

Liste des publications PFIE 2023

Articles :

Arone C, Martial C, Burlaud-Gaillard J, **Thoulouze MI**, Roingeard P, Dutartre H, Muriaux D. HTLV-1 biofilm polarization maintained by tetraspanin CD82 is required for efficient viral transmission. *mBio*, 2023, 14 (6), 29 p. [10.1128/mbio.01326-23](https://doi.org/10.1128/mbio.01326-23). [hal-04417714](https://hal.archives-ouvertes.fr/hal-04417714)

Freddi L, Ferreira Vicente A, Petit E, Ribeiro M, Game Y, Locatelli Y, Jacques I, **Riou M**, Jay M, Garin-Bastuji B, Rossi S, Djokic V, Ponsart C. Evaluation of a Lateral Flow Immunochromatography Assay (LFIA) for Diagnosis and Surveillance of Brucellosis in French Alpine Ibex (*Capra ibex*). *Microorganisms*, 2023, 11 (8), pp.1976. doi: [10.3390/microorganisms11081976](https://doi.org/10.3390/microorganisms11081976). [hal-04175595](https://hal.archives-ouvertes.fr/hal-04175595)

León-Janampa N, Caballero-Posadas I, **Barc C**, Darrouzain F, Moreau A, Guinoiseau T, Gatault P, Fleuret I, **Riou M**, **Pinard A**, **Pezant J**, Rossignol C, Gaudy-Graffin C, Brand D, Marlet J. A pig model of chronic hepatitis E displaying persistent viremia and a downregulation of innate immune responses in the liver. *Hepatology Communications*, 2023, 7 (11), pp.e0274. [10.1097/HC9.0000000000000274](https://doi.org/10.1097/HC9.0000000000000274). [hal-04332121](https://hal.archives-ouvertes.fr/hal-04332121)

Nicolas M, **Faurie A**, **Girault M**, **Lavillatte S**, Menanteau P, **Chaumeil T**, **Riou M**, Velge P, Schouler C. In ovo administration of a phage cocktail partially prevents colibacillosis in chicks. *Poultry Science*, 2023, 102 (11), pp.102967. [10.1016/j.psj.2023.102967](https://doi.org/10.1016/j.psj.2023.102967). [hal-04205854](https://hal.archives-ouvertes.fr/hal-04205854)

Tomal F, Sadrin G, Gaboriaud P, **Guitton E**, Sedano L, Lallier N, Rossignol C, Larcher T, Rouille E, Ledevin M, Guabiraba R, Silvestre A, Lacroix-Lamandé S, Schouler C, Laurent L, Bussière FI. The caecal microbiota promotes the acute inflammatory response and the loss of the intestinal barrier integrity during severe *Eimeria tenella* infection. *Frontiers in Cellular and Infection Microbiology*, 2023, 13, [10.3389/fcimb.2023.1250080](https://doi.org/10.3389/fcimb.2023.1250080). [hal-04187670](https://hal.archives-ouvertes.fr/hal-04187670)

Thoulouze M-I, Catherine Inizan. Et si le SARS-CoV-2 se transmettait sous forme de biofilm viral ?. *Virologie*, 2023, 27 (6), pp.313-316. [10.1684/vir.2023.1027](https://doi.org/10.1684/vir.2023.1027). [hal-04429897](https://hal.archives-ouvertes.fr/hal-04429897)

Thoulouze M-I, Inizan C. What about a transmission of SARS-CoV-2 through a viral biofilm?. *Virologie*, 2023, 27 (6), pp.85-88. [10.1684/vir.2023.1029](https://doi.org/10.1684/vir.2023.1029). [hal-04431895](https://hal.archives-ouvertes.fr/hal-04431895)

Chapitres d'ouvrages : RAS

Matériel et méthodes :

Dascalu S, Preston SG, Dixon RJ, Flammer PG, Fiddaman S, Boyd A, Sealy JE, Sadeyen JR, Kaspers B, Velge P, Iqbal M, Bonsall MB, Smith AL. The influences of microbial colonisation and germ-free status on the chicken TCR β repertoire. *Front Immunol*. 2023 Jan 4;13:1052297. doi: [10.3389/fimmu.2022.1052297](https://doi.org/10.3389/fimmu.2022.1052297). PMID: [36685492](https://pubmed.ncbi.nlm.nih.gov/36685492/) [hal-03955969](https://hal.archives-ouvertes.fr/hal-03955969)
[Tissue samples (spleen, bursa of Fabricius, jejunum, caecum and colon) were derived from an in vivo study carried out at the **infectiology platform PFIE** (INRA, Val de Loire) in accordance with the national and international regulations specific to the research facility as part of the Development of Immune Function and Avian Gut Health (DIFAGH) consortium]

