

THE NORTH OF ENGLAND RAT SOCIETY **RATTITUDE**



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£3

BREEDER DIARY

Part 3 of a breeder's year

PITUITARY TUMOURS

How to spot and treat them

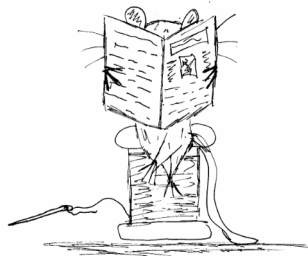


THE C LOCUS

A beginner's guide

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Newsletter Deadline:

The submission deadline for the next issue of *Rattitude* is Sunday 17th February 2019 but submissions are welcome at any time for future issues. Submissions can be on any topic you would like to share with the membership. If you'd like to submit something but are short on ideas, please drop the editor a line and we'd be happy to make some suggestions! Just email editor@neratsociety.co.uk.

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This month's cover photo is ... Feegle Full Metal Monk, owned and photographed by Fiona Milton.

If you would like to see your rat feature on our cover, please email a high quality photo to editor@neratsociety.co.uk along with the rat(s) name and photo credit. Please ensure you have permission to use the photo before you send it.

From the editor

Fiona Milton



Welcome once again to another packed issue of *Rattitude*! Apologies for the delay in getting it out to you, December ran away with me between Christmas and my autumn litter. I hope that you all had a wonderful festive period!

We have a huge range of content for you in this issue. Zoe has written a guide on the NERS longevity awards and show championships, and how to claim these for your rats - worth a read if you have any special oldies in your life!

Jemma has written another very informative article for us, this time on pituitary tumours. This is a really important one for all rat owners as the symptoms can easily be mistaken for other conditions, and early intervention can make a huge difference in terms of both quality of life and longevity post-diagnosis.

Part 3 of Hannah's breeder diary has some huge updates and lots of lovely, positive news from the Renegades.

A beginner's guide to the c-locus hopefully will clear up some of the mystery around one of the more complicated aspects of rat colour genetics. Many thanks to toyah for making sure I didn't go too technical with it! As a side note - I'm always happy to chat rat genetics so feel free to give me a prod if you want to discuss any of it further.

We have two contributions from Lesley this issue. The first is a delightful reminiscing on previous Christmas times with her rats. The second is a review of

The Highway Rat, a charming tale for younger readers that may be of interest to those with upcoming birthdays!

Finally we have a varieties word search - look out for the answers next issue.

As always, we welcome submissions from all members at any time. Articles, reviews, photos, stories...anything you can come up with!

A final note - the March show is also our AGM. Look out for information regarding this winging it's way to your inboxes in the near future, and have a think about any proposals you may wish to make.

Enjoy the issue!

NERS Preston 2* Show

9th March 2019

Christ Church, Victoria Road, Fulwood, Preston, PR2 8NE

Doors will open to exhibitors at 10.15am, rats to be benched at 10.45am and judging to start at 11.00am prompt.

Our AGM will be held at lunchtime and is expected to take around 45 minutes. This is open to all fully paid-up society members and we would encourage you to take part as it's your main way for deciding how your society is run. The meeting will comprise of short reports from each committee and support personnel, voting on proposed rule changes, and other society matters. Further information will be distributed to members soon.

Show Secretary: showentries@neratsociety.co.uk
Show Manager: showmanager@neratsociety.co.uk
Varieties Judge: **Lian O'Sullivan**
Pet Judges: **TBC**
Agility Judge: **TBC**

Entry deadline for standard entry rates: Wednesday 6th March @ 10:30pm.

Please send entries via our online entry form: <http://www.neratsociety.co.uk/forms/showentries.php>, or if there is a problem with the form then email the Show Sec. All rats can be entered into any number and any combination of the 3 sections in the show: Varieties, Pets and Agility. Rats entered in Varieties and Pets must be tanked.

Fees

Entries (per rat, per section): £1.50 (members), £2.50 (non-members)

Late entries after the deadline (per rat, per section): £2.50 (members), £3.50 (non-members)

There is **no fee** for shoulder rats, but they must be registered prior to the show as they need to be health checked.

Hire tanks: £1.50 per tank; these are capped at two per exhibitor, with priority given to new exhibitors. Tanks are not supplied with substrate or moisture source.

Usual infection control rules apply:

Please do not bring your rats if you have:

- ◆ Had - or had contact with any acute (new) infection related illness or unexpected deaths in the past 2 weeks;
- ◆ Brought in any new rats over the past 2 weeks;
- ◆ Been to any other shows or gatherings of rats in the past 2 weeks;
- ◆ Had any rat related contact with rats of unknown background (eg rescue centre, pet shop) in the past 2 weeks;
- ◆ Had a virus within a small group of rats within the past 4 weeks;
- ◆ Had a virus within a group of 15 or more rats, or when raising a litter within the past 8 weeks.

If you are at all unsure please contact the committee who will consider your individual situation. Help us to keep your rats safe!

Chair Chat

Jemma Fettes



As Christmas grows closer it's a sign that our annual Christmas show is coming up, one of my favourite shows of the year, I hope to see lots of Christmas jumpers there from all attending. I'll be wearing mine. With Christmas comes the end of the year and signals that our AGM is not that far away either. So, as the committee and support team work to try and make sure we've done everything we've set out to do over the committee year, a big thank you for everyone who has been working so hard over the past calendar year to support the club - both on the committee and support team and beyond. You make this club what it is.

We have a quieter start to the year before our first show which should give us time to recover from the hecticness of Christmas and the new year

festivities. I hope to see some of you at the Bradford Championships show on the 19th January (in Doncaster, don't ask ...), whilst it's a NFRS show rather than NERS, its also the only championship show near our area and a lovely place to meet some of the broader fancy. Something I look forward to every year.

Closer to home I have litters planned coming up soon and a puppy staying over for Christmas which is very exciting for me. Hopefully everything goes to plan on that front. I'll end by wishing everyone a very Happy Christmas and I hope the New Year brings you much rat and non rat related happiness.

Jemma and the Isamu rats

Rescue Fund Update

Linda Frances



It has been a quiet quarter for the Rescue Fund, with a couple of enquiries and just the one application. Four bucks have been helped on the way to their new happy homes, which is what the Rescue Fund is all about, thanks to everyone who supports the Fund.

So, please keep us in mind, if you know anyone who might be able to use the Rescue Fund, or if you can donate or fundraise. We recently had two very kind offers of cages and accessories, some of which went to rescue work,

and the remainder raised some money for the Rescue Fund. As they say, every little helps!

New and Renewed Members

Ryan Jolley



New Members:

Shonagh Lowerson-Head

Hello. I'm Shonagh. I have wanted pet rats since I was a child having read Terry Pratchett's *The Amazing Maurice and his Educated Rodents*. They were definitely worth the wait and I am now proud rat-mum to Dangerous Beans, Additives, Sardines and Darktan (the names will make sense if you are familiar with the book). I am hoping that as a member I will be able to make it to more shows, meet more people (and their rats) and improve on our showing debut at the start of the year where everyone came home with at least one certificate and Darktan came 4th in the pet class - much to my surprise!

Hannah Marsh

Hi, My name Hannah Marsh and I'm 15 years old. I have just bought two beautiful rats named Ares and Apollo.

Deborah Owen

I've had pet rats for a long time, but didn't know that you could show them. I love them, think that make the best pets. My rats are family. I love all varieties, they are all beautiful. Being a member means I'll be part of a big family xxxx

Cat Dodds

Holly Maguire

Deborah Whitehouse

Renewed Members:

Kasia Zyber

Robert Beare

Katie Critchley

Jill Calderley

Sharon Dobson

Katie Dorr

Heather Dunn

John Hambleton

Julie Kearney

NERS Online

Visit www.neratsociety.co.uk for more articles, news, information, and the online breeder list:

Members' forum

Get involved! Make your voice heard on the NERS forum:
<http://neratsociety.co.uk/phpbb/index.php>



NERS Award Schemes

Zoe Lumour



NERS runs two schemes for their members to celebrate and honour rats that excel in a specific area. The first is the NERS longevity scheme which was set up to celebrate rats that make it past the average rat lifespan. There are four levels of the longevity award that you can claim for in this scheme, based on the age that your rat lived to: bronze (28 months), silver (32 months), gold (36 months), and platinum (40 months).

To submit your application for a longevity award, simply complete the form on the NERS website and I will do the rest. You can submit for an award as soon as your rat reaches the age for each level, and this will be announced on the website and in *Rattitude*. Just remember to let me know if they reach a higher level award before they pass away - once you let me know that they have passed I will create an award for the highest level they reached. Your award can then either be presented at a show or be posted out to you.

The great thing about the longevity awards is that you can claim from anywhere in the country - so if you can't make it to shows, you can still claim longevity awards. You are welcome to submit rats from any source too provided that you know their age - I have created awards for some very special rescue rats!

The second scheme available to NERS members is the championship scheme that provides awards for rats that perform exceptionally well at shows. There are four different championships

that can be claimed:

1. Variety championship for a rat earning six NERS points through placing in the supreme challenge
2. Pet championship for a rat earning 12 NERS points through placing in the pet supreme challenge
3. Stud championship for a rat earning six NERS points through placing in the stud buck challenge
4. Agility championship for a rat earning six points through placing in the agility challenge.

