März 2023 Text: Udo Ahrens Photos: Udo Ahrens

AUTOSOMAL DFD

As is well known, all chicken colours are based only on black (eumelanin) and red (phaeomelanin). This must be supplemented by the colourlessness, namely white. In the case of red, a distinction is made between the ground colour gold, which is coupled to the sex chromosome, and autosomal red. This is what we are dealing with here.

As the name suggests, autosomal red is not linked to a sex and is inherited equally by cock and hen. The colour of the Red Jungle Fowl (RJF = Bankiva fowl in genetics in Europe) is the original form of the chicken colours and can be regarded as the "Goldhalsig" (e+, duckwing) colour type. For the sake of completeness, it has to be mentioned that the goldhalsige colour varieties of, for example, the (German) Bantam Cochin or the (German) Wyandotte is something else. They are based on a different genetic basis, the name for a hobby colour does not say anything about the genetic basis. We could say Asian-Goldhalsig or better partridgecoloured (eb) for it.

The Bankiva fowl (RJF) has a golden ground colour, but the autosomal red is responsible for the salmon breast of the hen, but also for the dazzling red on the wing patches of the cock. Both are intended by nature. The cock displays a colourful and magnificent colour, thus seducing the hens, while the hen's stippled plumage fulfils a camouflaging effect in the brooding process and the salmon breast supports this by resembling the colour of the ground. Autosomal red can also be found in the body plumage to intensify the ground colour.

In purebred poultry, autosomal red is often responsible for colourful variations, but in many cases it is also a persistent nuisance. The latter is true for most colour varieties with a silver ground colour. The counterpart of the golden ground colour (s+) is silver (S). Silver is dominant over gold and is also sexlinked. In practice, this means that a hen can only be gold (s+/-) or silver (S/-), a cock also s+/s+ (gold) or S/S (silver), but also silver and gold at the same time (S/s+). Due to the dominance of silver, this colour is predominant.

The gene "S" thus converts the golden ground colour into silver. What it cannot do, however, is influence the effect of the autosomal red. On the one hand, we do not want that either, because as for example with the silver-necked (e+, duckwing) hen, her attractiveness results from the colour play of the bright salmon breast and the silver-stippled mantle colour. In the silver-necked cock we A silver duckwing (e+) hen with a very intensely coloured salmon breast. The accumulation of autosomal red does not stop at the body plumage. Depending on the light conditions, this often remains hidden to the human eye.

again want a silvery-white mantle plumage, as free as possible from red tones on the wing shoulders and the back. The latter can only be achieved by meticulous selection, and breeders of this colour know how difficult it is to find the right colour. Finding the right balance and keeping it. While cross-breeding silver-necked (silver duckwing e+) into gold-necked (duckwing) to improve their type traits can make perfect sense, the other way round you open up a new construction site, because getting the shoulders of the silver cocks "clean" again takes generations.

Also, autosomal red may be responsible for yellowish hackles and saddles in pure silver cocks, if this cannot be explained by the influence of UV-light. The effect can be quite similar to that of a heterozygous cock carrying the gene for both silver and gold (S/s+).

In hens it is different. If brownish shades can be seen in the silver mantle plumage, it is always the influence of autosomal red. This is often described as the inheritance of the gold factor, which is not correct. Colour inheritance does not work like



A cock in whiteblue columbia. The yellowish shade on the shoulder is due to autosomal red.

mixing oil paint on a palette. Let us remember, for example, the early years of the still young colour silver-black double-laced of the Barnevelder. Here it took a very long time until the ground colour was almost free of brown tones. The original colour, i.e. the golden counterpart brown-black (is not mentioned in English) double-laced, is strongly enriched with autosomal red and mahogany to achieve this dark shade. Accordingly, it took a lot of effort to get the silver ground colour reasonably clean.

Autosomal red is often responsible for undesirable reddish-brown colour shades and whenever we read in the standard about "as free as possible from brown tones", it is about this very factor.

It occurs undesirably in all silver variants as well as white with black tail or white-black columbia on the wing covers and of course their blue variants. Likewise, these brown tones can be observed in cuckoo or barred

Blue-silver pencilled with orange shoulder is a good example for the positive handling of autosomal red. Also the colour of the hen from this mating should not be silver-white in the body colour. What stands in a row in the show cage does not always have to come from the same mating.

colourings.

The beautiful sides of Autosomal Red

The effects of autosomal red are not exclusively troublesome in breeding poultry. As mentioned, the beautiful salmon breast of the "necked" (duckwing e+) hens comes from this. But also silver colourings, where the cocks are supposed to have orange shoulders and backs, and just here show a particularly beautiful play of colours, come about through this factor.

