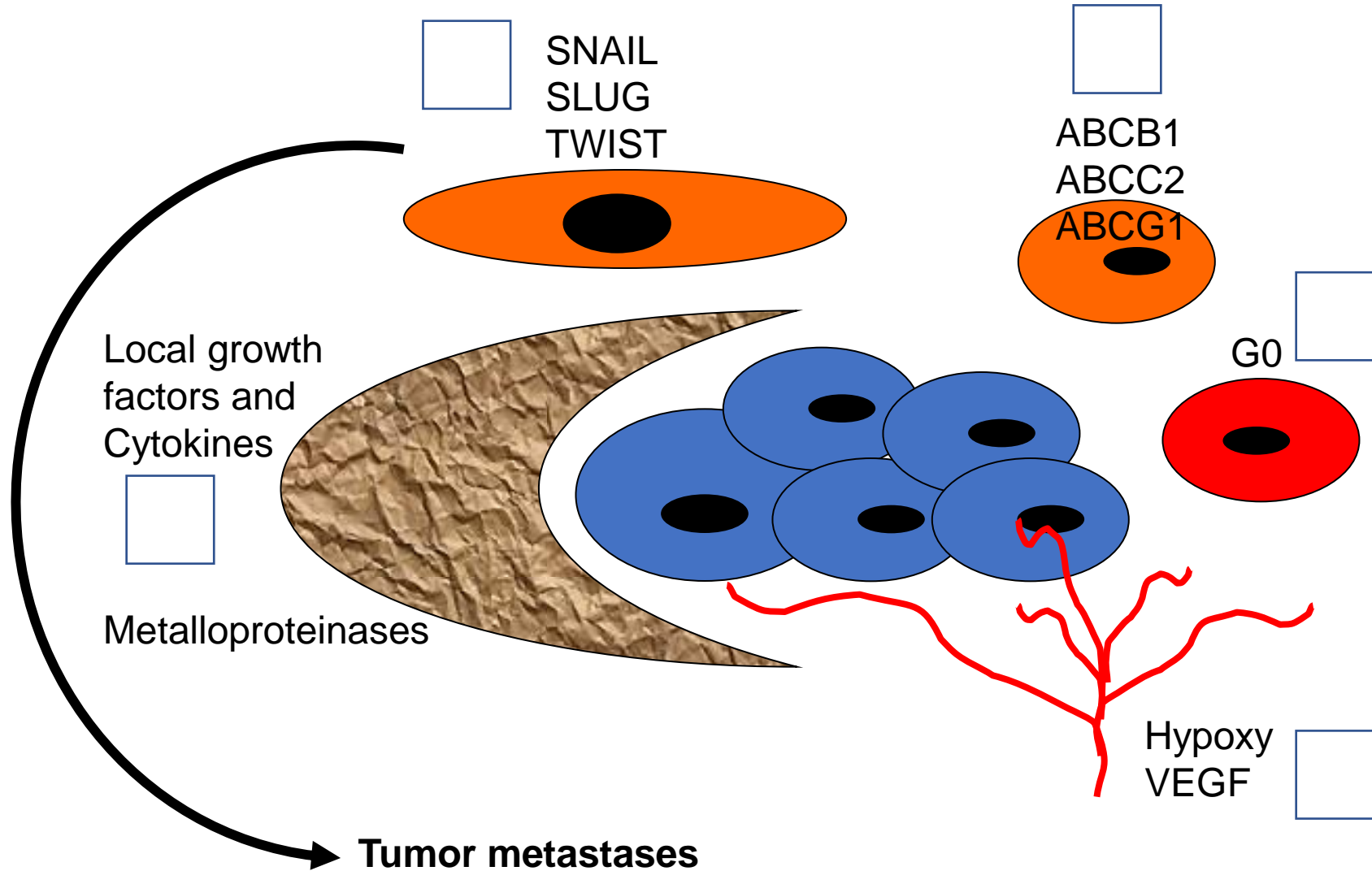


Match the terms in a proper position...