We have retired the old Grand Champion award (previously 6 points in pet supreme and 4 points in varieties or stud supreme) and have introduced the Grand Variety, Grand Pet, Grand Stud, and Grand Agility championship awards for any rat that achieves double the number of points required for a championship in that category.

The NERS awards officer (that's me!) will calculate these automatically and present you with your award at the next show.

Please don't hesitate to drop me an email at awardscheme@neratsociety.co.uk with any questions or comments and I would love to see photos of your rats with their awards.

NLAs and Championships

Zoe Lumour



NLAs

Bronze

Sillyrats Harvey owned by Hazel Bettenev
Marvin owned by Hazel Bettenev
Zephyr Between Two Lungs (Florence) owned by Marie Blackett
Zephyr I Wonder If This Could Be Love (Venus) owned by Marie Blackett
Halcyon Kate owned by Jessica Coleman
Halcyon Missy owned by Jessica Coleman
Elf owned by Katie Critchley
Curly Sue owned by Katie Critchley
Soldat owned by Katie Critchley
Rivendell Winterfel owned by Katie Critchley
Isamu Diddymus owned by Jemma Fettes
Renegade Electric Mistress owned by Hannah Field
William "Bill" S. Preston Esq owned by Nicola Jackson
Theodore "Ted" Logan owned by Nicola Jackson
Lovecraft Hannity owned by Lisa Maurin
Lovecraft Freewild owned by Lisa Maurin
Lovecraft Begasti owned by Lisa Maurin
Scunnerbugs Eskarina Smith owned by Fiona Milton
Susan Sto Helit owned by Fiona Milton
Lia owned by Shuri Pentu
Lita owned by Shuri Pentu
Frankie owned by Amanda Poole
Binx owned by Amanda Poole

Silver

Mulberry Melody owned by Jessica Coleman
Imp owned by Katie Critchley
Lovecraft Catalyst, owned by Lisa Maurin
Scunnerbugs Fenchurch owned by Fiona Milton

Gold

Zephyr The Colour And The Shape (Hero), owned by Marie Blackett
Moet owned by Doug Connor
Bing, owned by Diane Mailo

Platinum

Poppy, owned by Nicola Jackson

Championships

Variety

Isamu Waggledance owned by Jemma Fettes

Hawthorn Skye High McKay(e) owned by toyah Leitch

Hawthorn Shut the Front Door owned by toyah Leitch

Grand Variety

Isamu Waggledance owned by Jemma Fettes

Pet

Lovecraft Janicina Belle owned by Linda Frances

Stud

Mimble MacDuff owned by Helen Belton

Harkyle Kuiper Belt owned by Teena Madden

Agility

Feegle Princess Bride owned by Fiona Milton



Jemma Fettes' Isamu Waggledance with her Variety Champion certificate and some of the rosettes that helped her to reach it

Pituitary Tumours

Jemma Fettes



What is it?

The pituitary gland is a very small part of the brain that sits at the very bottom. It secretes hormones which help control growth, blood pressure, energy management, temperature regulation, metabolism, pain relief and various other systems in the body. Most tumours of the pituitary gland are benign but given the location removal is not possible. They are likely to be more common than we realise with one study seeing a 38% rate of PTs in rats over 10 months with it being significantly more likely in does than bucks (over 70% in does, 35% in males). This study found very tiny PTs in some rats that were not displaying any symptoms indicating that these could easily be missed. It is likely that a significant number of rats have a pituitary tumour which goes undiagnosed. When very small they are unlikely to give obvious symptoms, most issues occur as the tumour grows larger and begins to press on the brain nearby.

The majority (but not all) PTs are prolactinomas (so hormonally driven). The average age for rats to get PTs is 26 months, however this represents a particular lab strain and is heavily weighted to older rats, as the chances of finding a PT increase a lot with age (from 6% at 10 months to 69% in rats at 32m).¹

Symptoms

None of these symptoms alone suggest a PT (except perhaps the front leg issue which is rare in other illnesses but not always present in a PT) and several

symptoms are common in other conditions, however if you find yourself ticking off several in this list then you may be looking at a PT. Typically a PT will progress gradually over days, weeks and even months. You may have a niggling feeling something is wrong and it slowly clarifies into more defined symptoms:

- Front leg stiffness/lack of coordination, often resulting in difficulty holding food or gripping on bars
- Lack of coordination or confused movement
- Hind leg degeneration type symptoms
- Unequal pupil size or eye size
- Blindness
- Circling and head tilt – can be confused with ear infection or stroke
- Head bumping/pressing – where a rat pushed up against your hand when you stroke its head
- Behavioural changes
- Hormonal disturbances causing thinning skin, excessive thirst/urination, reduced thirst/urination (and dehydration), weight loss.
- Fitting/seizures - these can range from petit mal seizures where the rat may be “absent” for a period of time, to grand mal seizures where the rat will throw themselves around the cage (normally later stage)

Other similar conditions:

- Stroke – this is normally

sudden onset and shows clear one sided weaknesses. The rat normally goes from fine one minute to limp, weak and lacking coordination very quickly, often with a head tilt too. The key difference here is the one sided nature and sudden onset with a stroke.

- Ear infection – this shows as gradual onset (can be over the course of a few hours or a few days) head tilt which will often progress to circling and even rolling. The key difference here is underneath the tilting head the rat is otherwise well, though may lose weight and be a bit out of condition from it.

- Hind Leg Degeneration – shows as weakness and gradual paralysis in the hind limbs and tail. In more advanced cases of HLD a rat can struggle to hold and eat foods due to the need to prop itself up with one paw when eating (as its rear legs can no longer support its weight). This can sometimes be mistaken for front paw weakness. It is worth supporting the rats in your hands and offering it something to eat to see if it uses both paws, or holding up to cage bars and testing if it can grip them.

Treatment

Whilst pituitary tumours are rarely cancerous they are sadly in a location where removal is not possible. Instead treatment focuses on slowing the growth of the tumour, or where lucky reducing the size temporarily. Length of life with a PT relates to how fast the tumour grows as well as its response to medication, and it is a condition where you need to make a call on quality of

life and strongly consider euthanasia. There are two main treatment options - these can be used together or you could try one alone if you have a specific reason to.

- Prolactin secretion inhibitor (cabergolin [brand name Galastop], bromocriptine) – this reduces the amount of the hormone prolactin in a rat's system. Most PTs are prolactin driven so this can reduce the size of the tumour temporarily and reduce its growth rate.

Galastop is widely available in the UK and normally practical to get hold of, however the dose is very high and it is hard to get into rats as well as expensive. In the States bromocriptine is the more commonly used and is easy to give in tablet form so may be worth exploring.

- Steroids (prednisone, dexamethasone) – these act as a potent anti-inflammatory reducing swelling in the surrounding tissue and easing the symptoms.

- Euthanasia – this is an important but sad thing to add here. Ultimately PTs rarely end well for the rat involved and, as mentioned before, euthanasia decisions need to be made. There is nothing wrong with making this decision rather than trying treatment, especially in a case where the rat involved is already on quality of life watch. If anything, I would generally recommend putting a rat to sleep with a PT earlier than you might otherwise a rat with many other age-related conditions.

Case Study – Diddy

Diddy is an ageing doe with a residual head tilt that's been around since about 20 months, settling as a permanent tilt despite treatment at the time. As she's grown older she has started showing her age with gradually progressing hind leg degeneration. Despite this she's maintained a good weight and been able to climb and race around the cage until recently. When she reached 26/27 months I became aware she was probably blind or her sight was increasingly very poor. Added to this she appeared to be getting harder of hearing. All this is not abnormal in older rats and as she reached and passed her 28 month day I continued to make small adaptations to make her life a little easier. As she started to lose weight I gave her half a day in a lower level cage with her skinniest daughter to have access to more oldie friendly food and she started to gain her weight back. As she struggled more to get around I made sure more was on a single level for her so if she didn't want to climb she didn't have to.

As she grew slower and more warning bells started to trigger I decided to try investigating a couple of options - heart was quickly ruled out, as was kidneys, and metacam (a non steroidal anti-inflammatory) saw a small improvement but not much so it wasn't pain. I began suspecting something neurological. After spending a bit of time just sat watching her I spotted the tell-tale weakness in her hands one day, not much at all but a suggestion of it. I knew then it was likely to be a PT and by the next day it was already more obvious. She was quickly put straight on steroids and overnight she improved. She was still an old lady and not exactly sprinting round the cage but her ability to move

around and her interest in the world was markedly improved.

Normally with PTs I tend to put to sleep soon after spotting them, as they tend to progress quickly and are often in rats which already have challenges on their paws. In Diddy's case her good response to steroids meant I decided to give her a bit longer to see how she did, expecting maybe a couple of weeks at best. I also tried Galastop, though in Diddy's case it didn't make any noticeable difference (and needs a large amount which apparently tastes yucky) but she continued to do well on the steroids. The couple of weeks I gave her are now well passed (up to around a month since I first started her on steroids, in my experience they normally progress faster than this) and she is bright, happy and ruling her low level cage with her sister Terra (who I suspect she thinks is her baby the way she mothers her). I don't doubt by the time this is published her time will have come but for now I'll enjoy every day she gives me

1. Trouillas J, Girod C, Claustrat B, Curé M, Dubois MP. Spontaneous pituitary tumors in the Wistar/Furth/Ico rat strain. An animal model of human prolactin adenoma. *The American Journal of Pathology*. 1982;109(1):57-70. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1916064/>

Christmas Past - A Few Experiences

Lesley Mackness



Last year my rats steadfastly ignored the 6-foot imitation Christmas tree in the room where their cage is – until their free-range time on Christmas day! As if they had some sixth sense that this was *THE* day they'd been waiting for, they suddenly became interested in it and began to climb it! The whole tree shook and we could tell the progress of each rat as different branches moved!

