



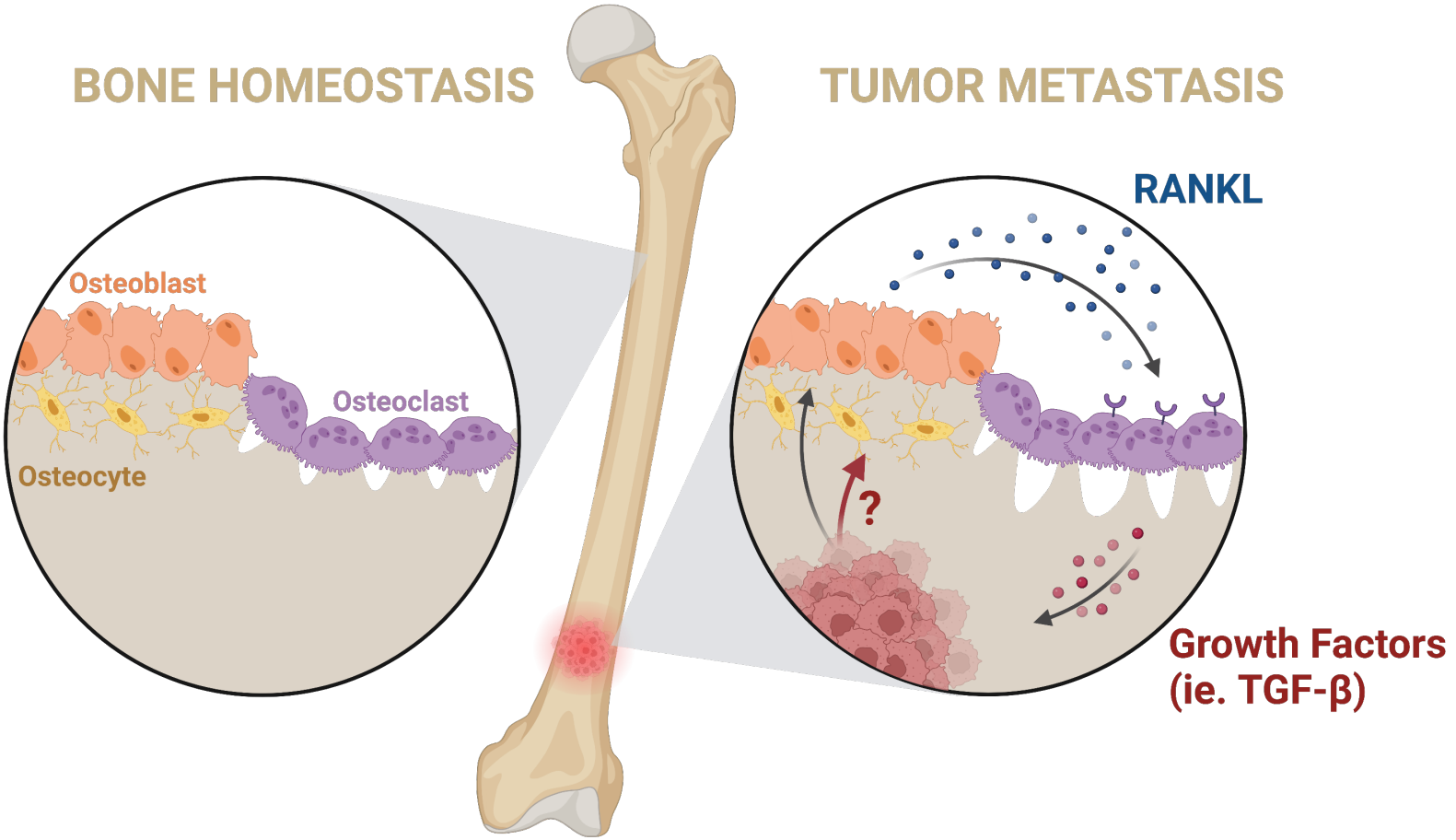
Tracking skeletal health in canine skeletal metastatic prostate carcinoma

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Prostate cancer shows high affinity towards bone.

