

May 2019 Newsletter.

The Pigeon Genetics Newsletter, News, Views & Comments.

(Founded by Dr. Willard .F. Hollander)

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This issue deals again with a variety of Topics

TOPIC #1 : The U of U study on "Pattern" , please note that this is "Pattern" in the true sense of the term , as it pertains to the arrangement of pigment granules over the entire bird, and specifically as seen on the wing shields.

We begin this with a few definitions of abbreviations & terms that you will see in the following material:

DNA - Deoxyribonucleic Acid , a molecule that encodes the genetic instructions used in the development and functioning of all living organisms. DNA is composed of two polynucleotide chains twisted around each other in the form of a double helix .



double helix DNA Chromosomes .

A **nucleotide** is the building block of DNA , it consists of a phosphate joined to a sugar known as 2-deoxyribose, to which a base is attached. There are four bases present in the DNA molecule, known as Adenine (A), Thim, Guanine (G) , and Cytosine (C).

Encodes - to specify a genetic code for a protein regulatory sequence.

Regulatory Sequence - any DNA sequence that is responsible for the regulation of gene expression, such as promoters and operators. or more simply put : a series of DNA nucleotides that regulate the expression of a gene. A regulatory gene is involved in controlling the expressions of one or more other genes.

Linear - having an end , opposite to circular without an end.

RNA - (ribonucleic acid) any of a class of single - strand nucleic acid molecules of "ribose" and "Uracel" found mainly in the cytoplasm of cells and in certain viruses important in protein syntheses and in the transmission of genetic information transcribed from DNA.

Non-coding RNA's - An RNA molecule that is not translated into protein. The DNA sequence from which a functional non-coding RNA (ncRNA), is transcribed is often called an RNA gene.

Coding Region - That portion of a genes DNA or RNA composed of exons that code for protein , it is the sum total of the organisms genome .

Exons - any part of a gene that will encode a part of the final mature RNA product by that gene after introns have been removed by RNA splicing.

Intron - any nucleotide sequence within a gene that is removed by RNA splicing during the maturing of the RNA product.

Signal Peptide - A short chain about 16 to 20 amino acids long , present at the N-Terminus of the majority of newly synthesized proteins that are destined towards the secretory pathway.

NDP - The NDP gene provides instructions for making a protein called Norrin , which participates in chemical signalling pathways that affect the way cells and tissue develop.

Locus (plural Loci), spot , location, position on a chromosome for a particular biological trait.

Allele - Alternate forms (choices) of a gene located at a given locus.

BART VAN ZWEEDEN wrote in Strictly Colour Genetics for Pigeons :

As a follower of pigeon genetics - research , I tend to read a lot of the work being done by the University of Utah. The latest article I saw , stated that the molecular mechanism of pattern (T-check, check etc.), is done in terms of gene expression. Our books try to tell us that we are dealing with 4 - 6 alleles.

Reading this article , I got the idea that this might not be true: The gene involved seems to be surrounded by a different amount of transcription - regulation sites, influencing the amount of melanin being produced. Only the barred pigeons have to deal with a slightly different mechanism, where the barless pigeons turned out to have a malfunctioning gene. In fact this is a true allele. I might be mistaken? Did anyone see this article (written in 2018?) Site :

<http://shapiro.biology.utah.edu/.../pdf...pu.../elife-34803-v1.pdf>

I hope that in this group there are more molecular fanatics as me... having an answer?
Thanks for letting me in this group anyway.

Editor { We actually do not have many people in the Pigeon Hobby who delve into the molecular level of genetic inheritance . Jith has covered a great deal of this subject in earlier issues , but most have no idea what all of the terms mean. I have not studied this aspect , and had to rewrite and proof read Jith's work , so I know how complex it can sound. However the more

we understand about the Roots of a tree , the more we will understand about its leaves , fruit and seeds ! } ~Bob R.

[Bob Rodgers](#) - Thanks for your post Bart , here is our October Issue which includes a letter to the U of U in regard to the above report published by them. You will see it was written by Hein Van Grouw. He did receive a response from Prof. Shapiro , but told me that he was not able to glean anything from it , but if indeed he could , he would send a follow-up to me for the newsletter. We also received a response from Charles Power who wrote to Prof. Shapiro also indicating his concerns with their findings. I have not heard anything further at this time. Paul Gibson who edited the Newsletter previously , once stated that he felt that the original "wild type" Columbia livia was the blue checker , and that Barless , barred , and T-pattern mutated to form the three alleles. This report suggests that the check pattern was introduced from another species, as I understand it .