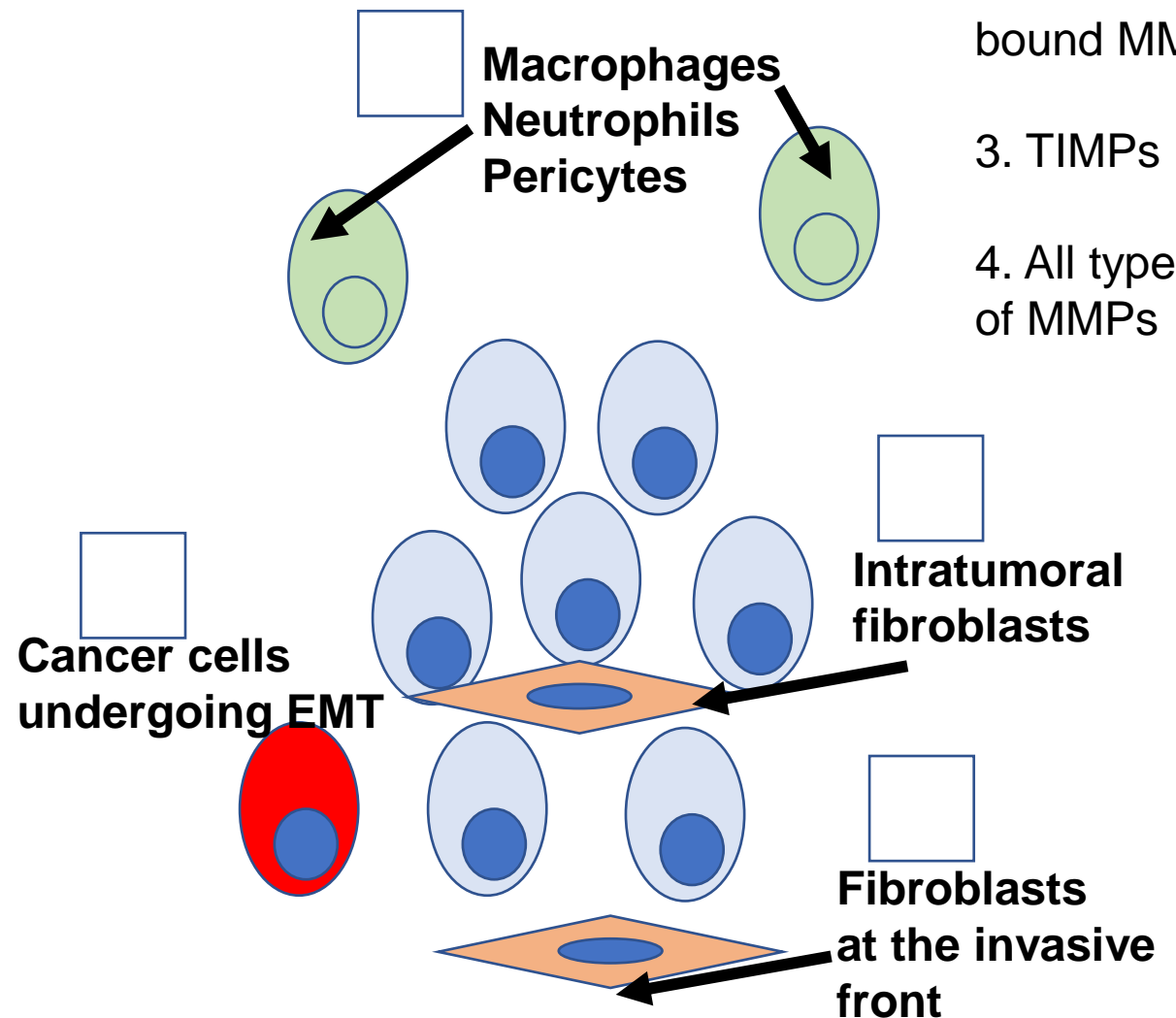


Terms:

1. MDR
Multidrug
Resistance
2. Tumor stem cell
3. Tumor
angiogenesis
4. EMT
Epithelial-
mesenchymal
transition
5. Tumor stroma

Which metalloproteinases are most likely secreted by indicated cells?

