

## RESUME

BAPTESTE, Eric; ORCID: 0000-0003-1966-1215; Date of birth: 18/05/1978; Nationality: French

URL for web site: [www.evol-net.fr](http://www.evol-net.fr) // [https://twitter.com/aire\\_team](https://twitter.com/aire_team)

### • EDUCATION

2010 : **HDR (Highest academic degree in France, for PhD supervision)**, Sorbonne Université/France.

2007: **PhD in Philosophy of Biology (2nd)**/IHPST/Paris I- Panthéon Sorbonne Université/France.

2003–2007: **Post-doctoral fellow** in microbial evolution, Doolittle lab/Dalhousie University/Canada

2003: **PhD in Evolutionary Biology (1rst)**/Université Pierre et Marie Curie/ France.

### • CURRENT POSITION(S) & PREVIOUS POSITIONS

2015 – now **CNRS Research Director (DR2)** / UMR 7205 ‘Institute of Systematics, Evolution and Biodiversity’/ Sorbonne Université/France. **Group leader of the AIRE team** with P. Lopez.

2007 – 2015 **CNRS Researcher**/ UMR 7138 ‘Systematics, Adaptation & Evolution’/ Sorbonne Université/ France. Since 2009, **group leader of the AIRE team** with P. Lopez.

### • FELLOWSHIPS AND AWARDS AND SELECTED ESTEEMED INDICATORS

2023 **Associate Prof.** at the Dpt of microbiology and infectiology, Faculty of Medecine and Health Sciences, **Sherbrooke University**, Canada

January 2023 Invited **Plenary Speaker (main stage, live on TV)** at ‘**XII Congreso Futuro**’ (**Santiago, Chile**) (millions of viewers, and >30 000 attendees, 4<sup>th</sup> largest event of scientific diffusion in the world)

2022 **Grant ATM MNHN** “Major phylogenetic extension of evolutionary theories of ageing : first report of cellular ageing and rejuvenation in Archaea ” (Bapteste PI : 14 000 euros)

2021-2024 **Grant** ‘New tools, methods, and resources for aquatic symbioses’, **Gordon and Betty Moore Foundation** (\$749,000) to B. Llorente (PI) (Bapteste co-PI: \$118 000)

2021-2023 **Grant Émergence** from **Alliance Sorbonne Université**, ‘Evolutionary, systemic, and philosophical dimensions of ageing’ (55 000€, Bapteste: PI)

2020-2023 **CNRS funding** for the **Thematic Pluridisciplinary Network** ‘Epistemic impacts of microbiome studies’ (15 000 €, Bapteste: PI)

January 2019 Invited **Plenary Speaker (main stage, live on TV)**: ‘Evolution in the Web of Life’, at the ‘**VIII Futures Congress**’, (**Santiago, Chile**), most important open-access scientific event in Latin America, with Nobel Prizes (millions of viewers, and >30 000 attendees)

2014 – now **ERC Consolidator Investigator Grant** (PI, 1,2284,240 euros)

2009 – 2019 **CNRS Prime for Scientific Excellency (PES, competitive)**

2009 **Paoletti Prize** for outstanding research, <http://www.cnrs.fr/insb/recherche/prix-2009.htm>.

2002 **Jacques Lebbe Prize**, awarded by **French Society of Systematics**

My work is regularly featured in **internationally distributed, renowned media** (**Press**: *Le Monde* (04/2013, 04/2018), *Libération* (11/2015), *Pour la Science* (04/2016, 11/2016, 03/2018, 11/2020), *Mediapart* (2018), *Philosophie Magazine* (04/2016), *New Scientist* (01/2009,03/2011,11/2015,04/2019,06/2021); **Radio interviews**: *France Inter* (2013/2018), *RFI* (2013/2018), *France culture* (2014), *Radio Anthropocène* (2022), *Radio Cooperativa* (2023) (a major Chilean radio); **TV interviews**: in 2023, AVANCE 24 HORAS TVN; CNN Chile. Thanks to my **well-selling science books**, I was plenary speaker in **nationally renowned conferences**: with *Jean-Claude Ameisen* (2018), at the *Cité des Sciences* (2013, 2023), at the *Festival d’Astronomie de Fleurance*, opened by the French Minister of Research (2017). I also provide public talks and consulting activities for **big museums**: Centre Pompidou (2022), Palais de la Découverte (2023).

