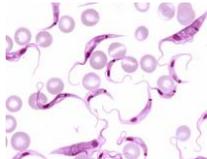
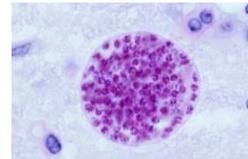


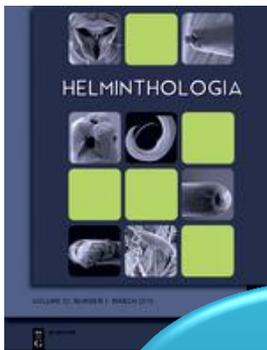


# INSTITUTE OF PARASITOLOGY SLOVAK ACADEMY OF SCIENCES (IP SAS)

## Summary of main activities 2012-2015

Košice, 2016 November 28<sup>th</sup>





**Helminthologia**

**Parasites,  
parasitic  
diseases**

**Research  
basic/applied  
national/inter-  
national**



**Publication  
of scientific  
results**



**IP SAS**

**Implementation  
of results into  
practice**



**Popularization**



**Scientific  
education**



**Cooperation**



# CONTENT

## I. INSTITUTE IN NUMBERS AND FACTS

*„What can easily be found in the Questionnaire...“*



Structure of the Institute (Departments); Personal structure



Funding from VEGA and SRDA projects; EU funds



Scientific outputs

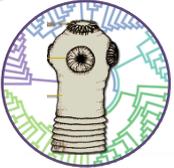
## II. BASIC AND APPLIED RESEARCH

*“What I would like to emphasize above the data from Questionnaire...”*

## III. NATIONAL AND INTERNATIONAL IMPORTANCE

*„Why is our Institute important...“*

# STRUCTURE OF THE INSTITUTE - DEPARTMENTS



**DEPARTMENT OF SYSTEMATICS**



**DEPARTMENT OF PARASITIC DISEASES**



**DEPARTMENT OF VECTOR-BORNE DISEASES**



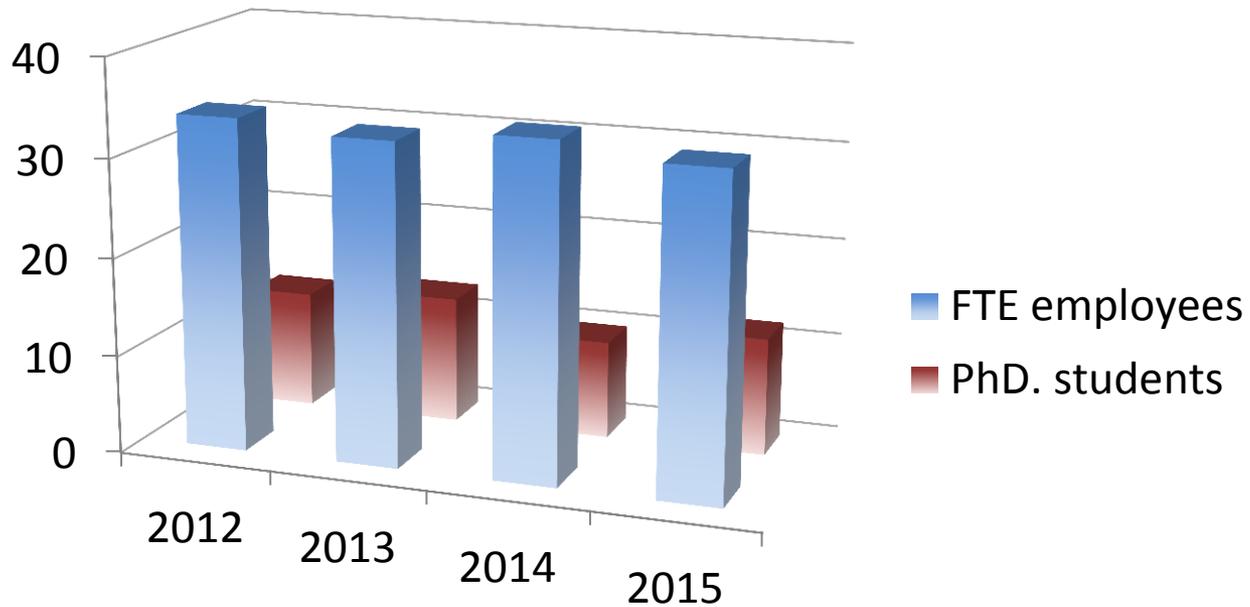
**DEPARTMENT OF EXPERIMENTAL PHARMACOLOGY**



