

Dr. Louise Cheynel

Current position : Postdoctoral Research Associate – LEHNA UMR 5023, Lyon 1 University, Villeurbanne, France.

University of Liverpool Honorary Association, UK.

Nationality: French - Age: 31.

Research interests:

wild immunology; host-microbe interactions; disease ecology; life-history; senescence.

Education & scientific experiences

- 2019/2022 Postdoctoral Research Associate (IVES, University of Liverpool, UK).**
Relationships between gut microbiome composition, health and immunity in natural populations of house mice. Collaboration with Prof. M. Viney and Prof. J. Hurst.
- 2016/2017 University Degree in *Evolutionary Biology and Medicine* (Lyon 1 University, France). Obtained with honours (rank : 1/9).**
Thesis: Allergic diseases and the Hygiene Hypothesis.
- 2016/2019 PhD in eco-physiology and evolutionary biology (Lyon 1 University, France).**
Age-specific relationships between immunity and life-history traits in a wild mammal, the roe deer. PhD defense : 14/12/2018.
Supervision: Dr. Lemaître, Prof. Gilot-Fromont, Dr. Gaillard & Dr. Rey. LBBE, UMR 5558.
- 2014/2015 MSc Degree (2nd year) in *Integrative physiology in extreme environments* (Lyon 1 University, France). Obtained with honours (rank: 1/12).**
The free radical theory of ageing: energetic metabolism and oxidative stress of the cave isopod *Proasellus*. Supervision: Dr. Mondy & Dr. Roussel. LEHNA, UMR 5023.
- 2013/2014 MSc (1st year) in *Animal and Human behaviour* (Rennes 1 University, France). Obtained with honours (rank: 6/97).** Are the sexual signals of the male tree frogs an indicator of their hunting capacities? Supervision: Dr. Mondy. LEHNA, UMR 5023.
- 2010/2013 BSc Degree in Physiology (Lyon 1 University, France).**

Collaborations

- ❖ **Prof. M. Viney & Prof J. Hurst** (University of Liverpool, UK): Gut microbiome of wild house mice.
- ❖ **Prof. E. Riley** (University of Edinburgh, UK): Immunogenetics and infection phenotypes in natural populations of house mice.
- ❖ **Dr. J.-F. Lemaître, Prof. E. Gilot-Fromont, Dr. J.-M. Gaillard & Dr. B. Rey** (University of Lyon, France): Immuno-ecology of roe deer.
- ❖ **Prof. D.H. Nussey** (University of Edinburgh, UK): Telomere dynamic in roe deer.
- ❖ **Prof. A. Cohen** (University of Sherbrooke, Quebec): Age-related physiological deregulation in roe deer.

Awards and grants

- ❖ Best Oral Communication Students' Award and Travel Fund grant for participation to the Conference of Animal Ecophysiology III, Strasbourg, France for the talk *Senescence, immune competence and telomere length in a wild mammal*. 06/11/2017 - 08/11/2017. 200€ + 300€.
- ❖ Registration and Travel Fund grant by Leverhulme Trust-funded Interdisciplinary Network on Diversity in Telomere Dynamics for participation to the Conference on Understanding diversity in telomere dynamics, Edinburgh, UK. 03/10/2017 - 05/10/2017. 500€.
- ❖ Registration and Travel Fund grant by Leverhulme Trust-funded Interdisciplinary Network on Diversity in Telomere Dynamics for participation to the Conference on Understanding diversity in telomere dynamics, Edinburgh, UK. 31/10/2016 -02/11/2016. 500€.
- ❖ PhD fellowship obtained in open competition from The French National Centre for Scientific Research (CNRS), France. 04/01/2016 - 03/01/2019. 65k€

Professional development

Since 2022 – **Communications representative position** in the Special Interest Group “Parasites and pathogens” of the British Ecological Society. In charge of the monthly newsletter.

2021 - Short-listed for two open-competition researcher permanent positions in ecology - for the French National Research Institute for Agriculture, Food and Environment (INRAE). Interview: 11/06/2021, Paris.

2020 - Workshop Amplicon sequence data for microbiomes. Annual meeting of the British Ecological Society (BES), online.

