



The Work of a Colony Manager and Its Importance for The Scientist

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Colony Management at ISTA

- 12 scientific groups
 - About 17 000 living animals
- Coordination between scientist and animal caretaker
- Contact for questions, problems and requests
 - Ordering mice
 - Help with colony management database
 - Discussing new lines / crosses
- Management and organization of mouse lines
 - Import and Export of mouse lines
 - Rederivation and in vitro fertilization
 - Setting up breeding pairs and keeping the colony efficient
 - Genotyping



What do you need for a good management?

- A good organized colony management software
- Trained animal caretaker and colony manager
- Organized animal rooms and house rules
- A good equipped genotyping laboratory

Colony Management Software – A tune (tick@lab)

Why using a software for recording mice?

- Accurate documentation
- complete records for the whole lifespan of the mouse
- flexible data analyses (e.g. import export of files and reports)

A tune – tick@lab as database

- can be used for multiple species on campus
- shows a CV for each mouse with exact days, time and user tracking for everything that is done
- task system for colony management
- ordering system for scientist
- reports can be easily exported

Colony Management – Mouse Database

The screenshot displays the 'a-tune' Mouse Database interface. On the left is a dark blue sidebar with a list of menu items: Home, Files & Documents, Animal Orders (highlighted with a yellow circle), Animal Management, Billing, Tasks, Cage Management, Administration, Reports, Master Data, Switch to mobile, and Help. At the bottom of the sidebar, it shows the 'tick@lab' logo and system information: 'System Information: a-tune tick@lab 3.0 Build 3269.3 Config Version: 001 Customer Version: -- Language: English'. The main content area has a top header with 'Launch Pad' and 'My tick@lab' on the left, and a 'Pin To' button on the right. Below the header, the interface is organized into horizontal panels, each with an icon and a title. The 'FILES & DOCUMENTS' panel contains buttons for 'OLD Notification', 'OLD Authorization', 'OLD Termination Notification', 'Notification', 'Authorization', and 'Termination Notification'. The 'ANIMAL ORDERS' panel contains 'Requests & Orders' and 'Deliveries & Identification'. The 'ANIMAL MANAGEMENT' panel contains 'Experimental Stock', 'Breeding Stock' (highlighted with a red circle), 'Matings' (highlighted with a green circle), 'Genotyping', and 'Internal Orders'. The 'BILLING' panel contains 'Billing Data', 'Animal Procurement', 'Invoice (Report)', and 'Census'. The 'TASKS' panel contains 'Tasks' and 'Cases'. The 'CAGE MANAGEMENT' panel contains 'Cages' and 'Audits'.

Animal Orders

- Requests & Orders
- Deliveries & Identification

Animal Management

- Experimental Stock
- Breeding Stock
- Matings
- Genotyping
- Internal Orders

Billing

- Billing Data
- Animal Procurement
- Invoice (Report)
- Census

Tasks

- Tasks
- Cases

Cage Management

- Cages
- Audits



ADMINISTRATION

[Logon Messages](#)[Configuration](#)[Cage Cards](#)[Templates](#)[Application Logs](#)

REPORTS

ADMIN

[User](#)[Location access](#)[Master Data: Forms Data](#)[Audit Trail](#)

ANIMAL HUSBANDRY

[Stock](#)[Animal & Medical Records](#)[Reclamation Report](#)[Room History](#)

ANIMAL UTILIZATION & STATISTICS

[Order & Disposition](#)[Animal Usage](#)[Experimental Use](#)[AUP Survey](#)[EU Tissue Sampling](#)[EU bred and killed without
being used](#)

BREEDING

[Breed Registry](#)

FILES & DOCUMENTS

[AUP Summary](#)

CUSTOM REPORTS

[Custom Report](#)

MASTER DATA

[Users](#)[Teams](#)[Catalog](#)[Catalog \(NG\)](#)[Suppliers](#)[Facilities](#)[Species](#)[Cage Types](#)[Supplier Catalogs](#)[CPD](#)[Forms Data](#)[Cost Centers](#)[Service Types](#)[Project Codes](#)[Billing Periods](#)[Billing Setup](#)

