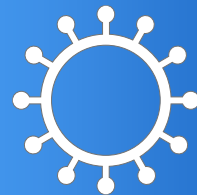




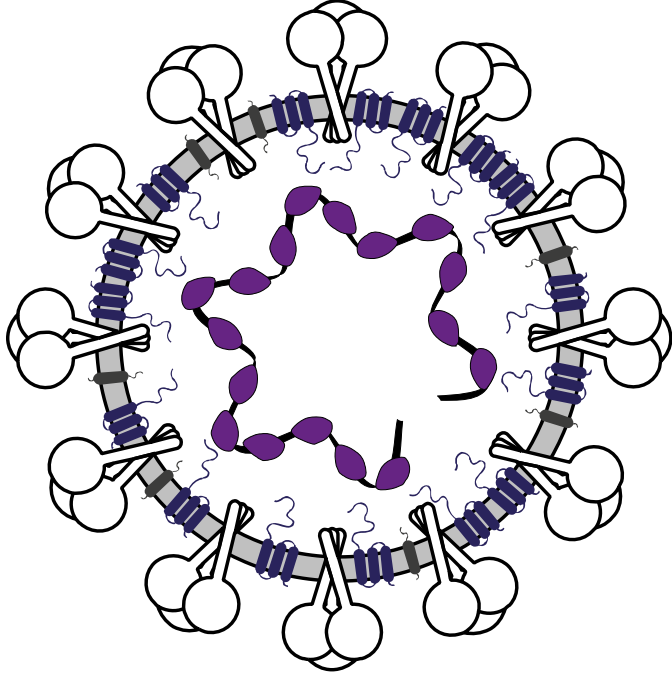
**Preventing Feline Coronavirus  
in catteries to reduce FIP risk**



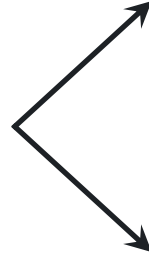


# Introduction

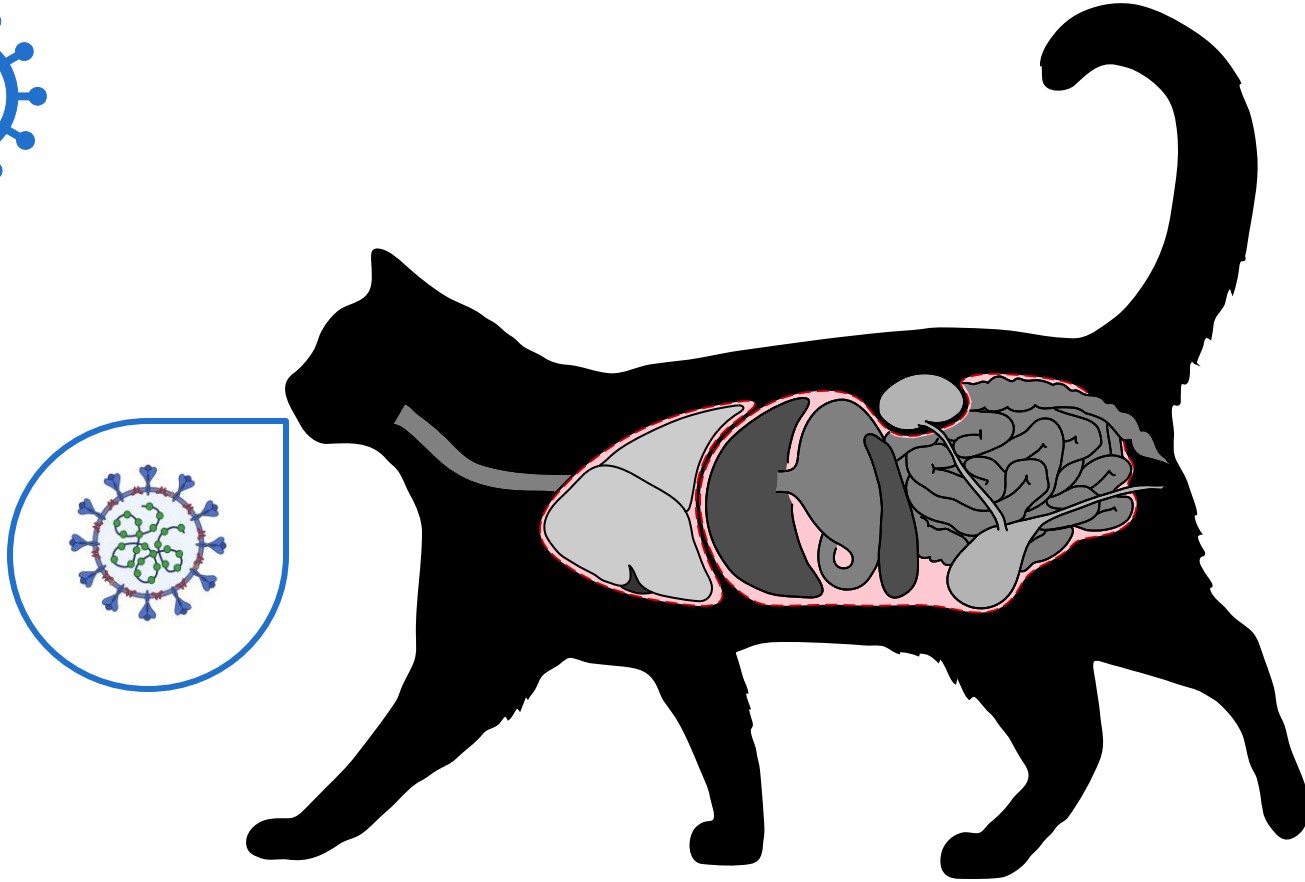
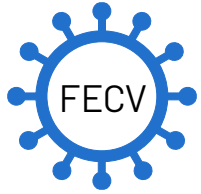
Nidovirales - coronavirusidae - coronavirusae  
alphacoronavirus - alphacoronavirus 1

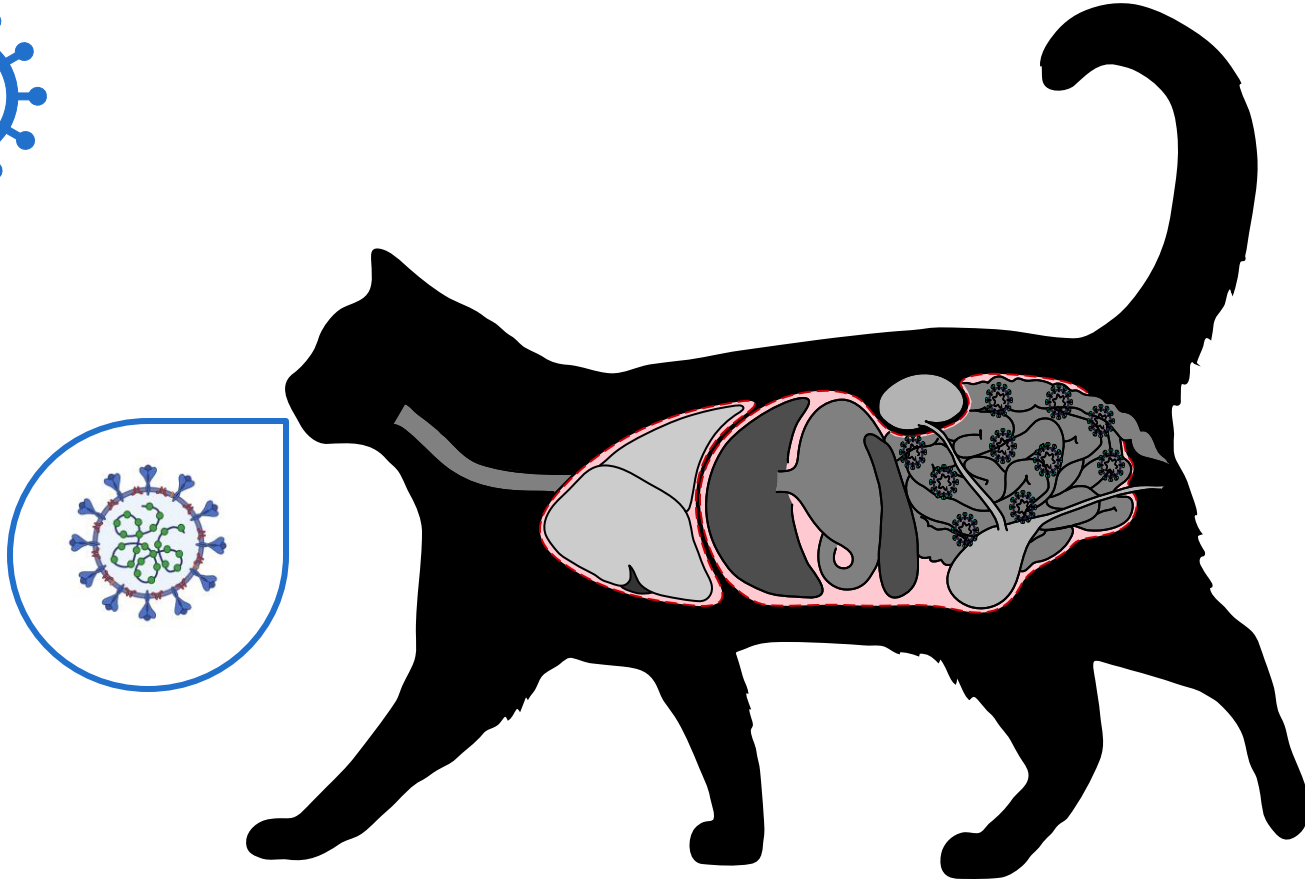
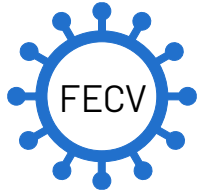


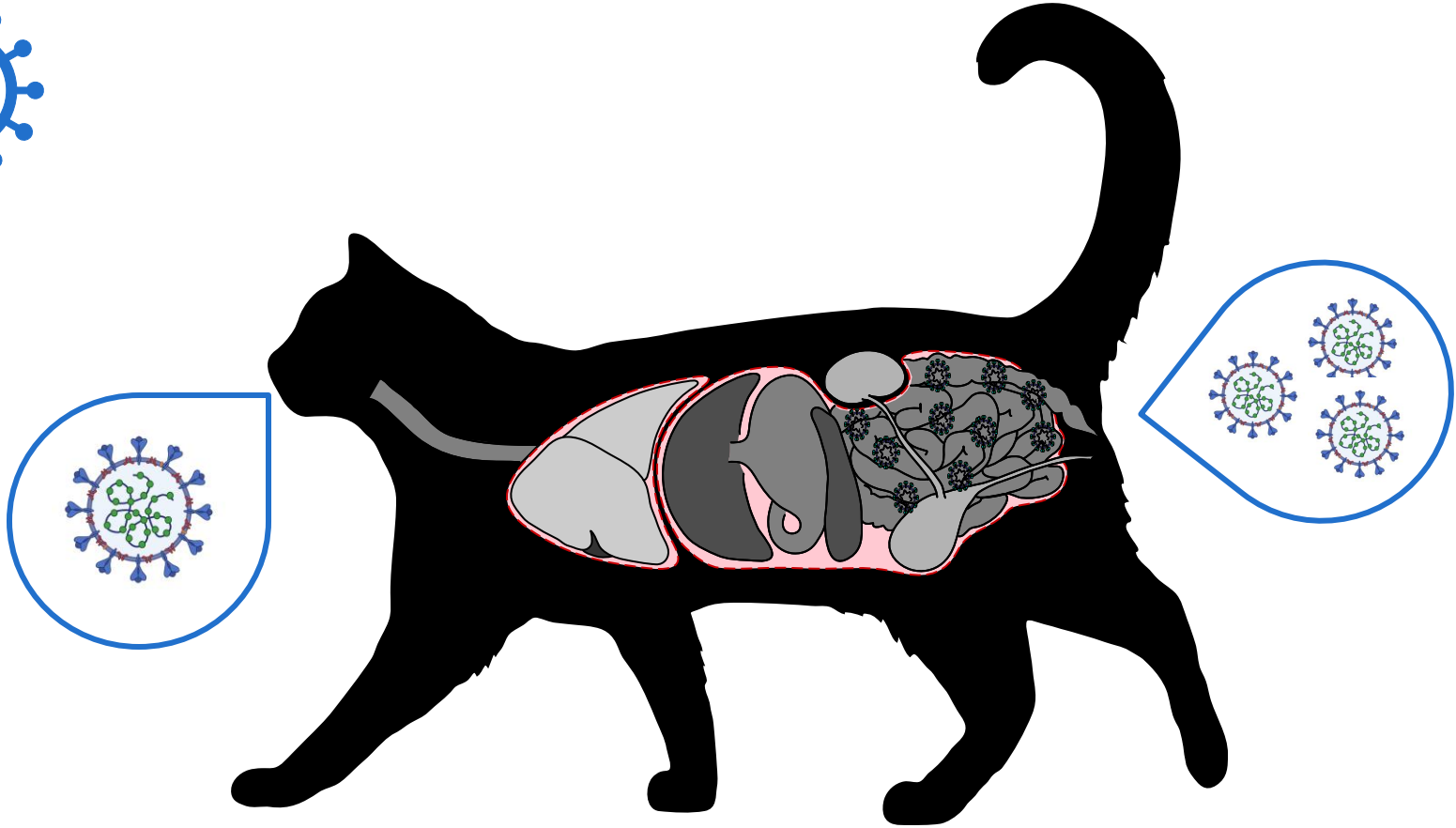
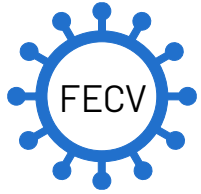
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Feline Enteric Coronavirus  
**(FECV)**

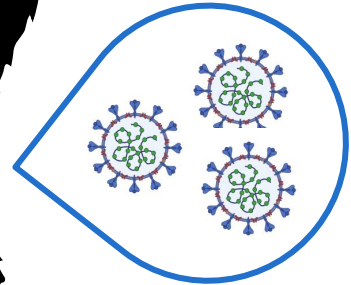
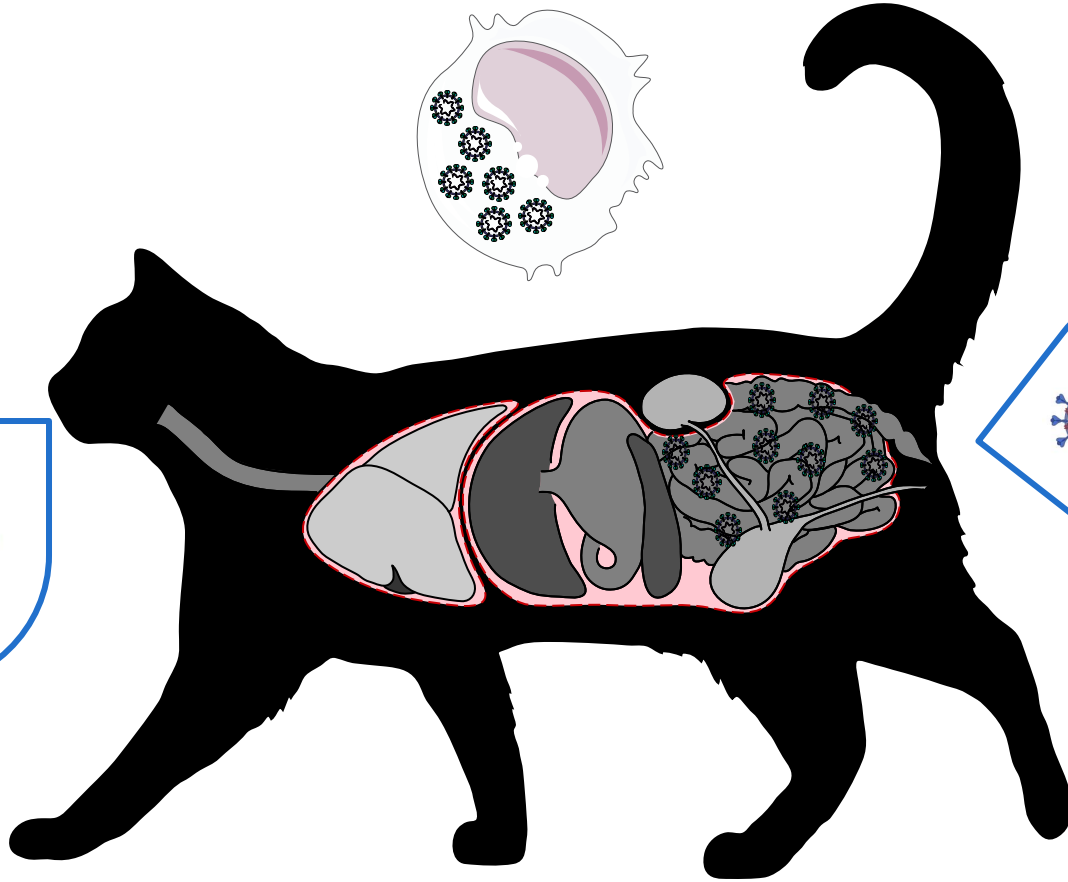
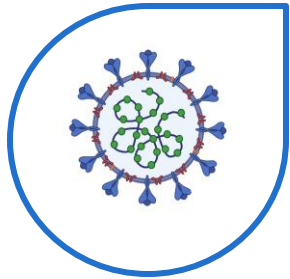
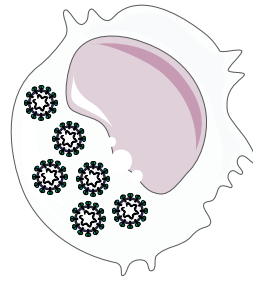
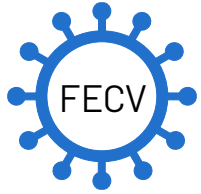


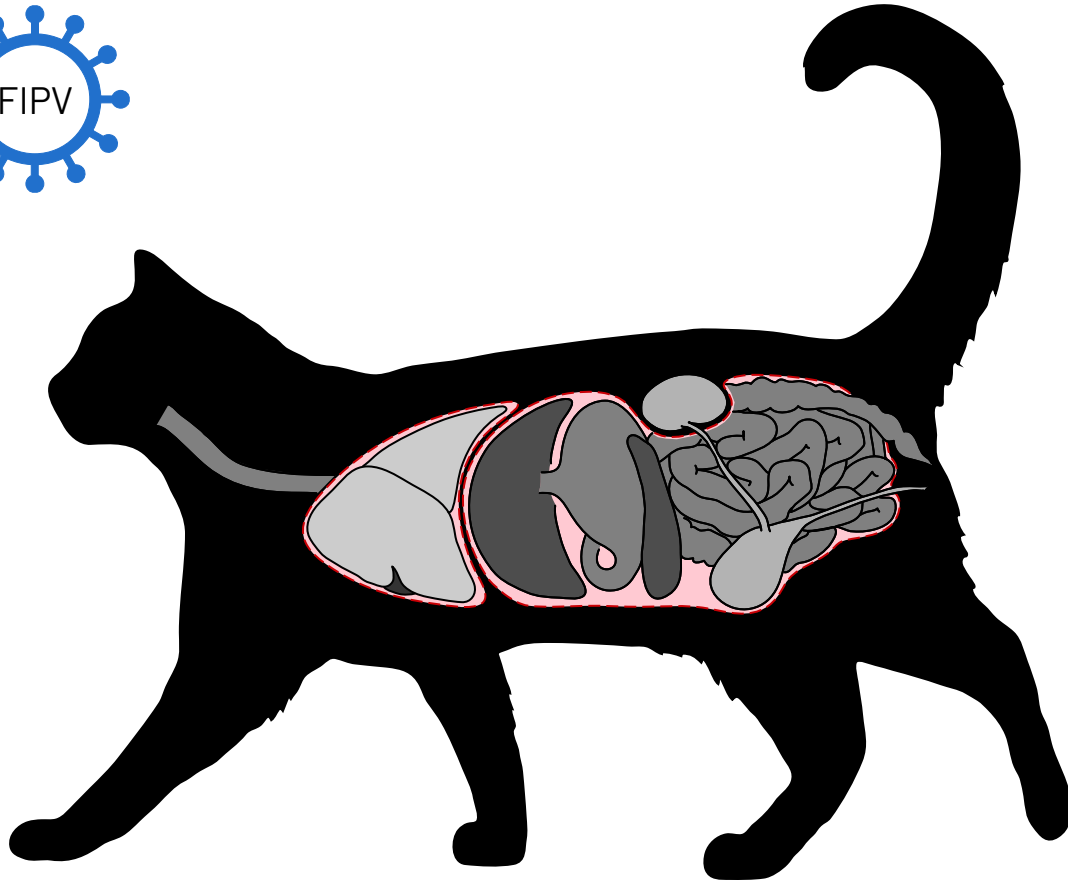
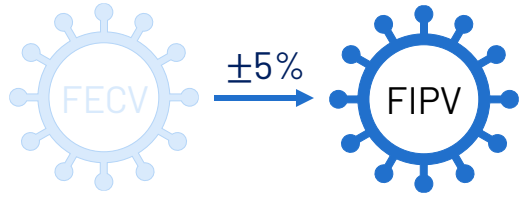
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Feline Infectious Peritonitis Virus  
**(FIPV)**

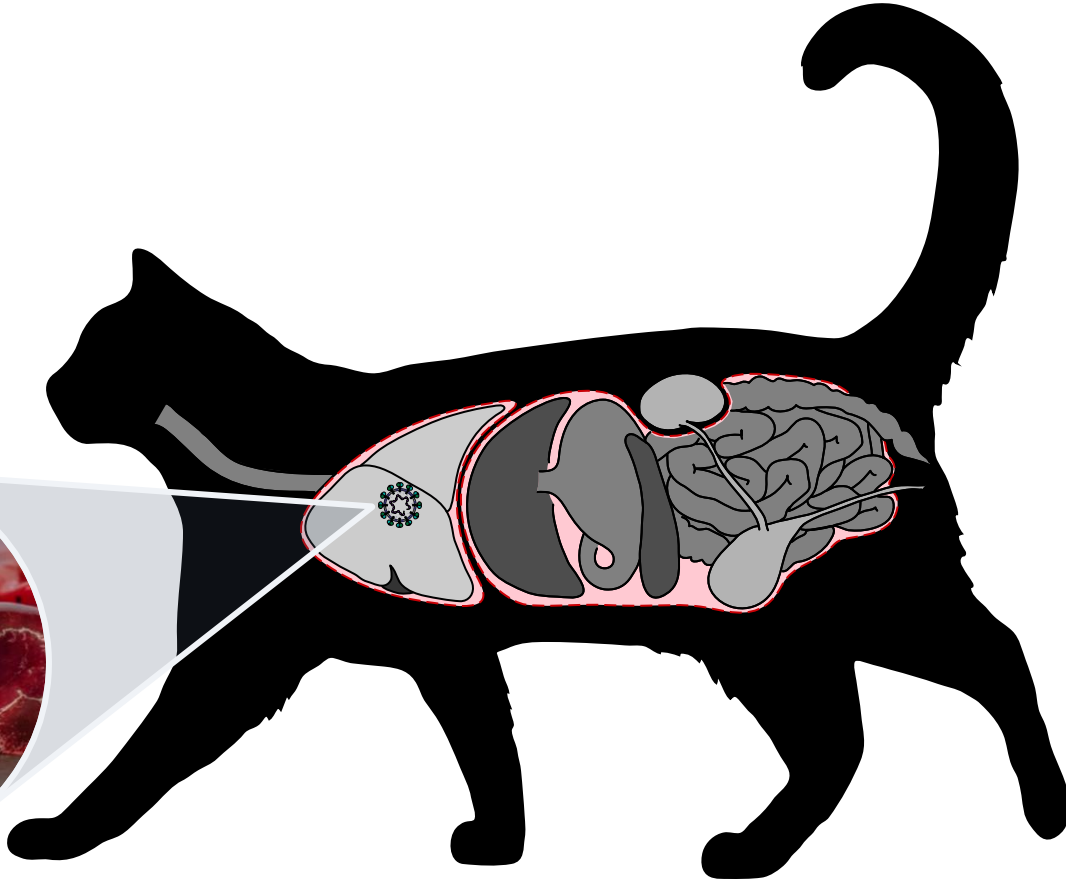
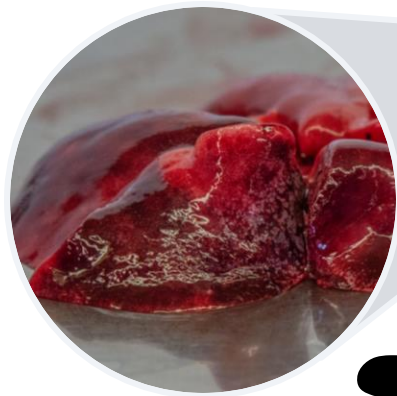


