

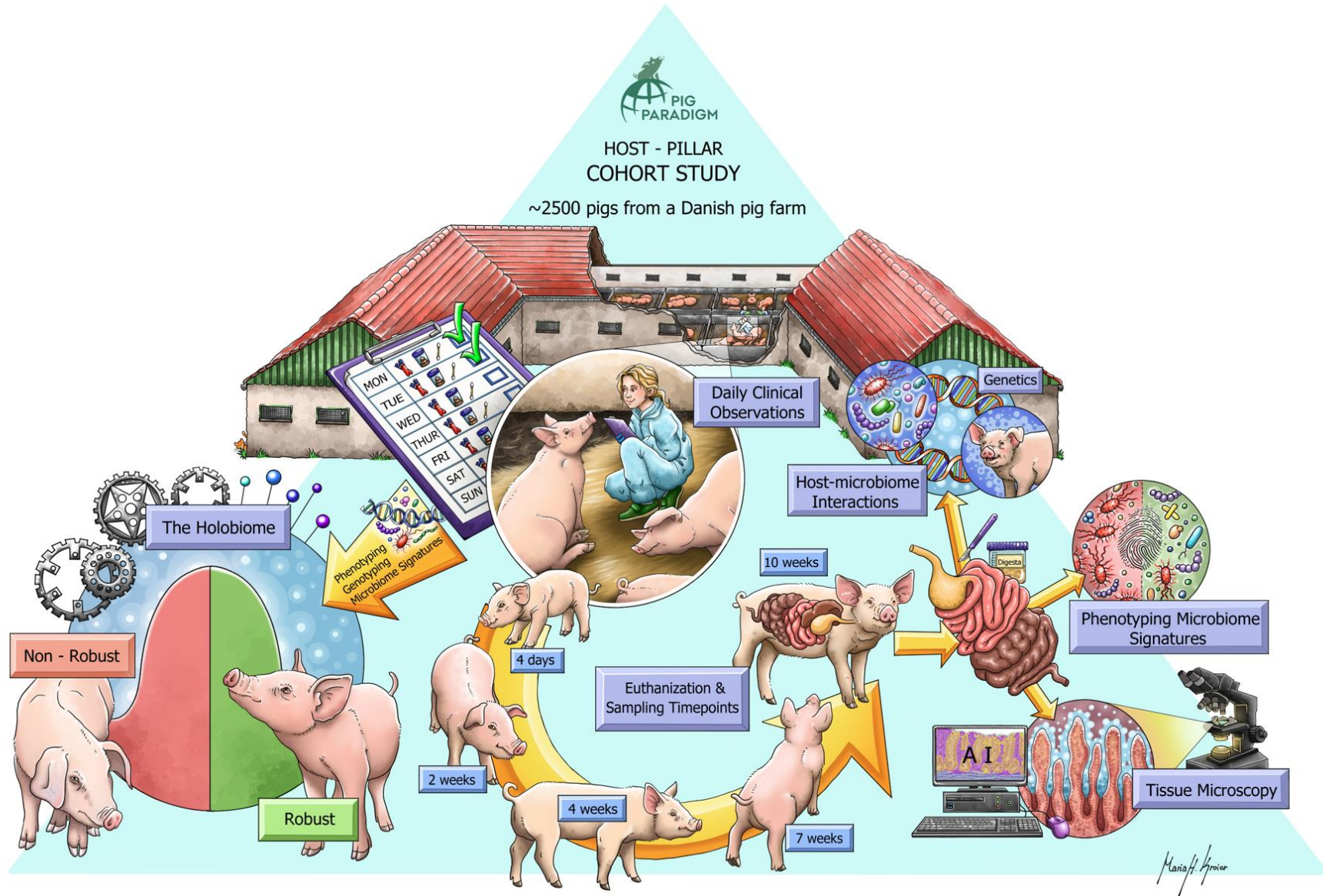
PIG-PARADIGM

Host Pillar: towards characterization of the robust pig

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The Host Pillar will elucidate the complex interactions between the intestinal microbiome and host factors and determine their separate and combined influence on intestinal health and resilience.

