

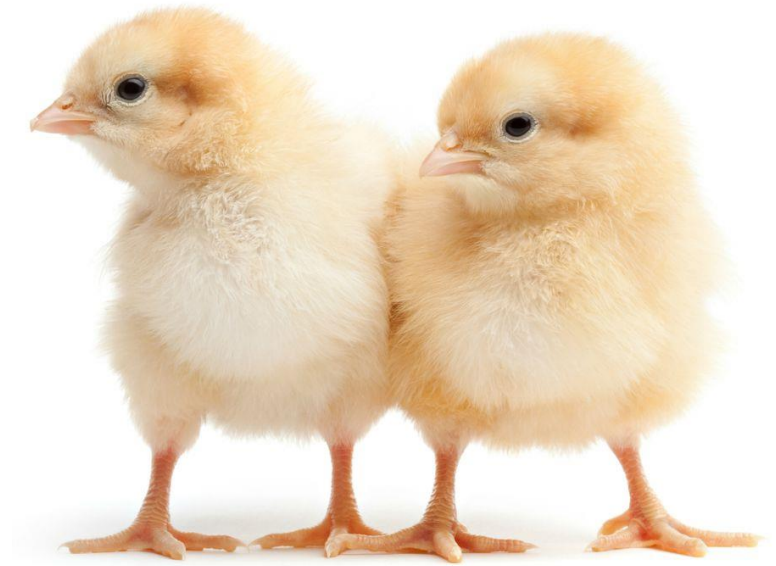
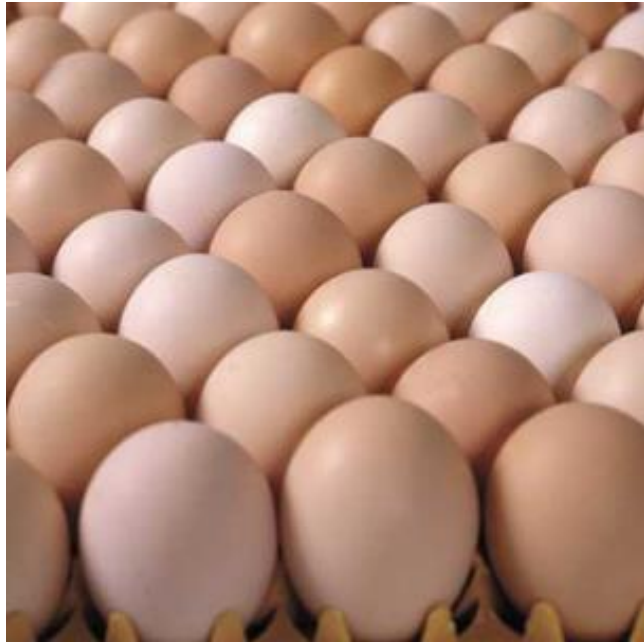


INTERNATIONAL

The key to your profit!



