

## **CURRICULUM VITAE OF PETER LASZLO PAP**

### **Education and training**

2015 – defense of habilitation thesis at the Babeş-Bolyai University, Faculty of Biology and Geology, Cluj Napoca, Romania (since 2016 I can supervise PhD students)

1998 – 2001: PhD Biodiversity, University of Debrecen, Debrecen, Hungary, supervisor: Dr. Tibor Szep (PhD degree from 26th November 2005)

1993 – 1998: B.S. Biology, Babeş-Bolyai University, Faculty of Biology and Geology, Cluj Napoca, Romania, specialization: Biology.

### **Positions**

2012 – present: associate professor, Babeş-Bolyai University, Cluj Napoca, Romania

2005 – 2012: senior lecturer, Babeş-Bolyai University, Cluj Napoca, Romania

2002 – 2005: assistant lecturer, Babeş-Bolyai University, Cluj Napoca, Romania

1998 – 2002: teacher assistant, Babeş-Bolyai University, Cluj Napoca, Romania

### **Fellowships**

2018 – 6 months post-doctoral researcher, University of Colorado, Boulder, USA

2013 – 2014: Post-doctoral researcher, University of Debrecen, Debrecen, Hungary

2010 – 1 month research fellowship, University of Bath, UK; supervisor: Prof. Tamas Szekely

2006 – 2008: Post-doctoral researcher, University of Debrecen, Debrecen, Hungary; supervisor: Prof. Zoltan Barta

2002 – 2 months research fellowship, Universite Pierre et Marie Curie, Paris, France; supervisor: Prof. Anders Pape Møller

2001 – 2 months research fellowship, Universite Pierre et Marie Curie, Paris, France; supervisor: Prof. Anders Pape Møller

### **Grants**

1. Title: Annual and spatial variation of immunocompetence and susceptibility to parasitism in the house sparrow: possible implication of cohabitation between wild birds and poultry disease transmission. Funded by the Romanian Ministry of Education and Research; 40000 Euro; Period: 2006–2008; Contract number: CEEX ET\_94/2006.

2. Title: Resistance and tolerance to parasitism as a mediator of avian life history: the role of oxidative stress and immune cell system. Funded by the Romanian Ministry of Education and Research; 170000 Euro; Period: 2010–2013; Contract number: TE\_291/2010.

3. Title: Integrating cooperation research across Europe (National coordinator of a FP6 international research project). Funded by the European Union; 13000 Euro for the Romanian partner; Period: 2007–2010; Contract number: 043318.

4. Title: The co-evolution of life history traits and measures of oxidative physiology (National coordinator of a bilateral project between Romania and Hungary). Funded by the Romanian Ministry of Education and Research; 7000 Euro for the Romanian partner; Period: 2013–2014; Contract number: 679/2013.

5. Title: Sex differences in life- history traits in birds and mammals: the significance of physiological state. Funded by the Romanian Ministry of Education and Research; 245000 Euro; Period: 2017–2019; Contract number: NR. 144/2017.

### **Coordination of a research group**

I started my academic career in 1998 at the Faculty of Biology and Geology of the Babes-Bolyai University from Cluj Napoca, Romania, and since then, with short interruptions during which I have been fellow researcher in different European universities and research centers, my research activity is based at this institute. I founded a research group, called 'Evolutionary Ecology Group', the main focus of which is on the field of ecophysiology, the study of the host-parasite interaction, microevolution and avian biology. In the research group activate a post-doctoral student, 4 PhD students and many undergraduate students. With the material support of several national (CEEX, TE and bilateral cooperation) and international (FP6) grants the fundamentals of the infrastructure for research was established. For instance, we have several indoor and outdoor aviaries situated in the campus of our faculty, small cages (60) for housing birds and a laboratory equipped for parasitological and physiological measurements. Several well established house sparrow and barn swallow populations are followed since 2011, which serve as a background for our studies on birds. More than 40 students were actively involved in the research activity of the group, among which 5 continued their academic career as PhD students and many more are working as field ecologists in various projects in Romania and abroad. The collaboration between the group leader and his students (Csongor I. Vagasi, Laura Patras, Orsolya Vincze and many others) resulted in prolific publication activity in peer-reviewed international journals (see the publication list of the group here: <https://avianimmunoecology.wordpress.com/publications/>).