[Adam Archer Pigeons](#) - Personally I wouldn't be surprised if a few of our colour genes slipped in from other species, for example Gazzi may have come from Snow Pigeons, and perhaps barless from something like wood pigeons

[Bob Rodgers](#) - There certainly may have been a number of ancestral wild species contributing traits such as bronze , and red orbital eye skin , but as far as the Snow pigeon and Gazzi is concerned , tests proved that there was no genetic compatibility , or that it was so far removed that it no longer was the same .

[Quido Valent](#) Hi [Bart van Zweeden](#), - I had a chance to go over the article a bit more accurate. Indeed regulatory sequences { any DNA sequence that is responsible for the regulation of gene expression} , appearing in different numbers have an influence on the checker/barrred phenotypes. This is not always completely linear { without an end} , possibly due to other modifiers. Barless is caused by a mutation in the coding region, { the sum total of the organisms genome. } probably destroying the signal peptide { A short chain of newly synthesized proteins } , causing accumulation of the NDP protein {The gene that provides instructions , for making a protein called Norrin , preventing it { the signal peptide}, to reach its true destination. The full NDP protein is expressed, however.

Then the question: what is an allele?{ an alternate choice at the same locus ?} Is this only if a mutation in the coding region is involved? Or can changes in the regulatory area also be seen as alleles? Checking Wikipedia, I have to conclude that the second is correct:

"The concept of a gene continues to be refined as new phenomena are discovered. For example, regulatory regions of a gene can be far removed from its coding regions, and coding regions can be split into several exons {any part of a gene that will encode a part of the final mature RNA} Some viruses store their genome in RNA instead of DNA and some gene products are functional non-coding RNAs. Therefore, a broad, modern working definition of a gene is ' any discrete locus of heritable, genomic sequence which affects an organism's traits by being expressed as a functional product or by regulation of gene expression.' "

Thus, also the mutations in the NDP regulatory region { producing Norrin , which participates in chemical signalling pathways that affect the way cells and tissue develop} can be classified as mutations within the gene and thus as alleles.

The number of phenotypes seem to be larger than the number of alleles. This can be caused by the different combinations of alleles possible, and the involvement of different modifiers (like sooty, dirty).

At least, that is my humble analysis.

[Bart van Zweeden](#) - Well [Guido Valent](#) .. I do agree. So, In fact it's a redefinition of the allele since we know more about gene-regulation. Comparing to the older books, those guys had no idea of the subjects you're mentioning. If an allele is just another expression - no matter how it's done (mutation, other level of expression, etc) than **{then it}** has lost its distinct characteristic. An allele should be recognizable and be distinct from another one.

But different levels of gene-expression could have a scale of values. "Therefore, a broad, modern working definition of a gene is any discrete locus of heritable, genomic sequence which affect **{s}** an organism's traits by being expressed as a functional product or by regulation of gene expression."

Well that's ok. But it could mean that we're not able anymore to distinguish one allele from another because it lost its discrete characteristics.

It's clear right now that an allele is no longer just another nucleotide sequence or just a SNP **{Single nucleotide polymorphism}** . A gene is considered including its promoter-region and enhancer and everything that is responsible for gene-expression. That's clear. Thanks Guido.

(A few books might have to be changed, I think..)

Anyway: Your analysis made things more clear. Thanks a lot.

[Guido Valent](#) [Bart van Zweeden](#) - **I do not think so**, in most cases. Regulation of expression can be done in many ways, only a few would classify as allelic - when caused by changes within the genetic code belonging to that gene (by broader definition).

This is usually still 'just a mutation within the locus', as the original definition of any locus is much less accurate than we now define genes.

