# Metastatic Bone Disease

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# Clinical Importance and Prognosis of Bone Metastases

| | Disease prevalence, U.S. (in thousands) | Bone mets. incidence (%) | Median survival (mo) |
|---|---|---|---|
| • Myeloma | 75 - 100 | 70 - 95 | 24 |
| • Renal | 198 | 20 - 25 | 12 |
| • Melanoma | 467 | 14 - 45 | 6 |
| • Bladder | 582 | 40 | 6 - 9 |
| • Thyroid | 207 | 60 | 48 |
| • Lung | 386 | 30 - 40 | 7 |
| • Breast | 1,993 | 65 - 75 | 24 |
| • Prostate | 984 | 65 - 75 | 36 |

NCI, 1997; International Myeloma Foundation, 2001.

# Bone Metastases Frequency

-both sexes : breast, prostate, lung, colon, stomach, bladder, uterus, rectum, thyroid, kidney

-men: prostate, lung, bladder, stomach, rectum, and colon.

-women: breast, uterus, colon, stomach, rectum, and bladder.

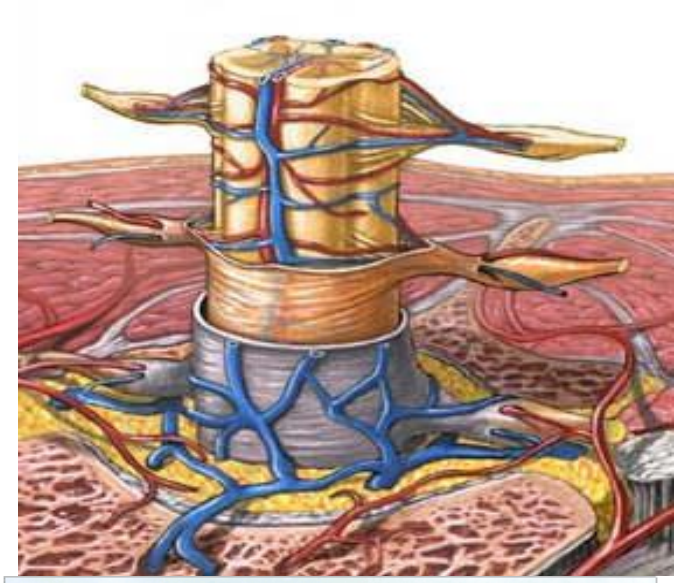
Peh et al, 2008

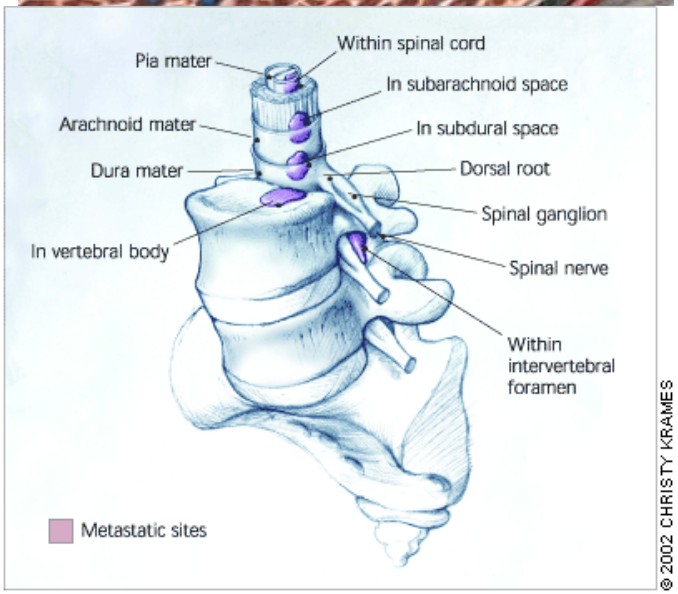
