

UNDERSTANDING FEATHER COLOUR:

WHAT HAPPENS AFTER MOULT?

I often get questions about whether feathers can lose their colour due to conditions like vitiligo.

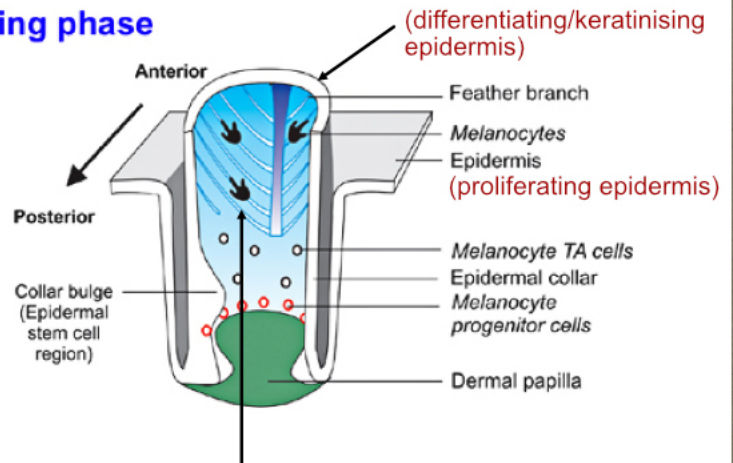
It's a great question, and the answer lies in understanding how feathers actually form.

The diagram in this post (from Lin et al 2013, with my annotations) shows what happens inside a growing feather follicle. During the growing phase, living melanocytes (pigment producing cells) produce pigment granules called melanosomes and transfer these to the surrounding keratinocytes (keratine producing cells).

As the feather grows upward and keratinises (becomes feather material we see), the melanocytes die off. What remains in the finished feather is not living cells, but their product: melanosomes permanently embedded in keratin.

This means a fully grown feather is, like hair and nails, dead tissue. There is no blood supply, no cellular activity, no way for the body to add or remove pigment after the feather has finished growing.

Growing phase



The black curved shapes represent melanocytes in the process of transferring melanosomes to surrounding keratinocytes. Once the feather structure fully keratinises, the melanocytes die and only their melanosomes remain embedded in the keratin of the feather.

Feather colour formation, diagram: Lin et al 2013.
Additions in red: www.chickencolours.com

So what about vitiligo?

In birds (and mammals), vitiligo affects the melanocyte progenitor cells in the follicle. If these cells are damaged or destroyed, new feathers grown after the next moult will lack pigment.

However, feathers already on the chicken remain unchanged, they simply can't 'lose' their colour because there are no living cells in them to be affected.

Feathers can fade over time due to UV exposure and wear, but this is physical degradation of the melanosomes and keratin, not a biological process like vitiligo.

In short: the colour of a feather is determined during its growth.

Once it's finished growing, that colour is locked in until the feather is replaced at the next moult.

I hope this helps clarify a topic that can be confusing! The biology of feather formation is fascinating, and understanding it helps us make sense of what we observe in our birds.

Photos: Udo Ahrens A
Cochin bantam hen
with vitiligo.



© Udo Ahrens (DE)



© Udo Ahrens (DE)