June 2019 Newsletter.

The Pigeon Genetics Newsletter, News, Views & Comments.

(Founded by Dr. Willard .F. Hollander)

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News , Views, and Comments from around the World brought to your PC via email Monthly!

Here we are midway through 2019 - is it just me , or is time flying by at a fever pace ??

TOPIC #1: Flash Back. U.S.A.

We thought that we would slow things down a bit by taking a look back into the past at some of the term symbols that were established by Dr. Willard .F. Hollander.

Statistics taken from Lester .P. Gibson's Book "GENETICS OF PIGEONS COLUMBA livia (GMELIN)

Dr. Willard .F. Hollander selected many symbols that we use to this day as abbreviations for the many different genetic traits in Pigeons.

Starting in 1937 he selected (cr) for crest to replace 'C' previously named by Horlacher , 'C' had previously been used by Bonhote & Smalley to denote checker.

Then in 1938 Hollander selected (o) for recessive opal, (Od) for Dominant Opal, (cl) for clumsy, (sy) for smoky, (C^T) for T-Pattern checker ., C^D for dark checker, (C) for checker , (c) for barless, and (F) for faded , which was later changed to (St^F) when it was determined that it was an allele of {Stipper} almond.

In 1943 he selected (py) for polydactyly . , and along with Riddle same year , (sc) for scraggly.

Then in 1948 he selected (skpy) for Show King polydactyly, and (mi) for microphthalmia.

In 1950 he selected (t) for Tharp's polydactyly.

Then the following year 1951 (t^H) for Haas polydactyly, along with (al) for albino, (pd) for pink eyed dilute, and (my) for milky.

In 1952 his work lead to selection of (Sb) for sideburns.

Then in 1957 (z) for Gazzi.

He selected (ca) for cataract in 1958.

Seven years later 1965 , he selected (gr) for grouse foot feathering.

Next in 1971 he selected (am) for amputated toes, and (G^T) for tiger grizzle after determining that it was an allele of Grizzle (G).

1972 he suggested changing (so) { of Besmertnaja} to (ro) for rose (beak crest).

In 1974 he selected (fb) for feed blind.

Hollander in 1978 suggested (F) for frayed (slightly silky).

Then in 1982 he selected a number of symbols : (ros) for rose crest since (ro) had previously been used for 'rolling', then (wl) for web lethal, (Ts) for Toy Stencil., (fs) for frill stencil and (fr) for frill neck (cravat).

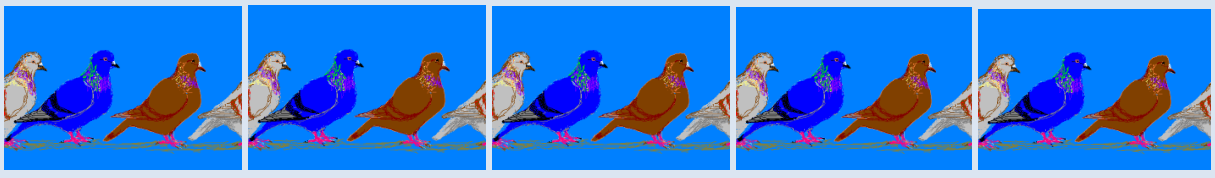
Also in 1982 he and Rinehart selected (dsc) for deutsche scraggly . Also that year he , Robert Mangle and Chrisler selected (z^wh) for bull eyed recessive white an allele of Gazzi.

In 1983 Hollander selected (fv) for foggy vision, (fz) for frizzy., also (Bh) Baldhead Pied Design, and (ma) for Modena bronze . { later deemed as (Ts1) of the (Ts) complex.)

1990 he selected St^Sa) for sandy, (St^Fr) for Frosty.

Of course all of you know that he began and Edited this Genetics Newsletter many years ago.

His intention was to have it be FREE to anyone interested in Colour Genetics and that it be made readily available so that subscribers could have input . We have continued with his wishes !



Hollander:

Descriptions and breeding tests are reported for three new mutants producing uncoordinated behavior in the domestic pigeon, Columba livia. They were discovered by fanciers separately and have been named "erratic," "wobbly," and "crazy." The affected birds can survive and breed in cages, with some difficulty. All have shown simple autosomal recessive inheritance, and at least "erratic" and "crazy" are not alleles. Maintenance of the mutants is generally best from matings of heterozygotes. Gene symbols proposed for the mutants are er, wo, and cy.

