

## Study of Mineral Sensor System: Phenotype of Tspan8-KO Mice

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### Summary

Calcium-sensing receptor (CaR) can make ionic regulation by sensing serum minerals. We have found that CaR is aggregated in a vesicle of parathyroid chief cells of mice. Then we analyzed the components of the vesicle and found that Tspan8 would be an important part. To elucidate influence of Tspan8 in Ca sensing mechanism, we decided to make Tspan8-knockout mice and study the phenotype including morphology.

Bone mineral density was 10% decreased and bone head of femur was relatively small compared with that of wild type mice. Ca excretion in urine was significantly increased. This was estimated as a cause of bone mineral density loss. In addition, transporting vesicles were enlarged, in both intestinal villus and tubular cells. These findings led us hypothesize that Tspan8 should play an important for vesicle plasticity in cells. Due to lacking Tspan8, mineral maintenance were impaired through malfunction of intracellular vesicle, resulting in a plenty loss of bone mineral salt. In conclusion, Tspan8 is essential for maintenance of mineral ions. CaR might make sense of mineral ion concentration in the fluid of intravesicular space where is closed by Tspan8-derived membrane.