- **Collagenases** MMP-1,-8,13,-18 are capable of degrading triple-helical fibrillar collagene of bone, cartilage, dentin in particular: I, II, III, V, IX
- **Gelatinases** , MMP-2 i -9 collagen type IV, laminin, gelatin
- **Stromelysins**,MMP-3 i -10 degradation of ECM
- **Matrilysin** MMP-7 i -26 degradation of matrix + celavage of: FASL, pro TNFalfa, E-cadherin
- **Membrane type MMP** are localized directly in the cell membrane
- **Other MMP**
 - TIMP tissue inhibitos of metalloproteinases
 - TIMP 1, 2, 3, 4



1. Gelatinases
2. Membrane bound MMPs
3. TIMPs
4. All types of MMPs

Epithelial-mesenchymal transition (EMT) – discuss the phenomenon

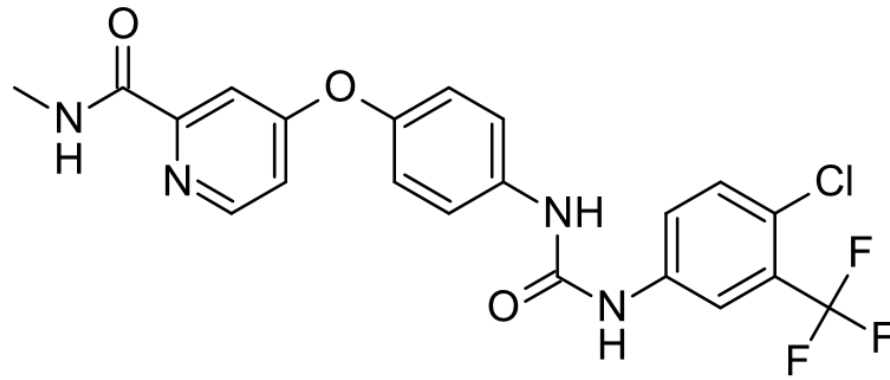
- Cells of epithelial phenotype with strong cell-cell connections (kadhersins), and strong cell ECM connections (integrins) **gain the ability to move**
- These cells undergoing EMT **loose their connections with ECM.**
- EMT is accompanied with change in cell morphology form epithelial like to mesenchyme like
- Changes in kadhersin expression occurs (**N-cadherin is up-regulated while E-cadhetin is repressed**)

Tumor angiogenesis – match the term with its definition

- **Vasculogenesis:**
 - de novo formation from angioblasts
- **Angiogenesis:**
 - basing on existing blood vessels, by proliferation of endothelium
- **Vasculogenic mimicry:**
 - is the formation of microvascular channels by aggressive, metastatic and genetically deregulated tumor cells

.....?

Fill with the name.



- a small molecular inhibitor of several tyrosine protein kinases that **inhibit mainly tumor angiogenesis**
- This drug is approved for the treatment of primary kidney cancer (advanced **renal cell carcinoma**), advanced primary **liver cancer** (hepatocellular carcinoma), and radioactive iodine resistant advanced **thyroid carcinoma**.

Targeted drugs – fill in the gaps

- **Tyrosine kinase** inhibitors
- **B-Raf** inhibitors –
- **mTOR** inhibitors –, tacrolimus (immunosuppressive tacrolimus)
- Pan kinase inhibitor **angiogenesis** inhibitor
- **HER2** inhibitor –.....
- **Estrogen receptor** inhibitor –
- **Proteasome inhibitor** –
- **VEGF-A** ab –(avastin)

