

Evaluation of differential SCC as a rapid and affordable tool to improve detection of subclinical mastitis in regular DHI samples

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Introduction

Mastitis is a frequent and costly disease in the dairy industry

Subclinical mastitis:

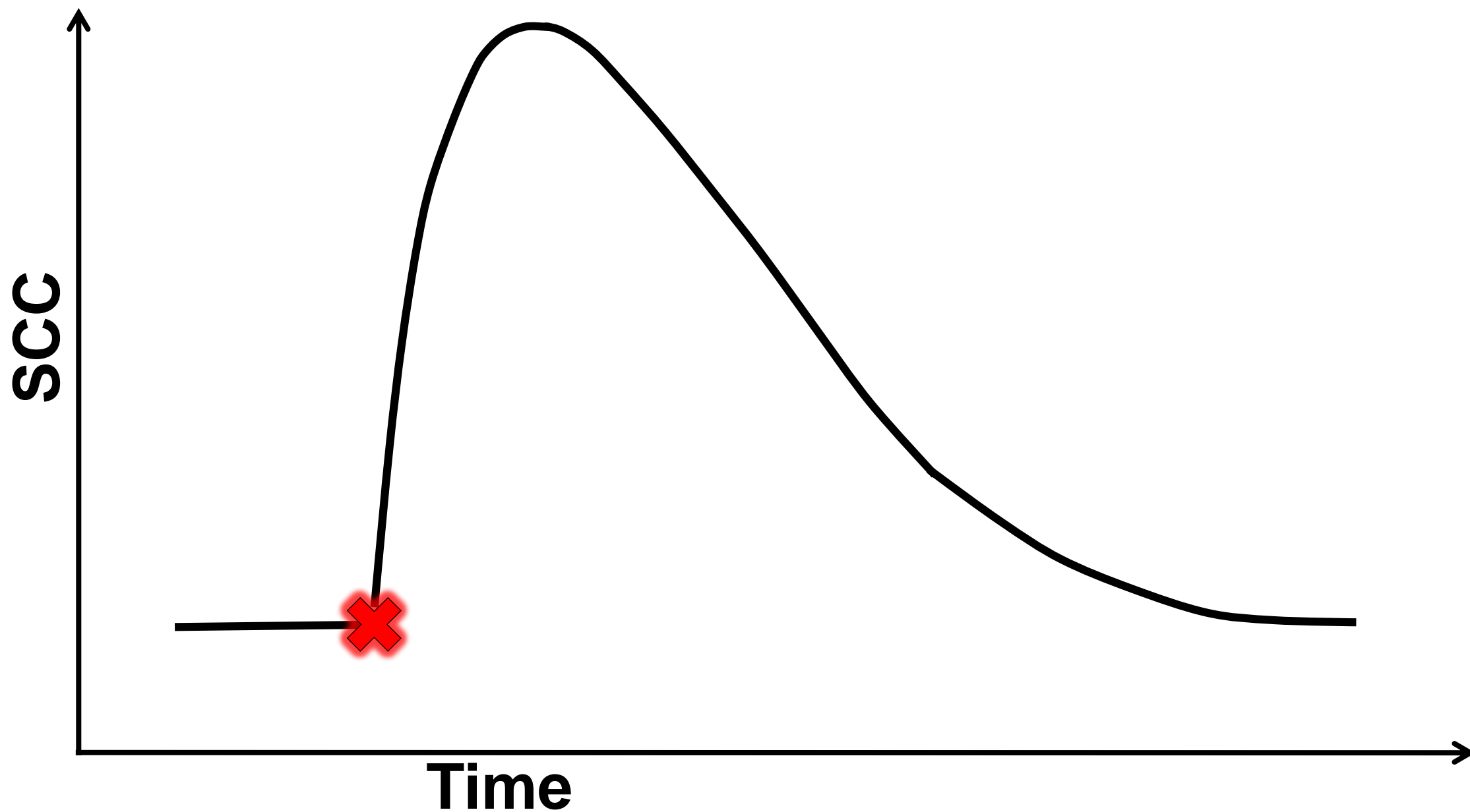
- Normal milk and udder, but infected/inflamed mammary gland
- Infected cows act as a reservoir for bacteria, resulting in an unnoticeable spread of mastitis to herdmates
- **Rapid** detection could result in important economic benefits for producers

Currently available tools:

- SCC monitoring
- Bacterial culture or PCR
- New Differential somatic cell count (Foss Analytical, Denmark; Damm et al. 2017)