### • SUPERVISION OF GRADUATE STUDENTS AND POSTDOCTORAL FELLOWS SINCE 2008

2008-2023: (co)-supervision of **14 master/11 PhD/9 Postdoc** in evolutionary bioinformatics, except \*.

**Master**: 2008-2010: *B. Chaeib*/U. Pierre & Marie Curie/France; 2011: *T. Hujsa*/U. Paris 7/France; 2013:

*M. Grenie*/ENS Lyon/France; 2014: *M. Rouass*/U. Pierre & Marie Curie/France; 2016: *A. Danzon*/U.

Pierre & Marie Curie/France, *A. Jaffe*/Harvard/USA; 2018:*A. Lestage* & *L. Cavaud*/U. Pierre & Marie

Curie/France; 2020:*P. Martin*/U. Nantes/France; 2021: *D. Sussfeld* & *H. Bonnefous*/ENS Saclay/France;

2022: *A. Omarjee* & *Y. Dai*/U. Paris Cité/France; 2023-present: *M. Toucourou*/U. Paris-Est Créteil/France.

**PhD**: 2010-2013: *C. Bicep*/U. Pierre & Marie Curie/France; 2011-2014: *PA Jachiet*/U. Pierre & Marie

Curie/France; 2013-2016: *R. Méheust*/U. Pierre & Marie Curie/France; 2014-2017: *J. Pathmanathan*/U.

Pierre & Marie Curie/France; *C. Vigliotti*/MNHN/France; 2016-2019: *R. Lannès*/U. Pierre & Marie

Curie/France; 2019-2021: *F. Papale\**/U. Montréal/Canada (\*Philosophy of sciences); 2019-2022: *C.*

*Bernard*/U. Pierre & Marie Curie/France; 2021-present: *H. Bonnefous*/U. Pierre & Marie Curie/France, *D.*

*Sussfeld*/U. Evry Val d'Essonne /France; 2023-present: *Y. Dai*/U. Sherbrooke/Canada  
Postdoc: 2008-2009: *J. Leigh*/U. Pierre & Marie Curie/France; 2009-2011: *K. Schliep*/MNHN/France; 2011-2013: *S. Karkar*/U. Pierre & Marie Curie/France; 2014-2016: *E. Corel*/U. Pierre & Marie Curie/France; 2015-2017: *M. List\**/U. Pierre & Marie Curie/France (\*linguistics); 2016-2019: *A. Watson*/U. Pierre & Marie Curie/France; 2017-2018: *D. Zea*/U. Pierre & Marie Curie/France; 2017-2020: *G. Bernard*/U. Pierre & Marie Curie/France; 2018-2023: *J. Teulière*/U. Pierre & Marie Curie/France

- **TEACHING ACTIVITIES (only punctual: a CNRS researcher has no teaching activities)**

I have taught evolutionary microbiology *classes I created* (master level) at the Ecole Normale Supérieure, Paris, at U. Clermont-Ferrand, and in average in one different university outside France each year: Cortona, Santiago, Kaiserslautern, etc. I also created and taught PhD level classes on networks and evolution through the International Summer School on Networks and Evolution (Roscoff, France, 2016/2018/2019).