2019 - UK Home Office Personal Licensee Training (PIL) - rodent. Modules E1/L (Ethics and legislation) and PIL AB (Basic biology, animal handling and welfare). University of Liverpool, UK.

2018 - Co-supervision Master 1 student, G. Buffelan. Internship (3 months): Senescence in roe deer, exploratory study of thyroid hormones. Co-supervisor: Dr. Rey, UMR 5558, Lyon 1 University, France.

2017 - Course History of Science and epistemology, Lyon 1 University, France. (24h)

2016 - Diploma Animal Experimentation and Ethics. CNRS, Marseille, France.

2016 - Course Health, medicine and evolutionary biology, University of Burgundy, France. (27h).

Fieldwork experience and laboratory skills

Field work

2021 - **Leading fieldwork coordinator** for wild mice trapping and biological sampling (gut dissection, faeces) from 3 populations in the UK.

2016/2018 - **Fieldwork assistant** on two long-term monitoring programs of wild roe deer populations in France. January/March: captures and biological sampling (blood, faeces...). June: fawn tagging. November: reproductive success monitoring (telemetry). In collaboration with The French Biodiversity Agency (OFB).

2015 - **Fieldwork assistant** on an experimental project on cave isopods: captures (speleology), housing in laboratory, immunology and oxidative physiology.

2014 - **Fieldwork assistant** on an experimental project on tree frogs (*Hyla arborea*): captures, housing in laboratory, manipulation of hormonal status, behavioural tests.

Laboratory technics

- ✓ DNA extraction (leukocytes, bacteria), PCR.
- ✓ Assays: antibodies with ELISA, antioxidant enzymes, oxidative damages, plasma complement activity, immuno-fluorescence staining.
- ✓ Mouse gut dissections and preservation. Eye lenses dissection.
- ✓ Blood smear and microscopy (white blood cells identification).
- ✓ Bases: flow cytometry, respirometry (OROBOROS oxygraphy).

Scientific publications

- **L. Cheynel**, E. Gilot-Fromont, B. Rey, E. Quéméré, F. Débias, J. Duhayer, S. Pardonnet, M. Pellerin, J-M. Gaillard & J-F. Lemaître (2021). Maternal effects shape offspring physiological condition but do not senesce in a wild mammal. *Journal of Evolutionary Biology*, 34: 661-670.
- J-F. Lemaître, J. Carbillet, B. Rey, R. Palme, H. Froy, R.V. Wilbourn, S.L. Underwood, **L. Cheynel**, J-M. Gaillard, A.J.M. Hewison, H. Verheyden, F. Débias, J. Duhayer, C. Régis, S. Pardonnet, M. Pellerin, D.H. Nussey & E. Gilot-Fromont (2021). Short-term telomere dynamics is associated with glucocorticoid levels in wild populations of roe deer. *Comparative Biochemistry and Physiology Part A: Molecular & Integrative Physiology*, 252, 110836.
- J-F. Lemaître, **L. Cheynel**, M. Douhard, V. Ronget & J-M. Gaillard (2020) Trade-offs. In: Rattan, S.I.S. (Ed.), *Encyclopedia of Biomedical Gerontology*. Elsevier. vol. 3, Academic Press, pp. 367–375.
- **L. Cheynel**, F. Douhard, E. Gilot-Fromont, B. Rey, F. Débias, S. Pardonnet, J. Carbillet, H. Verheyden, A.J.M. Hewison, M. Pellerin, J-M. Gaillard & J-F. Lemaître (2019) Does body growth impair immune function in a large herbivore? *Oecologia*, DOI: 10.1007/s00442-018-4310-4.
- **L. Cheynel**, Thesis: Age-specific relationships between immunity and life-history traits in a wild mammal. *Ecology, environment*. Université de Lyon, 2018. English. (NNT : 2018LYSE1273).
- J-F. Lemaître, **L. Cheynel**, F. Douhard, G. Bourgoïn, F. Débias, H. Ferté, E. Gilot-Fromont, S. Pardonnet, M. Pellerin, B. Rey, C. Vanpé, M. Hewison & J-M. Gaillard (2018) The influence of early-life allocation to antlers on male performance during adulthood: evidence from contrasted population of a large herbivore. *Journal of Animal Ecology*, 87:921–932.
- **L. Cheynel**, J-F. Lemaître, J-M. Gaillard, B. Rey, G. Bourgoïn, H. Ferté, M. Jégo, F. Débias, M. Pellerin, L. Jacob & E. Gilot-Fromont (2017) Immunosenescence patterns differ between populations but not between sexes in a long-lived mammal. *Scientific Reports*, 7: 13700.
- R.V. Wilbourn, H. Froy, M.-C. McManus, **L. Cheynel**, J.-M. Gaillard, E. Gilot-Fromont, C. Régis, B. Rey, M. Pellerin, J.-F. Lemaître & D.H. Nussey (2017) Age-dependent associations between telomere length and environmental conditions in roe deer. *Biology Letters*, 13(9):20170434.

