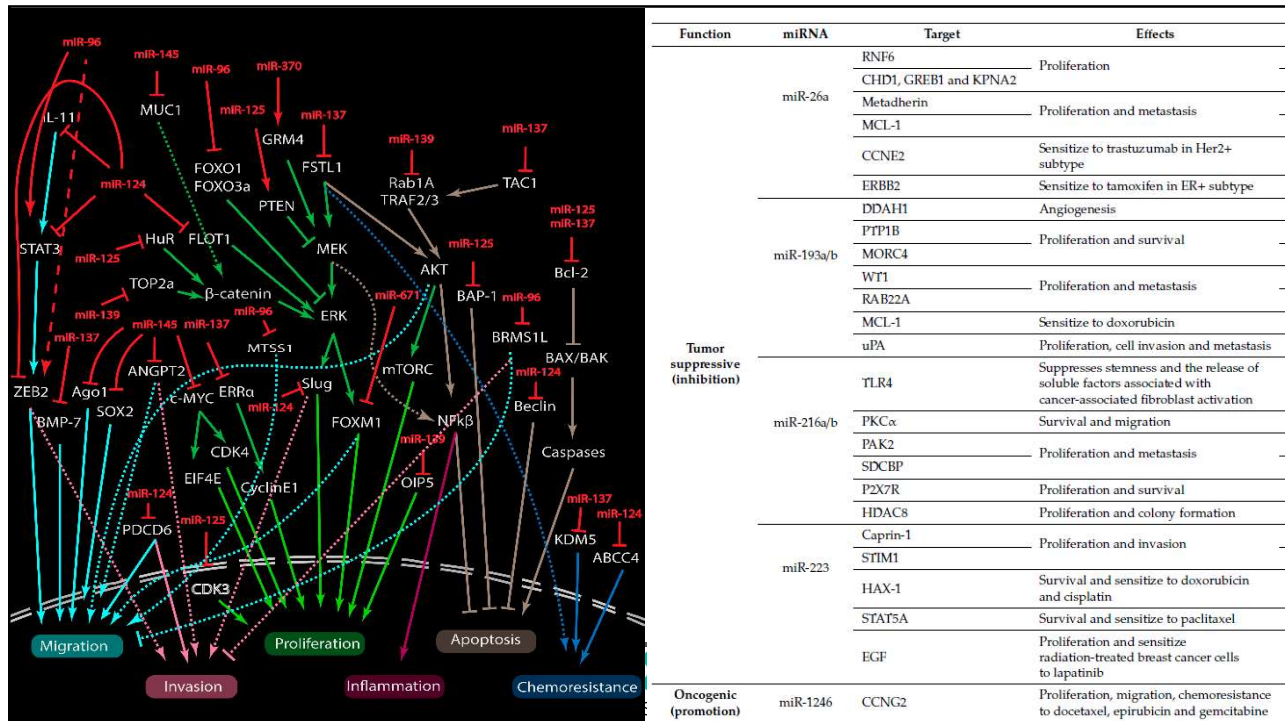


PubMed Database 2020

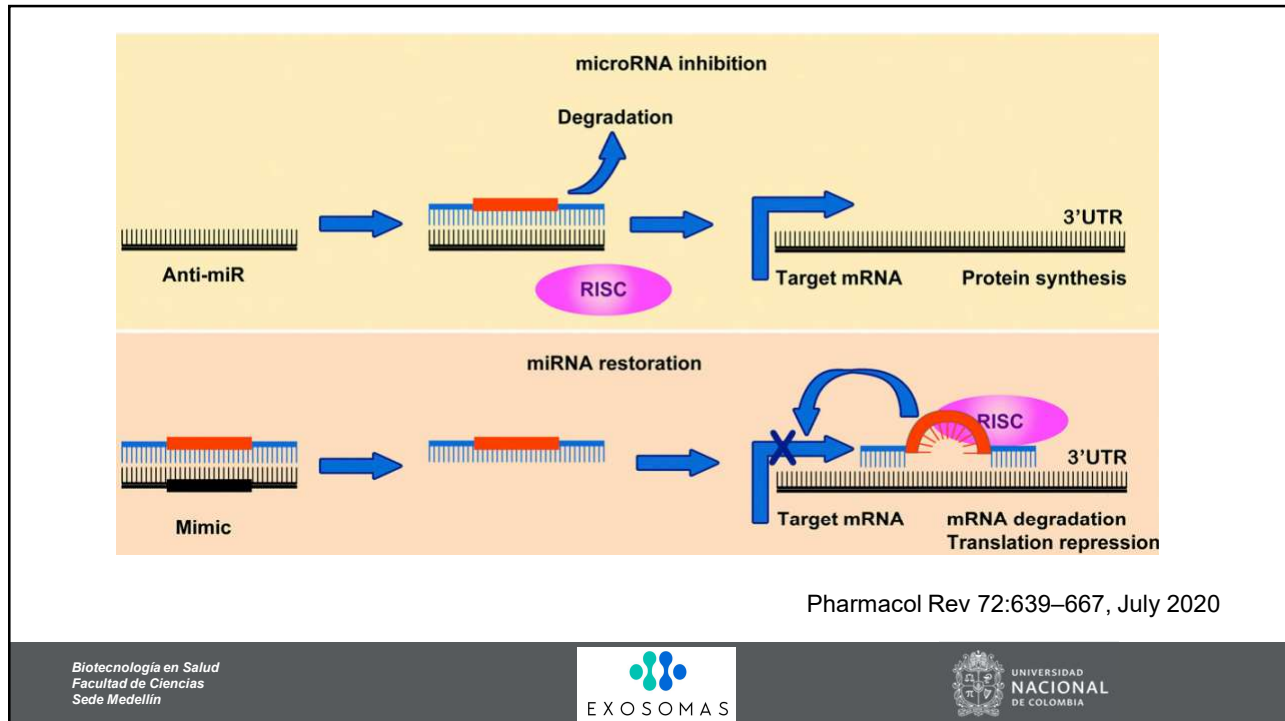
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