TOPIC #2 : More on Stipper "white " break on base pigment ~ questions by **Walter Wojceiski**, Hawaii.

Bob , can you please explain to me what's happening when the white bar {band} appears in my almonds genetically ----how is the white taking over the base of the almond - blue series bird ...??

Bob Rodgers - Walter , if you analyze each area of the tail feathers of most birds , you will note that there is a very light gray terminal tail band at the tip, more pronounced in smoky factor birds , then there is the "black " sub-terminal tail band . The remainder of the feather may be clumped smooth spread of varying tones of blue/gray depending on darkening modifiers. SOME birds will have a dark (blackish) patch basally just before the feathers attach to the body by a whitened Quill. Stipper works on the condensed smooth spread of the tail band. Usually it is not a perfect replacement of the band , but as you know is very often an abstract effect in somewhat of a "V" shape. Bronze does not express strongly or at all on either condensed or clumped smooth spread , so the tails often lack

much desired bronze . However IF those blackened patches are present , (which I am addressing in the next {this} Newsletter) , then lots of bronze will express there. The unstable , abstract nature of the Stipper breaking action , again as you know , allows patches of black or even the odd all black feather to be produced , and most of them will indeed revert to black as the bird ages.

Walter Wojcieski - Bob Rodgers I got my kite tails dark --- now trying to get bronze to express there--

Walter Wojceiski - Bob in your above comment what do you mean by smooth spread? So the Stipper white is the tail band? So when almond ages it will loose band? Turn all black as the white break regresses?

Bob Rodgers - Walter Wojcieski (1) I think that if the trait I described , is still not present , no matter how "black" you get the tail by other modifiers , you still will have problems with bronze expression, (2) smooth spread is the type of pigment that is found in the Tail band and the tips of the flights , it differs from Coarse spread of the wing patterns , and is laid down in the feathers in a different manner. (3) Any areas that are not replaced by bronze , or that do not retain some of the base pigment , are stipper white , the BREAK areas caused by the Stipper gene. (4) When Stipper weakens , then reversion of the base pigment takes place , but it may not be complete . Some small areas of white break may remain , and not always just in the band area as we have discussed many times in the past . The variability of the genes action is not totally predictable nor totally controllable. The charts below show variations of two normal tail feathers and two dirty factor . The first one left has a lightened terminal tip and narrower sub-terminal band. the remaining three have wider bands with dark extending to the tips . These all lack the dark patches I mentioned above . Bronze in my view is much less likely to express strongly on birds that have this genetic make-up without the dark patches. The second chart shows outer tail feathers with the darker areas mid feather that would allow a strong expression of bronze. I have not ever seen any reference to this trait in any literature of any kind , and do not know if this is a form of "coarse spread " , which would explain why bronze is compatible with it as opposed to condensed smooth spread.

Michael Spadoni - The light tail bar, is a quirk if St. But there is lots of variation within St I don't know what additional genes may make the tail bar stand out lighter.

Bob Rodgers - Stipper breaks the entire feather , but is replaced by bronze in areas where bronze is able to express, as I pointed out . Bronze does not express in the tail band areas after stipper has depigmented that region. The depigmentation is of course not always precise , thus the abstract nature of the phenotypes created. There is a three-way battle going on that is eventually won by the base pigment as a result of weakening stipper break allowing reversion .

Michael Spadoni - The key point here was bronze doesn't express on the tail bar therefore making the bar area lighter when affected by St.

Walter Wojceiski - Bob I have noticed that a few of my baby kites have bronze showing on rump -- what's going on genetically ??

Walter Wojceiski - Bob a kite from a almond splash and a red whole agate
What's going on here genetically??