Lacroix-Lamandé S, Bernardi O, Pezier T, Barilleau E, Burlaud-Gaillard J, Gagneux A, Velge P, Wiedemann A. Differential Salmonella Typhimurium intracellular replication and host cell responses in caecal and ileal organoids derived from chicken. *Vet Res.* 2023 Jul 31;54(1):63. doi: [10.1186/s13567-023-01189-3](https://doi.org/10.1186/s13567-023-01189-3). PMID: [37525204](https://pubmed.ncbi.nlm.nih.gov/37525204/).

[*White Leghorn PA12 chickens from INRAE experimental unit PFIE (Centre Val de Loire, France) were used for intestinal crypt isolation*]

León-Janampa N, Caballero-Posadas I, **Barc C**, Darrouzain F, Moreau A, Guinoiseau T, Gatault P, Fleurot I, **Riou M**, **Pinard A**, **Pezant J**, Rossignol C, Gaudy-Graffin C, Brand D, Marlet J. A pig model of chronic hepatitis E displaying persistent viremia and a downregulation of innate immune responses in the liver. *Hepatology Communications*, 2023, 7 (11), pp.e0274. [10.1097/HC9.0000000000000274](https://doi.org/10.1097/HC9.0000000000000274). [hal-04332121](https://hal.archives-ouvertes.fr/hal-04332121)

[*Animal experiments were performed by the Platform for Experimentation on Infectious Diseases,[28] in accordance with directive 2010/63/EU, with the approval of the Loire Valley ethical review board (APAFIS#23191-201912061012471-v2, CEEA VdL, committee number 19).*]

Nicolas M, Trotreau A, Culot A, Moodley A, Atterbury R, Wagemans J, Lavigne R, Velge P, Schouler C. Isolation and Characterization of a Novel Phage Collection against Avian-Pathogenic Escherichia coli. *Microbiology Spectrum*, 2023, 11 (3), pp.e0429622. [10.1128/spectrum.04296-22](https://doi.org/10.1128/spectrum.04296-22) PMID: [37140373](https://pubmed.ncbi.nlm.nih.gov/37140373/) [hal-04167471](https://hal.archives-ouvertes.fr/hal-04167471)

[*On day 11, eggs (provided by the Infectiology of Farm, Model and Wildlife Animals Facility (PFIE) doi.org/10.15454/1.5572352821559333E12; member of the National Infrastructure EMERG'IN) were candled to eliminate infertile eggs and eggs with dead embryos.*]

Ribeiro E Silva A, Diallo MA, Sausset A, Robert T, Bach S, Bussière FI, Laurent F, Lacroix-Lamandé S, Silvestre A. Overexpression of Eimeria tenella Rhopty Kinase 2 Induces Early Production of Schizonts. *Microbiol Spectr.* 2023 Jun 1: e0013723. doi: [10.1128/spectrum.00137-23](https://doi.org/10.1128/spectrum.00137-23). Epub ahead of print. PMID: [37260371](https://pubmed.ncbi.nlm.nih.gov/37260371/). [hal-04168152](https://hal.archives-ouvertes.fr/hal-04168152)

[*All animal experiments were performed in the Infectiology of Farm, Model, and Wildlife Animals Facility (PFIE, Centre INRAE Val De Loire: <https://doi.org/10.15454/1.5572352821559333E12>, accessed on 25 July 2021; member of the National Infrastructure EMERG'IN).*]

Tomal F, Sadrin G, Gaboriaud P, Guitton E, Sedano L, Lallier N, Rossignol C, Larcher T, Rouille E, Ledevin M, Guabiraba R, Silvestre A, Lacroix-Lamandé S, Schouler C, Laurent L, Bussière FI. The caecal microbiota promotes the acute inflammatory response and the loss of the intestinal barrier integrity during severe Eimeria tenella infection. *Frontiers in Cellular and Infection Microbiology*, 2023, 13, doi: [10.3389/fcimb.2023.1250080](https://doi.org/10.3389/fcimb.2023.1250080). [hal-04187670](https://hal.archives-ouvertes.fr/hal-04187670)