**DEPARTMENT OF ENVIRONMENTAL AND PLANT PARASITOLOGY**

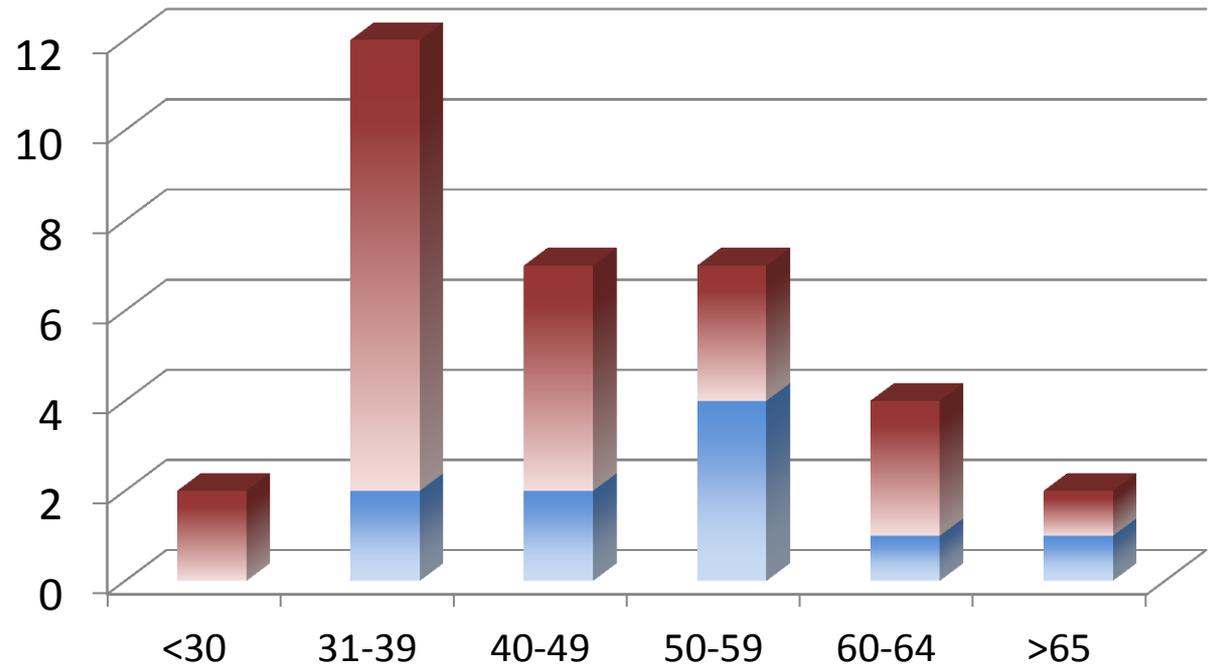
# PERSONAL STRUCTURE

	2012		2013		2014		2015		Average	
	No.	FTE	No.	FTE	No.	FTE	No.	FTE	No.	FTE
Employees with degree	42.0	33.9	42.0	32.8	42.0	34.1	38.0	32.6	41.0	<b>33.4</b>
PhD. students	14.0	12.0	16.0	13.0	14.0	10.0	15.0	12.0	14.8	<b>11.7</b>
<b>Total</b>	56.0	<b>45.9</b>	58.0	<b>45.8</b>	56.0	<b>44.1</b>	53.0	<b>44.6</b>	55.8	<b>45.1</b>



# PERSONAL STRUCTURE

SEX AND AGE RATIO OF EMPLOYEES WITH DEGREE  
as of 2015 December 31<sup>st</sup>



● female (27)

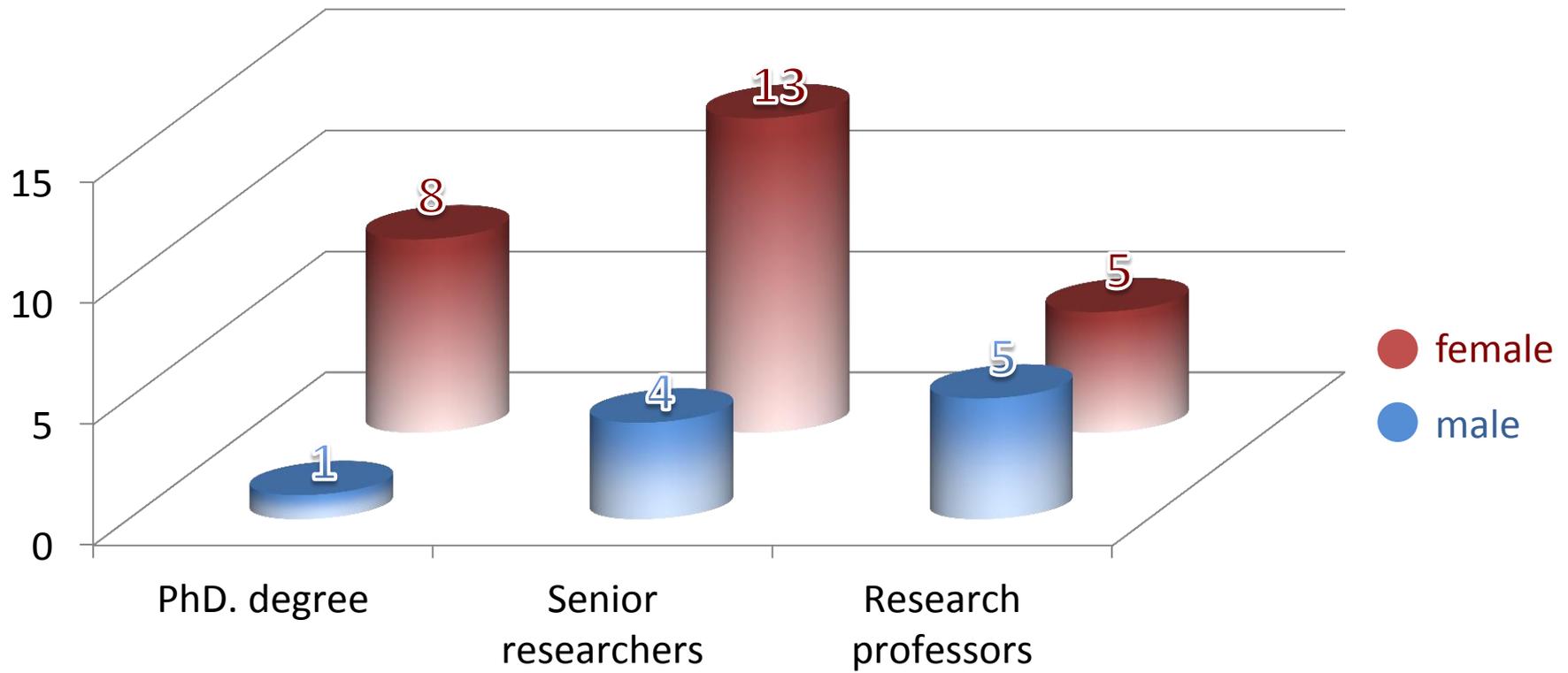
● male (10)