It's a mistake to let your rats free-range where you have Christmas presents. My group knew immediately which parcels contained something edible and went straight over to them and began trying to get into those parcels!

One Christmas, out of a group of them, there was one rat which spent long periods of time sitting in the corner of the cage closest to the Christmas tree, staring at it. We could only assume that he was merely curious as to what it was – unless he was making his own long Christmas wish to Santa!

My rats are always entranced by the shiny baubles hanging on our Christmas tree. They stand on their hind legs to try to reach them, then run away when they manage to eventually get one down and it seems to roll after them.

Breeder Diary Part 3

Hannah Field



Given the difficulties I had earlier in the year, to say this quarter has been a surprise and relief to me would be an understatement. It's really helped remind me of the joys of breeding. Sometimes it's soul destroying and I find myself having one difficult time after another, but there's times like now when you just get to enjoy happy healthy mums and babies and it makes it all worthwhile – this is what it's for.

14th-25th September

Jay (BE Marten) has moved in with Scoubidou (PE Marten, cousin to Jay), Nina (black, sister) and Pixie (BE Marten, sister). I witnessed matings with Scoubi 14th September, and both Nina and Pixie 24th September. I had a lot of issues reintroducing Jay back to his group so I have decided I won't be doing extended matings in this way again as I don't feel it works for me.

6th October

Scoubi had been visibly pregnant from fairly early in the pregnancy and she is younger than I usually mate at (I wanted to try mating earlier so she is 6.5 months, where in the past I would usually mate at 9+) so I expected a larger litter. I did not expect 19, live and well fed babies. Her milk supply has been excellent, all babies

having lovely fat milk bands. This is the largest litter I've had, and while I know that rats are generally capable of raising this many I am cautious and fully expect to lose a few in the next few days.

16th October

Scoubi and babies are doing brilliantly; all are still alive and thriving! Pixie and Nina both gave birth today. Pixie had 16 (14 live), and Nina had 14 (12 live) all are well fed and both mums are doing well. This brings the total babies this time to 45, which is the most I've ever had at one time!

28th October

Mums and babies are all doing really well, we still have all 45! Scoubi and her 19 moved into the hutch a couple of days ago, which is new for me as I usually raise litters in a Coco Large when they're properly up and about but given the number of babies this time I thought they would appreciate the extra space of one of my hutches and they certainly do. In both Scoubi and Pixie's litters all the babies are Marten, in both pink eye and black eye (as expected). Scoubi has a few dumbos which I'm delighted by (not entirely unexpected as while both parents are standard ear I knew they could be carriers), Pixie's are all standard ear. Nina's litter several Marten, some Blacks and also a Russian Blue and a Russian Marten (not overly surprising as I knew there was Russian in the lines), there's also a mix of dumbo and standard ear which I'm pleased about. I have wanted to keep dumbo in the line, but haven't had many who stood out enough over their standard ear siblings so I hope to have some nice ones to keep this time.

7th November

As 45 babies is a ridiculous number of babies for me to try and keep entertained, or contained for that matter, Nina and her babies have gone to stay with a friend for a few weeks and be spoiled while I keep Scoubi and Pixie's litters entertained. I've moved Pixie and babies in with Scoubi now, and they're all loving hutch life. I was a bit anxious about how mums would respond in a hutch, although I'm not really sure why, but I've been delighted by relaxed and confident they've been so will be raising future litters in hutches too now most likely.

17th November

I split Scoubi and her boys off today, yes they're 6 weeks, no I didn't forget – I've always closely monitored does from 5 weeks out of paranoia but I'm yet to have a litter where any of the does vagina's have opened prior to 6 weeks, so it works for my lines. I've also kept Scoubi with the boys as Pixie is still with the girls and the younger litter. Scoubi's bucks aren't big enough to be able to mount her and I know they will benefit from having her for a bit longer.

21st November

I've usually started thinking about keepers by this point (from 6 weeks onward), but there's that many I've completely buried my head in the sand about it all and am continually declaring this and homing "future Hannah's problem". Although they all have homes lined up and have had for a while I've not got down to working out any of the specifics. There's one buck I've decided I'm keeping, as

every time I pick him up I realise how nice he feels but that's about as far as I've got.

I've finally got a few months now where I don't have any litters planned, which I'm looking forward to! In a few weeks' time most of these babies will be off to their new homes and my keepers will be introduced to my groups and I can enjoy the calm for a while before my next litters in the Spring which will be from the Tonkinese I kept from Calliope's litter in my last article.

A beginner's guide to the c-locus

Fiona Milton



As a genetics nerd the c locus is one of my favourite aspects of rat varieties, but it also seems to be the one that confuses people the most. It is more complex than most colour loci in the rat, with multiple variants, and this is what makes it both hugely interesting and potentially confusing. Hopefully this guide to the c locus will demystify it and make it a bit less panic inducing!

The Basics

Before we discuss the c locus specifically, we need to understand the basics of genetics as they pertain to rat varieties. Like all living things, rats are made consist at the very basic level of DNA – a long molecule that is made of four different nucleotides. Genes are sections of DNA that have a specific function based on the order in which the nucleotides are arranged. There are several effects that a gene can have within the body, but a key one is that they can produce proteins. These proteins then go on to make up the rat, including the pigments that give us the various colours.

Within cells DNA is arranged in chromosomes which exist in pairs (rats have 21 pairs). Each rat has received one of each chromosome from its dam and one from its sire, meaning that they have two copies of every gene in each

cell. A locus is simply a specific location on a chromosome. This may be a gene, or a specific genetic marker. In rats, the c locus is located on chromosome 1.

In rats, as with most organisms, colouring is caused by a group of pigments known collectively as melanins. Melanin is subdivided into brown-black pigments called eumelanins and yellow-red pigments called pheomelanins. The different colours seen in rats are the result of genes affecting the production of these pigments – for example in an agouti rat the melanocytes alternate production of eumelanin and pheomelanin creating the lovely ticking effect, whereas a non-agouti rat only produces eumelanin.

Mutations

Mutations sound scary, and some of them can be detrimental, but in

general they are quite simple. Mutations are changes within the DNA where one nucleotide is substituted for another, one or more nucleotides are deleted, or one or more are added. They can occur anywhere on the chromosome, although some areas are more stable, and therefore less likely to mutate, than others. Some mutations have no effect on the protein produced by that gene while others cause the protein's structure to be changed which can then produce a visible effect.

Each form of a gene is then called an allele. For many genes there is only one allele – this means that there is only one possible sequence and there is no variation in the protein produced by this gene. Most of the genes responsible for colour in rats have two alleles, meaning that there are two potential proteins produced. For example, the agouti gene has two alleles – the wild type agouti and the mutation which produces black. This is where the c locus becomes more complex than other colour loci as it has (at least) four alleles – the wild type, himalayan, marten and albino. Tonkinese is hypothesised to be another c locus variant, but it is still being worked out and so as this is a beginner's guide I'm going to ignore it for this article!

A rat with two copies of the same allele is called homozygous, and a rat with two different copies is called heterozygous. Which of these the individual is depends on which alleles it inherits from its parents.

Allele interactions

There are three ways in which alleles can interact. The one that most people know about is a dominant/recessive relationship where one allele

completely masks the other. In this situation a rat with two copies of the dominant allele will look identical to one with one copy of each allele, and a rat with two copies of the recessive allele will look different. This is true of the majority of rat colour mutations including agouti/black (where agouti is the dominant form and black the recessive), and both pink eye dilute and red eye dilute (where two copies of the recessive dilute are required for the rat to have pink or red eyes respectively).

The second possible interaction is incomplete dominance. In this case the heterozygous form looks different to both possible homozygous forms. Rex is an example of this in rats. The homozygous wild type (rere) is a standard coated rat, a single copy of the rex allele (Rere) produces a rex rat with a curly coat, and the double rex (ReRe) rat has weak hairs meaning that these rats have a thin coat and can appear almost hairless.

The final interaction is co-dominance. This is when two different alleles interact in a way that produces an individual with aspects of both.

The c locus in rats displays both simple dominant/recessive relationships and co-dominance relationships between the different alleles, which further adds to its complexity.

The c locus alleles

As previously mentioned, there are four c locus alleles that I will be discussing in this article.

The wild type (C). This is the "original", non-mutated version of the gene where melanocytes produce pigment as determined by the rest of the rat's

genetics.

Albino (c). This mutation stops all melanin production.

Himalayan (c^h). This mutation causes acromelanism, where the production of pigment is temperature dependent with cooler temperatures producing more pigment.

Marten (c^m). This mutation causes the yellow pigment to be reduced to a very pale yellow or silver, with the black pigment unchanged in kittens but lightened in adults.