Inclusion of sows and piglets



Malene Kjelin Morsing

Batches comprising ~270 piglets

- ~18 sows parity 1-6 included every sixth week
- Finished farrowing between Sunday mid day and Monday morning
- Min. 15 piglets

Piglets at inclusion

- 15 random piglets stay with the sow
- Min. 600 g
- Warm and able to walk

Clinical observations (NB! no batch treatment)



Malene Kjelin Morsing

Daily

- Alertness
- Unthrifty/thin
- Treatment and cause

Weekly

- Fecal score, perianal fecal staining, wounds, lameness, body condition, coat, umbilical hernia

0-14 days post weaning:

- Perianal fecal staining

Treatment of diarrhea

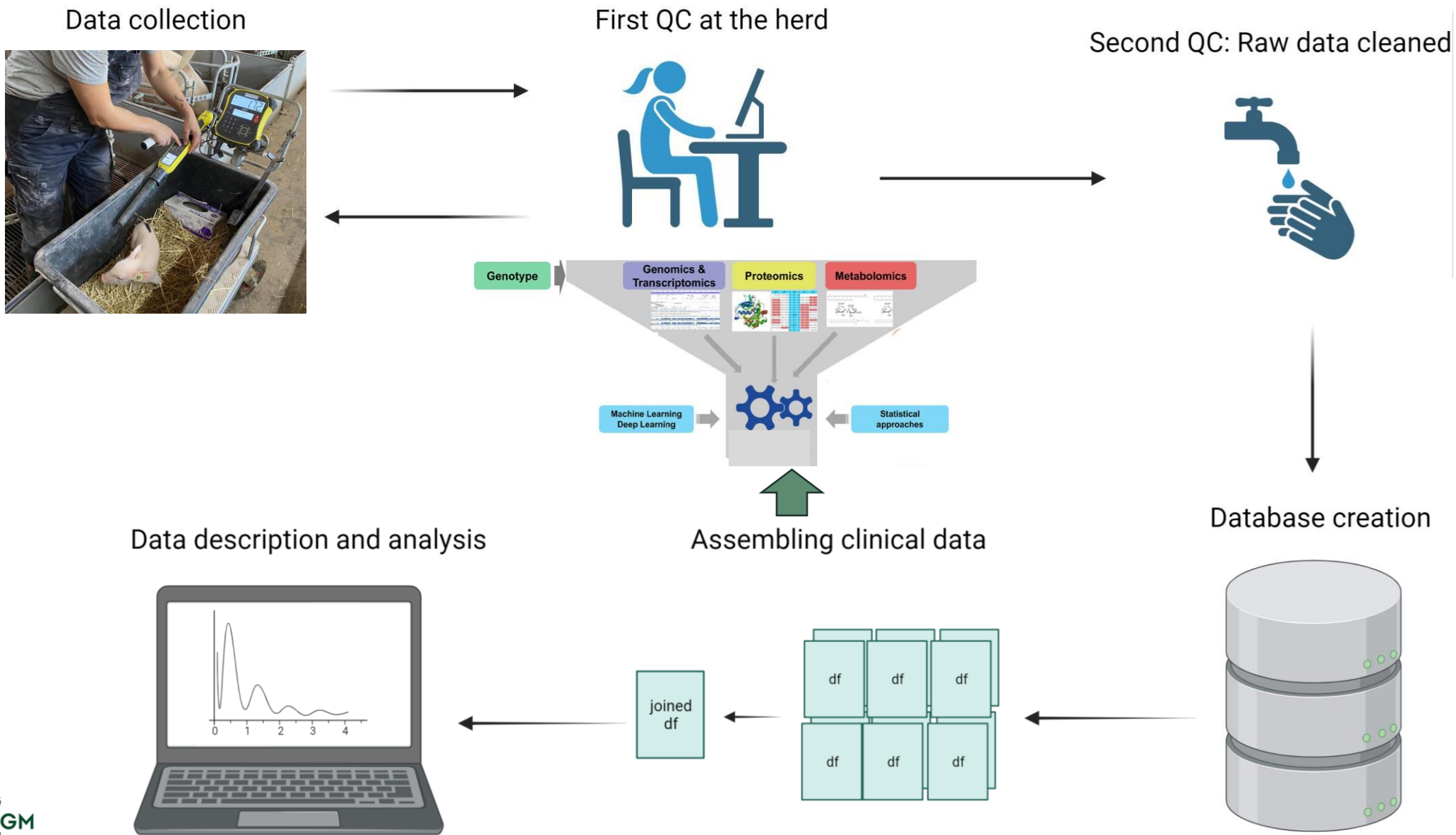


- Perianal fecal staining/fecal score 3-4 (loos/watery)

