HAPPY NEW YEAR !

The **Pigeon Genetics** Newsletter

News , Views and Comments .

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(1) Beginner genetics :

(Dominant Red) Ash-red series : symbol (BA)

The descending order of Dominance places Ash-red Series birds at the top in relation to the other two base Pigments at the Major Colour Locus . It is Dominant over both Blue and brown series birds . The three are sex-linked alleles or alternate choices at that locus (spot) on the strand of DNA . In order to be pure for the Ash-red trait , a cock requires both parents to give him an ash-red gene. Hens however, need only to receive one ash-red gene from their Sire to be pure for it.

Part of this mutation being different is that the colour pigment granules 'phaeomelanin" are shaped differently than the" eumelanin" of Blue or brown series birds. They may be clumped together or laid down in a specific manner so as to present different colour tones or hues as seen by the naked eye in the various PATTERN mutations.. The "Red" is often enhanced in its expression by the presence of at least one "Bronze" factor ., or influenced by other Dominant modifiers that darken pigment ., or by carried recessive traits that enhance pigment.

Heterozygous males (impure for Ash-red) which are split for (carry) blue , will have flecks, spots, and streaks of black particularly in the flights and tail feathers. This may be on the shields as well and will increase in expression with age. (This expression gave rise to the term mealiness or "Mealy" , which has been overused in more recent years to mean just about any Ash - red series bird) .

(above) Mealy cock Spread factor & heterozygous for (blue/black) with black flecks or "Ink spots" (Woodstock Show) Photo by Jerry Sindelar .

Great Photo from Facebook by "Pigeon Racing National" Impure male & young that shows he is split for blue with a blue daughter .

Homozygous (pure ash-red) males , some heterozygous (impure ash-red) males and hemizygous (pure ash-red) females usually will not show the ink spots with very rare exceptions and therefore are a very clean clear Ash colouration such as we see in this group photo..

When the impure ash-red is split for brown , any spotting will be brown.

Ash-red Bar (Intense phase)

Cream Bar, (dilute phase).

Ash-red may also be affected by the gene for dilution to create a lighter phase (cream/ ash-yellow).

(We will cover the "dilution Phase " with more detail in the March Issue !)

Saturated T-pattern Intense & dilute

Barred Pattern Intense & dilute

British bred.

All of the modifiers that affect Blue series birds may be applied to Ash-red series birds also , but with differing phenotypical results. (phenotype is " what you actually see on the bird ") (genotype is the genetic make-up of each bird that produces its specific phenotype).

The smooth spread of Dominant red birds is the "ASH" colour . The tips of flight feathers and to some extent the sub-terminal tail band are almost white in expression, not brick red. It is the lightened colour in these areas and the tips of the lower secondary flights that will help you to identify actual ash-reds from other similar phenotypes.

The "BRICK" Red of Dominant red is influenced by various bronzes ., and factors such as Dirty (V) , which will result in richer darker tones mainly in the Pattern areas (bars and checks , or saturated wing shields). The smooth spread areas are usually very light ASH from which the Colour name came by Willard Hollander !

From the net .	Heinke Andreas	Bertoz Kok
T-pattern ash -red	Ash-red checker, het . blue	Grizzle ash-red Barred
		

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We have discussed Ash-red on the various Facebook Groups etc. Most Breeders are very familiar with this trait . There are specimens in just about every loft in the Country regardless of what Breed (s) you may keep. However there are look-a-likes that can fool even seasoned Breeders .

Both Intense and dilute hetero Indigo Blue series birds can resemble Ash-red. Homozygous (pure for Indigo) blue series patterned birds can resemble ash-reds , such as this bird below of Octavian Sarofolean. (note the dark plum colour of the head and tail base).


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From Arnau's Post on Facebook ., "rubella Blue Checker " .

Below a recessive opal blue series bird Facebook Group , I did not get the breeders name .

(2) Intermediate

Last time we learned from an excellent Article written by **Jith Peter** for our advanced Genetics section , from his study of reports out of the Universities of Utah and Texas, that there are three genes with the following name abbreviations — **Tyrp1, Sox10** and **Slc45a2** that control multiple color "phenotypes" , or "what we see" , in pigeons . Researchers found that the ash-red mutation took place just once and was distributed throughout the species by selective breeding. This spontaneous mutation happened within the **Tyrp1** gene that plays a large role in color determination .