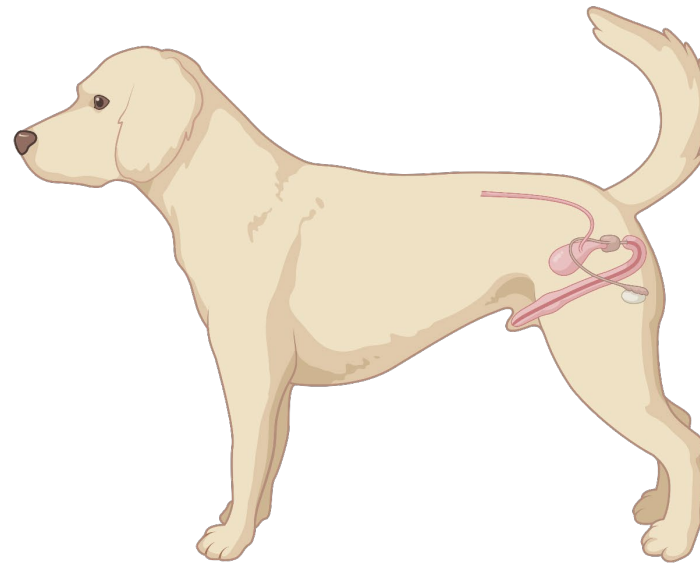
- PCa is the most common cancer and second most common cause of cancer death in men in the US
- Preferential metastasis to bone
- Markedly worse prognoses
 - 5-year survival rate 56% → <1% with metastasis + a skeletal-related event (ie. fracture)

PCa increases the rate of bone remodeling.



Dogs may serve as a preclinical model for studying PCa metastasis.

- Spontaneous disease development, age-associated disease, skeletal metastasis
- Prostatic carcinomas
 - Prostatic adenocarcinoma (PAC)
 - Urothelial carcinoma (UC)