- **ORGANISATION OF SCIENTIFIC MEETINGS (see also the 2<sup>nd</sup> part of my CV)**

2014: Co-organizer with T. Dagan of a **Satellite Meeting SMBE**/Germany; 2014-2016: Organizer of the **EVOLUNET seminar series**/France; 2016: Organizer of the **1st international summer school on networks and evolution**/France; 2017: Organizer of the **International Symposium on network and evolution**/France; 2018: Organizer of the **2nd international summer school on networks and evolution**/France & Co-organizer of the **Conference 'Thinking Evolution'**/France; 2019: Organizer of the **1st colloquium on evolutionary networks**/France & of the **3rd international summer school on networks and evolution**/France; 2020: Organizer of the **2nd Networks and Evolution Conference**/France; 2021-2022: Organizer of the **New Challenges Induced by Microbiomes Colloquium, 1st, 2nd and 3rd editions**; 2022: Organizer of the **1st expanding evolutionary theories of ageing Colloquium**

- **SELECTED RESPONSIBILITIES & REVIEWING ACTIVITIES**

**Grant reviews for:** 2022: *the Israel Science Foundation (ISF)*, *the Irish Research Council (IRCLA)*, 2021: *the Canada Foundation for Innovation (CFI)*/ *John R. Evans Leaders Fund*; 2014: *the US-Israel Binational Science Foundation*, *the Programma Nazionale di Ricerche in Antartide* (Italy), 2013: *the Center for Advanced Study, Univ. of Illinois, USA*, 2010: *the US-Israel Binational Science Foundation*. **HDR review:** External for J. Filée (CNRS, 2023). **PhD reviews:** *External* for L. Pradier (U. Montpellier, Fr., 2022), S. Harzallah Debbabi (U. Jean-Moulin Lyon 3, Fr., 2018), V. Keshri, (U. Aix-Marseille, Fr., 2016 PhD rejected), O. Poirion (Ecole Centrale Lyon, Fr. 2014), E. Skippington (The University of Queensland, 2012), C.A Michael (Macquarie University, 2008), *Evaluator* for H. Gardon (U. Clermont Auvergne, Fr., 2022), *Committee member* for B. Churcheward (Université Nantes, Fr., 2021), M. Hénnart (Pasteur, Fr., 2021), M. Hénnart (Pasteur, Fr., 2020), R. Tignat-Perrier (Ecole Centrale Lyon, Fr., 2017), L. Urbini (Université de Lyon 1, Fr., 2015-2016). **Associate Editor:** (2021-): *Microbiology Research*, *the German Journal of Microbiology*, (2019-): *Microorganisms*, *Biology*, (2014- 2020): *Genome Biology & Evolution*, (2008-2020): *BMC Research Notes*, (2006-2016): *Biology Direct*. Moreover, I am a **regular reviewer for** *Genome*, *Trends in Genetics*, *PloS ONE*, *BioEssays*, *Genome Research*, *Proceedings of the National Academy of Sciences*, *Molecular Biology and Evolution*, *Journal of Molecular Evolution*, *Environmental Microbiology*, *The International Journal of Systematic and Evolutionary Microbiology*, *Nucleic Acid Research*, *Genome Biology and Evolution*, *BMC Bioinformatics*, etc.

- **MAJOR COLLABORATIONS**

*Network and statistics:* **M. Habib & L. Viennot** (University Paris Diderot, Fr.), **F.J. Lapointe** (U. Montréal, Canada), **P. Gambette** (U. Marne-la-Vallée, Fr.), **S. Chaffron & D. Eveillard** (U. Nantes, Fr.); *Microbial ecology and evolution:* **I. Ruiz-Trillo** (Barcelona, Spain), **D. Bhattacharya** (Rutgers, USA), **M. Krupovic** (Pasteur, France), **LP Haraoui** (U. Sherbrooke, Canada), **L. Hug** (U. Waterloo, Canada), **C. Larose** (Ecole Centrale Lyon, France), **F. Not** (Roscoff, Fr.), **J. McInerney** (Nottingham, UK); *Philosophy of biology:* **P. Huneman** (CNRS, France), **J. Dupré** (Exeter, UK), **F. Bouchard** (U. Montréal, Canada); *Ageing:* **A. Baudisch** (University of Southern Denmark, Denmark), **E. Teeling** (University College Dublin, Ireland), **W. Ludington** (Carnegie Science, USA), **C. Franceschi** (U. Bologna, Italy)

## Ten years track-record

### **1. Ten significant publications over the last 10 years (out of 52 articles since 2013; supervised students)**

In total, I have published **99** papers (25 as first author and 50 as last author, H-index: **43**, > **7273** citations).