Bob Rodgers - I suppose one would have had to have followed the ancestry of all birds involved to adequately determine as near as possible just who contributed what genes. I personally do not buy

into the "whole agate" idea , they are either solid recessive reds or they have a gene that produces white areas whereby they become agates if Stipper bred. Hetero recessive red enhances bronze , so you will note increased expression of bronze any time you add in recessive red. The bronze in some cases may be brander as opposed to simply just Kite. They have been determined to be linked but different , so it may possibly be that some strains of Stipper are indeed brander as well. Bronzing in the rump of the so called kites would be a bonus as it is more likely to ensure a bronze rump as opposed to a white rump with black flecks in the Almonds. The differences in smoky (sy) specimens and non- smoky almonds that you have noted in the past may help explain some of your questions. Modifiers that allow bronze expression and those that hinder it , may become more evident. I see kite as an "under colour" usually expressing somewhat basally as seen here in a bronze fantail I bred via selection for homozygous kite. Brander on the other hand looks to me as being an "overcoat" expression of bronze affecting the outer ends of all feathers except where a modifier such as Sooty may be involved. Brander is additionally enhanced by the epistatic effect of recessive red even in the hetero state . Photo of Ratul Hasan Sahed of the Exclusive Pigeon Fan Club Jatrabari Facebook Group.

Walter Wojceiski - Bob Rodgers this is exactly what I was asking for... Your explanation on the rumps having bronze is a plus which I'm going to select for in my kites..
In your opinion Bob since my baby is expressing this white tail band-- what sub variety should be best match to continue white band and more color in tail and more defined tail band?

Bob Rodgers - I think I would be looking for a Kite that expresses a lot of distinct bronze in the tail feathers The stipper will be attempting to turn the entire tail white , and we know that some base pigment is either condensed or at least resists stipper , so if the remainder of the tail gets bronze then we can also (in my opinion) assume that the darkened patches are genetically present , that I mentioned , to allow that bronze expression. That should lead to a white Tail band as you have . I doubt that it will be easy to "fix" that trait exactly , as heaven knows what other polygenes are at work .

Walter Wojceiski - Bob Rodgers oh yes exactly .. Thanks for your opinion on these questions I posted... I enjoy the way you break it down in your explanations -- we breeders need that so we can understand how these colors work and hopefully breed better colored pigeons.

Bob Rodgers - Thanks Walter , I may not always be correct in my opinions , but they are intended as food for thought , discussion , and test breeding. If they work consistently all the better. There are many aspects of all these traits that we still do not know , and thus it is difficult to connect all of the dots if a few are missing.

TOPIC # 3 ~ The almond look-alike .. Nova Scotia Canada .

This is a moulting young Dark checker Classical Grizzle tortoiseshell Baldhead Pied Canadian Show Roller bred by **Ryan Ward** of Nova Scotia Canada , it somewhat resembles an Almond /Stipper and this can confuse some breeders. We can see the blue series base pigment , and the bronze residue of Kite bronze . There is white from the pied factor and light/white basal feather but NO WHITE STIPPER BREAK , evidence of stipper breaking action to the base pigment ! Thus we know that Stipper/ Almond is not present ! When Stipper breaks the pigment it tends to MOVE the granules such that they become more condensed in some areas or possibly blocked altogether. The action of the grizzle family varies among the grizzle traits , but is different than that of the Stipper alleles. There is no movement of granules into areas of condensed accumulation of base pigment. Note that the ends of the secondary flights are left in tack. Normally Stipper breaks these to white . The grizzles have no effect on these in the hetero , and may not have much effect even in the homozygous state .

{ Editors Note : Some of our long time supporters may wonder why we keep repeating some photos , Topics , and other information. The answer is that we have new people joining us all the time , and will be seeing some of this material for the first time , also many topics require similar responses ., and some photos are very self explanatory . "All New" material depends upon YOU the readers and Breeders . }

TOPIC #4 ~ The "DEFINING" traits of the various 'grizzle' mutations. (revisited).

