Key cellular and molecular players in the hematopoietic stem cell niches altered in the myeloproliferative neoplasms

**Marrow**
- Megakaryocyte (MGK)
- VEGF
- Mobilization
- NOTCH
- GCSF
- IL6
- BMP
- CXCL4
- CXCL12
- HSC cycling
- HSC maintenance
- HSC quiescent
- Akt+EC
- ECM
- Collagen fibers

**Bone**
- Bone resorption
- SNO
- RANKL

**Sympathetic nerve**
- BMSC
- Monocyte
- Inflammatory cytokines

**TGF-β1**
- MGK
- Fibroblast

**ECM**
- Collagen fibers

*Curto-Garcia et al., Haematologica, 2020*