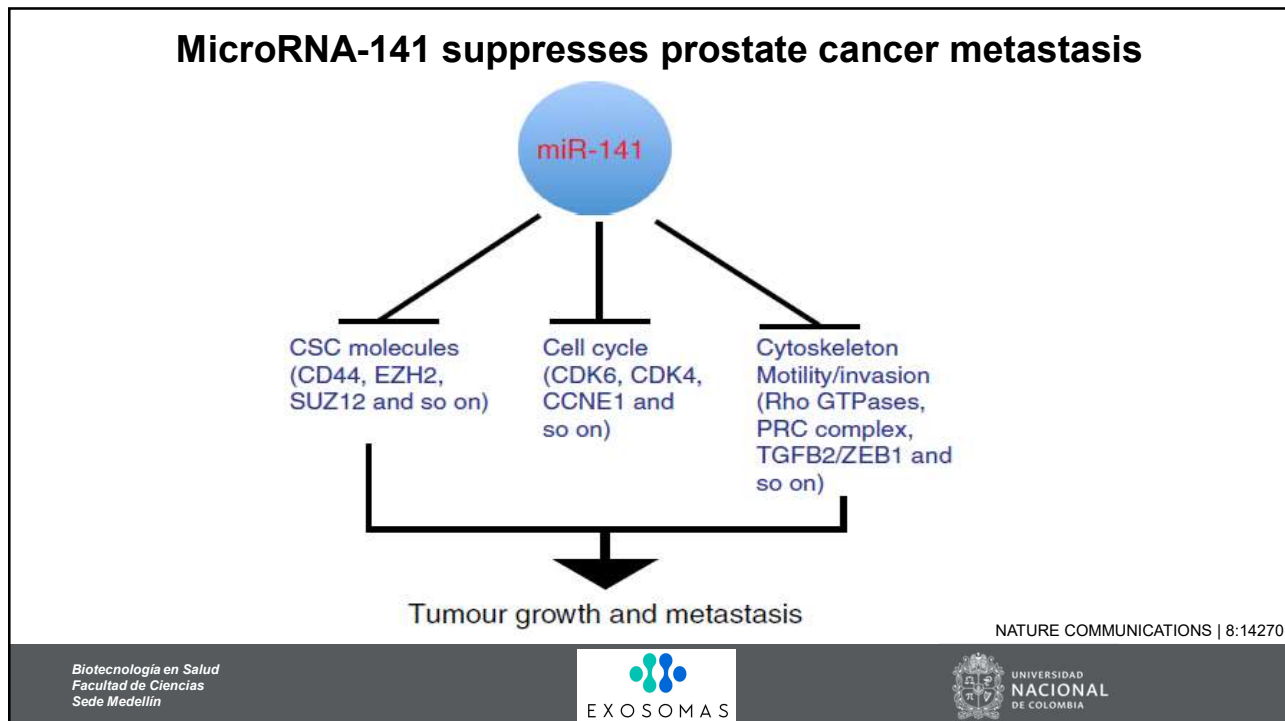
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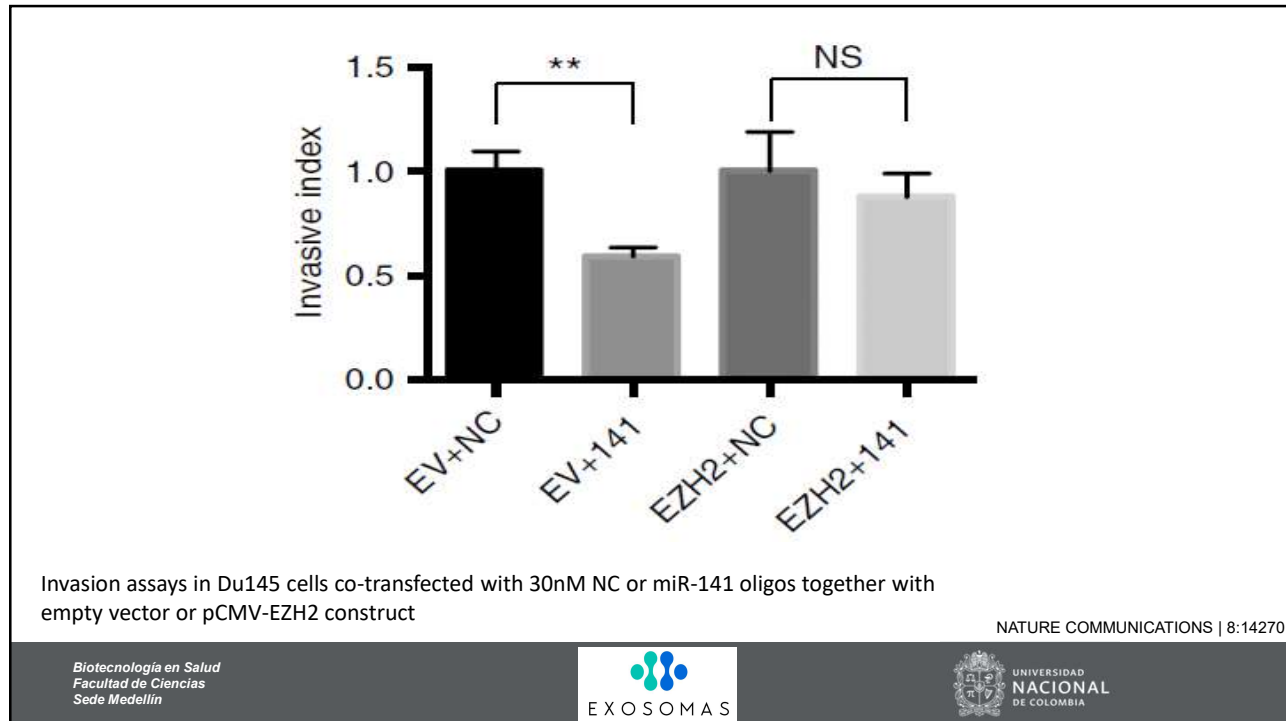