The c locus varieties

As previously mentioned, these alleles interact in both the traditional dominant/recessive fashion and through co-dominance. The wild type allele is dominant to all of the others, so if a rat has at least one copy of it their variety will be whatever their other genetics dictates (e.g. an agouti rat with at least one copy of C will be agouti).

Albino is the result of having two copies of the albino allele (cc). In this rat there is no pigment produced at all giving a white rat with pink eyes. It's important to remember that the albino gene is simply masking any other colour genetics and "underneath" the white the rat is still another variety! An agouti-based albino rat (A^*cc) will look identical to a black-based albino rat (aacc) but would produce different offspring when mated to a black rat.

Siamese rats have two copies of the Himalayan allele ($c^h c^h$). Here the Himalayan allele reduces pigment production in a temperature dependent fashion where the coldest

parts of the rat (the feet, the face and the base of the tail/rump) have the most pigment production. This produces a creamy rat with shading that is darkest on the feet, nose and base of the tail, becoming lighter as it moves towards the warmer body of the rat. This temperature dependence is why Siamese rats can end up with some very strange shading when the weather changes! A sudden cold snap when the rat is mid-moult can produce darker patches (and Murphy's law says that this will of course happen just before a show!). The reduction in pigment also affects the eyes making them red/ruby.

Himalayan occurs when a rat has one copy of the albino allele and one copy of the Himalayan allele (so the rat is $c^h c$). The two alleles interact with each other – the Himalayan trying to give the shading of the Siamese rat and the albino trying to remove all pigment (you could argue that this is either an example of co-dominance or incomplete dominance of c^h over c. I personally consider it co-dominance). This interaction produces a white rat with coloured points rather than the shaded effect of a Siamese. One of the difficulties with Himalayan rats is getting dark points on the light body, and Himalayan rats can also be produced by selecting genetically Siamese rats for lighter bodies. This makes it easier to get the dark points desired in a show Himalayan, but does tend to make the body creamy rather than white and is more likely to produce unwanted shading up the back. As with the Siamese, the eyes are red/ruby.

The most common variation of both Himalayan and Siamese is the classic seal point, which can be agouti or non-agouti. However, other variations can occur. The only other standardised

version is blue point where Russian blue (or British blue, although this is less common) is added to the Himalayan/Siamese. Technically any other colour could be added, although some will look like standard seal point and others will be too pale to produce a clear effect.

The marten allele is slightly different to the Himalayan allele in that it is dominant over albino rather than co-dominant with it. This means that a $c^{mc}c^m$ rat is identical to a $c^{mc}c$ rat. In this rat, the yellow pigment is almost absent and the black pigment is slightly diluted, giving a grey rat with red eyes (leading to them sometimes being known as Red Eye Devils). Martens tend to be dark as kittens and fade as they age, and have lighter fur around the whiskers, eyes and ears.

The other way in which martens differ is that they are affected by whether the rat is agouti or non-agouti. Adding agouti to marten produces silver agouti where the rat has grey ticking which pales down the sides to an ivory belly. As with Siamese and Himalayan, marten is affected by the presence of other colours – for example a marten rat that is also homozygous for Russian blue will be a Russian marten. However, none of these other varieties are currently standardised.

Pointed marten occurs when the rat has one copy of the marten allele and one of the Himalayan allele ($c^{mc}c^h$). The two interact to produce a rat that has marten colouring but with shading at the nose and tail. This variety isn't currently standardised.

Black eyes

Although all of the above varieties have

pink or red eyes due to the reduction in pigment, they also come in black eyed version (the black eyed version of albino is ivory). The black eyed version is created by the addition of a separate black eye gene (Be). This is dominant to the wild-type so a rat only needs one copy of it to have black eyes, but it only affects c-locus rats. This means that a champagne rat with a copy of the black eye gene will still be champagne, whereas a Himalayan rat with a copy will be a black eyed Himalayan. In addition to making the eyes black, this gene makes the coat a little creamier (which is why ivories are a slightly different shade to pink eyed whites!).

Further reading/references:

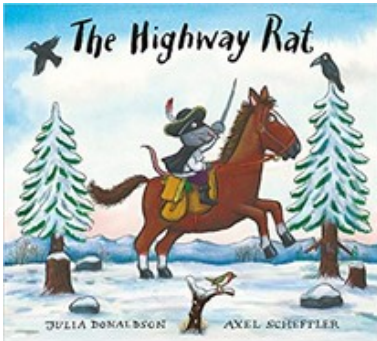
<http://ratvarieties.com/c-locus/> - this is toyah's website that covers the genetics of most current varieties

Blaszcyk, W. M. et. al. (2005). A Tyrosinase missense mutation causes albinism in the Wistar rat. *Pigment Cell & Melanoma*, Volume 18(2), p144-145

Kuramoto, T. et. al. (2010). *Genetic analyses of fancy rat-derived mutations*. *Experimental Animals*, Volume 59(2), p147-155

Book review: *The Highway Rat*

Lesley Mackness



The Highway Rat
by
Julia Donaldson
Alison Green Books
Christmas Board Book
ISBN-13: 978-1407181059
Ages: 2+

The opening lines set the tone of the tale: "The Highway Rat was a baddie. The Highway Rat was a beast. He took what he wanted ...".

It's obvious from his demands that this rat, bent on stealing travellers' food, will indeed take whatever he wants, however much he is depriving the poor creatures who are travelling 'his' highway. Listeners and readers are sure to feel especial sympathy for his horse when he even takes his own horse's hay! The illustrations by Axel Scheffler beautifully enhance the characters in this tale. The detail included in each page should give children plenty to talk about as they spend time examining the illustrations, from the broken biscuits being swept up from the floor and the bats hanging from the roof of the cave to the food falling from the Highway Rat's saddle bag.

Whilst not looking cruel and horrid, the Highway Rat's actions mark him out as the 'baddie' of the story and young listeners will feel outraged as the delightfully drawn and endearing animal characters get thinner and thinner whilst the Highway Rat grows fatter.

However, the most successful children's stories do not allow wickedness and wrongs to go un-righted or unpunished, and in an ingenious and satisfying way the Highway Rat gets his comeuppance. Gently intoning 'rights' and 'wrongs' such as these in such easily digestible form helps set children on the correct moral path as such tales are meant to. The justice is fitting and poetic, whilst the last image of the Highway Rat evokes sympathy after all!

Produced specifically for Christmas and New Year gifts, this board book version of *The Highway Rat* has snow-covered trees on the front cover and snow falling in some of the pages to make it seasonal.

The size of the book makes it easy for young children to hold, and being a 'board book' has not just a hard back but also hardback pages, making them largely

childproof, except for the possibility of teeth marks!

Julia Donaldson readily admits her inspiration for this story came from one of her favourite poems: *The Highwayman* by Alfred Noyes, whose highway man also 'came riding— Riding—riding—The highwayman came riding ...'

About the author:

Julia Donaldson began her career as a teacher before working in publishing. She had her first book published in 1993 and to date she has now had more than 160 books published, many specifically for schools. She has won many literary prizes as author of some of the world's best-loved picture books including modern classics *The Gruffalo*, *The Gruffalo's Child* and *Stick Man*, which together have sold over 17 million copies worldwide and been translated into seventy-five languages.

She was the 2011-2013 UK Children's Laureate and has been honoured with an MBE for Services to Literature. Julia and her husband Malcolm divide their time between West Sussex and Edinburgh.

Varieties report - Newcastle September 2018

Rackie Powell



Thank you all for inviting me to come up and judge – I do enjoy coming to NERS shows and catching up with people I don't see very often! The standard was very high, and I had some really difficult decisions to make towards the end; always nice but makes my life harder! Thank you to everybody who helped me out and who helped with the day.

Provisional standard (3)

1st PS1 Hawthorn Rural Juror owned by toyah Leitch. D. Pearl Merle Berkshire dumbo. Good size but a little baggy. Good head, lovely eye. Ears fair but a bit creased. Good base colour but a bit patchy. Good attempt at merling. Fairly symmetrical markings and good coverage but some spots. Lovely condition.

2nd PS3 Hawthorn Urban Fervor owned by toyah Leitch. B. Pearl merle. Good size kitten. Fair head – still growing into it? Lovely eyes. Good ears. Nice colour. Merling good but could extend more to sides. Small Berkshire marking. Fairly symmetrical Irish marking. Excellent condition.

3rd PS2 Gallifrey Captain Phasma owned by Cat Mace. D. Satin. Good size and type. A little bit out of condition today. Lovely head, excellent eye, fair ears. Colour good and fairly even but coat very stained. Good attempt at satinisation but staining spoils.

Self Black adult (5)

1st 1305 Lovecraft Arcana owned by Lisa Maurin. D. Good size. Lovely type. Good head and ear. Lovely eye. Good depth of colour but silvering spoils. Some white toes. Lovely condition.

2nd 1301 Mible Callisto owned by Helen Belton. D. Good size, good type. Good head, slightly snipey. Lovely eye.

Good colour but brown undertones. A few white hairs and some silvering on sides. Some white toes. Lovely condition.

3rd 1302 Azuline Ink Responsibly owned by Zoe Lumour. D. Good size and type. Good head, eye and ear. Good colour but silvering coming through. Chew marks in coat. Good feet. A little bit baggy today but otherwise good condition.

4th 1304 Aurora Crackers and Cheese owned by Lyn Dimmock. D. A bit small and lightweight. Good head and ear, lovely eye. Fair colour. Good attempt at feet.

