

ANDREA BARDŮNEK VALIGUROVÁ

Date and place of birth: July 17, 1978; Bratislava, Slovak Republic

EDUCATION / DEGREE:

2001	M.Sc. in Biology-Zoology	Faculty of Natural Sciences, Comenius University, Bratislava, Slovak Republic
2002	RNDr. in Biology-Zoology	Faculty of Natural Sciences, Comenius University, Bratislava, Slovak Republic
2008	Ph.D. in Parasitology	Faculty of Science, Masaryk University, Brno, Czech Republic
2020	Assoc. Prof. in Zoology	Faculty of Science, Masaryk University, Brno, Czech Republic

Master Thesis: Eugregarines (Gregarina, Apicomplexa) of some invertebrates in Slovakia

PhD Thesis: Comparative morphology of developmental stages of gregarines and cryptosporidia with an emphasis on host-parasite interactions

Habilitation thesis: Strategies of Parasitism in Early Branching Apicomplexa

WORK EXPERIENCE:

2002 - 2011: Specialist; Faculty of Science, Masaryk University, Brno

2006 – 2020 (maternity and parental leave in 2016-2019): Research and development worker; Faculty of Science, Masaryk University, Brno

2021 – to date: Senior researcher; Faculty of Science, Masaryk University, Brno

Workplace address: Department of Botany and Zoology, Faculty of Science, Masaryk University
Kotlářská 2, 61137 Brno, Czech Republic

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CURRENT RESEARCH INTERESTS

Protista (Apicomplexa): parasite determination, life cycle, experimental infections, morphology and ultrastructure, parasite-host interactions, phylogenetic relationships among apicomplexans

Diplozoidae (Monogenea): host-parasite interactions, developmental changes, morphology and physiology, reproduction, digestion, enzymatic activity.

Methods: experimental work, *in vivo* and *in vitro* studies, histological and serological techniques, immunohistochemistry, light and electron microscopy, immunofluorescence and confocal microscopy

TEACHING ACTIVITIES

2001-2005: The System and Evolution of Invertebrates, tutorial, Faculty of Science, Masaryk University

2001-2007: General Parasitology, tutorial - casual, Faculty of Science, Masaryk University

2003: Human Parasitology, tutorial, Faculty of Science, Masaryk University

2005-2015: Zoological Microtechnique, tutorial – casual, Faculty of Science, Masaryk University

2010-pres.: Introduction to Field Invertebrate Zoology, lectures/practice, Faculty of Science, Masaryk University

2010-pres.: Biology of parasitic arthropods, lectures/practice, Faculty of Science, Masaryk University

SUPERVISOR OF STUDENTS' THESES (+ co-director of other 6 students' theses):

Bachelor theses:

2008-2009: Jana Ilgová. Experimental and morphological methods used to study the interactions between host and parasitic protists.

2009-2010: Václav Churý. A study of contractile elements in model gregarines.

2012-2013: Veronika Mazourová. Cell motility in cryptosporidia (Apicomplexa).

2014-2015: Michal Kubík. Cellular interactions and formation of host-parasite interface in marine representatives of basal apicomplexans.

2014-2016: Pavla Balková. The effect of gregarines on survival and development of laboratory reared mealworm beetles.

2015-2016: Lenka Tůmová. *In vitro* cultivation of cryptosporidia.

2019-2020: Karolína Poláková. Pathological effect of selected representatives of basal Apicomplexa on host tissue.

2019-2020: Kateřina Hartmanová. Host-parasite interactions and feeding strategies in early branching Apicomplexa (Protista).

2020-to date: Stanislav Hodeček. Apicomplexan parasites of European amphibians.

2020-to date: Klára Piknerová. Motility pattern and cytoskeletal structures in Opalinea.

Master theses:

- 2009-2012:** Jana Ilgová. A study of host-parasite interactions in gastric parasite *Cryptosporidium muris*.
- 2013-2015:** Veronika Mazourová. Cell motility and invasion in cryptosporidia.
- 2016-2019:** Lenka Tůmová. Cultivation of cryptosporidia in cell and cell-free cultures.
- 2020-to date:** Karolína Poláková. The effect of the early immune events of the mice repeatedly bitten by sand flies on the course of cutaneous leishmaniosis.
- 2020-to date:** Kateřina Hartmanová. Application of cytological and (immuno)histochemical methods to study the attachment and motility structures of eugregarines (Apicomplexa).
- 2021-to date:** Hana Hřebíčková. Motility of eugregarines (Apicomplexa) *in vitro* and *in vivo*.