[Bob Rodgers](#) - Given the complexity of events that follow the union of sperm and egg , and the multitude of possible outcomes , successful, partially successful, and failures , I think it is impossible to apply any sort of random conjecture as to what may or may not be the result. I think that the knowledge of the professors involved in the "Pattern" study is above question. However I am concerned at times that they seem to be depending upon advice from Pigeon Breeders in the western U.S.A. regarding terminology and similar guidelines for their report. Nevertheless , they did subject the patterns involved to rather intense measurements to establish identifications that were consistent. There are as , Bart and Guido , mentioned, many stages in between each established Pattern . These seem , in my view , to be due to conditions other than simply modifier genes such as sooty, smoky , Sooty , and Dirty factors. There are no distinct variations between Barless and Barred , however there are quite a number of stages on the way to a full checker pattern , and then again on the way to Dark checker such that they have been listed as distinctly : Light , Medium and Dark checker. I suggest that there are stages in between these as well. Then from dark checker on to the very dark (almost spread blue black) saturated T-Pattern. It is not clear if all of these variations have been tested to establish a continuum of descending order of dominance from the latter., I rather doubt it . The apparent fact is that these variations can exist with or without any one of the aforementioned darkening modifiers. The idea that Bart eluded to regarding the Barless mutant being a true allele based upon its imperfections is probably the defining aspect that allowed the University to do this study in the first place as they were able to make the link to the same genetic result in Humans . They must be able to establish such links in order to receive further funding for such studies as far as I understand. They made similar links in the testing of dilution , if memory serves me well. We have not heard anything more about their study of the DNA from collected feathers from Stipper specimens. Presumably that is underway .

[Bart van Zweeden](#) [Bob Rodgers](#), - I think you might be right. I didn't elude the idea that barless is a true allele. The only thing is what you have said before: " Light , Medium and Dark checker. I suggest that there are stages in between these as well. "

I think that too. But it seems (indeed) that other factors play a role as well. [Quido Valent](#) was absolutely right in remarking that the definition of 'allele' is a bit wider than I thought.

Anyway: we had a good conversation on this topic. This is after all what I am after: Trying to link the old-style-factors to modern, up to date insights of the DNA mechanisms.

Anyway: thanks for giving such a discussion a platform like this place. Great.

[Bob Rodgers](#) - My reference was to this comment in your opening statement of the Post : "where the barless pigeons turned out to have a malfunctioning gene. In fact this is a true allele. "

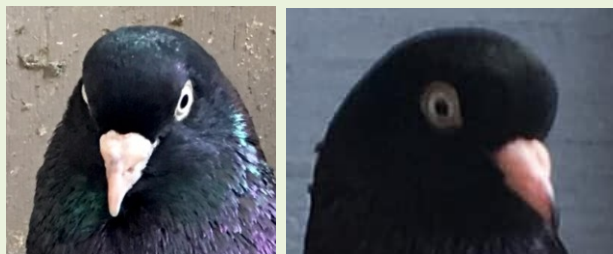
[Bart van Zweeden](#) - ok.

[Charles Kendrix](#) - I know in Europe they have different classes for the checker birds. I have heard that some attribute the differences in the checker pattern to recessive patterns being present in the bird that lessens the saturation of the dominant pattern. I have never read that any testing has been done to verify that hypothesis.

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**TOPIC #2 :** Those little annoying traits with BIG unknown reasons ! ( I edited out all comments by [Tom DeMunnik](#) as I plan a full issue on his Black Whiteside Topic later on in the year., where his comments that were here will be added.)

Do you often wonder how you can add or delete a trait that continues to plague your breeding results ? [Walter Wojcieski](#) has been doing just that and it led to a number of conversations in the past on several Groups , his and mine . Here is one such topic.: Question pertains to beak color... Both have smokey and no dirty factor.... What causes black snips on beak?



This is a problem that he's plagued with in black oriental rollers in certain family's.... Any genetic reason????

[Bob Rodgers](#) It is my belief that if Dirty was present along with smoky , the beak would likely be entirely dark. Smoky usually causes an otherwise normally dark beak to show some basal lightening causing the effect of a dark tip ( horn tip ). There does appear to be a slight tarnish of dark pigment on the left bird also. I am wondering if he may be hetero recessive red ?? I also expect that both birds may express more or less beak colour if exposed to various conditions such as increased sunlight and availability of natural foraging outside.

[Walter Wojcieski](#) [Bob Rodgers](#) thanks , SO your saying hetero recessive red may cause dark tip on beak if black bird is carrying it , if so how would this cause dark tip from red?

[Bob Rodgers](#) No not a black tip , but perhaps a tarnish as seen in that bird. The tip IS light as it would likely be in most recessive reds also. I have no idea if recessive red would make any difference , it would possibly also depend upon the genome /phenotype of the red. There may be no genetic difference between those two beak colours , just variance in expression.