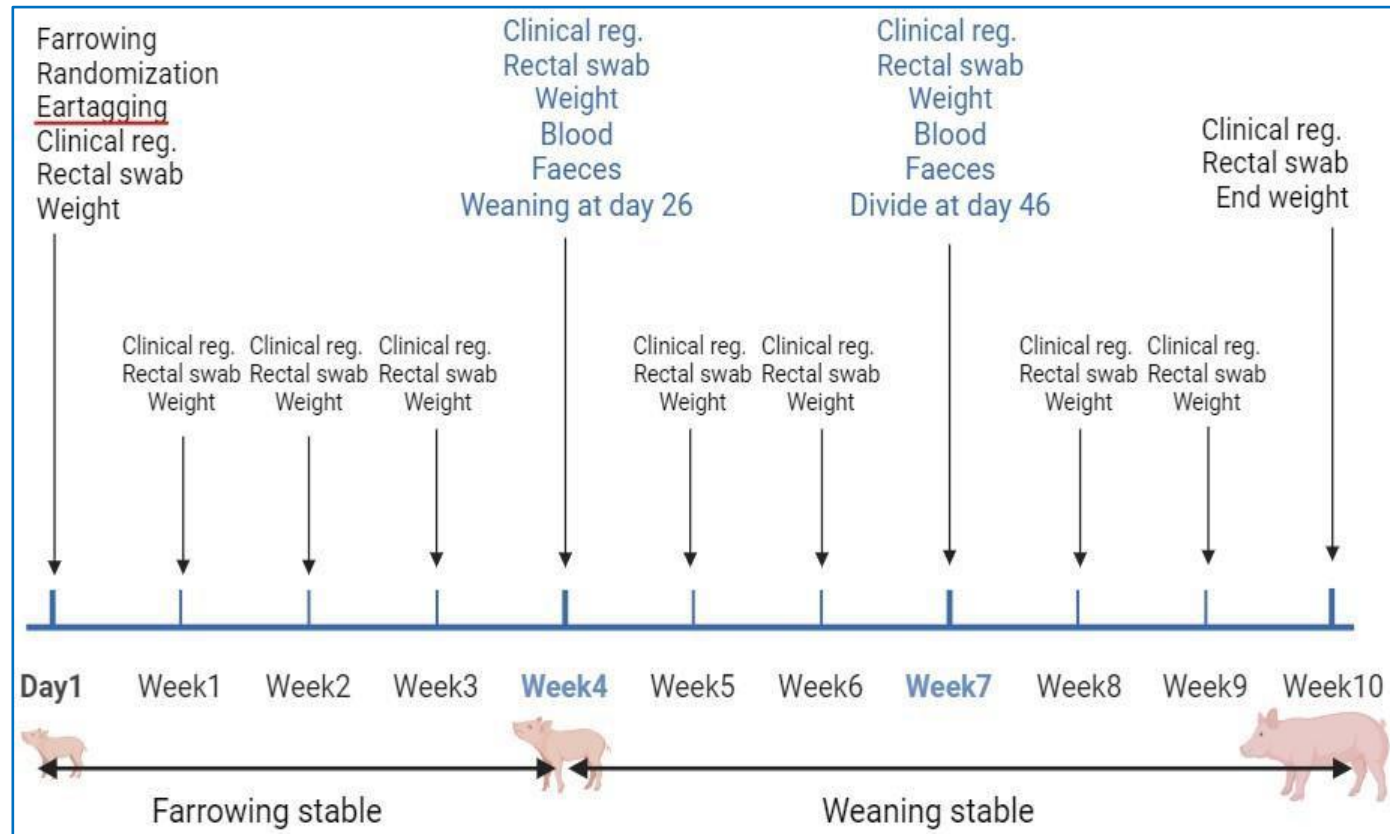
AND

- Losing body condition and/or depressed

Data management



Sampling



- **Rectal swabs:**

- 16S seq
- qPCR diagnostics

- **Faecal samples:**

- metagenomics

- **Blood and serum samples:**

- Genetics
- CBC and diff
- metabolomics
- transcriptomics

Status: Number of included sows and piglets



Batch	Sows	Piglets
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1 to 7	112	1.680
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Excluded piglets (non-clinical)