### **Organization of conferences and meetings**

- 2019 – I was the organizer of the *12th Conference of the European Ornithologists' Union*  
2009, 2011, 2013, 2015 – Biology Days from Cluj Napoca (a local conference organized mainly for students)  
2009 – Cooperation in Animal Societies, Cluj Napoca, Romania  
2008 – Conflict and Cooperation in Animal Societies, Debrecen, Hungary  
2007 – Behavioural Ecology Meeting, Cluj Napoca, Romania

### **Visibility of the scientific activity**

#### **(1) Oral presentations at international conferences**

- Pap, P.L. (2017). *Invited plenary lecturer at the 11th Conference of the European Ornithologists' Union. Turku, Finland.*
- Pap, P.L. et al. (2015). Interspecific variation in the structural properties of flight feathers in birds. 10th Conference of the European Ornithologists' Union. Badajoz, Spain.
- Pap, P.L. et al. (2012). Seasonality in coccidian parasitism and immune function in the house sparrow: natural covariation or just coincidence? 8th Conference of the European Ornithologists' Union. Riga, Latvia. (as an invited speaker)
- Pap, P.L. et al. (2012) The evolution of constitutive immune defence in relation to life-history and parasitism in European birds. 12th European Ecological Federation Congress, Avila, Spain.
- Pap, P.L. et al. (2010). Badge size and the immune function in male house sparrows during the annual cycle: coccidians enforce the honesty of a plumage ornament. 25th International Ornithological Congress. Campos do Jordao, Brasil.
- Pap, P.L. et al. (2008). Diet quality affects post-nuptial molt and feather quality of the house sparrow (*Passer domesticus*): interaction with humoral immune function? 7th Conference of the European Ornithologists' Union. Vienna, Austria.
- Pap, P.L. et al. (2005). Microhabitat preference, escape behavior and cues used by feather mites to avoid molting wing feathers: an experimental test. Winter Annual Meeting of the Association for the Study of Animal Behaviour, London, UK.

Pap, P.L. (2005). Breeding time and sex specific health status in the barn swallow *Hirundo rustica*. 'Migration in the life-history of birds', European Science Foundation Conference on Optimality in Bird Migration, Wilhelmshaven, Germany.