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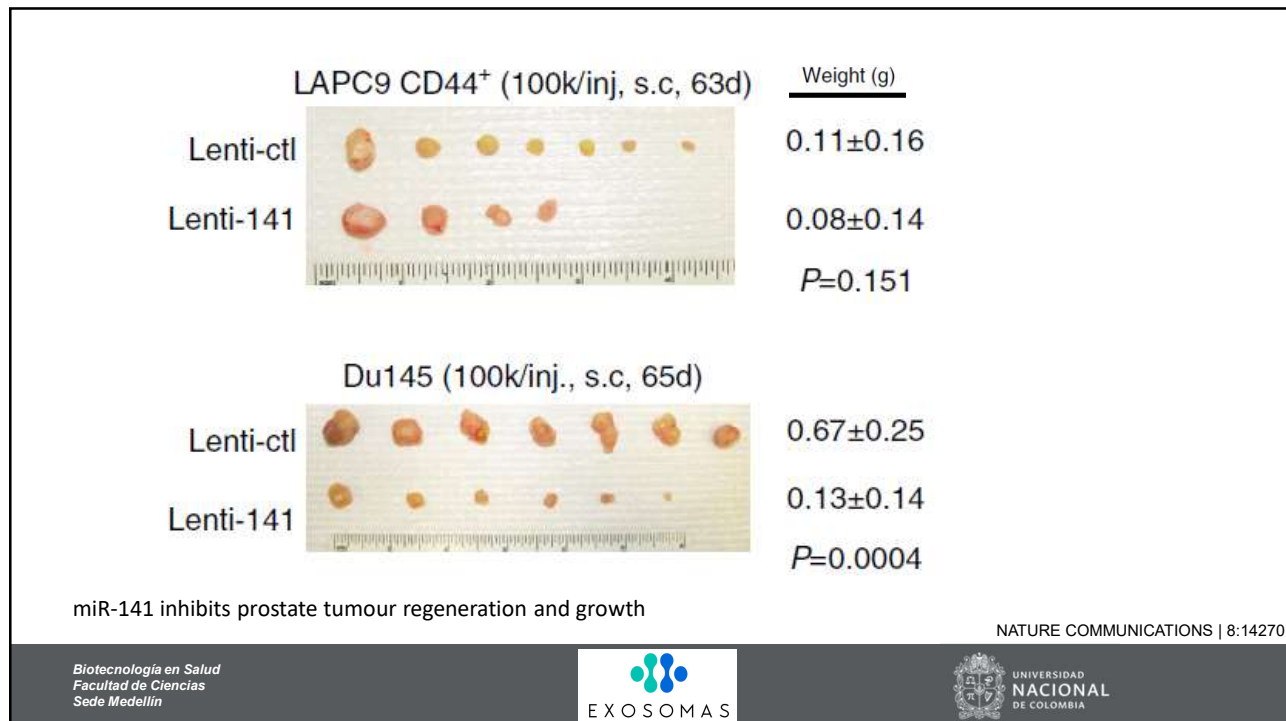
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28

