

ANIEK IVENS, PhD

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Evolutionary ecologist with a passion for all things cooperation. From the start of my PhD, I have independently developed and funded my multidisciplinary research, combining theory with empirical research. In my studies I have developed subterranean ant-trophobiont interactions into novel study systems for mutualism evolution and stability. Besides a seasoned scientist, I am also a passionate educator and science communicator with ample experience in academic and non-academic teaching and mentoring.

RESEARCH EXPERIENCE

- 2019 - **Strategic researcher Environmental Science, Milieu Centraal, Utrecht (0.74 fte)**
Topics: urban ecology, sustainable consumption, biodiversity, circular economy
- 2013 – 2018 **Postdoctoral fellow, The Rockefeller University (NYC) & VU Amsterdam**
Topic: mutualistic networks of ants, aphids and their microbiomes
Acquired personal funding: Niels Stensen Fellowship (2013), NWO Rubicon (2014), EU Marie Curie International Outgoing Fellowship (2015 – 2018) and two Rockefeller University Pilot Project grants (2014, 2015)
- 2013 **Postdoctoral researcher**
University of Groningen, Theoretical Biology. Advisor: Prof. Weissing
Project: Evolution of within- and between species cooperation
- 2006 **Field assistant Tropical Ecology**
Smithsonian Tropical Research Institute, Republic of Panama
Project: Evolutionary ecology of ant-fungus mutualism
- 2005 **Field assistant Behavioral Ecology**
Utah, USA, part of Evolutionary Genetics research (University of Groningen)
Project: Evolutionary ecology of oviposition in parasitoid wasps.

EDUCATION

- 2007 – 2012 **PhD Cum Laude**
University of Groningen, Theoretical Biology and
University of Copenhagen, Centre for Social Evolution (Denmark)
Thesis: The Evolutionary Ecology of Mutualism (theory and empirical research)
- 2004 – 2006 **Top-MSc Evolutionary Biology Cum Laude**
University of Groningen
- 2001 – 2004 **BSc Biology, specialized in Ecology Cum Laude**
Wageningen University and Research Centre (The Netherlands)

SELECT HONORS AND FUNDING (out of 22, 2004-2020. PI on all funding, 530,000+ € total)

- **2017** Rockefeller University nominee for Blavatnik Regional Awards for Young Scientists
- **2016** Award for 'Best talk' at Alan Alda Center for Communicating Science Boot Camp, Stony Brook University, NY, USA
- **2015** EU Marie Curie International Outgoing Fellowship for Career Development (~ 270,000 €)
- **2014** Pilot Project grant, Sackler Center for Biomedicine and Nutrition Research (~ 21,000 €)
- **2014** Rubicon Fellowship, Netherlands Organisation for Scientific Research (~ 128,000 €)
- **2014** Listed in VIVA400: 400 successful women in The Netherlands
- **2013** Audience 1st, jury 2nd prize in Van Swinderen dissertation prize competition (~ 2,100 €)

SELECT HONORS AND FUNDING (out of 22, 2004-2020) [continued]

- **2013** Honorary mention in dissertation prize competition of the Dutch Entomological Society
- **2013** Pilot Project grant, Iris and Junming Le Foundation and The Rockefeller University Center for Clinical and Translational Science (~ 17,000 €)
- **2013** Sponsored membership of the American Association for the Advancement of Science (*part of AAAS Program for Excellence in Science*)
- **2012** Niels Stensen Fellowship for Postdoctoral Research (~ 45,000 €)
- **2011** Field work travel grant, Uyttenboogaart-Eliassen Foundation (~ 2,000 €)
- **2008** Award for 'best talk', 14th European Meeting for PhD-Students in Evolutionary Biology (EMPSEB), CH
- **2007** Research grant, Nicolaas Mulerius Fund (~ 5,000 €)
- **2007** Pieter Langerhuizen Stipendium (~ 15,000 €; *awarded once every seven years in zoology*)
- **2006** Ubbo Emmius Fellowship, University of Groningen (~ 110,000 €)