Mink adult (1)

1st 1701 Additives owned by Shonagh Lowerson-Head. Fair size but a little lightweight. Good head, eye and ear. Colour very patchy and coat chewed. White toes.

Self challenge

1st 1305 Lovecraft Arcana owned by Lisa Maurin

2nd 1301 Mimbale Callisto owned by Helen Belton

3rd 1302 Azuline Ink Responsibly owned by Zoe Lumour

4th 1304 Aurora Crackers and Cheese owned by Lyn Dimmock

Marked

Berkshire/badger adult (1)

1st 2101 Hawthorn Cute Lil' Nimbus owned by Zoe Lumour. D. Russian blue. Small for an adult. Nice racy type. Good head. Fair ear and eye. Good colour. Berkshire markings good coverage but extend too far up sides. White on neck. Fair blaze but drags on cheek. Tail a bit matchstick, fair condition.

Irish adult (3)

1st 2303 Lovecraft Sweet cHilly Pepper owned by Linda Frances. D. Agouti.

Good size and type. Good head and ear, lovely eye. Nice even colour but could be brighter. Good attempt at triangle but small white spot on belly. Good feet, nice condition.

2nd 2301 Lovecraft Nabu owned by Melanie Smith. B. Agouti. Good size but body a bit narrow. Good head, eye and ear. Nice even triangular shape to marking. Good feet. Colour good but dark dorsal stripe. Good condition.

3rd 2302 Sardines owned by Shonagh Lowerson-Head. B. Black. Good size and type. Good head and ear, lovely eye. Fair colour but starting to fade, silvering on rump. Not enough white on feet. Fair marking but could extend more on right. Some scratches on tail.

Hooded adult (1)

1st 2501 Hawthorn Sky High McKay(e). D. Black. Good size and type. Lovely head, eye and ear. Good depth of colour, very little silvering. Excellent hood but chin stripe spoils. Saddle slightly uneven but good attempt. Fair tail, could have more colour. Good under, very good condition.

Variegated adult (1)

1st 2701 Hawthorn Cloud and Proud owned by Zoe Lumour. D. A bit small and lightweight for an adult. Good head, fair ear and eye. Good colour and headspot. Fair variegation but doesn't extend to sides. Chopped rump. Tail slightly matchstick.

Variegated kitten (1)

1st 2801 Feegle Soot Sprite owned by Fiona Milton. D. Black. Good size and type. Good head, eye and ear. Good depth of colour. White on cheeks. Headspot drags. Good variegation, could be slightly more even. Tiny spot

on belly. Good condition.

Capped kitten (1)

1st 3001 Feegle Sabriel owned by Fiona Milton. D. Black. Good size. Good head, eye and ear. Colour extends too far back. Headspot uneven. Overall colour good. Some scabs on back and belly. Fair condition.

Essex kitten (1)

1st 3201 Ellfin Dax owned by Holly Maguire. B. Good size and type. Head a little narrow. Good eye and ear. Nice even colour, especially for a kitten. Good fading. Headspot could be slightly more defined. Lovely condition.

Marked adult

1st 2501 Hawthorn Sky High McKay(e) owned by toyah Leitch
2nd 2303 Lovecraft Sweet cHilly Pepper owned by Linda Frances
3rd 2701 Hawthorn Cloud and Proud owned by Zoe Lumour
4th 2301 Lovecraft Nabu owned by Melanie Smith

Marked kitten

1st 3201 Ellfin Dax owned by Holly Maguire
2nd 2801 Feegle Soot Sprite owned by Fiona Milton
3rd 3001 Feegle Sabriel owned by Fiona Milton

Marked challenge

1st 3201 Ellfin Dax owned by Holly Maguire
2nd 2501 Hawthorn Sky High McKay(e) owned by toyah Leitch
3rd 2303 Lovecraft Sweet cHilly Pepper owned by Linda Frances
4th 2801 Feegle Soot Sprite owned by Fiona Milton

Russian

Russian blue adult (1)

1st 3901 Lilliput Little Miss Uppity owned by toyah Leitch. D. Good size, good type but a bit pear-shaped. Good head, eye and ear. Nice even colour to coat. Guard hairs a bit long. Good under. Lovely condition.

Russian blue kitten (1)

1st 4001 Ellfin Ajax owned by Holly Maguire. B. Good size and type. Good head, eye and ear. Heathering a little uneven but overall good colour. Pen mark on tail spoils. Lovely condition.

Russian dove adult (1)

1st 4101 Hawthorn Lost Soul owned by toyah Leitch. D. Good size and type. Good head and ear, lovely eye. Good colour, lovely and even. Good tail but a bit dirty. Coat a little long for a Russian. Lovely condition.

Russian adult

1st 4101 Hawthorn Lost Soul owned by toyah Leitch
2nd 3901 Lilliput Little Miss Uppity owned by toyah Leitch

Russian kitten

1st 4001 Ellfin Ajax owned by Holly Maguire

Russian challenge

1st 4101 Hawthorn Lost Soul owned by toyah Leitch
2nd 3901 Lilliput Little Miss Uppity owned by toyah Leitch
3rd 4001 Ellfin Ajax owned by Holly Maguire

Shaded

Argente crème adult (1)

1st 4701 Roselia Luke owned by Cat Mace. B. Good size buck but a bit baggy. Good head, fair ear, small eye.

Good colour and good shading but stained. Dirty tail. Good condition.

Himalayan kitten (1)

1st 5001 Renegade Kurayoshi owned by Stephen Belton. B. Good size – large kitten. Type very feminine. Fair head, good eye and ear. Coat colour good but chewed. Points could be darker – feet very pale. Fair condition.

Shaded challenge

1st 4701 Roselia Luke owned by Cat Mace
2nd 5001 Renegade Kurayoshi owned by Stephen Belton

AOV

Topaz adult (1)

1st 6701 Isamu Ele Mental owned by Jemma Fettes. D. Good size, lovely type. Lovely head, eye and ear. Colour rich and fairly even. Some staining on flanks. Good tail. Lovely condition – nice fit rat.

Silver adult (1)

1st 7101 Lovecraft Reaper owned by Melanie Smith. B. Black. Good size, good head, eye and ear. Very good depth of colour. Nice even silvering. Good under. Good condition.

Agouti adult (10)

1st 7302 Isamu Butter Fingers owned by Jemma Fettes. D. Good size and type. Lovely head, eye and ear. Good colour but dark on rump. Excellent condition.

2nd 7303 Isamu Hot Potato owned by Jemma Fettes. D. Good size, verging on pear-shaped. Even colour but could be more fiery. Good head, eye and ear. Good condition.

3rd 7305 Mible Equinox owned by Helen Belton. D. Good size and type. Fair head, good eye and ear. Fair

colour but dark on dorsal stripe. Coat a bit chewed and scab on belly.

Otherwise nice condition.

4th 7310 Ismau Kishti owned by Lisa Maruin. D. Good size and type. Nice solid rat. Colour good, a tad dark on rump. Lovely head, eye and ear. Excellent condition.

Cinnamon adult (4)

1st 7503 Hawthorn Hollywood owned by toyah Leitch. B. Good size. Good head and eye. Good ear but nick in one. Good overall colour. A bit baggy today otherwise good condition.

2nd 7502 Hawthorn Jenga owned by toyah Leitch. D. Good size. Head a bit narrow. Good ear and eye. Fair colour. Slightly chopped rump. Good under and good condition.

3rd 7504 Hawthorn Flair owned by toyah Leitch. B. Fair size, type a bit feminine. Fair head, good eye and ear. Good colour but a bit too silvery. Good condition.

4th 7501 Darktan owned by Shonagh Lowerson-Head. B. Good size but a bit baggy – older boy? Colour spoiled by lack of guard hairs. Good head, eye and ear. Very scabby tail. A bit out of condition today.

Cinnamon pearl adult (1)

1st 8101 Hawthorn Shut the Front Door owned by toyah Leitch. D. Good size. Lovely type. Excellent head, eye and ear. Good colour but some chew marks in coat. Starting to put on a bit of weight, but otherwise excellent condition.

AOV challenge

1st 8101 Hawthorn Shut the Front Door owned by toyah Leitch

2nd 6701 Isamu Ele Mental owned by Jemma Fettes

3rd 7302 Ismau Butter Fingers owned by Jemma Fettes

4th 7303 Isamu Hot Potato owned by Jemma Fettes

Rex

Russian rex kitten (1)

1st 9001 Ellfin Wyatt owned by Holly Maguire. B. Russian blue. Good sized kitten. Fair head, good eye and ear. Lovely colour. Rexing present but wavy rather than curly. Good condition.

AOV rex adult (3)

1st 9302 Mimble MacDuff owned by Helen Belton. B. Agouti. Good size. Good head, eye and ear. Rexing present but could be tighter curled. Good colour. Good condition.

2nd 9301 Mimble Linus owned by Robyn Harper. B. Good size but baggy. Good head, eye and ear. Colour good. Good extent of rexing but curls could be tighter. Good condition.

3rd 9304 Mimble Emmeline owned by Lisa Maurin. D. Cinnamon. Good size, lovely head, eye and ear. Good colour. Rexing wavy but not a bad attempt for a doe. Good condition.

