

Where phosphate meets FGF23

The impact of phosphate types on the FGF23 regulatory landscape

1. Understanding FGF23 regulation requires distinguishing between classical regulators involved in phosphate homeostasis and non-classical regulators involved in other processes (this thesis)
2. Mitigating the health consequences of increased dietary phosphate requires understanding how inorganic phosphate from food additives affects FGF23 regulation (this thesis)
3. Different forms of phosphate (organic versus inorganic) have distinct biological effects on FGF23 regulation in FGF23-secreting cells, with organic phosphate being a direct stimulator (this thesis)
4. Vitamin D metabolites, beyond the active form 1,25-dihydroxyvitamin D, significantly contribute to phosphate homeostasis (this thesis)
5. The balance between MAPK and TGF- β signaling pathways is critical for the regulation of FGF23 by organic phosphate (this thesis)
6. Effective regulation and clear labeling of phosphate additives in food products are crucial public health measures to mitigate the adverse effects of high dietary inorganic phosphate on bone and cardiovascular health (Ritz, E, 2012, Deutsches Ärzteblatt International, 2012)
7. Nature's choice of phosphate as life's cornerstone is no accident; its balance of stability and reactivity makes it the perfect molecular architect for the dynamic complexity of biochemistry (Westheimer, FH, Science, 1987)
8. Current *in vitro* models are insufficiently representative for the *in vivo* environment of osteocytes, limiting research on FGF23 regulation and emphasizing the need for improved 3D culture models (Bonewald, LF, Journal of Bone and Mineral Research, 2011)
9. Life can multiply until all the phosphorus has gone and then there is an inexorable halt which nothing can prevent (Isaac Asimov, 1920-1992)
10. If we knew what it was we were doing, it would not be called research, would it?" (Attributed to Albert Einstein, 1879-1955)
11. A bend in the road is not the end of the road... unless you fail to make the turn (Helen Keller, 1880-1968)