[*Hatching and growth of conventional and germ-free Ross PM3 broilers were performed in the facility for Infection of Farm, Model and Wildlife Animals (PFIE, Centre INRAE Val De Loire: <https://doi.org/10.15454/1.5572352821559333E12>; member of the National Infrastructure EMERG'IN).*]

Tomal F, Sausset A, Le Vern Y, Sedano L, Techer C, Lacroix-Lamandé S, Laurent F, Silvestre A, Bussière FI. Microbiota promotes recruitment and pro-inflammatory response of caecal

macrophages during *E. tenella* infection. *Gut Pathogens*, 2023, 15 (1), pp.65. [10.1186/s13099-023-00591-8](https://doi.org/10.1186/s13099-023-00591-8). [hal-04416438](https://hal.archives-ouvertes.fr/hal-04416438)
[Conventional and GF Ross PM3 broilers were hatched in the Infectiology of Farm, Model and Wildlife Animals Facility (PFIE, Centre INRAE Val De Loire; <https://doi.org/https://doi.org/10.15454/1.5572352821559333E12>; member of the National Infrastructure EMERG'IN) as described in [19]].

Pasdeloup D, Chuard A, Rémy S, Courvoisier-Guyader K, Denesvre C. The pUL51 Tegument Protein Is Essential for Marek's Disease Virus Growth *In Vitro* and Bears a Function That Is Critical for Pathogenesis *In Vivo*. *J Virol*. 2023 May 31;97(5):e0024223. doi: [10.1128/jvi.00242-23](https://doi.org/10.1128/jvi.00242-23). PMID: [37154764](https://pubmed.ncbi.nlm.nih.gov/37154764/) [hal-04160330](https://hal.archives-ouvertes.fr/hal-04160330)
[Specific pathogen-free (SPF) and MDV maternal antibody-free White Leghorn chicks (B13/B13 haplotype) of 2 weeks of age were obtained from **INRAE animal facilities**.]

Remerciements :

Chylinski C., Cortet J., Cabaret J., Blanchard A. *Haemonchus contortus* Adopt Isolate–Specific Life History Strategies to Optimize Fitness and Overcome Obstacles in Their Environment: Experimental Evidence. *Animals*, 2023, 13 (11), pp.1759. [10.3390/ani13111759](https://doi.org/10.3390/ani13111759). [hal-04172380](https://hal.archives-ouvertes.fr/hal-04172380).
Authors would like to thank Thierry Chaumeil and the INRAE PFIE team for their assistance in managing the animals.

Freddi L, Ferreira Vicente A, Petit E, Ribeiro M, Game Y, Locatelli Y, Jacques I, Riou M, Jay M, Garin-Bastuji B, Rossi S, Djokic V, Ponsart C. Evaluation of a Lateral Flow Immunochromatography Assay (LFIA) for Diagnosis and Surveillance of Brucellosis in French Alpine Ibex (*Capra ibex*). *Microorganisms*, 2023, 11 (8), pp.1976. doi: [10.3390/microorganisms11081976](https://doi.org/10.3390/microorganisms11081976). [hal-04175595](https://hal.archives-ouvertes.fr/hal-04175595)
[The authors want to thank the technicians and researchers from ... INRAE (ISP + PFIE (<https://doi.org/10.15454/1.5572352821559333E12>, accessed on 3 July 2023) ... for their contribution to this study.]

León-Janampa N, Caballero-Posadas I, **Barc C**, Darrouzain F, Moreau A, Guinoiseau T, Gatault P, Fleurot I, **Riou M**, **Pinard A**, **Pezant J**, Rossignol C, Gaudy-Graffin C, Brand D, Marlet J. A pig model of chronic hepatitis E displaying persistent viremia and a downregulation of innate immune responses in the liver. *Hepatology Communications*, 2023, 7 (11), pp.e0274. [10.1097/HC9.0000000000000274](https://doi.org/10.1097/HC9.0000000000000274). [hal-04332121](https://hal.archives-ouvertes.fr/hal-04332121)
[The authors thank the members of the scientific and **animal house staff of the Platform for Experimentation on Infectious Diseases**, including the confinement team and the technical and contained facility management groups.]