## (2) List of publications

52. Pap P.L., Fülöp A., Adamkova M., Cepak C., Michalkova R., Safran R.J., Stermin A.N., Tomasek O., Vágási C.I., Vincze O., Wilkins M.R., Albrecht T. (in press). Selection on multiple sexual signals in two Central- and Eastern-European populations of the barn swallow. *Ecology and Evolution*
51. Vincze O., Vágási C.I., Pap P.L., Palmer C., Møller A.P. (in press). Wing morphology, flight type and migration distance predict accumulated fuel load in birds. *Journal of Experimental Biology*.
50. Pap P.L., Vincze O., Vágási C.I., Salamon Z., Pándi A., Bálint B., Nord A., Nudds R.L., Osváth G. (2019). Vane macrostructure of primary feathers and its adaptations to flight in birds. *Biological Journal of the Linnean Society* 126: 256–267.
49. Vágási C.I., Vincze O., Pătraș L., Osváth G., Péntzes J., Haussmann M., Barta Z., Pap P.L. (2019). Longevity and life history coevolve with oxidative stress in birds. *Functional Ecology* 33: 152-161.
48. Vágási C.I., Pătraș L., Pap, P.L., Vincze O., Mureșan C., Németh J., Lendvai Á.Z. (2018). Experimental increase in baseline corticosterone level reduces oxidative damage and enhances innate immune response. *PLoS ONE* 13: e0192701.
47. Wilkins M.R., Scordato E.S.C., Semenov G.A., Karaardıç H., Shizuka D., Rubtsov A., Pap P.L., Shen S-F., Rebecca J. (2018). Global song divergence in barn swallows (*Hirundo rustica*): exploring the roles of genetic, geographic, and climatic distance in sympatry and allopatry. *Biological Journal of the Linnean Society* 123: 825-849.
46. Pap P.L., Vincze O., Fülöp A., Székely-Béres O., Pătraș L., Péntzes J., Vágási C.I. (2018). Oxidative physiology of reproduction in a passerine bird: a field experiment. *Behavioural Ecology and Sociobiology* 72: 18.
45. Osváth G., Daubner T., Dyke G., Fuisz T.I., Nord A., Péntzes J., Vargancsik D., Vágási C.I., Vincze O., Pap P.L. (2018). How feathered are birds? Environment predicts both the mass and density of body feathers. *Functional Ecology* 32: 701-712.
44. Fülöp A., Vágási C.I. Pap P.L. (2017). Cohabitation with farm animals rather than breeding effort increases the infection with feather-associated bacteria in the barn swallow *Hirundo rustica*. *Journal of Avian Biology* 48: 1005-1014.
43. Pap P.L., Vincze O., Wekerle B., Daubner T., Vágási C.I., Nudds R.L., Dyke G.J., Osváth G. (2017). A phylogenetic comparative analysis reveals correlations between body feather structure and habitat. *Functional Ecology* 31: 1241-1251.
42. Geue J.C., Vágási C.I., Schweizer M., Pap P.L., Thomassen H.A. (2016). Environmental selection is a main driver of divergence in house sparrows (*Passer domesticus*) in Romania and Bulgaria. *Ecology and Evolution* 6: 7954-7964.
41. Wilkins M.R., Karaardıç H., Vortman Y., Parchman T.L., Albrecht T., Petrželková A., Özkan L., Pap P.L., Hubbard J.K., Hund A.K., Safran R.S. (2016). Phenotypic differentiation is associated with divergent sexual selection among closely related barn swallow populations. *Journal of Evolutionary Biology* 29: 2410-2421.
40. Safran R.J., Scordato E.S.C., Wilkins M.R., Hubbard, J.K., Jenkins, B.R., Albrecht T., Flaxman S.M., Karaardıç H., Vortman Y., Lotem A., Nosil P., Pap P.L., Shen S., Chan, S-F., Parchman T., Kane N.C. (2016). Genome-wide differentiation in closely related populations: the roles of selection and geographic isolation. *Molecular Ecology* 25: 3865-3883.