PhD theses:

- 2010-2018:** Janka Melicherová. Invasion strategies and host-parasite interactions in cryptosporidia.
- 2012-2018:** Andrei Diakin. Biology of marine early emerging apicomplexans.
- 2013-2019:** Magdaléna Kováčiková. Cell motility of early emerging apicomplexans.

RESEARCH STAYS / FIELDWORK AND SAMPLING ABROAD

- 2006:** Laboratory of Entomology, Dipartimento di Scienze e Tecnologie Agroambientali, Università degli studi di Bologna, Italy (October 23-30, 2006): rearing techniques of insect parasitoids and their hosts.
- 2008:** Department of Entomology, Kansas State University and Biological Research Unit Grain Marketing & Production Research Center in Manhattan, Kansas, USA (May 3-July 1, 2008): Fellowship awarded from OECD: "Monitoring protozoan natural control agents of stored-product pests".
- 2009:** Museum National d'Histoire Naturelle (Paris), Station Biologique de Roscoff (University Pierre et Marie Curie, CNRS) and Station de Biologie Marine de Dinard (CRESCO) in France.
- 2010:** Museum National d'Histoire Naturelle, Paris, France (April 8-20, 2010): Immunocytochemical studies on gregarines (by Prof. J. Schrével).
- 2010:** World Health Organization Collaborating Centre for the Molecular Epidemiology of Parasitic Infections, School of Veterinary and Biomedical Sciences, Murdoch University, Australia (July 29-August 13, 2010): *In vitro* cultivation of cryptosporidia (by Prof. R.C.A. Thompson).
- 2010:** Museum National d'Histoire Naturelle, Paris, France (October 17-31, 2010): Immunocytochemical studies on gregarines and preparation of genomic project on gregarines (by Prof. J. Schrével).
- 2011:** Museum National d'Histoire Naturelle, Paris, France (November 7-10, 2011): Immunocytochemical studies on apicomplexan motility (by Prof. J. Schrével).
- 2015:** Department of Zoology, Faculty of Natural Sciences of Comenius University in Bratislava, Slovakia (October 1-November 1, 2015): Cytological changes of *Acanthamoeba* isolates after application of potentially amoebicidal compounds (by RNDr. M. Mrva, PhD.).
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- 2008:** Field application and monitoring neogregarines as control agents of stored-product insect pests using serological techniques (during stay at the Biological Research Unit Grain Marketing & Production Research Center in Manhattan, Kansas, USA, 2 month-stay, funding by OECD project).
- 2009:** Sampling of marine early-branched apicomplexans in the area of the Station Marine MNHN Dinard in France and Station Biologique de Roscoff in France (2 weeks, funding by the project ECO-NET 2009, in collaboration with Prof. J. Schrével and Assoc. Prof. T.G. Simdyanov).
- 2011-2012:** Sampling of marine early-branched apicomplexans in the area of the Station Biologique de Roscoff in France (2 weeks, funding by the project Czech-French Barrande project, in collaboration with Prof. J. Schrével).
- 2011-2015:** Sampling of marine early-branched apicomplexans in the area of the White Sea Biological Station of the Biological Faculty of Moscow State University (Cape Kindo, Velikaja Salma) (2-3 weeks, funding by the Postdoctoral project in 2011-2012 and later by ECIP, in collaboration with Assoc. Prof. T.G. Simdyanov and Assoc. Prof. G.G. Paskerova).