[Bob Rodgers](#) Recessive red ( [Charles Kendrix](#)) showing dark beak..



**Walter Wojcieszki** Very interesting Bob, some oriental roller black family's struggle with this tip . I'm so excited about this list of post on this unblemished beak vs black snip beaks on solid black .... These dark snips have baffled me and I'm sure many OR breeders of other breeds for that matter.... There are lots of interesting reasons that have been discussed on this thread....

I have found through selection or culling dark snipped birds and selecting for untarnished beaks ... Offspring in a family tent to lose the snips, But what am I breeding out ? Through selection ? Or am I just breeding for refinement in this way of selecting beak color?

**Bob Rodgers** That is exactly what I was about to say ... you are not culling out the stained or horn tip beak , but rather you are selecting against whatever trait or traits are contributing to or causing that colour expression in the beak by inadvertently adding a stronger dose of the lightening trait(s). Since normally any self or solid coloured bird has a matching coloured beak., certain traits must be present to alter that and bring about a so called flesh colour. Those traits that we know about are few and just how they interact with one another is not fully known either. We think we understand smoky. We think we understand the grizzle family, the Pied family , and even recessive red ., but nothing is ever cut & dry. There are always exceptions . Following the influences of these and other modifiers is never a simple task. I still also must bring up the aspect of the influence that things such as diet ( vitamins & minerals ), and sun exposure can play a role.

**Walter Wojcieszki** Bob -- yes this makes a lot of sense on the moving around the whitening trait for flesh colored beak... I agree we don't know all about smokey...

I m guessing we don't accurately know what this whitening trait is ...

Breeding for refinement in this area of beak brings me to toenails....

Are they in anyway linked beak color and toenail color ..... In a well refined black solid Oriental roller we not only want flesh colored beak but unblemished flesh colored toenails...

I've seen flesh colored beaked blacks with jet black toenails?

I've seen flesh colored toenails with beak having a snip...

Is there any light you can share on this Bob?

This is confusing as hell as a breeder ☐ ...

My black here has toenails and beak flesh colored and continue to breed off of him hopping he passes these whitening traits down . I have pure recessive white ORs



X



=



When bred back to self black I produced the cleanest flesh colored beak black ... Upon continuing with tests every self black that was produced, besides whiteflighted type and pure white had beautiful beaks ... But what I didn't like, the risk of it throwing a white flight or so in the self blacks when these black self offspring were bred together -- so scratched that test ... But what I'm getting at is that something happened that I can't put my finger on but recessive white was responsible for the consistency of clear beak in these test birds.... What's your understanding of what happened in this tests ?

**Bob Rodgers** Well to start with , a recessive white is a coloured bird not expressing . Therefore its genetic influence totally depends upon what you cannot see. It could be a smoky blue , or black , or a recessive red , etc. It also of course can be a pied factor as is

evidenced by the white flights. Pied birds will usually produce clear beaks and toenails. I do not think that beaks and toenails are "linked" as in a "genetic linkage" , but I suspect that the skin of these birds is not totally pigmented even though there are pigmented feathers . Basally the feathers are probably not expressing pigment either, I may be wrong in this regard... I have had Baldheads that had clear beaks and clear toenails that changed in the summer to have horn tip beaks, I cannot recall if they faded out again in the winter months ... It would take some very carefully documented combinations to finally sort out some predictability and in turn establish just which genes are obviously responsible in each case.

[Walter Wojcieszki](#) Hmm very interesting Bob...

The consistency of clear beak blacks differ from family to family....

Some just stay clear ---- some clear and slightly tarnished during molt and return clear.....

Some black tipped but when feeding young tend to go clear and returned tipped after breeding season .... So its confusing what we are really dealing with in different family's .....

[Bob Rodgers](#) Seems that just as I mentioned with the sun's rays and nutrition , the stress on the immune system is affecting the amount of pigment cells being produced in the skin. This of course cannot affect feather as it is no longer growing. Smoky darkens light areas of feather while they are growing , such as all albescent areas , the underwings and I think without us realizing it , the expression of coarse spread granules , which accounts for the somewhat blurred effect we see in bars and check patterns. It lightens the terminal tail band, and skin including orbital eye skin , beaks and toenails. I am wondering if it does so by in effect robbing the skin of pigment cells which can in some cases be replaced in ideal health conditions with a lot of direct sunlight and natural food supplementation even after the feathers have stopped growing. ??