39. Vágási C.I., Vincze O., Pătraș L., Osváth G., Marton A., Bărbos L., Sol D., Pap P.L. (2016). Large-brained birds suffer less oxidative damage. *Journal of Evolutionary Biology* 29: 1968-1976.
38. Paștiu A.I., Pap P.L., Vágási C.I., Niculae M., Páll E., Domșa C., Brudașcă F.G., Spînu M. (2016). Wild birds in Romania are more exposed to West Nile virus than to Newcastle Disease virus. *Vector-Borne and Zoonotic Diseases* 16: 176-180.
37. Vágási C.I., Pap P.L., Vincze O., Osváth G., Erritzøe J., Møller A.P. (2016). Morphological adaptations to migration in birds. *Evolutionary Biology* 43: 48-59.
36. Fülöp A., Czirják G.Á., Pap P.L., Vágási C.I. (2016). Feather-degrading bacteria, uropygial gland and feather quality in House Sparrows *Passer domesticus*. *Ibis* 158: 362-370.
35. Vincze O., Vágási C.I., Pap P.L., Osváth G., Møller A.P. (2015). Brain regions associated with visual cues are important for bird migration. *Biology Letters* 11: 20150678.
34. Pap P.L., Osváth G., Aparicio J.M., Bărbos L., Matyjasiak P., Rubolini D., Saino N., Vágási C.I., Vincze O., Møller A.P. (2015). Sexual dimorphism and population differences in structural properties of barn swallow (*Hirundo rustica*) wing and tail feathers. *PLoS ONE* 10: e0130844.
33. Pap P.L., Pătraș L., Osváth G., Buehler D.M., Versteegh M.A., Sesarman A., Banciu M., Vágási C.I. (2015). Seasonal patterns and relationships among coccidian infestations, measures of oxidative physiology, and immune function in free-living house sparrows over an annual cycle. *Physiological and Biochemical Zoology* 88: 395-405.
32. Pap P.L., Osváth G., Sándor K., Vincze O., Bărbos L., Marton A., Nudds R.L., Vágási C.I. (2015). Interspecific variation in the structural properties of flight feathers in birds indicates adaptation to flight requirements and habitat. *Functional Ecology* 29: 746-757. Spotlighted paper in the 29(6) issue of *Functional Ecology*.
31. Pap P.L., Vágási C.I., Vincze O., Osváth G., Veres-Szászka J., Czirják G.Á. (2015). Physiological pace of life: the link between constitutive immunity, developmental period, and metabolic rate in European birds. *Oecologia* 177: 147-158.
30. Diaz-Real J., Serrano D., Pérez-Tris J., Fernández-González S., Bermejo A., Calleja J.A., De la Puente J., De Palacio D., Martínez J.L., Moreno-Opo R., Ponce C., Frías Ó., Tella J.L., Møller A.P., Figuerola J., Pap P.L., Kovács I., Vágási C.I., Meléndez L., Blanco G., Aguilera E., Senar J.C., Galván I., Atiénzar F., Barba E., Cantó J.L., Cortés V., Monrós J.S., Piculo R., Vögeli M., Borràs A., Navarro C., Mestre A., Jovani R. (2014). Repeatability of feather mite prevalence and intensity in passerine birds. *PLoS ONE* 9: e107341.
29. Pap P.L., Sesarman A., Vágási C.I., Buehler D.M., Pătraș L., Versteegh M.A., Banciu M. (2014). No evidence for parasitism-linked changes in immune function or oxidative physiology over the annual cycle of an avian species. *Physiological and Biochemical Zoology* 87: 729-739.
28. Bókony V., Lendvai Á.Z., Vágási C.I., Pătraș L., Pap P.L., Németh J., Vincze E., Papp S., Preiszner B., Seress G., Liker A. (2014). Necessity or capacity? Physiological state predicts problem solving performance in house sparrows. *Behavioral Ecology* 25: 124-135.
27. Møller A.P., Merino S., Soler J.J., Antonov A., Badás E.P., Calero-Torrallbo M.A., de Lope F., Eeva T., Figuerola J., Flensted-Jensen E., Garamszegi L.Z., González-Braojos S., Gwinner H., Hanssen S.A., Heylen D., Ilmonen P., Klarborg K., Korpimäki E., Martínez J., Martínez-de la Puente J., Marzal A., Matthysen E., Matyjasiak P., Molina-Morales M., Moreno J., Mousseau T.A., Nielsens J.T., Pap P.L., Rivero-de Aguilar J.,