Miclou M, Courtot É, Guégnard F, Lenhof O, Boudesocque-Delaye L, Matard-Mann M, Nyvall Collén P, Castagnone-Sereno P, Neveu C. The Brown Alga *Bifurcaria bifurcata* Presents an Anthelmintic Activity on All Developmental Stages of the Parasitic Nematode *Heligmosomoides polygyrus bakeri*. *Pathogens*. 2023 Mar 30;12 (4) : 540. doi: [10.3390/pathogens12040540](https://doi.org/10.3390/pathogens12040540). [hal-04129892](https://hal.archives-ouvertes.fr/hal-04129892)

*[We are also grateful to the **PFIE unit** of INRAE for providing the animals needed for the experiments.]*

Pasdeloup D, Chuard A, Rémy S, Courvoisier-Guyader K, Denesvre C. The pUL51 Tegument Protein Is Essential for Marek's Disease Virus Growth *In Vitro* and Bears a Function That Is Critical for Pathogenesis *In Vivo*. *J Virol.* 2023 May 31;97(5):e0024223. doi: [10.1128/jvi.00242-23](https://doi.org/10.1128/jvi.00242-23). PMID: [37154764](https://pubmed.ncbi.nlm.nih.gov/37154764/) [hal-04160330](https://hal.inrae.fr/hal-04160330)

*[All animal experiments were carried out at the Experimental Infectiology Facilities (PFIE) of INRAE (Nouzilly). We are grateful to **Sébastien Lavillate, Arnaud Faurie, and Mylène Girault** for their invaluable help with animal care and handling.]*

Rambault M, Gilbert FB, Roussel P, Tessier A, David V, Germon P, Winter N, Remot A. Neutrophils expressing major histocompatibility complex class II molecules circulate in blood and milk during mastitis and show high microbicidal activity. *J Dairy Sci.* 2023 Jun;106(6):4245-4256. doi: [10.3168/jds.2022-22728](https://doi.org/10.3168/jds.2022-22728). PMID: [37080786](https://pubmed.ncbi.nlm.nih.gov/37080786/). [hal-04167063](https://hal.inrae.fr/hal-04167063)

*[We also thank **Mickaël Riou** and **Noémie Perrot** (PFIE, INRAE, Nouzilly, France) for complete blood count.]*

Ribeiro E Silva A, Diallo MA, Sausset A, Robert T, Bach S, Bussière FI, Laurent F, Lacroix-Lamandé S, Silvestre A. Overexpression of Eimeria tenella Rhoptry Kinase 2 Induces Early Production of Schizonts. *Microbiol Spectr.* 2023 Jun 1: e0013723. doi: [10.1128/spectrum.00137-23](https://doi.org/10.1128/spectrum.00137-23). Epub ahead of print. PMID: [37260371](https://pubmed.ncbi.nlm.nih.gov/37260371/). [hal-04168152](https://hal.inrae.fr/hal-04168152)

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Tomal F, Sadrin G, Gaboriaud P, Guitton E, Sedano L, Lallier N, Rossignol C, Larcher T, Rouille E, Ledevin M, Guabiraba R, Silvestre A, Lacroix-Lamandé S, Schouler C, Laurent L, Bussière FI. The caecal microbiota promotes the acute inflammatory response and the loss of the intestinal barrier integrity during severe Eimeria tenella infection. *Frontiers in Cellular and Infection Microbiology*, 2023, 13, doi: [10.3389/fcimb.2023.1250080](https://doi.org/10.3389/fcimb.2023.1250080). [hal-04187670](https://hal.inrae.fr/hal-04187670)

*[We are grateful to all the employees of the facility for Infection of Farm, Model and Wildlife Animals (PFIE), for the animal care and skills with the animal experiments (**T. Chaumeil, M. Renouard, S. Lavillatte, P. Cousin, A. Faurie, O. Dubes, M. Girault**)]*

Tomal F, Sausset A, Le Vern Y, Sedano L, Techer C, Lacroix-Lamandé S, Laurent F, Silvestre A, Bussière FI. Microbiota promotes recruitment and pro-inflammatory response of caecal macrophages during E. tenella infection. *Gut Pathogens*, 2023, 15 (1), pp.65. [10.1186/s13099-023-00591-8](https://doi.org/10.1186/s13099-023-00591-8). [hal-04416438](https://hal.inrae.fr/hal-04416438)

*[We are grateful to all the employees of the facility for Infection of Farm, Model and Wildlife Animals (PFIE), for the animal care and skills with the animal experiments (**T. Chaumeil, M. Renouard, S. Lavillatte, P. Cousin, A. Faurie, O. Dubes and M. Girault**).]*

Communications orales :

Aminzadeh A, **Riou M**, Hilgers L, Platenburg PP, **Perrot N**, Rossignol C, Jorgensen R. Vaccine safety of a new toxoid-based vaccine against *Clostridioides difficile* infection in rabbits. 18. Congrès national de la SFM - Microbes 2023, Société Française de Microbiologie, Oct 2023, Rennes, France. ([hal-04225874](#))

