

Marc-André SELOSSE, né le 29 mars 1968, est professeur du Muséum national d'Histoire naturelle à Paris et aux universités de Gdansk (Pologne) et Kunming (Chine), où il dirige des équipes de recherche. Il a enseigné à Viçosa (Brésil) et est chargé de cours à l'Ecole Normale Supérieure, Science Po et aux Hautes Etudes Commerciales (HEC). Ses travaux portent sur l'écologie et l'évolution des associations à bénéfices mutuels (symbioses). Mycologue et botaniste, il travaille en particulier sur les symbioses mycorhiziennes qui unissent des champignons du sol aux racines des plantes. Président de BioGée, membre de l'Académie d'Agriculture de France et de l'Institut Universitaire de France, il est éditeur de quatre revues scientifiques internationales et de la revue de vulgarisation *Espèce*. Il a publié plus de 230 articles de recherche et 290 articles de vulgarisation, téléchargeables sur son site et une centaine de vidéos variées sont disponibles sous YouTube. Il a publié des ouvrages grand public notamment sur les microbiotes (*Jamais seul*, 2017), les tannins (*Les goûts et les couleurs du monde*, 2019) et le sol (*L'origine du Monde*, 2021), la place de l'homme dans la nature (*Nature et Préjugés*, 2024), ainsi que ses chroniques diffusées sur France-Inter (*Petites histoires naturelles*, 2021), chez Actes Sud. Il est co-auteur d'une bande dessinée sur le sol avec Mathieu Burniat (*Sous Terre*, 2021, Dargaud). Il a reçu le prix Homme-Nature de la Fondation Sommer 2020. Site web : <https://isyeb.mnhn.fr/en/directory/marc-andre-selosse-405>

Un curriculum-vitae détaillé en anglais se trouve à la suite.

Marc-André Selosse

Born March 29th 1968 in Paris; French; married.

Affiliations : **Professor at the Muséum national d'Histoire Naturelle**, UMR 7205,
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Head of the team *Interactions et Evolution Végétale et Fongique*.
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Professor at the University of Gdansk,
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University of Gdansk, Wita Stwosza 59, 80-308, Gdansk, Poland.
Head of the *Laboratory of Plant Symbiosis* (Faculty of Biology, Univ. of Gdansk).

Academic career and positions (more at https://fr.wikipedia.org/wiki/Marc-André_Selosse)

1988 - 90	BSc and MSc degrees at the Ecole Normale Supérieure (Paris), with honours
1991 - 93	ENGREF (French Institute of Forestry, Agricultural and Environmental Engineering).
1993 - 94	Military service as a scientist at the Centre de l'Energie Atomique.
1994 - 98	PhD, Univ. Paris XI (Population genetics of the mycorrhizal fungus <i>Laccaria bicolor</i>).
1998 - 2000	Research and teaching assistant at ENGREF.
2000 - 04	Maître de Conférences at the University Pierre & Marie Curie.
2002	Habilitation à Diriger des Recherches ; Univ. Paris XI.
2004 - 12	Full 2 nd and then 1 st class Professor at the University of Montpellier II.
2013 ->	Full 1 st class and then X-class Professor at the Muséum national d'Histoire Naturelle.
2015 - 18	Visiting Researcher at the University of Viçosa (MG, Brazil).
2015 ->	Professor at the University of Gdansk (Poland).
2019 ->	Visiting Professor at the University of Kunming (China).

Linguistic skills. French, German & English (fluent, written & spoken); I read Latin.

Decorations & honorific titles. Médaille de Vermeille by the Acad. of Agriculture (1999); Chevalier du Mérite Agricole (2017); Grand Price of the Rector of the University of Gdansk (2019); Prix Boucher-Dedieu de l'Académie des Sciences (2020); Prix Mange-Livre (for my 3rd book; 2020); Grand Prix Scientifique François Sommer (2020).

Main research activities. I work on mycorrhizae, a symbiosis linking plant roots and soil fungi. I use molecular biology (incl. transcriptomics), metabolomics, microbial ecology (barcoding), isotopic methods and *in situ* experiments. My main contributions to the fields of symbiosis and mycology are: (1) a model for evolutionary pressures on gene loss in organelles; (2) compelling evidence that plants exchange carbon underground by means of shared fungal symbionts (mycorrhizal networks); (3) the discovery that some green forest plants are partly heterotrophic (mixotrophy by recovering carbon from symbiotic fungi); (4) the discovery that the ecological niche of some fungi interacting with plants is larger than currently known, even for large guilds such as aquatic saprobic fungi or ectomycorrhizal fungi; (5) the discovery that some tropical non-green plants access dead soil organic matter by way of mycorrhizal fungi; (6) a partial elucidation of the truffle's life cycle and non-mycorrhizal, endophytic ecology; (7) a framework for the evolution of fungal symbioses of land plants over the last 400 Myrs; and (8) application of the 'interaction networks' theories to the mycorrhizal symbiosis.