● female

● male

# PERSONAL STRUCTURE

PROFESSIONAL QUALIFICATION STRUCTURE  
as of 2015 December 31<sup>st</sup>



Funding from **VEGA** - The Scientific Grant Agency of the Slovak Academy of Sciences  
and the Ministry of Education

VEGA	2012	2013	2014	2015
Number	20	21	19	19
Funding	122,777	116,086	99,541	110,733

Funding from **SRDA** - The Slovak Research and Development Agency

Project title	Project number	Period of funding	Total funding in the period
Resistance of parasites of small ruminants to anthelmintics – can science win?	APVV-0539-10	2012-2014	94,007
Structure of foci and emerging diseases with emphasis on role of rodents in urban type of landscape	APVV-0267-10	2012-2014	135,350
Species boundary delimitation in fish parasites: morphology versus genes and chromosomes	APVV-0653-11	2012-2015	222,476
Small mammals as a potential source of zoonotic bacteria and resistance to antibiotics	APVV-14-0274	2015-	23,027
Parasite resistance to anthelmintics – Challenges, perspectives and solutions	APVV-14-0169	2015-	16,249

# EUROPEAN STRUCTURAL FUNDS

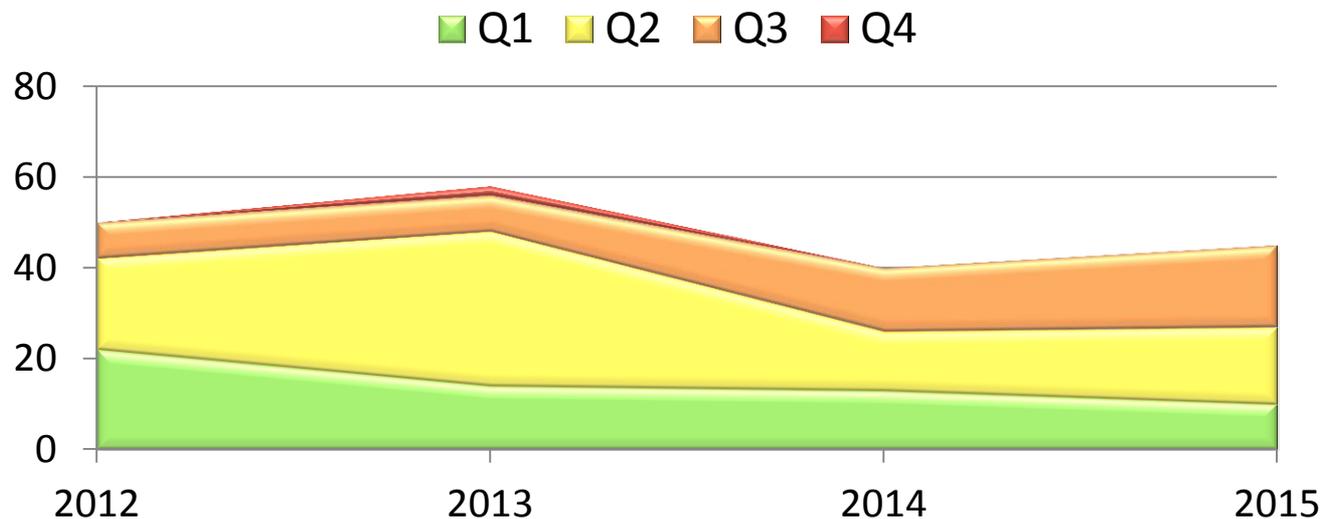
Project title	Duration	Role of IP SAS
Centre of Excellence for Parasitology	2009-2012	Coordinator
Application Centre for the Protection of People, Animals and Plants from Parasites	2009-2013	Coordinator
Protection of Environment against Parasitooonoses under the Influence of Global Climatic and Social Changes	2011-2015	Coordinator
Parasitological Research and Training Center	2012-2014	Coordinator
Centre of Excellence for Biological Methods of Forest Protection	2009-2013	Working group leader
Competence Centre for Biomodulators and Nutritional Supplements	2011-2015	Working group leader

# SCIENTIFIC OUTPUTS

Scientific publications	2012	2013	2014	2015	Total
Monographs published abroad	-	1	-	-	<b>1</b>
Monographs published in Slovakia	1	-	3	-	<b>4</b>
Chapters in monographs published abroad	6	-	3	4	<b>13</b>
Chapters in monographs published in Slovakia	1	-	-	-	<b>1</b>
Scientific papers registered in WoS, SCOPUS, CCC	50	58	40	45	<b>193</b>

**73 % Q1+Q2 in average**

**1.4 paper/FTE/year**

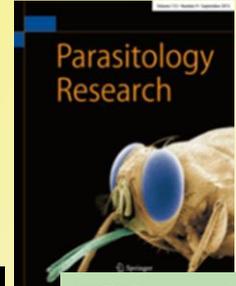


Q1

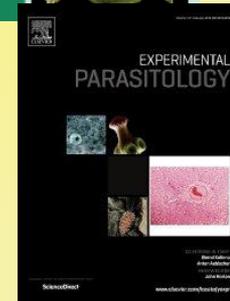
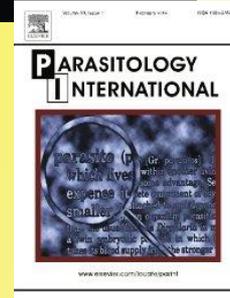
73%

Q2

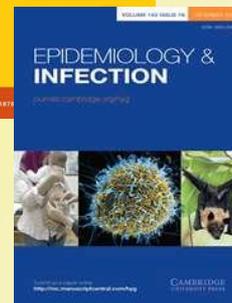
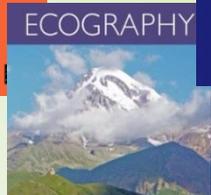
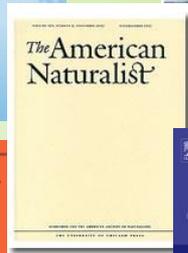
Parasitology