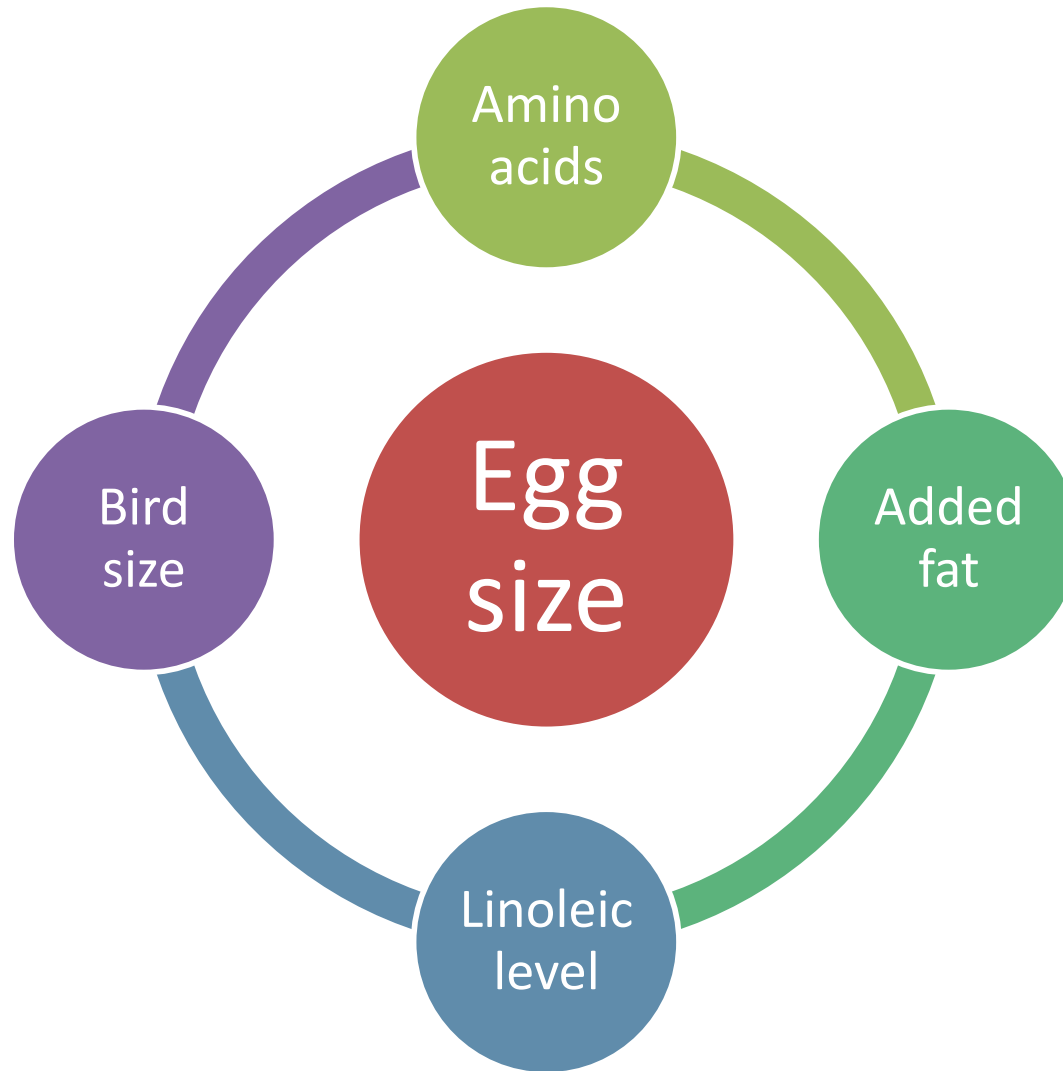
Feeding for good chick quality



Good egg quality

- Egg size
- Egg quality
 - Egg shell
 - Clean egg
 - Internal content

Egg size limitations



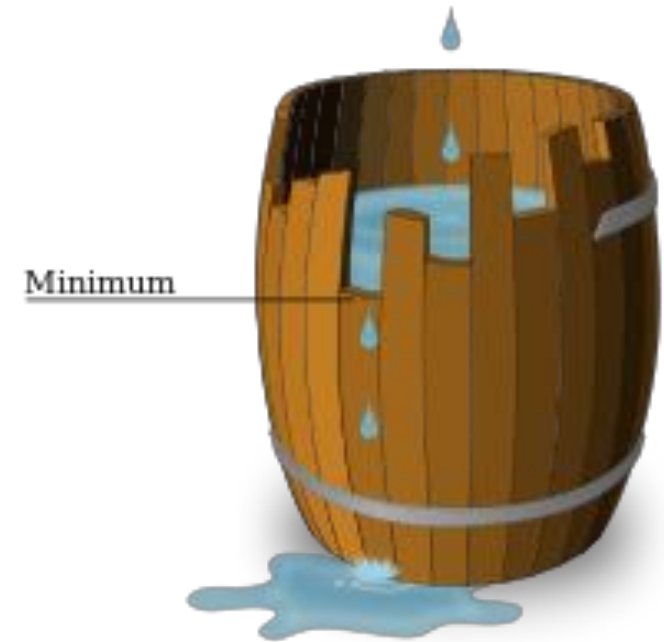
Hen performance, 24-59 wk

Main effect: initial BW

	High (1.733 g)	Low (1.606 g)	<i>P</i>
Egg prod. (%)	91.2	90.5	NS
ADFI (g)	113.9^a	111.0^b	***
