BONE AND CALCIUM

## PP-B-01

### TARGETING TETRASPANIN 7 TO DEVELOP NEW DRUGS FOR OSTEOCLAST-RELATED BONE DISEASES

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#### INTRODUCTION
Bone remodeling is essential for bone homeostasis and is controlled by bone-forming osteoblasts and bone-resorbing osteoclasts. Several bone diseases, including osteoporosis, are related to an imbalance of activity between the 2 cell types. Previous results from our group and others have shown that tetraspanin 7 (TSPAN7) plays an important role in cytoskeletal reorganization and bone resorption in osteoclasts. In this study, we investigated the efficacy of TSPAN7 as a potential new drug target for osteoclast-related bone diseases.

#### METHODOLOGY
We constructed soluble cell-permeable TSPAN7-NT and -CT peptide inhibitors, and TSPAN7-Fc fusion protein that consists of the EC2 domain of TSPAN7 and the Fc part of human IgG (hIgG). The effects of TSPAN7 peptide inhibitors and TSPAN7-Fc on osteoclasts were evaluated by TRAP staining assay, actin ring immunofluorescence assay, and bone resorption assay. The bone-protective effect of TSPAN7-Fc was determined with the pathological bone loss models: lipopolysaccharide (LPS) and ovariectomy (OVX) models. The statistical tests used were the student's 2-tailed T-test and ANOVA.

#### RESULTS
In-vitro study showed that both TSPAN7 peptide inhibitors and TSPAN7-Fc inhibited the formation of fully spreading mature osteoclasts with normal actin rings, thereby leading to significantly decreased bone resorption. In addition, mice treated with TSPAN7-Fc were protected against LPS- and OVX-induced bone loss. Interestingly, TSPAN7-Fc induced abnormal morphology of osteoclasts in vivo.

#### CONCLUSION
Our findings suggest that specific inhibition of TSPAN7 could be used as a novel therapeutic strategy to treat osteoclast-related bone diseases.

#### KEYWORDS
drug target, osteoclast-related bone diseases, TSPAN7 peptide inhibitor, TSPAN7-Fc

## PP-B-02

### A RARE CASE OF PARATHYROID ADENOMA PRESENTING WITH HOARSENESS

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#### CASE
A 47-year-old Filipino male presented with hoarseness and aspiration episodes for 3 days. Transnasal endoscopy revealed right vocal cord paralysis. Neck MRI revealed an enhancing ovoid lesion measuring 0.9 x 0.9 x 1.8 cm in the posterior portion of the right thyroid lobe, with thickening and medial displacement of the right vocal cord consistent with right vocal cord paralysis secondary to a parathyroid adenoma. Workup showed elevated iCA 1.40 mmol/L (NV:1.09-1.30) intact PTH 160.10 pg/ml (NV:18.50-88) and low vitamin D 29.74 ng/ml (NV: 30-100). Creatinine was 1.22 mg/dl (NV: 0.55-1.02) with eGFR of 67.7 ml/min. SPECT/CT revealed no sestamibi-avid parathyroid adenoma in the neck and mediastinum. Bone mineral densitometry was normal. He was managed as primary hyperparathyroidism secondary to parathyroid adenoma and underwent right lobectomy with parathyroidectomy. Histopathology showed an enlarged hypercellular parathyroid. He had a >50% decrease in iPTH (24.80 pg/ml), normal ionized calcium(1.25 mmol/L), and resolution of hoarseness. He was discharged with vitamin D supplementation.

#### KEYWORDS
hypercalcemia, parathyroid, adenoma