[Walter Wojcieszki](#) [Bob Rodgers](#) so what I'm picking up here is that your theorizing that when in the case that the bird has a certain amount of smoky ,...affecting the darkening of the new feather as it grows in the molting process --it robs the lightening up of the skin ,,beak ,toenails as the smoky amount has been diverted to darken new feather ? Growing in this beak takes on a dark snip? Now birds that have more smoky factor can both balance it both ways darkening feathers and whitening beak etc -- and keep clear beak at all times? What's your thoughts Bob ?

[Bob Rodgers](#) The bird is either smoky factor or it is not. Hetero smoky may express , as we see intermediate stages , but I do not think that is proven. It may cause that lightening by in effect robbing pigment from the skin areas, but leaving a horn tip in the earlier hardened areas such as the tip of the beak and toenails. Modifiers such as the Dirty genes and possibly yet to be identified genes may cause the variation , or it may be other factors such as an instability of the smoky gene , and/or the health conditions of the growing chick etc.

[Walter Wojcieszki](#) [Bob Rodgers](#) that's interesting ---bird in next comment, is a red out of an all dirty factor family of almond ,Stippers.

Here's a red out of a almond pair that possesses dirty factor that shows snip .



[Bob Rodgers](#) As you know , the stipper gene often leaves a horn tip beak. Again we are dealing with genes that cause partial reduction of pigments from the skin out. Recessive red again is an epistatic trait , so it depends upon what this bird is masking.

[Walter Wojcieszki](#) [Bob Rodgers](#) this red is masking kite t-pattern blue series .

[Bob Rodgers](#) and probably other modifiers including smoky and Sooty . It becomes a guessing game in such cases.

[Walter Wojcieszki](#) [Bob Rodgers](#) you just mentioned that Stippers tends to leave horn tip beak....

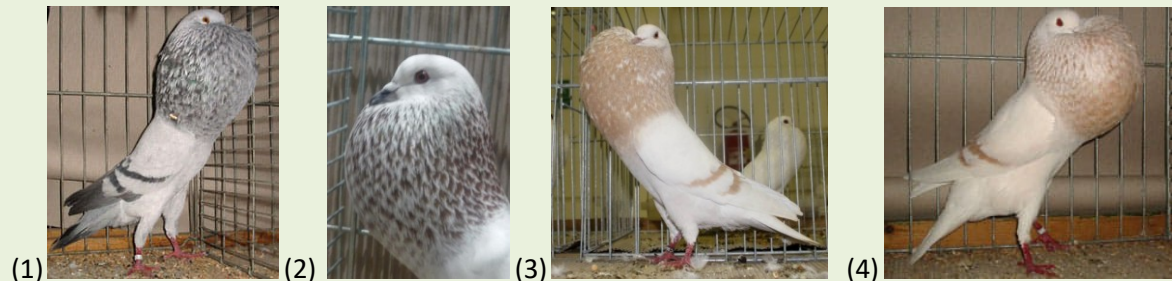
Do you think black mixed with Stipper has caused this residue of this horn tips on beak that has been left in the black color or certain OR family's ?

[Bob Rodgers](#) Stippers in any breed may cause horn tip or stained beaks ., I think it is simply the stipper breaking action on pigment over the entire bird that can be irregular or in the case of a horn tip , a bit more specific . We may think all of our birds get ideal diets and healthy growing conditions , but we can see just within each nest , one chick will blossom while the other struggles . There are a host of reasons why each may not get its perfect share of all the ingredients it requires nutritionally , but also we know that the same may apply "genetically" . A host of things can go wrong in the entire process from the moments of genetic recombination (fertilization). Some just get robbed of certain specific conditions , genes , influences , such that they do not get to give the expected outcome , and again during the growing process other factors may be cheated out of everything they need to flourish!

Editors' request { if you have anything to contribute that would help put Walter on the right track to controlling the expression of a clear beak in recessive reds and good shiny blacks , here is your chance to share it and have your name affixed to the advice for all to see ! }

**TOPIC #3** : Last issue we talked about a white red barred grizzle , and the topic quickly grew off topic, but I said I would add the remainder of the posts this issue to be fair to all who had taken part just the same !