Parasites & Vectors



Various fields



# PHD. PROGRAM, POST-DOCS AND EDUCATION



## 4.2.5. Zoology

Faculty of Science, Comenius University, Bratislava



## 6.3.7. Infectious and Parasitic Diseases of Animals

University of Veterinary Medicine and Pharmacy, Košice

	2012	2013	2014	2015
Potential supervisors	27	28	32	29
PhD. students	12	13	10	12
Defended thesis	4	2	4	1

## Cooperation with universities:

Faculty of Science, UPJŠ Košice

Faculty of Medicine, UPJŠ Košice

Faculty of Science, UK Bratislava

UVMF Košice

Prešov University, Prešov

Catholic University, Ružomberok

St. Elizabeth Univ. of Health/ Social Work Bratislava



## ŠTEFAN SCHWARZ FUND

financial support from P SAS for post-docs  
7 funds in IP SAS in accreditation period

## II. BASIC AND APPLIED RESEARCH

*“What I would like to emphasize above the data from Questionnaire...”*

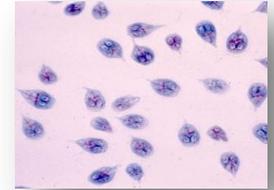
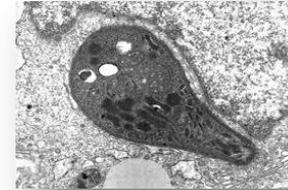
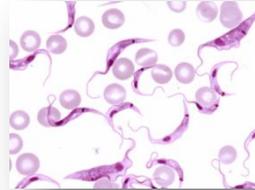


# BASIC RESEARCH

**PARASITES** - morphologically, taxonomically and biologically very **DIVERSE** group of organisms

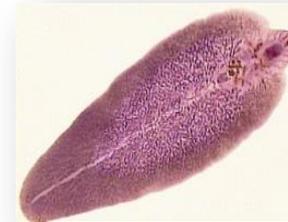
## PROTISTS

*Trypanosoma, Neospora, Giardia...*



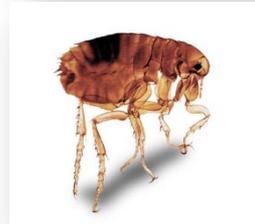
## HELMINTHS

tapeworms, flukes, roundworms...



## ARTHROPODS

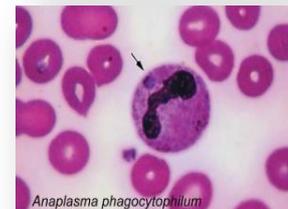
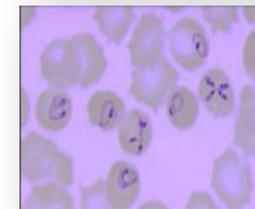
fleas, ticks, mosquitos...



## VECTOR-BORNE DISEASES

parasitic, bacterial

*Babesia, Anaplasma, Borrelia...*



# BASIC RESEARCH



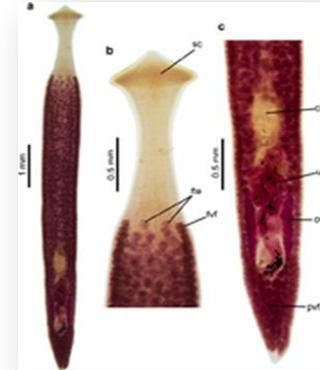
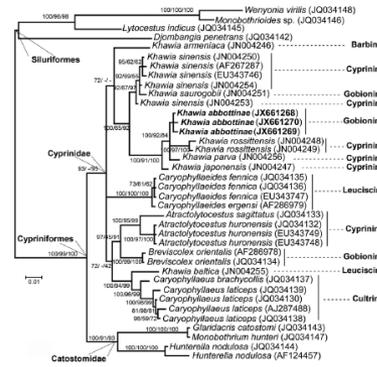
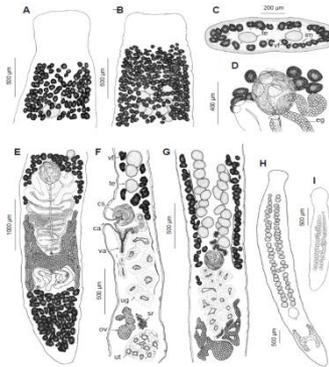
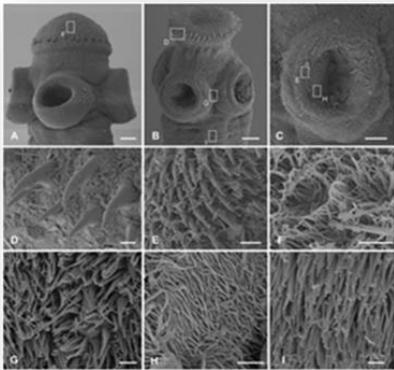
What do parasites look like? What are their internal structures?

Where do they belong taxonomically? What position do they occupy in the phylogenetic tree?

What is their evolutionary history?