- Shurulinkov P., Slagsvold T., Szép T., Szöllősi E., Török J., Vaclav R., Valera F., Ziane N. (2013). Assessing the effects of climate on host-parasite interactions: A comparative study of European birds and their parasites. *PLoS ONE* 8: e82886.
26. Vincze O., Vágási C.I., Kovács I., Galván I., Pap P.L. (2013). Sources of variation in uropygial gland size in European birds. *Biological Journal of the Linnean Society* 110: 543-563.
  25. Møller A.P., Vágási C.I., Pap P.L. (2013). Risk-taking and the evolution of mechanisms for rapid escape from predators. *Journal of Evolutionary Biology* 26: 1143-1150.
  24. Czirják G.Á., Pap P.L., Vágási C.I., Giraudeau M., Mureşan C., Mirleau P., Heeb P. (2013). Preen gland removal increases plumage bacterial load but not that of feather-degrading bacteria. *Naturwissenschaften* 100: 145-151.
  23. Pap P.L., Vágási C.I., Bărbos L., Marton A. (2013). Chronic coccidian infestation compromises flight feather quality in house sparrows *Passer domesticus*. *Biological Journal of the Linnean Society* 108: 414-428.
  22. Pap P.L., Adam C., Vágási C.I., Benkő Z., Vincze O. (2013). Sex ratio and sexual dimorphism of three lice species with contrasting prevalence parasitizing the house sparrow. *Journal of Parasitology* 99:24-30.
  21. Vágási C.I., Pap P.L., Vincze O., Benkő Z., Marton A., Barta Z. (2012). Haste Makes Waste but Condition Matters: Molt Rate-Feather Quality Trade-Off in a Sedentary Songbird. *PLoS ONE* 7: e40651.
  20. Galván I., Aguilera E., Atiénzar F., Barba E., Blanco G., Cantó J.L., Cortés V., Frías Ó., Kovács I., Meléndez L., Møller A.P., Monrós J.S., Pap P.L., Piculo R., Senar J.C., Serrano D., Tella J.L., Vágási C.I., Vögeli M., Jovani R. (2012). Feather mites and body condition of their avian hosts: a large correlative study. *Journal of Avian Biology* 43: 273-279.
  19. Marzal A., Ricklefs R.E., Valkiūnas G., Albayrak T., Arriero E., Bonneaud C., Czirják G.A., Ewen J., Hellgren O., Horakova D., Iezhova T.A., Jensen H., Križanauskienė A., Lima M.R., de Lope F., Magnussen E., Martin L.B., Møller A.P., Palinauskas V., Pap P.L., Pérez-Tris J., Sehgal R.N.M., Soler M., Szöllősi E., Westerdahl H., Zetindjiev P., Bensch S. (2011). Diversity, Loss, and Gain of Malaria Parasites in a Globally Invasive Bird. *PLoS ONE* 6: e21905.
  18. Pap P.L., Vágási C.I., Czirják G.Á., Titilincu A., Pintea A., Osváth G., Fülöp A., Barta Z. (2011). The effect of coccidians on the condition and immune profile of molting house sparrows (*Passer domesticus*). *The Auk* 128: 330–339.
  17. Vágási C.I., Pap P.L., Tökölyi J., Székely E., Barta Z. (2011). Correlates of variation in flight feather quality in the Great Tit *Parus major*. *Ardea* 99: 53–60.
  16. Vágási C.I., Pap P.L., Barta Z. (2010). Haste makes waste: Accelerated molt adversely affects the expression of melanin-based and depigmented plumage ornaments in house sparrows. *PLoS ONE* 5: e14215.
  15. Pap P.L., Vágási C.I., Osváth G., Mureşan C., Barta Z. (2010). Seasonality in the uropygial gland size and feather mite abundance in house sparrows: natural covariation and an experiment. *Journal of Avian Biology* 41: 653-661.
  14. Pap P.L., Czirják G.Á., Vágási C.I., Barta Z., Hasselquist D. (2010). Sexual dimorphism in immune function changes during the annual cycle in the house sparrows. *Naturwissenschaften* 97: 891-901.
  13. Pap P.L., Vágási C.I., Tökölyi J., Czirják G.Á., Barta Z. (2010). Variation in haematological indices and immune function during the annual cycle in the Great Tit *Parus major*. *Ardea* 98: 105-112.