Below photos : (1) Graeme Boyd Intense blue bar Hetero Classical Grizzle . [Jerry Sindelar](#) {edited} hetero grizzle Silesian ,no ice involved. (2) [Jerry Sindelar](#) hetero grizzle ash red. (3)[Jerry Sindelar](#) ash yellow-no grizzle (4) [Graeme Boyd](#) What about this one?



[Graeme Boyd](#) How about the one that initiated the post, the white with red bars, is that ice?

{At this point in the discussion Graeme commented on a website and gave a link , however upon looking at it I noticed several things. One was that some of the phenotypes were not correctly named , and Two, specimens of dilute ash red hetero Grizzles did show a range of tones , but I think due to other modifiers. Some ash birds even without the Grizzle trait will express more silvery white on the neck area whereas others may express much more "yellow" than normal. Likewise the shields and flights may be much lighter "cream" in some than others.}

Hi Bob,

White Ash Red Bar and Barless are "Whitewing" as found in Crescent Pigeons and Ash Red Archangels. I bred Ash Red Ice Damascenes back to pure Damascenes for five generations and they were still not "white" Ice.

Paul Gibson has the mutant Whitewing (Archangels) in his book but apparently did not realize that Crescent Pigeons were the same thing. Gene Hochlan.

{Then the discussion moved to Powdered or the Milky factor . There is another TOPIC here that we have dealt with before several times regarding the Light silvery trait in Show Homers that is thought not to be Milky or Ice because the originator of the phenotype was believed to have developed the trait by selection of lighter blue bars over many years . Photos John Ferber - Canada.}

Editors: { Note below : the bleached / erased bars also typical of the Ice factor.}

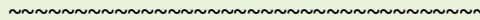




[Quido Valent](#) [John Ferber](#) homo ice ash-red?

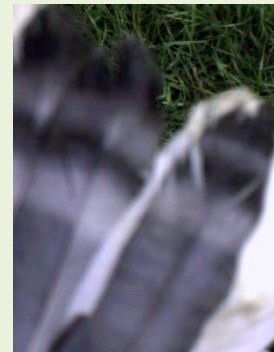
[John Ferber](#) No ice, Selective breeding for lighter ash red.

[Quido Valent](#) [John Ferber](#) so, no ice and no grizzle? Would be interesting to find out which modifiers ARE at work. Do you know what happens when crossed to blue? Do you have pics in juvenile plumage?



**TOPIC #4 :** The recessive opal gene symbol (o) . by Porumbei Colorati .

Recessive opal t-pattern cock...I will use it to start a barless recessive opal project and of course to add another 1-2 pigeons like him to my loft.



(3)

Here's the opal recessive I like... thank you Ramon for the pigeon. I hope to get something nice with him too... maybe reward me with a pigeon where barless and opal recessive are linked.

Editor { We have seen how quite a number of genetic traits : Stipper alleles , Dominant Opal, Rusty, rubella , etc. have rather profound and quite similar effects on the tail feathers of pigeons. This often expresses as horizontal striations running across all feathers in a disorganized manner. Some are very defined others not. They often appear as if they are demonstrating a struggle during the growth of the feathers whereby pigment sometimes is laid down normally , while in other areas it misses altogether. Both the condensed and clumped smooth spread are affected. Some of these traits correct themselves in subsequent moults such as Dominant Opal and Stipper , while others do not. No surprise , most will be much lighter to almost white in the juvenile stages as the pigments are always weaker in the nest. Pictured above, third photo is a juvenile tail of a Dominant Opal bred by Bob R. }



**TOPIC #5 :** The homo Indigo and homo or hemi brown ? - by : Grzegorz Szpryngiel

Gender uncertain at time of photos .



Editors { When we think of a Homozygous expression of Indigo , we usually picture a spread factor bird with an almost white phenotype but with colour laced feathers; however, the pattern birds often are simply not changed much at all. Blue series birds are changed to appear more as ash-reds, but Ash and brown series birds show little or no significant effect. The presence of one or more other 'bronze' traits may also alter the phenotypes to appear rather similar regardless of base pigment}

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TOPIC # 6 : Gazzi Design and recessive white - alleles ? by Charles Kendrix from "Genetics Pros & Cons" . FB.