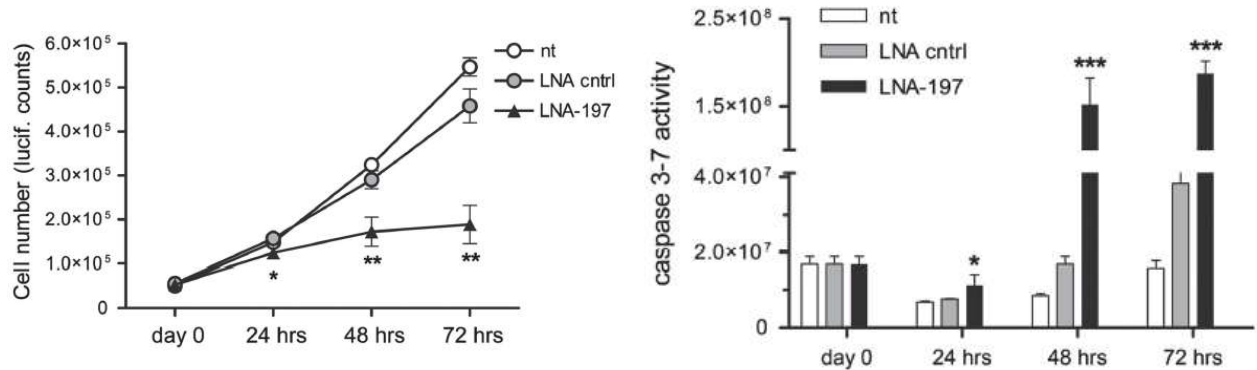


29



30

miR-197 depletion impairs cell proliferation and induces apoptosis in NSCLC.

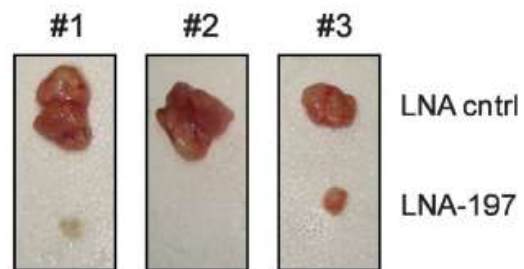
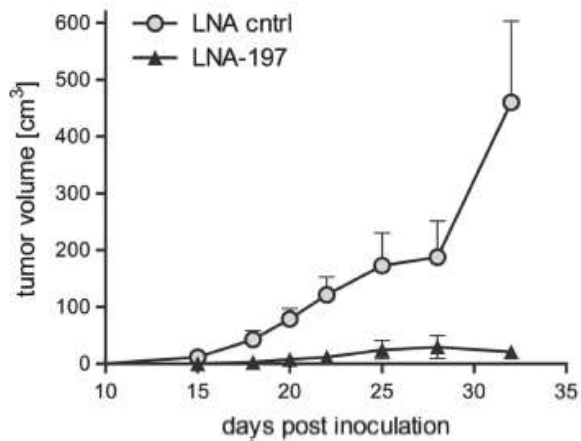


Cell Death and Differentiation (2014) 21, 774–782

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31



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32

Different types of miRNA-based therapies.

