

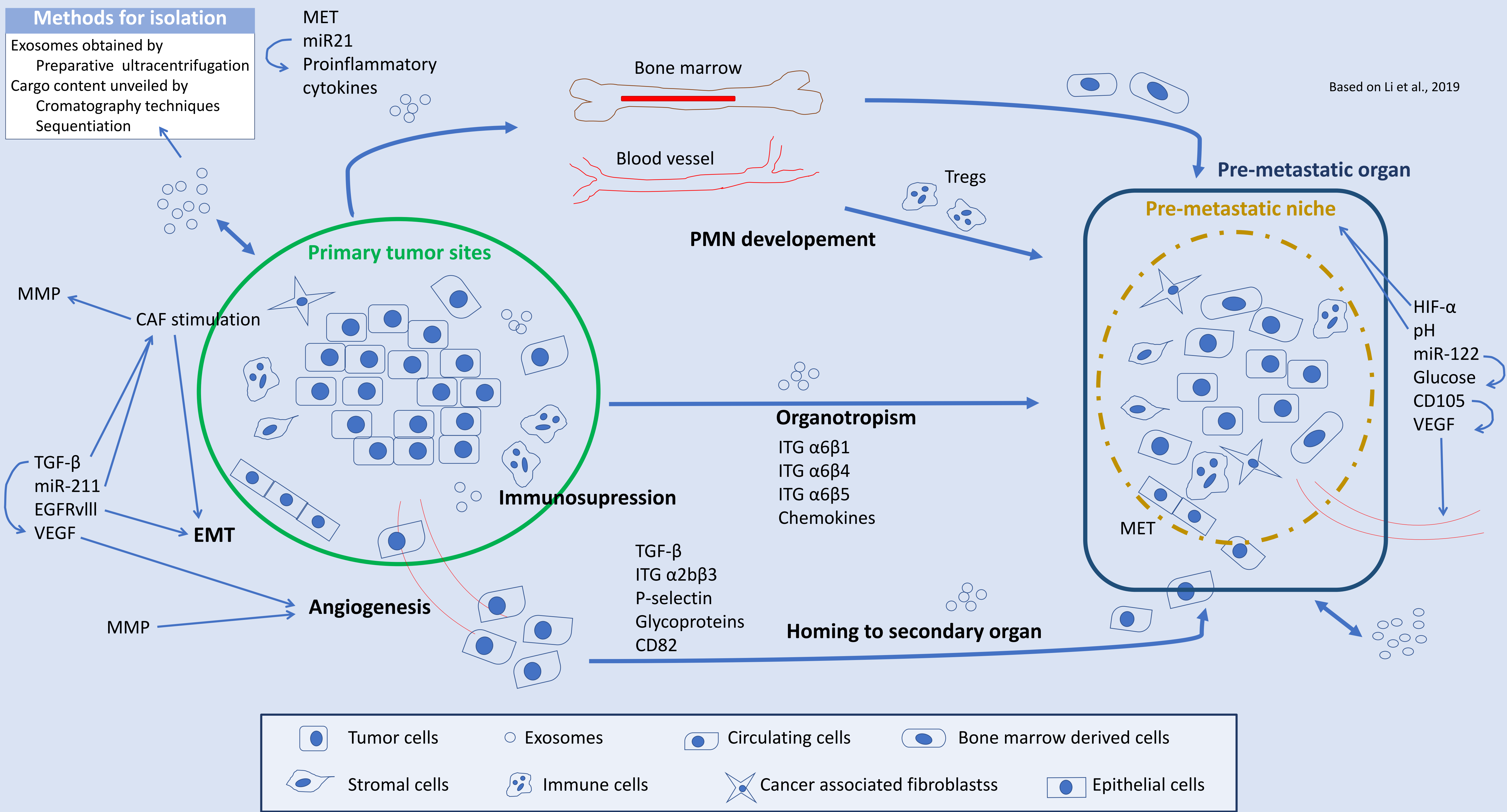
Background

- Cancer is one the most incident diseases in our society that contributes to 9 million fatalities a year in the world, being metastasis the key stage that accounts for 90% of all cancer-associated deaths.
- Many efforts have been put in finding the mechanisms and processes underlying cancer metastasis to design new approaches in diagnosis and therapies.
- Tumor derived exosomes have been described as important regulatory components in every single step of the metastatic cascade.
- Specific biomolecules contained within these exosomes modify local environments and are believed to ease the pre-metastatic niche formation.
- Current therapies are already studying them as potential biomarkers for a better diagnosis, but also as effective drug delivers and targets.

Goals

- This project aims to review and clarify:
- The specific role these exosomes play in each step of the complex metastatic cascade.
 - The importance of the pre-metastatic niche formation in cancer metastasis and the underlying drivers involved on it.
 - The complex interaction between tumor derived exosomes and the particular environment at metastatic sites.
 - New tumor derived exosomes-based therapies that are currently being studied and analyze them as possible and feasible future alternatives in cancer's treatment.

Results



Biomolecule	Potential target	Metastatic cascade step
TGF- β	VEGF/Fibroblasts	Primary tumor growth
EGFRvIII	Epithelial cells	EMT
VEGF	Endothelium	Angiogenesis
miR-21	Innate immune cells	Immune evasion/progression

Biomolecule	Potential target	Metastatic cascade step
MET	Bone marrow cells	Bone marrow education/invasion
ITG	Organ-specific cells	Organotropism
CD82	Epithelial cells	Homing to tissue/MET
HIF- α mi-R122	Stromal cells at PMN	PMN formation

Conclusions

- Tumor derived exosomes are involved in every step of the metastatic cascade: primary tumor formation, dispersion and colonization into secondary tissues.
- The development of the pre-metastatic niche is closely linked with the content of these exosomes, which widely vary among nucleic acids, proteins or lipids.
- Tumor derived exosomes-based therapies are being studied for their potential as biomarkers, drug delivers and targets, with promising results that need further research for an effective clinical application.

References

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