In review:

L. Cheynel, L. Lazarou, E. Riley & M. Viney. Immunogenetics and infection phenotype in natural populations of house mice. In review in *Molecular Ecology*.

Presentations in internationally established conferences

2021 - Annual meeting of the British Ecological Society (BES), Liverpool, UK. Poster: Immunogenetic variation and infection phenotypes in wild mouse populations. [L. Cheynel](#), E. Riley & M. Viney.

2020 - Annual meeting of the British Ecological Society (BES), online. Talk: The microbiome of wild mice, *Mus musculus domesticus*. M. Viney, [L. Cheynel](#) & J. Hurst.

2019 - Annual meeting of the LABEX ECOFECT, Lyon, France. Talk: Immune senescence in two populations of a wild mammal, the roe deer. [L. Cheynel](#), J.M. Gaillard, B. Rey, E. Gilot-Fromont & J.F. Lemaître.

2017 - Conference of Animal Ecophysiology III, Strasbourg, France. Talk: Senescence, immune competence and telomere length in a wild mammal. [L. Cheynel](#), R. Wilbourn, H. Froy, E. Gilot-Fromont, J.M. Gaillard, B. Rey, J.F. Lemaître & D. Nussey. **Price of best oral communication (200€). Travel grant obtained (300€).**

2017 - Conference *Understanding diversity in telomere dynamics*, Edinburgh, UK. Talk: Age-dependent associations between telomere length and environmental conditions in a wild mammal. [L. Cheynel](#), R. Wilbourn, H. Froy, M.C. McManus, E. Gilot-Fromont, J.M. Gaillard, B. Rey, J.F. Lemaître & D. Nussey. **Travel and accommodation grant obtained (500€).**

2017 - Annual meeting of the group *Réseau Ecologie des Interactions Durables (REID)*, Montpellier, France. Talk: Immuno-senescence patterns in two populations of a long-lived mammal. [L. Cheynel](#), J-F. Lemaître, J-M. Gaillard, B. Rey & E. Gilot-Fromont.

2017 - Annual meeting of the LABEX ECOFECT, Lyon, France. Poster: Patterns of immunosenescence differ between two contrasted populations of a long-lived mammal. [L. Cheynel](#), J-F. Lemaître, J-M. Gaillard, B. Rey, G. Bourgoïn, M. Pellerin & E. Gilot-Fromont.

2016 - Annual meeting of the British Ecological Society (BES), Liverpool, UK. Poster: Patterns of immunosenescence differ between two contrasted populations of a long-lived mammal. [L. Cheynel](#), J-F. Lemaître, J-M. Gaillard, B. Rey, G. Bourgoïn, M. Pellerin & E. Gilot-Fromont.

2016 - Conference *Understanding diversity in telomere dynamics*, Edinburgh, UK. Talk: Patterns of immunosenescence differ between two contrasted populations of a long-lived mammal. [L. Cheynel](#), E. Gilot-Fromont & J-F. Lemaître. **Travel and accommodation grant obtained (500€).**

2015 - Conference of Animal Ecophysiology, La Rochelle, France. Poster: The free radical theory of aging: energetic metabolism and oxidative stress of the cave isopod *Proasellus*. [L. Cheynel](#), C. Douady, T. Lefébure, C. Romestaing., A. Dumet, D. Roussel & N. Mondy.

Member of the British Ecological Society (since 2016) and the French Society for Ecology and Evolution (since 2019).