



The **Pigeon Genetics** Newsletter

News , Views , & Comments

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Beginner Genetics Volume 8 page 1.

Firstly I just want to say that co-Editor Jith Peter has moved to Oman ., and while he will still be contributing to the Newsletters , he may not have the time to devote to them that he has in the past. I sincerely wish him all the Best in his new location .

OUR JULY TOPIC IS "OYSTERSHELL" , a phenotype by Lynn Krall

This Month I thought it would be of interest to take a closer look at the Beautiful Indian Fantails as developed by Ms Lynn Krall of the U.S.A. She has been breeding from a closely related flock for many years and rarely has introduced any new blood in the past twenty. These carefully inbred birds are the reason for her great success in fixing the family traits she found most desirable according to their Club Standard.

There also was another reason for revisiting her work . A few years ago she shared photos with Dr. Lester .P. Gibson for this Newsletter . They featured a specific phenotype that occurred in her flock that she eventually named " Oyster " or "Oyster shell" .

She makes no claim that this is a new mutation ., but there are those who have suspected that it might be . Due to the fact that all of her birds are closely linked ., and the fact that she was not eager to bring in new birds that could potentially bring in other problems ., she was unable to run any particular

Breeding tests that may shed light on just what was the reason for the unique phenotype.

She then decided to share a few specimens with three other Breeders so that they may conduct some tests to reveal the genetic make-up ., and its relationship in the Colour genetics scheme of things . These tests are underway now .

"OYSTER" is bred from her Chocolate / brown series birds in particular ., and maintained from brown matings .



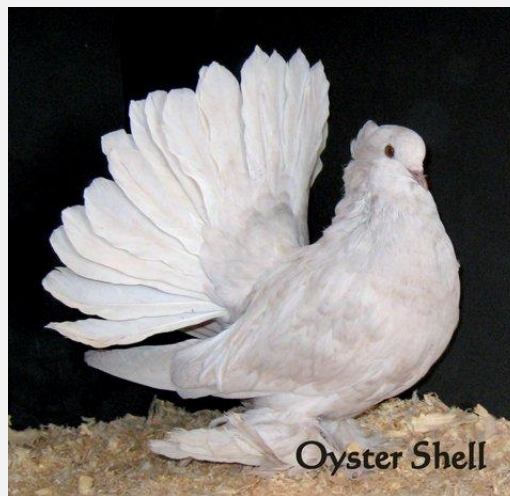
I promised her that I would not discuss any possibilities ., nor give rise to any beliefs or claims ., just simply showcase some of her beautiful birds ., to which she agreed and thankfully provided us with her photos .

Below is her letter to me Edited :

Hi Bob,

It would be nice to put the Oyster Shell pictures and breeding in the newsletter. I breed several of them each year, but the genetics making the Oyster Shells has not been figured out as yet by other pigeon breeders. It takes years to figure it out and my loft is so inbred that I did not feel like I could do that. I have only brought two Indians into my loft in the last 20 some years and so everything is related. I have an idea how I happened to produce them and what genetically happened to make Oyster Shells. But to prove this they needed to be bred to birds that are not related to mine. The pigeon breeder needs to know exactly what the mate to an Oyster Shell carries in their genes when they make baby pigeons, and not many breeders know or keep track of that. Until Tim Kvidera, Dan Skiles, and Paul Tapia who now are raising some in their lofts, produce several with mates that are not related to my loft of birds, we will only then know the genetic answer to how they are made, and it will be correct.

Lynn





Brown/Oyster Chimera Mosaic.







Oystershell youngster .