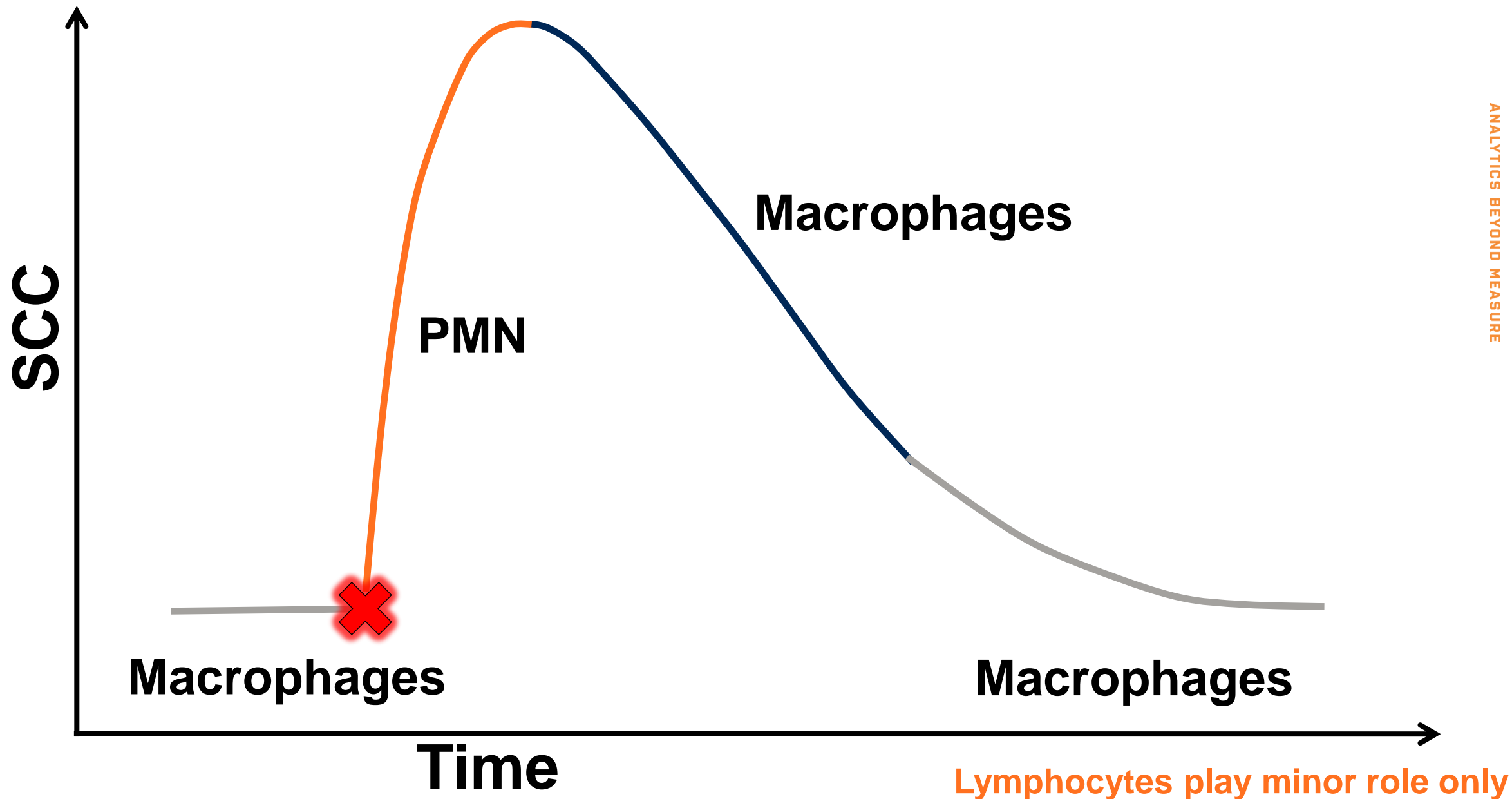
MASTITIS CASCADE

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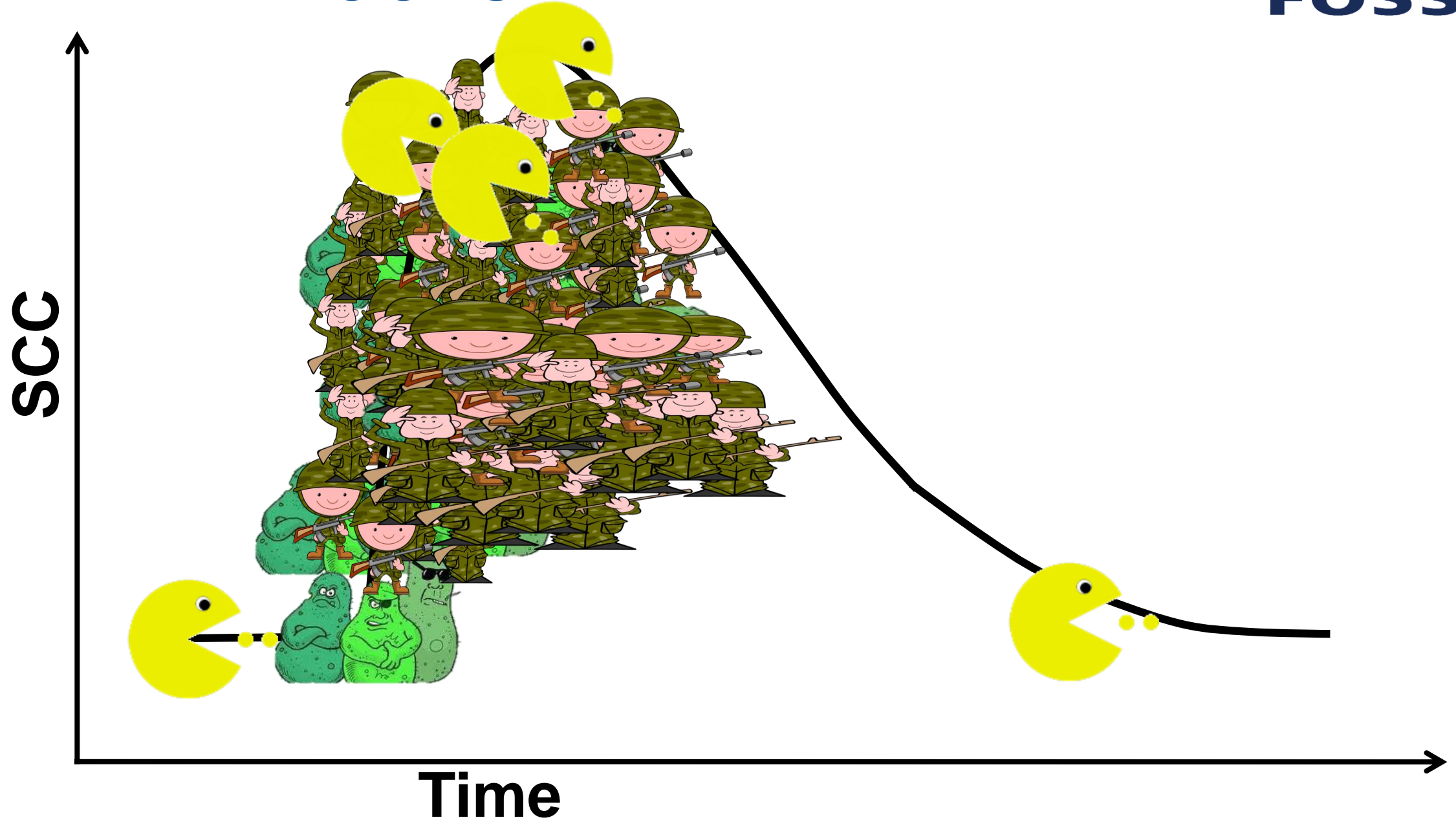
WHAT "THEY" SAY IT IS

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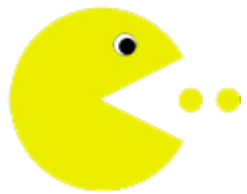
WHAT IT LOOKS LIKE IN MY HEAD

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Differential somatic cell count

- % value
- Proportion of PMN + Lymphocytes in SCC
- Proven under practical conditions – infection trial (Wall et al., 2018)