-Alvarez-Ponce, Lopez, **Baptiste**, McInerney. (2013) Gene similarity networks provide tools for understanding eukaryote origins and evolution. **PNAS**. 110(17): E1594-603. [*New approach*]

-**Corel**, Lopez, **Méheust**, **Baptiste**. (2016) Network-Thinking: Graphs to Analyze Microbial Complexity and Evolution. **Trends Microbiol.** 24(3):224-37. [*Creative thinking*]

-**Méheust**, Zelzion, Bhattacharya, Lopez, **Bapteste**. (2016) Protein networks identify novel symbiogenetic genes resulting from plastid endosymbiosis. **PNAS**.113(13):3579-84. [*New phenomena*]

-**Méheust**, **Watson**, Lapointe, Papke, Lopez, **Bapteste**. (2018) Hundreds of novel composite genes and chimeric genes with bacterial origins contributed to haloarchaeal evolution. **Genome Biology**. 19(1):75. [5-year Impact Factor: 13.6] [*Creative thinking, new findings*]

-**Watson**, Habib, **Bapteste**. (2020) Phylosystemics: Merging Phylogenomics, Systems Biology, and Ecology to Study Evolution. **Trends Microbiol**. 28(3):176-190. [*Creative framework for evolutionary studies*]

-**Bernard**, Yanyan, Lopez, **Bapteste**. (2021) Beyond arbitrium: identification of a second communication system in Bacillus phage phi3T that may regulate host defense mechanisms. **ISME J**. 15(2):545-549. [Impact Factor in 2020: 11.217] [*Original analyses of microbial functions and evolution*]

-**Bernard**, **Teulière**, Lopez, Corel, Lapointe, **Bapteste**. (2022) Aging at Evolutionary Crossroads: Longitudinal Gene Co-expression Network Analyses of Proximal and Ultimate Causes of Aging in Bats. **Mol Biol Evol**. 39(1):msab302. [5-year Impact Factor: 14.387] [*Original transcriptomics network ageing studies*]

-**Ocaña-Pallarès**, (...), **Pathmanathan**, **Bapteste**, Tikhonenkov, Keeling, Szöllösi, Ruiz-Trillo. (2022) Divergent genomic trajectories predate the origin of animals and fungi. **Nature** 609, 747–753 (2022). [*Fruitful training of a visiting scientist, altmetric: top 1%*]

-**Teulière**, **Bernard**, Corel, Lapointe, Martens, Lopez, **Bapteste**. (2023) Network analyses unveil ageing-associated pathways evolutionarily conserved from fungi to animals. **Geroscience**. 45(2):1059-1080. [5-year Impact Factor:7.608][*Original phylosystemics analyses of ageing*]

-**Teulière**, **Bernard**, **Bonnefous**, Martens, Lopez, **Bapteste**. (2023) Interactomics: Dozens of Viruses, Co-evolving With Humans, Including the Influenza A Virus, may Actively Distort Human Aging. **Mol Biol Evol**.;40(2):msad012. [5-year Impact Factor: 14.387][*Original network studies of ageing; altmetric: top 5%*]

## **2. Research monographs**

**I published 5 single-author synthetic science books:** “*Les gènes voyageurs*”, Belin 2013; “*Conflits intérieurs*”, Ed. Matériologiques 2015; “*Tous entrelacés!*” Belin 2018; “*Tout se transforme! Comment marche l'évolution*”. Ed. Circonflexe 2022; “*Le monde surprenant des microbes*” Ed. Circonflexe 2022.