# Mechanisms for Bone Metastases

1) Direct extension

2) Retrograde venous flow –Batson paravertebral venous plexus

3) Seeding via tumor emboli in blood

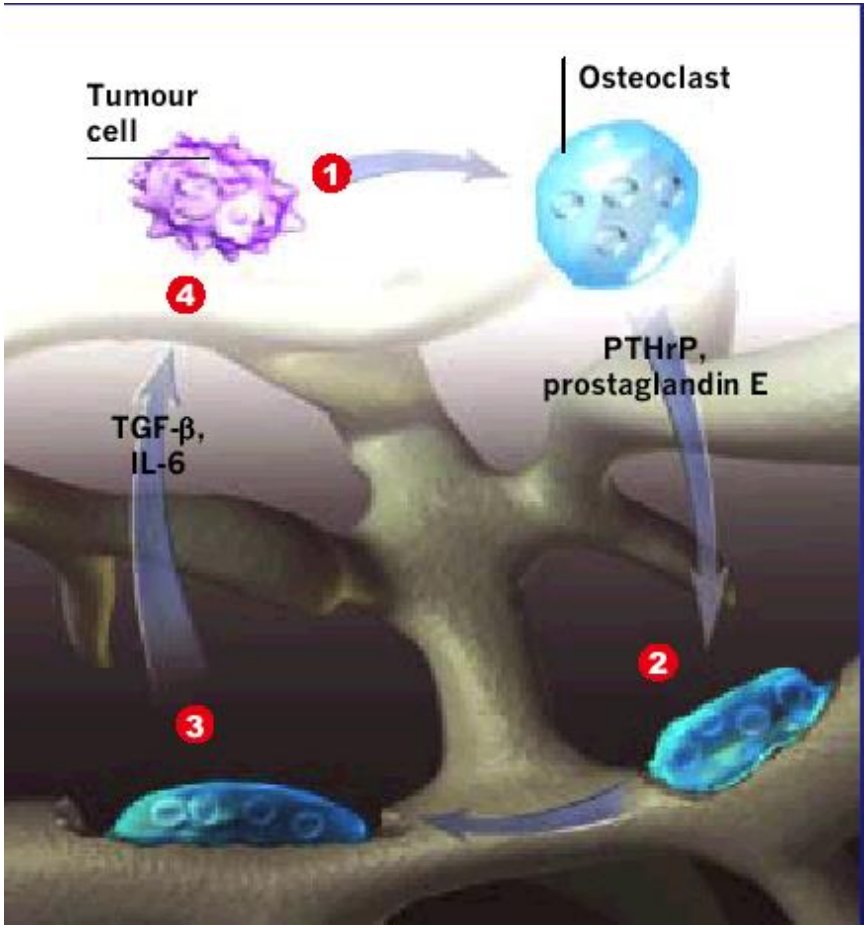





Seeding of BM→osteolytic or osteoblastic lesions

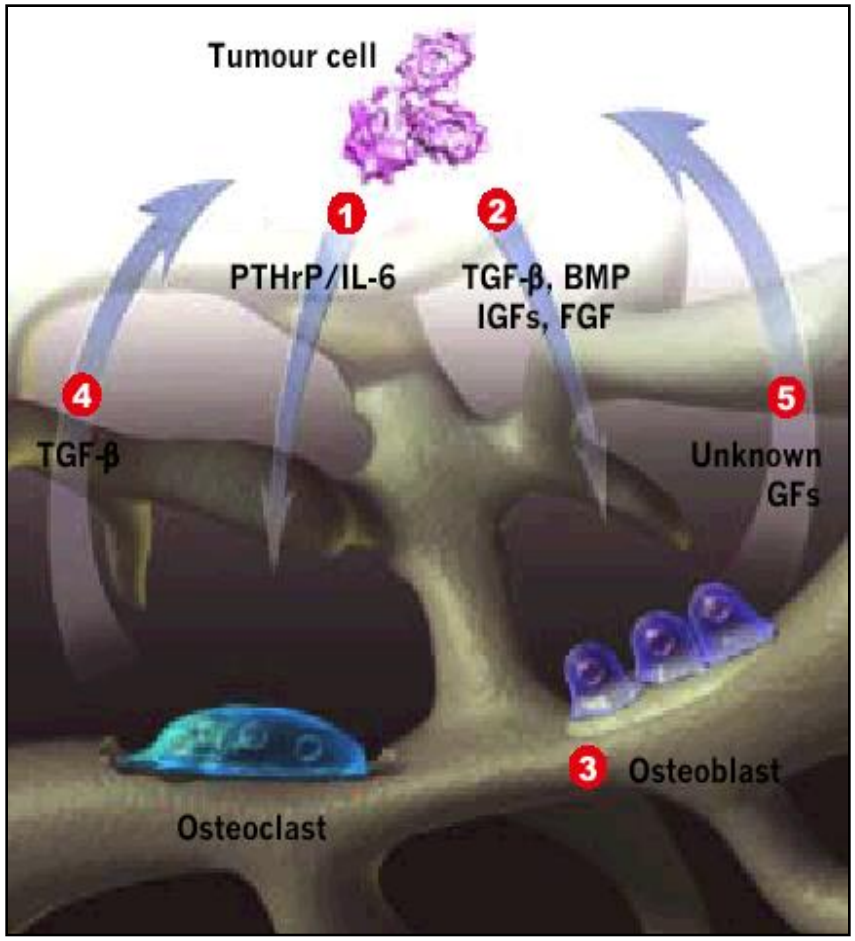
# Cancer and Bone Interaction

## Osteolytic




IL-1, IL-6, RANKL, PGE2, PTHr peptide, macrophage inflammatory protein 1alpha

## Osteoblastic




Endothelin-1, PDGF, PSA, urokinase

# Osteolytic vs Osteoblastic Bone Metastases

- Osteolytic bone metastases
  - Multiple myeloma
  - Breast
- Osteoblastic bone metastases
  - Prostate
  - Thyroid
  - Renal
  - Colon
  - Lymphoma
- Mixed
  - Lung

# References

Peh W, Bone Metastases. Retreived Sept 22, 2009. from eMedicine. Website: http:// emedicine.medscape.com/article/807840-overview

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