PUBLICATIONS

- Matis D., **Valigurová A.** (2000): Gregarines (Apicomplexa, Eugregarinida) of some invertebrates of Slovakia. *Folia faunistica Slovaca* 5: 11-22.
- Valigurová A.**, Matis D. (2001): The records of gregarines (Eugregarinida, Apicomplexa) in myriapods (Myriapoda) in Slovakia. *Folia faunistica Slovaca* 6: 1-8.
- Valigurová A.** (2003): First records of gregarines (Gregarina, Apicomplexa) from Slovakia. *Biologia* 58: 895-896.
- Valigurová A.**, Koudela B. (2005): Fine structure of trophozoites of the gregarine *Leidyana ephestiae* (Apicomplexa: Eugregarinida) parasitic in *Ephestia kuehniella* larvae (Lepidoptera). *Eur. J. Protistol.* 41: 209-218.
- Valigurová A.**, Koudela B. (2006): Ultrastructural study of developmental stages of *Mattesia dispora* (Neogregarinorida: Lipotrophidae), a parasite of the flour moth *Ephestia kuehniella* (Lepidoptera). *Eur. J. Protistol.* 42: 313-323.
- Valigurová A.**, Hofmannová L., Koudela B., Vávra J. (2007): An ultrastructural comparison of the attachment sites between *Gregarina steini* and *Cryptosporidium muris*. *J. Eukaryot. Microbiol.* 54: 495-510.

- Valigurová A.**, Koudela B. (2008): Morphological analysis of the cellular interactions between the eugregarine *Gregarina garnhami* (Apicomplexa) and the epithelium of its host, the desert locust *Schistocerca gregaria*. Eur. J. Protistol. 44: 197-207.
- Valigurová A.**, Jirků M., Koudela B., Gelnar M., Modrý D., Šlapeta J. (2008): Cryptosporidia: epicellular parasites embraced by the host cell membrane. Int. J. Parasitol. 38: 913-922.
- Jirků M., **Valigurová A.**, Koudela B., Křížek J., Modrý D., Šlapeta J. (2008): New species of *Cryptosporidium* Tyzzer, 1907 (Apicomplexa) from amphibian host: morphology, biology and phylogeny. Folia Parasit. 55: 81-94.
- Michalková V., **Valigurová A.**, Dindo M.L., Vaňhara J. (2009): Larval morphology and anatomy of the parasitoid *Exorista larvarum* (Diptera: Tachinidae), with an emphasis on cephalopharyngeal skeleton and digestive tract. J. Parasitol. 95: 544-554.
- Valigurová A.**, Michalková V., Koudela B. (2009): Eugregarine trophozoite detachment from the host epithelium via epimerite retraction: Fiction or fact? Int. J. Parasitol. 39: 1235-1242.
- Valigurová A.**, Hodová I., Sonnek R., Koubková B., Gelnar M. (2011): *Eudiplozoon nipponicum* in focus: monogenean exhibiting a highly specialized adaptation for ectoparasitic lifestyle. Parasitol. Res. 108: 383-394.
- Hodová I., Sonnek R., **Valigurová A.** (2011): Body Architecture of the Parasitic Worm: Visualization of Muscular Structures by LM, SEM and CLSM. G.I.T. Imaging & Microscopy 2: 46-48.
- Valigurová A.** (2012): Sophisticated adaptations of *Gregarina cuneata* (Apicomplexa) feeding stages for epicellular parasitism. PLoS One 7(8): e42606.
- Valigurová A.**, Vaškovicová N., Musilová N., Schrével J. (2013): The enigma of eugregarine epicytic folds: Where gliding motility originates? Frontiers in Zoology 10: 57.
- Melicherová J., Ilgová J., Kváč M., Sak B., Koudela B., **Valigurová A.** (2014): Life cycle of *Cryptosporidium muris* in two rodents with different responses to parasitization. Parasitology 141: 287-303.
- Valigurová A.**, Michalková V., Koník P., Dindo M.L., Gelnar M., Vaňhara J. (2014): Penetration and encapsulation of larval endoparasitoid, *Exorista larvarum* (Diptera: Tachinidae) in the factitious host *Galleria mellonella* (Lepidoptera: Pyralidae). Bull. Entomol. Res. 104 (2): 203-212.
- Valigurová A.**, Paskerova G.G., Diakin A., Kováčiková M., Simdyanov T.G. (2015): Protococcidian *Eleutheroschizon duboscqi*, an unusual apicomplexan interconnecting gregarines and cryptosporidia. PLoS One 10(4): e0125063.
- Melicherová J., Mazourová V., **Valigurová A.** (2016): In vitro excystation of *Cryptosporidium muris* oocysts and viability of released sporozoites in different incubation media. Parasitol. Res. 115(3): 1113-1121.
- Chambouvet A., **Valigurová A.**, Pinheiro L.M., Richards T.A., Jirků M. (2016): *Nematopsis temporariae* (Gregarinasina, Apicomplexa, Alveolata) is an intracellular infectious agent of tadpole livers. Environ. Microbiol. Rep. 8(5): 675-679.
- Diakin A., Paskerova G.G., Simdyanov T.G., Aleoshin V.V., **Valigurová A.** (2016): Morphology and molecular phylogeny of coelomic gregarines (Apicomplexa) with different types of motility: *Urospora ovalis* and *U. travisiae* from the polychaete *Travisia forbesii*. Protist 167: 279-301.
- Schrével J., **Valigurová A.**, Prensier G., Chambouvet A., Florent I., Guillou L. (2016): Ultrastructure of *Selenidium pendula*, the type species of archigregarines, and phylogenetic relations to other marine Apicomplexa. Protist 167: 339-368.
- Diakin A., Wakeman K.C., **Valigurová A.** (2017): Description of *Ganymedes yurii* sp. n. (Ganymedidae), a new gregarine species from the Antarctic amphipod *Gondogeneia* sp. (Crustacea). J. Eukaryot. Microbiol. 64(1): 56-66.
- Kováčiková M., Simdyanov T.G., Diakin A., **Valigurová A.** (2017): Structures related to attachment and motility in the marine eugregarine *Cephaloidophora cf. communis* (Apicomplexa). Eur. J. Protistol. 59: 1-13.
- Valigurová A.**, Vaškovicová N., Diakin A., Paskerova G.G., Simdyanov T.G., Kováčiková M. (2017): Motility in blastogregarines (Apicomplexa): Native and drug-induced organisation of *Siedleckia nematoides* cytoskeletal elements. PLoS One 12(6): e0179709.
- Melicherová J., Hofmannová L., **Valigurová A.** (2018): Response of cell lines to actual and simulated inoculation with *Cryptosporidium proliferans*. Eur. J. Protistol. 62: 101-121.
- Hodová I., Sonnek R., Gelnar M., **Valigurová A.** (2018): Architecture of *Paradiplozoon homoion*: A diplozoid monogenean exhibiting highly-developed equipment for ectoparasitism. PLoS One 13(2): e0192285.
- Simdyanov T.G., Paskerova G.G., **Valigurová A.**, Diakin A., Kováčiková M., Schrével J., Guillou L., Dobrovolskij A.A., Aleoshin V.V. (2018): First ultrastructural and molecular phylogenetic evidence from the blastogregarines, an early branching lineage of plesiomorphic Apicomplexa. Protist 169: 697-726.
- Valigurová A.**, Pecková R., Doležal K., Sak B., Květoňová D., Kváč M., Nurcahyo W., Foitová I. (2018): Limitations in the screening of potentially anti-cryptosporidial agents using laboratory rodents with gastric cryptosporidiosis. Folia Parasitol. 65: 010.
- Paskerova G.G., Miroliubova T.S., Diakin A., Kováčiková M., **Valigurová A.**, Guillou L., Aleoshin V.V., Simdyanov T.G. (2018): Fine structure and molecular phylogenetic position of two marine gregarines, *Selenidium pygospionis* sp. n. and *S. pherusae* sp. n., with notes on the phylogeny of Archigregarinida (Apicomplexa). Protist 169: 826-852.
- Kováčiková M., Vaškovicová N., Nebesářová J., **Valigurová A.** (2018): Effect of jasplakinolide and cytochalasin D on cortical elements involved in the gliding motility of the eugregarine *Gregarina garnhami* (Apicomplexa). Eur. J. Protistol. 66: 97-114.