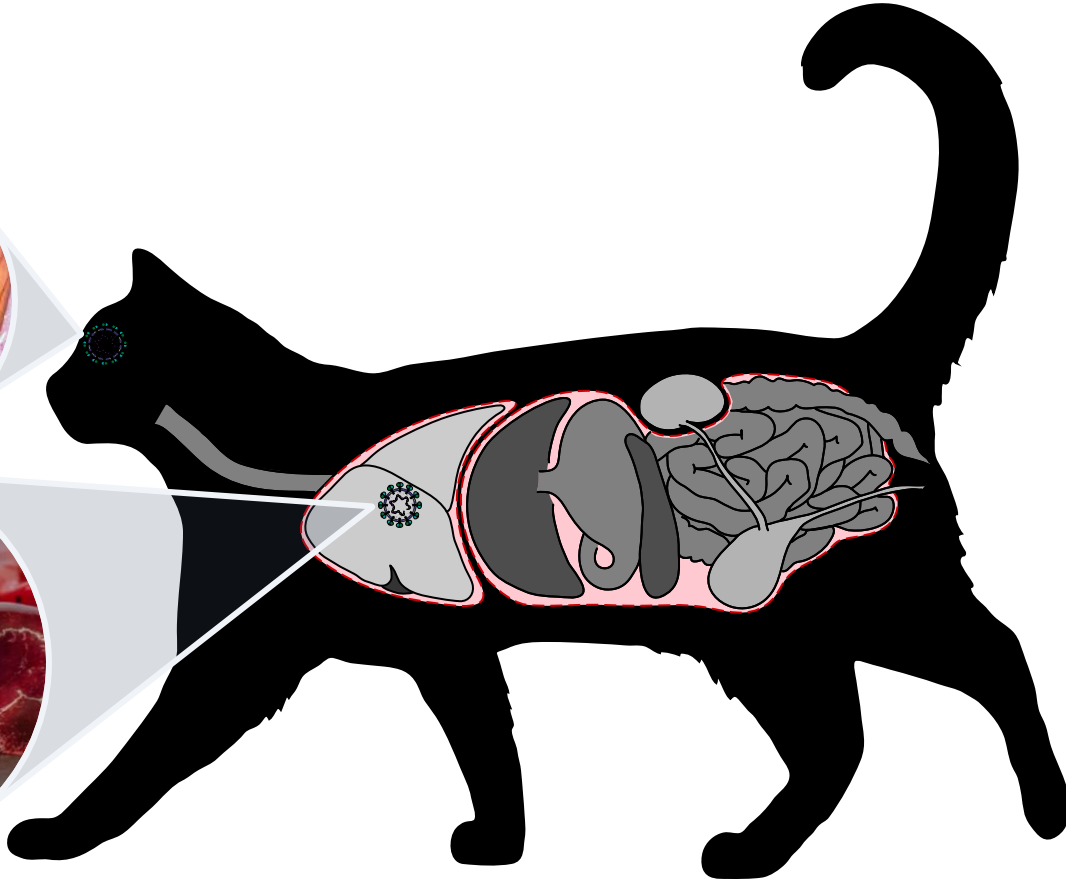
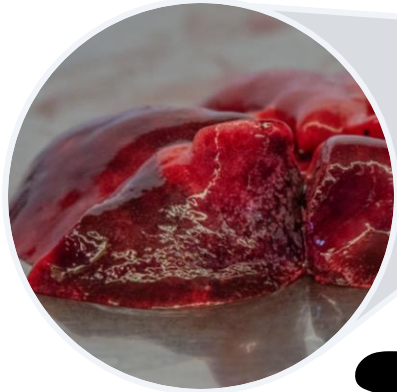


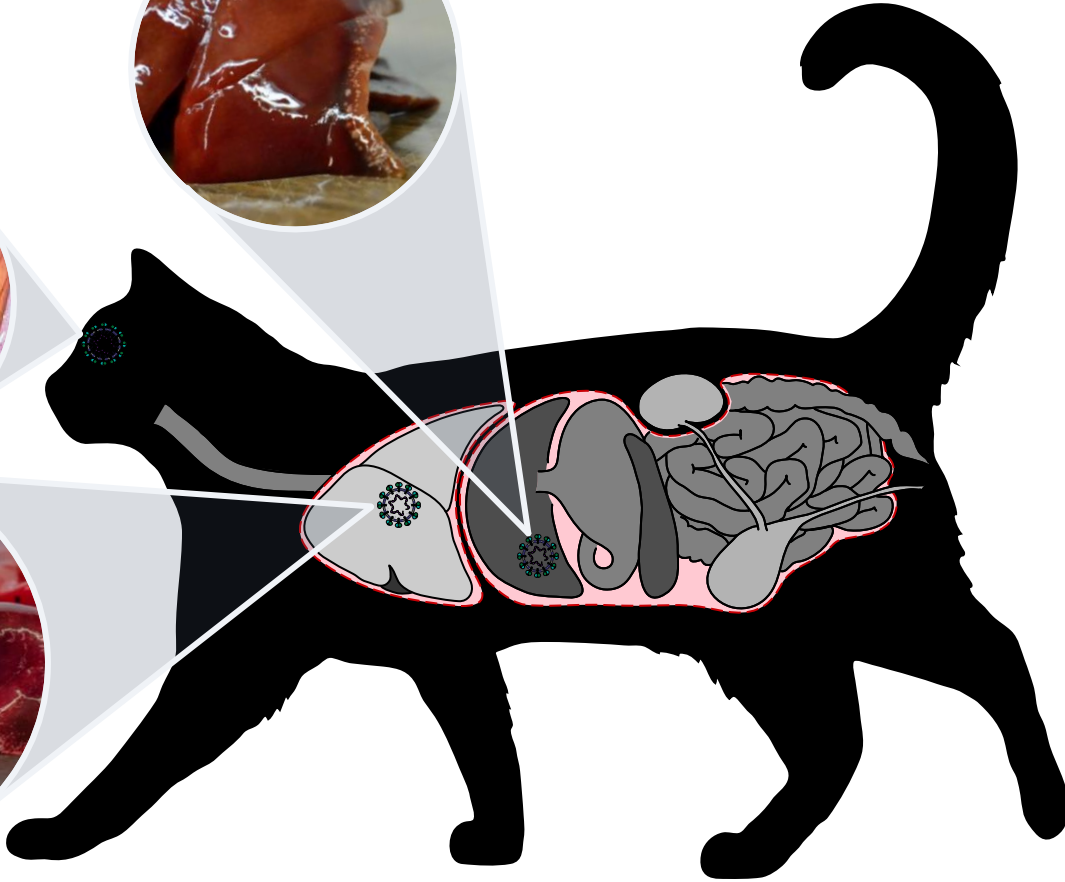
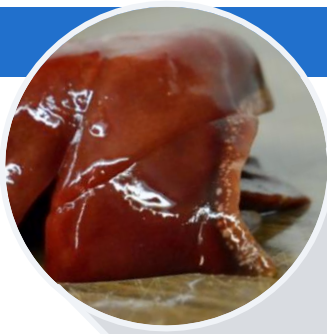
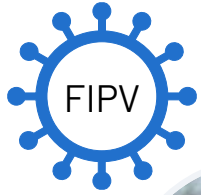


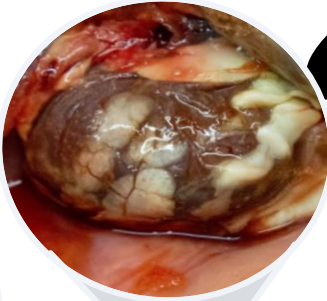
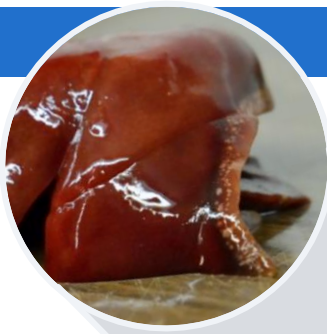
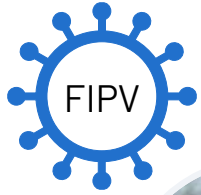


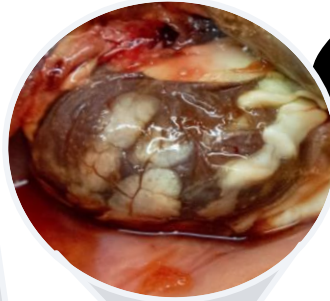
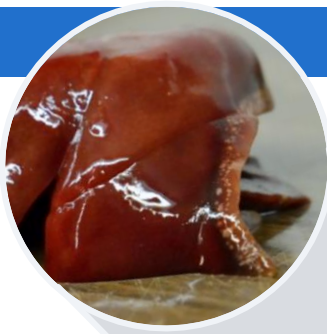














# Preventing FCoV in catteries

# Preventing FCoV in catteries

## Prevalence and risk factors of Feline Enteric Coronavirus (FECV) in catteries in Flanders

- Results from a first study (May '23-May '24)

## Implementation of protocols to reduce Feline Infectious Peritonitis (FIP) risk:

- Guidelines
- Manual FECV-low
- Manual FECV-free
- Results from a second study (May '24-May '25)

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# Methodology: shedding prevalence



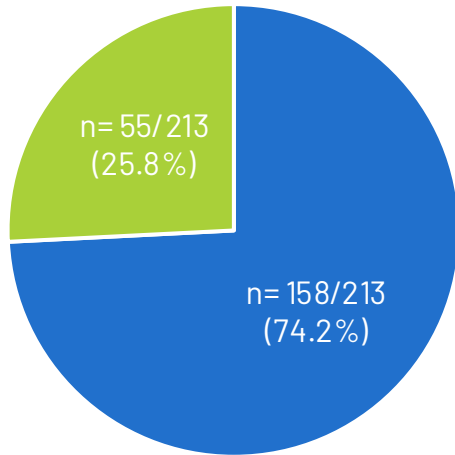
Measure FECV  
genome copies



ORF1b qPCR

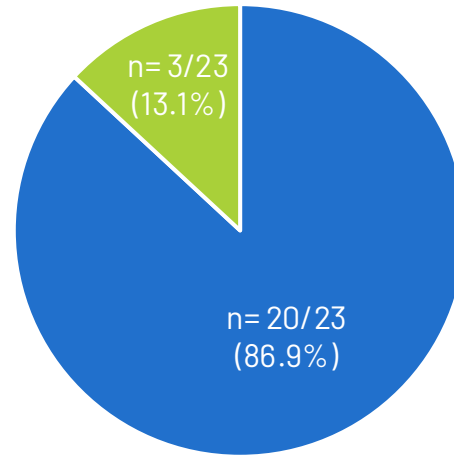
# Prevalence of FECV in catteries in Flanders

Cat level prevalence



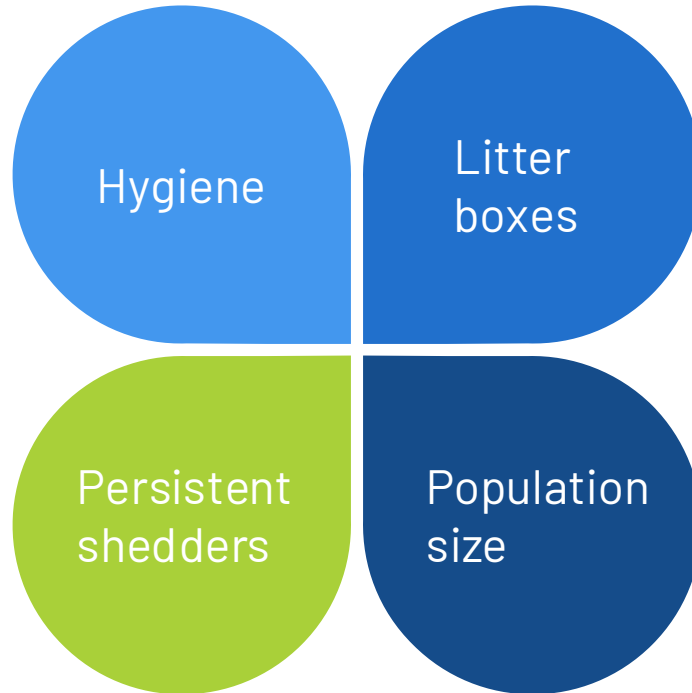
■ positive cats ■ negative cats

Cattery level prevalence

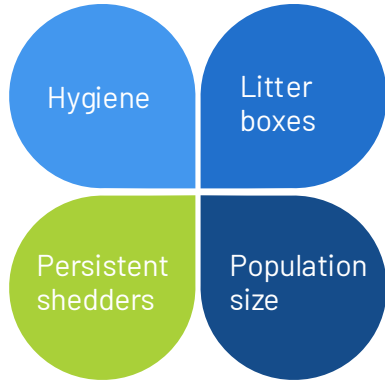


■ positive catteries ■ negative catteries

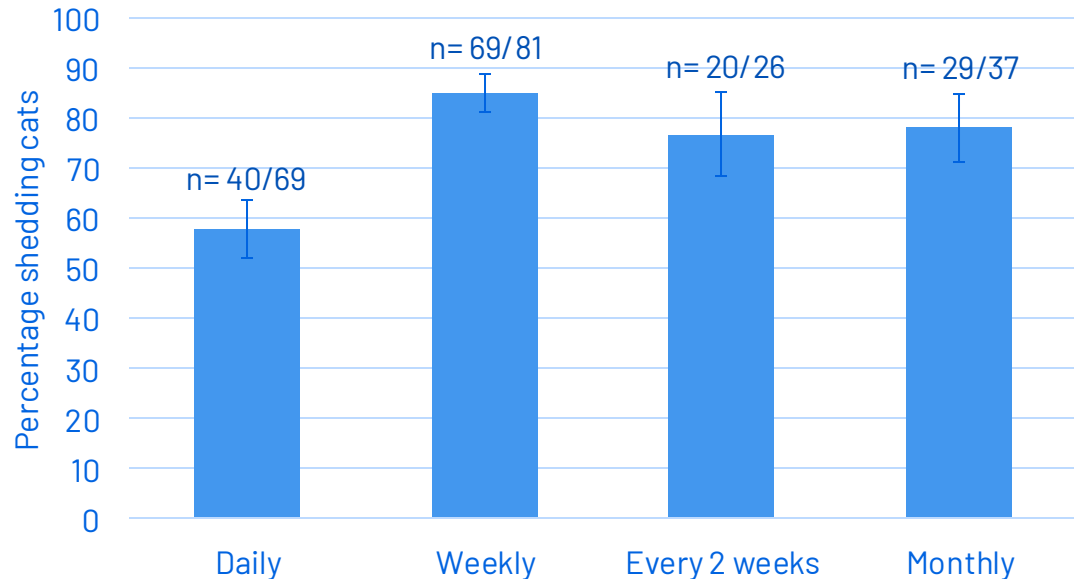
# FECV prevalence: risk factors



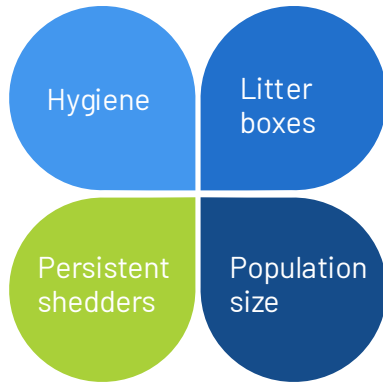
# FECV prevalence: risk factors



Effect of **cleaning frequency** on cat-level prevalence ( $p= 0.002$ )



# FECV prevalence: risk factors



## Composition of litter box content:

**Table 1** Effect of cat litters on ability of feline coronavirus (FCoV) to infect cell culture

Cat litter	Litter type	Cytotoxicity	FCoV titre/ ml
Virus control (no litter)	NA	NA	10 <sup>6</sup>
Ever Clean Less Track (Clorox International)	Fuller's earth	No	0
Tesco Value (Tesco)	Fuller's earth	No	0
LitterPurrrfect (imported by Costco UK)	Fuller's earth	No	0
Cat Country USA (Mountain Meadows Pet Products)	Compressed wheat grass	No	0
Sophisticat (Steelley)	Fuller's earth	No	10
Wood-based cat litter (Pets at Home)	Wood pellets	No	10 <sup>2</sup>
Catsan (Masterfoods)	Softwood granules	No	10 <sup>2</sup>
Snowflake (Ashton-under-Lyne)	Wood pellets	No	10 <sup>2</sup>
World's Best Original (Grain Processing Company)	Whole-kernel corn	No	10 <sup>3-4</sup>
Tesco Premium (Tesco)	Recycled paper and clay	No	10 <sup>4</sup>
Nutrena Nature (USA)	Chicken feed	No	10 <sup>4</sup>
World's Best Extra (Grain Processing Company)	Whole-kernel corn	No	10 <sup>4-5</sup>
Litter Pearls (Crystal Clear Pet Products)	Silica gel	No	10 <sup>4-5</sup>
Cat Country UK (Mountain Meadows Pet Products)	Compressed wheat grass	No	10 <sup>6</sup>
Cat Country Europe (Mountain Meadows Pet Products)	Compressed wheat grass	No	10 <sup>6</sup>

} = bentonite

# FECV prevalence: risk factors

Hygiene

Litter boxes

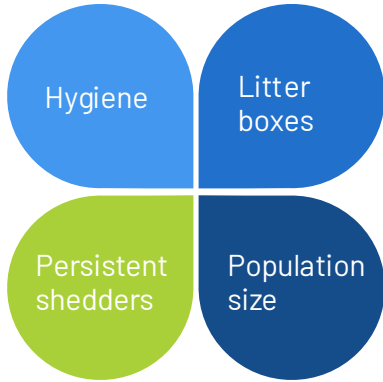
Persistent shedders

Population size

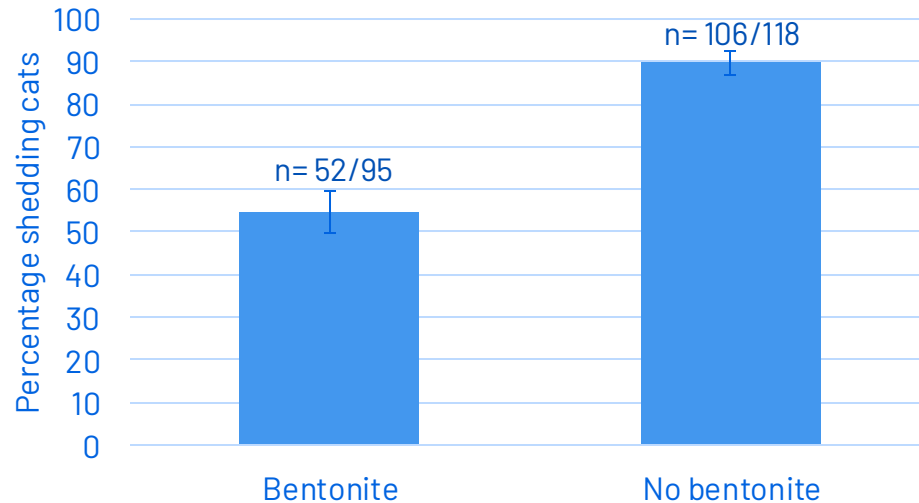
Bentonite:



# FECV prevalence: risk factors



Influence of **cat litter composition** on cat-level prevalence ( $p < 0.001$ )



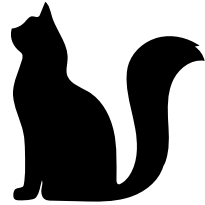
# FECV prevalence: risk factors

Hygiene

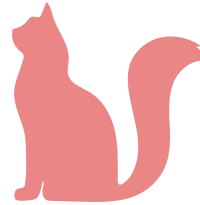
Litter boxes

Persistent shedders

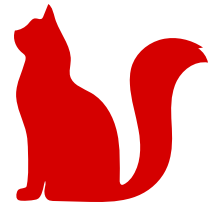
Population size



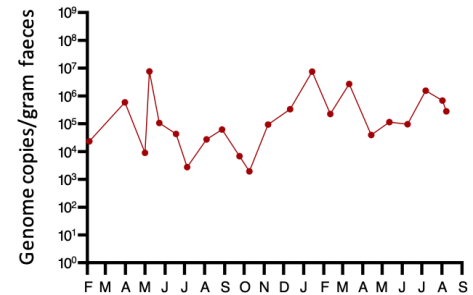
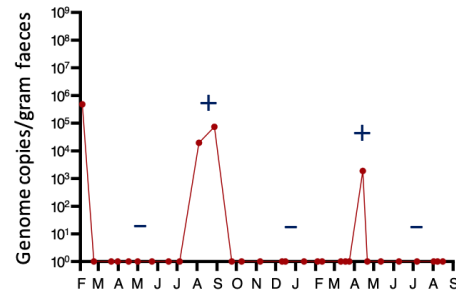
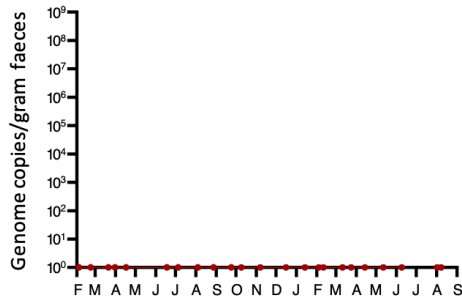
Negative cat



Positive cat



Persistent shedder



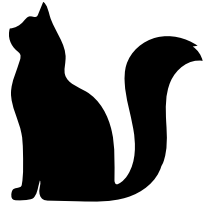
# FECV prevalence: risk factors

Hygiene

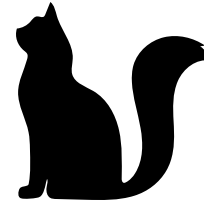
Litter boxes

Persistent shedders

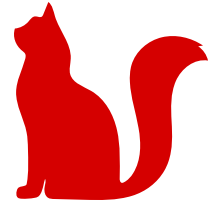
Population size



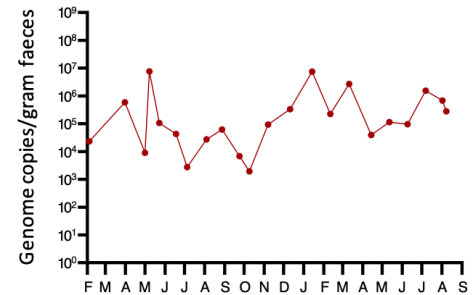
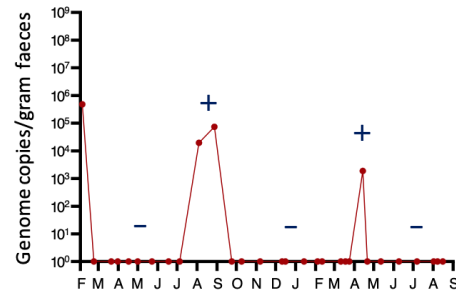
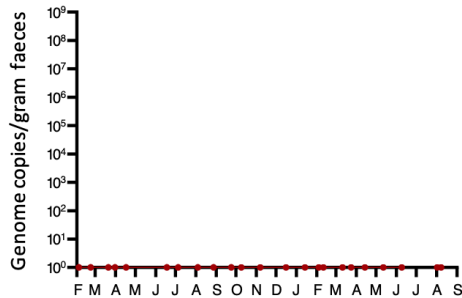
Negative cat



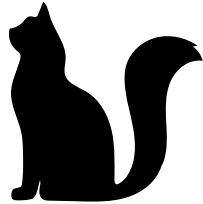
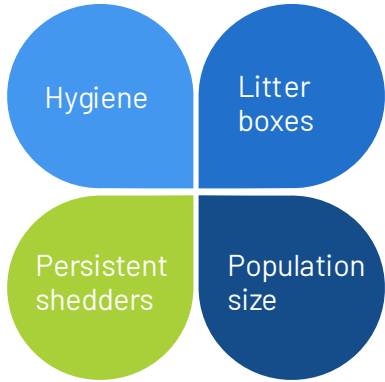
Negative cat



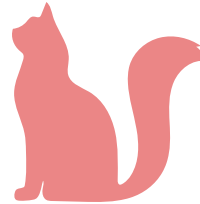
Persistent shedder



# FECV prevalence: risk factors



Negative cat

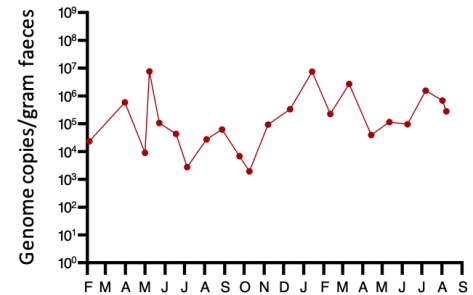
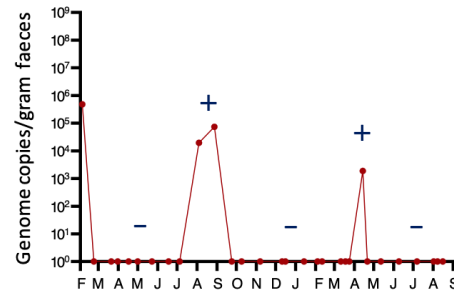
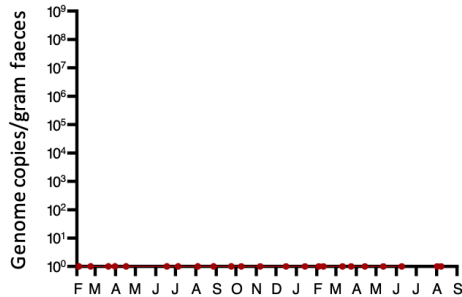


Positive cat

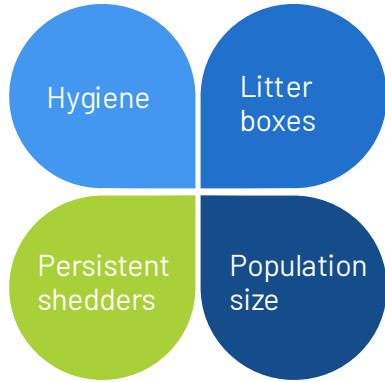


Persistent shedder

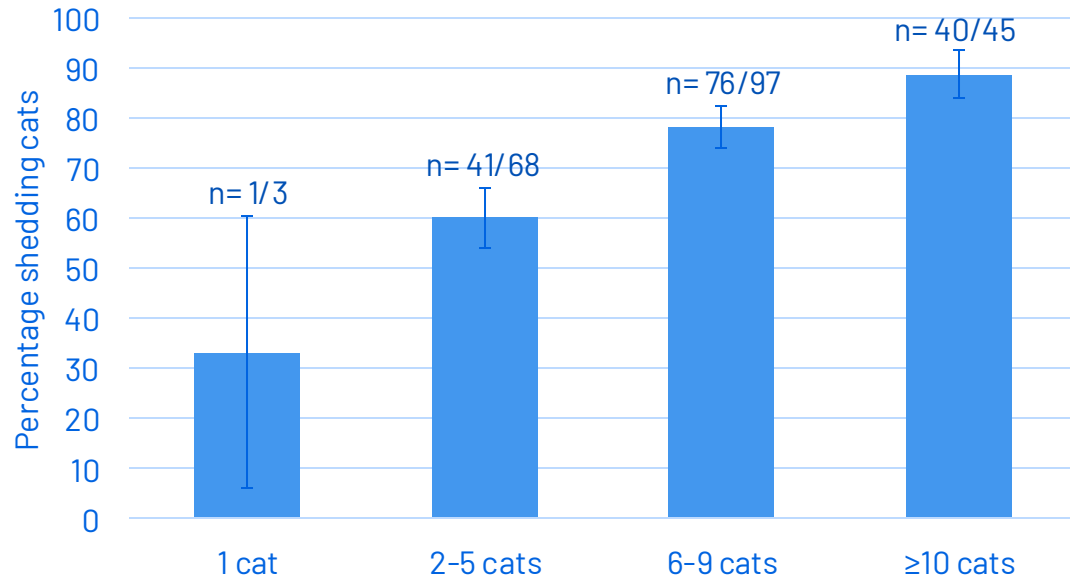
Continuously sheds for at least 4 months when housed alone



# FECV prevalence: risk factors



Effect of **group size** on cat-level prevalence ( $p= 0.001$ )



# Conclusions first study

- ▶ Cat-level prevalence of FECV in Flemish catteries is 74.2%
- ▶ Risk factors are known: hygiene, litter box management, populations density, grouping strategies,...