The TIGER grizzle ~ So named because of the manner in which the bird may appear like it has **Tiger** stripes or spots distributed over the entire feather cover. However that is usually not the case . The Tiger grizzle trait is Dominant., and has both a heterozygous and a homozygous state. Only the heterozygous state is suitable for show in Europe, described further below . The homozygous state can be utilized for breeding , but not for show. . The characteristic of a homozygous tiger grizzle is again a phenotype of whole white or whole coloured feathers , but the bird usually is more white than coloured thus giving the TIGERED effect . Normally there are NO individual feathers with a mix of white and colour , unless undergrizzle (a non-grizzle trait) ,is also present. Hollander determined that Tiger grizzle was the original mutant at this locus and that "Classical Grizzle " mutated from it and thus is an 'allele' . The phenotype of an adult heterozygous Tiger is a "**MOTTLED**" phenotype consisting of whole white feathers and whole coloured feathers over the head , neck, breast , and usually the entire wing shields with no "grizzled" effects. Tiger grizzles are fledged with a defining trait of only a slight "**lacing**" of grizzle on the head and shoulders which causes some to be confused with Classical Grizzle but they moult to white

feathers and coloured feathers interspersed individually . **The flights and tail feathers are not <u>usually</u> affected by the whitening trait so are either self pattern or spread solid colour**.


(MOTTLE) Bassett , 
(Tigered) Qafi Lofts photo.

Mottles and Tigers of the Tiger grizzle trait will have NO 'grizzle' effect in the flights and tail feathers.

The Classical Grizzle ~ This mutation is still believed by most to be an allele of Tiger grizzle having mutated from it as originally stated by Dr. Hollander. Classical Grizzle is a partial Dominant and also has both a heterozygous and homozygous state. It is considered a Partial Dominant as it does not have a major effect on wild type in the hetero state. The 'Defining ' characteristic for the heterozygous state is a "**SALT & PEPPER**" grizzling of all feathers from head to toe leaving the pattern intact. This expression does not change much from juvenile to adulthood. The defining characteristic of the homozygous Classical Grizzle is a near white pigeon (obliterating the pattern) ,with only a few coloured feathers on the head and perhaps upper neck area as well as the tips of the flights and the tail feathers . This is referred to as "**storked**" as it somewhat resembles the "Stork" markings of a wild species of bird..


(Salt & Pepper) , and (Storked).

Gulf Farm photo. { **Classical Grizzles will ALWAYS have grizzling in the flight and tail feathers**.}

The Print Grizzle ~ This is a complex mutation that seems to encompass a number of genetic traits and requires considerable more study. The '**Defining**' characteristic basically for all stages of this mutation is a **dark patch of throat feathers or 'bib"** . Normally the patterns with less coarse spread will show more white expressed in both the hetero and homo states, however modifiers change this rule which explains why it appears to be such a complex mutation. There are also specimens of this trait that are completely coloured on the head, neck and breast. These also will have mainly coloured flights and tail feathers. Close observation will reveal the "Undergrizzling" (Ug) of feathers basally ., which is usually accompanied by kite bronze. Feathers will usually be basally whitened even without (Ug). I've seen an exception to the dark bib (throat patch) in specimens with a distinct selected white beard., also a tail marked form, as well as mottled / Tiger grizzle versions most of which still express the dark bib. Selective breeding , mainly for performance , seems to have inadvertently set or fixed certain feather colour arrangements in the process. This appears to be the gene or genes that are present in Black white side , as revealed in testing by Tom Ah de Munnik of Canada. He is still working on this project.

Ranjith Balram photo. (Light Print barred). ~ **Mick Basset** photos ~ Light , medium , and dark Prints in T-pattern & last two Spread Blue/black). { NOTE: all have a darker patch of bib colouration at the throat , they are usually darker than Classical Storked birds and the flights usually have more colour but still have grizzling basally}. { Other variations below }

Ahona Pigeon Farm photo. Brander bronze Tortoiseshell **Mick Bassett** photo.. **Sarblove Karm Sarbjeet Singh** photo .

There are many variations of Print Grizzle due to years of strict selection for specific arrangements of an otherwise very irregular mix of colour and white. It is almost totally specific to Tipplers , and Highfliers.

English Long Face Tumblers that I previously thought were Tigers are most likely also Print Grizzle.

There are approximately 15 different expressions of "grizzle-like "genes . Many seem to be selected variations of the above described three. There are a number of traits that follow the basic Tiger grizzle phenotype . These may have been created by selection from the original Tiger mutation. Some have been referred to as 'pseudo Tiger' traits . These often also sport some white flights and white tail feathers.