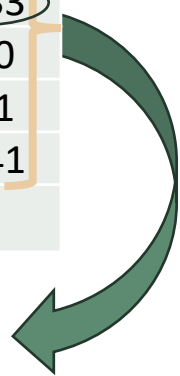
8 litters excluded	120
Tissue collection	85

→ 1.475 piglets remaining

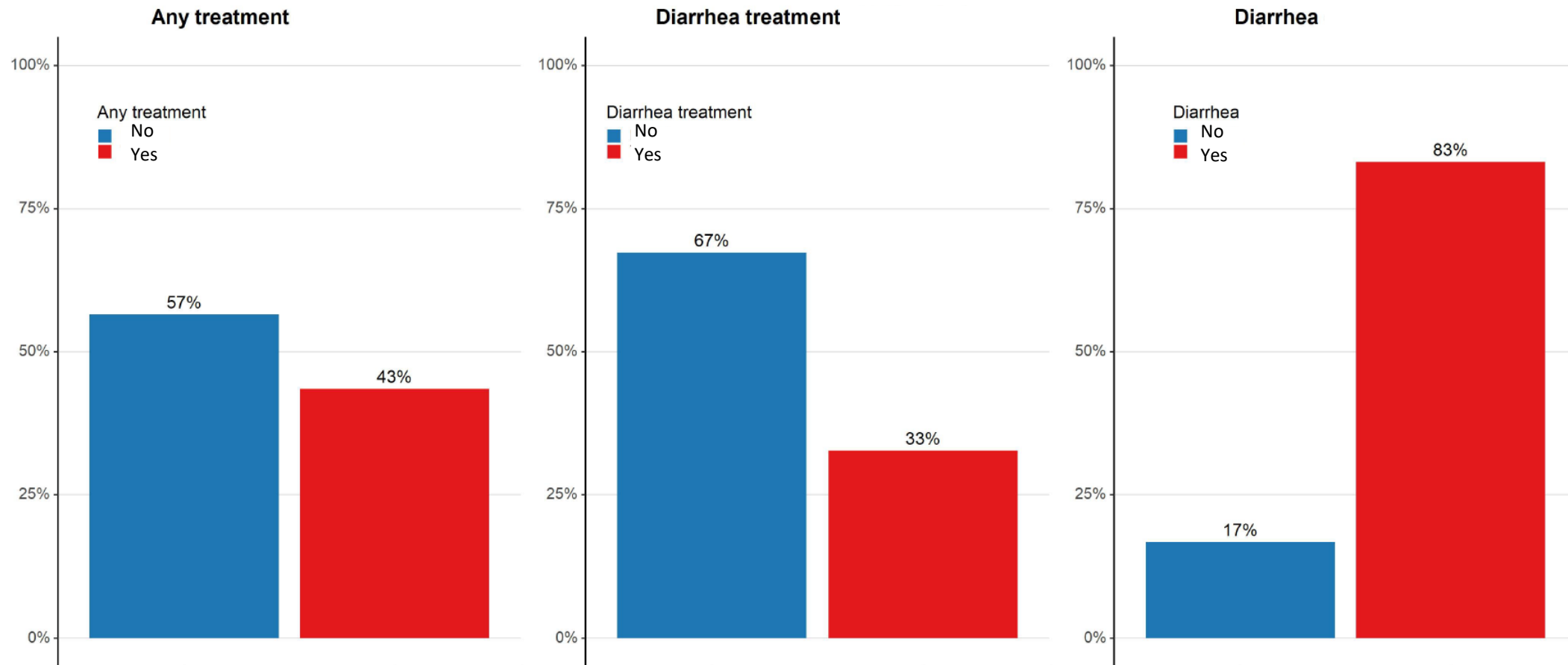
Piglets excluded for clinical reasons out of 1.475 piglets