ACADEMIC TEACHING AND MENTORING

- **2015 –** **Workshop leader 'Improv(e) your science communication'**, The Rockefeller University, Memorial Sloan Kettering Cancer Centre, Harvard University, University of Groningen, Gordon Research Conferences, VU Amsterdam
 - Skills for oral presentations and distilling messages
 - Undergraduate through faculty level, class sizes 6 – 20
- **2020** **Course coordinator and instructor, Fontys Hogeschool Tilburg (0.2 fte)**
 - Urban ecology and evolution, MSc architecture and urbanism
 - Lectures, field work, workshops, literature discussion, class size ~15
- **2018** **Guest lecturer 'Microbial Ecology and Evolution'**, Leiden University, NL
 - Evolution of microbial cooperation, undergraduate level, class size ~120
 - Lecture and discussion
- **2017, 2018** **Guest lecturer 'Microbial Ecology'**, Utrecht University, NL
 - Ecology of microbial cooperation, undergraduate level, class size ~50
 - Lecture and discussion
- **2014 – 2018** **Lecturer 'Social Evolution & Behavior'**, The Rockefeller University
 - On mutualism as cooperation between species, graduate level, class size 14 - 20
 - Lecture, workshops (field collecting, ant taxonomy, computer simulations), literature discussions
- **2016** **Guest lecturer 'Animal Behavior'**, Sarah Lawrence College
 - On conflict and cooperation in nature, undergraduate level, class size 25
 - Lecture and literature discussion
- **2015, 2016** **Supervisor of 1 BSc and 1 MSc student**, The Rockefeller University
 - Three- and two-month projects respectively
 - Field sampling, genetic barcoding experiments and analysis and reporting.
 - Both projects resulted in manuscripts (published or in preparation)
- 2008-2012** **Co-supervisor of 3 MSc and 1 BSc thesis projects**, University of Groningen
 - Three 6-month MSc research projects and a 2-month BSc literature thesis
 - All four projects focused on mutualism and ant biology
 - Methods: fieldwork, simulation studies, genotyping and literature review
- **2011** **Lecturer 'Theoretical Ecology and Evolution'**, University of Groningen
 - On ecology and evolution of mutualism, MSc level, class size 15
 - 5 day lecture series, literature discussions and student projects

ACADEMIC TEACHING AND MENTORING [continued]

- **2005** **Lab teacher 'Evolutionary Genetics Research'**, University of Groningen
 - Supervisor of 4-week student lab projects in Behavioral Ecology
 - Group of 3 undergraduate students
- **2003** **Lab teacher 'Introduction to Biology'**, Wageningen University
 - Supervisor of 8-week student literature project on current themes in Biology
 - Group of 8 first-year undergraduate students

OTHER PROFESSIONAL EXPERIENCE

- 2007 –** **Founder, coach and moderator at Academic Improv, Leiden, NL**
 - Communication workshops, moderating of conferences, personal coaching
 - From PhD courses to corporate team building (group size 1-30)
- 2018 – 2019** **Member advisory board Beta Bugs Ltd., London, UK**
Expert advisor for start-up company in insect culturing
- 2012** **Member of De Nationale DenkTank, Amsterdam, NL**
 - Research topic: sustainable food chains and the world food problem
 - This 5-month Dutch national think tank selects annually 20 promising young academics to develop applied solutions to a societal problem in a multi-disciplinary context.*

SELECT LEADERSHIP EXPERIENCE (out of 21, 2000-2020)

- **2020** Facilitator team day Research Data Office, University of Groningen, NL
- **2019** Facilitator Postdoc retreat Origins Center, NL
- **2019** Conference moderator at NWO Life2019, Bunnik, NL
- **2017** Symposium organizer 'Evolution across the mutualist-parasite continuum' at European Society for Evolutionary Biology (ESEB) meeting
- **2017** Invited workshop participant 'Responsible Leadership in Academia' at THINK, NL
- **2016-2017** Social Media Officer on the board of Know Science, *organization for science literacy*
- **2015-2016** Host of WISER (Women In SciencE at Rockefeller) round table discussions on career choices and advocacy of minorities in science with high-profile scientists
- **2013** Chair of SINNERS 2 (Social Insects iN the North-East RegionS) Organizing Committee. *This meeting hosts biannually ~40 participants*
- **2008-2009** President of the EMPSEB 15 Organizing Committee.
This meeting hosts annually >110 participants and plenary speakers