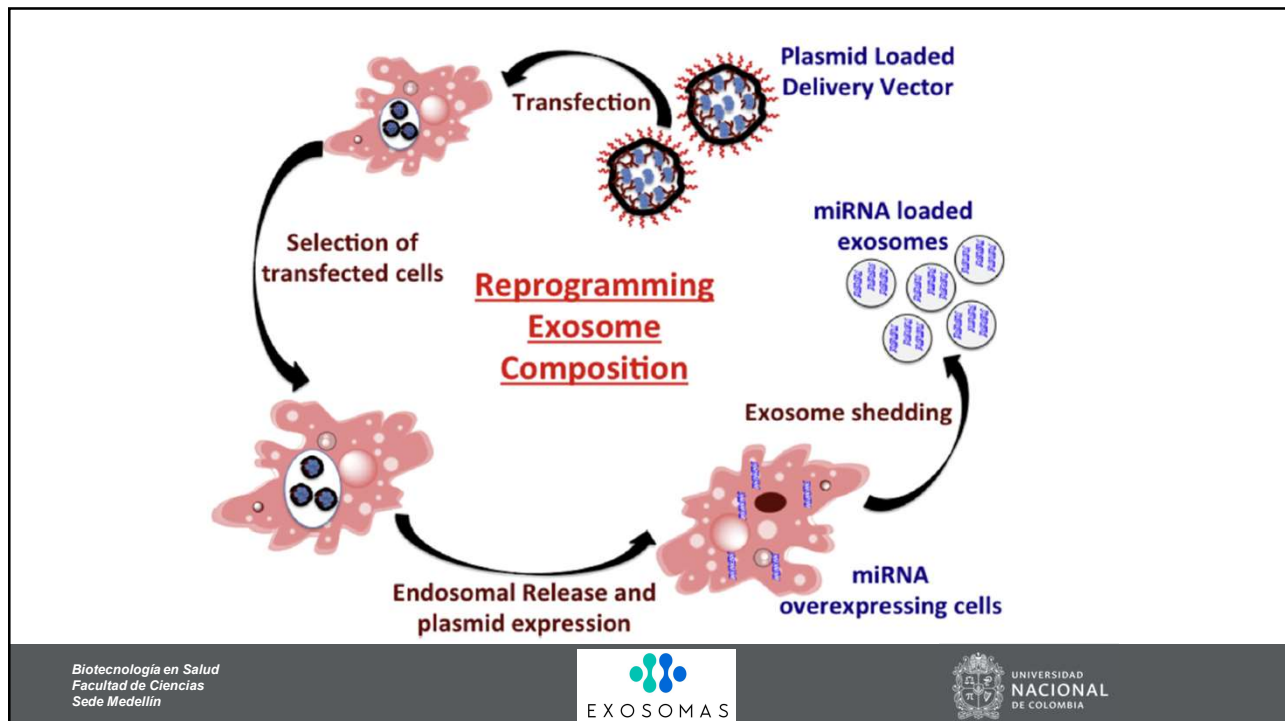
Treatment	Modes	Methods	miRNA	Types of Studies In Vivo/In Vitro
miRNA inhibition therapy	AMOs	2-OMe	miR-451	In vitro (MCF-7, SKBR3) In vivo (BALB/c)
			miR-21	In vitro (MCF-7 and HeLa)
	Gene editing	Crispr-cas9	miR-23b, miR-27b	In vitro (MCF7) In vivo (nude)
			Virus	Lentivirus
miRNA replacement therapy	Virus	Adeno-associated virus	miR-1d	In vitro (HEK293T and HeLa) in vivo (PyMT)
			Retroviral	miR-21
		Nanoparticle	Gold (PLL)	mir-708
	Lipid			miR-203
	Polymer	Creatine	mir-34a	In vitro (4T1.2 and MDA-MB-231) In vivo (BALB/c)