Macrophages



PMN



Lymphocytes

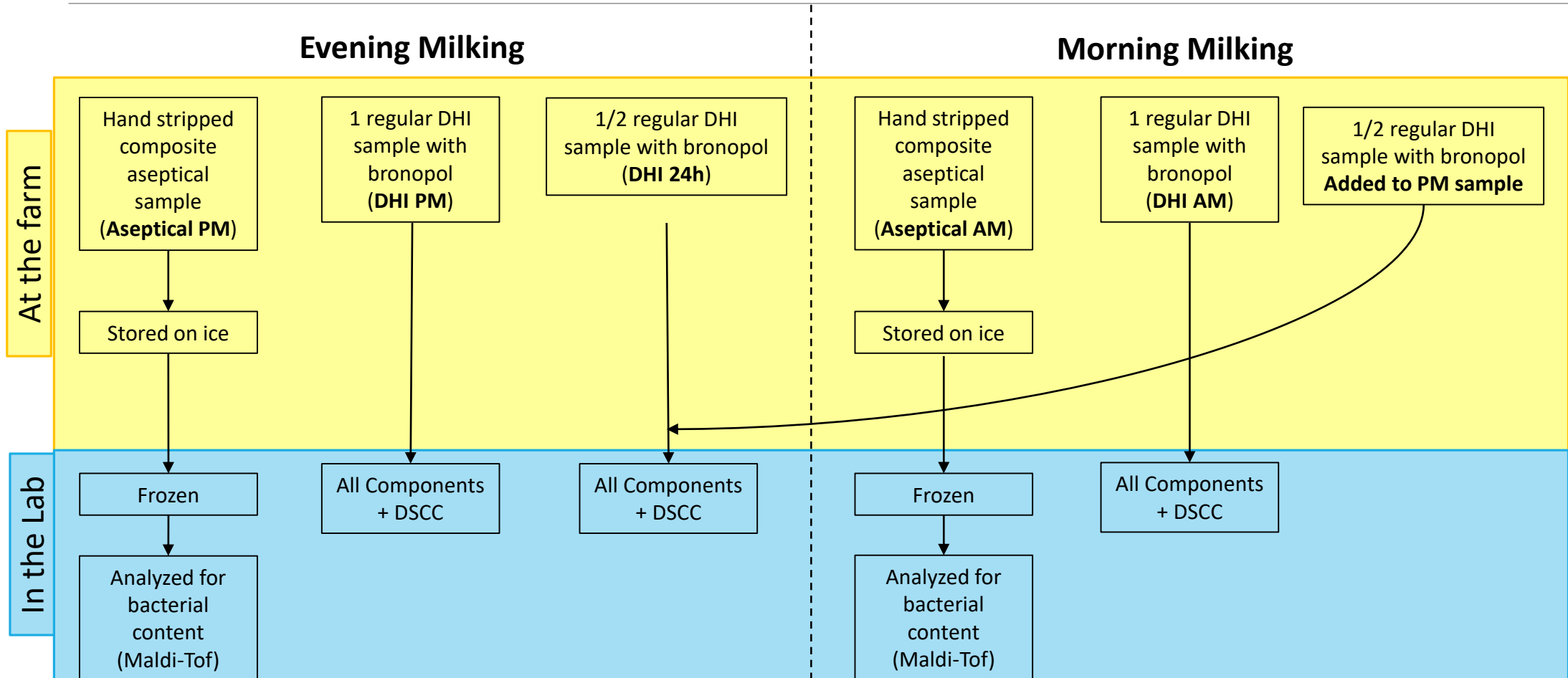
DSCC

Valacta project (2017):

General objective:

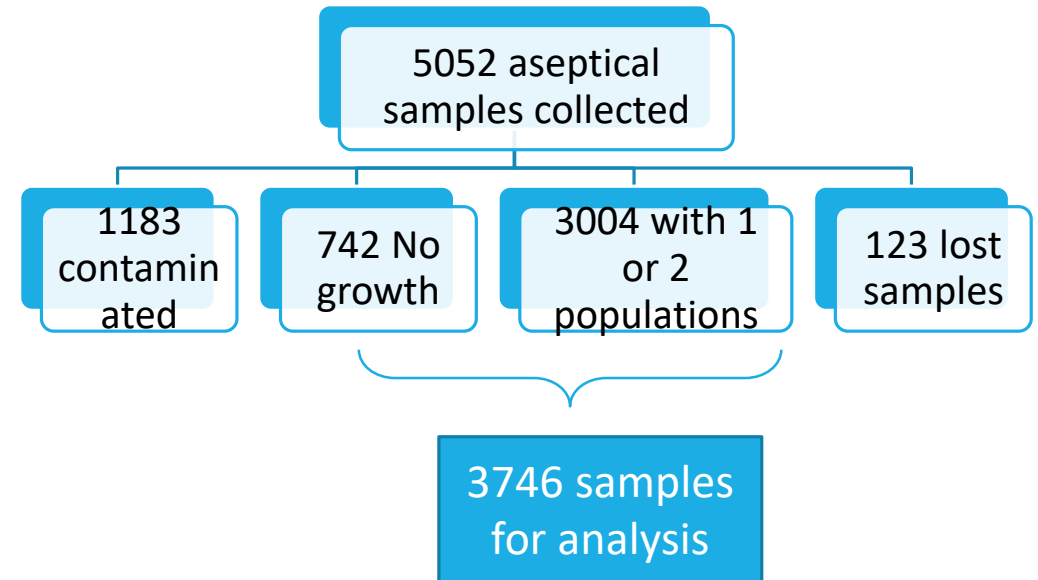
Evaluate the potential use of DSCC as a tool to identify and characterize udder health status, by comparing SCC & DSCC results to bacterial culture results for mastitis diagnosis in regular DHI samples