SEMINAR AND CONFERENCE PRESENTATIONS

Select invited presentations (out of 21, 2009-2020)

- **2019** *Best friends forever: understanding the nature of cooperation.* Seminar speaker, European Space Research and Technology Center (ESA ESTEC, Noordwijk, NL)
- **2018** *Knowing what to expect: reducing stress by partner specificity in an ant-trophobiont-mutualism symbiosis.* Invited speaker.
Gordon Research Conference on Microbial Stress Response (South Hadley, USA)
- **2017** *Evolutionary stability of symbiotic relationships.* Keynote speaker.
Resilience Seminar, Wageningen University and Research Centre (Wageningen, NL)
- **2017** *The evolutionary ecology of subterranean ant-aphid mutualism.* Plenary speaker.
10th International Symposium on Aphids (Nevsehir, TR)
- **2017** *Subterranean ant-trophobiont mutualism: from partnership to community effort.*
Seminar speaker, Harvard University (Cambridge, USA)

- **2016** *Best friends forever: a tale of ants, aphids and their interacting microbiomes*
Seminar speaker, New York University (New York, USA)

Select oral conference contributions (out of 28, 2007-2020)

- **2017** *A network approach to understanding mutualism*. Biology and Economics of Mutualism Workshop (Max Planck Institute for Evolutionary Biology) (Ploen, D)
- **2017** *Specificity in a multilevel mutualistic network of ants, trophobionts and their interacting microbiomes*. Gordon Research Seminar on Host-Microbe Symbiosis (West Dover, VT, USA)
- **2016** *Novel genetic characterization of a mutualistic community of ants, aphids, mealybugs, and their internal microbiomes*. New York Area Population Genomics Meeting (Princeton, USA)
- **2011** *The co-evolution between mutualism and condition-dependent emigration and immigration*
Mathematical Models in Ecology and Evolution (MMEE) Conference (Groningen, NL)

PEER REVIEWING ACTIVITY

- Review Editor on the Editorial Board of Social Evolution for *Frontiers in Ecology and Evolution*
- Referee for Research Foundation – Flanders (FWO) Postdoctoral Fellowship applications
- Referee for The Leverhulme Trust (UK) – Research Project Grant applications
- Referee for National Science Foundation (USA)
- Referee for German-Israeli scientific cooperation foundation (IL)
- Reviewed for: *Am. Nat.*, *Basic Appl. Ecol.*, *Beh. Ecol. Sociobiol.*, *Behav. Ecol.*, *Biol. J. Linnean Soc.*, *Bull. Entomol. Res.*, *Ecol. Res.*, *Evolution*, *Evol. Hum. Beh.*, *Entomol. Ber.*, *Fungal Ecol.*, *Insect. Cons. Div.*, *J. Appl. Microbiol.*, *Mol. Biol. Rep.*, *Mol. Ecol.*, *Myrm. News*, *Nat Plants*, *Naturwissenschaften*, *PLoS ONE*, *Proc. B*, *Sci. Rep.*, *Zool. Lett.*