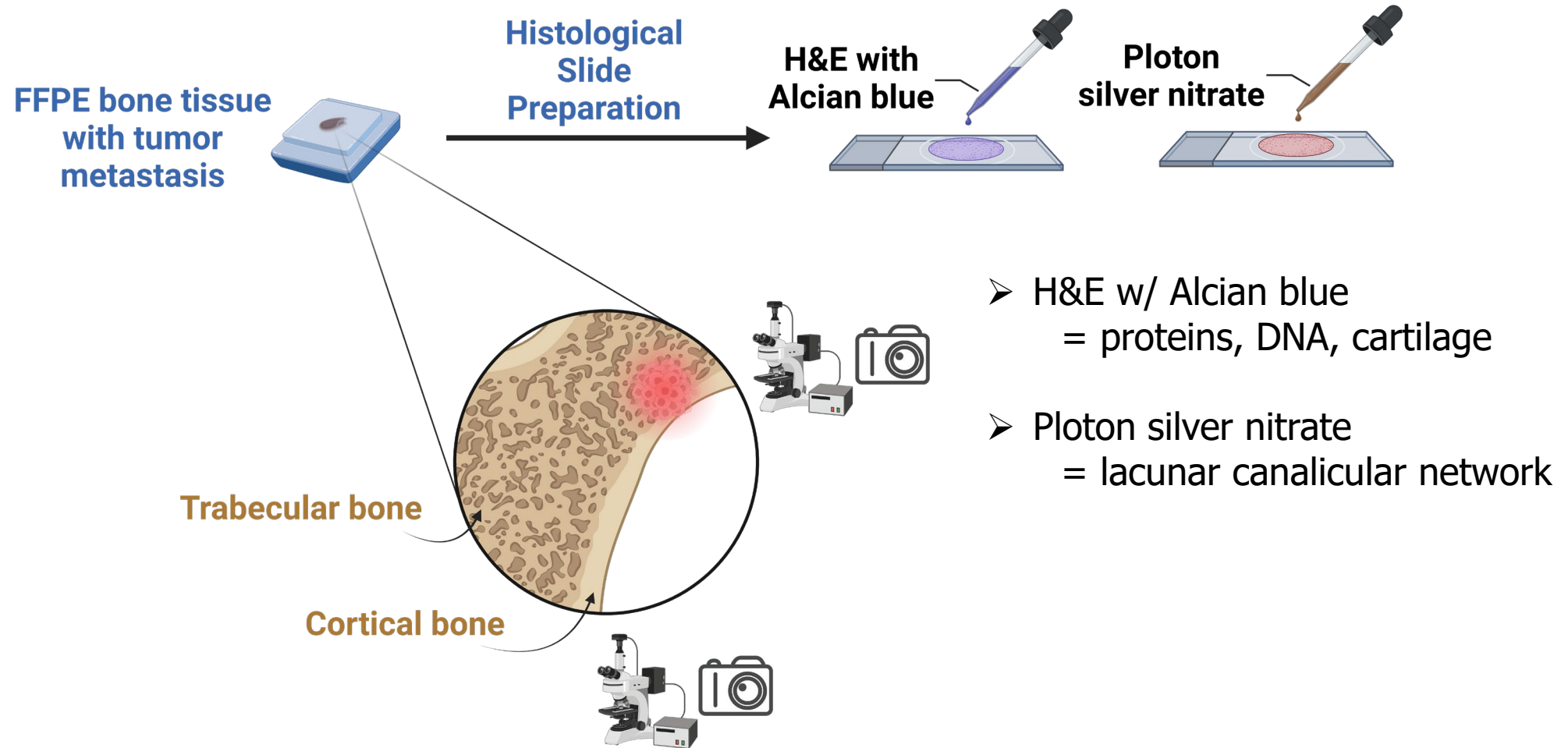


Methods

- 129 cases of canine PCa identified from UC Davis VMTH (1988-2023)
 - PAC or UC confirmed via IHC
- 9 cases confirmed metastasis to bone
 - 4 vertebrae, 2 ribs, 3 multiple sites (vertebrae & ribs)

Patient ID	Age (years)	Castration Status	Bone Metastasis Site	PAC or UC
46-93-12	10	Castrated	Lumbar vertebrae	UC
48-38-35	13	Castrated	Lumbar vertebrae	UC
72-76-48	8	Intact	Lumbar vertebrae	PAC
36-77-13	8	Castrated	Rib	UC

Methods

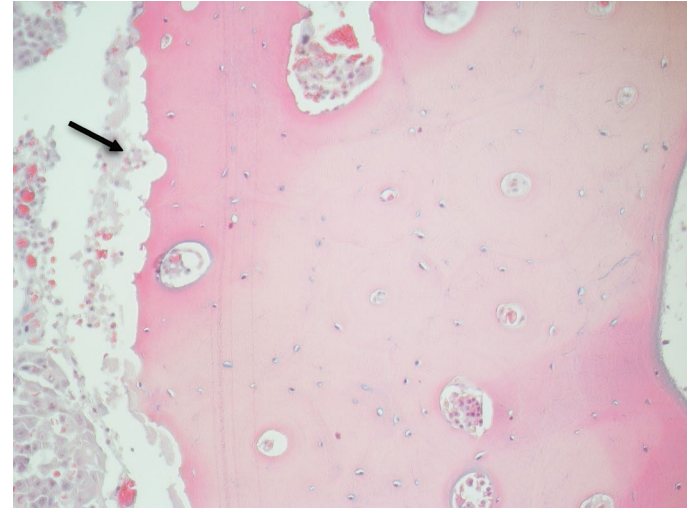
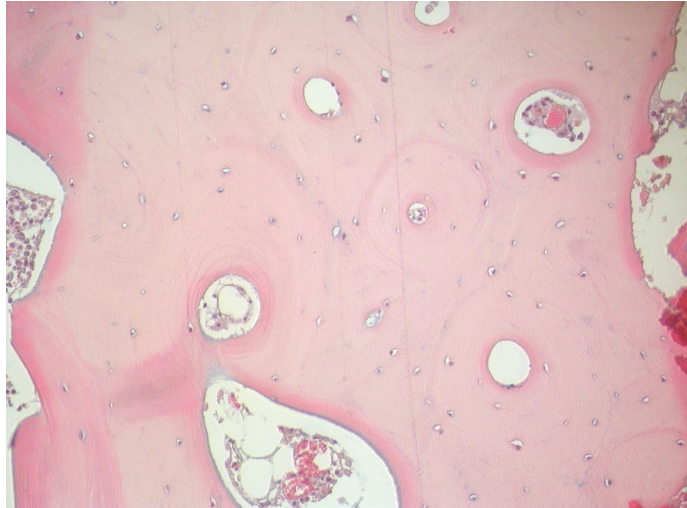