Category	Explanation	Number	%
110	Dead - Crushed/bitten/stamped	67	19,92
130	Dead - Diarrhea	8	2,40
150	Dead - Hunger/cold/weak	48	14,41
170	Dead - Leg/hoof disorder	11	3,30
180	Dead - Central nervous disorder	7	2,10
190	Dead - Other	31	9,31
910	Removed - Crushed/bitten/stamped	1	0,30
930	Removed - Diarrhea	10	3,00
950	Removed - Hunger/cold/weak	91	27,33
970	Removed - Leg/hoof disorder	12	3,30
980	Removed - Central nervous disorder	10	3,01
990	Removed - Other	30	11,41
TOTAL		333 (~22%)	

If half of the removed piglets survived → ~17% lost due to clinical reasons



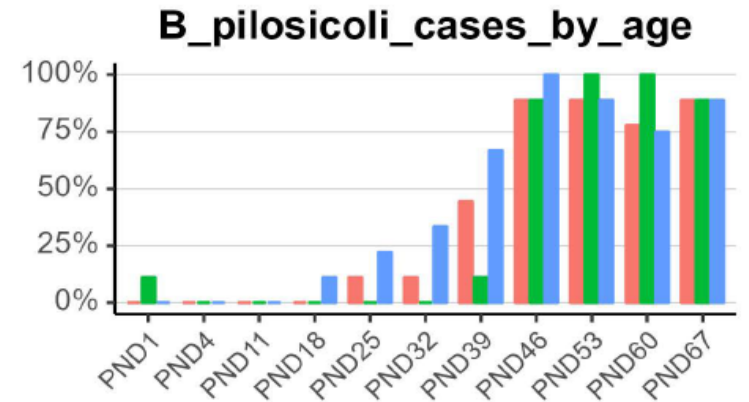
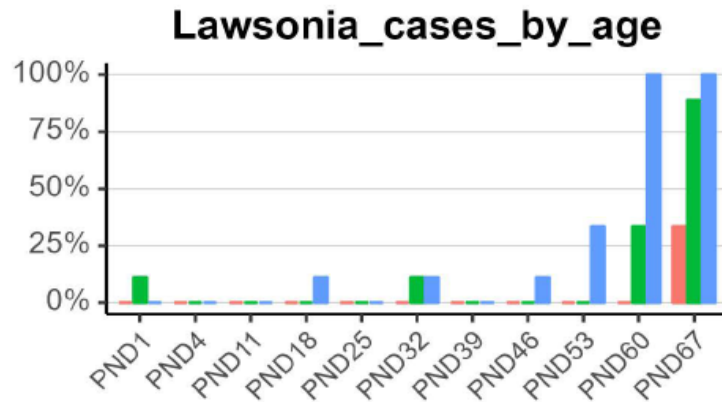
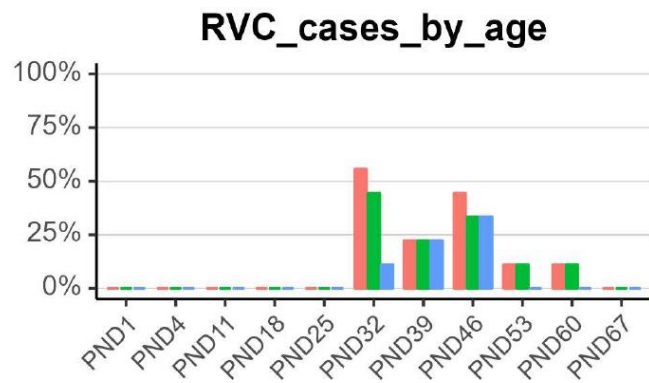
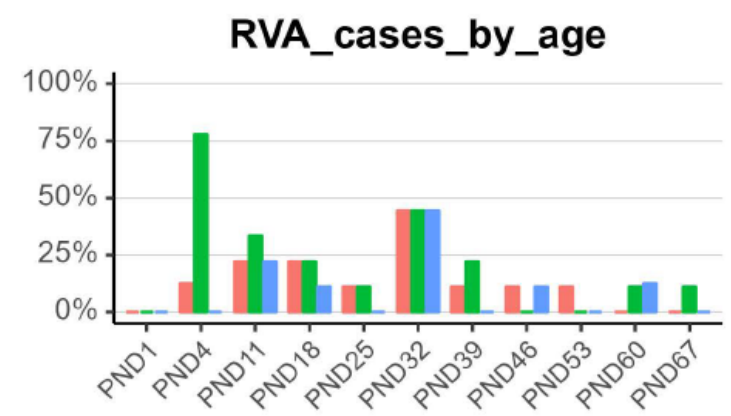
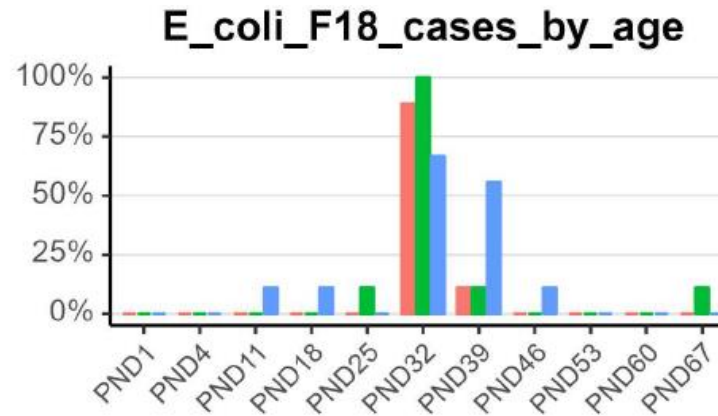
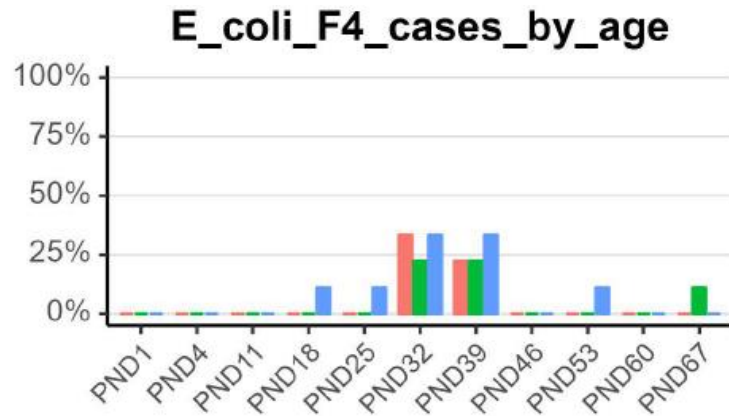
Preliminary data on diarrhea and treatment