Breeding stock

	S	Auto-ID	Animal-ID1	Animal-ID2	Animal-ID3	Age	DoB	No. of animals	Background	N/F	Genotype	Sire	Dam	Room	Tags	Cage-ID	Cage Name	
	♀	394968	AK3F/23/3992	#1R/L	K 126135	24d	12/08/2023	1	GBS-GFP/Rosa-DTA (AK)	N5	GBS-GFP: hom Rosa-DTA: het	370678//AK3F/23/1431//RL//K113122	371001//AK3F/23/1496//RR//K119307	I05.OG3.011		128499		✓
	♂	395194				10d	26/08/2023	99	ROSA-DTA (AK)	N5		373745//AK3F/23/1746//R//K120047	361296//AK3F/23/893//R/LL//K112421 (113512)	I05.OG3.011		126143	K 126143	✓

Mating

No. of entries: 48

	Mating	Start date	Lab assistant	Male	Female	Date of last litter	Litter size	Cage-IDs	Cage Names	Room	Strain
⤴	033686	19/04/2024	Bauer, Katharina	421940//AK3F/24/221//w/o//K 133092 GBS-GFP (AK) GBS-GFP: het	421937//AK3F/24/218//w/o//K 133091 GBS-GFP (AK) GBS-GFP: het	02/09/2024	2	140207	K 140207	I05.OG3.011	GBS-GFP (AK)

Litters

No. of entries: 6 ⏪ < Page 1 of 2 > ⏩

Litter#	Date	Dam	Sire	Born alive	Born dead	Strain
444549	11/05/2024	421937//AK...	421940//AK...	10	0	GBS-GFP (AK)
448103	31/05/2024	421937//AK...	421940//AK...	8	0	GBS-GFP (AK)
452662	22/06/2024	421937//AK...	421940//AK...	7	0	GBS-GFP (AK)
456336	12/07/2024	421937//AK...	421940//AK...	2	0	GBS-GFP (AK)
462007	13/08/2024	421937//AK...	421940//AK...	5	0	GBS-GFP (AK)

No. of entries: 6 ⏪ < Page 1 of 2 > ⏩

Animal orders

Requests & Orders

REQUESTS

FILTER & SEARCH

+ New Request

Request/Order

AUP

Animals

Ownership and Responsibility

Location, Dates, Billing

Husbandry

Attachment

Summary

FOR STOCK

Please specify whether the animals are needed for Experiment or for Breeding. Animals will be transferred from the Breeding Module to the Experimental Module or in the Breeding Module. Transfer from the Breeding Module to the Experimental Module to the Breeding Module is NOT possible.

Experimental: ☒

Breeding: ☐

SELECT AUP

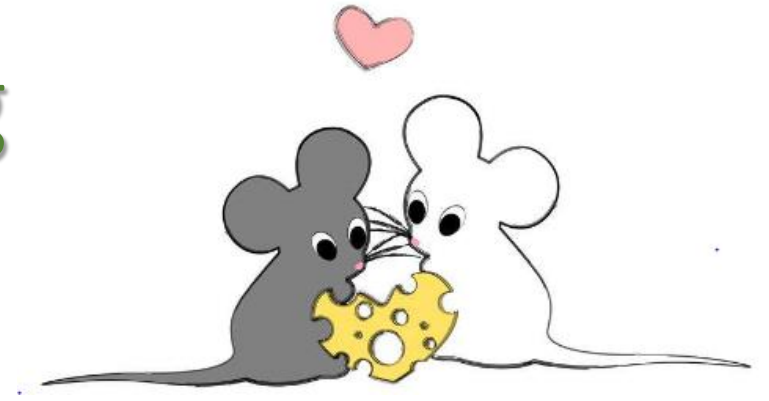
AUP #*:

Short description:

Study Number:

Animals for organ removal - Sixt
Animals for organ removal - Cutanos
Breeding_2023-0.288.351
CG_TrainingLabAnimals 2021-0.560.926
CG_TrainingLabAnimals 2021-0.560.926

Colony Management - Breeding



- Planning and set up of breeding pairs
 - Which mouse strains are needed
 - Do we have the strains or is an import necessary (hygiene level certificate, Embryo transfer?)
 - Number of mice, age, expected phenotype and genotype
- *As many but also as few animals as necessary*
 - Reduction and limitation of colonies and costs

Breeding

Inbred: mating of brothers and sisters (20 generations) to generate genetically identical and homozygous individuals e.g. C57BL/6

- + defined genetic background, reduction of animal numbers
- spontaneous mutations can lead to a genetic drift, inbred-repression

Outbred: high genetic variability generated (inbred <1%) e.g. CD-1, Wistar

- + no inbred-repression, good breeding performance
- many breeding pairs, increase animal numbers, variability of phenotypes

Monogamy: Male and female together the whole time

Intermitted monogamy: Male is removed during pregnancy and re-added after weaning

Polygamy: Male is rotating between 2 (or more) females

Timed matings: Male is removed as soon female is plug+ (for embryo collection)

Organize different mouse strains

- 1 animal caretaker per mouse room
- Different colours for cage cards, 2 different card systems for breeding cage and maintenance cage
- Attention cards for special wishes, requests

Litter card DOB: _____ Biopsy: _____ Wean: _____	Please sacrifice	Check & Report	Stop mating	Jumping male	Food experiment	Diphtheria Date of injection: _____ Time of injection: _____	Timed mating	Age > 1 year Still in use?	New transgenic Line Please immediately call Michael or Claudia in case a mouse is sick/ wounded or dead!!!	Sterile female Cage Mate Please DON'T kill this female in case male gets ordered or used for breeding!
Cagemate	Vet - Check	Post-OP Control	Plug check	already changed	Pregnant	Special health check - Weanlings	Do NOT change this cage!!!	Rats only:		
Quarantine Water bottles, NO drinking valves! Sampling date: _____	I feel lonely	Sentinels	Humidified Food	Permanent water bottle	2 pregnant ♀ / 2 mothers	Mating ersetzen!	Implant	Mating	Last chance	
Tamoxifen Date of injection: _____ Time of injection: _____	Freezing	Export Consignee: _____ Shipping date: _____	Food crusher	Reserved for	Placeholder cage	Separate ♂ as soon ♀ is pregnant.	Separate ♂ to placeholder cage as soon ♀ is pregnant. Keep ♂ separated until further notice.			



Special sticker code:

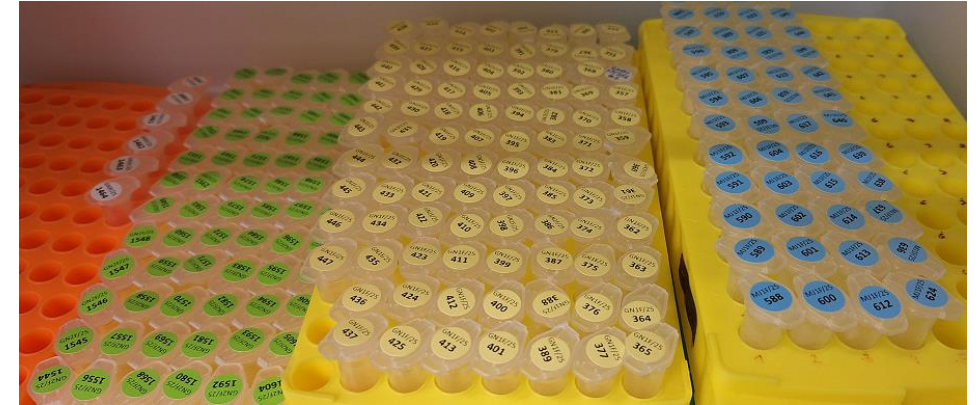
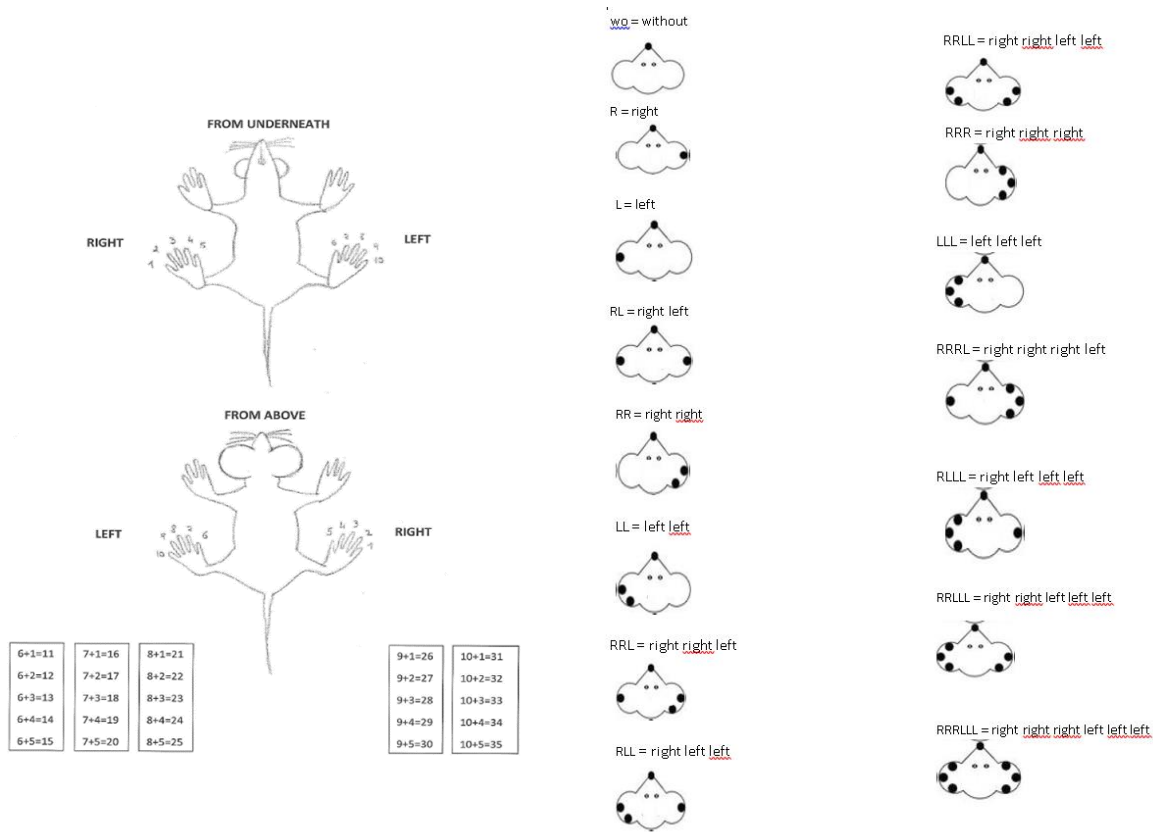
Red dot: biopsy only 1st litter