Intermediate Genetics :

I think that the more I speak with Breeders the more I see the interest in Colour Genetics growing ! One matter that I thought we could address is the idea that we cannot always expect an answer to that question " What Colour is This " ? To

begin with , as I have said in earlier Newsletters we are only certain of three Base Colour Pigments . Black Pigment, Dominant Red Pigment , and Chocolate pigment so named by Christi & Wreight but today the science world simply uses the term Brown. When we see these three expressed in a wide range of tones we refer to them as "Colour Series" . The Colour Series are the result of the base pigments applied along with the "Pattern" series . These no longer look BLACK, RED ., nor Chocolate to us , so we call them Blue Series , Ash series , and brown series. They cannot look like this without the associated "Patterns" Barless ., Barred., and the Checkers . (The Checker series is sub-divided into light , Medium , and dark check). I think a further observation may reveal that there are easily several more actual Checker patterns , but most are as a result of additional Modifiers as opposed to Mutations of the Pattern Series. Spread factor allows us to see the true pigment colouration over Pattern in the Black and Brown Series but Dominant Red appears as Ash due to granule shape and position.

No matter what modifiers we can think of ., we must apply them to the combinations of the Three Base Colours , and the Base Patterns . It is not possible to have any colour without a Pattern and conversely , it is not possible to have any Pattern without a base Colour. We sometimes hear people speak about a BRONZE Base ., or an Almond Base referring to what they consider a "ground " colour. That is not correct genetically speaking. The Ground Colour is the Base Pigment. In the case of our so-called Almonds , the (St) Stipper gene breaks up the Base pigment of blue /Black ., ash-Red., or brown/Chocolate and leaves only streaks of it condensed in a scattered fashion throughout the feathers. In the case of Spread factor birds ., the remainder of the feathers then appear colourless or whitish, in effect without colour pigment. If a bronze modifier is genetically present , then for some reason Stipper does not ., cannot , BREAK it down without spread factor , thus we see a tan coloured tone over most, if not all feathers . This bronze residue is not a Base pigment. It therefore is not the "ground " colour.

Bronze is made to appear deeper in tone with the addition of another modifier , recessive red , and the Stipper gene is further impeded by this epistatic trait, thus

a deeper red colouration is created that we call Deroy, or in effect a recessive red Almond /Stipper.

When we look at any of these colours and tones of colour, we first must ask ourselves , What is the Base Pigment? Then what is the "base Pattern" ., Then we should look for the tell tale signs of any and all modifiers that may or may not be present. I think that the three main modifier traits that I see most often misidentified are Dirty , Sooty ., and smoky. These can alter the effects of all of the other traits and sometimes render them as completely different in appearance .

Coupled with these facts , is the variation possible within the genetic mutations . They seem to be endless and can give rise to the belief that we are dealing with new Mutations, when in fact it may simply be a combination of known traits . Actual MUTATIONS are much more rare than some may think!

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I have been looking at various posts on Facebook from around the world and noticed that people are making distinctions between the Indian Fantails bred in India and Bangladesh and Imports from America as being (1) India Fantails ., and (2) American Fantails . Unfortunately many of the birds that may have been exported from America appear to have been the "culls" from "Fantasy" breeding stock that trace back to Jacobin Outcrosses. These birds as a result, have extremely long flights and feather in general. They are all "Indian Fantails" in foundation blood and attributes. The differences lie in size and overall type for show . The American Fanciers have been developing the Standard on an ongoing basis . FEW have reached the Ideal as depicted by the most recent Standard.

Traits that have not become popular in the U.S.A. , but have been developed in India and Bangladesh are : Very large muffs ., Neck shaking , and high breast carriage which is a reason for the imbalance that causes neck shaking. In America a more balanced stance is required , little or no neck shaking ., and