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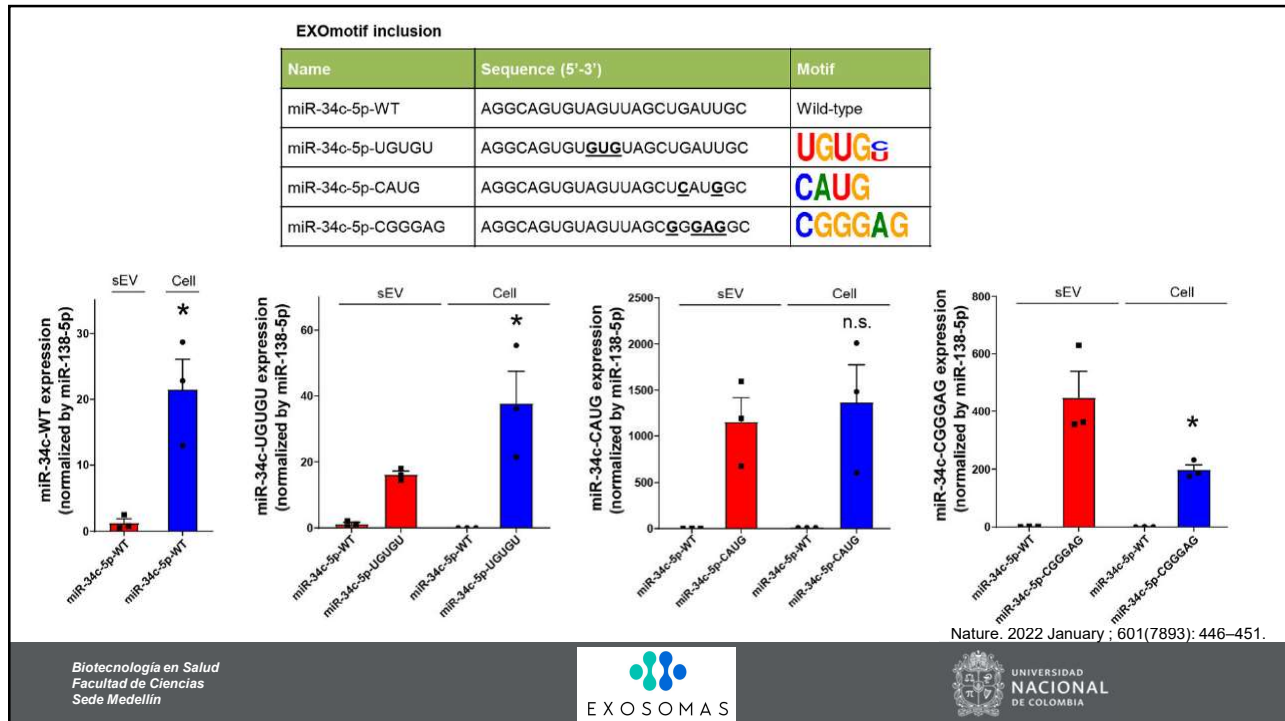
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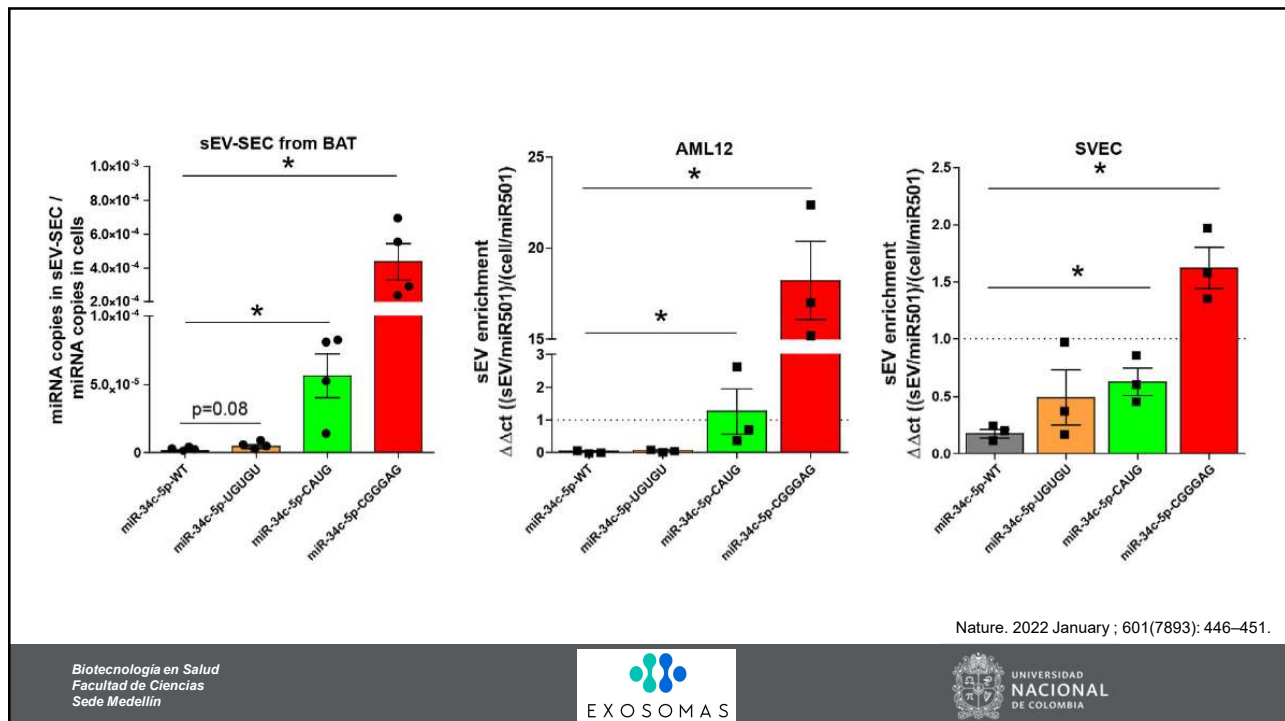