12. Pap P.L., Vágási C.I., Czirják G.Á., Titilincu A., Pintea A., Barta Z. (2009). Carotenoids modulate the effect of coccidian infection on the condition and immune response in moulting house sparrows. *Journal of Experimental Biology* 212: 3228-3235.
11. Pap P.L., Vágási C.I., Czirják G.Á., Barta Z. (2008). Diet quality affects postnuptial molting and feather quality of the house sparrow (*Passer domesticus*): interaction with humoral immune function? *Canadian Journal of Zoology* 86: 834-842.
10. Pap P.L., Barta Z., Tökölyi J., Vágási C.I. (2007). Increase of feather quality during moult: a possible implication of feather deformities in the evolution of partial moult in the great tit. *Journal of Avian Biology* 38: 471-478.
9. Szép T., Møller A.P., Piper S., Nuttall R., Szabó D.Z., Pap P.L. (2007). Migratory connectivity in barn swallows and other hirundines. *Journal of Ornithology* 148: 257-260.
8. Stokke B.G., Hafstad I., Rudolfson G., Bargain B., Beier J., Campas D.B., Dyrce A., Honza M., Leisler B., Pap P.L., Patapavicius P., Prochazka P., Schulze-Hagen K., Thomas R., Moksnes A., Møller A.P., Røskaft E., Soler M. (2007). Host density predicts presence of cuckoo parasitism in reed warblers. *Oikos* 116: 913-922.
7. Møller A.P., Chabi Y., Cuervo J.J., de Lope F., Kilpimaa J., Kose M., Matyjasiak P., Pap P.L., Saino N., Sakraoui R., Schifferli L., von Hirschheydt J. (2006). An analysis of continent-wide patterns of sexual selection in a passerine bird. *Evolution* 60: 856-868.
6. Szép T., Møller A.P., Piper S., Nuttall R., Szabó Z.D., Pap P.L. (2006). Searching for potential wintering and migration areas of a Danish Barn Swallow population in South Africa by correlating NDVI with survival estimates. *Journal of Ornithology* 147: 245-253.
5. Pap P.L., Szép T., Tökölyi J., Piper S. (2006). Habitat preference, escape behavior and cues used by feather mites to avoid molting wing feathers. *Behavioral Ecology* 17: 277-284.
4. Pap P.L., Tökölyi J., Szép T. (2005). Host-symbiont relationship and abundance of feather mites in relation to age and body condition of the barn swallow (*Hirundo rustica*): an experimental study. *Canadian Journal of Zoology* 83: 1059-1066.
3. Pap P.L., Tökölyi J., Szép T. (2005). Frequency and consequences of feather holes in Barn Swallows *Hirundo rustica*. *Ibis* 146: 169-175.
2. Pap P.L., Márkus R. (2003). Cost of reproduction, T-lymphocyte mediated immunocompetence and health status in female and nestling Barn Swallows *Hirundo rustica*. *Journal of Avian Biology* 34: 428-434.
1. Pap P.L. (2002). Breeding time and sex-specific health status in the barn swallow (*Hirundo rustica*). *Canadian Journal of Zoology* 80: 2090-2099.

**(3) I was referee for the following international journals:** *Animal Behaviour*, *The Auk*, *Behavior Ecology and Sociobiology*, *Biological Journal of the Linnean Society*, *BMC Veterinary Research*, *Canadian Journal of Zoology*, *Comparative Biochemistry and Physiology*, *Evolutionary Ecology*, *Functional Ecology*, *Global Change Biology*, *Ibis*, *International Journal of Parasitology*, *Journal of Animal Ecology*, *Journal of Avian Biology*, *Journal of Experimental Biology*, *Journal of Zoology*, *Physiological and Biochemical Zoology*, *PlosOne*, *Polar Biology*.

### **Community service**

I am a member of the National Council for Attesting Titles, Diplomas and University Certificates (CNATDCU) of the Romanian Ministry of Education and Research since 2016.

Besides supervising PhD and habilitation theses, among the others, this council develops national criteria for academics (i.e. for PhD and habilitation, academic career).

I organized many environmental activities for cleaning, education and protection of wildlife.

### **Teaching**

For MSc students: Behavioural conservation biology (lectures and seminars), Methods in biological research (lectures)

For BSc students: Vertebrate zoology (lectures and labs), Ethology (lectures and seminars), Field practice in vertebrate zoology

Supervised students: In total 47 undergraduate and 16 MsC theses.