Egg mass (g/d)	58.5^a	57.0^b	**
Egg weight (g)	64.2^a	63.0^b	***
FCR	1.95	1.95	NS
BW gain (g)	313	307	NS

Amino acids

- Key AA:
 - 1st Methionine; 2nd Lys; 3rd M+C
 - Keep a balance



AA profile vs Crude protein

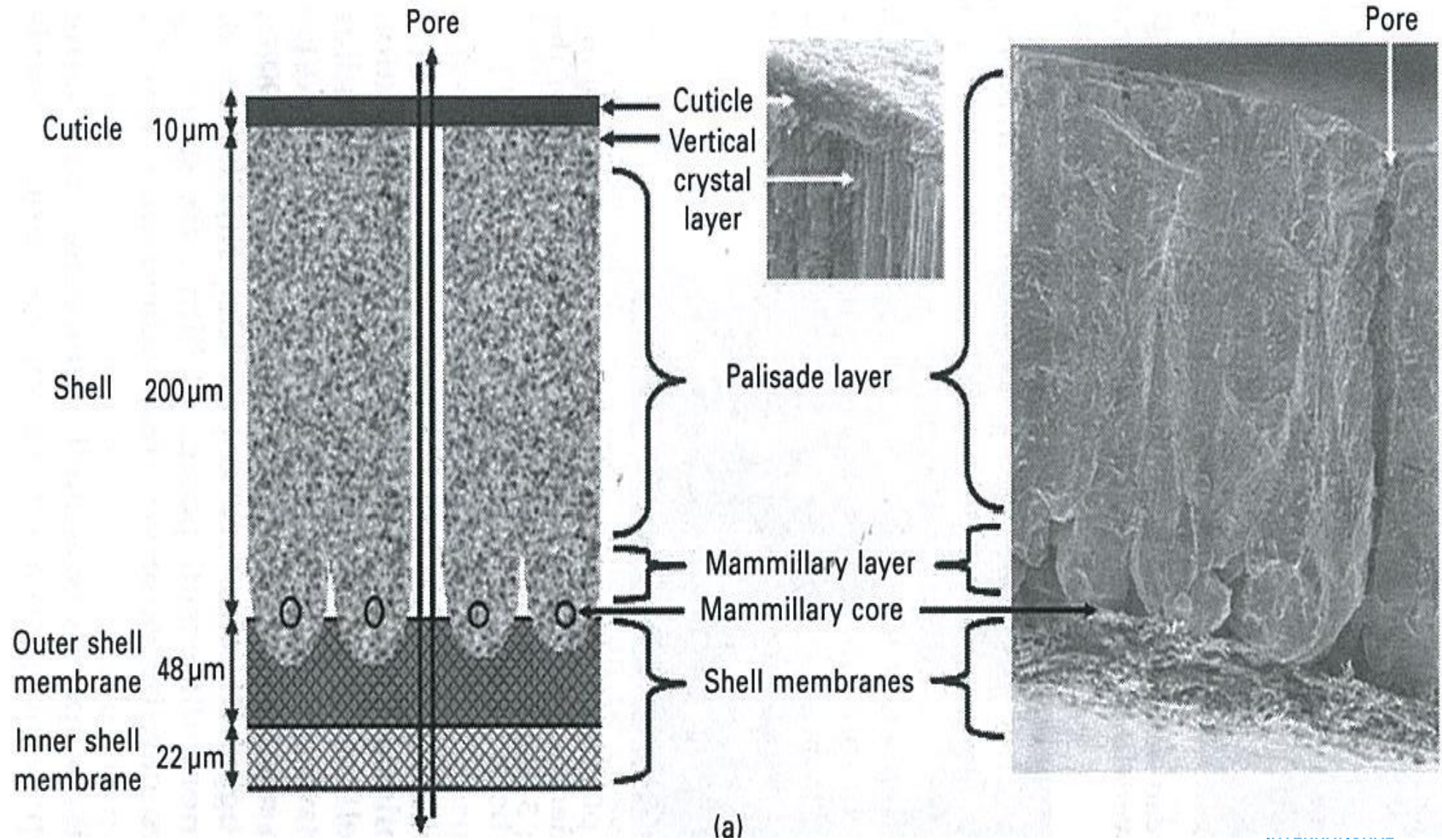
	Layer
Lysine	100
Methionine	50
M+C	92
Threonine	69
Tryptophan	21
Arginine	104
Valine	88
Isoleucine	79