## Morphology, taxonomy, systematics, phylogeny & evolution



Light microscopy



SEM microscopy



TEM microscopy



Sanger sequencing

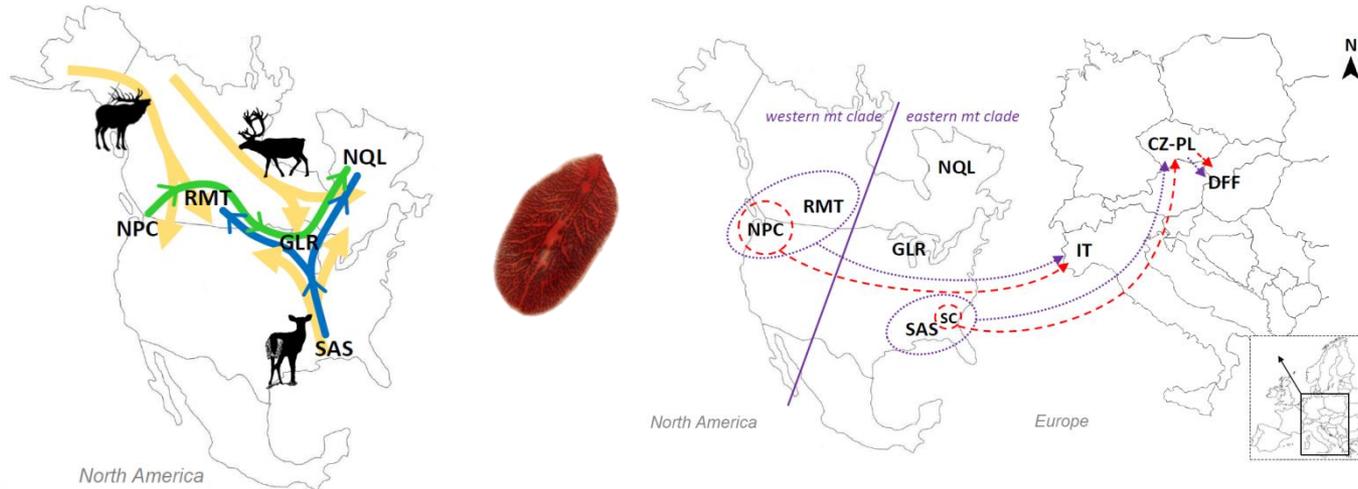
# BASIC RESEARCH



Where do they come from? How are they transmitted to novel territories?  
How did they appear in Slovakia?



## Population genetics, phylogeography & biogeography



SoLiD NGS sequencing



Structure Software



454 NGS pyrosequencing

# BASIC RESEARCH



*What is the host-parasite interaction? How is the host responding to parasite infection?  
Is it possible to modulate the immune response of the host?*



## Immunology, host-parasite interactions

*Trichinella spiralis*



*Mesocestoides sp.*



*Echinococcus multilocularis*



Spectrophotometer



Flow cytometer



Haematology analyzer

# BASIC RESEARCH



*Do anthelmintics have a negative impact on the host? Can the effect of anthelmintics be enhanced using natural compounds? Do natural compounds increase the immunological response of host?*