Green dot: fluorescence check

Yellow dot: Phenotype check

Blue arrow: early genotyping

Organize tissue samples

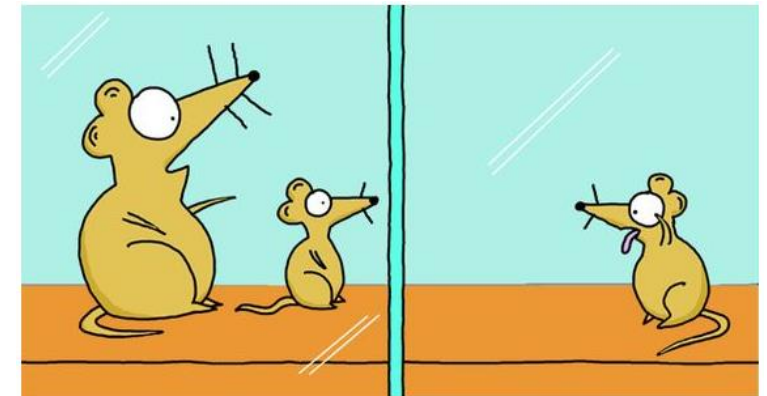


- toe clip or ear punch

- Pre-printed eppi-labels: initials of the group, year of birth, pup ID
- Different colour for different floors

Genotyping Services

- **Early genotyping P0-P5** Fast lyses with Quanta Extracta DNA Prep (**45 min**)
<https://www.quantabio.com>
- **Common genotyping P6-P21** Lyses overnight, Viagen Direct PCR Tail Extraction Kit (**4h-16h**)
- DNA extraction with **Maxwell** (**30-40 min**), high genomic DNA purification
- Sequencing with **Microsynth** VWR ExoCleanUp Fast (**30 min**) or BioLabs Monarch DNA Gel Extraction Kit (**45min**) → Sequencing overnight
- ~5300 PCR reaction per month = 1400/week
- From Biopsy to result: Fastest 2,5h



“Don’t play with him, he is **Wild Type**.”

Genotyping Services

PCR Protocol R26R Confetti

Date: 5/8/2025

Tube	Sample
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	K ⁺
17	wt
18	H ₂ O

Mastermix	1	19	
	-fold	-fold	5%
ddH ₂ O	7.00	133.00	139.7
Phire Green Hot Start II	10.00	190.00	199.5
Primermix (10μM)	1.00	19.00	20.0
	18.00		

18μl MM + 2μl lysis

Mutant = 300 bp
Heterozygote = 300 bp and 386 bp
Wild type = 386 bp

Gel: 2%, 1x TAE Buffer, 3μl Sybr Safe
Load: 5μl ladder (100bp), 10 lysis
Run: 110 Volt, 30-35min

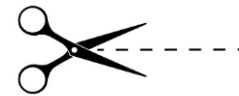
Cycling:

98°C	30sec	
98°C	5sec	
55°C	5sec	30 Cycles
72°C	15sec	
72°C	1min	
12°C	forever	

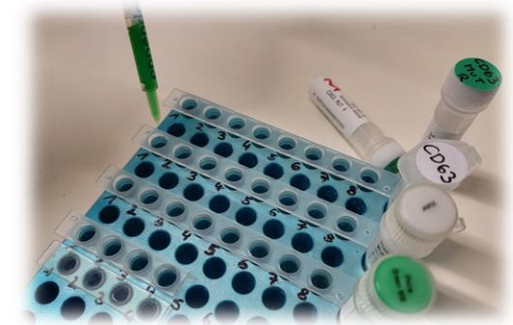
Primers:

R26R Mt 5' GAA TTA ATT CCG GTA TAA CTT CG
R26R wt 5' AAA GTC GCT CTG AGT TGT TAT 3'
common 5' CCA GAT GAC TAC CTA TCC TC 3'