The study teams at three Universities in the U.S.A., learned that coding and regulatory distinctions in the interactions among the genes **Tyrp1, Sox10** and **Slc45a2** affect multiple color phenotypes, or appearances, in pigeons. Different forms of **Tyrp1** make pigeons blue-gray, red or brown. In the pigeon world , fanciers call these Blue , Ash ., and brown series birds with Black ., Dominant Red ., and chocolate pigment respectively .

Different versions of the three main pigeon-color genes affect the general proportions of the melanin pigments – eumelanin and pheomelanin – and their consentration within cells. Eumelanin is black and brown/chocolate pigmentation, while pheomelanin is red pigmentation in feathers.

Variations of **Sox10** make pigeons appear as another type of red , (known to us as recessive red), regardless of what form **Tyrp1** takes , so the recessive red gene mutation Symbolized (e) , can mask or hide the base pigments of Black ., Dominant Red and chocolate so that they each may be seen by us as "RED" pigeons . That masking is referred to as being "epistatic" .

The researchers found also, **Slc45a2** makes the pigeons' colors either very strong or look washed out. (we call these "Intense" & "dilute " phases) . We also know that there is an intermediate phase about 1/4 way between Intense & dilute that we call "Pale" factor phase .

The **Slc45a2** gene determines if we see those pigments as an Intense or **dilute phase** , so that Blue becomes silver ., Red becomes yellow ., and chocolate becomes Khaki. (More on this by **Jith Peter** in the March Issue , featuring dilution).

(3) advanced genetics :

Despite all that we now know about the Ash-red gene ., there are still effects that we struggle to understand ! The main reason is that we usually do not know or follow the inheritance of other modifiers that either lighten or darken the original colour.

You may have read that recessive red when carried hidden by an ash-red bird , causes the flights and tail feathers of such ash-reds to be a much darker bluish colour than the normal ash tone ., and the normal almost white sub-terminal band becomes a dull greyish tone . Now , there seems to be no logical reason why that should happen . Usually the neck and shield areas are made more red in such birds , so why not the flights & tail ?

The most likely answer would be to assume that it depends upon just what the recessive red parent brings to the table ! Was it hiding spread ., T-Pattern or any of the darkeners , Sooty , dirty , or smoky? In the case of most recessive reds the answer would probably be yes .

What about recessive reds that mask Ash-red . When they are mated to Ash-reds , do the resulting offspring still have dark blue/gray flights and tails? Has anyone actually documented those matings ?

We also have witnessed some rich red birds that have proven to be ash genetically ., but appeared to be excellent recessive reds . This has been attributed to one or more bronze modifiers .

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Ash-reds that are a combination of Spread factor , Heterozygous Recessive red / yellow , and the darkening agents, (Sooty, Dirty , and/or smoky) along with the darker Patterns such as T-pattern , may not appear to be "Ash" at all. Below is a Pouter bred by Mohammed Bilal that is out of a Black hen and sired by a recessive yellow cock that appears to be masking ash-red . The bronze cast in the shields may be the hetero (e) ., or bronzes that it brings with it . Those traits alone ; however, are rarely enough to cause such a darkened Ash. (anyone wish to add information) ??


sire at right .

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Letters from you :

Hí Bob,

The black pigment is not herited in intermedier way!!!! Normaly the mutation is what use to relate to the wildtype allele, thus brown is, what is recessive to the wildtype ,and Ash red is, what isdominat to the wild type. Black, than recessive in one, and dominant in the other relation, but never herited intermedier. This should be corrected! Sorry ! Arpad

Editor's reply :

I do not get what you are saying exactly , as it seems to simply repeat what I said while saying I should correct what I said. Firstly The Blue Series is indeed the Black pigment of the wild-type . It has mutated to a Dominant Red pigment ., and a recessive chocolate pigment. They inherit in a descending order . Ash Red / Blue Black / brown chocolate. Perhaps I could have chosen a different way of saying that other than to refer to Blue/Black as an intermediate . It is never First in order , but always second to the Dominant Red . , with brown below it ., thus in the scheme of descending order of inheritance of alleles it is intermediate.

Yes , it seems that didn't got what I tried to explain. Could be because of my limited English.