## Experimental pharmacology

*Trichinella spiralis* 

*Mesocestoides sp.*



*Echinococcus multilocularis*



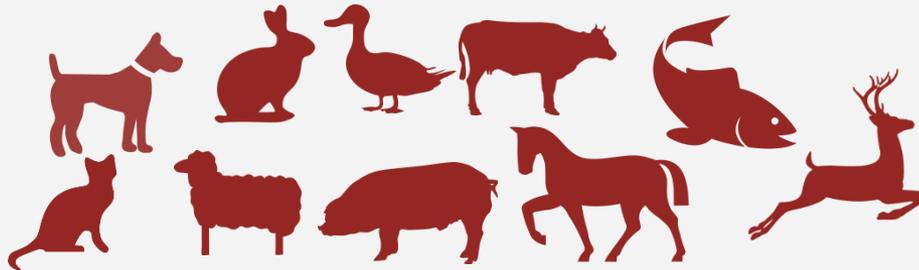
# APPLIED RESEARCH



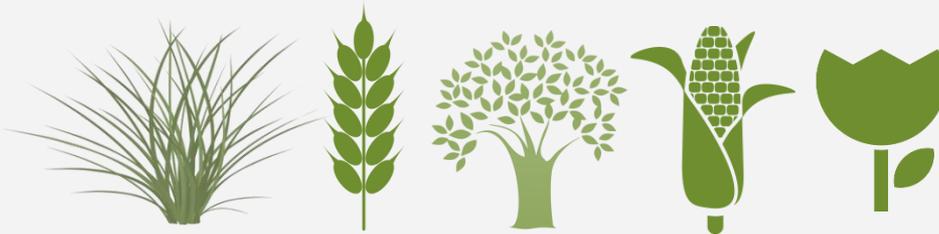
**HUMAN  
MEDICINE**



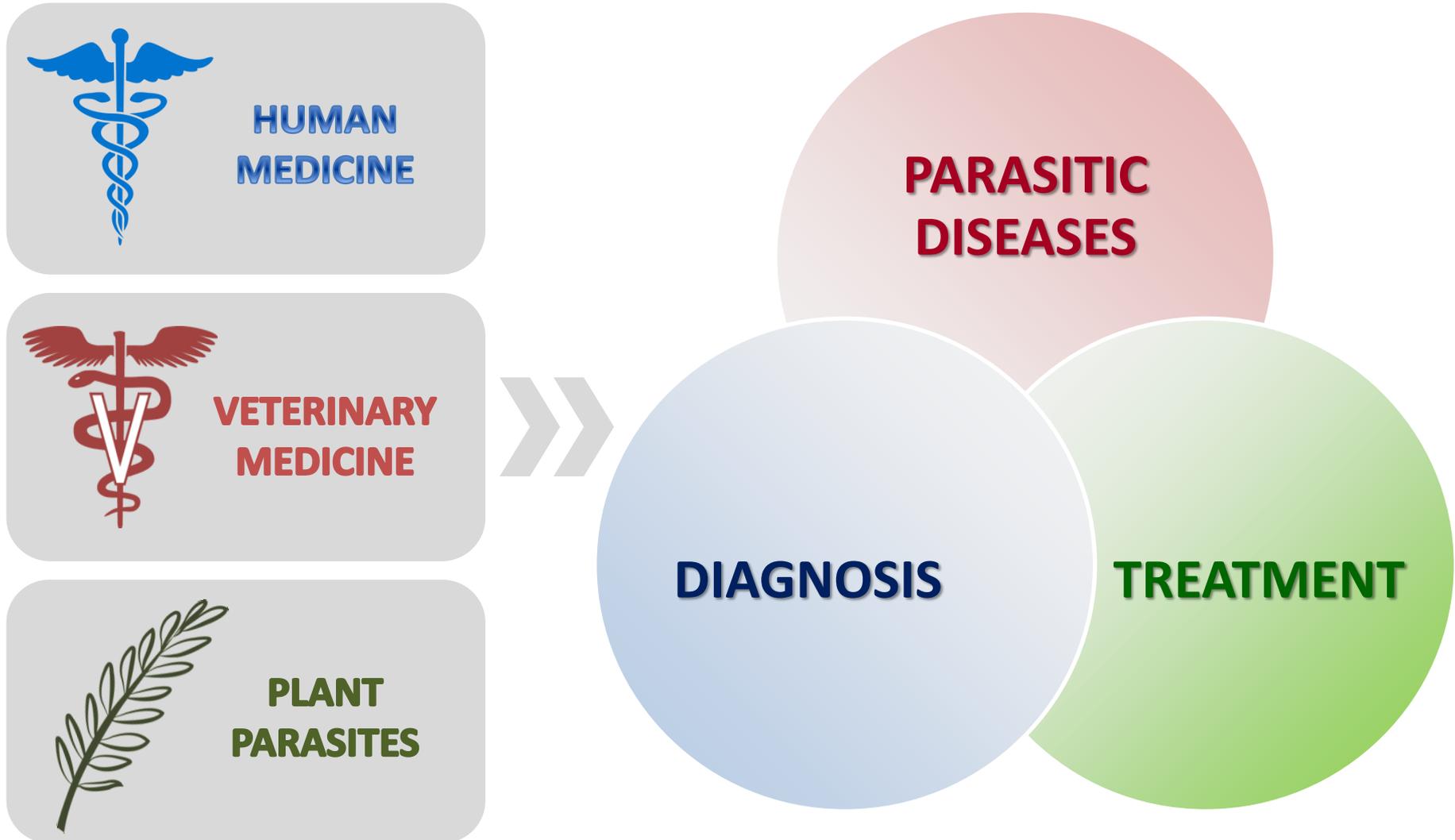
**VETERINARY  
MEDICINE**



**PLANT  
PARASITES**



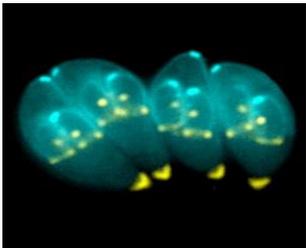
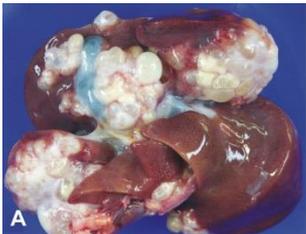
# APPLIED RESEARCH



# APPLIED RESEARCH - Diagnosis

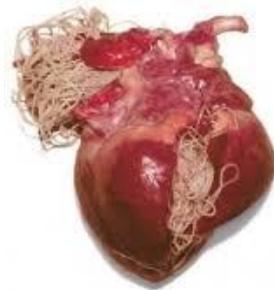
## Human parasites

*Echinococcus granulosus*,  
*Echinococcus multilocularis*,  
*Toxocara spp.*,  
*Trichinella spp.*,  
*Toxoplasma gondii*,  
tick-borne diseases



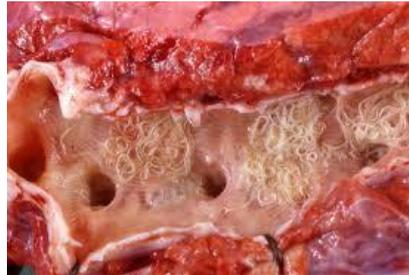
## Parasites of pets and carnivores

*Dirofilaria*, *Angiostrongylus*,  
*Babesia*, *Hepatozoon*,  
*Anaplasma*,  
arthropod-borne diseases



## Parasites of domestic ruminants

*Strongylida*, *Haemonchus*,  
*Fasciola*, *Dicrocoelium*,  
*Dictyocaulus*,  
GIT and lung nematodes



## Parasites of fish and wildlife

*Caryophyllidea*, *Bothriocephalidea*,  
*Diphyllobothridea*, *Fascioloides*,  
fish-borne diseases