Visibility of research for large audience. My works have been reported, on mixotrophy in *Nature* (2007, 449: 136), on mycorrhizal networks in *Science* (2004, 304: 1620), and on truffles in *PNAS* (2018, 115: 10188) and in *New Scientist* (2019, 3262: 73). My career was reviewed in *New Phytol.* (2015, 205: 32) and featured in *La Recherche* (2020, 561: 4). My book "*Jamais seul*" (2017) gave rise to >40 press articles or interviews and >30 radio broadcasts. My research on truffles was featured in a CNRS film available online (<https://lejournel.cnrs.fr/videos/lenigmatique-sexualite-de-la-truffe>).

Teaching. I teach >220 hours/year in all, at the Muséum and in other French and European universities, as well as in two 'Grandes Ecoles', ENS rue d'Ulm, Saclay and Lyon, as well as Science-Po Lille and EHESP. My teaching encompasses field and lecture courses in ecology, soil sciences, microbiology, and the evolution of symbiosis, at all university levels (esp. M and D). Abroad, I teach at the University of Gdansk, and in the PhD programme of the Gulbenkian Foundation in Lisbon (2013-17, general ecology, 24h. per year). I actively contribute to the writing of curricula for high schools (I was a member in the

2018-19 commission for new biology curricula for high schools). I supervised 24 MSc and 15 PhD theses (incl. 3 ongoing; 8 with permanent positions in research).

Disseminating science. Formerly organizer and/or member of the scientific council of 15 national and 26 international congresses. I devote time to outreach by means of articles (153), talks (>45/yr), presence in high schools, Internet material (incl. highly viewed *YouTube* videos, 145 items), radio interviews and broadcasts (*France-Inter* weekly, *RTL*), TV outreach shows (*E=M6*), and scientific direction of scientific films (5). Collaboration with many French outreach journals and newspapers. See books below.

Administration. Administration of the team *Interactions et Evolution Végétale et Fongique* (Muséum, UMR 7205; Paris; 20 people) and the *Laboratory of Plant Symbiosis* (Univ. of Gdansk; 15 people). Member of the Scientific Council of CNRS-INEE since 4 years. Former member of several *Commissions de Spécialistes* (section 67-68); member of recruitment and promotion commission (CSS3) of the IRD (2008-12). Scientific Council of LMI *Adaptation des Plantes et microorganismes associés aux Stress Environnementaux* in Dakar since 2011. Former member of the Unit Council of my lab (ISYEB, UMR 7205, 2014-18). Currently directing the M2 *Enseignement Agrégation SVT* (Univ. Saclay, ENS, MNHN) for the MNHN.

Editorships and memberships in academic organizations. **Editor** of *New Phytologist* (IF: 7.4), *Ecology Letters* (IF: 9.1), *Botany Letters* (IF: 1.7), *Symbiosis* (IF: 1.3) and *Espèces* (outreach, in French); guest Editor for a spec. issue of *Microbiome* (IF: 9.1) on 'Holobionts' (2018). Since 2005, **referee** for six European research agencies and 21 journals, incl. *Science*, *PLoS Biology*, and *Trends* journals. **Board member** of the *Internat. Society for Symbiosis* (since 2004) and the *Soc. Fr. d'Orchidophilie* (2016). **President of the Société botanique de France** in 2010-18 (now V-P.). Assoc. Member of the **Académie d'Agriculture** since 2017.

Main leaded grants: Leader of the 'Systruf' project on truffles (ANR + Région Languedoc-Roussillon; 3 500 k€, 2010-14); sponsorings (60 k€ in 2015-18); research on orchid heterotrophy (Fondation *Ars Cuttoli*, 70 k€ in 2016-17), and on mycorrhizae of epiphytic orchids (Fondation *Franklinia*, 60 k€ in 2016-17; Brazilian CNPq, 100 k€ in 2016-17 at Viçosa Univ.); on orchid transcriptomics and metabolomics (Orchidomics, Polish Centre for Science, 880 k€ in 2016-20); on Saudi-Arabi soil microbes (767 k€ in 2019-23); for restauration of the Paris herbarium on fungi (Fondation *Ars Cuttoli*, 70 k€ in 2020-21).