Added fat effect

Fat inclusion	1.1	3.0	SEM
ADFI (g)	117	118	0.83
Egg prod. (%)	77.0 ^b	79.3 ^a	0.84
FCR (kg/kg)	2.36 ^a	2.26 ^b	0.020
Egg weight (g)	64.9 ^b	66.3 ^a	0.28

n = 24; P < 0,05

Egg Structure



Pores

- Number of pores
- Diameter
- Length

Egg conductance

- Gas exchange
- Temperature exchange

How much calcium is used from diet to lay the egg in optimal conditions?

1.60%



2.70%



3.80%



4.90%



Bone structure

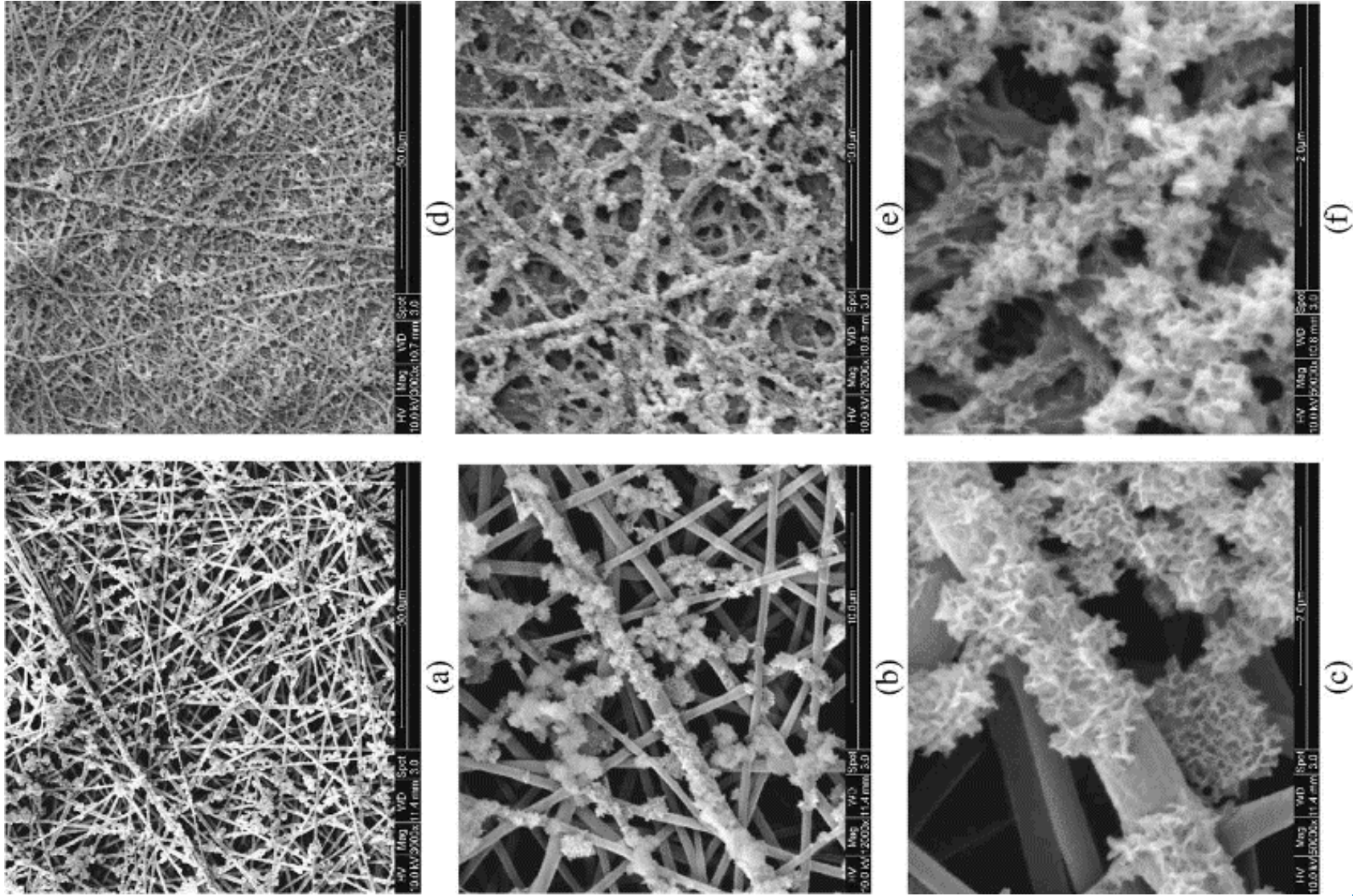


Fig. 2. Mineralization of n-HA on nanofibers after Ca-P treatment. (a) to (c) denote n-HA deposition on PLGA nanofibers. (d) to (f) represent n-HA deposition on PLGA/Col nanofibers.

