


## ICAR Technical Meeting Verona - 31st May 2007



- tissue sampling with animal identification
- sample handling, storage and transport
- lab integration

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Caisley International GmbH

### Caisley International's headquarter at Bocholt - Germany

4000 sqm, 25 mould injection lines, approx 55 staff

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### Caisley International GmbH – characteristics

<i>founded:</i>	1982 by Hannelore & Roy Caisley as Caisley GmbH
<i>change of name and take over:</i>	1989 by Reinhard Nehls as Caisley International GmbH
<i>product labels :</i>	MULTIFlex, FLEXoPlus, PrimaFLEX, GENO-ear tags, DUO, TWIN
<i>production p.day:</i>	150.000 pcs., max. 220.000 pcs.
<i>printing:</i>	firstly hot bumping, since 1992 increasing and now predominantly by laser, today approx. 85 %
<i>electronic ear tags:</i>	since 1992 in collaboration with AEG, 2003 take over of AEG identification systems GmbH
<i>Export:</i>	to more than 50 countries worldwide

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hard insert in the female part

hard cutting cone base in the male part

FlexoPlus – ear tag with new developed locking system


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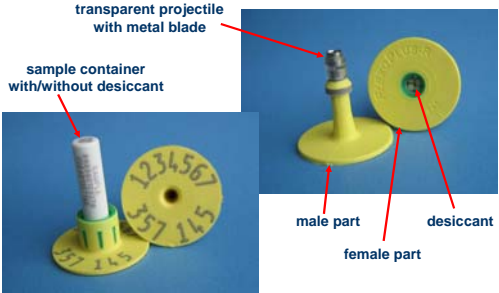
### Modular system for tissue sampling and sample processing in the lab

- ear tags with tissue sampling (obtainable with official identification or individual registration numbers)
- products and kits for standardized tissue sampling at carcasses and meat
- storage logistics for tissue samples
- lab integration

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### Ear tags for tissue sampling



transparent projectile with metal blade

sample container with/without desiccant

male part

female part

desiccant

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## Types of ear tags

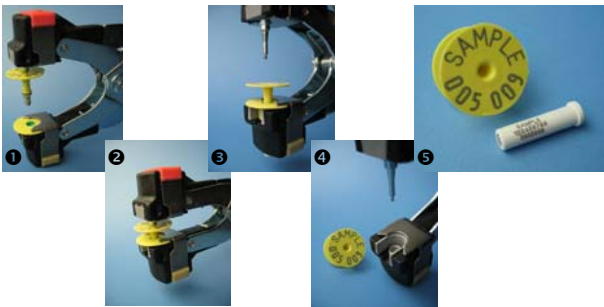


- official identification for cattle and sheep in combination with tissue sampling possible
- button tags for all species
- also available with RFID

## RFID and tissue sampling



## Tissue sampling



## Range of application

- parentage testing
- determination of genetic defects
- proof of origin (e.g., quality meat programs)
- genotyping (e.g., scrapie)
- diagnostics (e.g., BVD antibody test)

## Advantages

- ☺ definite allocation of sample and animal
- ☺ effective and time saving through automated data registration (human errors prevented)
- ☺ improvement of processing costs (standardized tissue samples)

## Tissue sampling without animal identification



## Standardized sample size



## Applicators

one type applicable for all ear tags  
with or without tissue sampling



- parallel closing mechanism
- available adapter for all types of animal identification systems/ tissue sampling
- official ID cattle/ sheep
- button tags
- vet kits
- all other conventional ear tags (visual identification)

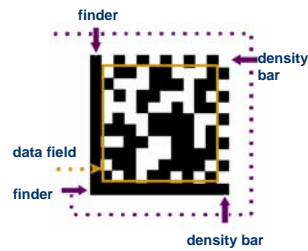
## Sample identification

unique and guaranteed well-defined



- labelling standard:
- DataMatrix-code with unique number
  - customized identification (line one – up to 12 letters)
  - individual sample number (2<sup>nd</sup> and 3<sup>rd</sup> line – up to 24 numbers)

## encoding



- DataMatrix-Code (ECC200):
- standardized
  - supernumerary information → reliable and safe data transfer
  - omnidirectional decoding → no orientation necessary
  - 16 x 16 data fields
  - 24 numerical digits
  - Public domain, no licensing fees

## Sample registration

- scanning of bottom printed DataMatrix codes in 96 position rack
- decoding and linking of individual sample numbers with each position on the rack