Addressing risk factors through structured measures  
(1-year project funded by Animal Welfare Flanders)

# Preventing FCoV in catteries

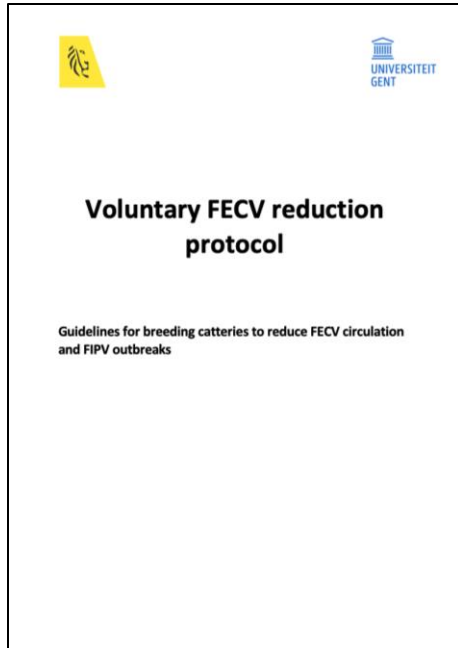
## Prevalence and risk factors of Feline Enteric Coronavirus (FECV) in catteries in Flanders

- Results from a first study (May '23-May '24)

## Implementation of protocols to reduce Feline Infectious Peritonitis (FIP) risk:

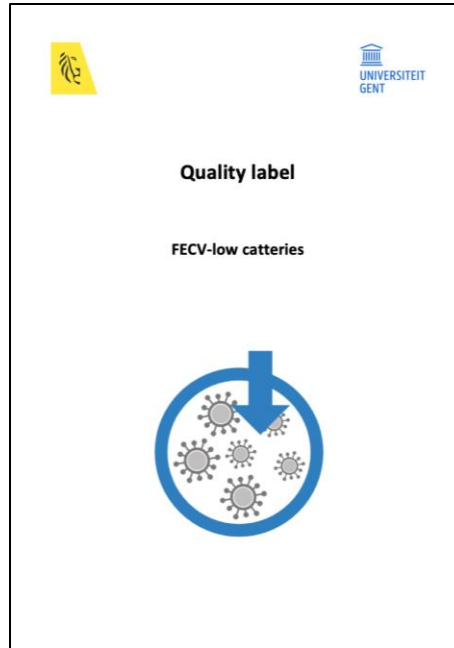
- Guidelines
- Manual FECV-low
- Manual FECV-free
- Results from a second study (May '24-May '25)

## Guidelines



- Recommendations
- Reduce number of shedders
- n = 10 catteries

## Manual 'FECV-low cattery'



- Mandatory
- $\leq 20\%$  positive cats
- n = 5 catteries

## Manual 'FECV-free cattery'

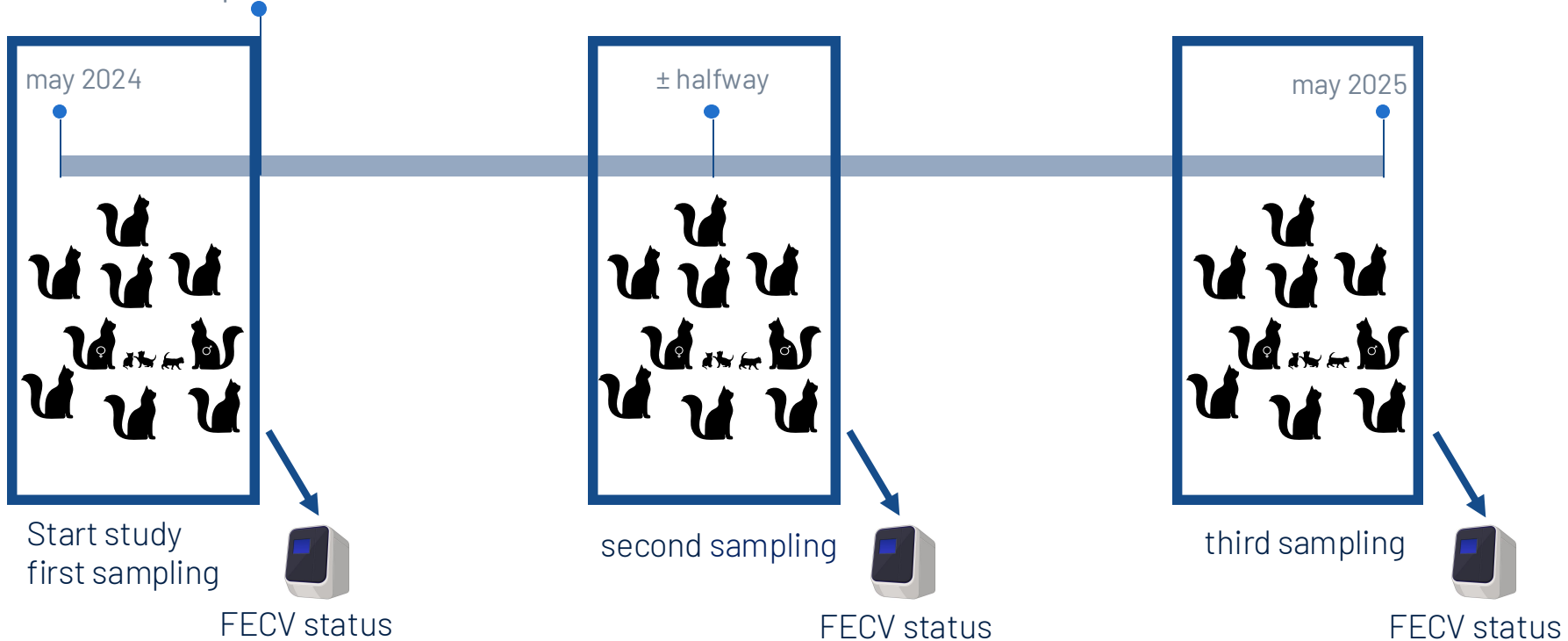


- Mandatory
- No positive cats
- n = 5 catteries

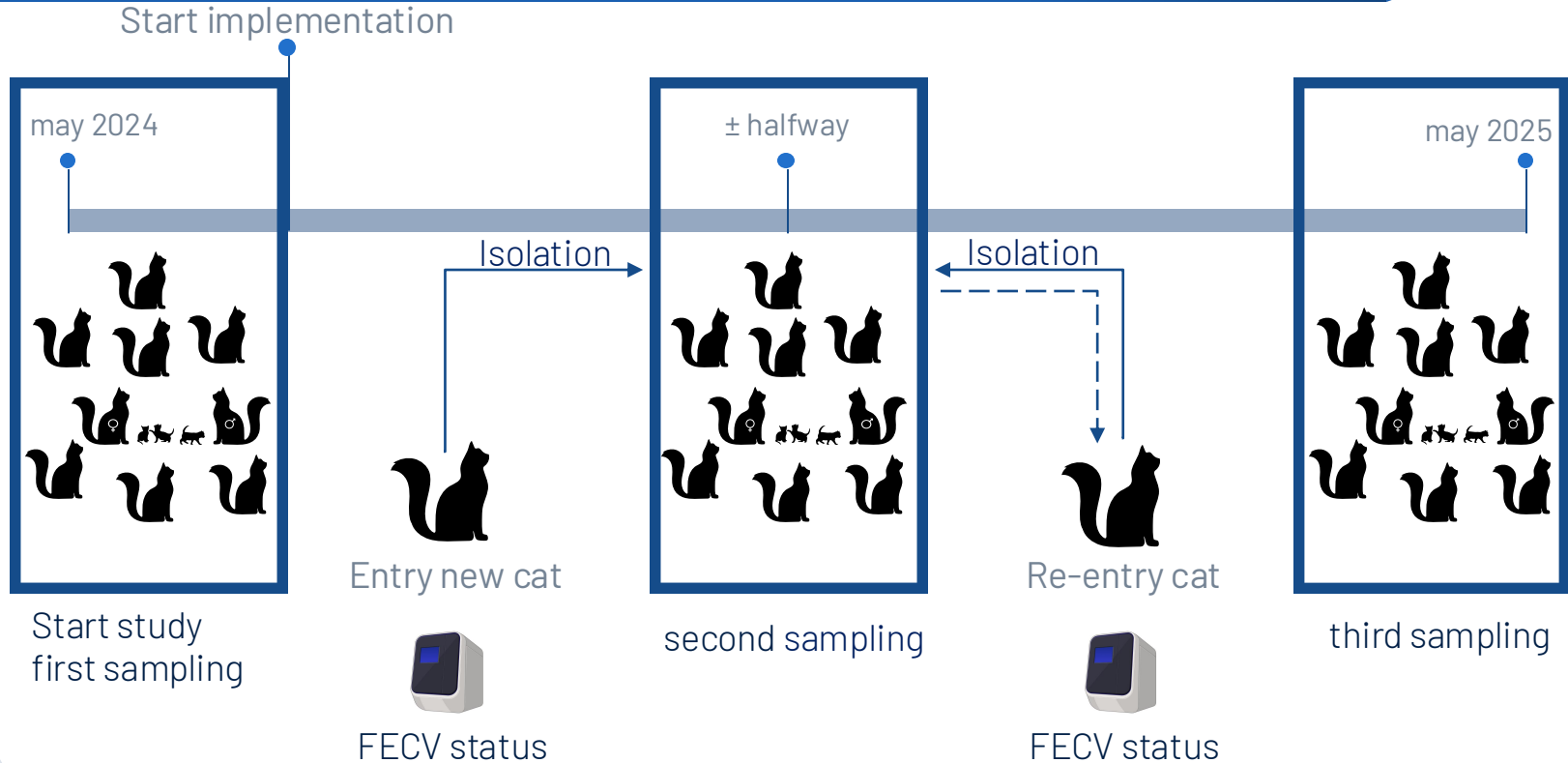
	Guidelines	Manual FECV-low	Manual FECV-free
<b>Cleaning</b>	<b>As much as possible</b>	<b>≥ 2x/week</b>	<b>Daily</b>
<b>Disinfecting</b>	As much as possible	≥ 1/week	≥ 2x/week
<b>Cat litter</b>	Ideally bentonite Refresh as much as possible Remove faeces as much as possible	Bentonite Refresh 1x/week Remove faeces ≥ 1/day	Bentonite Refresh 2/week Remove faeces ≥ 1/day
<b># litter boxes</b>	/	# cats + 1	# cats + 1
<b>Infrastructure</b>	/	Sanitary entry zone 1 isolation room	Sanitary entry zone 1 isolation room
<b>Positive cats</b>	Try to isolate from negative cats	House individually Max 20% is positive	Remove from cattery No positive cats in cattery
<b>Grouping</b>	<b>According to FECV-status</b>	<b>Max 5 cats/group</b>	<b>Max 3 cats/group</b>
<b>Persistent shedders</b>	<b>Try to house individually</b>	<b>Insist to remove from cattery</b>	<b>Remove from cattery</b>
<b>Arriving cats</b>	Isolate and test	Isolate and test	Isolate and test
<b>Departing cats</b>	/	1 week of non-occupancy room	2 weeks of non-occupancy room
<b>Breeding partner selection</b>	Keep FECV-status in mind	Don't use positive cats	Don't use positive cats
<b>Outdoor mating</b>	Avoid outdoor mating	Don't use positive cats Provide ≥2 litter boxes	Don't use positive cats Provide ≥2 litter boxes
<b>Gestation period</b>	Isolate pregnant queen from positive cats	Isolate pregnant queen	Isolate pregnant queen
<b>Shows</b>	Avoid going to shows	Isolate and test cat when home	Isolate and test cat when home

# Methodology

Start implementation

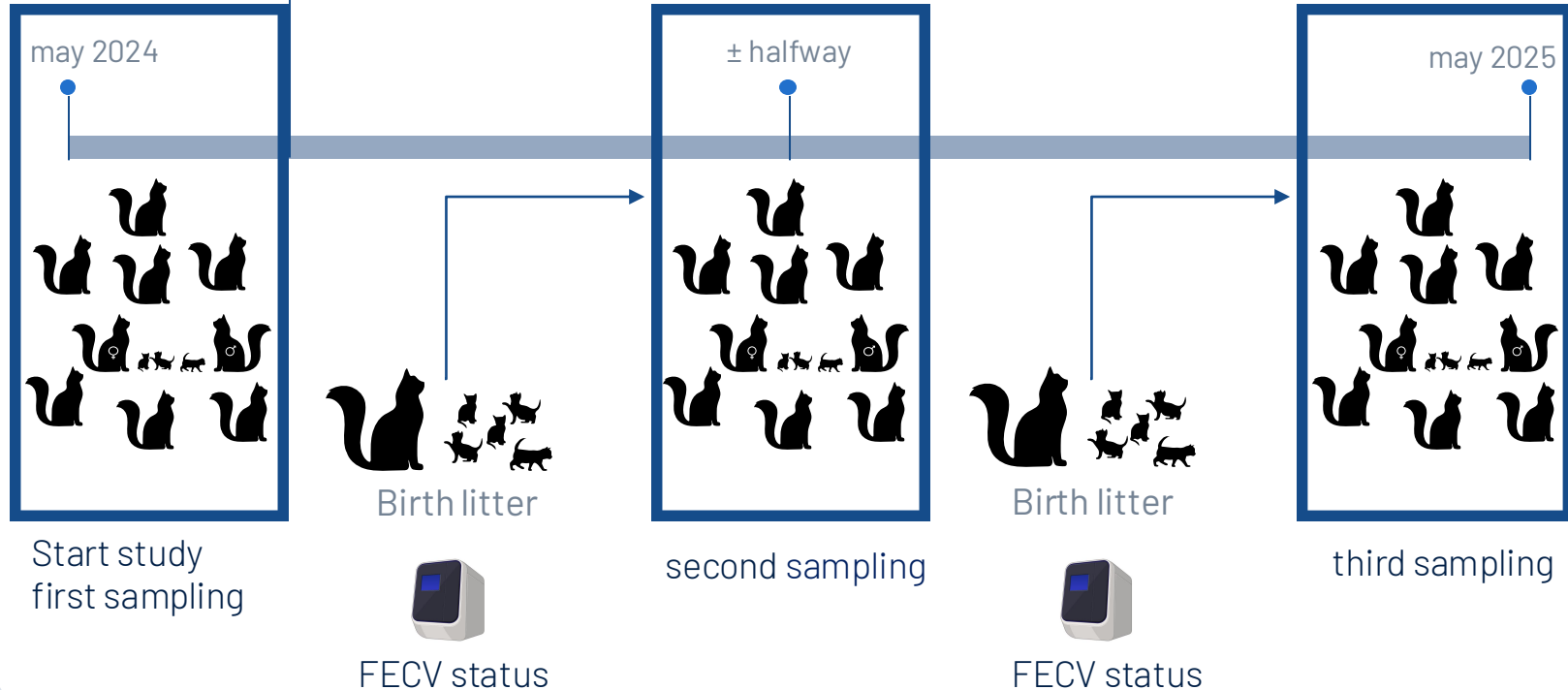


# Methodology

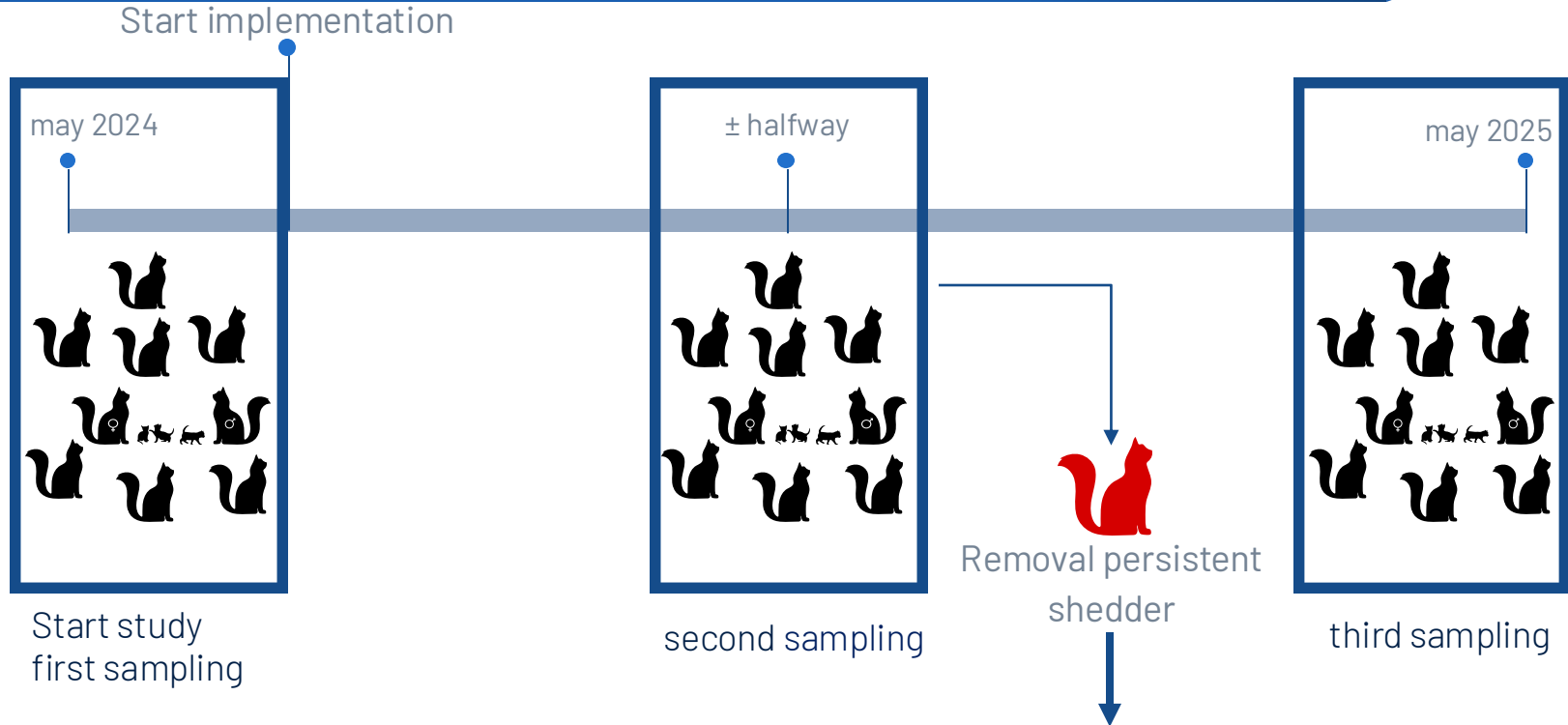


# Methodology

Start implementation



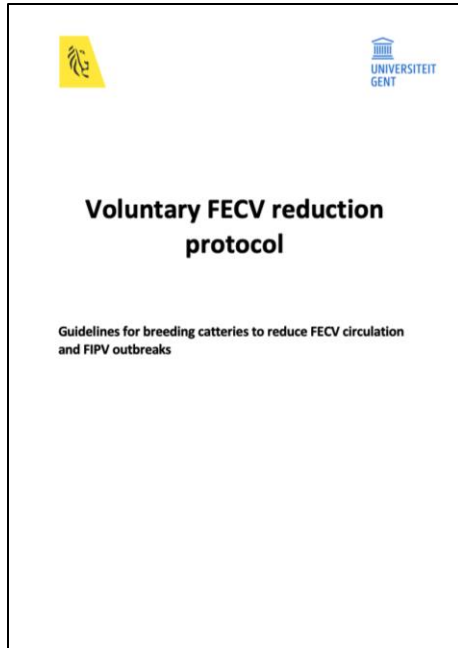
# Methodology





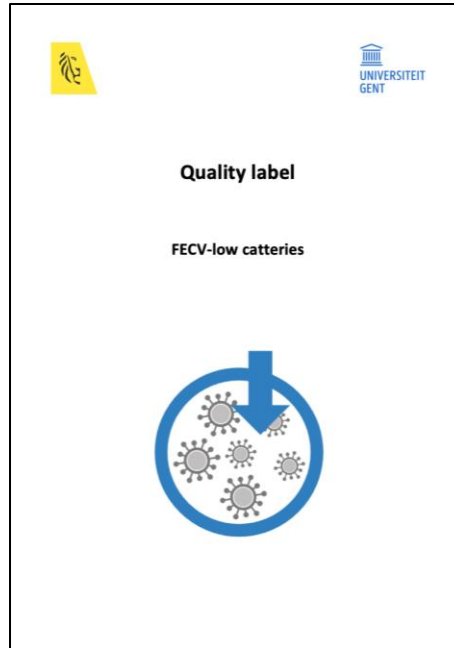
# Implementation guidelines

## Guidelines



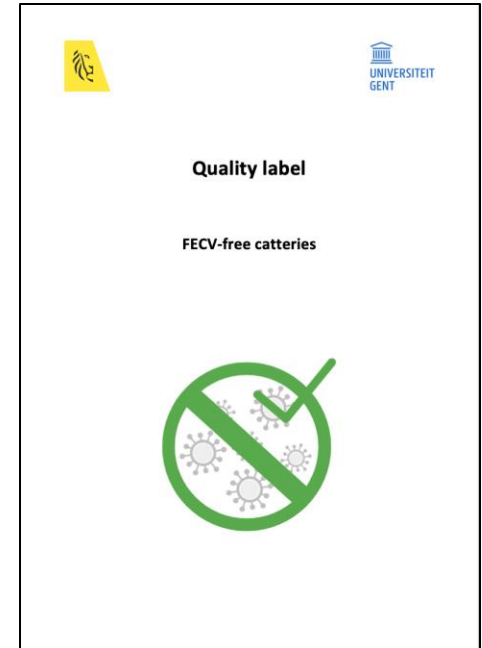
- Recommendations
- Reduce amount of shedders
- n = 10 catteries