When is the biggest bone development in the hens?

1. At 6 weeks

1

2. At 16 weeks

2

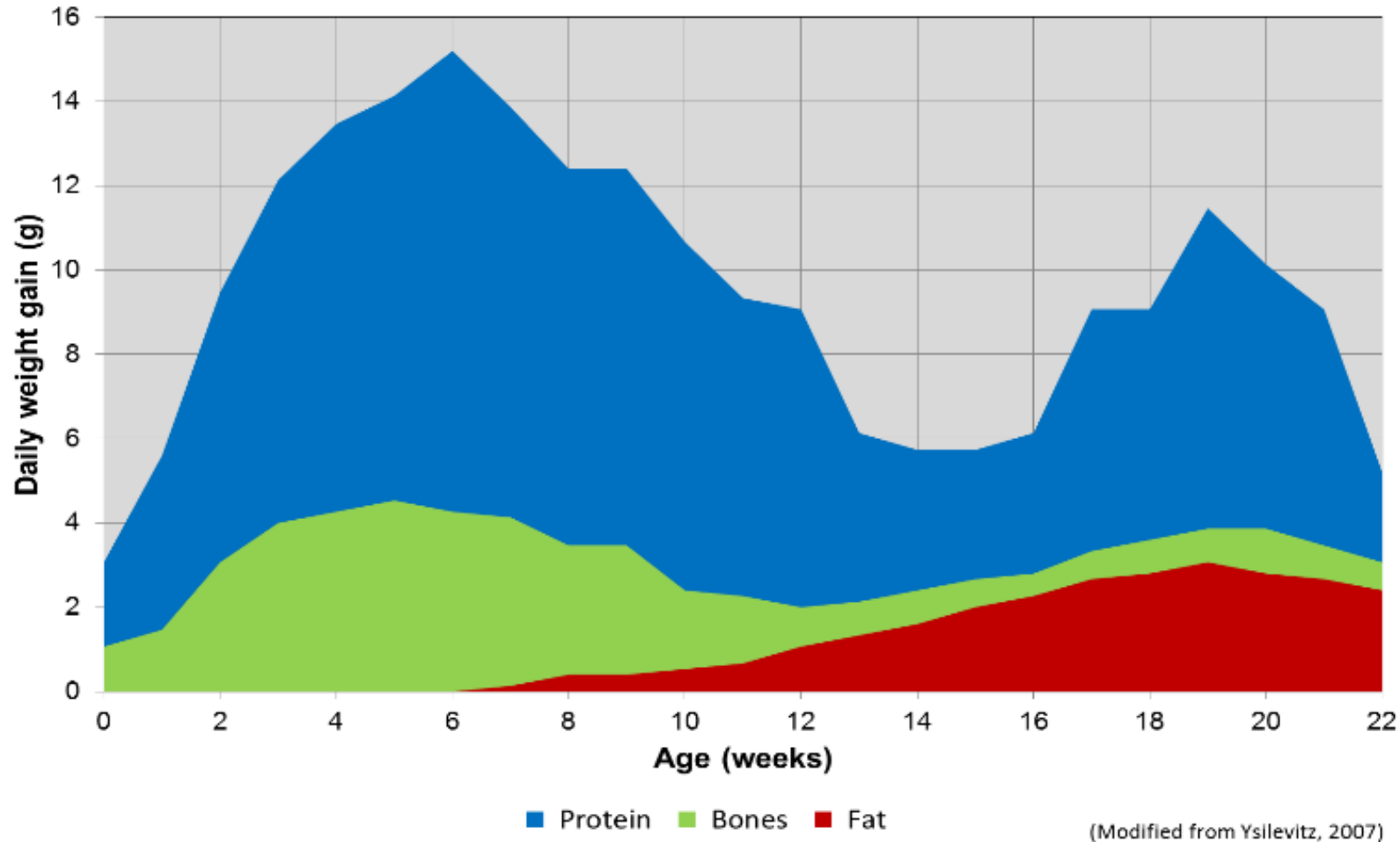
3. At 18 weeks

3

4. All the above

4

Bone development



Medullary bone

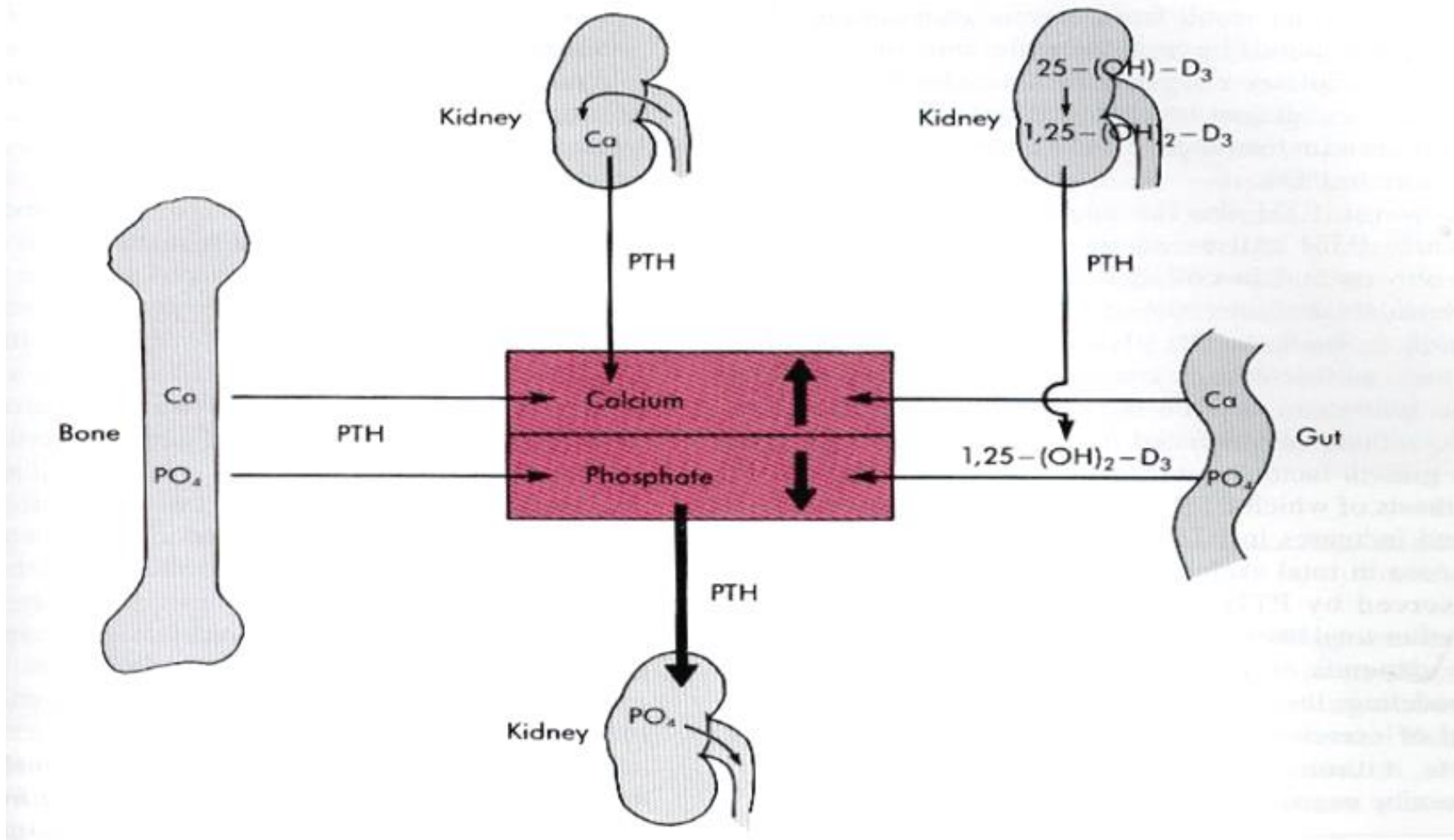


15 WK
1% Ca

22 WK
3.9% Ca

62 WK
3.9% Ca

Ca – P – Vitamin D



Calcitonine antagonism of the PTH and depends on Ca levels

How much calcium should I include in the Layer 3 diet?