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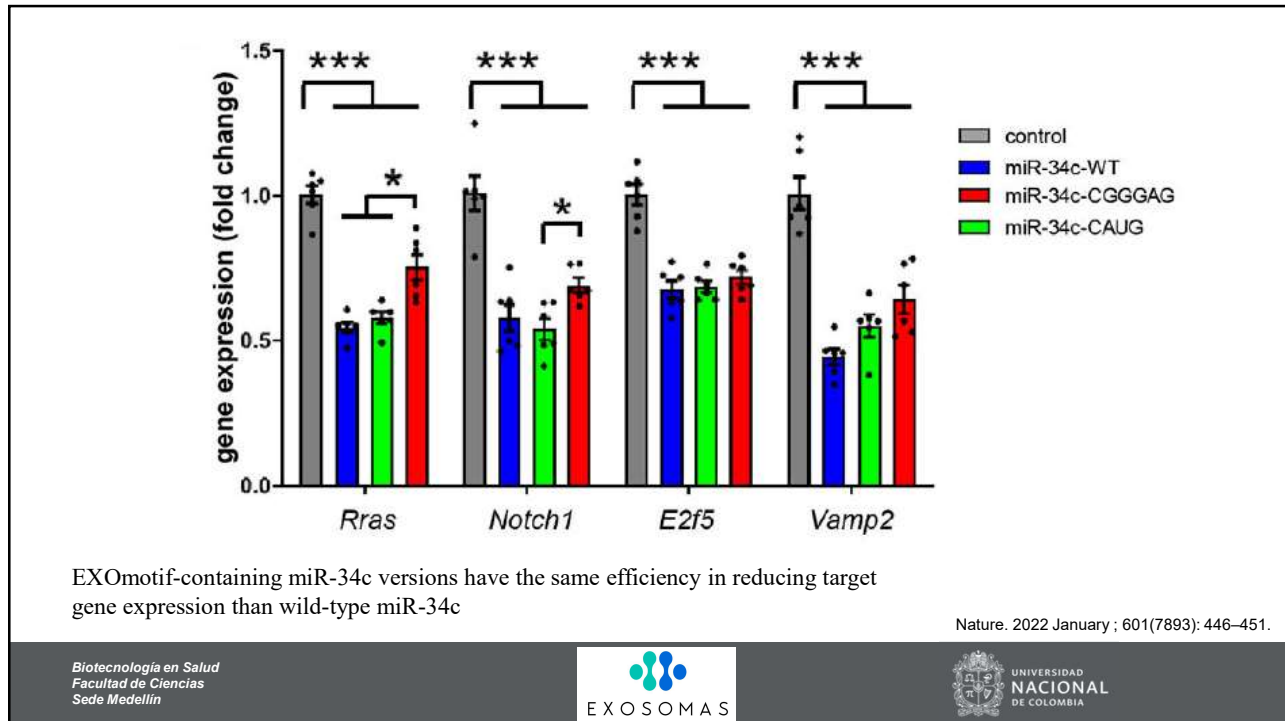
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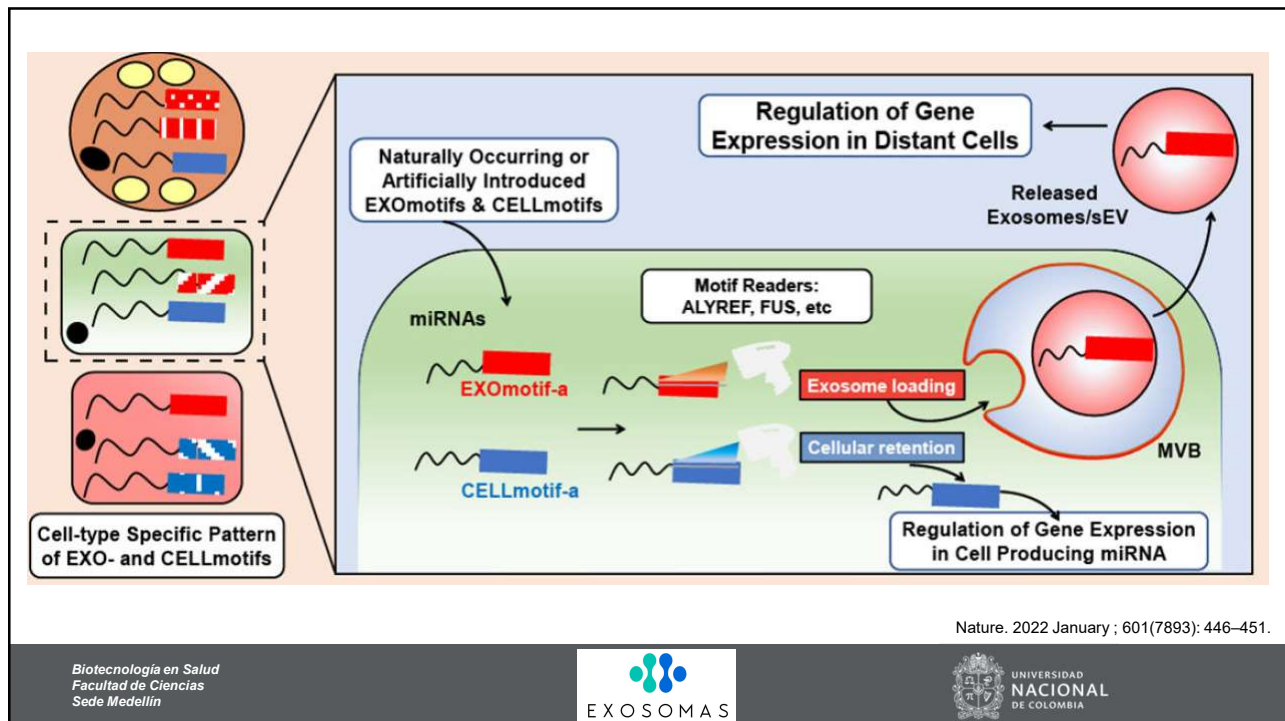