## **3. 10 selected invited presentations to internationally established conferences**

-01/2023 : **Plenary Speaker (main stage, live on TV)** at ‘**XII Congreso Futuro**’ (**Santiago, Chile**) (millions of viewers, and >30 000 attendees, including Nobel Prizes, 4<sup>th</sup> largest event of scientific diffusion in the world).  
 -01/2019: **Plenary Speaker (main stage, live on TV)** at the ‘**VIII Futures Congress**’ (**Santiago, Chile**)  
 -07/2019 : **Speaker** at ‘**the SMBE 2019 meeting**’, Manchester, UK.  
 -10/2018: **Speaker** at the **International IRIF workshop: 40 Years of Graphs and Algorithms**. Paris, France.  
 -08/2017: **Speaker** at the **15th International Congress of Protistology (ICOP 2017)**. Prague, Czech Republic.  
 -03/2016: **Speaker** at the **International BioPerspectives CNRS School**. Cargèse, France.  
 -10/2015: **Speaker** at **International workshop The Origin of metazoans**. Presqu'île de Giens; France.  
 -07/2015: **Speaker** at **The Phylogenetic Network Workshop**. Singapore  
 -07/2015: **Speaker** at the **International Symbiosis Society**. Lisboa, Portugal.  
 -08/2013: **Speaker** at the **10th International Phycological Congress**, Orlando, Florida, USA.

## **4. Selected organisations of international conferences**

2014 : Co-organizer of the **Satellite Meeting SMBE on Reticulated Microbial Evolution**/Germany (76 speakers and attendees) ; 2016-2019 : Organizer of the **1st, 2<sup>nd</sup> and 3<sup>rd</sup> editions of the international summer school on networks and evolution**/France (27 speakers, 36 selected early career researchers, hands-on sessions) ; 2018 : Co-organizer of the **Conference : ‘Penser l'évolution’**/France (20 speakers, 60 attendees) ; 2019-2020 : Organizer of the **1st and 2nd colloquium on evolutionary networks**/France (11 speakers, 90 attendees) ; 2021-2022 : Organizer of the **New Challenges Induced by Microbiomes Colloquium, 1st, 2<sup>nd</sup> and 3<sup>rd</sup> edition** (38 speakers, 270 attendees) – the 4<sup>th</sup> edition will occur in October 2023. ; 2022 : Organizer of the **1st (soon 2<sup>nd</sup>) expanding evolutionary theories of ageing Colloquium** (14 speakers, 70 attendees).

## **5. Prizes : 2009: Paoletti Price, prestigious award by the CNRS**

## **6. Major contributions to the carriers of 22 excellent researchers**

**In the past 10 years, I directly supervised/co-supervised: 1 visiting college student:** A. Jaffe (2016, 1 co-authored paper in Env. Micro), who next joined the **Banfield lab** (University of California, **Berkeley**, USA) for a PhD, **1 visiting PhD student:** Dr. E. Ocaña, who developed outlines and methods for a **Nature** article during his stay in my lab; **8 PhD students:** C. Bicep (2010-2013, 5 co-authored papers), who next joined the **Embley lab** (Newcastle University, UK) as postdoc; PA Jachiet (2011-2014), now **data-analyst in a private company**; J. Pathmanathan (2014-2017, 6 co-authored papers), who next joined the **Landweber lab** (**Columbia University**, USA) as postdoc and is now **data-analyst in a private company**; R. Méheust (2013-2016, 8 co-authored papers, including a PNAS), who next joined the **Banfield lab** (University of California, **Berkeley**, USA) as postdoc and is now **permanent CEA researcher**; C. Vigliotti (2014-2017), who next joined the **Institute of Cardiometabolism and Nutrition**, Clément lab, as postdoc and is now **Assistant Prof**