H&E with Alcian blue

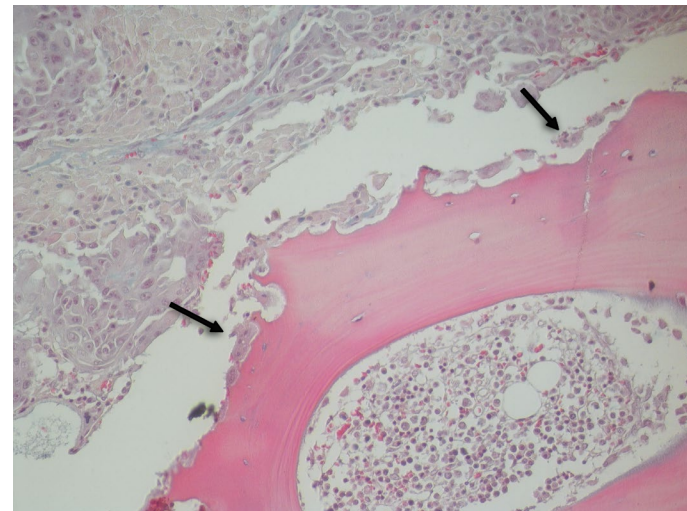
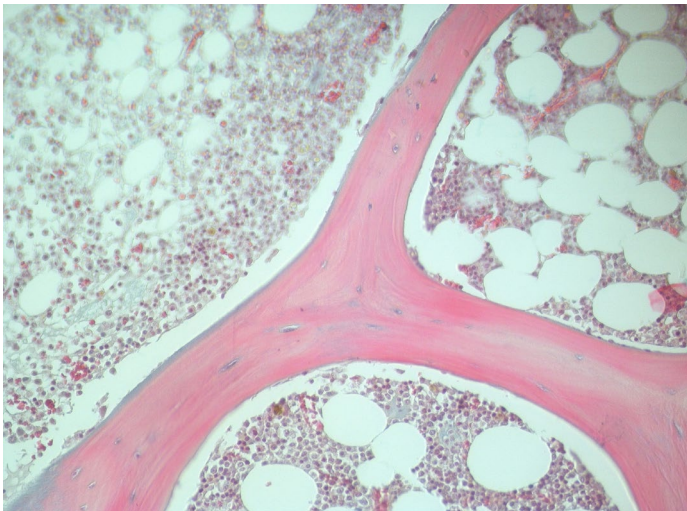
Away from tumor site

At tumor site

Cortical



Trabecular

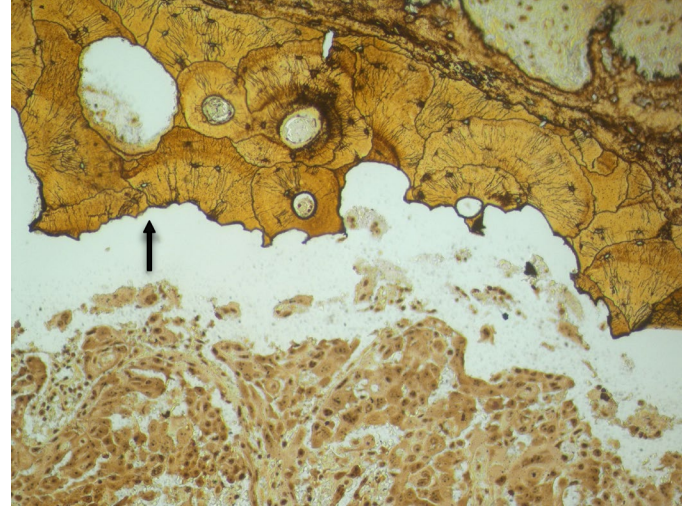
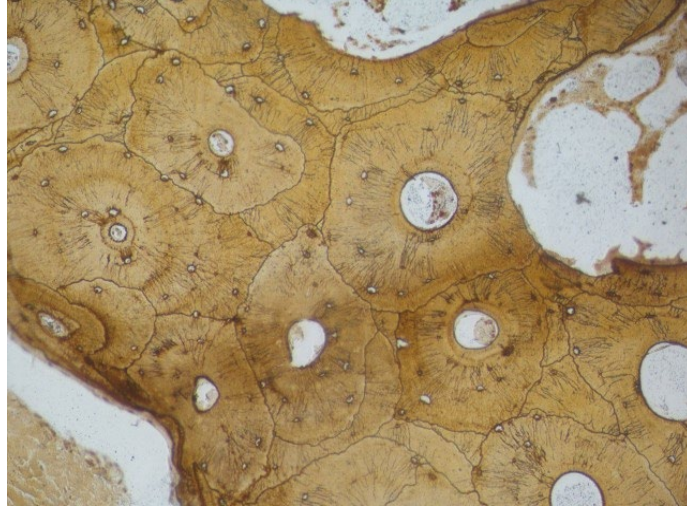