Topic #5 : This is a correction to a portion of the talks last Issue from Strictly Genetics Group by Quido Valent. Quido feels that I used definitions out of the context in which he intended . I gave the meanings of the terms he used copied directly from Wikipedia which is the source he referred to having used himself. If any of you who read his comment in the last issue , were to google any of the terms he used , you would have found exactly the same meanings as I gave in red text, however he intended a slightly different meaning which I felt had already been expressed in his original talks ~ Here is his explanation:

Dear Bob,

Thanks again for your newsletter – always a good read. This time you also included a text of mine, in response to Bart van Zweeden. This was written for Bart, who has the technical understanding to follow me. You tried to make it more readable for those who have a hard time following this, which is

appreciated. Unfortunately, some of your notes are likely to confuse rather than elucidate, as – e.g. – some 'translations' of terms were out of context. Below I have added the part from your latest newsletter, with my alterations in green. Hope this helps.

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 the level of gene expression}, appearing in different numbers have an influence on the checker/barred phenotypes. This regulation is not always completely linear {X more regulatory sequences does not always yield X more gene product~~without an end~~}, possibly due to other modifiers {affecting gene expression and/or gene product activity}. Barless is caused by a mutation in the coding region {the DNA sequence that directly translates to the gene product ~~the sum total of the organisms genome. }~~ probably destroying the signal peptide {A short part on some ~~chain of~~ newly synthesized proteins that helps the protein (=gene product) to reach its destination in the cell}, causing accumulation of the NDP protein {The gene product – ~~that provides instructions, for making~~ a protein called Norrin}, preventing the protein ~~it { the signal peptide},~~ to reach its true destination {as the signal peptide can not bring it there}. The full NDP protein (Norrin) is expressed, however {just not reaching its proper destination in the cell, therefore not fully functional}.
Then the question: what is an allele {an alternate choice at the same locus}? What type of mutation can be considered an allele? 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 gene product ~~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 {thus outside the coding region, determining e.g. timing and level of expression ~~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)

Topic #6 : **Walter Wojcieski** asked in Strictly Genetics Group :

Dirty Kite , What causes the white tip on beak ?

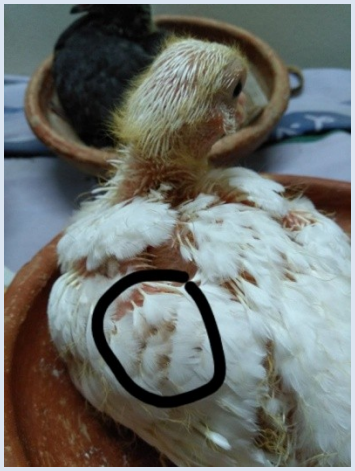
Graeme Boyd Just the remnants of the egg-tooth I reckon.

Bob Rodgers That is the area where the " pipping tooth" was attached to allow the squeaker to cut through the shell. It will eventually disappear.

Jijo Thomas Bob Rodgers you are wealth of knowledge. Perfect answer.

Bob Rodgers Thank you sir , I try to share what I have experienced over a lifetime with this great Hobby. Graeme beat me to it by seconds.

TOPIC # 7 : Question in Strictly Genetics Group by **Juhaer Islam** .
From a white King pair I got this kind of baby How is it possible ?



Bob Rodgers Your white Kings are actually ash-red grizzles most likely . The red edged feathers may moult to pure white . In some cases , they become more red , so you will have to just wait to see.

Juhaer Islam Bob Rodgers let's see .

Here is a feature photo sent to us by : **Ranjith Balram** of India.

This is a very attractive Chimera Mosaic owned by Ranjith's Cousin who purchased two similar birds. They are half Pouter bred. I think the combination and arrangement is quite stunning and it will be interesting to see if there is a tendency for this pair to produce more Mosaics.

This brings us to the end of yet another Issue of the Newsletter , we sincerely hope you found it interesting , and informative. The July issue will be mailed the first day of that Month from Canada . We have received quite a few issues returned the last two mailings due to a problem with addresses to Yahoo accounts. Not all Yahoo accounts are affected , but only Yahoo in the case of those returned. I re-mailed the issues for April a second time and they went individually. I did not get to re-mail the May issue yet , but will do so.

Hope you will have a good summer , we are still awaiting warmer , dryer weather here in Eastern Canada. All the Best from us here at the Loft and PG,N.V.& C .