



# BIOR

INSTITUTE OF FOOD SAFETY, ANIMAL HEALTH  
AND ENVIRONMENT



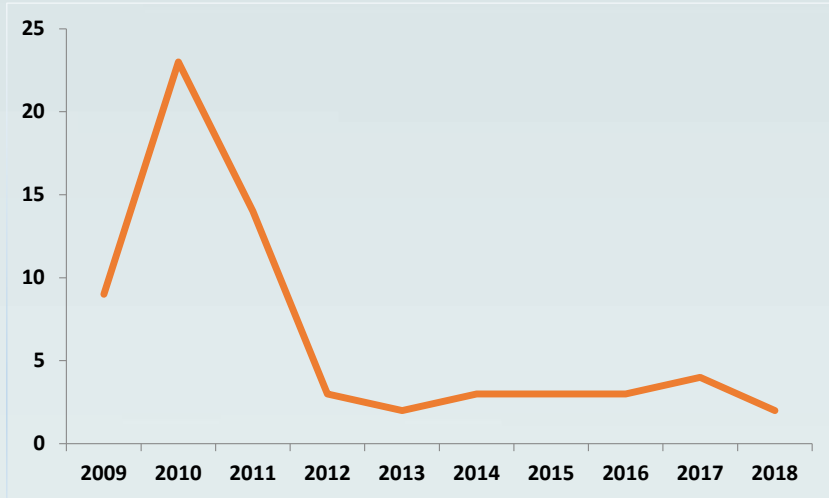
# EPIDEMIOLOGY OF *CRYPTOSPORIDIUM* SPP. IN DAIRY CATTLE IN LATVIA

DEKSNE G.<sup>1,2\*</sup>, MATEUSA M.<sup>1</sup>, DERBAKOVA A.<sup>3</sup>, PANKRATJEVA K.<sup>1</sup>, KEIDĀNE D.<sup>3</sup>, ĶIBILDS J.<sup>1</sup>,  
OZOLIŅA Z.<sup>1</sup>, TROELL K.<sup>4</sup>

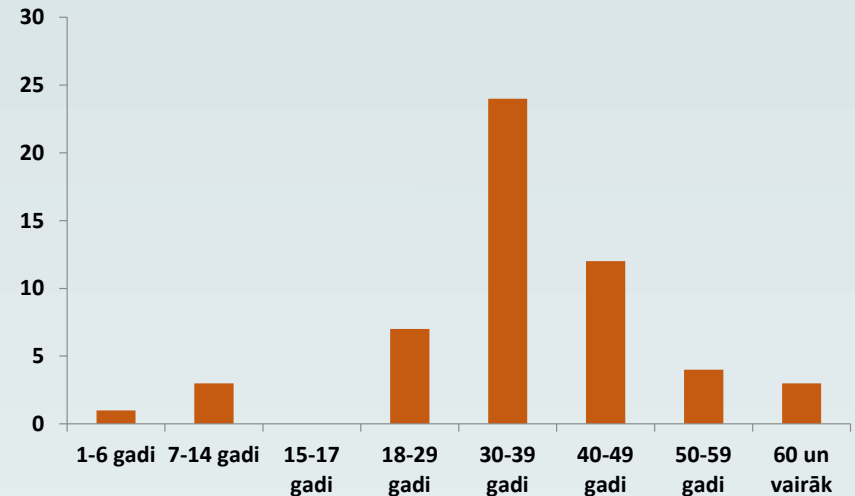
<sup>1</sup>NATIONAL REFERENCE LABORATORY FOR PARASITES, INSTITUTE “BIOR”, LATVIA; <sup>2</sup>UNIVERSITY OF LATVIA, LATVIA; <sup>3</sup>UNIVERSITY OF LIFE SCIENCES AND TECHNOLOGIES, LATVIA <sup>4</sup>NATIONAL VETERINARY INSTITUTE,, SWEDEN

E-MAIL: [GUNITA.DEKSNE@BIOR.LV](mailto:GUNITA.DEKSNE@BIOR.LV)

# CRYPTOSPORIDIOSIS AND *CRYPTOSPORIDIUM* SPP. IN LATVIA



**Cryptosporidiosis human cases per year  
(2009-2018)**



**Cryptosporidiosis human cases per age group  
(2009-2018)**

- All reported cryptosporidiosis cases are assumed to be single cases, associated with drinking untreated water
- No official reports available from livestock
- Very few studies in livestock (dairy cattle 19.4%), no studies in pet animals