For details <http://bit.ly/2eMaC42>

PUBLIC OUTREACH

- Frequent keynote lectures and classes for the general public (elementary-school through high-school level and adults, NL and USA, ongoing), including returning seminar speaker and story collider presenter in Rockefeller University's Lab Out Loud Lecture Series, annual guest teacher at The Masters School (Dobbs Ferry, USA, 2013-2017), public science lectures at the New York Public Library and GenSpace (New York), speaker at the InScience Film Festival (Nijmegen, NL), the annual OCLC contact day (Rotterdam, NL), MUMC+ symposium (Maastricht, NL), Biology on Tap (Leiden, NL) and scientist at 'Ask a Scientist'-shows at NEMO Science Museum.
- Frequent interviews in national Dutch broadcasting media, incl. portrayed scientist in popular science program *Labyrinth* (VPRO) and consulted ant expert in *Hoe?Zo! Radio* (NTR) and *Met Het Oog Op Morgen* (NOS)
- Frequent coverage by written popular science media, incl. magazines *Quest* and *Bionieuws*
- Available as popular science speaker via Know Science (USA), Speakers Academy® (NL) and despreker.nl
- Art and Science projects: *Dr. Aniek Discovers* (solo) and PIPORNOT (with artist Aricoco)
- Volunteer for Stichting Leve DNA!
- Active science and conference communication on Twitter @AniekIvens

LANGUAGES

Native: Dutch. **Fluent:** English. **Average:** German, French, Latin. **Basics:** Danish

LEAVES

2007: 6-month world travel, **2017-2018:** 6-month maternity leave

PUBLICATION LIST

International peer-reviewed publications

1. **Ivens, A.B.F.**, Gadau, A., Kiers, E.T., Kronauer, D.J.C. 2018. Can social partnerships influence the microbiome? Insights from ant farmers and their trophobiont mutualists. *Molecular Ecology*, 00:1–17
(Impact Factor=6.614, 8th of 50 Journals in Evolutionary Biology, 7 citations (12/01/2020))
2. **Ivens, A.B.F.***, von Beeren, C.*, Blüthgen, N, Kronauer D.J.C. 2016. Studying the complex communities of ants and their symbionts using ecological network analysis. *Annual Review of Entomology*, **61**, 353–371.
(Impact Factor=16.173, 1st of 98 Journals in Entomology, 26 citations (12/01/2020))
3. **Ivens, A.B.F.** 2015 Cooperation and conflict in ant (Hymenoptera: Formicidae) farming mutualisms – a review. *Myrmecological News*, 21, 19-36. (IF=2.386, cited 8x)
(Impact Factor=2.586, 11th of 98 Journals in Entomology, 15 citations (12/01/2020))
4. Werner, G.D.A., Strassmann, J.E., **Ivens, A.B.F.**, Engelmoer, D., Verbruggen, E., Queller, D., Noë, R., Hammerstein, P., Johnson, N.C., Kiers, E.T. 2014 Evolution of microbial markers. *Proceedings of the National Academy of Sciences of the United States of America*, 111, 1237–1244.
Cover story.
(Impact Factor=10.600, 7th of 69 Journals in Sciences, 132 citations (12/01/2020))
5. **Ivens, A.B.F.**, Kronauer, D.J.C., Pen, I., Weissing, F.J., Boomsma, J.J. 2012b Reproduction and dispersal in an ant-associated root aphid community. *Molecular Ecology*, 21, 4257-4269. (Impact Factor=6.614, 8th of 50 Journals in Evolutionary Biology, 8 citations (12/01/2020))
6. **Ivens, A.B.F.**, Kronauer D.J.C., Pen I, Weissing F.J., Boomsma J.J. 2012a Ants farm subterranean aphids mostly in single clone groups – an example of prudent husbandry for carbohydrates and proteins? *BMC Evolutionary Biology*, 12, 106.
(Impact Factor=3.559, 21th of 50 Journals in Evolutionary Biology, 21 citations (12/01/2020))
7. **Ivens, A.B.F.**, Kronauer, D.J.C., Boomsma, J.J. 2011 Characterisation and cross-amplification of polymorphic microsatellite loci in ant-associated root-aphids. *Conservation Genetics Resources*, 3, 73-77.
(Impact Factor=0.614, 40th of 59 Journals in Biodiversity Conservation, 3 citations (12/01/2020))
8. **Ivens, A.B.F.**, Nash, D.R., Poulsen, M., Boomsma, J.J. 2009b Caste-specific symbiont policing by workers of *Acromyrmex* fungus-growing ants. *Behavioral Ecology*, 20, 378-384.
(Impact Factor=3.226, 61th of 165 Journals in Ecology, 21 citations (12/01/2020))
9. **Ivens, A.B.F.**, Shuker, D.M., Beukeboom, L.W., Pen, I. 2009a Host acceptance and sex allocation of *Nasonia* wasps in response to conspecifics and heterospecifics. *Proceedings of the Royal Society B-Biological Sciences*, 276, 3663-3669.
(Impact Factor=5.386, 11th of 50 Journals in Evolutionary Biology, 18 citations (12/01/2020))