Rex challenge

1st 9302 Mimble MacDuff owned by Helen Belton

2nd 9301 Mimble Linus owned by Robyn Harper

3rd 9304 Mimble Emmeline owned by Lisa Maurin

4th 9001 Ellfin Wyatt owned by Holly Maguire

Dumbo

Self dumbo adult (1)

1st 9501 Lovecraft Good King Moggle Mog XII owned by Jemma Fettes. D. Black. Good size. Lovely head and eye. Good depth of colour but quite silvered. Good feet. Good ears, one slightly

creased.

Marked dumbo kitten (1)

1st 9801 Hawthorn Thumper owned by toyah Leitch. D. Good size, fair head, lovely eye. Good ears. Colour very moult/patchy. Markings extend too far onto flanks. Too much of tail coloured. Very good condition.

Russian dumbo adult (1)

1st 9901 Hawthorn Bubblegum Cheeky owned by Cambria Leitch. D. Russian Blue. Good size. Good head, lovely eye. Nice even coat colour. Good ears but a bit creased.

Russian dumbo kitten (3)

1st 10003 Orchard Foxbox owned by Cambria Leitch. D. Russian dove. Fair size. Good head, lovely eye. Colour nice and even. Good ears. Lovely condition.

2nd 10001 Orchard James owned by Carolyn Heslop. B. Russian dove. Good size and type. Good head, lovely eye. Colour not quite to standard. Lovely condition. Good ears.

3rd 10002 Orchard Not James (Ozzy) owned by Carolyn Heslop. B. Russian dove. Good size, good head, lovely eye. Colour not to standard – not creamy. Fair ears but nick in one.

AOV dumbo adult (5)

1st 10306 Lovecraft Isola owned by Lisa Maurin. D. Good size, good head, lovely eye. Nice even colour. Good ears. Lovely condition.

2nd 10302 Isamu Kyba owned by Melanie Smith. B. Agouti. Fair size, feminine type. Colour a bit dark. Fair head. Good eyes. Good ears, slightly creased. Very young buck? Soft coat for a buck. Good condition.

3rd 10305 Lovecraft Perrin owned by Ryan Jolley. B. Agouti. Fair size – young

buck? Colour a bit dark, lacking fire. Good head and eye. Fair ears, a bit creased. Fair condition.

4th 10301 Isamu How 'ard Can It Be owned by Holly Maguire. B. Agouti. Fair size, good head and eye. Colour getting a bit light on sides. Good ears. Fair condition.

Rex dumbo adult (1)

1st 10501 Aurora The Day Walker owned by Lyn Dimmock. B. Black. Very small for an adult. Fair head, lovely eye. Good depth of colour. Rexing present but more crimped than curled. Good feet. Brown patch on rump. Good ears, nice condition.

Dumbo adult

1st 9501 Lovecraft Good King Moogle Mog XII owned by Jemma Fettes
2nd 9901 Hawthorn Bubblegum Cheeky owned by Cambria Leitch
3rd 10306 Lovecraft Isola owned by Lisa Maurin
4th 10302 Isamu Kyba owned by Melanie Smith

Dumbo kitten

1st 10003 Orchard Foxbox owned by Cambria Leitch
2nd 9801 Hawthorn Thumper owned by toyah Leitch
3rd 10001 Orchard James owned by Carolyn Heslop
4th 10002 Orchard Not James (Ozzy) owned by Carolyn Heslop

Dumbo challenge

1st 9501 Lovecraft Good King Moogle Mog XII owned by Jemma Fettes
2nd 9901 Hawthorn Bubblegum Cheeky

owned by Cambria Leitch
3rd 10003 Orchard Foxbox owned by Cambria Leitch
4th 10306 Lovecraft Isola owned by Lisa Maurin

Guide standard (1)

1st 10701 Feegle Inconceivable! owned by Fiona Milton. D. Black spotted downunder. Good size. Lovely head, eye and ear. Good colour, some staining on coat. Colour too blocky and lacking on sides. Nice condition.

Supreme

1st 4101 Hawthorn Lost Soul owned by toyah Leitch
2nd 8101 Hawthorn Shut the Front Door owned by toyah Leitch
3rd 3201 Ellfin Dax owned by Holly Maguire
4th 1305 Lovecraft Arcana owned by Lisa Maurin

Stud buck

1st 7101 Lovecraft Reaper owned by Melanie Smith
2nd 9302 Mimble MacDuff owned by Helen Belton
3rd 7503 Hawthorn Hollywood owned by toyah Leitch
4th 2301 Lovecraft Nabu owned by Melanie Smith

Novice breeder

1st 9302 Mimble MacDuff owned by Helen Belton

Junior

1st 9301 Mimble Linus owned by Robyn Harper

Pets report - Newcastle September 2018

Carolyn Heslop & Ryan Jolley



Carolyn - Thanks to everyone who brought along their lovely girls and boys. And also thanks to our scribes and stewards. Just a couple of things for future reference, please give your rat a health check the night before the show, and another quick check over before you put them in their tank, to make sure they are fit and well. It's a long day for them, especially if they are not 100%. If you are not sure how to do this, there are lots of informative and interesting articles on the NERS website under "Rat-keeping information", including an article about show preparation. Lastly...Congratulations to the winners!

Ryan - This was my first time judging for a while and it was a lot of fun. A big big thanks for Carolyn my co-judge and all of the scribes and stewards who helped make the day go so smoothly. A lot of lovely rats were shown today and it was a pleasure to judge them all, I can't wait for the next show!

Buck under 6 months

1st P102 Isamu Bakari, owned by Melanie Smith, bred by Jemma Fettes. Perfectly tractable. Good overall health. Claws clipped, clean tail, nice shiny coat. Good muscle tone. Happy to explore and happy to be handled. Curious boy and lovely.

2nd P101 Aurora Notched Arrow, owned and bred by Lyn Dimmock. Perfectly tractable, good health. Good muscle tone and good weight. Good Prep. Very relaxed and happy to sit with judge but also exploring the bench.

3rd P109 Aurora The Day Walker, owned and bred by Lyn Dimmock. Perfectly tractable. Good overall health. Nails trimmed, tail clean. Good muscle tone and nice weight. Happy to have a little explore, loves being handled. Licky boy, adorable.

4th P103 Isamu Kyba, owned by Melanie Smith, bred by Jemma Fettes. Very tractable, good health and good prep. Very curious, would much rather explore bench than sit with the judge. Really nice energetic boy.

Unplaced

P104 Gallifrey Ford, owned and bred by Cat Mace. Very tractable. Good overall health and good condition. Good prep but a couple of claws missed. Amazingly relaxed rat. Very cuddly, not very interested in exploring today. Very sweet boy.

P106 Hawthorn Tightrope Walker, owned and bred by toyah Leitch. Perfectly tractable. Square edge to tail (growth spurt?) Good muscle tone and good overall health. Claws done, tail a little mucky. Happy to explore, likes a scratch from the judge. Nice boy.

P107 Hawthorn Flair, owned and bred by toyah Leitch. Slightly hesitant coming out of tank but fine when out. Good health and prep – tail very clean. Good weight for size, good overall condition. Nice relaxed boy, happy to spend time with judge and explore. Doesn't want to go back into tank.

P108 Hawthorn Urban Fervor, owned and bred by toyah Leitch. A little wriggly, but perfectly tractable. Good overall health. Nice soft coat. Tail mostly clean. Very energetic and happy to explore. Good muscle tone and nice weight.

Buck 6 to 12 months

1st P212 Lovecraft Reaper, owned by Melanie Smith, bred by Lisa Maurin. Little bit of resistance coming out of tank.

Great overall health, good muscle tone and weight for size. Nails trimmed, tail cleaned. Relaxed and lovely lad.

2nd P209 Lovecraft Nabu, owned by Melanie Smith, bred by Lisa Maurin. Perfectly tractable coming out of tank.

Great overall health, really good muscle tone and nice chunky buck. Nails clipped, clean tail. Like to explore, knows what he wants, easy to handle, confident sweet boy.

3rd P201 Isamu How 'ard Can It Be, owned by Holly Maguire, bred by Jemma Fettes. Perfectly tractable, good overall health and good prep. Ok weight for size, ok muscle tone. Very happy to explore, very interested in judge's coffee. Nice boy.

4th P203 Mimble MacDuff, owned and bred by Helen Belton. Perfectly tractable. Good overall health and good prep. Good weight for size, nice muscle tone. Nice relaxed boy, happy to be with judge but also happy to explore (especially interested in bacon rolls!).

5th P210 Mimble Bowmore, owned by Stephen Belton, bred by Helen Belton. Perfectly tractable. Good health and prep. Good weight for size but lacking a little muscle tone. Peed on crit! Nice explorative rat that loves peeing on things + people. Very nice lad though.

6th P211 Hawthorn Inigo Montoya, owned by Fiona Milton, bred by toyah Leitch. Perfectly tractable coming out, good overall health. Carrying a little extra but good muscle tone. Mail clipped, tail grubby and feet grubby. Little bit nervous + wriggly but licky and sweet. Wants to go back to tank.

Unplaced

P202 Mimble Linus, owned by Robyn Harper, bred by Helen Belton. Perfectly tractable coming out of tank. Good overall health and great muscle tone.

Nails clipped, slightly grubby tail. Happy to explore and very relaxed with judge. Lovely licky sweet boy.