1.3.7%



2.4%



3.4.5%



4.All the above

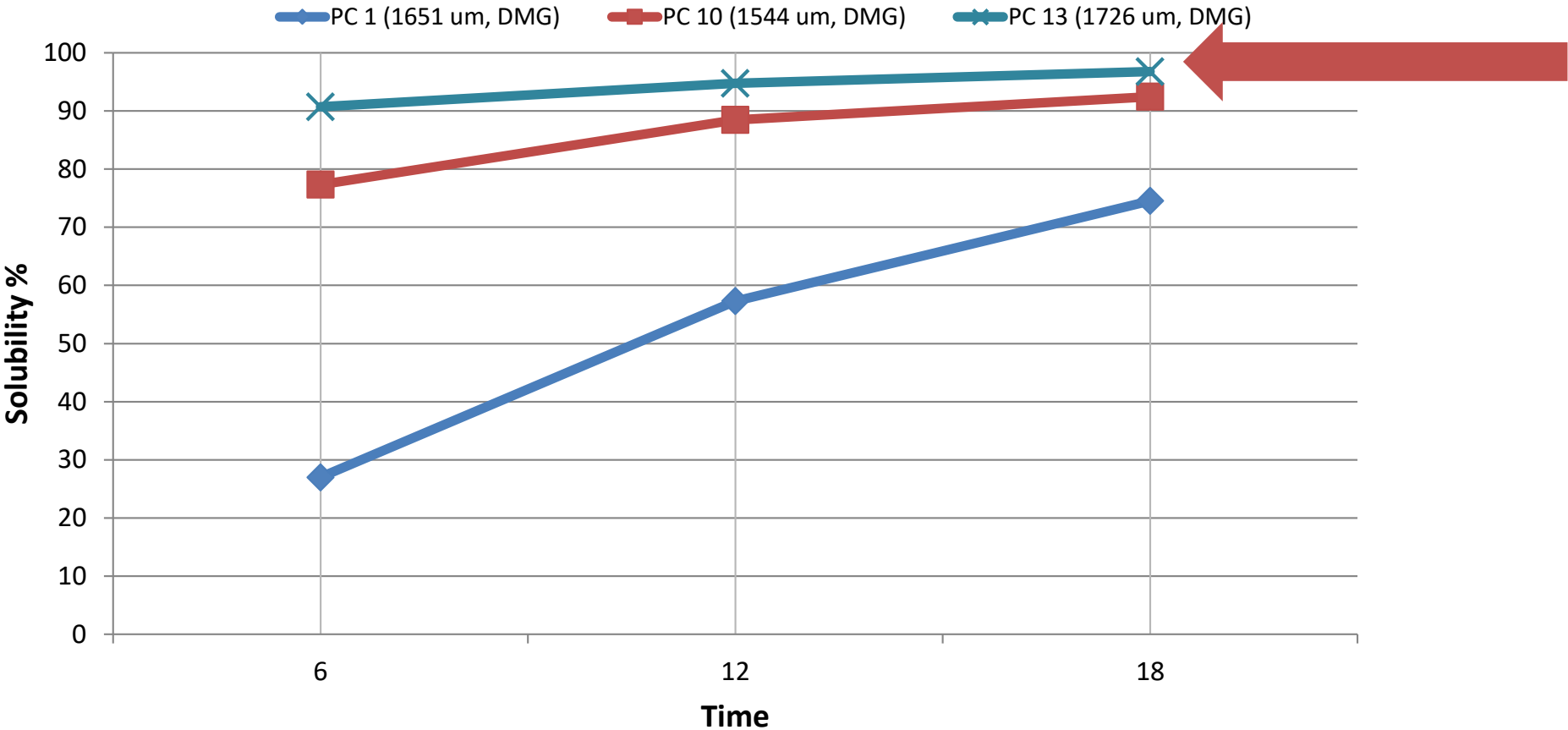


Particle size of the Ca

	Fine particle	Coarse particle
On set	35%	65%
Up to 45 weeks	30%	70%
Up to 60 week	25%	75%
> 70 weeks	15%	85%

- Fine: 1 mm
- Coarse: 3.5 mm ; 5% > 5mm

Solubility of calcium vs Diameter



Not always the coarse particle means the right solubility for the egg shell quality



Adapted from R. Angel 2018

P measurements

- Total P: amount of all kind of P
- Phytate P: P source of the plants
- NNP: Total P – Phytic P
- Available P: amount of P for having a performance including organic and inorganic sources. The needs are calculated based on the response to inorganic form like monocalcium phosphate
- Digestible P: how much P is absorb after digestion

What is the effect of the phytase?

1. 0.10% av P

1

2. 0.12% av P

2

3. 0.14% av P

3

4. None of the above

4

Effect of phytases

Diet 1	%
Corn	50.47
Soya	34.44
Phytic acid	0.23

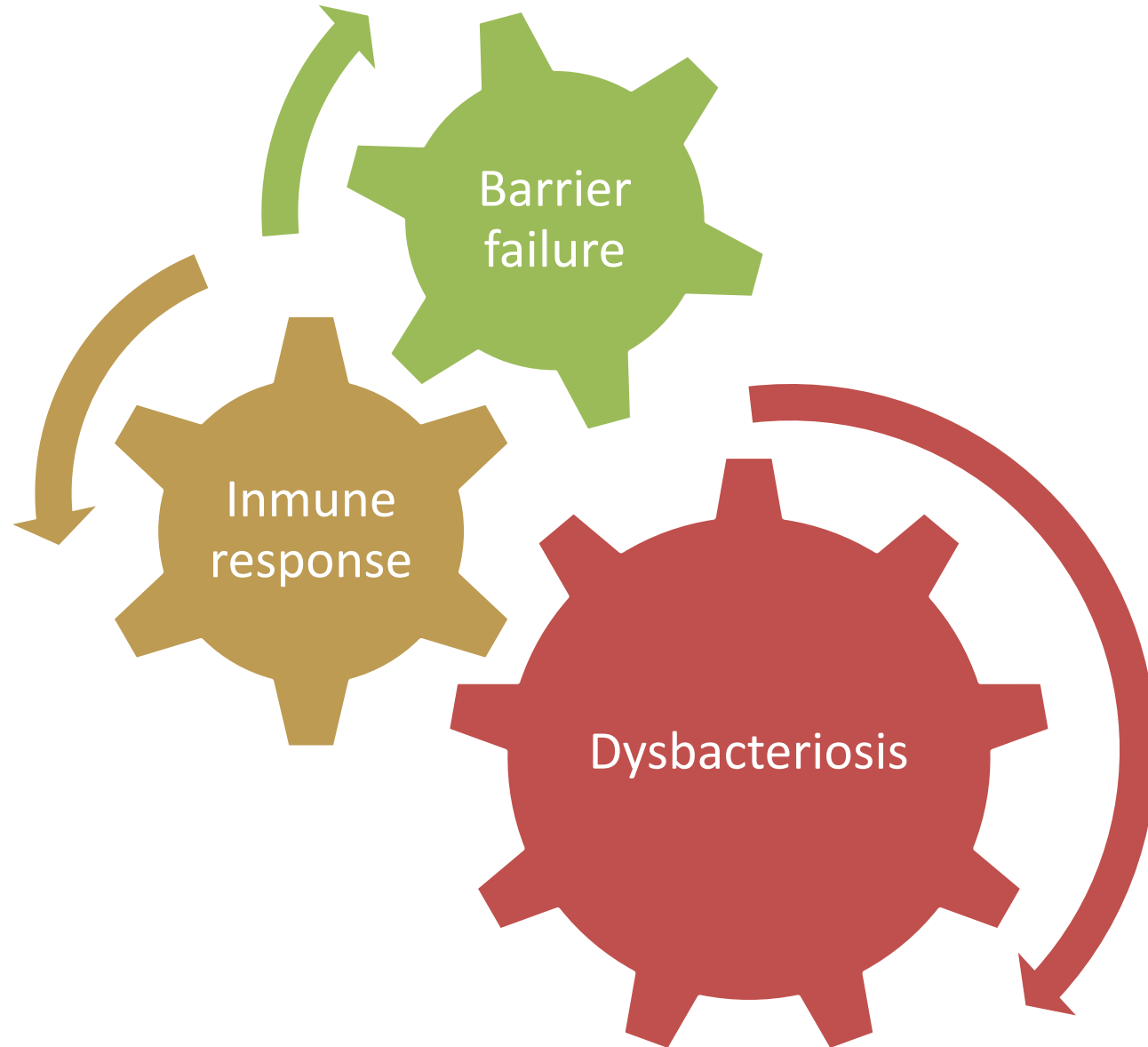
Diet 2	%
Corn	43.31
Soya	33.11
Rice bran	7
Phytic acid	0.30

30% more substrate

Same effect of the phytase?