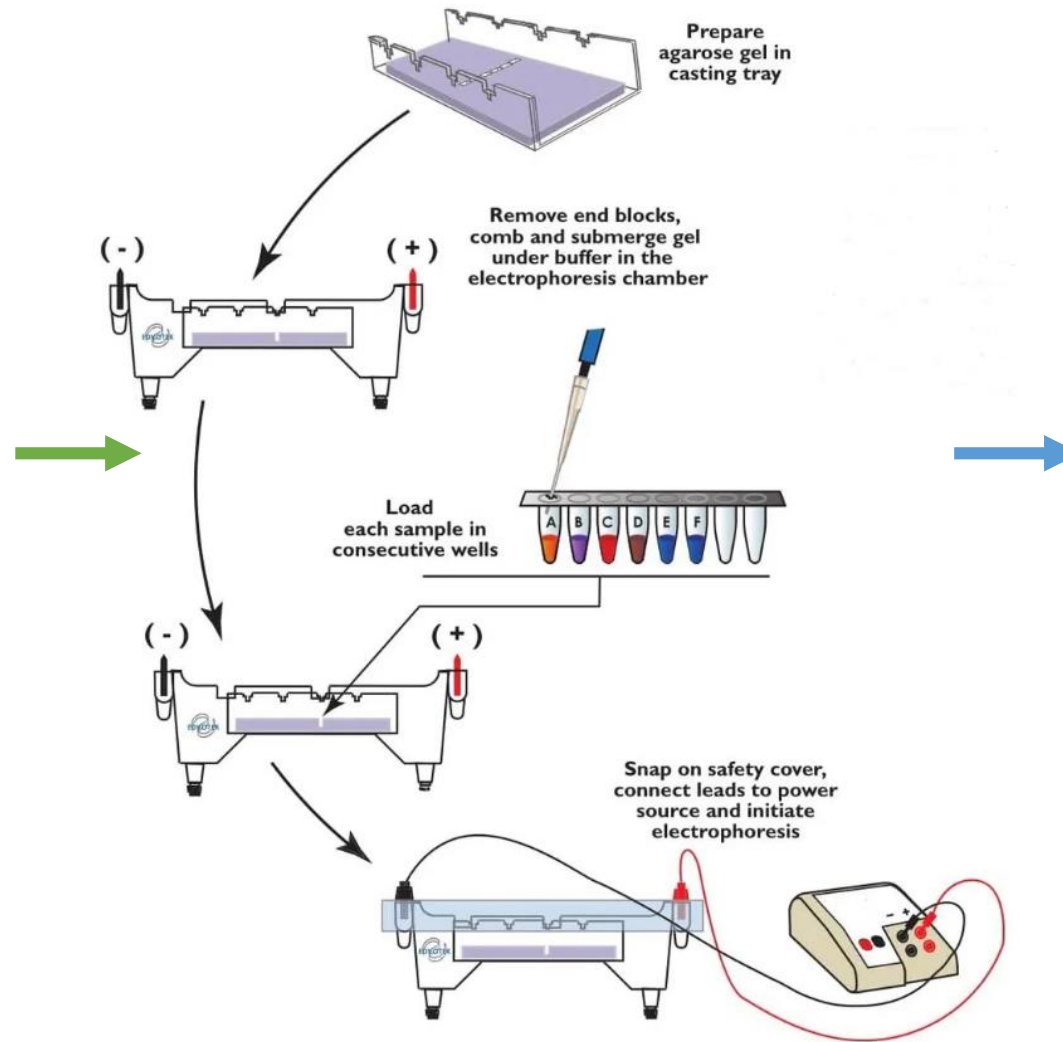
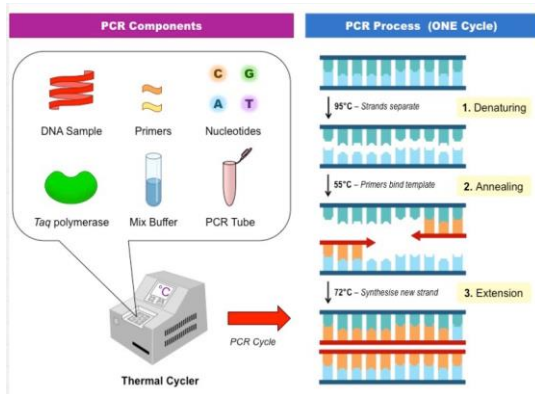
DNA extraction



Proteinase K



Genotyping Services – Agarose gel electrophoresis



Tube	Samples	Results
1	Embryo #1	hom
2	Embryo #2	het
3	Embryo #3	het
4	Embryo #4	wt
5	Embryo #5	hom
6	Embryo #6	hom
7	Embryo #7	wt
8	Embryo #8	het
9	WT	
10	K+	
11	H2O	