- Garajová M., Mrva M., Vaškovicová N., Martinka M., Melicherová J., **Valigurová A.** (2019): Cellulose fibrils formation and organisation of cytoskeleton during encystment are essential for *Acanthamoeba* cyst wall architecture. *Sci. Rep.* 9: 4466.
- Kováčiková M., Paskerova G.G., Diakin A., Simdyanov T.G., Vaškovicová N., **Valigurová A.** (2019): Motility and cytoskeletal organisation in the archigregarine *Selenidium pygospionis* (Apicomplexa): observations on native and experimentally affected parasites. *Parasitol. Res.* 118(9): 2651-2667.
- Valigurová A.**, Florent I. (2021): Nutrient acquisition and attachment strategies in basal lineages: A tough nut to crack in the evolutionary puzzle of Apicomplexa. *Microorganisms* 9(7): 1430.
- Valigurová A.**, Vaškovicová N., Gelnar M., Kováčiková M., Hodová I. (2021): *Eudiplozoon nipponicum*: Morphofunctional adaptations of diplozoid monogeneans for confronting their host. *BMC Zool.* 6: 23
- Paskerova G.G., Miroliubova T.S., **Valigurová A.**, Janouškovec J., Kováčiková M., Diakin A., Sokolova Y.Y., Mikhailov K.V., Aleoshin V.V., Simdyanov T.G. (2021): Evidence from the resurrected family Polyrhabdinidae Kamm, 1922 (Apicomplexa: Gregarinomorpha) supports the epimerite, an attachment organelle, as a major eugregarine innovation. *PeerJ* 9: e11912
- Kolářová I., **Valigurová A.** (2021): Hide-and-seek: A game played between parasitic protists and their hosts. *Microorganisms* 9 (12): 2434