## Manual 'FECV-low cattery'



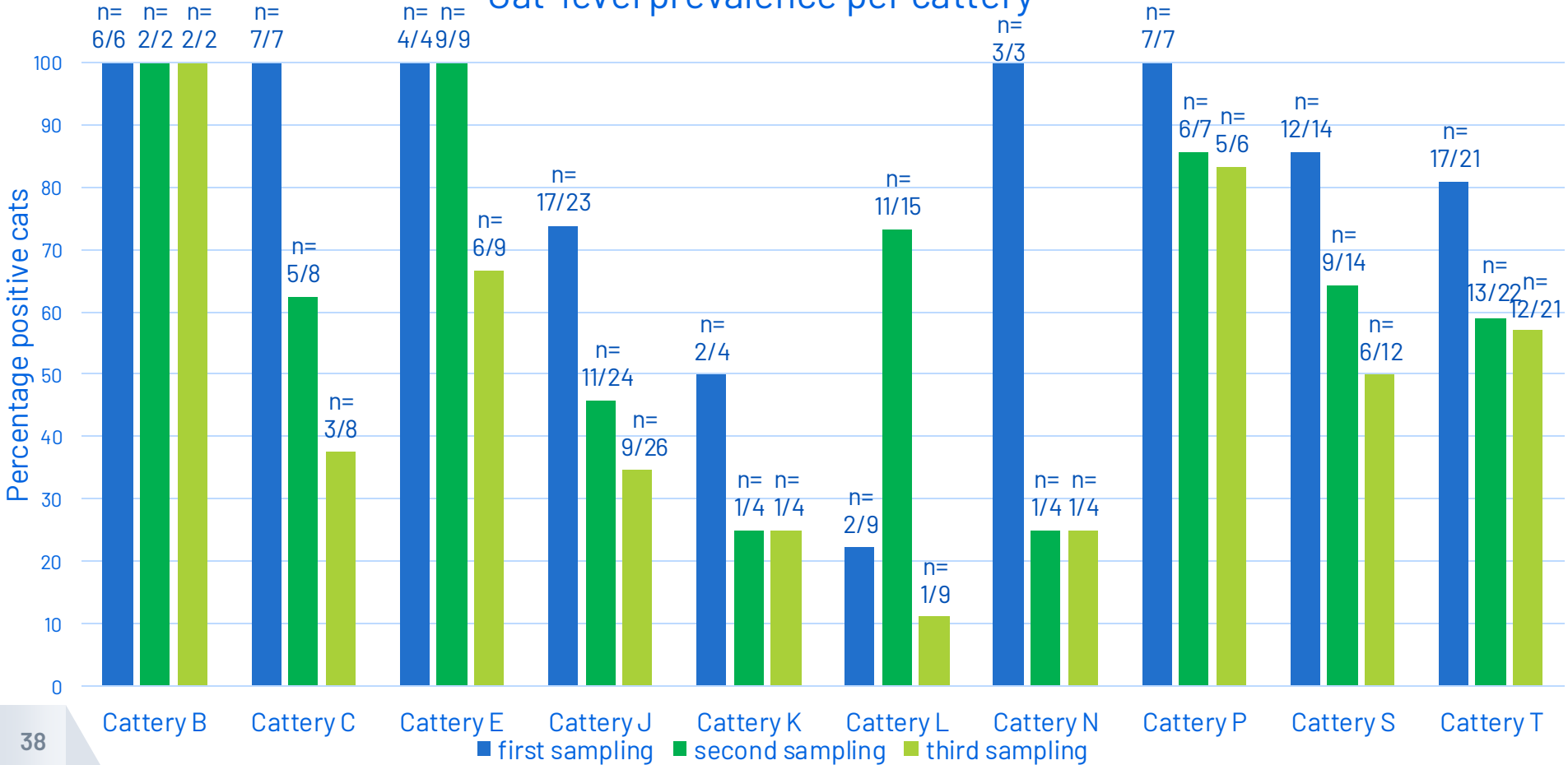
- Mandatory
- $\leq 20\%$  positive cats
- n = 5 catteries

## Manual 'FECV-free cattery'

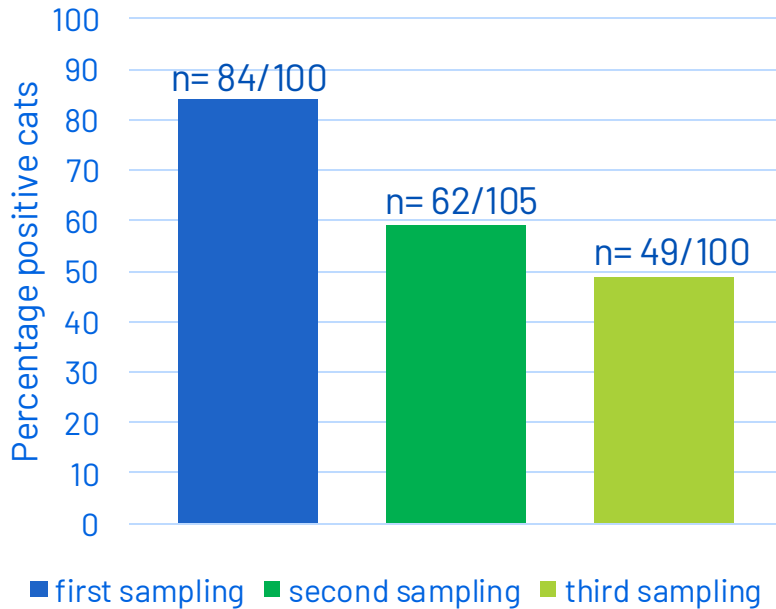


- Mandatory
- No positive cats
- n = 5 catteries

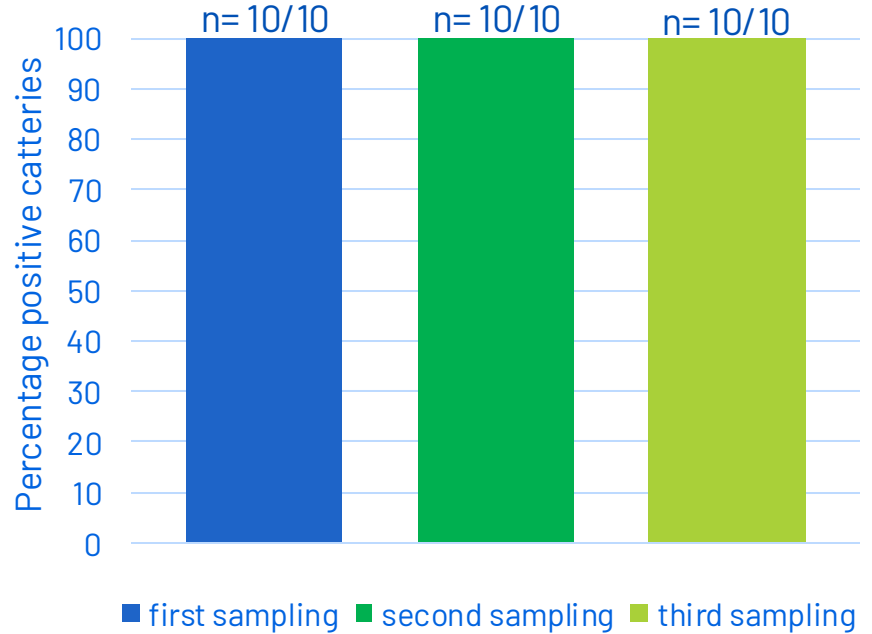
## Cat-level prevalence per cattery



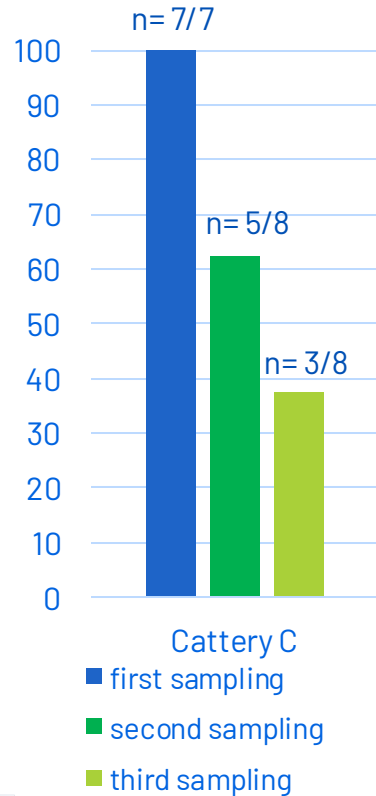
## Prevalence at cat level



## Prevalence at cattery level



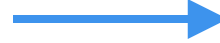
## Example/ Cattery C



Wood pellets

4 litter boxes

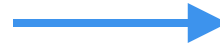
Cleaning 1x/week



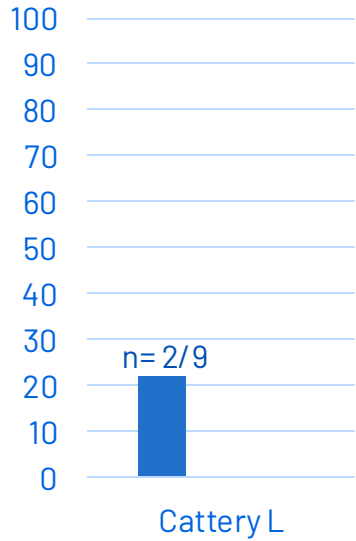
Bentonite

9 litter boxes

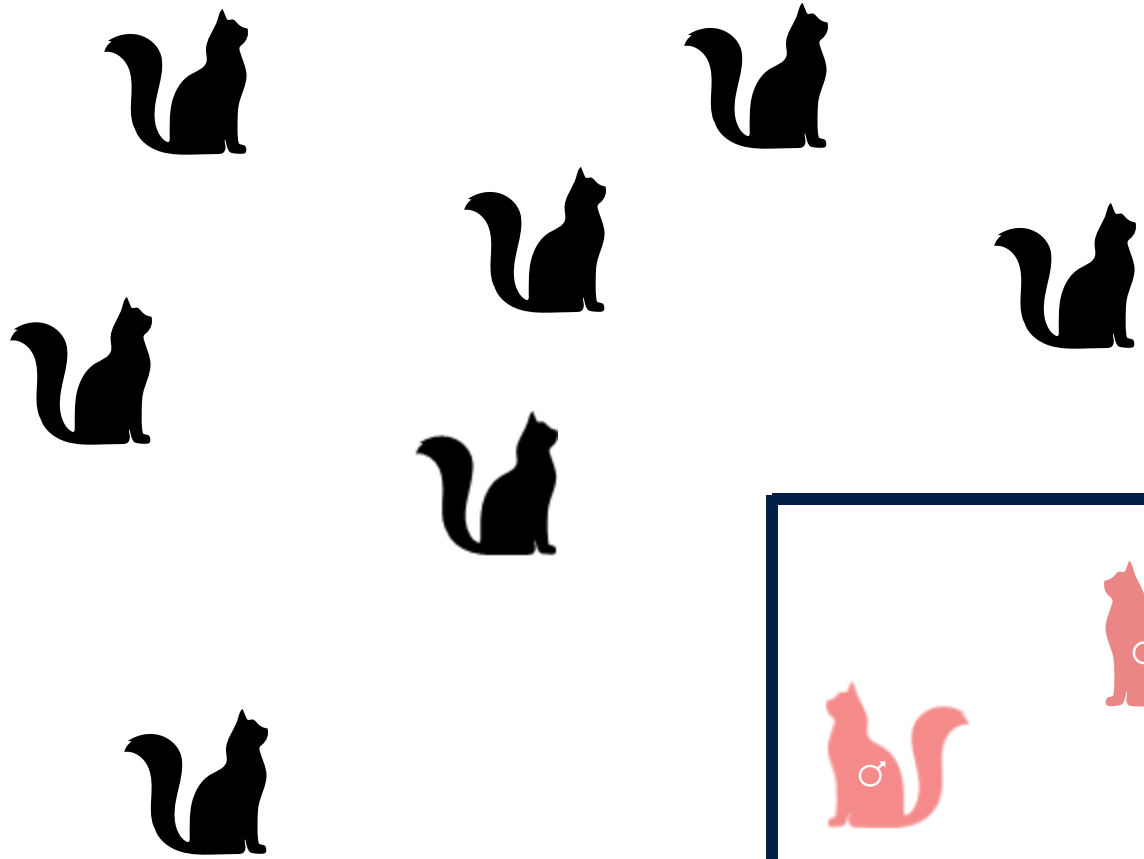
Cleaning daily



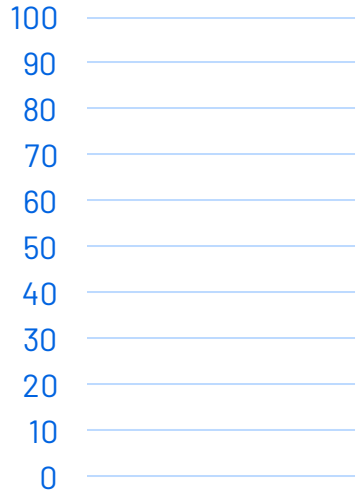
# Example/ Cattery L



- first sampling
- second sampling
- third sampling

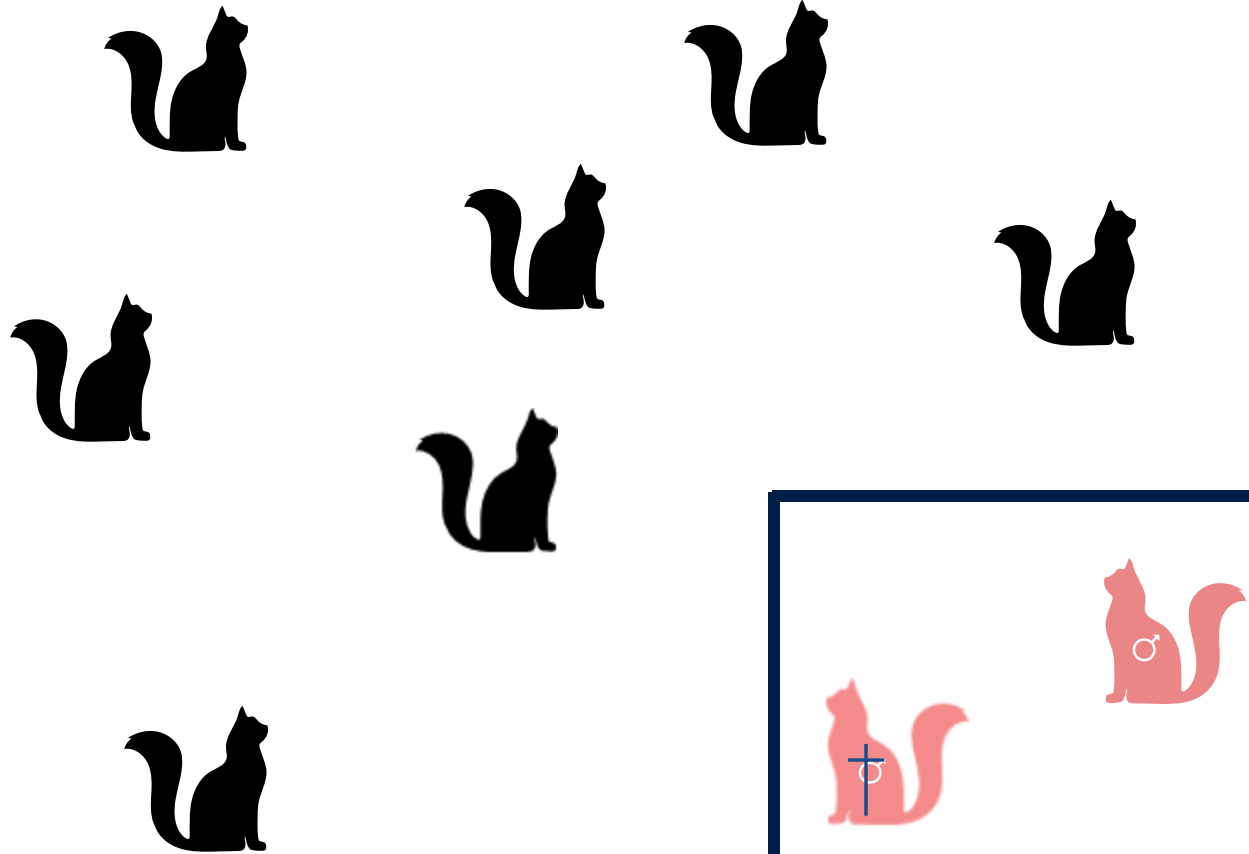


# Example/ Cattery L

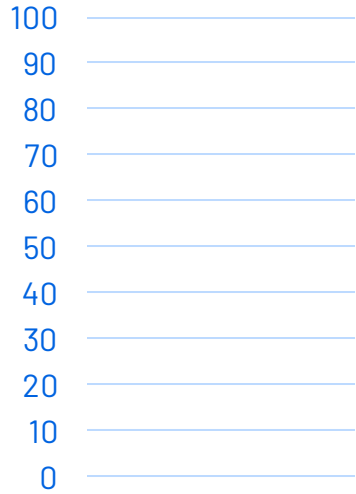


Cattery L

- first sampling
- second sampling
- third sampling

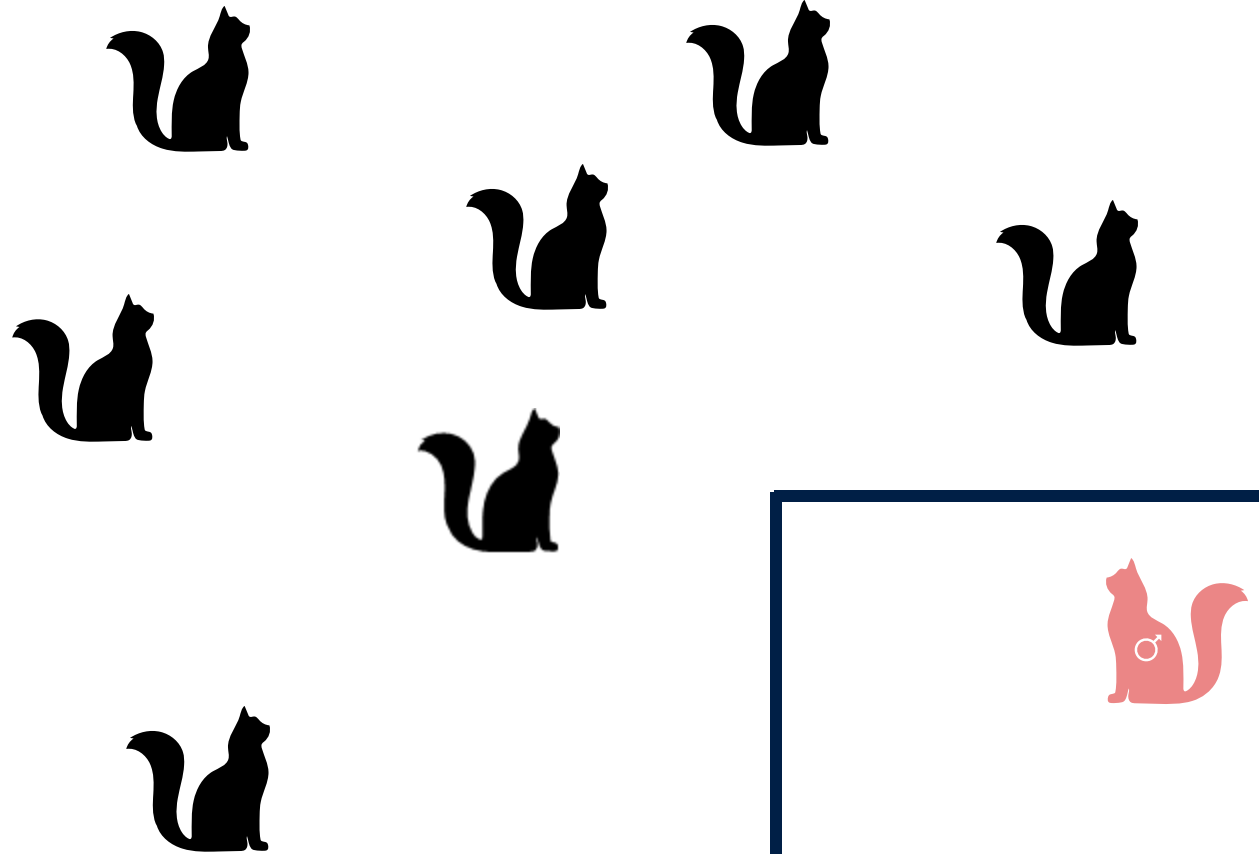


# Example/ Cattery L

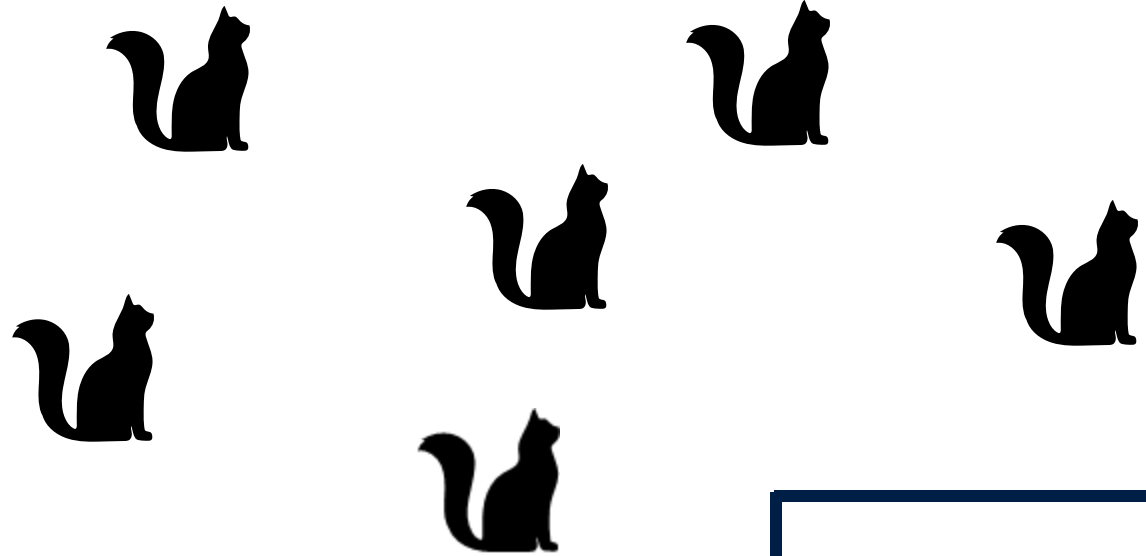
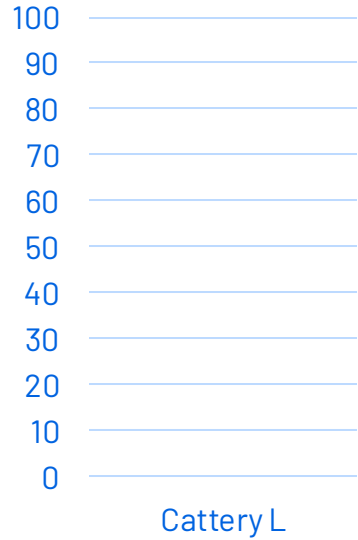