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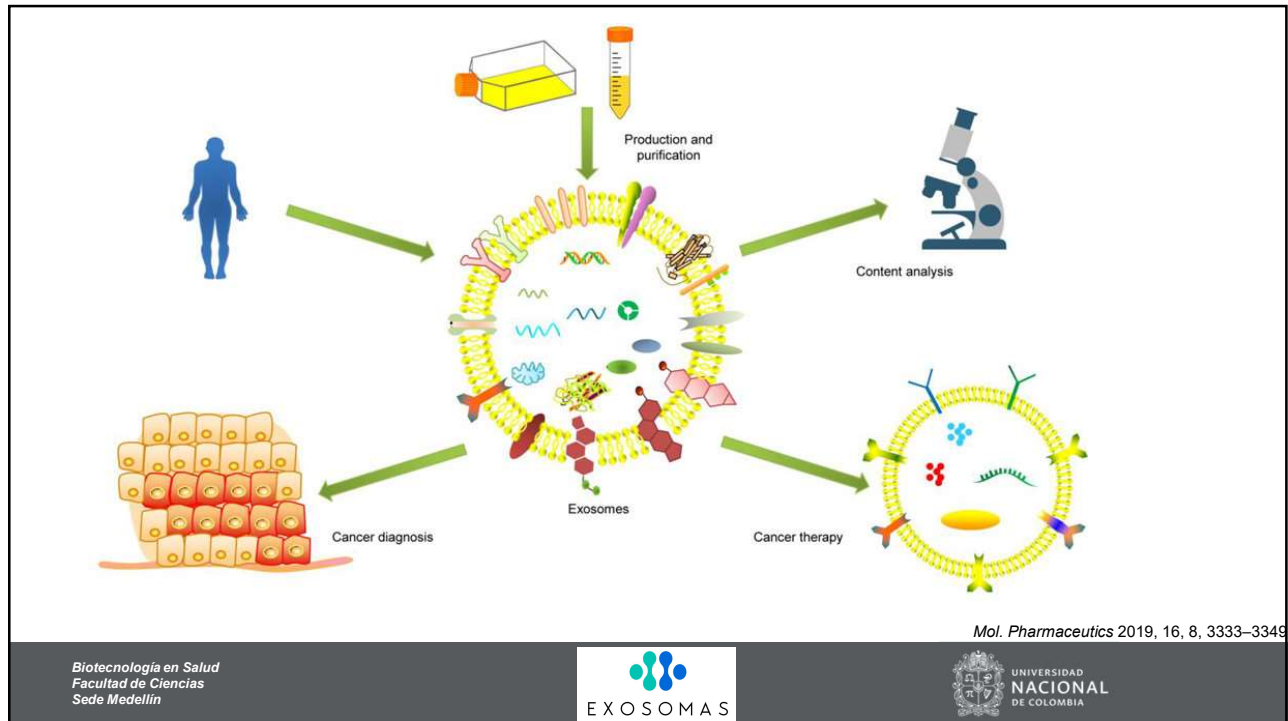
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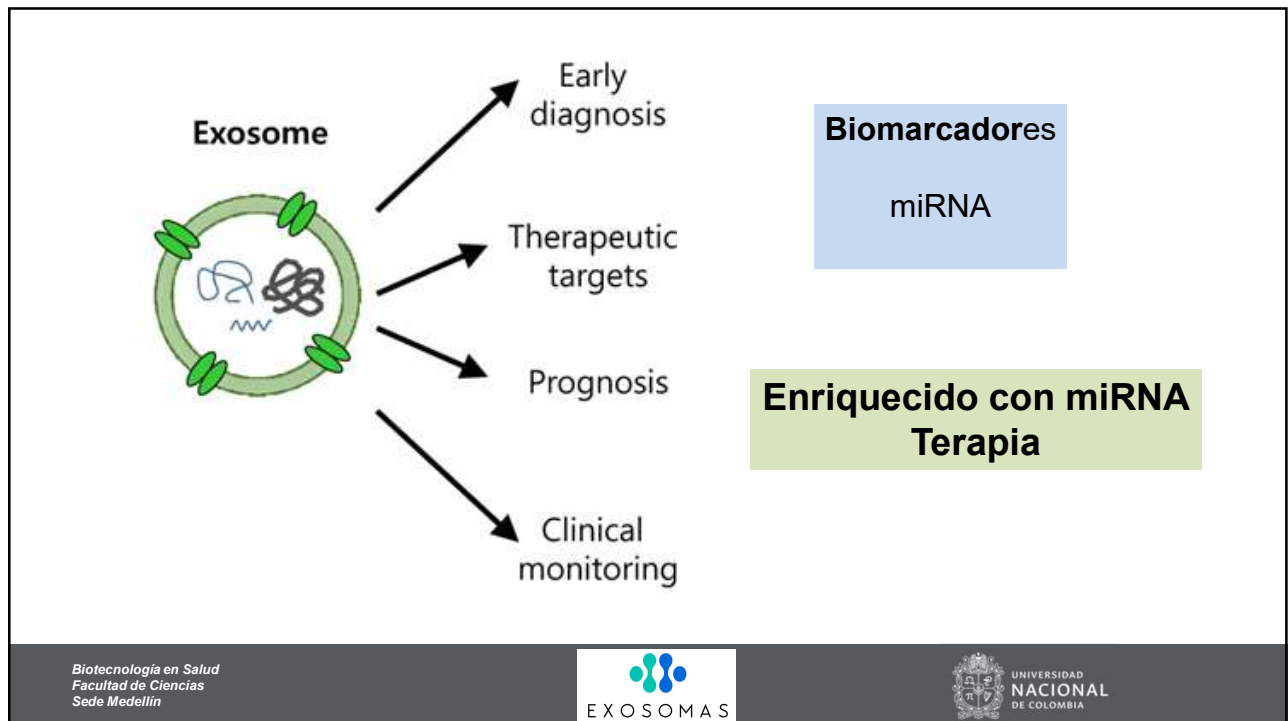
37



38



39



40