For example, there is blue-silver pencilled (dark) with orange shoulders. Actually just the blue

Illustration: svd



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It is not always possible to make a reliable statement about the genetic mixture. A split silver cock can look the same as a pure-bred one, if autosomal red takes over the yellowish to reddish colouring. 6a) A silver-wheaten coloured cock of Dutch type. Here it was important to select out all influences of autosomal red. 6b+c) Two almost identical looking cocks. 6b is pure silver-wheat coloured (S/S), 6c is a cock with both ground colours, gold and silver. The ground colours are located on the sex chromosome "Z". The cock has two of them.

equivalent of silver pencilled (dark) but with the idea of not selecting out the autosomal red but creating a colour contrast of blue, silver and orange. This colour is considered very attractive. Due to the divergent blue and the missing black counterpart, only 50% of the offspring are potentially suitable for the show and also only 75% for breeding, because the pencilling is no longer assessable in standard blue silver pencilled. Silver has no effect on autosomal red, which means that even the ground colour of BSO hens cannot and should not be silver white if the hen is to have breeding value. The silver should at least be creamy white in the mantle plumage. The fact that the hen's neck appears lighter is partly an optical effect, as the light is reflected differently on the soft feathers and the hairy outer edge, and partly due to hormonal reasons. Testosterone is a booster for autosomal red.

Autosomal red and selection

Selection usually takes up most of the space in crosses made for the development or creation of a colour. Knowledge about the heredity theory and the history of the development of a breed and colour shortens the way to the goal. The variety of colours in today's chicken breeds is astonishing and often sharp selection was and is the sole cornerstone of success. Many things are also done correctly by experience or intuition and everyone knows the breeders with the "certain touch". However. simply breeding away no longer fits the times, if we also keep in mind the animals that accompany the path to the goal, but do not continue it. Colour varieties whose reproducibility within one generation is possible when mating two parents of the same colour characteristics should be considered as colour. We know that this is not always the case. As a rule, unstable colours do

The back plumage of a silver-wheaten coloured cock. If there is a purple sheen on dark red, this is an indication of the presence of mahogany. not catch on and remain wallflowers in the hands of a few who are prepared to invest a lot of effort, or disappear again after only a few generations.

If one reads through the descriptions of some colours in the standard, such as "silver-necked (duckwing) with orange back", one also suspects that this is exclusively a cock colour, which is based on the splitting of silver and gold (S/s+). The hen, as already mentioned, can only be silver or gold.

Since nature has designed autosomal red in a sex-specific way, with the effect of factors favouring survival, selection is not equally possible in both directions. To rid the silvernecked (silver duckwing) cock of any red tones on his shoulders and at the same time keep the mantle plumage of the silver-necked (silver duckwing) hen free from brown tones is a lengthy act of selection and a fine levelling within a breeding line. If this is broken recklessly, the undesirable properties of autosomal red are quickly back and set to stay for a longer period of time.

It is easier in the other direction. To increase the effect of autosomal red by selection and successively establish more and more shades of red, even on silver ground colour, is quite possible. It is not always obvious to the eye whether it is a split cock (S/s+) or a pure (S/S) silver cock with a lot of red enhancers. This also applies to yellow colour varieties, which, within certain limits, can be selected to red. This is mostly a matter of taste.

What is valid for the "necked" (duckwing) colour varieties is generally not valid for the wheaten colour (eWh). Here, in the silverwheaten coloured cocks, a colour contrast by red wing coverts is desirable, even if this is expressed differently depending on the breed. This offers the advantage that the golden and silver varieties of this colouring can be combined almost endlessly within a breeding if the breeders can trace the ancestry of the animals.

Here, too, in some breeds it happens that the split (S/s+) cock represents the show type, which is to be classified as uncritical, since only the pure silver (S/S) cock is not suitable for the show, but very well for breeding with gold-wheaten coloured hens, from which exclusively sons of the show type and silver-wheaten coloured daughters result. So in a balanced breeding both wheaten ground colours are to be bred with and next to each other.

A bit of a mystery...

Autosomal red is not a classic gene and does not follow the rules of Mendel's laws, after which it would have to disappear in the F2 generation. We do not even know whether it is just one factor or even several in interaction. There are also modifying factors that can lighten or

The silver-black doublelaced bantam Barnevelder still clearly show "brass". To get the ground colour completely pure is a rocky road. The golden counterpart is strongly darkened. With the red enhancer "mahogany" even small traces of Ar+ are kept visible. Photos: svd.



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intensify Ar+, such as the well-known gene mahogany (Mh), which provides a deep dark red.

The breeders have given Autosomal Red the abbreviation "Ar+". It is written in capital letters because of its dominance, the plus stands for its occurrence in the Bankiva fowl (RJF). In colours such as white-black columbia or white with black tail, it only appears visually in cocks on the wing coverts and the back, which is usually covered by the hackle, and more rarely in the rear saddle feathers. This does not mean that the female siblings are free of it and do not pass it on to their sons. As already mentioned, the effect of Ar+ is enhanced by the male sex hormone testosterone. If we think of a flirtatious cock, with its wing lowered, wooing the hen and presenting its iridescent wing shield, it makes sense and we understand that nature intended it that way.



A pure silver-wheaten coloured cock. The already clustered autosomal red has been enhanced by the modifier "Mahogany (Mh)" to such an extent that silver is no longer the predominant colour. DAS AKTUELLSTE, SCHÖNSTE UND SPANNENDSTE FARBGENETIK-BUCH ALLER ZEITEN!



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