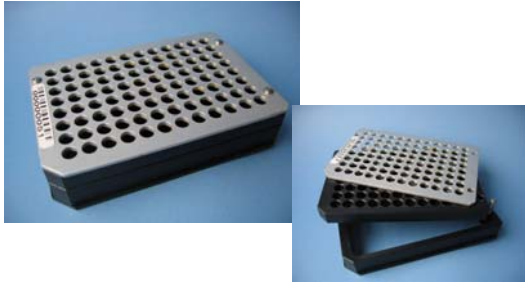
## Data transfer to automated analytics

### generating data for data transfer

rack no.	column	row	sample no.	comment	
123456	1	A	8000400010001187	good read	code deciphered
123456	2	A	8000400010001167	good read	
123456	3	A	8000400010001175	good read	
123456	4	A	8000400010001178	good read	
123456	5	A	8000400010001413	good read	
123456	6	A	8000400010001438	good read	
123456	7	A	8000400010001420	good read	
123456	8	A	0	code error	code not recognized
123456	9	A	8000400010001439	good read	
123456	10	A	8000400010001417	manually corrected	corrected data entry
123456	11	A	8000400010001418	good read	
123456	12	A	0	vacant	vacant position
123456	1	B	8000400010001293	good read	
123456	2	B	8000400010001352	good read	
123456	3	B	8000400010001131	good read	
...					

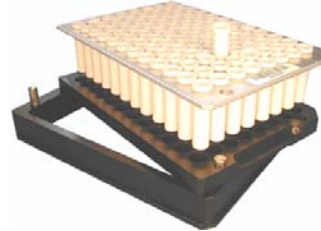
## Lab integration in 96-well format

analysis in standard 96-well format

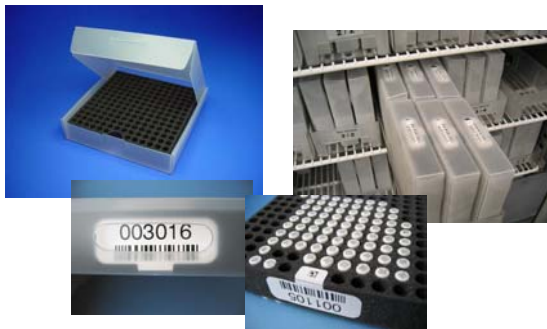


## Rack for 96-well format

- 96- position rack for highly efficient analysis
- all required steps performable on the same rack:
  - sample registration
  - opening of samples
  - lysis
  - DNA-purification
  - PCR preparation
  - ...



## Storage / transport



## Advantages of data handling

- no manual data registration
  - no handwritten transfer of sample data to lab databases or analysis reports
- ➔ elimination of human error

## Advantages of sample handling

efficient storage management

- documentation of all storage movements
  - documentation of sample throughput
  - increase in performance
- ➔ reduction of costs

## Automated opening of samples

pneumatic press with exchangeable punching tool



opening by piercing bottom or punching through membrane from top

guaranteed contamination free

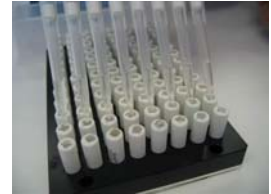
## Automated opening of samples

process

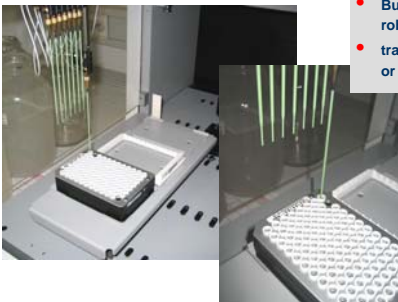


## Sample processing by hand

- ✓ lysis and incubation directly in the sample container with established protocols
- ✓ liquid handling with conventional lab methods



## Automated sample processing



- Buffer dispensing with robot
- transfer of eluate to ELISA or PCR well plates

## Capacities / performance

process	duration	throughput	comment
positioning on 96-rack	+/- 3 min	2000 samples/h	possible identification of damaged sample tubes
registration with scanner	+/- 3 min	2000 samples/h	possible cleaning of dirty sample tubes
opening with punching tool	+/- 2 min	2900 samples/h	punching tool needs to be decontaminated on a regular basis

Thank you very much for your attention!



Caisley International GmbH  
 Harderhook 31  
 D-46395 Bocholt

Tel. +49.2871.2 39 39-0 • Fax 49.2871.2 39 39-50  
 info@caisley.de • www.caisley.de