# SO... WE HAD TO START FROM SOME WHERE ...

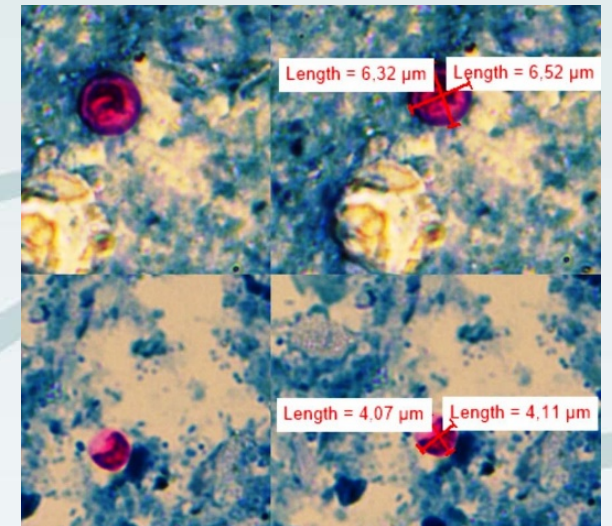
❖ We investigated the epidemiology of *Cryptosporidium* spp. in Latvia by testing fecal samples from 938 dairy cattle aged from one week to 11 years, raised on 141 cattle farms



❖ The presence of *Cryptosporidium* spp. oocysts by concentration and modified Ziehl-Neelsen staining method

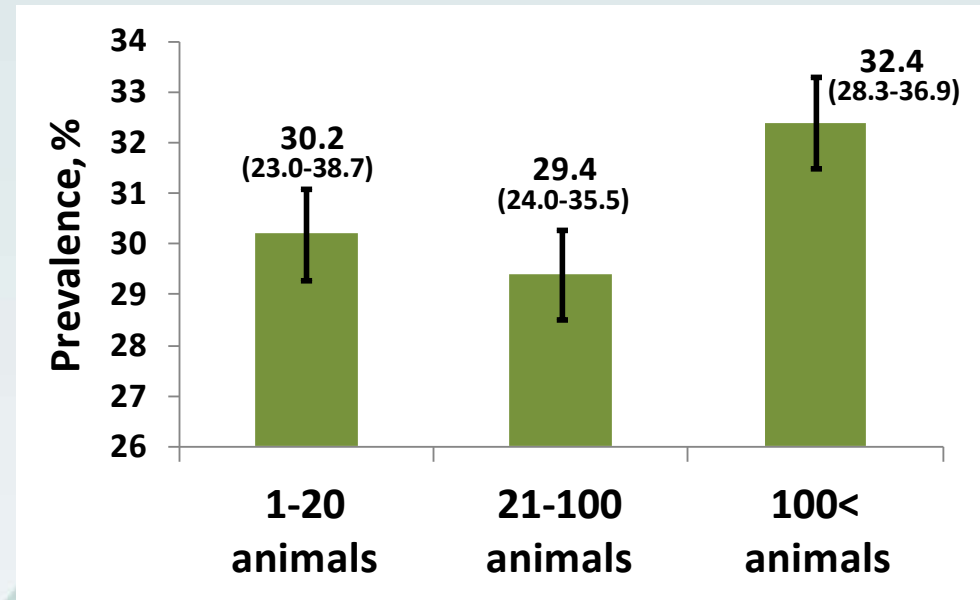
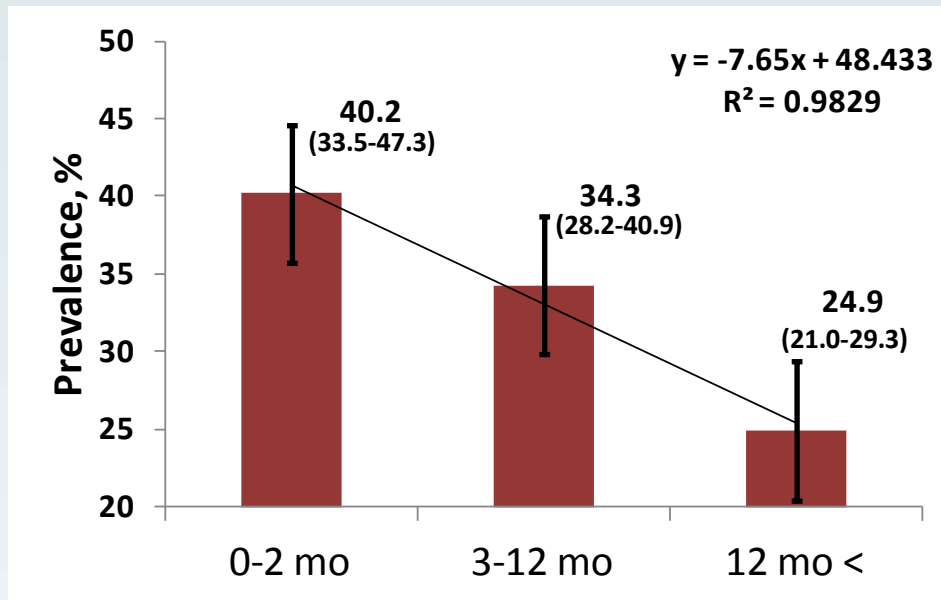
❖ Species identification was done by sequencing of the 18S rRNA gene (gp60 for *C. parvum* subtyping)