P204 Mimble Felix, owned by Robyn Harper, bred by Helen Belton. Perfectly tractable coming out of tank, good overall health and good muscle tone + weight. Nails trimmed, slightly square edge to tail (possible growth spurt). Looking for a bit of reassurance, happier to be getting attention and giving licks. Sweet boy.

P206 Gallifrey Hercules, owned and bred by Cat Mace. Perfectly tractable. Couple of scratches on rump and odd red line on neck (staining?) but otherwise good health. Overweight but cuddly rat. Ok prep but a few claws missed and poo on leg. Very wriggly and explorative, not very interested in judge.

P207 Feegle Soul Cake Duck, owned and bred by Fiona Milton. Perfectly tractable out of tank. Good overall health, nails clipped but tail slightly grubby. Some staining on coat. Good muscle tone. Some long guard hairs. Happy to have an explore. Relaxed and confident and enjoyed having a scratch with judge.

P208 Hawthorn Hollywood, owned and bred by toyah Leitch. Perfectly tractable. Nails not trimmed and dirty tail. Good overall condition, good weight for size, nice muscle tone. Pooped on judge, but nice boy.

Bucks 12 to 18 months

1st P302 Sardines, owned by Shonagh Lowerson-Head. Very tractable, good health and good condition for age. Few

long guard hairs on over rump. Good muscle tone for age. Good prep, clean tail but a bit scabby. Nice sweet boy, gave judge a few kisses. Want to go back to tank.

2nd P303 Darktan, owned by Shonagh Lowerson-Head. Perfectly tractable coming out of tank. Good overall health, nails not trimmed and tail a little grubby, slightly dry and some red marks. Good muscle tone, good weight for size. A Little shy, happy to explore a little nervous by the day.

Bucks over 18 months

1st P403 Additives, owned by Shonagh Lowerson-Head. Perfectly tractable coming out of tank. Some nails not trimmed, nice clean tails. Good weight + muscle tone. Calm, relaxed but confident guy.

2nd P402 Gallifrey Rimmer, owned and bred by Cat Mace. Perfectly tractable. Good overall health. Ok prep, few nails missed, tail clean. Very solid for age, good overall condition but quite extensive hair loss over back. Very relaxed but still happy to explore.

Buck Challenge

1st P102 Isamu Bakari, owned by Melanie Smith, bred by Jemma Fettes

2nd P212 Lovecraft Reaper, owned by Melanie Smith, bred by Lisa Maurin

3rd P209 Lovecraft Nabu, owned by Melanie Smith, bred by Lisa Maurin

4th P201 Isamu How 'ard Can It Be, owned by Holly Maguire, bred by Jemma Fettes

5th P302 Sardines, owned by Shonagh Lowerson-Head

6th P403 Additives, owned by Shonagh Lowerson-Head

Does under 6 months

1st P514 Hawthorn Bubblegum Cheeky, owned by Cambria Leitch, bred by toyah Leitch. Perfectly tractable. Good health. Good preparation, good overall condition, nice coat, nice tail. Slightly over weight for size. Very relaxed for age, very happy to be out with judge although did try to jump back to tank, but also happy to explore bench. Very sweet girl.

2nd P519 Isamu Kishti, owned and bred by Lisa Maurin. Perfectly relaxed coming out of tank. Good overall health and preparation. Good weight for size, very solid, good muscle tone. Very confident for her age, happy to be on judge's shoulder, but also had a nice explore.

3rd P511 Hawthorn Thumper, owned and bred by toyah Leitch. Perfectly tractable, good overall health. Nails clipped, tail clean, good muscle tone. Nice shiny coat. Happy to have an explore, but loves cuddles and strokes with judge.

4th P520 Lovecraft Arcana, owned and bred by Lisa Maurin. Very relaxed coming out of tank. Good preparation, good health, good weight for size and nice muscle tone. Loved to explore the bench, very sweet rat.

5th P517 Orchard Foxbox, owned by Cambria Leitch, bred by Leia Morrison. Perfectly tractable. Good overall health, nails short but sharp. Tail grubby. Lovely soft coat. Wasn't interested in exploring, happier sitting with the judge, lovely little girl.

6th P506 Feegle Sabriel, owned and bred by Fiona Milton. Very relaxed coming out of the tank, good health, and good preparation. Tail very clean, good condition and weight for size. Very relaxed and bold for her age. Small scratch on rump.

Unplaced

P501 Isamu Butter Fingers, owned and bred by Jemma Fettes. Slightly nervous coming out of tank, but fine when out. Good overall health, good preparation and nice clean tail. Good condition and nice weight for size, and good muscle tone. Sweet rat, giving judge kisses, but happy to go exploring. Does not want to go back in tank!

P502 Isamu Hot Potato, owned and bred by Jemma Fettes. Perfectly tractable. Good overall health, good muscle tone, nice weight for size. Nails trimmed tail a little grubby. Lovely coat. Had a little explore, prefers being with judge.

P503 Mible Equinox, owned and bred by Helen Belton. Very relaxed coming out of tank. Good overall health, but quite large bite on belly. Good condition. Very relaxed and happy to sit with judge but took herself back to the tank. Sweet girl.

P504 Aurora Berry Alice, owned and bred by Lyn Dimmock. Initially very nervous and didn't want to come out of the tank. Settled when out but still a little wary. Good overall health, OK preparation, few nails missed. Good overall condition. Has settled well out of tank, still seeking assurance from the judge. Very sweet girl.

P505 Aurora Crackers and Cheese, owned and bred by Lyn Dimmock. Perfectly tractable. Good overall health. Good muscle tone and nice weight for size. Nails clipped, tail a little grubby. Happy to explore. Very confident for such a little girl. Happy being handled and really sweet.

P507 Hawthorn Sky High McKy(e), owned and bred by toyah Leitch. Perfectly tractable. Good overall health. Good muscle tone, nails clipped, tail clean. Happy to explore, always on the move! Confident sweet girl.

P508 Feegle Soot Sprite, owned and bred by Fiona Milton. Very relaxed coming out of the tank, but a little nervous when out. Couple of nervous poops! Good health and good condition. Few scabs on tail, nice preparation, no sharp claws. Seems relaxed but very squeaky with judge.

P509 Excalibur Elara, owned by Ellen Pascoe, bred by Joel Gardner-Hall. Very relaxed coming out of the tank, good health and good preparation, nails done. In good condition, nice weight for size, good muscle tone. A little bit apprehensive and squeaky with judge. Seeking reassurance from judge.

P510 Hawthorn Jenga, owned and bred by toyah Leitch. Perfectly tractable. Good preparation and good health. Would much rather explore than sit with the boring judge! Very squeaky.

P512 Lilliput Little Miss Uppity, owned by toyah Leitch, bred by Lilly Holland. Perfectly tractable. Good health, slightly overweight for age. Good preparation, tail nice and clean, one bloody nail. Not particularly interested in judge, took herself back to the tank a few times.

P513 Hawthorn Cute Lil' Nimbus, owned by Zoe Lumour, bred by toyah Leitch. Perfectly tractable even though judge woke her up! Good overall health. Good muscle tone and weight for size. Nails good, tail clean. Porphyrin staining around nose, keep an eye on her just in case. Really sweet girl, had an explore of judge and surroundings, gave a few licks.

P515 Hawthorn Cloud and Proud, owned by Zoe Lumour, bred by toyah Leitch. Good tractability. Good health, good preparation. Good weight for size, OK muscle tone. Nice relaxed doe for age, even though she had a wee and poo on judge. Took herself back to the tank.

P516 Hawthorn Lost Soul, owned and bred by toyah Leitch. Perfectly

tractable. Good health, OK muscle tone. Nails clipped, tail a little grubby. Happy to explore, very nosy. More interested in exploring than in judge. Very cute.

P518 Lovecraft Humla owned and bred Lisa Maurin. Little resistance coming out of the tank, but perfectly fine when out. Lovely coat, good overall health. Nails trimmed, tail lovely and clean. Loves to explore. Also happy to spend time with the judge, but would rather be off seeing everything.

Does 6 to 12 months

1st P605 Lovecraft Good King Moggle Mog XII, owned by Jemma Fettes, bred by Lisa Maurin. Perfectly tractable, happy "hanging" rat! Nails clipped, tail a little grubby. Good muscle tone. Nice weight for size. Lovely soft shiny coat. Happy to explore, gave judge a kiss on return. Lovely sweet girl.

2nd P604 Azuline Ink Responsibly, owned and bred by Zoe Lumour. Perfectly tractable. Good health, good prep, nice clean tail. Good condition, nice weight for size. Very relaxed with judge, even giving kisses. Happy to explore bench as well. Nice happy girl.

3rd P614 Isamu Tiddly Pom, owned by Linda Frances, bred by Jemma Fettes. Good tractability, good health. Nice weight for size, OK muscle tone. Good preparation. Nice and relaxed with judge, happy to stay for cuddles and go off and explore.

4th P613 Azuline For Duck's Sake, owned and bred by Zoe Lumour. Perfectly happy to come out of tank, good overall health. Nails clipped and tail nice and clean. Good muscle tone and weight for size. Wasn't keen on exploring, but very happy with judge, giving lots of kisses on judge's nose.