Imatinib

Everolimus

Bevacizumab

Trastuzumab

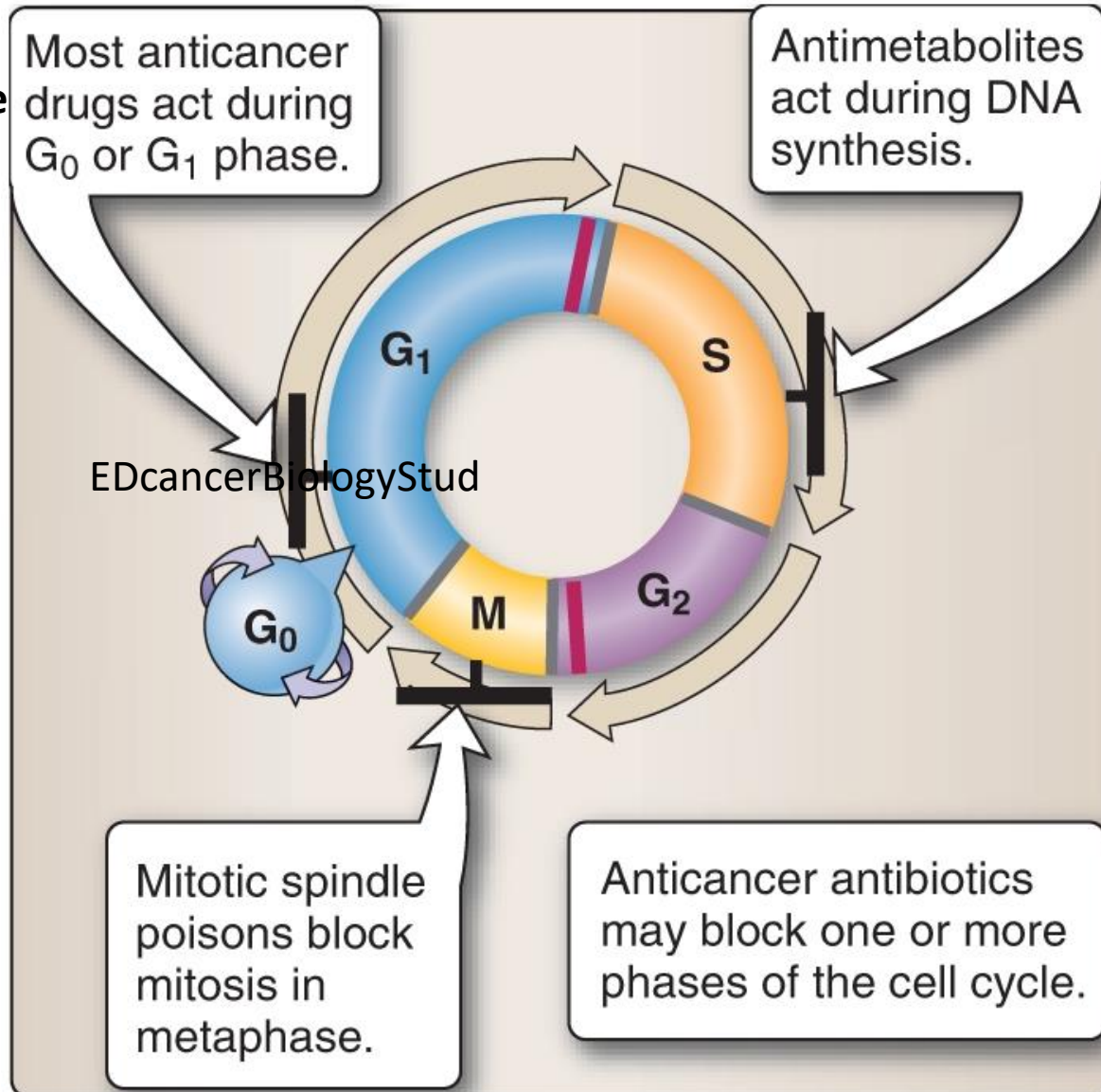
Vemurafenib

Sorafenib

Bortezomib,
carfilzomib

Anticancer drugs

1. Cell-cycle unspecific
2. Acting in the M-phase
3. S-phase drugs



Cisplatin
Doxorubicin
Etoposide



Vincristin
Vinblastin
Taxol
Paclitaxel



Fluorouracyl
Hydroxyurea
Methotrexate