Ploton silver nitrate

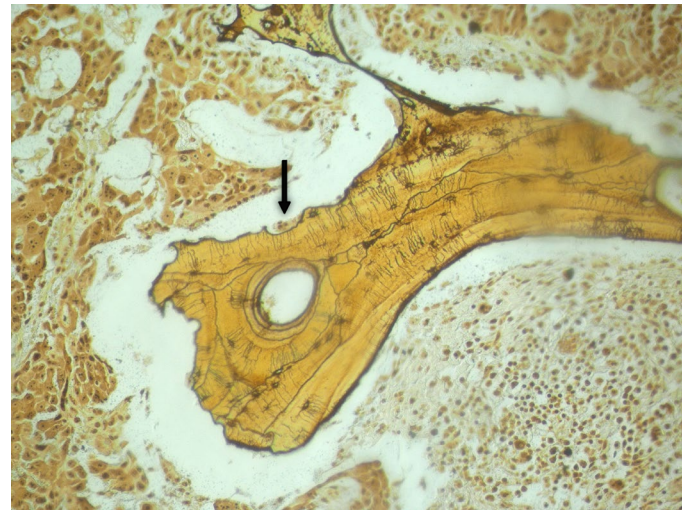
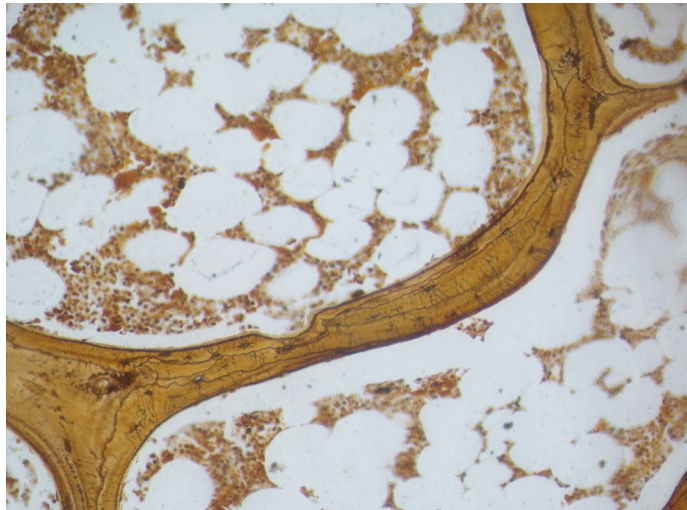
Away from tumor site

At tumor site

Cortical



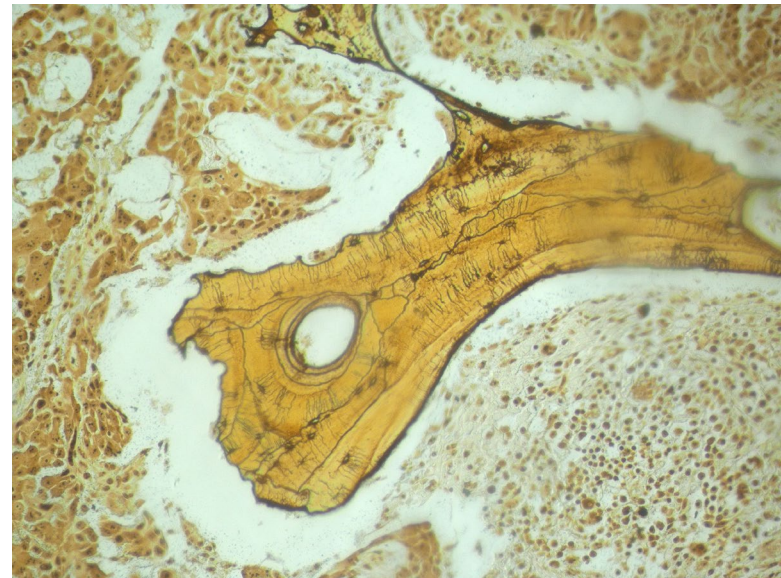
Trabecular



Discussion

Increased osteoclast activity outside of normal bone remodeling seen in both trabecular and cortical bone.

- Osteocyte death → unregulated osteoclast function
- Elevated markers of remodeling near tumor site
- No definite conclusions



Future Directions

- Healthy bone in incoming male canine necropsies
- Matched assessment (castration status, age, bone metastasis site)
- In situ hybridization for pro-inflammatory cytokines
- Quantitative assessment of osteocyte dendritic processes

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Figures made using Biorender.com

Questions?

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Thank you!