Publications - 220 research papers (10,150/17,649 citations, H=55/70, i10=176 in ISI/Google Scholar on Oct. 7th 2022), 46 book chapters, 14 forewords, >450 videos or content on the Internet, and >275 outreach papers. See full lists online at: <http://isyeb.mnhn.fr/fr/annuaire/marc-andre-selosse-404>

Ten major papers:

- M.-A. SELOSSE, G. SCAPPATICCI, A. FACCIO, P. BONFANTE, 2004. Chlorophyllous and achlorophyllous specimens of *Epipactis microphylla* (Neottieae, *Orchidaceae*) are associated with ectomycorrhizal septomycetes, including truffles. *Microbial Ecology* 47: 416-426.
- T. JULOU, B. BURGHARDT, G. GEBAUER, D. BERVILLER, C. DAMESIN, M.-A. SELOSSE, 2005. Mixotrophy in orchids: insights from a comparative study of green individuals and non-photosynthetic mutants of *Cephalanthera damasonium*. *New Phytologist* 166: 639-653.
- M.-A. SELOSSE, F. RICHARD, X. HE, S. SIMARD, 2006. Mycorrhizal networks: les liaisons dangereuses. *Trends in Ecology and Evolution* 11: 621-628.
- M.-A. SELOSSE, M. ROY, 2009. Green plants eating fungi: facts and questions about mixotrophy. *Trends in Plant Sciences* 14: 64-70.
- F. MARTOS, M. DULORMNE, T. PAILLER, P. BONFANTE, A. FACCIO, J. FOURNEL, M.-P. DUBOIS, M.-A. SELOSSE, 2009. Independent recruitment of saprotrophic fungi as mycorrhizal partners by tropical achlorophyllous orchids. *New Phytologist* 184: 668-681.
- M.-A. SELOSSE, F. ROUSSET, 2011. The plant-fungal marketplace. *Science* 333: 828-829.
- F. MARTOS, F. MUNOZ, I. KOTTKE, C. GONNEAU, M.-A. SELOSSE, 2012. The role of epiphytism in architecture and evolutionary constraint within mycorrhizal networks of tropical orchids. *Molecular Ecology* 21: 5098-5109.
- E. TASCHEN, F. ROUSSET, M. SAUVE, L. BENOIT, M.-P. DUBOIS, F. RICHARD, M.-A. SELOSSE, 2016. How the truffle got its mate: insights from genetic structure in spontaneous and managed Mediterranean populations of *Tuber melanosporum*. *Molecular Ecology* 25: 5611-5627.
- M.-A. SELOSSE, M. CHARPIN, F. NOT, 2017. Mixotrophy everywhere on land and water: the *grand écart* hypothesis. *Ecology Letters* 20: 246-263.
- F. LALLEMAND, M.-L. MARTIN-MAGNIETTE, F. GILARD, B. GAKIÈRE, A. AVON-LAUNAY, E. DELANNOY, M.-A. SELOSSE, 2019. *In situ* transcriptomic and metabolomic approach to the transition to the loss of photosynthesis in plants exploiting fungi. *The Plant Journal* 98: 826-841.

Five books:

2000. *La symbiose : structures et fonctions, rôle écologique et évolutif*. Vuibert, 154 p. Sold 6,000 times.
2017. *Jamais seul : ces microbes qui construisent les plantes, les animaux et les civilisations*. Actes Sud, 368 p. Sold 44,000 times; translated in Polish, Estonian and Korean in 2019, Chinese in 2023.
2019. *Les goûts et les couleurs du monde : une histoire naturelle des tannins, de l'écologie à la santé*. Actes Sud, 358 p. Sold 11,000 times; translated in Italian in 2022.
2021. *L'origine du monde. Une histoire naturelle du sol à l'attention de ceux qui le piétinent*. Actes Sud, Arles, 480 p. Sold 24,000 times.
2021. *Petites histoires naturelles. Chroniques de la Terre au Carré*. Actes Sud, Arles, 180 p. Sold 6,500 times
2024. *Nature et préjugés. Convier l'humanité dans l'histoire naturelle*. Actes Sud, Arles, 448 p. Sold 11,500 times