



# Evolving reversible iMmunocapture by membrAne sensing peptides: towaRds scalable extracellular VEsicLes isolation

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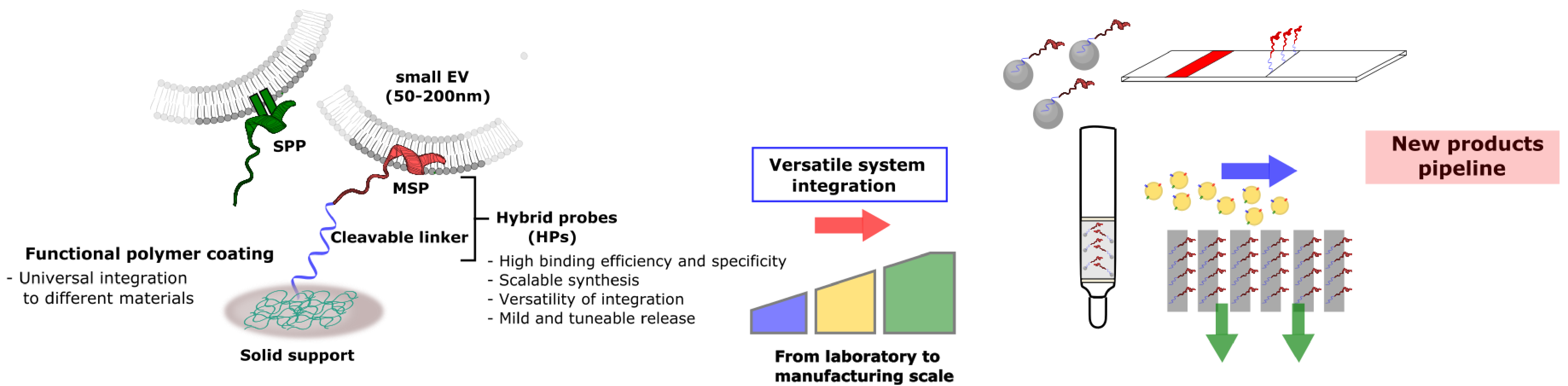


## MARVEL project goal

To develop a new affinity-based platform for reversible and scalable extracellular vesicles (EV) isolation.

## MARVEL project proposes

A paradigm shift **from antibodies to peptides** as an alternative class of affinity ligands characterized by high efficiency of EV capturing, small EV enrichment, synthetic versatility, no batch-to-batch variations.



We will introduce the use of **membrane-sensing peptides (MSP)** as novel ligands for the size-selective capturing of small EVs, unbiased by differential surface protein expression (membrane as universal EV marker); in parallel, **specific peptide probes (SPP)** with high affinity for clinically relevant EV protein markers will be developed to enrich selective EV subpopulations. The versatility and modularity in scaling-up of the technology will be applied to different **isolation tools** on medium/large sample volumes such as urine and cardiac cell culture media.

## Possible MARVEL technology application

This will allow exploitation of EVs in precision healthcare, with particular focus on regenerative medicine for Cardiac Repair and Liquid Biopsy.

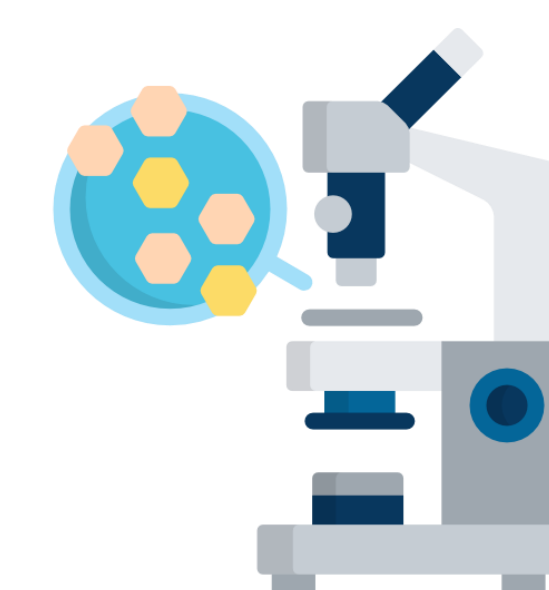
### Regenerative medicine

EV-based cell-free therapeutic treatment of cardiovascular diseases by EV isolation from cardiac progenitor cells



### Diagnostics

EV-based liquid biopsy in urine for non-invasive bladder cancer stratification and monitoring



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