5th P615 Lovecraft Isola, owned and

bred by Lisa Maurin. Very tractable. Very good muscle tone and weight for size. Nails clipped and tail clean. In good shape. Very happy to explore and very calm and relaxed. Lovely girl. 6th P602 Lovecraft Sweet cHilly Pepper, owned by Linda Frances, bred by Lisa Maurin. Perfectly tractable. Good health. Good preparation, tail clean and nails clipped. Good muscle tone. Very happy to explore surroundings and happy being handled or just sit. Very sweet girl.

Unplaced

P601 Stillyrats Lyra, owned by Ellen Pasco, bred by Janette Rodgers. Perfectly tractable. Good preparation, good health and condition. OK weight for size, muscle tone fine. Seems quite relaxed but squeaks when (male) judge touches her. Seems happier in tank than with evil judge.

P606 Feegle Inconceivable!, owned and bred by Fiona Milton. Perfectly tractable even though disturbed by the judge. Good overall health, except a little porphy around the nose. Good muscle tone and weight. Nails clipped, tail a little grubby. Happy to sit and get attention from judge, giving kisses. Took herself back to tank.

P607 Hawthorn Shut the Front Door, owned and bred by toyah Leitch. Slight tension coming out of tank (in heat?). Not settling when out. Good health and condition. Have never seen a more on heat rat! Nice coat. Seems a nice sweet rat when she can get over how in heat she is!

P609 Coco, owned by Fiona Emmonds. Really good coming out of the tank. Good overall health and great muscle tone and overall size. Really shiny coat, nails clipped and tail good. A little bit nervous about exploring, but likes an explore on judge. Looking for a little reassurance. Cuddly sweet girl.

P610 Ruby, owned by Fiona Emmonds. Perfectly tractable but wriggles mcgee out of tank! Good health. A few claws missed, clean tail, good muscle tone. Much prefers exploring to sitting with judge. Not interested in people or going back in tank.

P611 Hawthorn Rural Juror, owned and bred by toyah Leitch. Perfectly tractable coming out, even though having a nice relax before coming out. Good health carrying a little bit extra, good muscle tone. Nice soft coat. Happy to have a little explore, a little nervous but very happy to have her head stroked.

P612 Hawthorn Anybody Want a Peanut, owned by Fiona Milton, bred by toyah Leitch. Good tractability, good health. Nails done, tail a little bit mucky, a bit of porphyrin staining on side. OK condition, OK weight for size, lacking a little muscle tone. Very relaxed with judge, very unurgent rat. Had a little explore but took herself back to the tank.

Does 12 to 18 months

1st P702 Azuline Llamageddon, owned and bred by Zoe Lumour. Perfectly tractable coming out of tank. Good overall health and lovely coat condition. Nice shiny coat. Good muscle tone and good weight for size. Nail slipped, tail clean. Very relaxed and happy to have an explore. Very lickky kissy lovely girl.

2nd P701 Stillyrats Champagne Supanova, owned by Lyn Dimmock, bred by Janette Rodgers. Perfectly tractable. Good health and prep and clean tail. Slightly long guard hairs on rump. Very relaxed rat. Ok weight for size, lacks a little muscle tone especially over rump. Very sweet girl giving judge lots of kisses.

3rd P703 Isamu Ele Mental, owned and bred by Jemma Fettes. Perfectly happy to come out of the tank. Good overall health, some porph staining around eyes. Good muscle tone and weight for size. Good prep, nails clipped. Tail a bit grubby. Took self back to tank while exploring but came back out. Easy to handle. Very sweet girl.

Does over 18 months

1st P801 Gallifrey Nefertiti. Owned and bred by Cat Mace. Perfectly tractable. Good health but carrying a few extra pounds. Coat condition ok for age. Nice clean tail, ok prep, few claws missed. Quite relaxed and happy to sit with judge.

Supreme challenge

1st P605 Lovecraft Good King Moggle Mog XII, owned by Jemma Fettes, bred by Lisa Maurin

2nd P102 Isamu Bakari, owned by Melanie Smith, bred by Jemma Fettes

3rd P212 Lovecraft Reaper, owned by Melanie Smith, bred by Lisa Maurin

4th P604 Azuline Ink Responsibly owned and bred by Zoe Lumour

5th P209 Lovecraft Nabu, owned by Melanie Smith, bred by Lisa Maurin

6th P201 Isamu How 'ard Can It Be, owned by Holly Maguire, bred by Jemma Fettes

Best Coat Condition

P605 Lovecraft Good King Moggle Mog the XII owned by Jemma Fettes, bred by Lisa Maurin

Best Overall Fitness

P102 Isamu Bakari, owned by Melanie Smith, bred by Jemma Fettes

Best Presented

P506 Feegle Sabriel, owned and bred by Fiona Milton

Most Relaxed

P701 Stillyrats Champagne Supanova, owned by Lyn Dimmock, bred by Janette Rodgers.

Most Engaging

P212 Lovecraft Reaper, owned by Melanie Smith, bred by Lisa Maurin

Most Affectionate

P701 Stillyrats Champagne Supanova, owned by Lyn Dimmock, bred by Janette Rodgers

Most Confident

P209 Lovecraft Nabu, owned by Melanie Smith, bred by Lisa Maurin

Best Junior

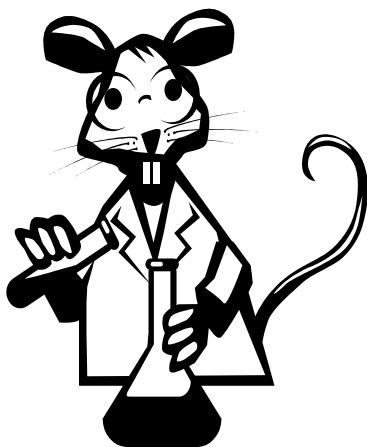
P514 Hawthorn Bubblegum Cheeky, owned by Cambria Leitch, bred by toyah Leitch

Varieties word search

I	V	Z	E	T	X	A	E	E	G	Y	C	B	D	D
G	M	C	T	S	E	G	H	K	E	A	T	J	E	K
E	I	Q	H	J	U	Y	R	S	L	P	P	P	V	D
K	N	U	Q	A	J	R	E	I	G	L	P	A	M	T
Y	K	I	N	V	M	M	L	Q	T	A	Q	L	Q	R
Z	J	C	B	L	R	P	K	E	C	K	Y	Z	E	S
X	Y	K	M	U	J	T	A	Y	B	R	J	G	A	K
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X	H	I	W	E	I	C	I	N	N	A	M	O	N	U
U	M	L	F	P	G	H	V	F	B	E	D	N	L	Y
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H	R	E	O	R	U	Z	X	O	H	Z	V	N	P	V
S	V	R	O	Y	L	J	X	Z	D	B	E	L	R	H
L	W	Q	C	H	N	W	F	M	J	E	C	N	X	M
W	L	R	M	T	D	H	P	R	O	I	D	C	U	K

CHAMPAGNE
QUICKSILVER
MINK
BADGER
HOODED
CAPPED
DOVE
BURMESE
CINNAMON
LILAC

This space can be used for show report overflow, pictures, small notices or answers section from any puzzles put into the magazine.



For Loan

NERS currently have a range of items available to loan out to members

Books

Rat by Jonathan Burt.

Rats: A Year with New York's Most Unwanted Inhabitants by Robert Sullivan.

Both are currently with Jemma Fettes (chair@neratsociety.co.uk).

Humane (Live) Rat Trap

There is one humane rat trap available for loan to members to catch either domestic or wild rats. If you are interested in borrowing this please contact a member of the committee.

Heat Mats

Two heat mats are available to be borrowed from Beri Instone (publicity@neratsociety.co.uk). These would be easy to post.

Cages

The following cages are available to hire:

2 Alaska cages (ideal for use as birthing cages), located in County Durham and Lancashire

1 Critter One cage (good for intros), located in Sheffield

If you are interested in hiring any of these cages please contact a member of the committee.

NERS Contact Information - Who's Who?

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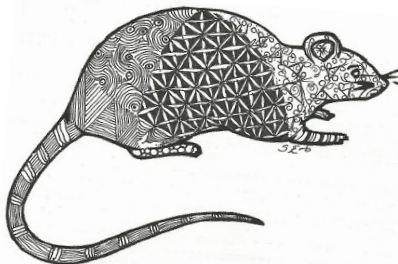
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Yorkshire Rat Club



The **Yorkshire Rat Club (YRC)** was set up in 2002, to promote the keeping of rats as pets and to encourage people to show their rats in a competitive but companionable atmosphere. It has grown into a vibrant and thriving community of rat lovers.

Promoting the keeping and responsible breeding of Fancy Rats for exhibition and as pets.

- Regular one and two star shows in Leeds and York, with light refreshments, stalls and fun events.
- Membership includes reduced entry and hire tank fees, access to our member only group and forum and the quarterly magazine StarratS!
- Membership fees starting from just £9 (based on concessionary membership, new members are subject to a £2.50 joining fee)

For more information please Like us on Facebook or visit YorkshireRatClub.org.uk



The Midlands Rat Club



www.midlandsratclub.org

The Midlands Rat Club holds shows for Varieties and Pets every two months in the Midlands.

If you would like to know where we will be meeting next, visit our website at www.midlandsratclub.org or email us at enquiries@midlandsratclub.org

Take your show experience to another level



MRC Members Forum