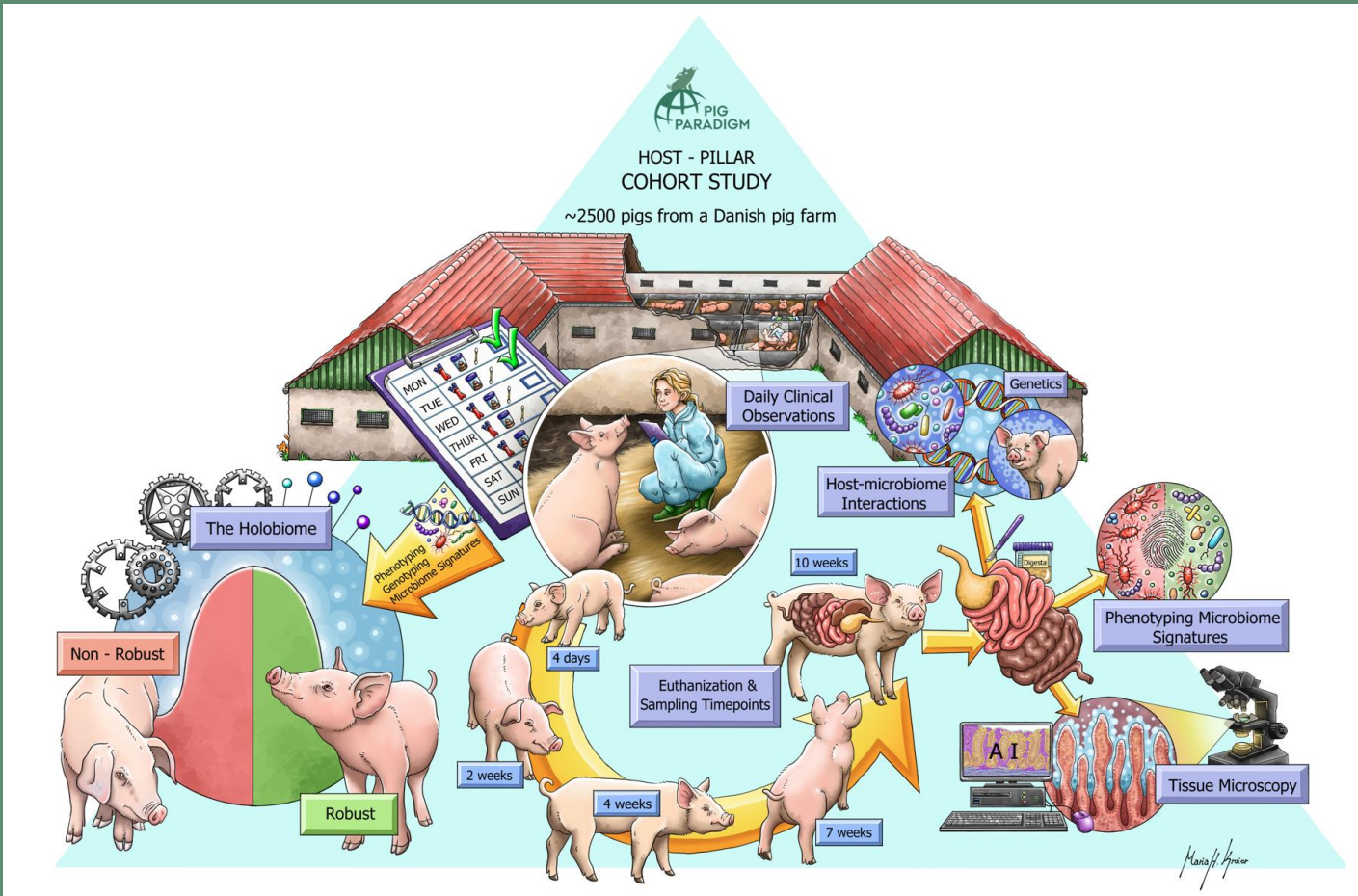
Post doc Martin Peter Rydal

Preliminary information on pathogens in the herd

- Batch 1 (healthy (robust))
- Batch 2 (diarrhea (self-resolving))
- Batch 3 (PWD (antibiotic treated))



Extrapolation from the number of excluded piglets in 7 batches we will need to include 11 batches.



Conclusion and perspectives:

We are in the process of establishing a very valuable data- and sample set ensuring that we will be able to elucidate the interactions between the intestinal microbiome and host factors and determine their separate and combined influence on intestinal health and resilience.

People involved

KU Clinical part

- **Professor Jens Peter Nielsen**
- **Postdoc Malene Kjelin Morsing**
- **Postdoc Martin Rydal**
- Associate professor Ken Steen Pedersen
- **Animal caretaker Rasmus Syhler**
- Veterinary students (4)

KU Genetics and genomics

- Post doc Emil Ibragimov
- Post doc Janneke Elzinga
- PhD student Jiahong Sun
- Associate professor Peter Karlskov-Mortensen
- Professor Bernt Guldbrandtsen
- Associate professor Claus B. Jørgensen
- Associate professor Susanna Cirera
- **Lab technician Tina Mahler**
- **Lab technician Minna Jakobsen**
- **Research assistant Frederik Scharling**

KU Pathology

- Professor Henrik Elvang Jensen
- PhD student Cecilie Brandt Becker
- Associate professor Mette Sif Hansen
- Research assistant Christoffer Kirkelund Flyger
- Research assistant Benjamin Meyer Jørgensen

KU Data management

- Professor Jan Gorodkin
- AC TAP Christian Anton

KU Microbiology

- Professor Lars E. Lasen
- Professor John E. Olsen
- Post doc Nicole Bakkegård Goecke

WU Micobiome pillar

- Professor Hauke Schmidt
- Professor Michiel Kleerebezem
- PhD student Mohak Gujare
- PhD student Baris Osdinc

KU Micobiome pillar

- Professor Luca Guardabassi
- PhD student Sina Maschek
- Professor Dennis Sandris Nielsen

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Questions