Cattery L

- first sampling
- second sampling
- third sampling



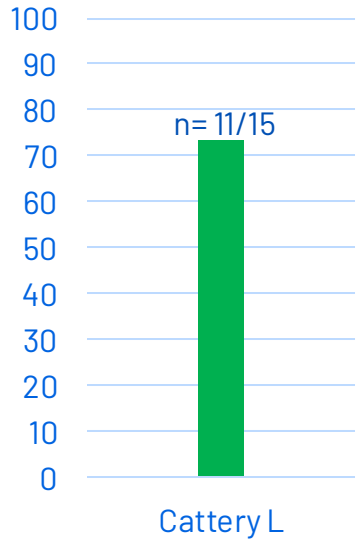
# Example/ Cattery L



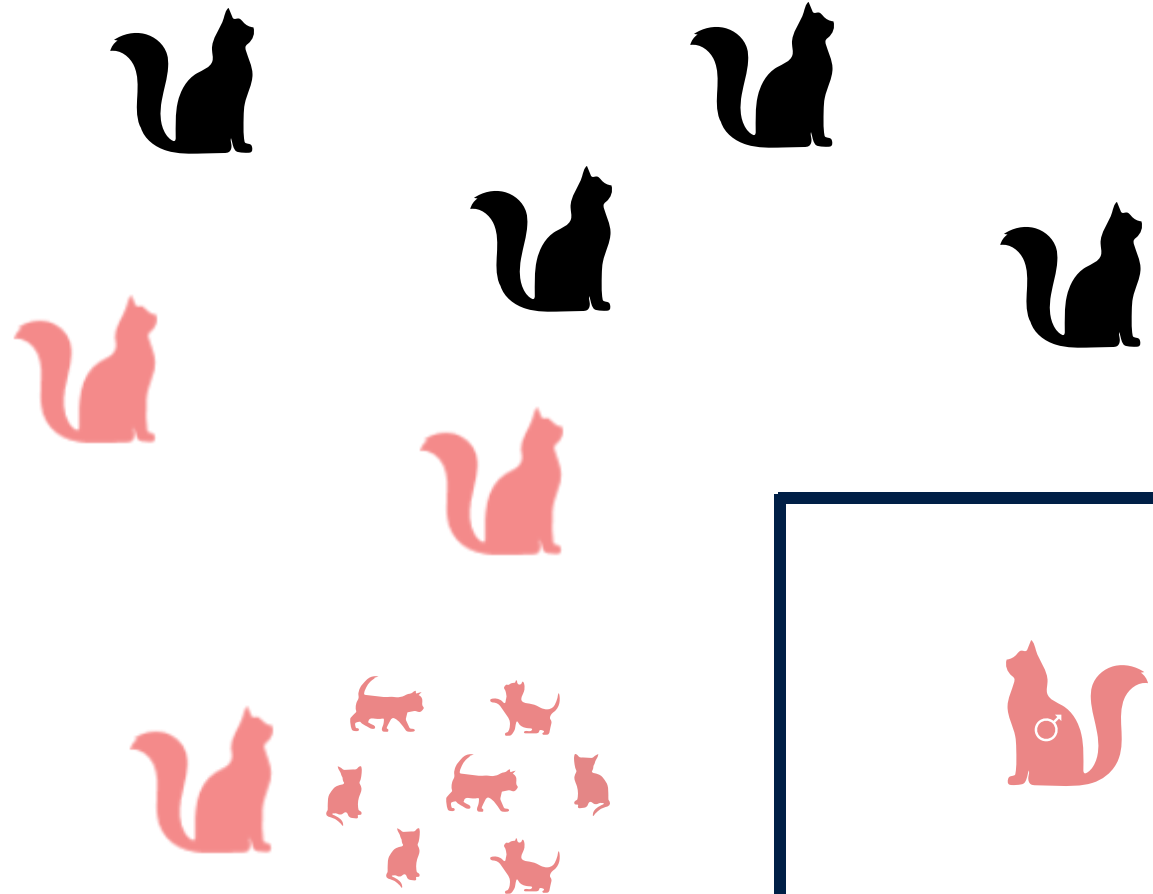
- first sampling
- second sampling
- third sampling



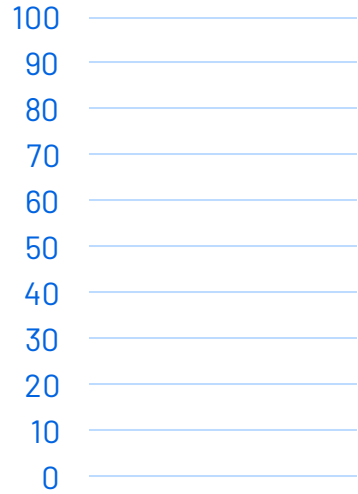
# Example/ Cattery L



- first sampling
- second sampling
- third sampling

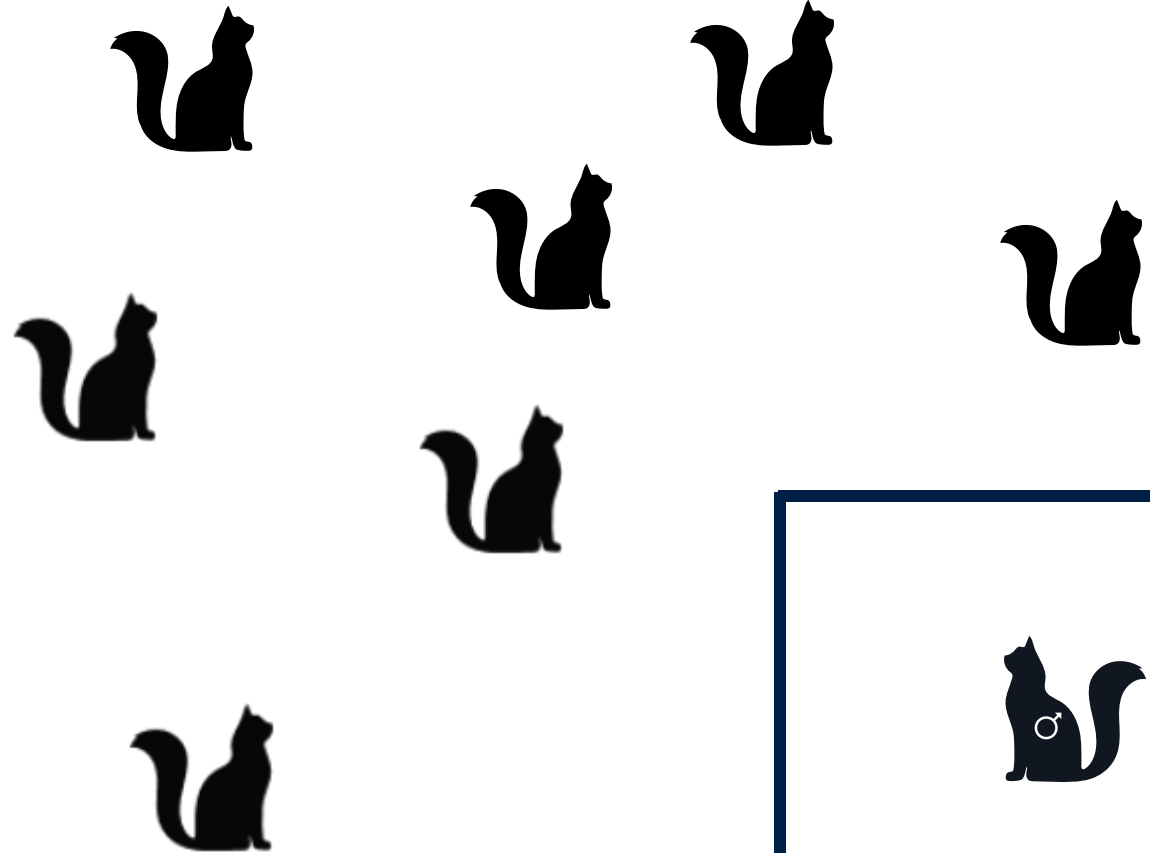


# Example/ Cattery L

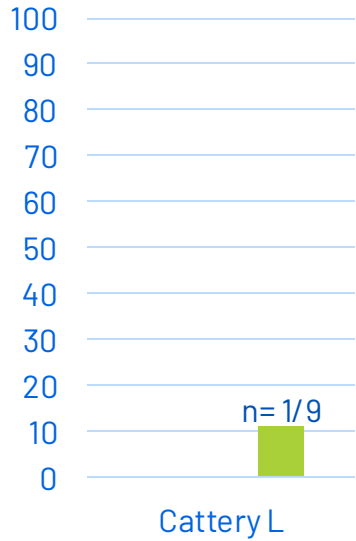


Cattery L

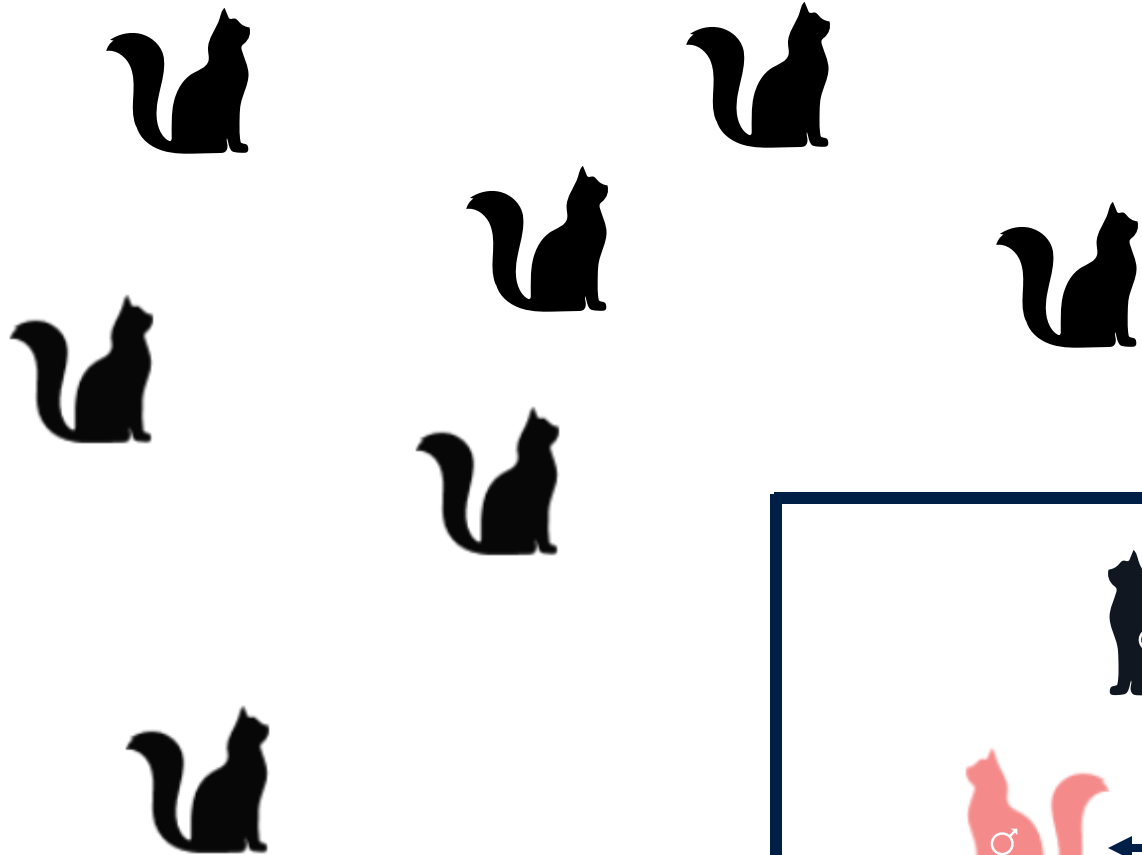
- first sampling
- second sampling
- third sampling




# Example/ Cattery L



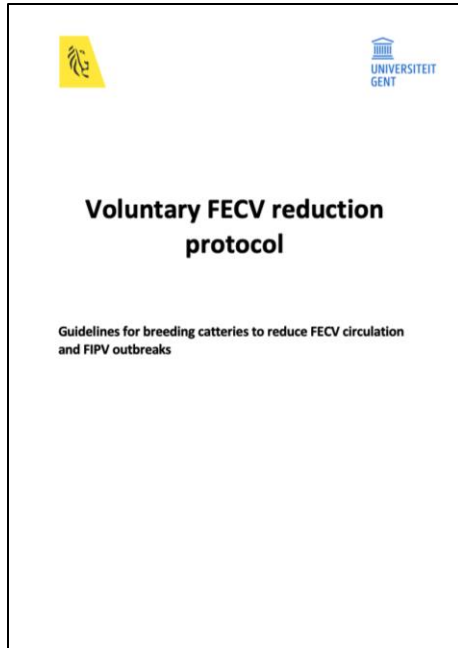
- first sampling
- second sampling
- third sampling





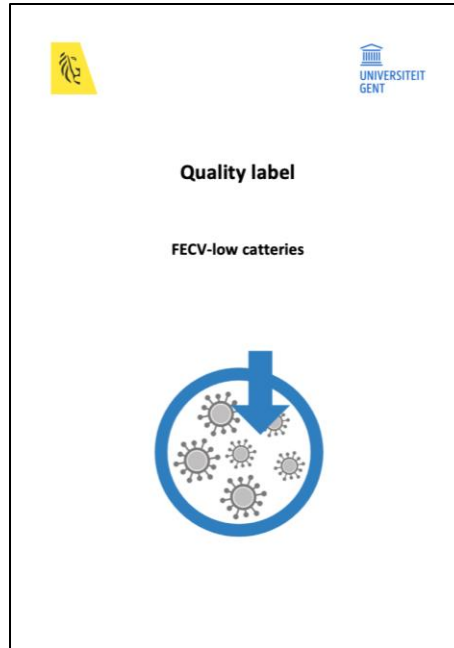
**Implementation  
manual FECV  
low**

## Guidelines



- Recommendations
- Reduce amount of shedders
- n = 10 catteries

## Manual 'FECV-low cattery'



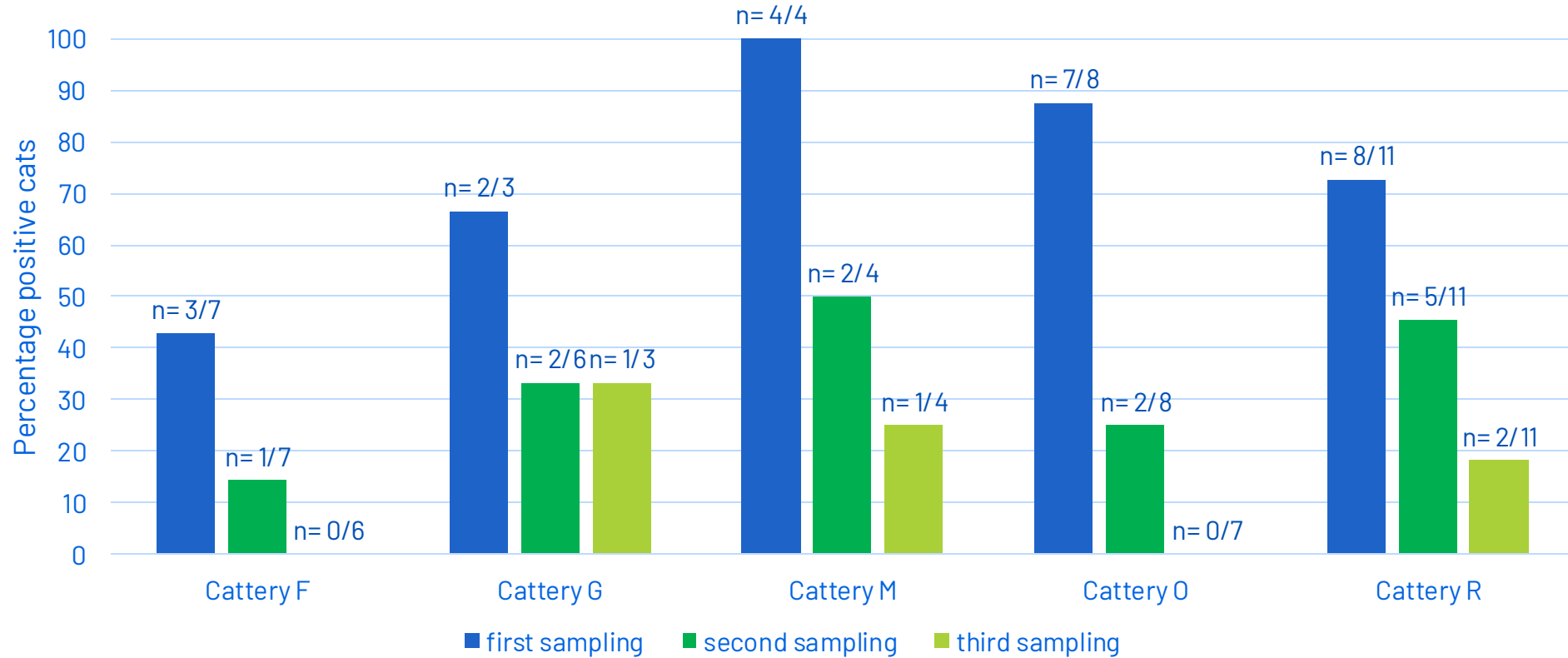
- Mandatory
- $\leq 20\%$  positive cats
- n = 5 catteries

## Manual 'FECV-free cattery'

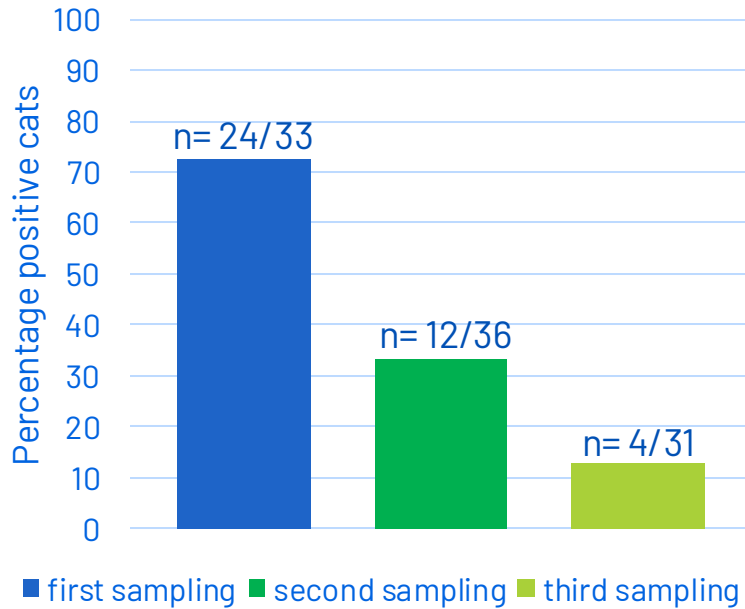


- Mandatory
- No positive cats
- n = 5 catteries

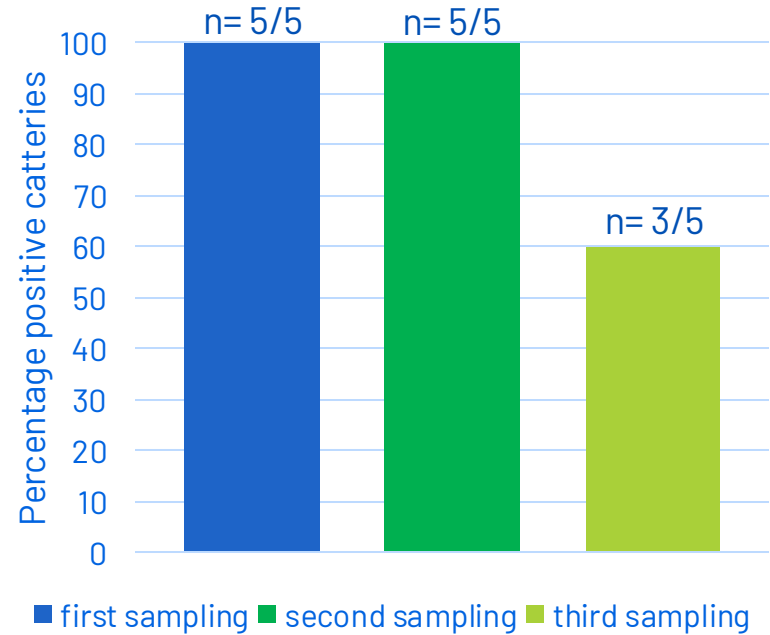
## Prevalence per cattery



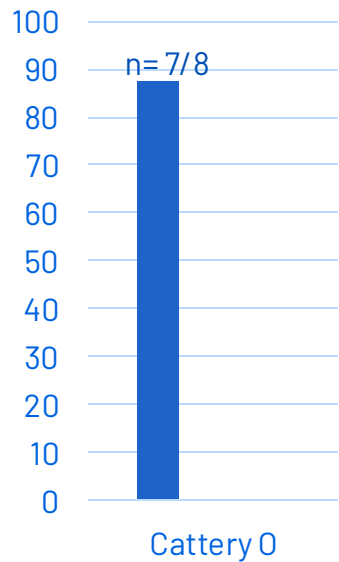
## Prevalence at cat level



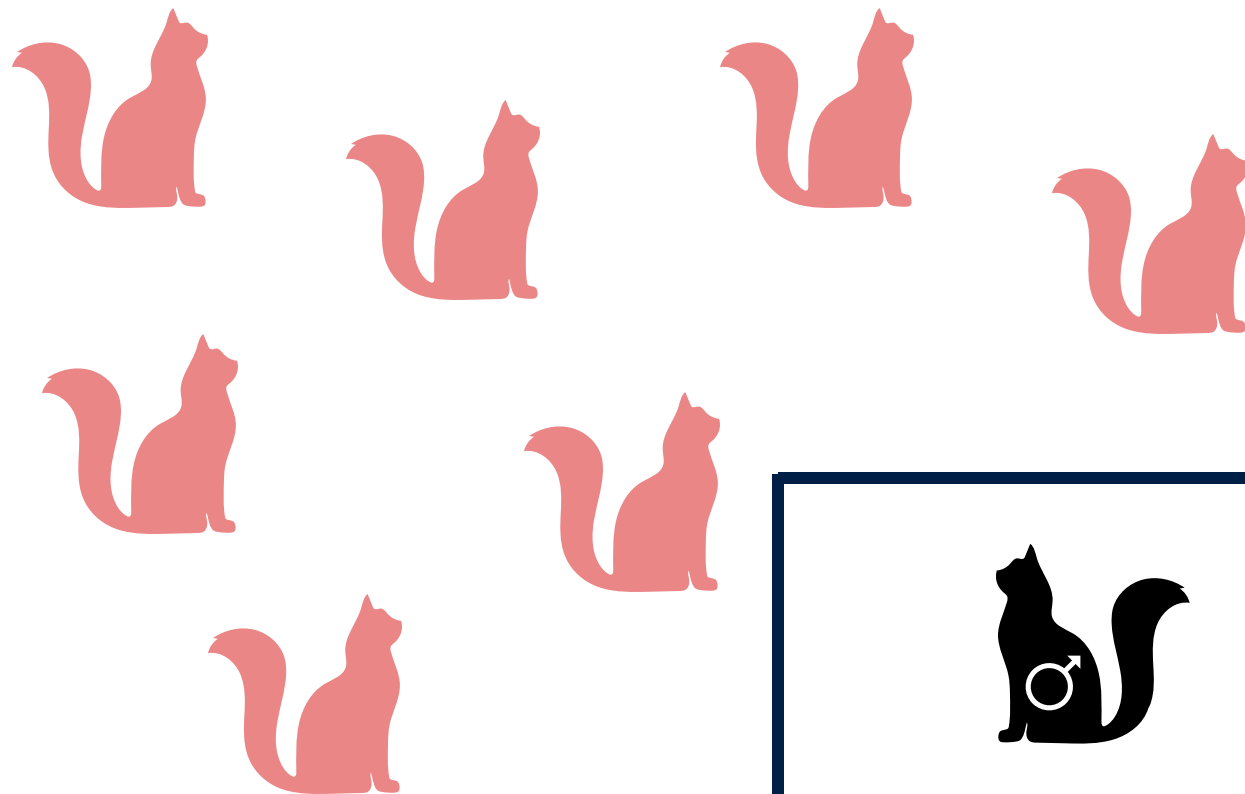
## Prevalence at cattery level



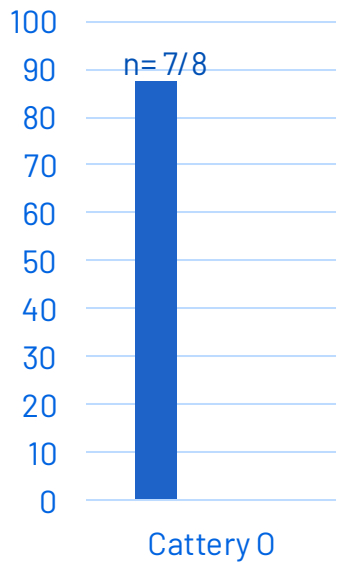
# Example/ cattery 0



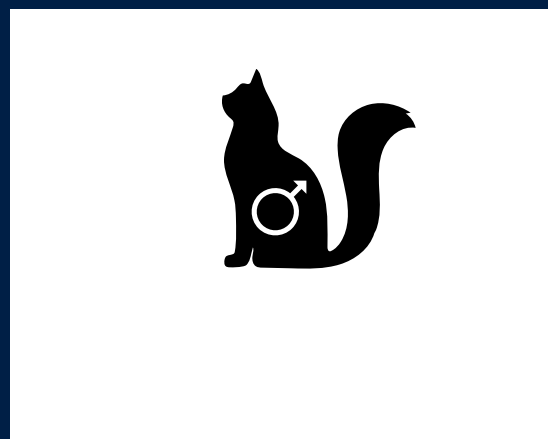
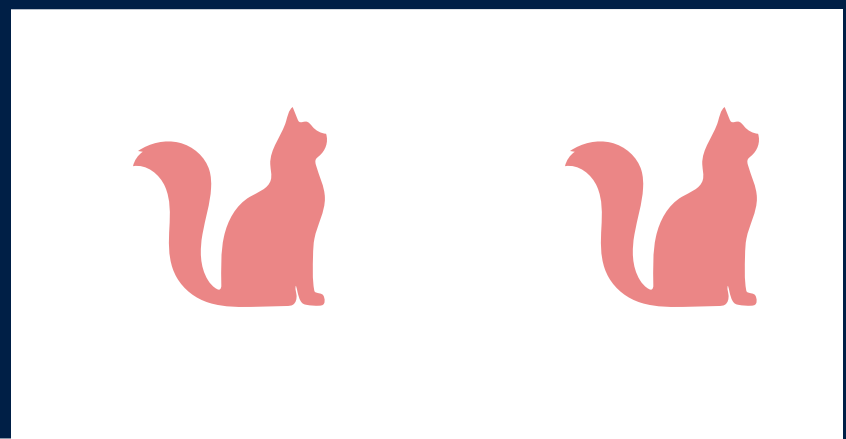
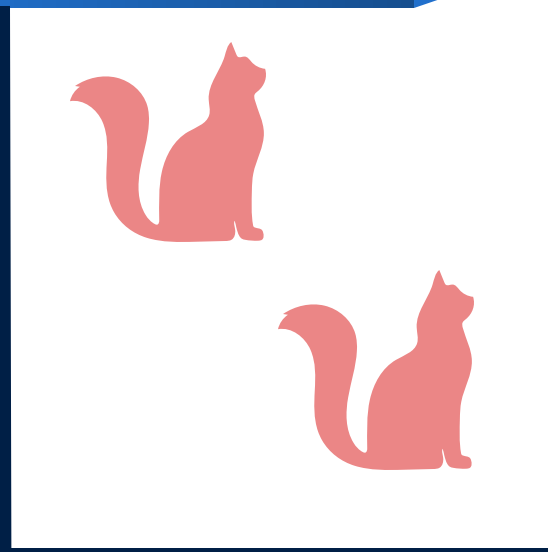
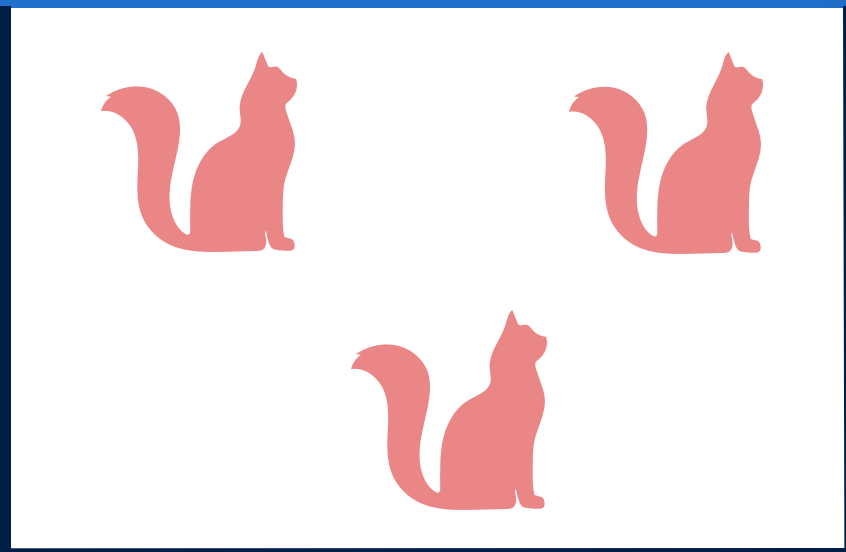
- first sampling
- second sampling
- third sampling



