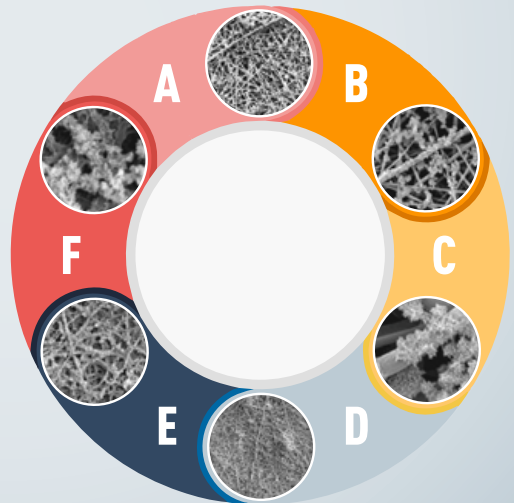




Calcium in layer life

- ✓ Mineralization of the skeleton of the pullet **0-6 weeks.**
- ✓ Secondary mineralization of the bones **17-21 weeks.**
- ✓ **Egg shell formation** during egg production.

Bone mineralization happens step by step on top of a collagen matrix





Calcium for eggshells



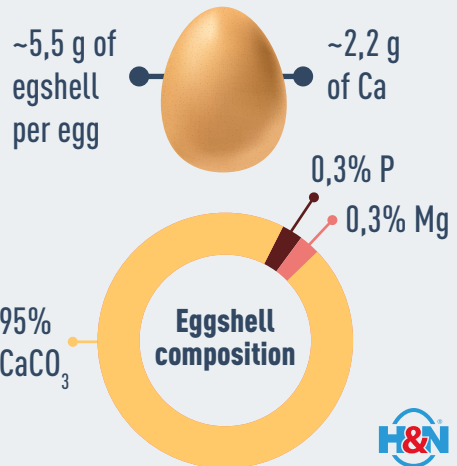
+ Layer hens need the calcium for the eggshell.

+ The amount of phosphorus for egg production is minimal. However phosphorus is important to secure calcium supply for producing egg shell.



Source: H&N International. Image by: Electron Microscopic Imaging by Stefan Dittler - Scientific Photography, Wuerzburg, www.electronmicroscopy.info

Eggshell Formation





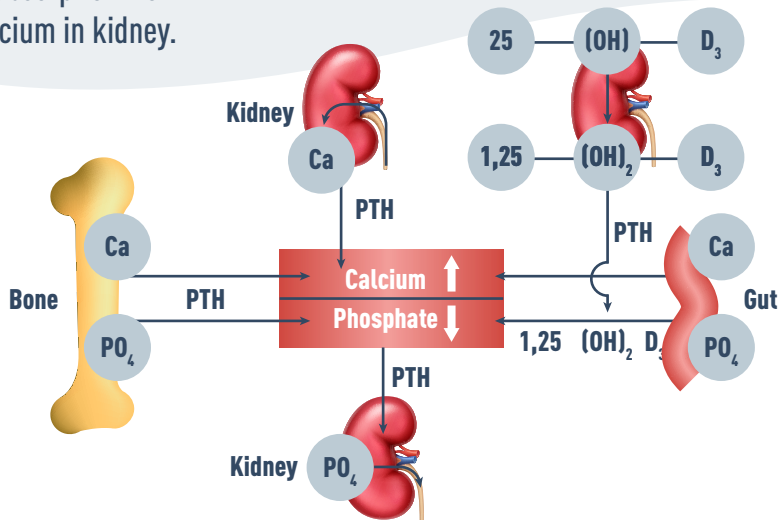
The cycle of calcium for the eggshell

The PTH hormone stimulates the calcium level in the blood by:

- ✓ Getting it from the bones.
- ✓ Reabsorption from calcium in kidney.

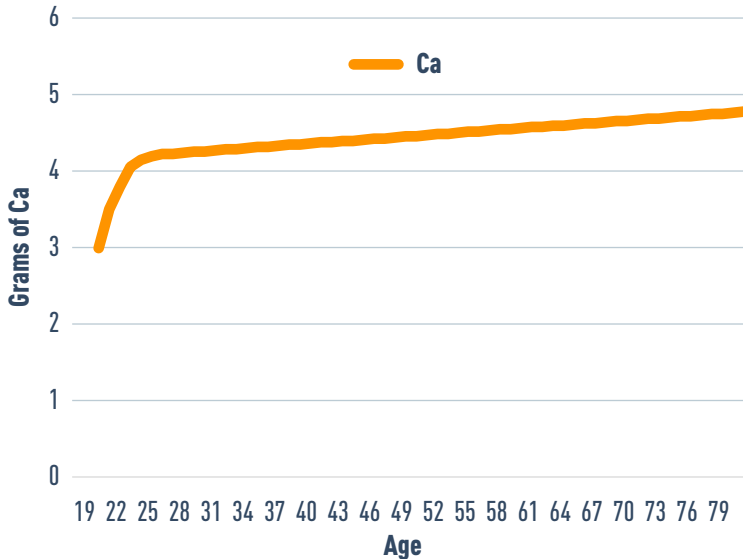
1,25-dihydroxy Vitamin D3 (Vitamin D3): stimulates absorption of calcium from gut

Calcitonine will antagonize the effect of the PTH





What are the needs of Calcium in production?



The needs of calcium increase as the bird ages as there is a reduction of the absorption capability.



Vitamin D effect in absorption of Calcium

Activation

Vitamin D: needs to be activated as a hormone, has two phases:

- ✓ In liver it is transformed to: 25-hydroxy Vitamin D3
- ✓ In kidneys as activated hormone to 1,25-dihydroxy Vitamin D3



Activity

PTH stimulates 1,25-dihydroxy Vitamin D3 production

The main action of 1,25-(OH)₂-D is to stimulate absorption of Ca²⁺ from the intestine.

- ✓ 1,25-(OH)₂-D induces the production of calcium binding proteins increasing the Ca absorption at intestinal cells.

Also: Stimulates the absorption of phosphorus in the gut

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- Source: H&N International, Image by: Electron Microscopic Imaging by Stefan Diller - Scientific Photography, Wuerzburg, www.electronmicroscopy.info