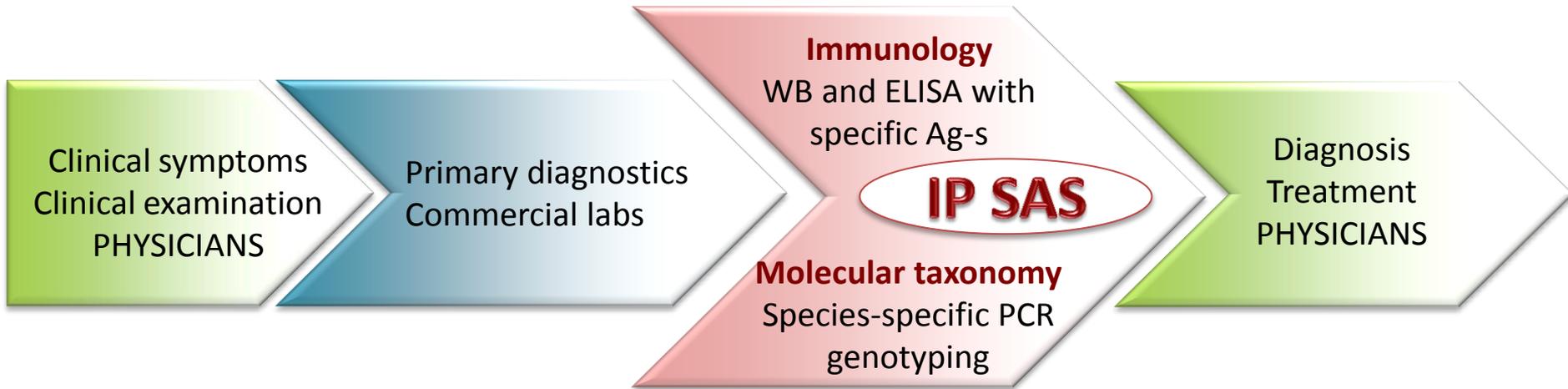


## Parasites of corn and crop

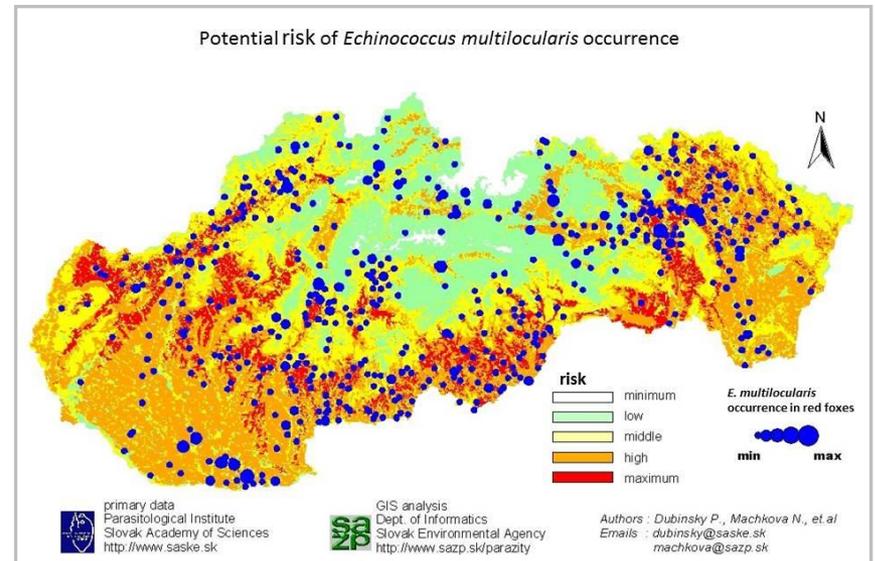
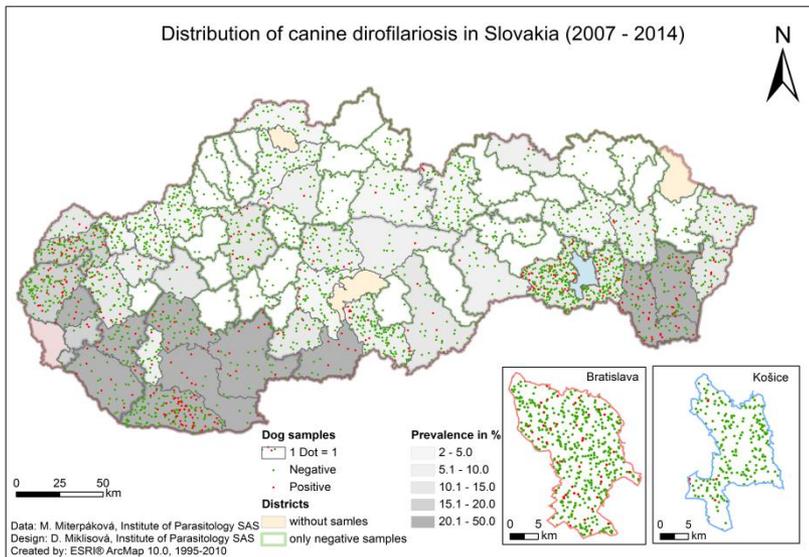
*Meloidogyne*,  
*Globodera*,  
*Heterodera*