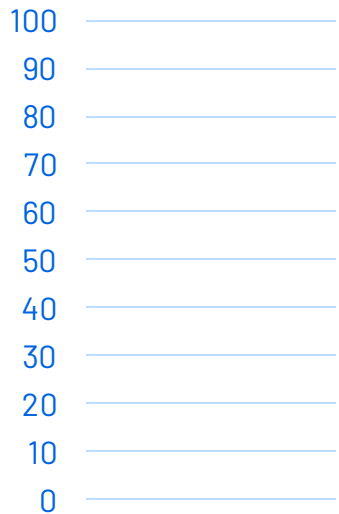
## Example/ cattery 0



- first sampling
- second sampling
- third sampling

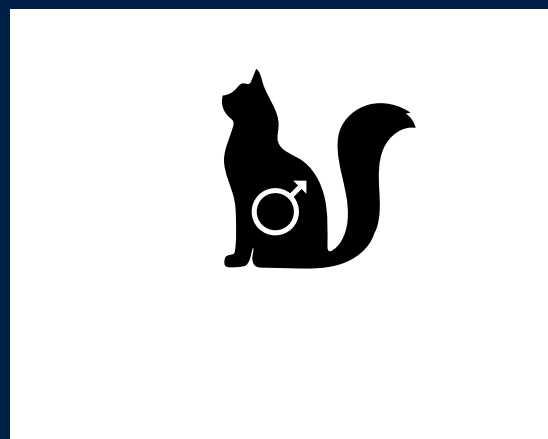
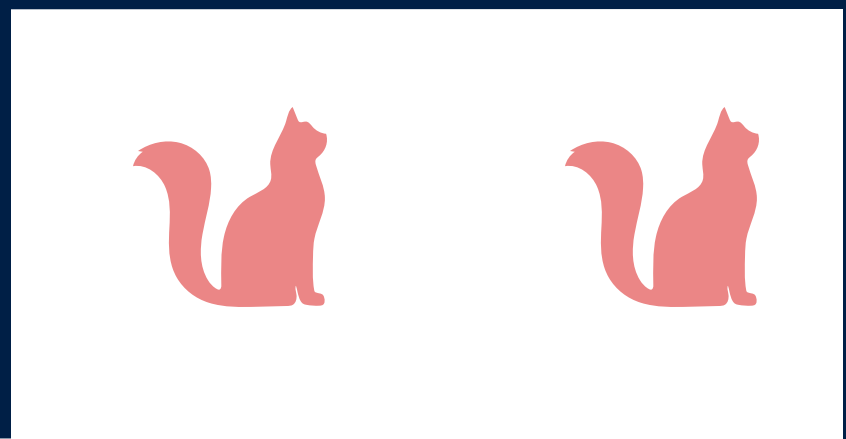
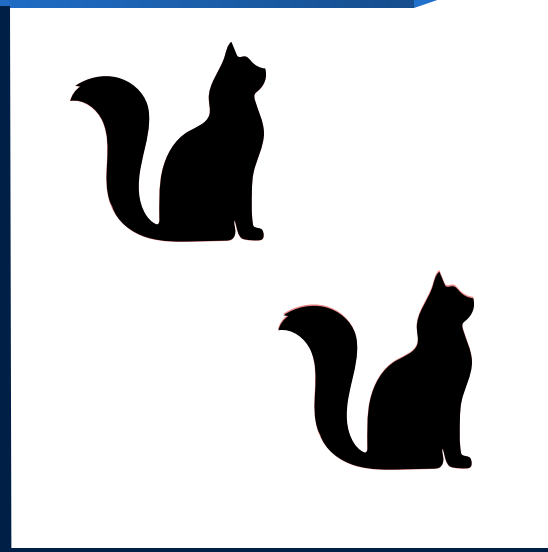
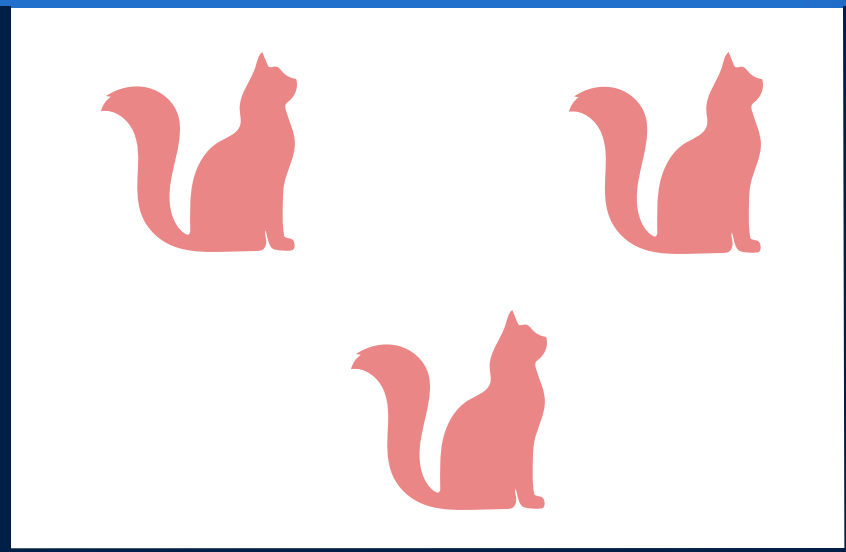


# Example/ cattery 0

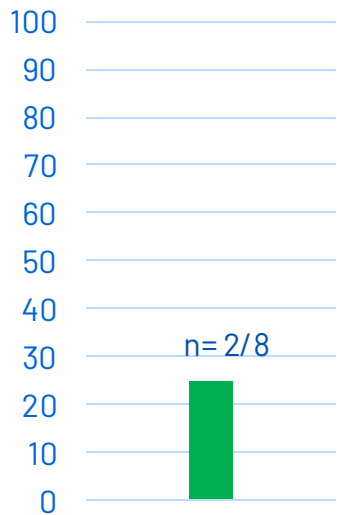


Cattery 0

- first sampling
- second sampling
- third sampling

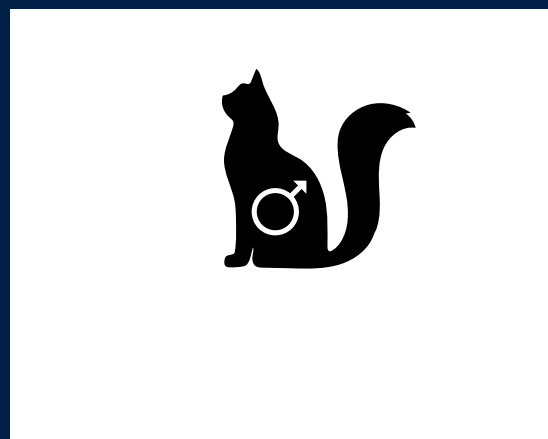
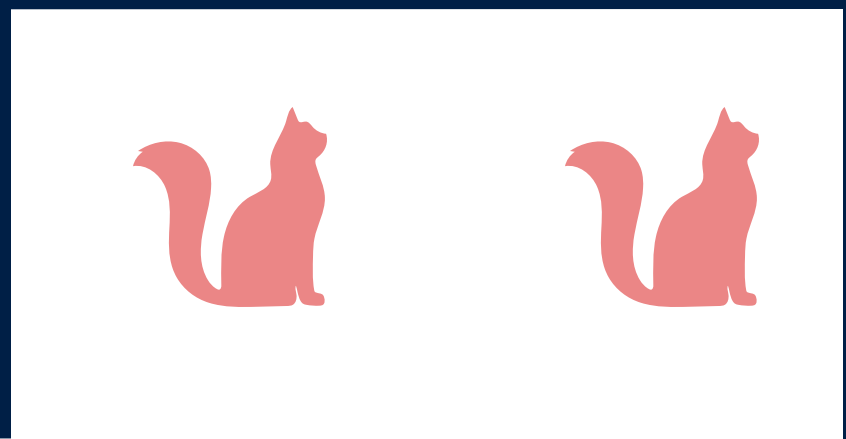
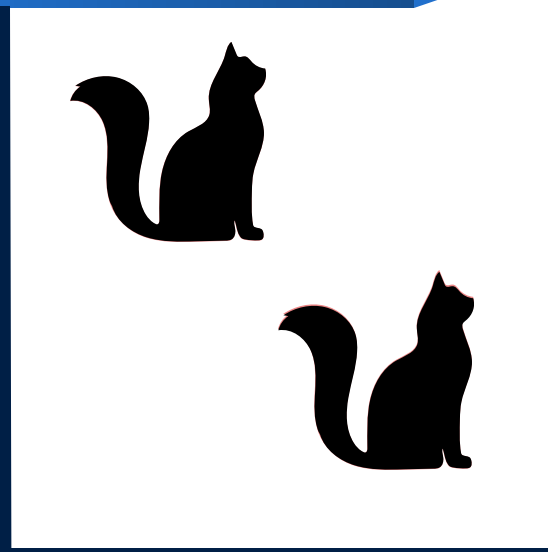
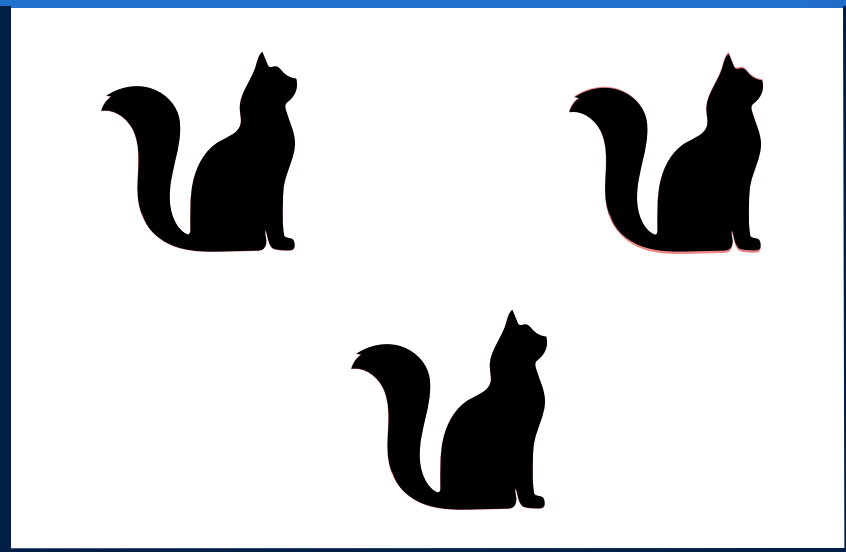


# Example/ cattery 0

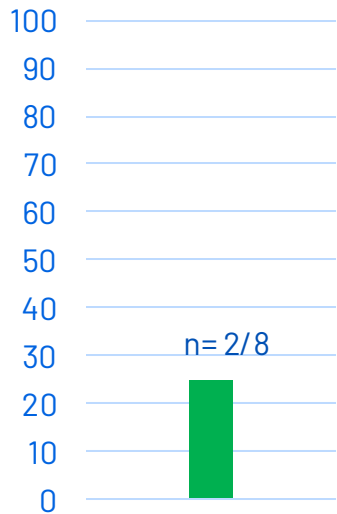


Cattery 0

- first sampling
- second sampling
- third sampling

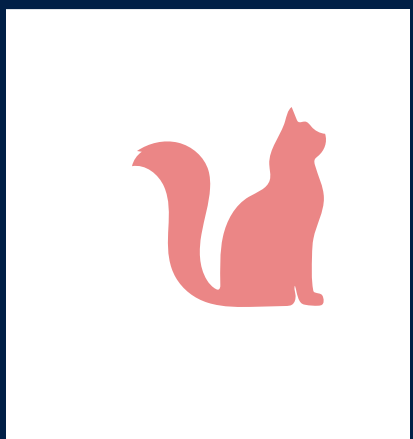
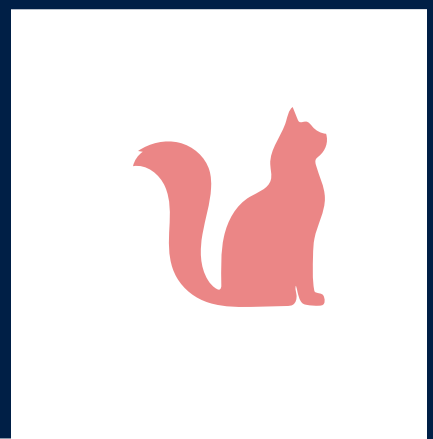
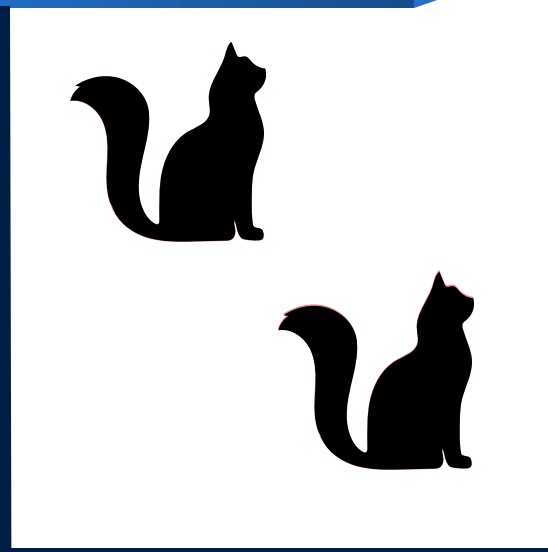
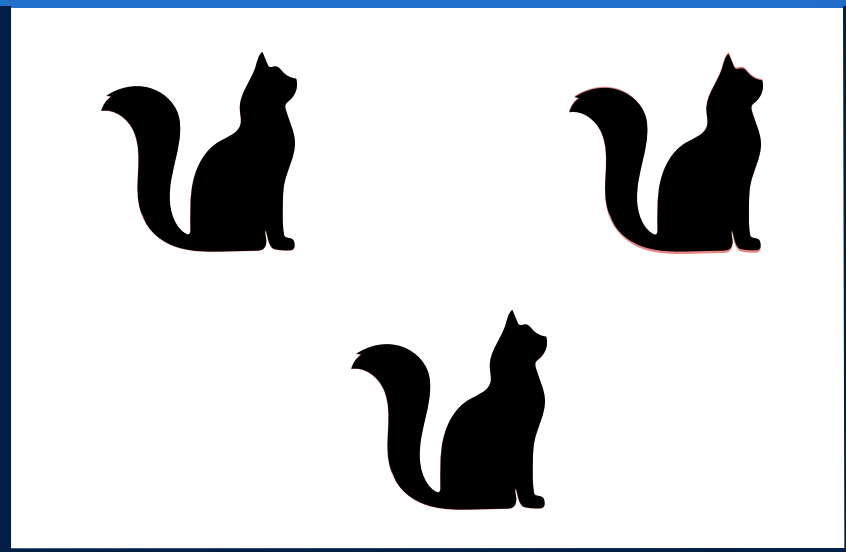


# Example/ cattery 0

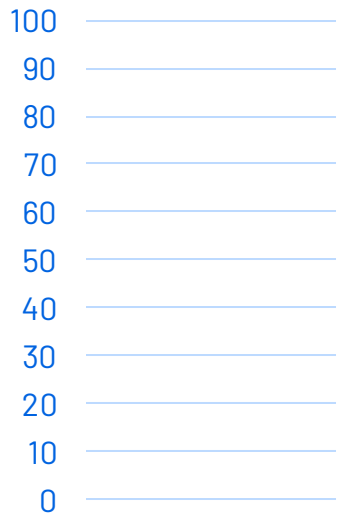


Cattery 0

- first sampling
- second sampling
- third sampling

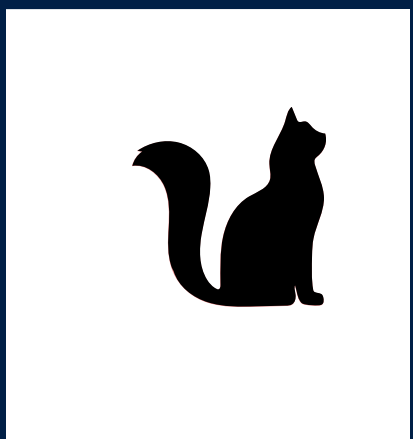
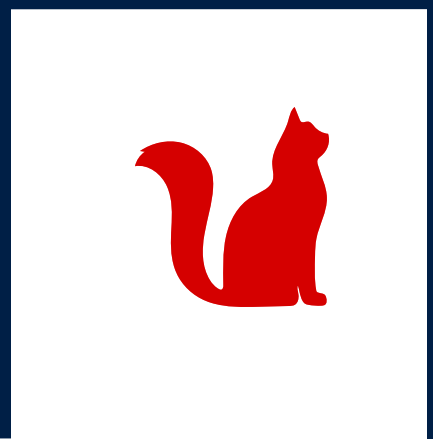
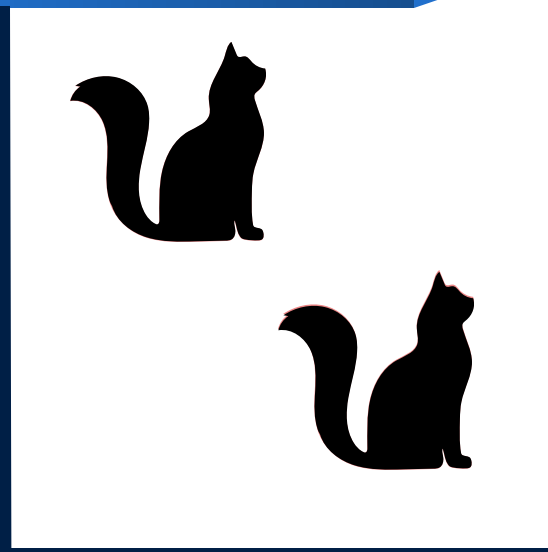
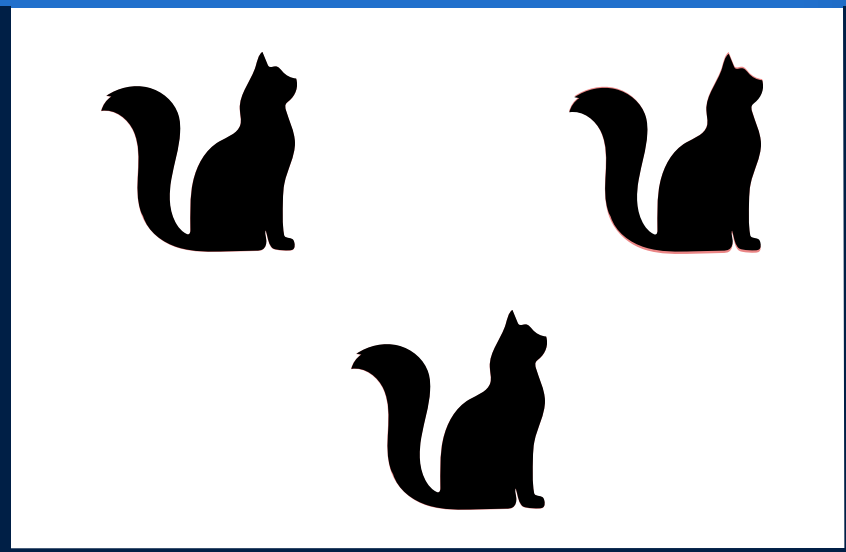