❖ Using a questionnaire, we surveyed factors that could be relevant for prevalence and transmission of *Cryptosporidium* spp. on the farms



# CRYPTOSPORIDIUM SPP. IN CATTLE

- ❖ Total prevalence - **28.8%** (95% CI 26.0-31.8);
- ❖ In **53.9%** of farms were found at least one animal who shed the oocysts



# CRYPTOSPORIDIUM SPP. IN CATTLE FARMS

	Factor	No of analyzed animals	Prevalence, %	95% CI	<i>p</i>
<b>Type of holding animals*</b>	Tethered	363	27.6	23.2-32.4	<0.01
	Free	262	34.0	34.0-28.5	
<b>Place of calving</b>	Distinct	410	32.9	28.6-37.6	0.43
	Same as sleeping place	215	25.1	19.8-31.3	
<b>Separation of calves*</b>	Immediately	601	28.8	25.3-32.5	<0.01
	After 2-3 days	23	69.6	49.0-84.6	

# CRYPTOSPORIDIUM SPP. IN CATTLE FARMS

Factor		No of analyzed animals	Prevalence, %	95% CI	<i>p</i>
Holding calves in groups	Yes	361	29.4	24.9-34.3	0.58
	No	264	31.4	26.1-37.3	
Age of calves when moved to groups	> 1 week*	17	58.8	35.9-78.4	<0.01
	1-2 weeks	46	32.6	20.8-47.1	
	<2 weeks	115	39.1	30.7-48.2	
	Older than 1 months	183	19.7	14.5-26.1	
Calves per group	1-5*	269	23.3	27.0-38.2	<0.01
	6-15	56	26.8	16.9-39.7	
	15<	36	11.1	3.8-25.9	

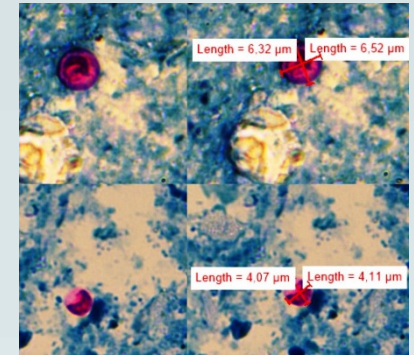
# CRYPTOSPORIDIUM SPECIES COMPOSITION

Species	No of Isolates (n=67)/ Prevalence	Mean OPG	Mean age of animal (months)	Animals with diarrhea, %
<i>C. parvum</i> *	24 / 35.8	2,100	5	33.3 (17.8-53.4)
<i>C. andersoni</i>	20 / 29.9	950	16	15.0 (4.4-36.9)
<i>C. bovis</i>	15 / 22.4	3,354	30	6.7 (0.0-31.8)
<i>C. ryanae</i>	8 / 11.9	400	8	25.0 (6.3-59.9)

\*subtyping is in process

# CONCLUSIONS

- There are still lots of things to do...
- There should be more human cases as reported currently
- We need to raise higher awareness of cryptosporidiosis in Latvia (start with veterinarians and farmers)







# THANK YOU FOR YOUR ATTENTION!

ACKNOWLEDGEMENT: THIS STUDY WAS FUNDED BY THE EUROPEAN REGIONAL DEVELOPMENT FUND “1.1.1.2. “POST-DOCTORAL RESEARCH AID” POSTDOCTORAL RESEARCH AID “ONE HEALTH” MULTIDISCIPLINARY APPROACHES FOR EPIDEMIOLOGY AND PREVENTION OF SELECTED PARASITIC ZONOSIS (OMEPPAZ), (1.1.1.2/VIAA/1/16/204)” AND IS PARTLY BASED UPON COLLABORATION WITHIN THE FRAMEWORK OF COST ACTION FA1408 (A EUROPEAN NETWORK FOR FOODBORNE PARASITES (EURO-FBP)) AND SHORT TERM SCIENTIFIC MISSION, SUPPORTED BY COST (EUROPEAN COOPERATION IN SCIENCE AND TECHNOLOGY). THE AUTHORS WOULD LIKE TO THANK HARRI AHOLA FROM SVA (SWEDEN) FOR THE HELP IN LABORATORY WORKS AND ESPECIALLY FOR THE HELP WITH PCR OPTIMIZATION.

[www.bior.lv](http://www.bior.lv)



**BIOR**

PĀRTIKAS DROŠĪBAS, DZĪVNIEKU VESELĪBAS  
UN VIDES ZINĀTNISKAIS INSTITŪTS