Results:

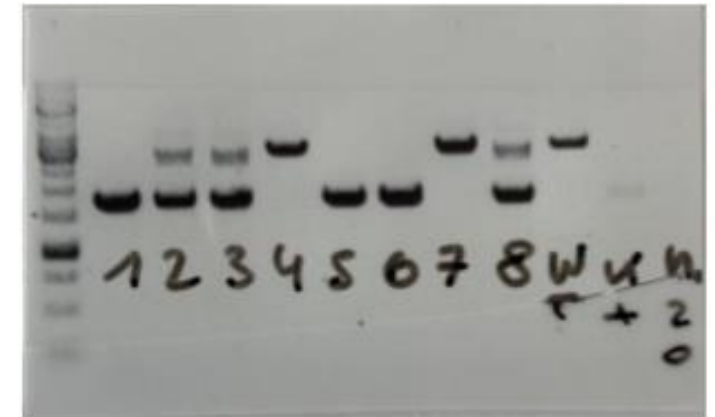
wt = 2.8 kb

het = below 2.8 kb

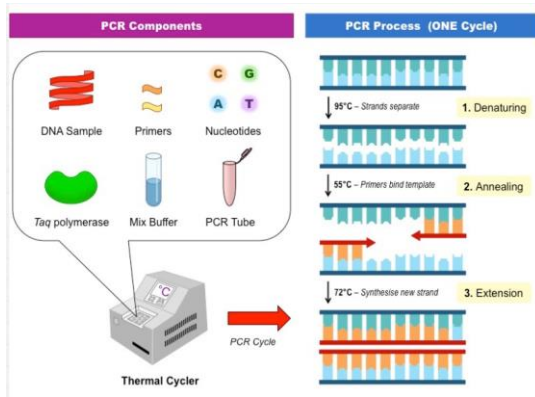
Gel: 1%, 110Volt 35min

4µl Sybr Safe , 9µl PCR product

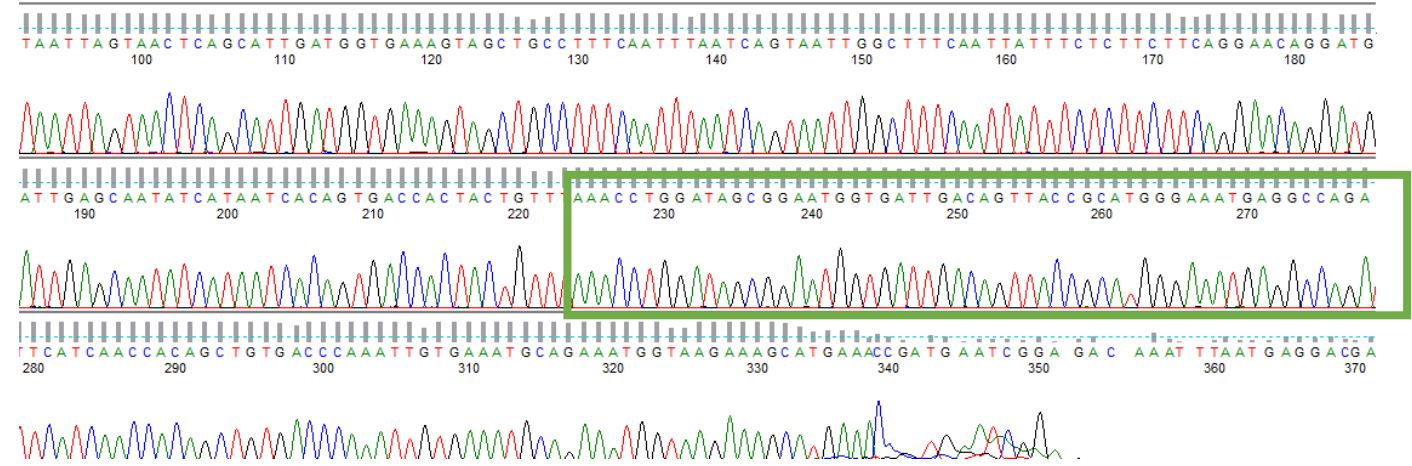
Ladder: 1kb



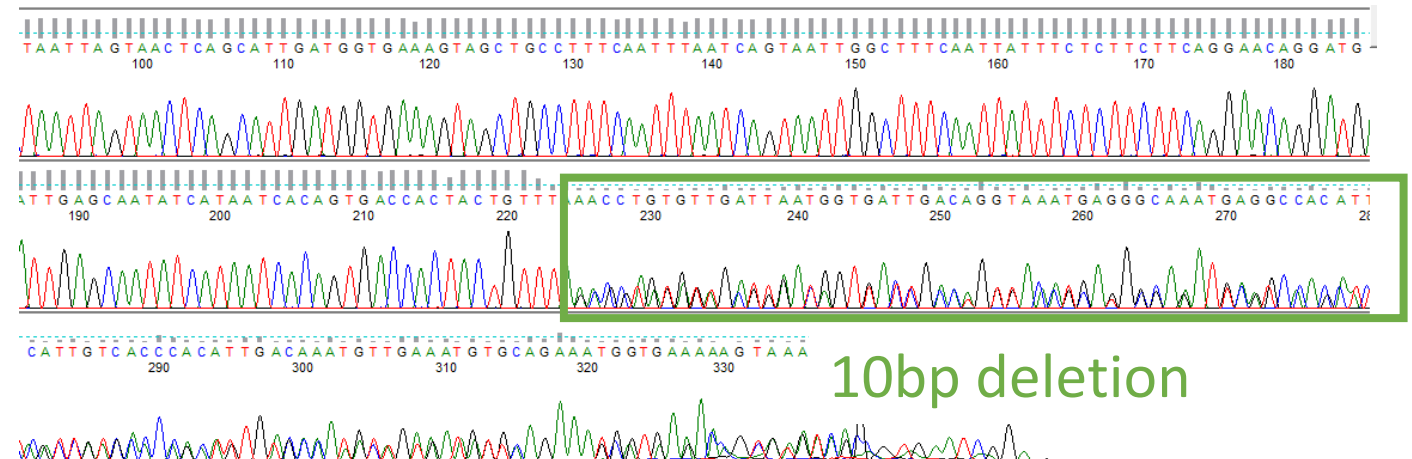
Genotyping Services – Sanger Sequencing



WT



HET



Advantages for Scientists

Colony management is time consuming:

- more time to plan and do experiments, evaluate results, write papers

Fast problem solutions:

- In house pipetting give fast answers if something seems wrong
- Urgent requests will be solved (e.g. delivery of animals)
- Colony can be adjusted easily

Less stress for scientist and animal



Thank you for your attention your PCF team!



Sabina Deixler

- Head of PCF Lab Team



Anna Heger

- Colony manager group **Hippenmeyer**
- IVF Team



Freyja Langer

- Colony manager group **Jösch, Sixt and Cutanos**
- IVF Team



Victoria Wimmer

- Colony manager group **Hippenmeyer and Jonas**
- IVF Team



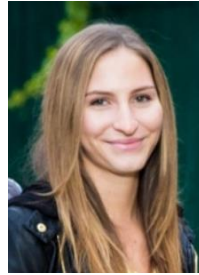
Sonja Haslinger

- Colony manager group **Siegert**
- Support **Novarino**
- IVF Team



Katharina Bauer

- Colony manager group **Kicheva and Douglass**
- IVF support



Angela Stichelberger

- Colony manager group **Novarino**



Thomas Bretterbauer

- Colony manager group **Shigemoto, De Bono and Danzl**



Gregor Kollwig

- Genotyping for group **Novarino**