How much more P in the diet?

Gut health challenge



Dysbacteriosis

- Change of the flora of the gut that usually doesn't grow in that area
- Related to:
 - Feed contamination
 - Reduction of the digestibility:
 - Low digestible raw materials, carbohydrates or protein
 - Antinutritional factors
 - Disbalanced Na+K-Cl-S

I can use a layer premix for the PS

1. True, just increase dose

1

2. No

2

Premix in the PS

- Challenge of a low volume
- Try to make a compromise with the layer premix

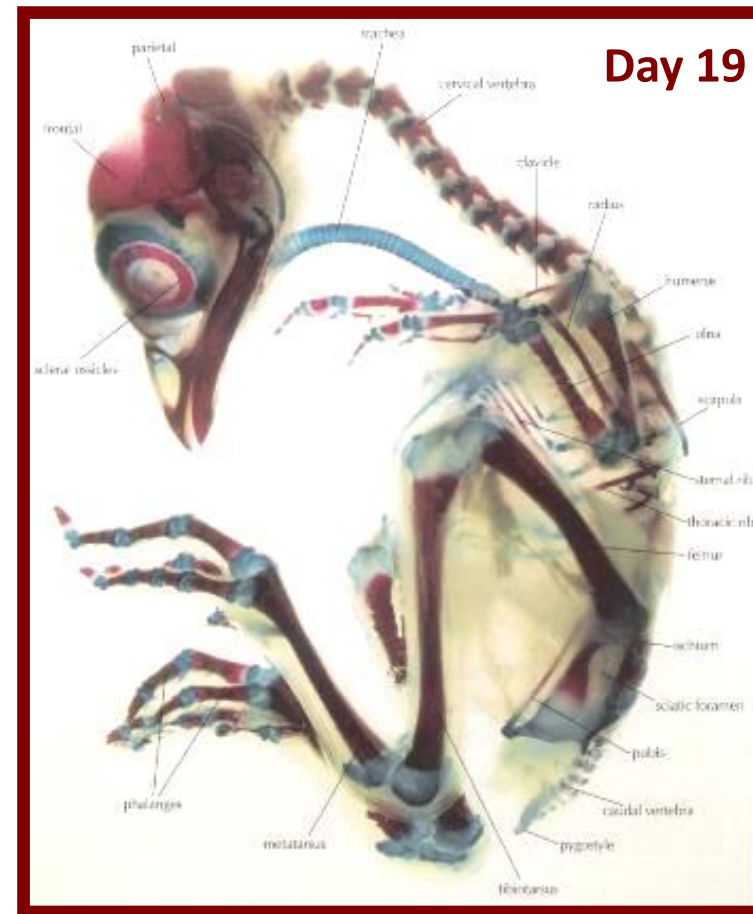
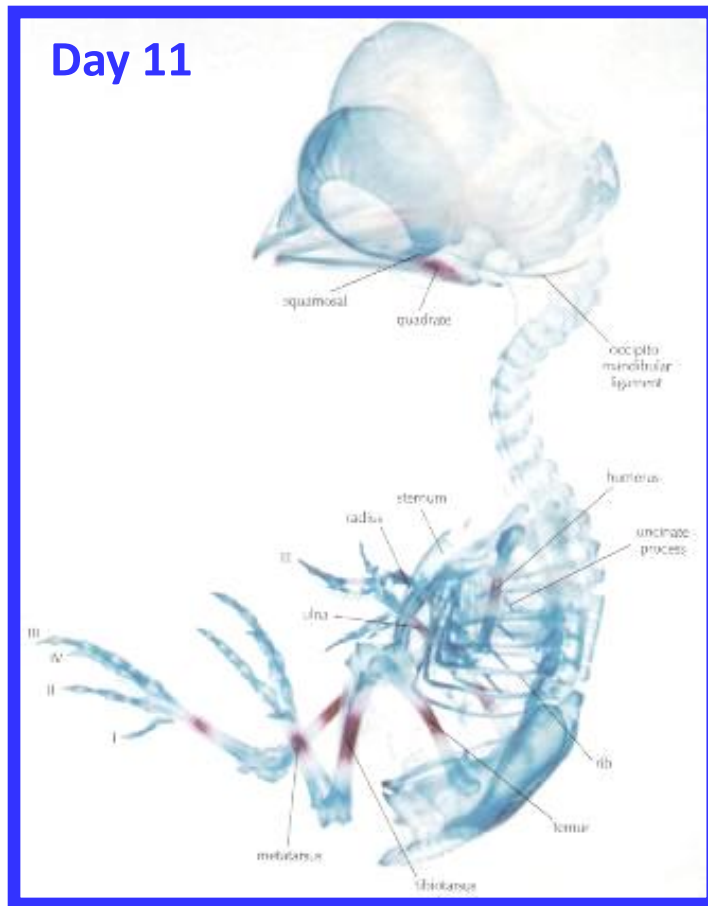
Comparing

It is difficult to “get” a breeder premix from a layer premix

	Units	Layer	Breeder
Vit A	IU	10.000	10.000
Vit D	IU	2.500	3.000
Vit E	IU	15-30	50-100
Vit K	Mg	3	3
Vit B1	Mg	1	4
Vit B2	Mg	4	10
Vit B6	Mg	3	6
Vit B12	Mcg	15	30
Panhotenic acid	Mg	10	20
Nicotinic acid	Mg	30	50
Folic acid	Mg	0.5	2
Biotin	Mcg	50	200
Zn	Mg	60	60
Cu	Mg	5	10
Mn	Mg	100	100
Fe	Mg	25	40
I	Mg	0.5	1
Se	Mg	0.25	0.3