# Example/ cattery 0

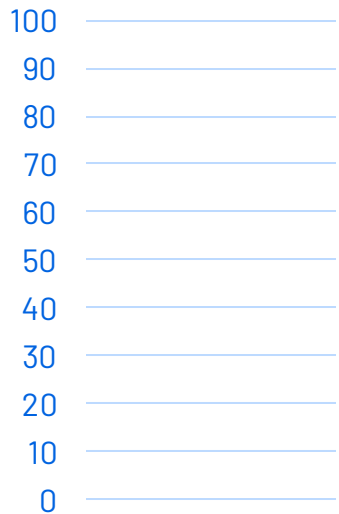


Cattery 0

- first sampling
- second sampling
- third sampling

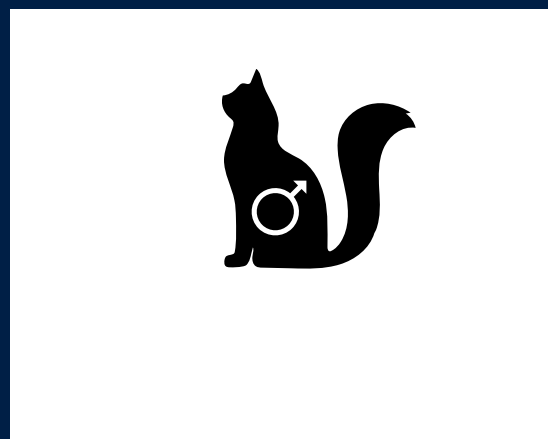
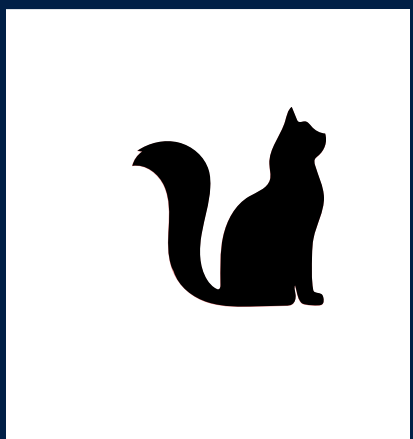
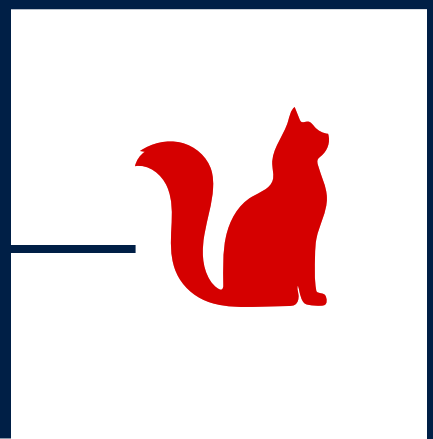
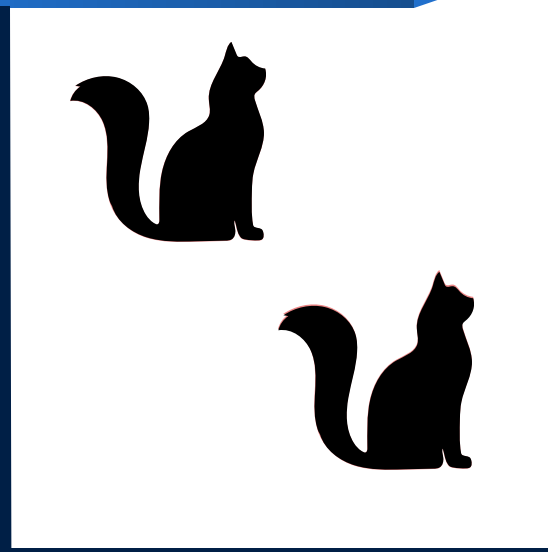
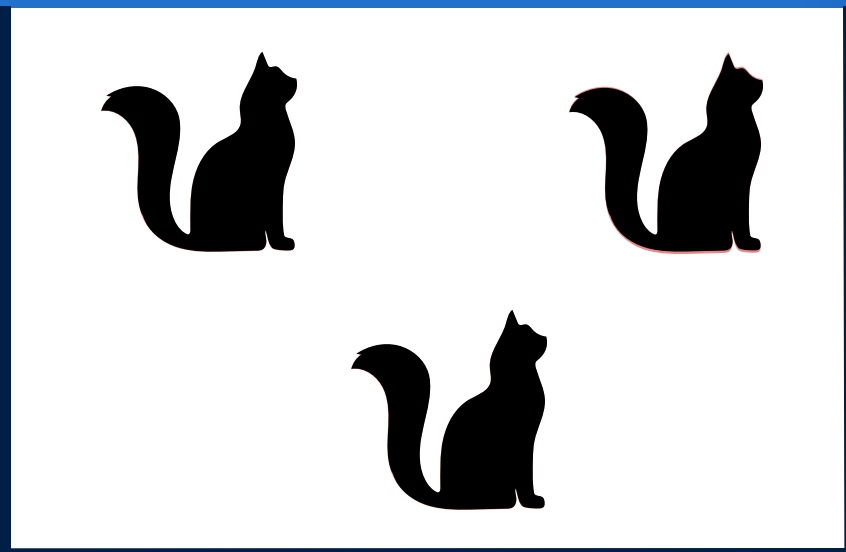


# Example/ cattery 0

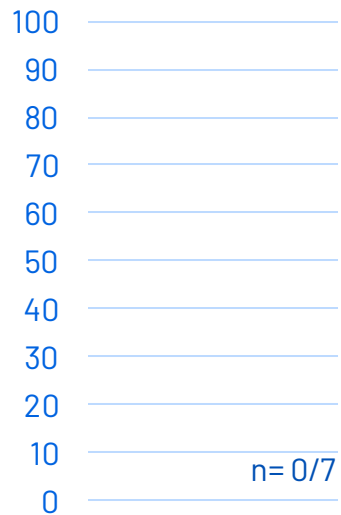


Cattery 0

- first sampling
- second sampling
- third sampling

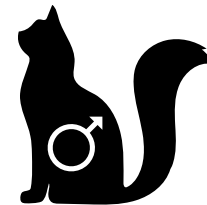
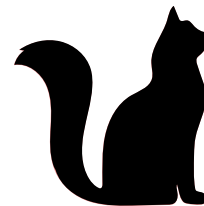
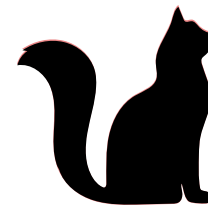
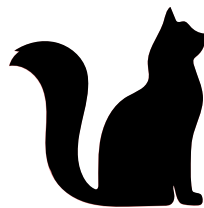
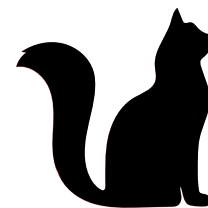
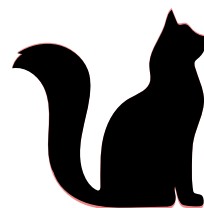
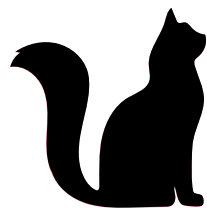


# Example/ cattery 0



Cattery 0

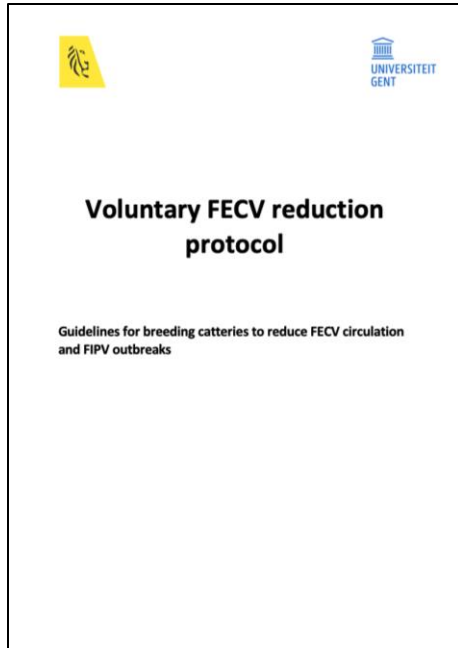
- first sampling
- second sampling
- third sampling



A blue 3D-style rectangular block with a white text overlay. The block is positioned on the left side of the frame and extends towards the right. The text is centered within the block and is written in a bold, white, sans-serif font. The block has a slight shadow on its right side, giving it a three-dimensional appearance.

**Implementation  
manual FECV free**

## Guidelines



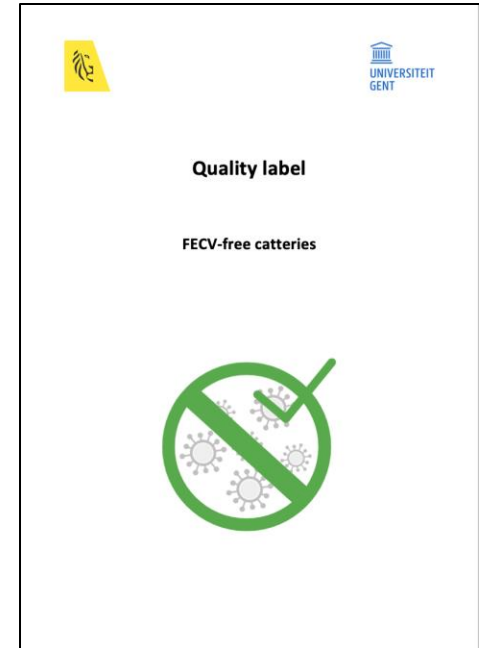
- Recommendations
- Reduce amount of shedders
- n = 10 catteries

## Manual 'FECV-low cattery'



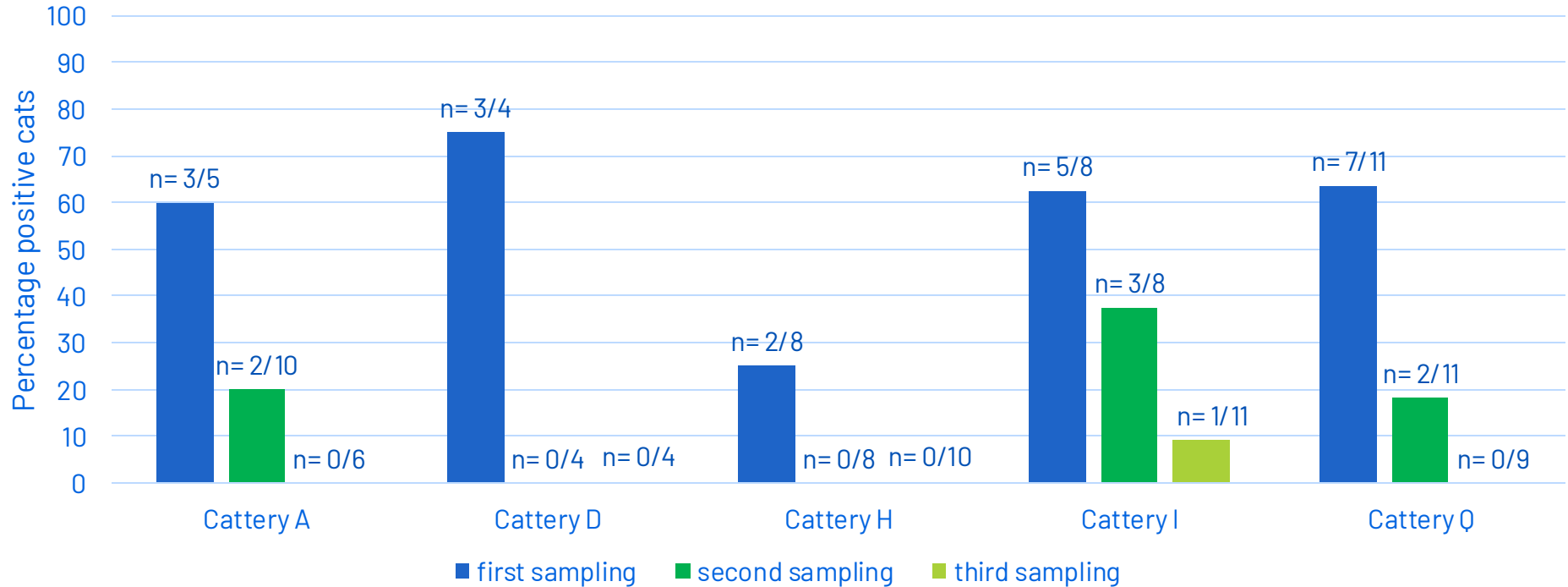
- Mandatory
- $\leq 20\%$  positive cats
- n = 5 catteries

## Manual 'FECV-free cattery'

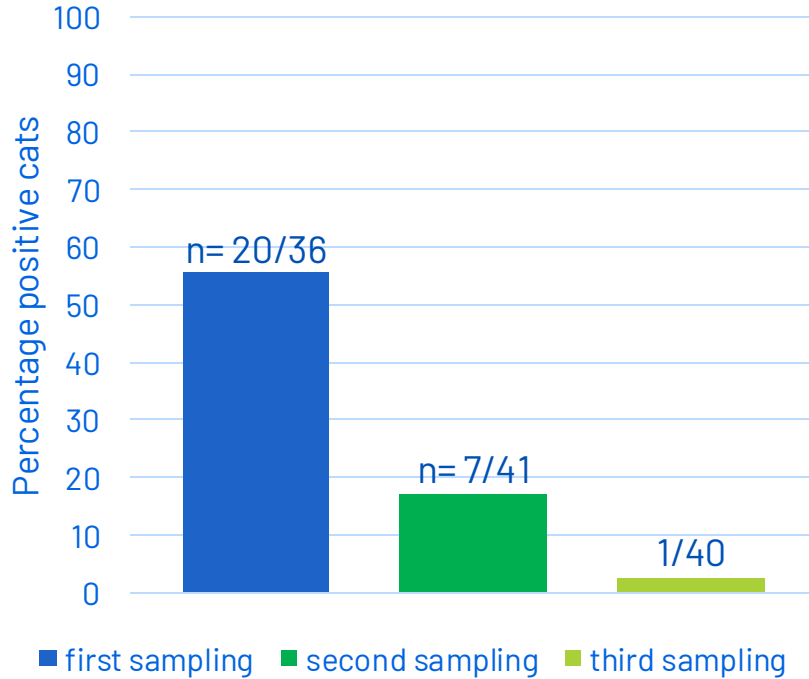


- Mandatory
- No positive cats
- n = 5 catteries

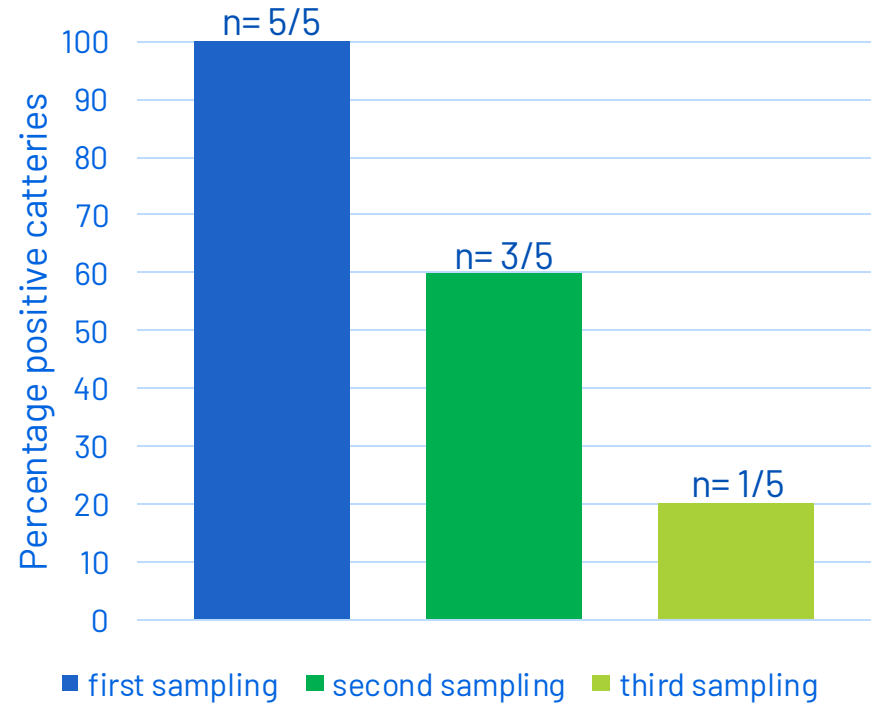
## Prevalence per cattery



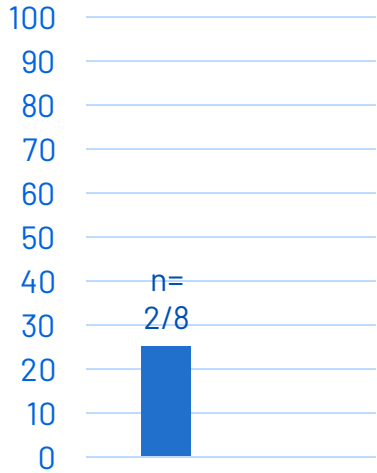
## Prevalence at cat level



## Prevalence at cattery level

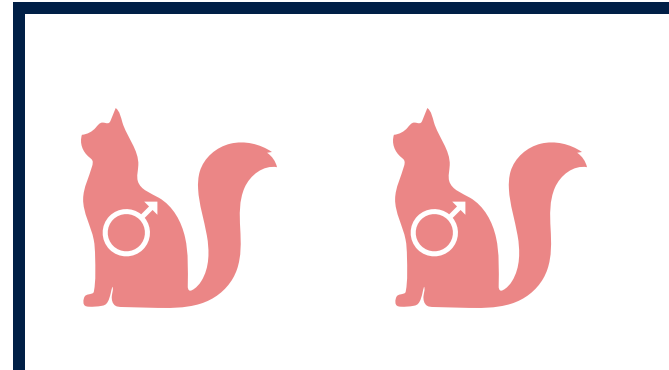
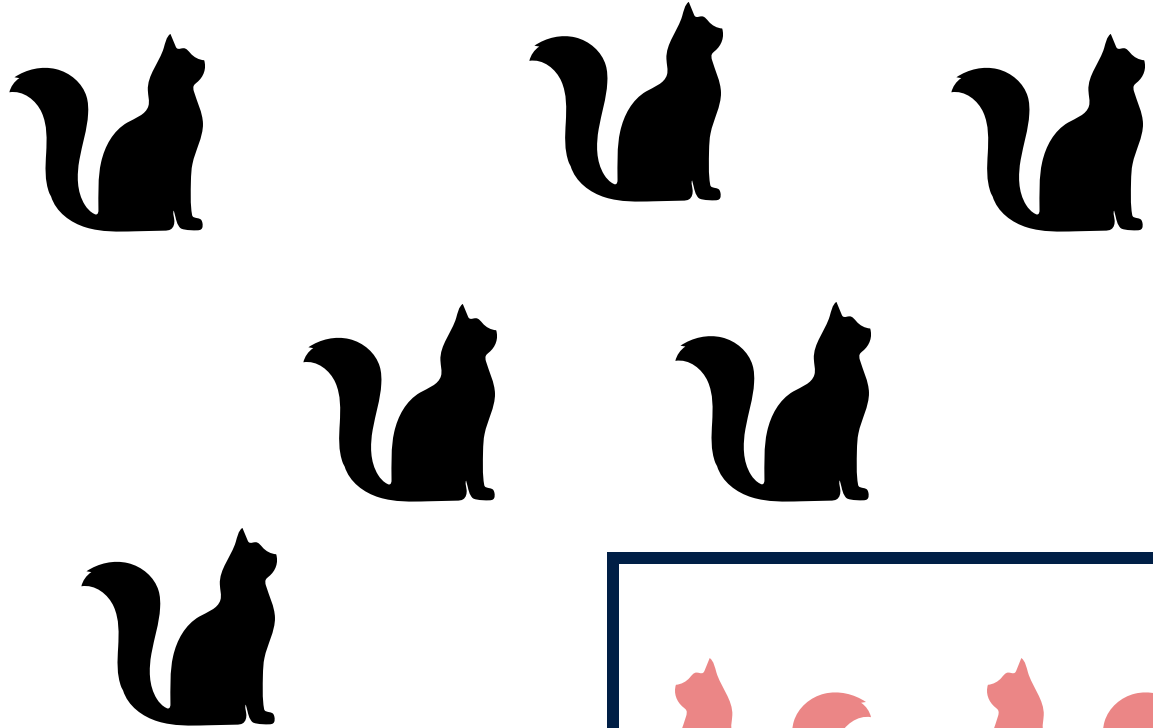


## Example/ Cattery H

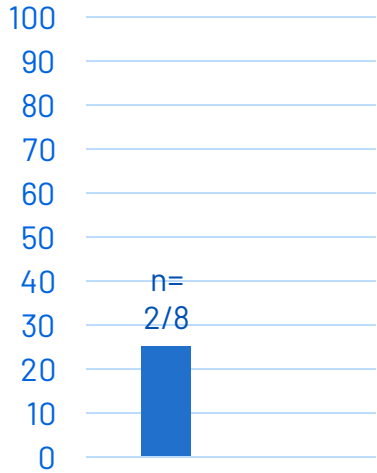


Cattery H

- first sampling
- second sampling
- third sampling

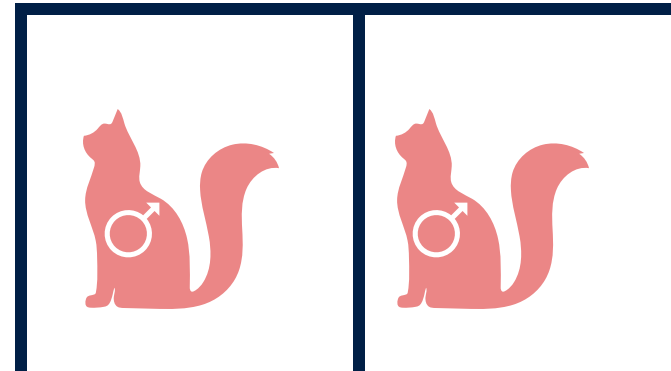
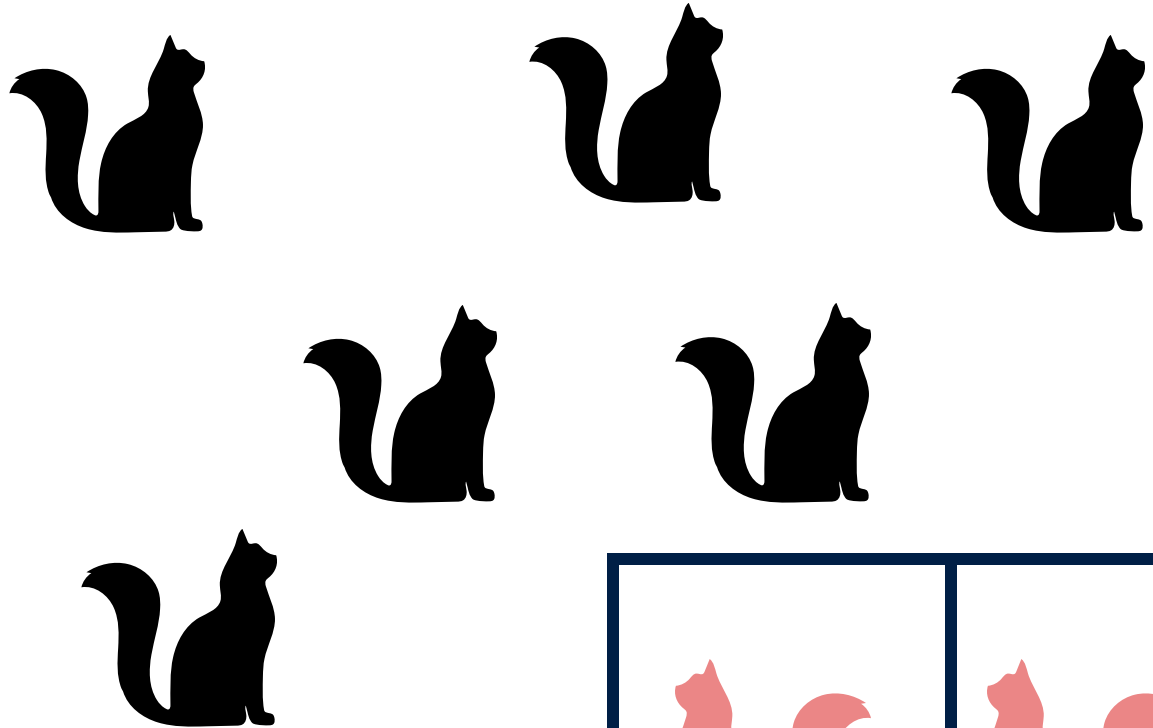


## Example/ Cattery H

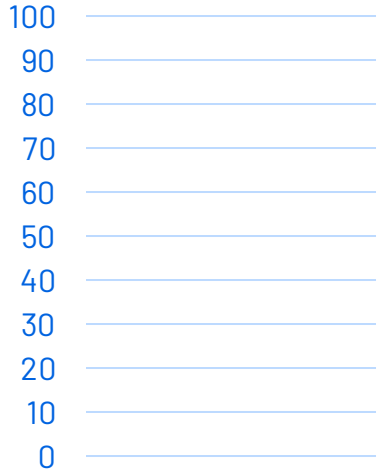


Cattery H

- first sampling
- second sampling
- third sampling

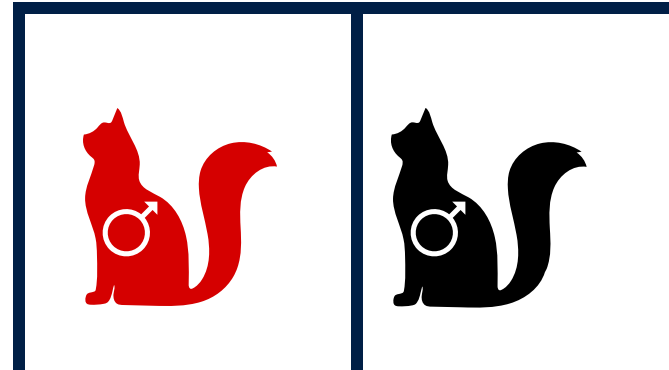
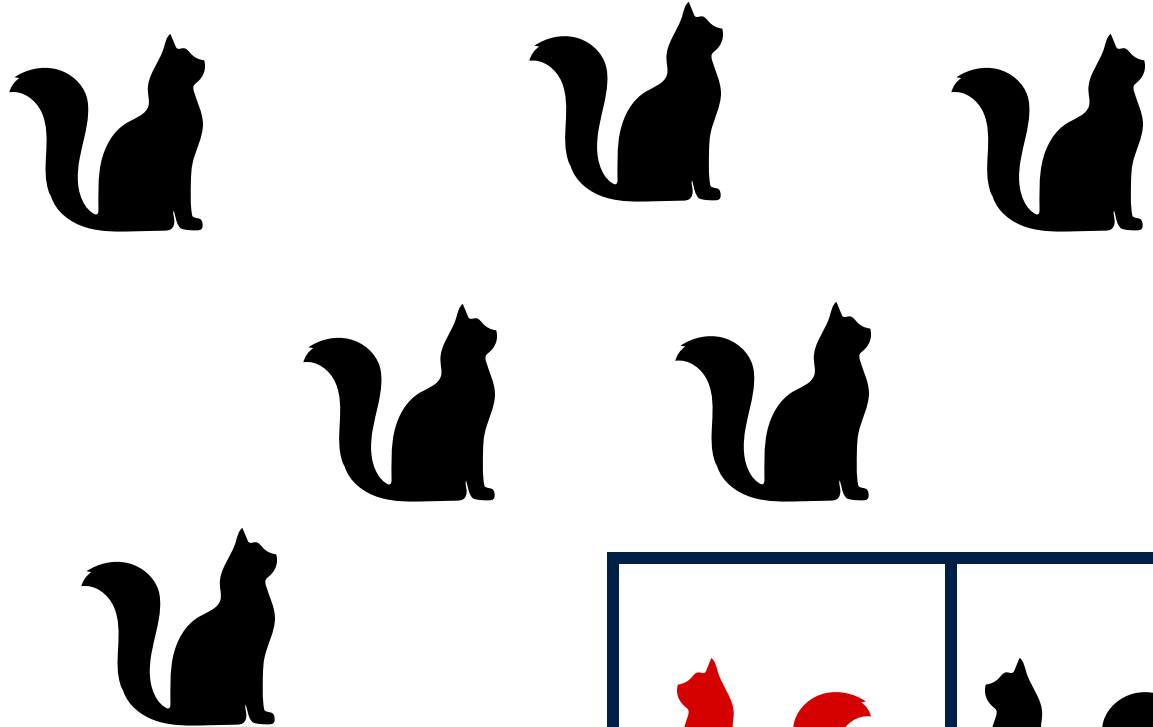