moderate muffs . The Tail is to be large and 3/4 circular in an overlapping double row of feathers . The flights carried below the tail but not dragging the floor.

~~~~~ Bob R.

Advanced Genetics :

Last Issue brought a few remarks and questions . One was from Michael Spadoni of Australia who wanted a better understanding as to why we had stated that we suspected that the Lalband-Ghagra gene MAY be an allele of Ash-red rather than stating that it was simply an allele of Blue/Black at the Major Colour Locus . Jith gave an explanation on Michael's Australian Facebook Pigeon Group which I have re-written and edited as to sentence structure and spelling for this newsletter.

THIS GETS DOWN TO THE MOLECULAR ASPECT OF GENETICS < SO WITHOUT AT LEAST A BASIC KNOWLEDGE OF THAT, NO EXPLANATION CAN BE MADE SIMPLE ENOUGH FOR ANYONE WHO IS NEW TO IT .

Jith Peter - Michael, we know that the information present in the gene (DNA) , first copied into RNA and the RNAs are used as a template to make proteins. These proteins take part in the biochemical process. Proteins are made up of amino acids, in other words a protein is a sequence of amino acids (bit of biochemistry). In simple terms, proteins have two portions , a signal peptide and an active portion. The signal peptide portion acts as a driver and takes the protein to its target. Once the protein reaches there, certain enzymes break (cleave) the protein and remove the signal peptide portion and then the rest of the amino acid sequence (called mature protein) takes part in the biochemical process. This is what is normally happening in the case of the expression of wild type at the Base locus (blue or black or whatever you want to call it). In the case of Ash red, the mutation happened right at the cleavage site of the signal peptide of the wild type gene and that results in a dramatic reduction in the cleavage efficiency, so the breaking and removal of the signal peptide is not happening in most, if not all proteins , coded by the Ash red variant, that alters the processing and movement of protein within the cells (melanocytes) which results in production of red pigment instead of black. Now we come to our hypothesis that in the case of Saffron, this mutation may be somewhere beyond the signal peptide, in such cases it could affect the cleavage efficiency but to a lesser degree compared to the Ash red mutation, that could be the reason for the partial dominant inheritance of the Saffron mutation. I hope this makes sense. It may or may not be proven as the case for the Saffron mutation, but such a case is possible.

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A **signal peptide** (sometimes referred to as **signal sequence, targeting signal, localization signal, localization sequence, transit peptide, leader sequence** or **leader peptide**) is a short (5-30 [amino acids](#) long) [peptide](#) present at the [N-terminus](#) of the majority of newly synthesized [proteins](#) that are destined towards the [secretory pathway](#). These proteins include those that reside either inside certain organelles (the [endoplasmic reticulum](#), [golgi](#) or [endosomes](#)), secreted from the cell, or inserted into most cellular membranes. Although most [type I membrane-bound proteins](#) have signal peptides, the majority of [type II](#) and multi-spanning membrane-bound proteins are targeted to the secretory pathway by their first [transmembrane domain](#), which biochemically resembles a signal sequence except that it is not cleaved.

**Peptide:** A molecule consisting of 2 or more amino acids. **Peptides** are smaller than proteins, which are also chains of amino acids. Molecules small enough to be synthesized from the constituent amino acids are, by convention, called **peptides** rather than proteins. The dividing line is at about 50 amino acids.

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Last say - to our Readers :

Axel Sell wrote :

thanks for the interesting Special Issue. I have a short review at my homepage, and there was still some response showing the interest in the fancy. From the appearance it would be interesting to test the relationship with reduced and rubella.
Best wishes
Axel Sell

Rick Wolf wrote : Bob, you always have a lot of knowledge about genetics. Do you know anything about the Hubbell breast on squabbling pigeons? The H breast is dominate, but don't know much other than a few articles that were inconsistent on the info for the H breast. Thanks in advance for your vast knowledge in genetics on the H gene, and all of the other material I have received from you on pigeon color genetics. Rick