Baillou A, **Chaumeil T**, **Barc C**, Le Vern Y, Sausset A, Pézier T, Schulthess J, Peltier-Pain Pauline, Laurent F, Lacroix-Lamandé S. Caractérisation des sous populations de phagocytes mononucléés intestinaux du jeune agneau à l'homéostasie et lors d'une infection à *Cryptosporidium parvum*. 1. Journées du Club d'Immunologie et Vaccinologie Vétérinaire, May 2023, Toulouse, France. ([hal-04165299](#))

Kasal-Hoc N, Baillou A, **Barc C**, Cognie J, **Pinard A**, **Pezant J**, Schulthess J, Peltier-Pain P, Lacroix-Lamandé S, Laurent F. Établissement d'un modèle d'anse intestinale chez l'agneau nouveau-né afin d'évaluer de nouvelles méthodes de lutte contre les maladies entériques et de réduire l'utilisation d'animaux de laboratoire. 47. Colloque de l'Association Française des Sciences et Techniques de l'Animal de Laboratoire (AFSTAL 2023) : La chirurgie de A à Z, AFSTAL. FRA., Jun 2023, Bordeaux, France. pp.138. ([hal-04171667](#))

Llach I, Caillat H, Fatet A, **Breton S**, Aguirre-Lavin T, Dubreuil D, Eymard A, Boucherot J, Fassier T, Marcon D, Parisot S, Durand C, Bonnafe G, Portes D, Morgan Davies C, Gonzalez Garcia E. Use of innovative and precision tools in research stations with small ruminants: the INRAE case. *74th Annual Meeting of the European Federation of Animal Science, EAAP*, Aug 2023, Lyon, France. ([hal-04195744](#))

Niepceron A. Un nouveau modèle d'étude des infections respiratoires à INRAE. *Rencontres France Futur Elevage 2023*, Institut Carnot France Futur Elevage, May 2023, Tours (FR), France. ([hal-04322849](#))

Sadrin G, Tomal F, Gaboriaud P, Sedano L, Larcher T, Ledevin M, Rossignol C, **Guillon E**, Le Vern Y, Sausset A, Guabiraba R, Lallier N, Lacroix-Lamandé S, Schouler C, Laurent F, Bussièrre FI. Physiopathology of *Eimeria tenella* infection and integrity of the intestinal barrier: influence of the microbiota. 13. International Coccidiosis Conference, Jun 2023, České Budějovice, Czech Republic. ([hal-04143368](#))

Posters :

Leon-Janampa N, Caballero-Posadas I, **Barc C**, Darrouzain F, Moreau A, Gatault P, Fleurot I, **Riou M**, **Pinard A**, **Pezant J**, Rossignol C, Gaudy-Graffin C, Brand D, Marlet J. An original immunocompromised pig model of chronic hepatitis E reveals a compartmentalization of Hepatitis E virus (HEV) genomes in the digestive tract. 8. European Congress of Virology (ECV), May 2023, Gdansk, Poland.

Rossignol C, **Kasal-Hoc N**, **Akay F**, **Cauty A**, **Mérat L**, **Lortscher E**, **Beaugé C**, Robert E, **Riou M**. Développement d'un modèle murin de plaies pseudo-chroniques et soins péri-opératoires associés à la gestion de la douleur. 47. Colloque de l'Association Française des Sciences et

Techniques de l'Animal de Laboratoire (AFSTAL 2023) : La chirurgie de A à Z, Jun 2023, Bordeaux, France. , 2023, 47e Colloque AFSTAL : La chirurgie de A à Z. <[hal-04171718](#)>

Rossignol C, Dozias S, **Kasal-Hoc N**, Charrier C, **Mérat L**, **Lortscher E**, **Beaugé C**, Pouvelse J-M, Robert E, **Riou M**. Evaluation des effets du traitement au plasma à froid sur le processus de cicatrisation des plaies pseudo-chroniques chez la souris : nouveau traitement alternatif aux antibiotiques. 18. Congrès national de la SFM - Microbes 2023, Oct 2023, Rennes, France. <[hal-04226077](#)>

Productions à destination de l'institut :

Niepceron A. Mise en place du modèle furet à INRAE. *INRAE - Lettre de la CNUE (Commission Nationale des Unités Expérimentales)*, 2023, 31, pp.5. <[hal-04322690](#)>

Productions à destination des professionnels : RAS