A New Cell Differentiation Index for the Evaluation of Udder Health in the Course of DHI Testing

ICAR WGFT meeting on udder health
Edinburgh 13/6/2017

Dr. Eva Scharinger

GERMAN PROJECT

- Coordination: DLQ

- Collaboration with: Free University Berlin

- Duration: until March 2019

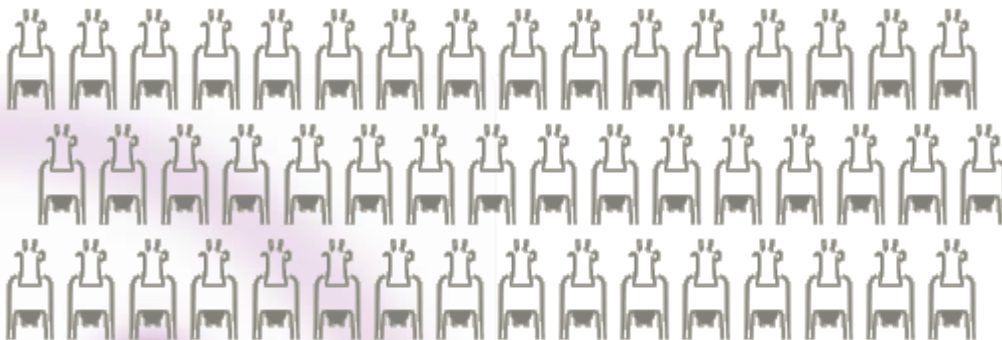- First data collection at Bavarian Association for raw milk testing

CURRENT EVALUATION OF UDDER HEALTH

Using new benchmarks

→ Reflection of the current situation

Herd with 69 lactating cows:

48 cows show SCC ≤ 100.000/mL

= healthy udder

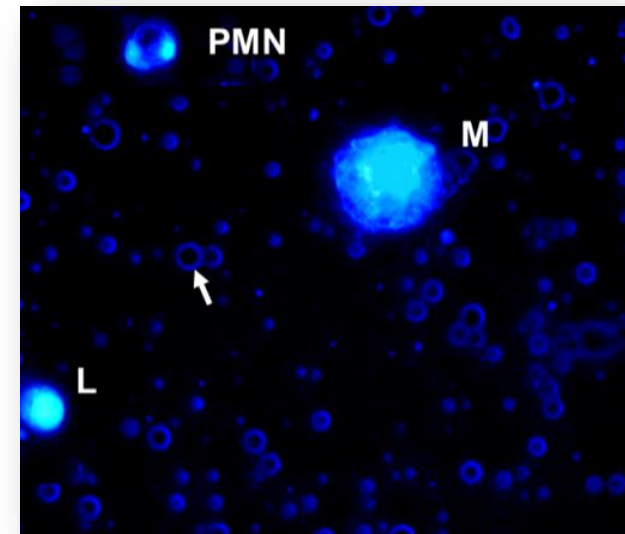21 cows show SCC > 100.000/mL

= udder health compromised

CELL DIFFERENTIATION

Somatic cells can be distinguished

- Polymorphnuclear neutrophil granulocytes (PMN)
- Macrophages (M)
- Lymphocytes (L)

During course of inflammation

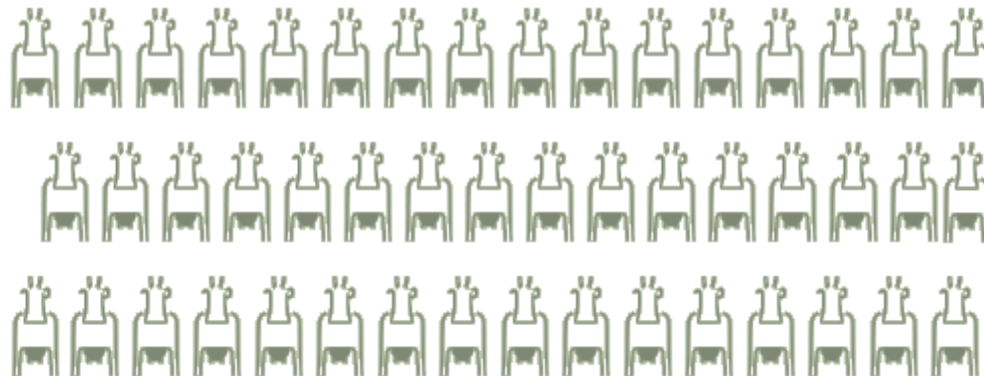- proportion of different cells changes

ZELLDIX

- Introducing a new parameter:
  - → „Cell differentiation index" (CDI)
  - ≈ Proportion of macrophages of total SSC