The discussion of recessive white got me thinking back to a pairing I had made a couple of years ago. I was attempting to put gazzi into rollers, and I had read that gazzi and recessive white were alleles, and that gazzi was dominant to recessive white. I used a recessive white roller hen and a mismarked (white in flights) German Modena cock bird. I only bred one round off this pair because the result was not what I had hoped for. I was hoping that gazzi was dominant and using the recessive whites would allow me to track gazzi in the heterozygous birds. It did not work out that way. In the picture of the two squabs in the nest the smaller one only got a little older before I lost it. It was going to be a badly mismarked gazzi with a lot of white on the head some color in the breast, white flights dark shield, mixed tail. The other youngster matured and is pictured. She was a white with three or four colored tail feathers. She was also bull eyed.



Bob Rodgers Gazzi to white has produced tail marked young in the lofts of several people who have shared their results with me over the past while. It seems that Tail mark is a component of Gazzi ., and I would therefore consider your offspring to be in effect Gazzi., This would support the allele theory. The bull eyes would be due to the lack of pigment expression around the eye in a mismarked pied. One could probably up-grade these peds to a Gazzi Design , but I rather doubt they would ever reach near perfection without outcrossing to better marked birds.

Brad Stuckey This outcome opens up an interesting idea to me. Do y'all know the relationship of tailmarked Owls and Fantails to this type of breeding?

Charles Kendrix I have never read or heard anything of it. I used to see some commons with the colored tails around. I wondered how those came about but never had one to test.

Bob Rodgers I may be totally wrong suggesting that such pied phenotypes bred from a Gazzi can be up-graded to Gazzi , as in mating of two Tail marks not likely ever would because they are only a component of a larger Design , but certainly if tail mark is mated to Gazzi Design birds, they should up-grade . There have been some unexpected results from Helmets also producing colour on the shoulders/ back. I think Michael Spadoni and Abdullah Al Kafi have done some crosses involving those. I have had tail marked birds come out of my Baldhead Rollers , assuming that a tail marked bird had been introduced years before. Anwarul Kabir had tail marked Modenas come out of whites mated to Gazzi. Some did have a few colored feathers on the head as I recall.

Mike Bordelon I crossed a white and a gazzi and got a bird, mostly white, with the color in the same place as the gazzi markings.

Bob Rodgers Here are some pics of a feral family I worked with: The hen in the back corner is wild caught , Her mate is next to her (a tail mark) that I will extend the pedigree here below. The youngster in the foreground is nearly a tail mark save a couple of feathers on its back.

Editors { We will leave this topic here , with a plan to continue it in a near future issue , so that we have some time to get your input again . We KNOW that there are many out there who have had similar experiences in your lofts and that there should be many photos that would help make the information more interesting and easily understood ! }

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**TOPIC # 7 :** Comments from you our member/readers.

From Zandri Reynolds - hi thanks so much! ill for sure enjoy this have a great day! zandri

From Tony , brancatoranch - THANK YOU,I LOVE THE GENETIC NEWSLETTER.VERY INFORMATIVE.

From Shoibal Sabbir - Well received dear . Thank you.

From Nilesh Rajput - Thanks sir !

From Vivek Raj- Hello sir, Thanks for sending the monthly Genetics News Letter ,Thank you again..... take care and be happy. **Best Regards Vivek Raj R .**

**From Jerry Sindellar** - Thank you Bob, well done again, lots of work behind this.... and lots to read and learn for readers... Jerry with regards. Bassett's photo is marmor black starling-marmor startaube (German) picture from Leipzig 2018 .



From Frank Seip - Hey Folks! Another interesting and informative article enjoyed and appreciated! Thank you Frank Seip.

From Hein Van Grouw - Hello Bob, Thanks for that. Hope you're keeping well.

[Charles Kendrix](#) Thanks Bob, I really like the format on this one with the topics highlighted.

Frank Hammond - Thanks Bob .

Hello Bob, I am writing to ask you to remove my father, Hyliebl Lofts from the newsletter distribution list. Unfortunately, he has passed away. I'd like to thank you for continuing to produce it. My father had enjoyed reading it for many years and looked forward to its arrival each month. All the best to you. Sincerely, Minnie

Eds. {**We are sincerely sorry to hear of the passing of Mr. Hyliebl.** Thanks everyone for sending in your comments }



Blue bar show type homer hen - bred by Bob Rodgers.

REMEMBER , this is everyone's Newsletter , we welcome any and all input , so do not be shy , let's hear your comments and ideas . If YOU the Members contribute info in any way , your name goes on it first!