Embryos develop on egg composition

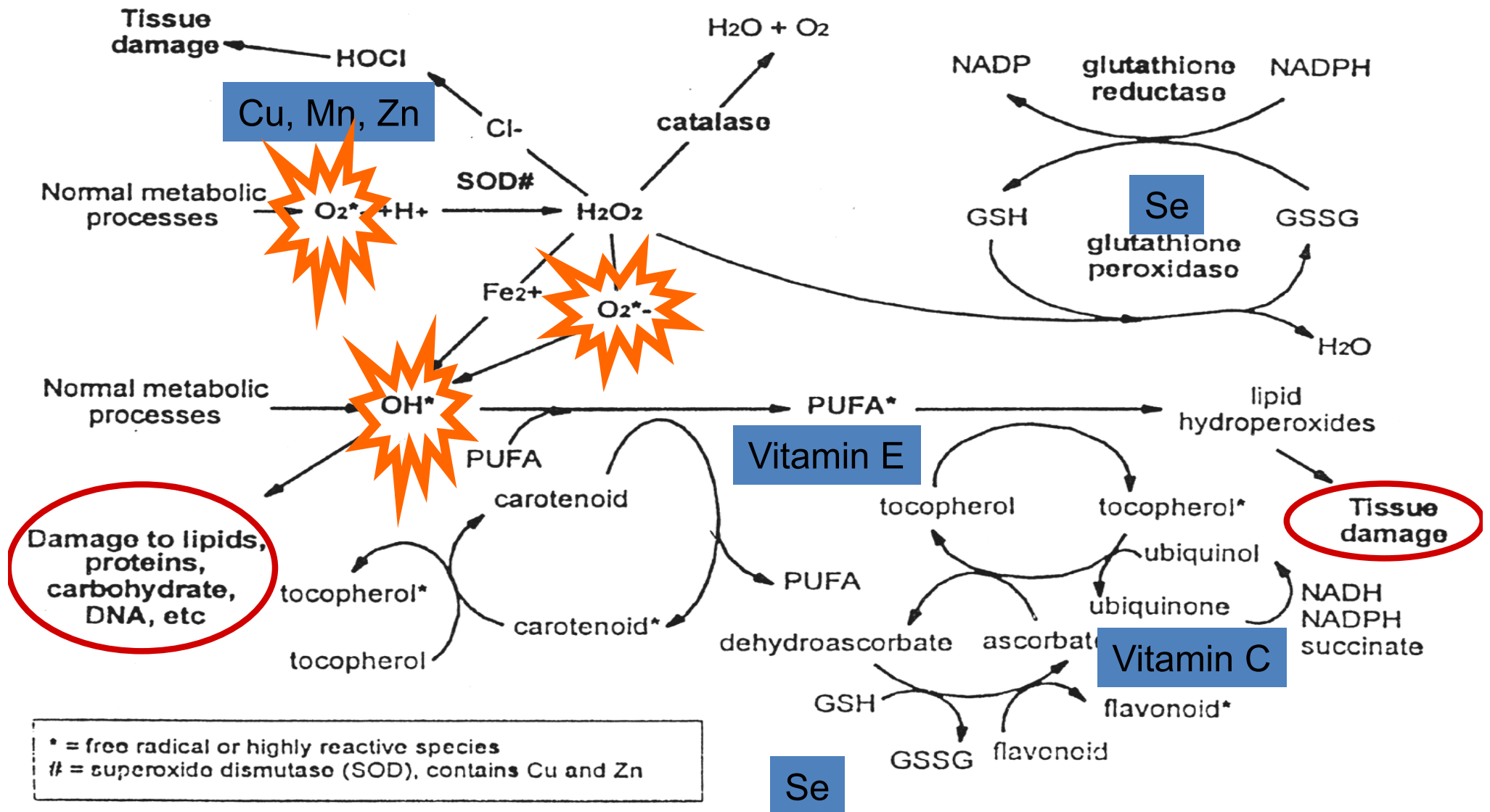


(Bellairs & Osmond, 2005)

Vitamins and breeders

	Vitamin A	Biotin	Riboflavin (B2)	Cobalamin (B12)	Vitamin D
Deficiency	<p>Mortality first week of incubation</p> <p>Too weak to hatch or survive</p>	<p>Mortality first and third week of incubation</p> <p>Too weak to hatch or survive</p>	<p>Edema, clubbed down, hemorrhages, micromelia and anemia</p> <p>Mortality at 9 to 14 day of incubation</p> <p>Too weak to hatch or to survive</p>	<p>Embryo mortality: it is progressive starts at 1st week until 3rd week</p> <p>Edema around the eyes, poor leg muscle development, hemorrhages, shortened beak and malposition</p>	<p>Mortality at 18 and 19 days</p>
Excess	<p>Early embryo mortality first week</p>			<p>Affects the Riboflavin deposition</p>	<p>Reduce the hatchability</p>

Anti oxidation system



Vitamins

- Vitamin E
 - Oxidative stress
 - Freshness of egg
- Vitamin C
 - Heat stress
 - Freshness of eggs

Trace minerals

- Co factors in many enzyme reactions
 - Structural tissues:
 - Bone development
 - Skin integrity
 - Egg shell development
 - Immune reactions
 - Oxidative stress
 - Egg freshness

Inorganic vs organic

- Inorganic:
 - Cheap
 - Low availability
 - Risk of contaminations

- Organics:
 - Expensive
 - High availability
 - High quality

Summary

- Good breeder
- Good egg shell quality
- Good gut health
- Good premix