More than two allales necessary forming a row of hierarchy, and yes, black stays in the middle, but the term „Intermedier inheritance „ not describes this fact. Intermedier inheritance occurs within two allales (as far I know), when the heterozygous form produces a phenotype , that falls between the parents (like: black x brown was produces brownishblack F1). Also it is synonymous with „ Incomplete dominance', "partial dominance") It not use to compare black to both its allele simultaneously, since always only two of the possible alleles are on the stage. With regards: Arpad

Been I confused because of intermadi**ate** vs intermedi**er**? Á.

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From Madren Gilligan , (Edited).

Dear Bob, many thanks for PGNL.........I have been receiving it on and off now for over 50 years........a lot of interesting reading Excellent

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From Mike Kudlam (Edited). This stuff is way beyond my pay grade but the pictures are "pretty".

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Hi Bob,
GOT THE DECEMBER ISSUE! I have not gotten my computer problems resolved as yet but the newsletter came on my laptop in the 'recently deleted' file. Maybe the others did too since I was not checking that file until recently and emails do not stay in that file but for a few days. I moved the newsletter to my 'old mail' file then clicked on keep as new to put it into my New Mail file.

I told my wife I got it and her question is how is he doing. My answer "Better than I was." I like the way you integrated the info from past years with the newer info from the Utah work on genome. It is very informative and understandable the way you wove it together. I suspect the two recessive reds are what we have called recessive red and unimproved recessive red. From what I did with these two and ember, it makes more sense to me that since ember reacts differently in substance from the other two, that that probably is the case.

Keep up the good work. Best regards, Paul G.

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Hi Bob,

I read your note about taking over as the editor of the newsletter. I think congratulations are in order but i am not sure! :-) it sounds like a big commitment.
I am a student of Pigeon Genetics and would really appreciate bring included in the monthly email.
You have my email address above. Thanks Bob. I look forward to contributing and learning. Mike Vito

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A beautiful Ash-red bar Old Dutch Capuchine , (anyone care to state genome exactly).

Are these birds actually Classical Grizzle ., Sooty ., smoky . or a combination of those traits in one way or another ?

A very nice smoky factor ash-red bar posted by Qafi's Loft on Facebook

Dominant red saturated T-Pattern , only ?? , Photo Mick Basset (England/Germany)

Hemizygous (pure) ash-red checker Pied (baldhead Design) old hen. Bred by the Editor .

Hemizygous Ash-red ELFCL Tumbler young hen. Breeder : Editor. This grizzle has not been identified to my knowledge. Two such birds will throw dark Mottles. Similar light print grizzles are seen in (highfliers and some Tipplers), any ideas !?

Ash-red T-Pattern ., and Ash-red T-pattern Almond Indian Fantails , Bred by Jith Peter , India.

T-Pattern ash-red showing typical smooth spread ash tail band .

I would like to explain why I use certain colour terms . There are those who will argue that "scientists" have traditionally used certain colour terms , so we should not rock the boat. We know that some terms are phenotypical in nature and some genetic. In the case of the wild type we all agree that the pigment is "BLACK " ., yet under the microscope , Christie & Wriedt saw that as charcoal grey. If we were scientists studying rats or mice ., we probably would see the pigment as black just as we actually view the animal.

However in Pigeons we only see a pigeon as Black when Spread Factor is present . The rest of the time , the pattern series causes us to see it as a gray or (blue) phenotype with the coarse and spread areas only as black. Thus we have a blue series bird caused by variations of the distribution of Black pigment.

In the case of the RED pigment ., something quite different takes place whereby we see the Coarse spread areas as Red , but the smooth spread areas as Ash. Again because of the Pattern series , the remainder of the bird also basically appears phenotypically to us as an ashy grey. Even when Spread factor is present , we see it phenotypically as ASHY grey as opposed to a Brick Red Pigeon unless other modifiers are present . Therefore the Ash -red pattern series is also dependent upon modifiers to add or delete Red expression phenotypically speaking.

Cristie & Wriedt looked at the third pigment under the microscope and named it Chocolate , which is the genetic term I prefer to use for this pigment mutation in pigeons . It is the equivalent to BLACK in wild type. When we add Spread factor to the Pattern Series ,we see the bird as that Chocolate colour ., but otherwise we see it as a brown variation of tones , thus the brown series .

Take a shot at the genotype of this ash-red series bird !! Nilesh Rajput photo on my facebook Groups .

This is far more than just the usual fine barring that is often seen in the feathers of some blue series birds .

That's it from the Pigeon Loft this Month . Next Month we talk about the brown series with Chocolate pigmentation. Then in March we look closer at the Slc45a2 gene where a mutation produced dilution.