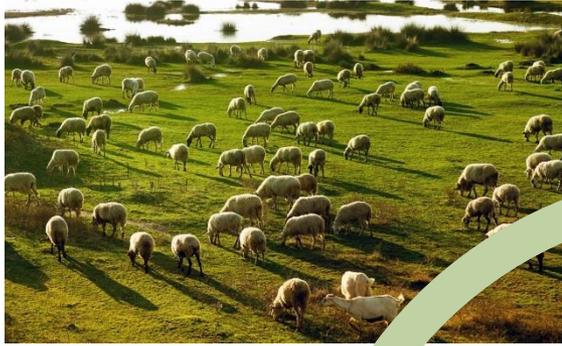
# APPLIED RESEARCH - Diagnosis



# Epidemiology



# APPLIED RESEARCH - Anthelmintic treatment



**Goat & sheep farms**

**GIT nematodes**

**Anthelmintic resistance**

**Parasitological examination**



**Anthelmintic treatment**



# APPLIED RESEARCH

## III. NATIONAL IMPORTANCE

„Why is our Institute important...“



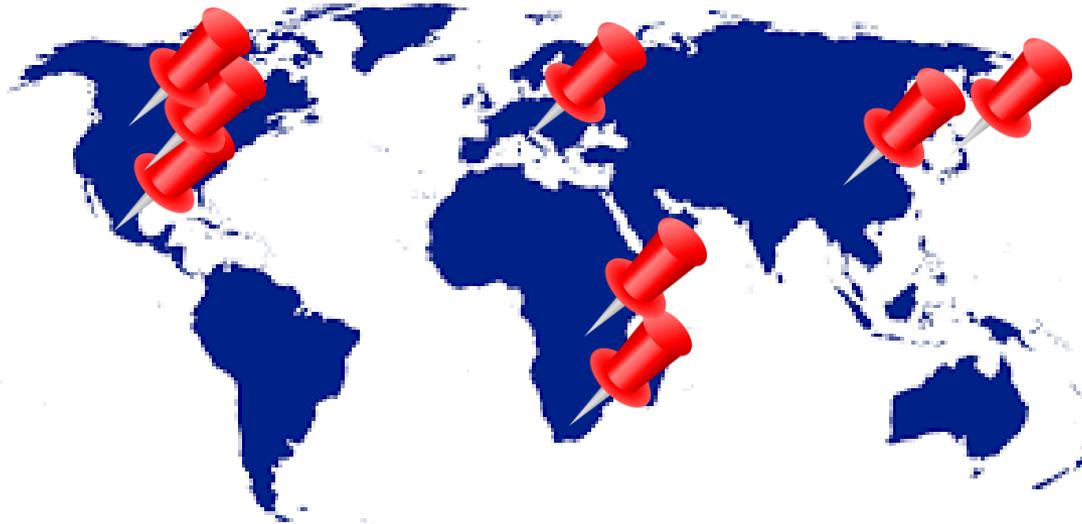
### III. INTERNATIONAL IMPORTANCE

„Why is our Institute important..“

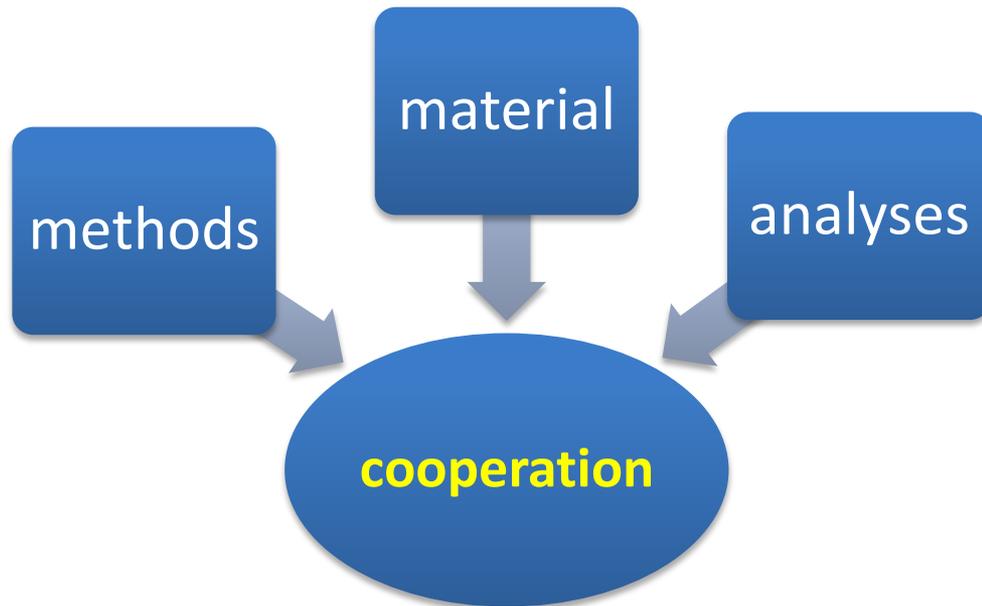
<b>CAPARA</b> Goat-parasite Interactions: from Knowledge to Control	COST Action	2009-2013
<b>EURNEGVEC</b> European Network for Neglected Vectors and Vector-Borne Infections	COST Action	2013-2017
<b>CYSTINET</b> European Network on Taeniosis/Cysticercosis	COST Action	2014-2017
<b>EURO-FBP</b> European Network for Foodborne Parasites	COST Action	2015-2019
<b>Mye-EUNITER</b> European Network of Investigators Triggering Exploratory Research on Myeloid Regulatory Cells	COST Action	2015-2018
<b>AMIGA</b> Assessment and Monitoring the Impacts of Genetically Modified Plants on Agrosystems <i>Cooperation with co-partner</i>	7th Frame Work Programme	2011-2016

### III. INTERNATIONAL IMPORTANCE

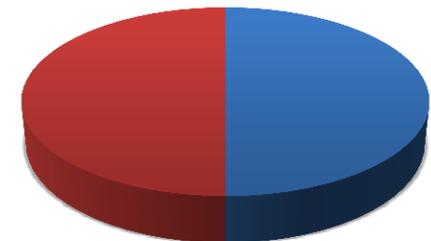
.....extensive international cooperation



**19 bilateral mobility projects**  
**International Commission on Trichinellosis**  
**European Food Safety Authority**  
**EurEchino Network**  
**EurEchino Database**  
**Global Cestode Database**



**Authorship of papers**



■ International  
■ National



**Congress Centre Academia, Stará Lesná  
The High Tatras, Slovakia  
May 25-30, 2014**



## Strengths

### *personnel structure*

- research professors
- favourable age structure
- motivated post-doctoral students
- PhD. students

### *balanced research structure*

- basic research / international research
- applied research /national impact

### *publication activities*

- ratio Q1+Q2/Q3+Q4



## Weaknesses

### *international aspect*

- long-term study stays abroad
- PhD. students and post-docs from abroad

### *financial aspect*

- high rate of overhead expenses, service costs and maintenance charges for four buildings

## Opportunities

- transformation into public research institutions
- fusions into more flexible and competitive Research Centres
- extra-budgetary means
- new contracts with private and industrial partners

## Threats

- the handicap of the Institute to compete in project calls which require the participation of applicants with a higher number of employees
- the constant increase of administration costs

# IP SAS MANAGEMENT

2012 – 2015

SINCE FEBRUARY 2016



**Branislav Petko**  
director 2007-2015



**Ivica Hromadová**  
director



**Ingrid Papajová**  
deputy director 2011-2015



**Martina Miterpáková**  
deputy director



**Daniela Antolová**  
deputy director