# Example/ Cattery H

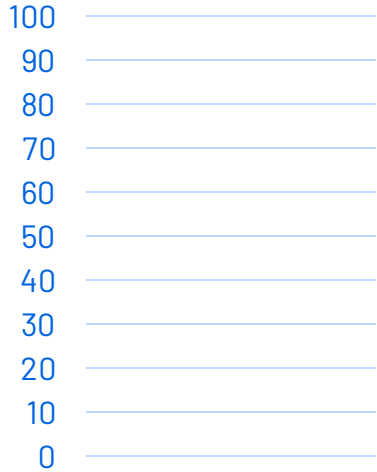


Cattery H

- first sampling
- second sampling
- third sampling

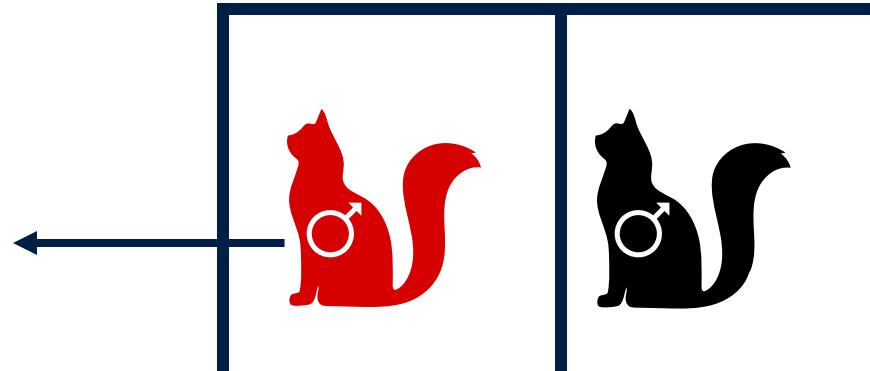
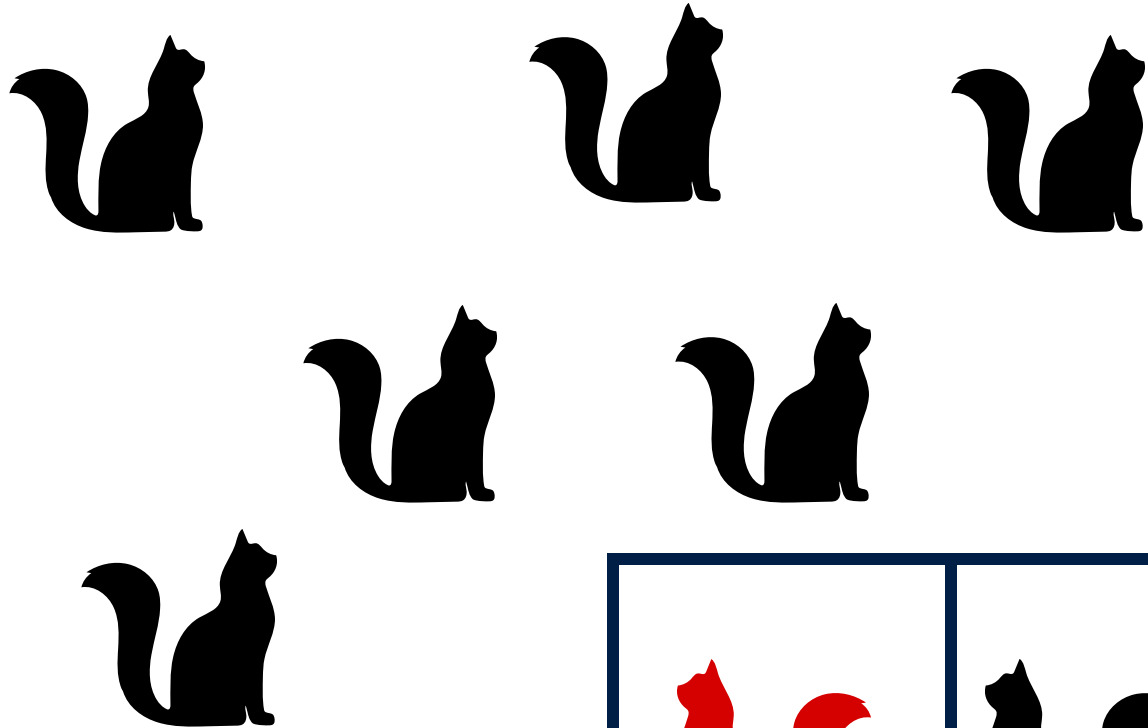


# Example/ Cattery H

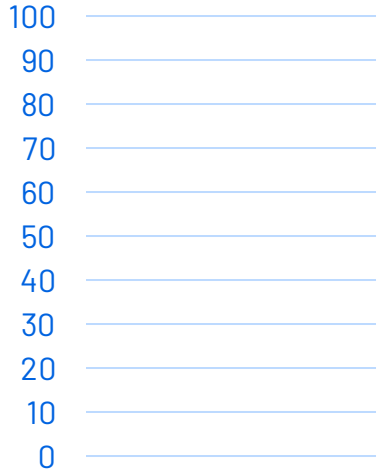


Cattery H

- first sampling
- second sampling
- third sampling

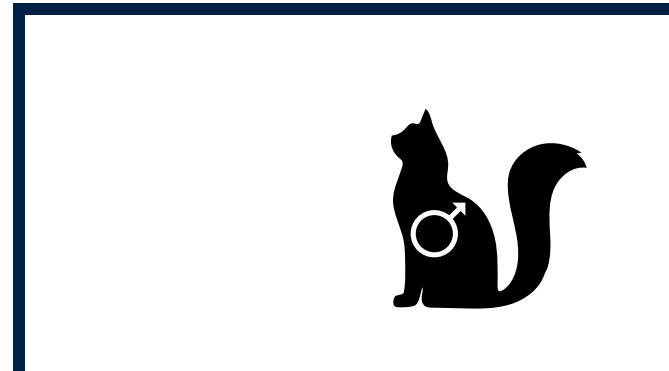
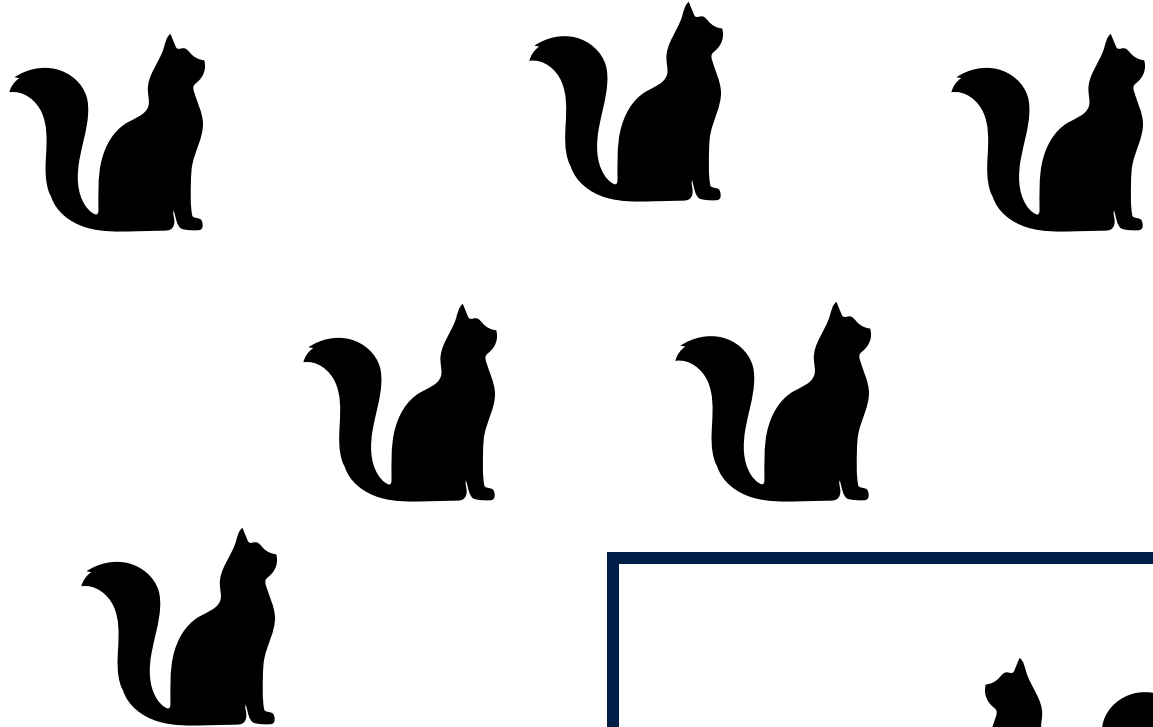


# Example/ Cattery H

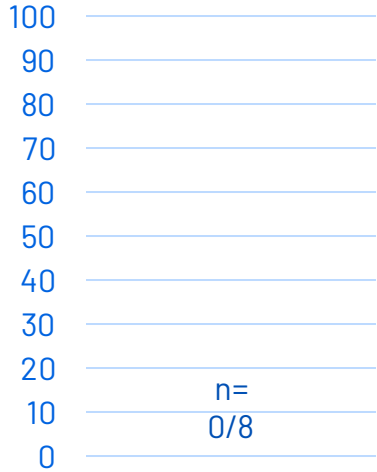


Cattery H

- first sampling
- second sampling
- third sampling



# Example/ Cattery H

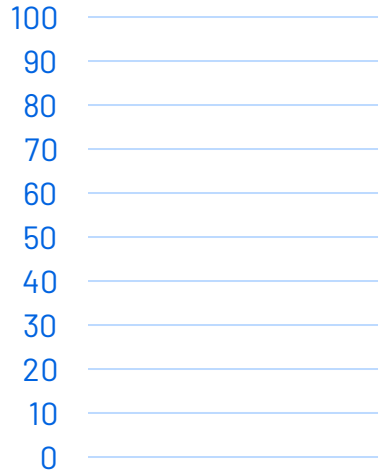


Cattery H

- first sampling
- second sampling
- third sampling



## Example/ Cattery H



Cattery H

- first sampling
- second sampling
- third sampling



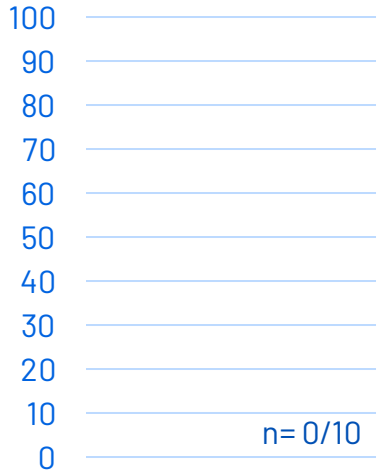
## Example/ Cattery H



FECV free litter

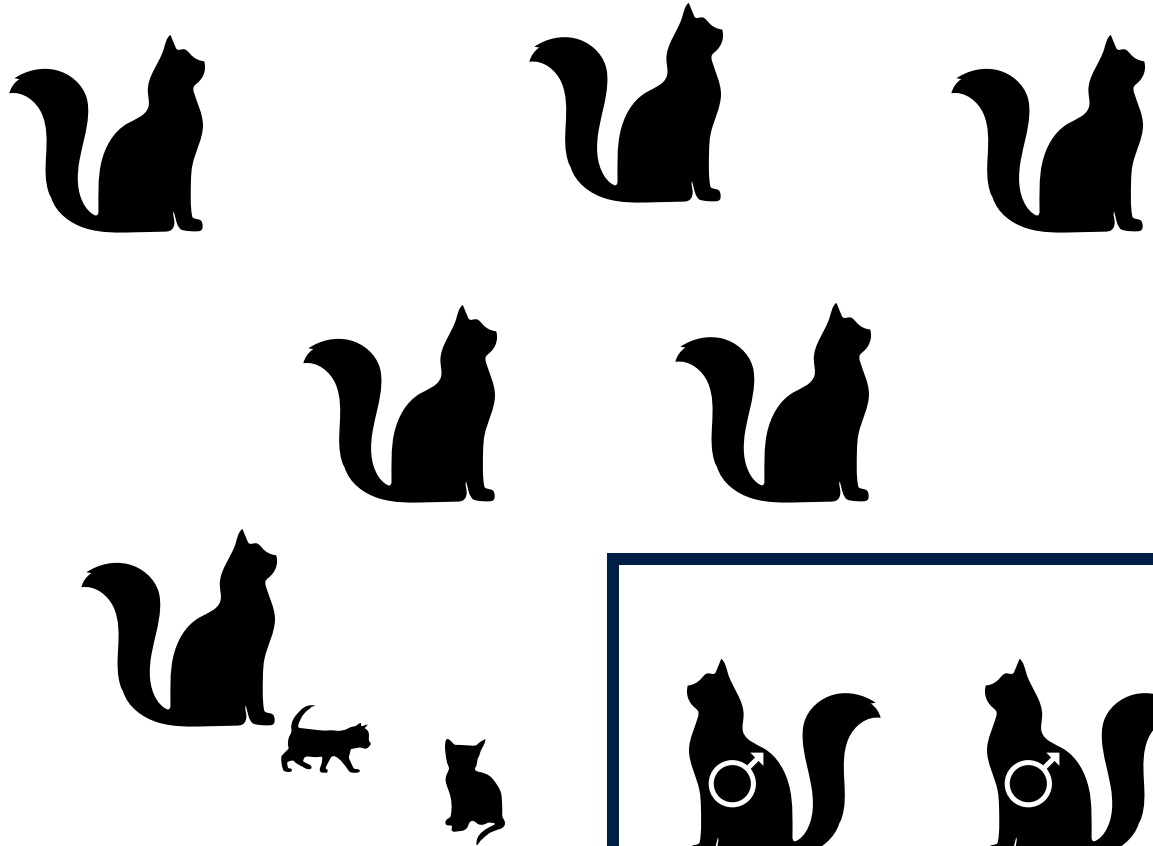


# Example/ Cattery H



Cattery H

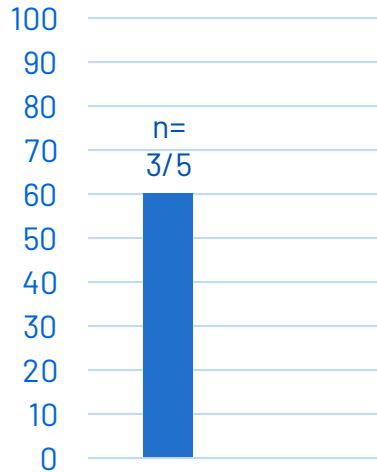
- first sampling
- second sampling
- third sampling





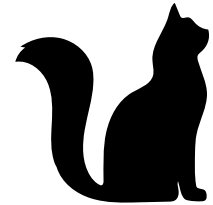
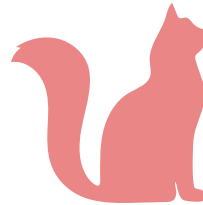
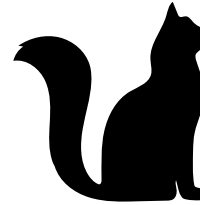
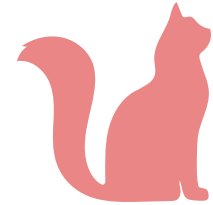
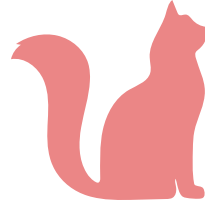
# Difficulties to keep FECV free status

## Example/ Cattery A

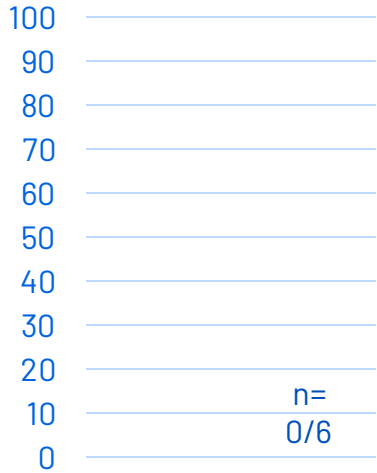


Cattery A

- first sampling
- second sampling
- third sampling



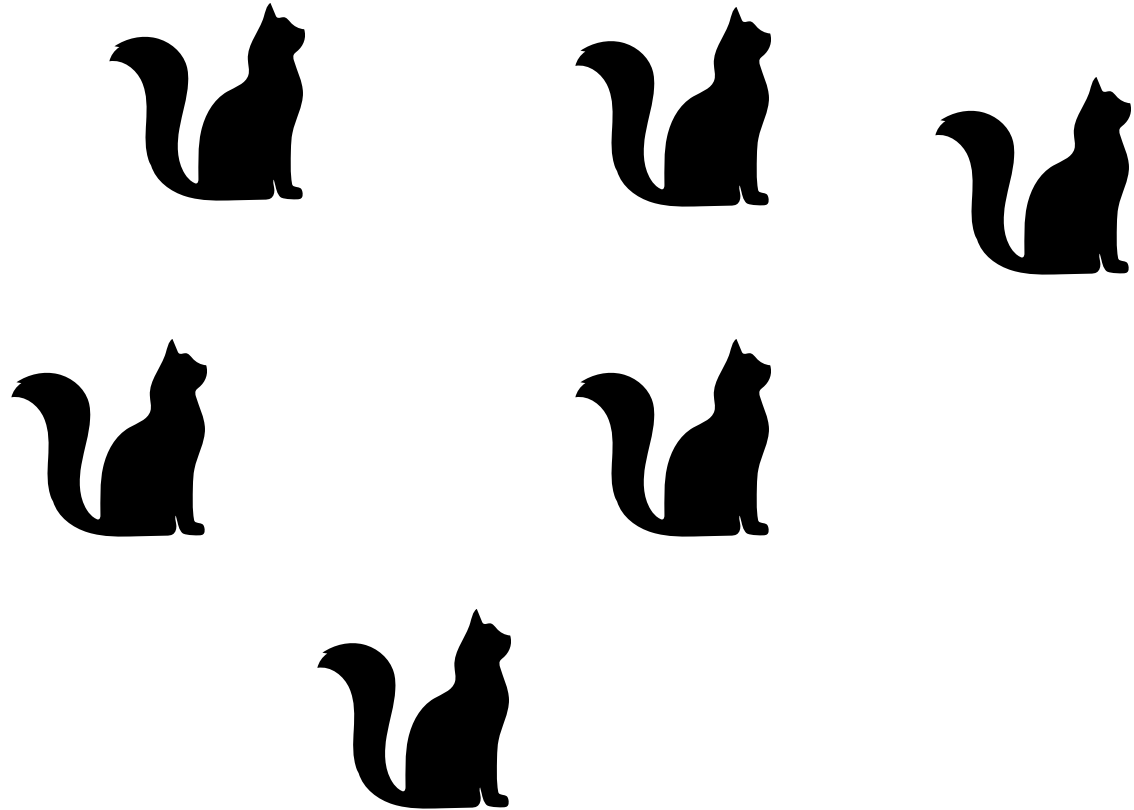
## Example/ Cattery A



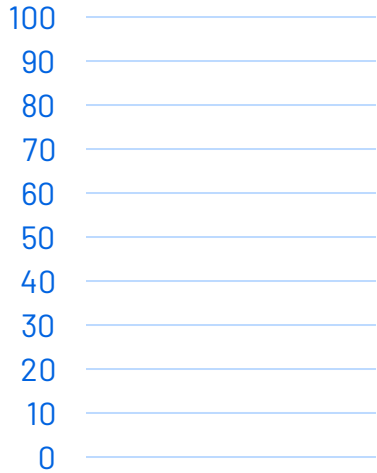
n=  
0/6

Cattery A

- first sampling
- second sampling
- third sampling

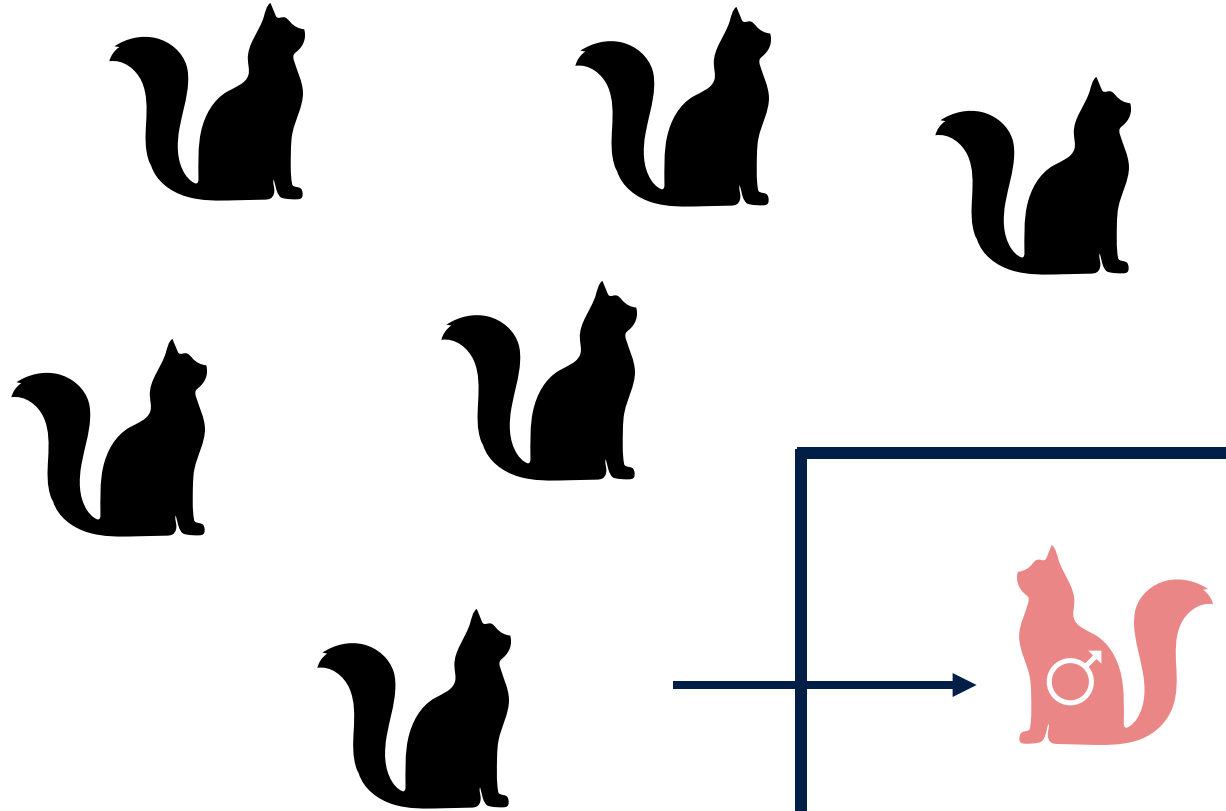


# Example/ Cattery A



Cattery A

- first sampling
- second sampling
- third sampling





**Future vision**

# Future vision

- ▶ Current participants: keep on testing (essential to stay negative)
- ▶ Other catteries: start testing and implement guidelines/manuals
- ▶ Need for official testing and certificates
- ▶ Breeding organisations start now!



# CERTIFICAAT

## FECV-VRIJE CATTERY

WORDT UITGEREIKT AAN:

*Naam cattery*

VOOR HET BEHALEN VAN EEN FECV-VRIJE STATUS

24 JUNI 2025

DATUM

*handtekening*

DIERENWELZIJN  
VLAANDEREN



Hans.nauwynck@ugent.be



Luna.vandenbuijs@ugent.be



Thank you for  
eradicating this  
monster