Sampling Protocol

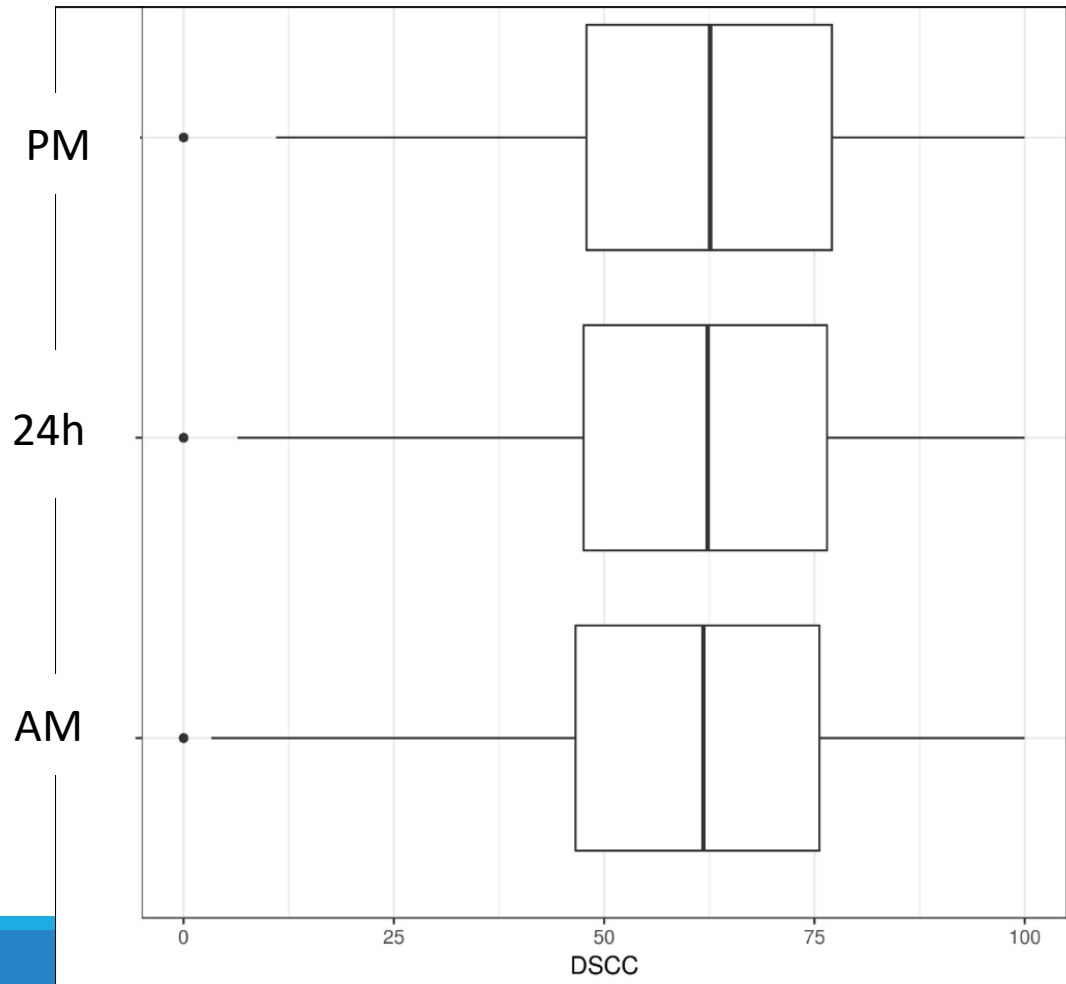


Project details

- 11 tie stall herds
- Total of 969 cows
- 5 month project
- Samples collected:
 - **7780 DHI** samples (PM, AM and 24h)
 - All components + SCC + DSCC
 - **5052 Maldi-Tof** (PM and AM)



DSCC Distribution over milkings



Milking	N	Average	Median	SD	Min	P 25	P 75	Max
PM	2 546	61,8	62,6	18,0	0	47,9	77,1	100
24h	2 583	61,4	62,3	18,3	0	47,6	76,5	100
AM	2 601	60,6	61,8	18,4	0	46,6	75,6	100