**at AgroParisTech;** R. Lannes (2016-2019), who next joined the **CRCT** (Toulouse, ONCOPOLE, France) as postdoc and is now **data scientist at the Whitehead Institute**; C. Bernard (12/2018-now, 1 book chapter, 2 co-authored papers), who next joined the **Dessimoz Lab (UNIL, Switzerland)** and is now with **E. Rocha at Pasteur** as postdoc; F. Papale (09/2018-now, 2 co-authored papers, a top co-authored paper in Trends in Micro), who then joined the **Doolittle lab (Dalhousie, Canada)** as postdoc. I also **supervised 6 post-doctoral fellows**: S. Karkar (2011-2013, 3 co-authored papers), who next joined the **Bhattacharya lab (Rutgers U., USA)** as postdoc and is now **Assistant Prof at Bordeaux University**; E. Corel (2014-2017, 4 co-authored papers), who is now **Assistant Professor at UPMC** in my team; A. Watson (2016-now, 7 co-authored papers), who next joined the **Errington lab** (Newcastle University, UK) as postdoc; G. Bernard (2017-04/2019, 2 co-authored papers), who next joined the **Bowler lab** (ENS, Paris); D. Zea (5 months in 2017/18), who become **permanent researcher at CONICET**, Argentina and is now **Assistant Professor at Paris Saclay**); J. Teulière (12/2018-now, 6 co-authored papers, top paper in Ageing Research Reviews); who is applying for Assistant professor position. I also hosted and co-supervised **1 research fellow** (Dr. M. List, 01/2015-12/2016, 5 co-authored papers, top paper in the Association of Computational Linguistics Conference, the 2<sup>nd</sup> best journal in linguistics), who **earned a highly competitive ERC starting grant**, became Group leader and **senior scientist at the Max Planck Institute**, Jena, Germany. In addition, **Dr. Lopez**, member of my former ERC team from 2014-2019 **earned the highly competitive permanent position of Full Professor at UPMC**.

### **7. Examples of innovation leadership :**

During the last 10 years, my **two PhD degrees** in Evolutionary Biology and in Philosophy of Sciences allow me i) to lead **original interdisciplinary researches** at the interface of evolutionary biology, bioinformatics, microbiology, ecology, graph theory, synthetic biology, human sciences and ageing, ii) to gather a powerful network of collaborators and iii) to develop tools and concepts for **network-thinking in evolutionary biology**. My work unveiled novel kinds of remodelled genes (S-genes, Chic-Genes and OR-genes) in prokaryotic and eukaryotic genomes (PMID: 29880023, 29534719, 34792602); the contribution of ultra-small marine microbes to the cycling of Carbon, Methane, Nitrogen and Sulfur (PMID: 30903144, 33325996); highly diverse quorum-sensing systems in CPR and DPANN (PMID: 33051376); the existence of phages and plasmids with multiple quorum-sensing systems (PMID: 33028977, PMID: 36929912); the evolution of robust genetic worlds despite gene transfers (PMID: 29346651); the existence of uncultured oceanic phyla closely related to Holozoa with potential to enlight the origins of animals (PMID: 32533833), etc. In vast majority, the masters, PhD and postdocs I trained during this time pursued a successful academic carrier. Recently, I geared my research to tackle the **evolution of ageing** from a network and microbial perspective, first using overheads from my ERC Consolidator grant, then by earning an Emergence grant (Sorbonne-University). I investigated the contribution of mitochondria to protist ageing (PMID: 33072737), introduced the original concept of age-distorters (PMID: 34082078), developed novel comparative methods of gene co-expression networks to unveil proximal and ultimate causes of ageing (PMID: 34662394), and predicted that cell division in microbes supports labor division with respect to ageing and rejuvenation (PMID: 32268207), earning an ATM grant to conduct experimental research on archaeal ageing. Based on these works, published in solid scientific journals, attracting some media attention (New Scientist, CurrentScienceDaily, Elementy.ru, Radio Cooperativa, TVN & CNN Chile), I gave international talks, started to organize international conferences on ageing, and new collaborations. I am also leader of a Thematic Pluridisciplinary Network funded by the CNRS, co-PI in an international research project funded by the Moore Foundation and provide my original expertise to a large Priority Research Program (PPR Océan et climat).