BOOK CHAPTER

- Valigurová A.** (2005): Gregarines (Gregarinida). In: Majzlan O. et al. (Eds.), *Fauna Devínskej Kobylej* [Fauna of the Devínska Kobyla Nature Reserve]. Asociácia priemyslu a ochrany prírody, Bratislava

SCIENTIFIC MEETINGS

- 41 presentations (2 invited lectures) at international scientific meetings
- 54 presentations (1 invited lecture) at domestic (including Czech-Slovak) scientific meetings
- 14 seminary lectures (8 invited lectures - Museum National d'Histoire Naturelle in Paris, White Sea Biological Station of the Biological Faculty of Moscow State University, Comenius University in Bratislava, Charles University in Prague, University of Veterinary and Pharmaceutical Sciences in Brno)

PROJECT INVESTIGATOR

FRVŠ 2069/2005: Use of transmission electron microscopy and molecular methods in the study of ultrastructure and phylogenetic position of model gregarines (2005; investigator: A. Valigurová).

Fellowship awarded from OECD: Monitoring protozoan natural control agents of stored-product pests. Host laboratory - Kansas State University, Manhattan, Kansas, USA (May -July, 2008; investigator A. Valigurová under the supervision of Assoc. Prof. L. Zurek, PhD.)

The program **ECO-NET 2009**, implemented and financed by the French ministry of Foreign Affairs and European: **Biodiversity of gregarines in a changing environment and evolutionary strategies in early apicomplexa** (2009-2010; Czech investigator A. Valigurová, French investigator Prof. J. Schrével).

Postdoctoral project **P506/10/P372: Comparative morphology and immunohistochemistry in the evaluation of phylogenetic affinities among early emerging apicomplexans** (2010-2012; investigator A. Valigurová).

Czech-French Mobility project **MEB021127: Cell motility and cytoskeleton of apicomplexan parasites** (2011-2012; Czech investigator: A. Valigurová, French investigator: Prof. J. Schrével).

Czech-French Mobility project **7AMB14FR013: Cell motility mechanisms in Apicomplexa** (2014-2015; Czech investigator: A. Valigurová, French investigator: Prof. J. Schrével).

Czech-Slovak Mobility project **7AMB14SK008: Cytological changes of Acanthamoeba isolates after application of potentially amoebicidal compounds** (2014-2015; Czech investigator: A. Valigurová, Slovak investigator: M. Mrva).

Since 2003 participation in other **13 projects as a team member**.

OTHER SCIENTIFIC ACTIVITIES

- **Reviewer of projects** (Grant Agency of the Charles University, Czech Science Foundation, The scientific grant agency of the Ministry of Education, Science, Research and Sport of the Slovak Republic and of the Slovak Academy of Sciences - VEGA).
- **Reviewer of manuscripts** in more than 15 international scientific journals with IF, member of the Board of reviewers for Journal of Eukaryotic Microbiology (2010-2014) and Microorganisms (2021-to date). Special issue editor for Microorganisms (2020-2021).
- **Reviewer of Bc, MSc, and PhD theses.**
- Member in International Society of Protistologists (ISOP) / Member of the ISOP Nominating Committee (2011), Czech Society for Parasitology, and Slovak Zoological Society. Member of the ISOP Nominating Committee (2011)
- Active cooperation with internationally renowned colleagues in the field, a total of 9 universities and other scientific institutions.