FACTORS AFFECTING SCC AND DSCC

SCC

Item	P-value
IMI status	<0.001

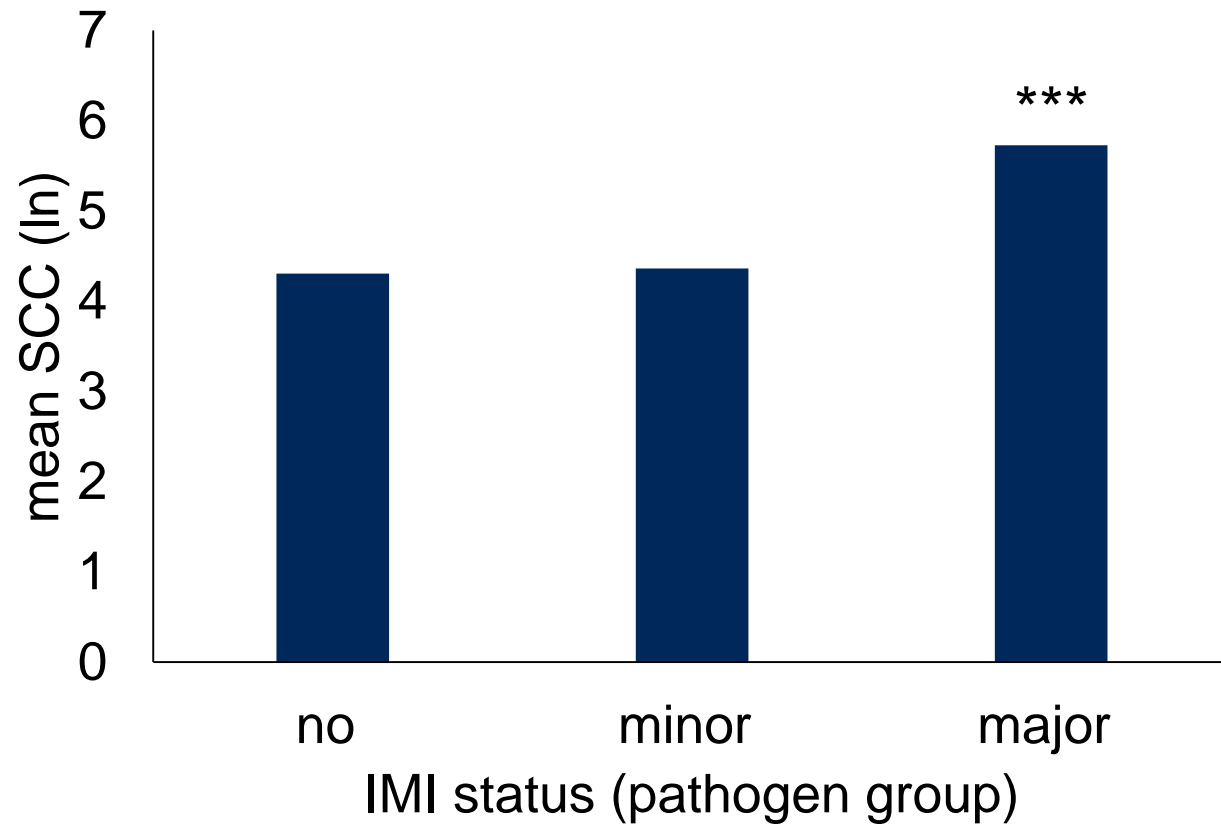
DSCC

Item	P-value
IMI status	<0.001
Parity	<0.001
DIM	NS
Milk weight	NS
Herd	<0.001

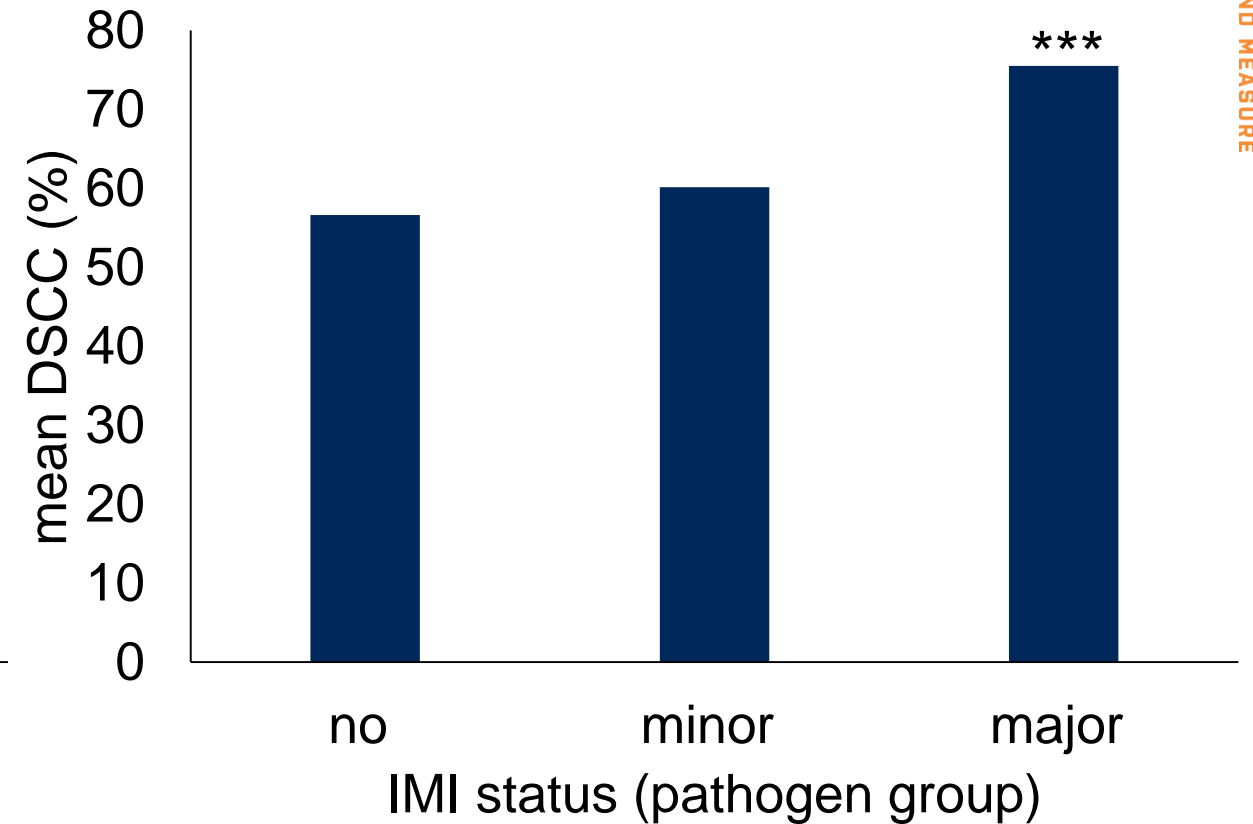
IMI STATUS AND SCC AND DSCC

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SCC

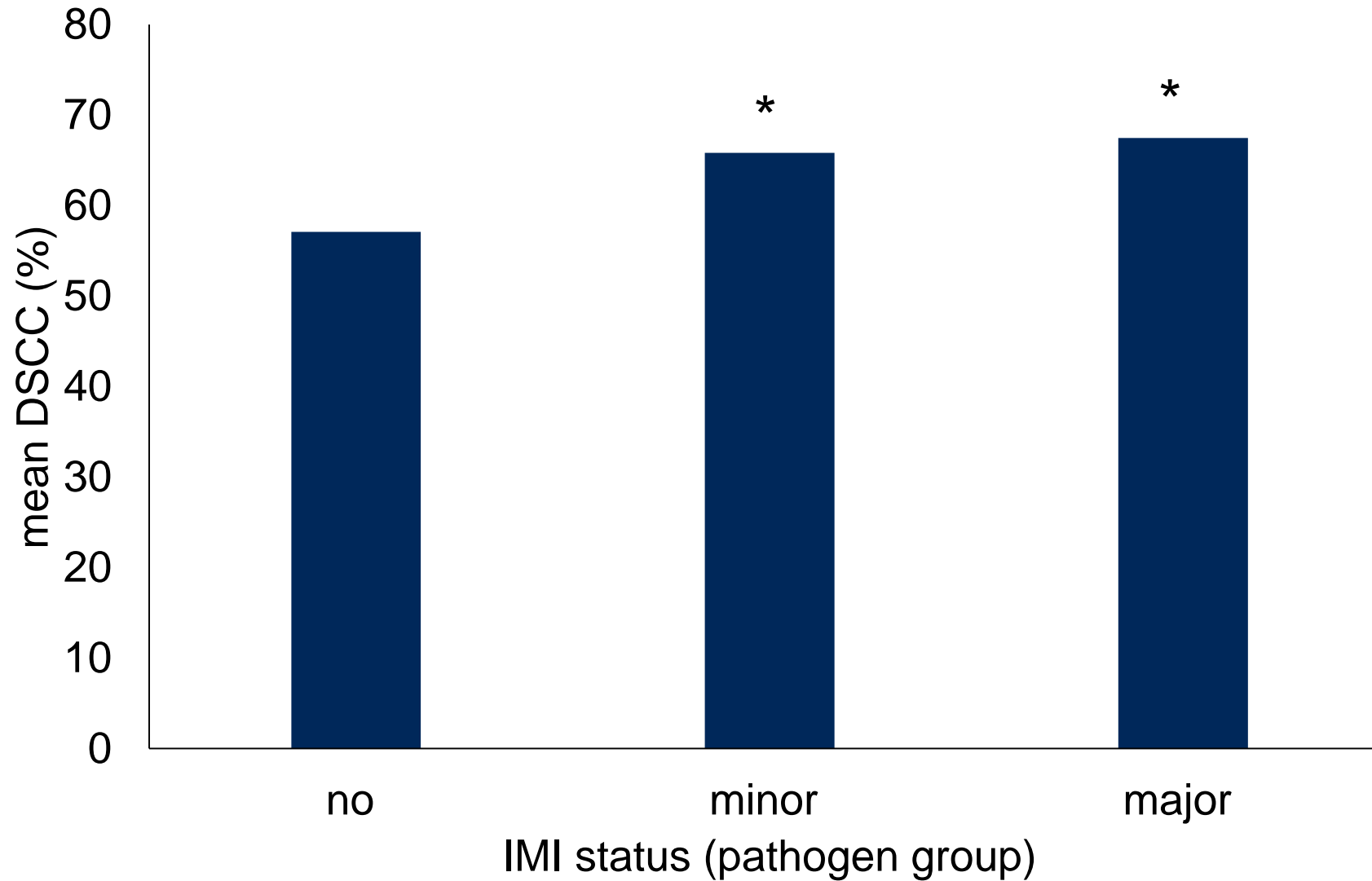


DSCC



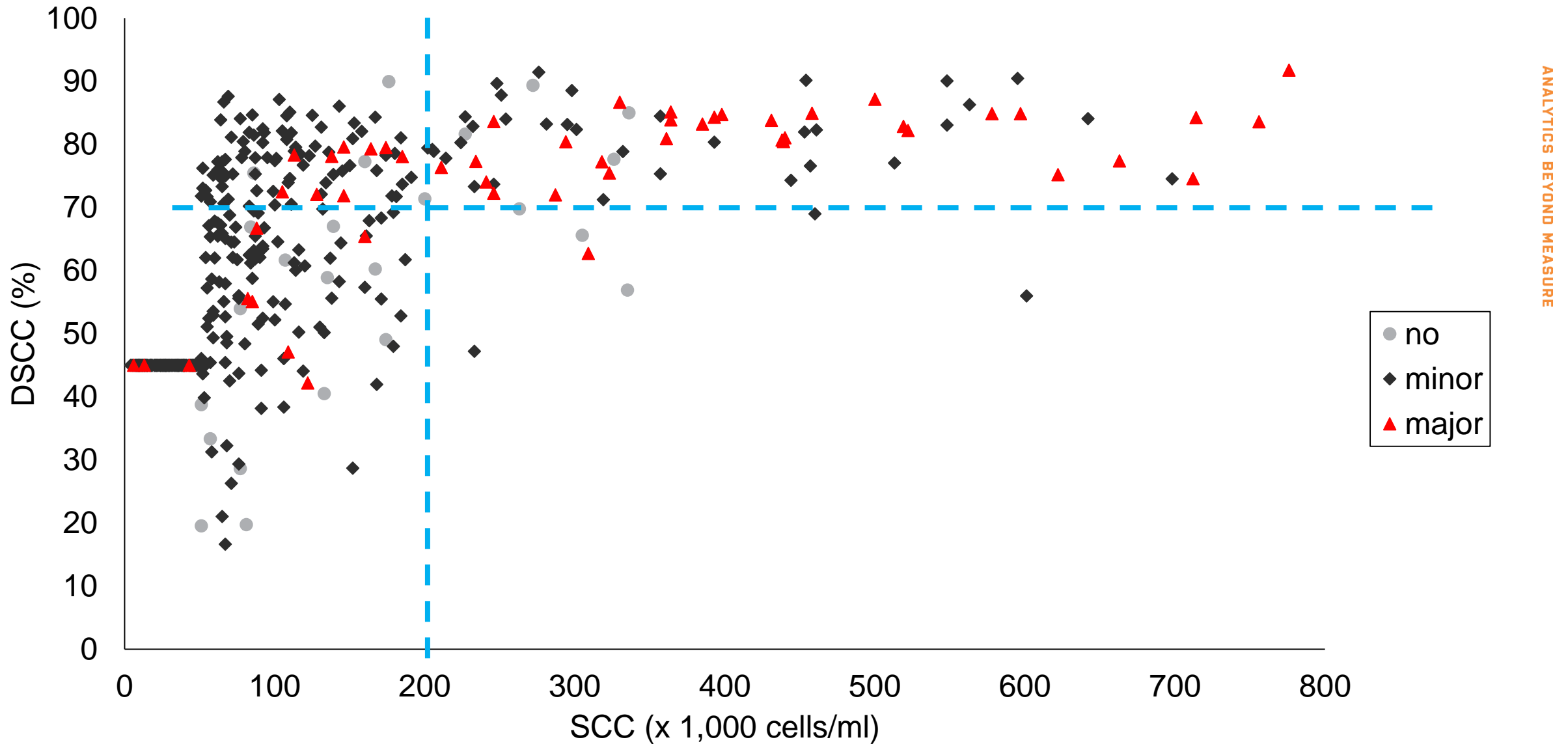
DSCC IN THE SCC RANGE 50-200 K

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INTERPRETATION OF UDDER HEALTH

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TAKE HOME MESSAGE

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- Factors affecting DSCC are similar to those affecting SCC
- Indications on improving mastitis screening in low SCC range (50-200k)
- Next steps:
 - Determination of performance of combined DSCC and SCC test
 - Development of actual tool

Next steps at Valacta

Collect a larger dataset

- Larger number of farms

- Longer period

- Herds with herd health status information collected by vet

Evaluate the DSCC tool in commercial situations

- Optimize interpretation

Thank you!



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