My Reply : Hello., Sorry for the late reply. I have nothing new to add regarding the "H" factor .. It seems that any writing about it simply states that it is indeed a Dominant autosomal gene , and that seems to have been the end of it. Obviously as with any mutation ., selection will assist in not only fixing family traits , but also in developing the characteristics to a greater extent . We see that in all pigeon Breeds today where many extremes have been reached. I will make mention of it in an up-coming Newsletter and perhaps someone has something more to add of interest. Thanks for your question ~ Bob R.

Andreas Boisits wrote : [Hello Bob](#),

Thanks for the very good analysis (also to your indian friend Jith Peter). Would it be possible to get some pictures of the breed and to do a short article about the mutation and your analysis for the austrian pigeon paper « Freude mit der Kleintierzucht » or even for the German paper „Geflügelzeitung“?

Also wrote(Edited) : Just one fact I would like to mention. It is the unique possibility to get sulfurlike bars or checks or even darkchecks on an otherwise nearly intense colored pigeon with the new trait saffron. Therefore I plan to show at least one or two pictures of a commonly dilute pigeon with sulfur colored bars or checks based on Ts1 for comparison, if this is okay for you. Best regards, Andreas

Frank Seip of Canada wrote : Thanks Bob, again this is mind boggling, informative and great pictures!
Wow

Mujeeb Mohammed wrote : Hi Bob,

This is Mujeeb from India, I'm so happy to read and learn your work ,May genetics news letter is my first one. I would like to read previous months newsletters too, if you don't mind can you please send it. Regards.

Gene Hochlan wrote (Edited) : Hi Bob, That was a superb report on the color mutation Lal band / Gaghra of India. The reason I forwarded a couple of e-mails from a conversation with Dr. Michael Shapiro is that I would like for you to put them in the next newsletter. About two years ago I mentioned my theory about Columba guinea being the predecessor of Checker in our Domestic Pigeons to Dr. Michael Shapiro.

He asked if I could supply him with feathers from Speckled Pigeons so I bought six of these wild pigeons from Africa and sent feathers to Dr. Shapiro. As far as I know DNA tests showed positive results but he and his department have never completed the report. ...Gene

On Apr 21, 2016, at 1:16 PM, Gene Hochlan <hochlang@yahoo.com> wrote:

Hello Michael, Exciting news. Last year I raised a hybrid Columba livia X Columba guinea male. Mated him to a C. livia hen a couple of months ago. He was only 5 months old and the Racing Homer hen was young and these were her first eggs. One of the eggs was fertile nonetheless and the youngster hatched today. Somehow I knew instinctively that this would happen and there are a few more wild species to consider also. Wish Dr. Hollander was still with us to see this but I'm just as happy to let you know about it. Have not shared this with anyone else.

Gene .

On Thursday, April 21, 2016 3:07 PM, Michael D Shapiro <mike.shapiro@utah.edu> wrote:

Wow, congratulations! That's great, and thanks for sharing the news with me. It will be very interesting to see if this youngster (and hopefully more) have the check phenotype in the expected ratio.

We recently "inherited" some C. guinea from a zoo in California, and we're setting up matings with C. livia as well. Hopefully we'll have some success, too!

Best,
Mike

On Thursday, April 21, 2016 3:41 PM, Gene Hochlan <hochlang@yahoo.com> wrote:

Hi Michael,

I did not follow the rules on pattern in my initial mating and chose genetic tameness and docility instead. Paired a T-Pattern Checker, heterozygous Bar, Racing Homer cock to a Columba guinea hen. The hybrid male is a T-Pattern Checker, heterozygous Checker and is now mated to an Extreme Dilute Blue Bar Racing Homer hen. My educated guess is that these crosses will follow the Columba domestica pattern inheritance rules. It is still hard for me to fathom that no one ever questioned Darwin before. It was totally coincidental that his domestic pigeon crosses; like Fantail to Pouter; produced Blue Bars and no Checkers.

If and when he did raise Checkers or T-Pattern Checkers I wonder how he came to terms with that? To me

it is still obvious that the Eastern Rock Pigeon, Snow Pigeon, White Collared Pigeon, European Wood Pigeon

and the Stock Dove have all contributed their genes to our domestic varieties. It is just a matter of time before

DNA analysis proves this out. All I have to give is good, old fashioned intuition turned into theory.

Gene

Gene said he would do an article with photos of his crosses for one of our future Issues .

That is it for the July 2016 Issue . Lots of things going on out there , so I sincerely hope everyone will send in their News Views and Comments so that we can share them to your credit . We leave you with a peak into the loft of Shoibal Sabbir who has been working with various colour traits in his flock of Satinettes and Blondinettes .



Anyone care to name the likely genome of this phenotype ?