- Hypothesis

  CDI can be used as an indicator for the stability of udder health

EVALUATION OF UDDER HEALTH USING CDI

„at risk" „no cure"

Out of 48 cows with SCC ≤ 100.000 /mL
23 cows have low CDI

➔ Indicating the presence of factors on the farm,
which are predisposing for comprised udder health
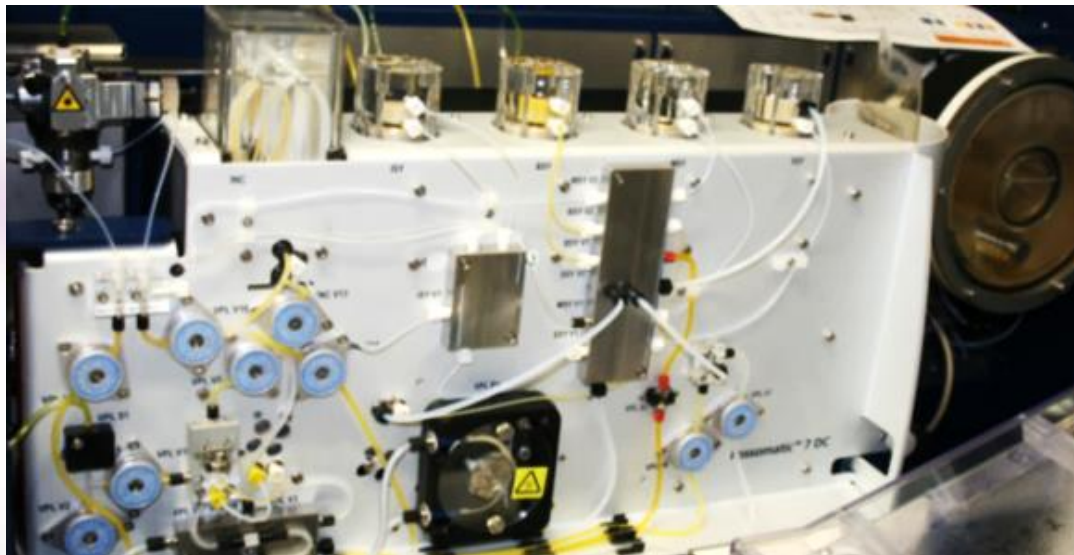
Out of 21 cows with SCC > 100.000/mL
7 cows have high CDI

➔ Indicating reduced chances
for cure

ZELLDIX

- First instrument for cell differentiation in high-throughput (600 samples/h) at *mpr*

- Fossomatic 7 DC

- Simultaneous analysis of SCC and CDI

GOALS OF ZELLDIX

- Establishment of tools for prognosis and diagnosis of udder health based on CDI

- Integration of tools into DHI testing

- Improvement of herd management

- Reduction of mastitis

Research in „Quality Assurance tools" for DSCC

Nowadays quality assurance tools, necessary to check the precision and accuracy of this new parameter, are not available (e.g Pilot samples, Reference material, Proficiency tests)

ICAR/ IDF Project on Reference System for SCC
&
ICAR Proficiency Test

![ZellDiX logo]

DSCC is a key parameter in „single cow milk" (today)
ICAR is the international frame to better apply this trait !

ICAR/ IDF
Project on Reference System for SCC

ICAR Proficiency Test (PT)

⭐ Aim: better safeguarding of worldwide equivalence of analytical test results, for somatic cell counting and in the future for DSCC

⭐ Global PT in 5 continents for Fat-Protein-Lactose-Urea-SCC BHB-PAG-DNA(PCR)

⭐ RSSCC has official liaison with the ISO TC 276 on biotechnology to update on new technologies to count cells and to treat the image analyses and data with new statistical tools

▶ Could it be extended to the new parameter DSCC ?

⭐ The project is considering new statistical approach of the data PT treatment

Thank you!

Do you have any questions?

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