Other scientific publications

10. **Ivens, A.B.F.**, *The evolutionary ecology of mutualism*. PhD thesis. 2012, University of Groningen. ISBN 978-90-367-5828-4. **Download:** <http://bit.ly/2fhCC0l>
11. **Ivens, A.B.F.**, van de Sanden, M., Bakker, J. 2011 MLGsim 2.0: updated software for detecting clones from microsatellite data using a simulation approach. **Software download:** <https://bit.ly/2EAOaoo>

In preparation for publication

- a) **Ivens, A.B.F.**, Gadau, A., Kiers, E.T., Kronauer, D.J.C., Diversity and specificity in obligate ant-trophobiont mutualisms. (in preparation for *American Naturalist*)
- b) **Ivens, A.B.F.**, Kiers, E.T., Kronauer, D.J.C., Third party modulator species drive specificity in ant farming mutualism. (in preparation for *Evolution*)
- c) Rodríguez, N., von Beeren, C., Lukasik, P., Kronauer, D.J.C., Pinto, A., **Ivens, A.B.F.**, Gut microbiome communities in six sympatric tropical army ant species. (in preparation for *Proceedings of the Royal Society B-Biological Sciences*)
- d) **Ivens, A.B.F.**, Pen, I., Boomsma, J.J., Weissing, F.J., Mutualism on the move: can the joint evolution of cooperativeness and conditional dispersal promote stable interspecific cooperation? (in preparation for *Proceedings of the Royal Society B-Biological Sciences*)
- e) **Ivens, A.B.F.**, Boomsma, J.J., Pen, I., Weissing, F.J., Conditional dispersal can promote and hamper cooperation in unexpected ways. (in preparation for *Nature Communications*)

Publications aimed at the general audience

- **Ivens, A.B.F.** (2019) Allemaal zombies: manipulatie van mieren door parasieten. *Forum Formicarium*
- **Ivens, A.B.F.** (2018) A whole lot of zombies: parasitic manipulation in ants. *Myrmecological News Blog* <https://bit.ly/2zRCYoo>
- **Ivens, A.B.F.** (2018). Ondergrondse veehouderij door mieren: een model voor samenwerking in de natuur. *Forum Formicarium* 19 (1):11-15
- **Ivens, A.B.F.** (2016) Trouble at the farm: a new case of thief ants staling the gardens of fungus growing ants. *Insectes Sociaux* blog <http://bit.ly/2g86mKA>
- **Ivens, A.B.F.** (2015) Stronger together! *Centre for Soil Ecology Bodemcolumn* <https://soilecology.eu/en/stronger-together>
- De Groot, H. and **Ivens, A.B.F.** (2015) Fluorescerend konijn. In: *Onze tijd ~ Welke kunst raakt je?* Ed.: Schippers, T. and Klaassen, D.
- **Ivens, A.B.F.** (2014) Unravelling a mutualistic ant-homopteran-microbe network. *Barcode Bulletin*, 5(3), 14-15
- Additional written contributions for *NRC Handelsblad*, *Quest*, www.naturetoday.com, *Entomologische Berichten*, *Forum Formicarium* and ESEB outreach blog.

Metrics

Citations: 204 (Google Scholar), **h-index:** 7 (Google Scholar), 6 (Web of Science)

ResearchGate: http://www.researchgate.net/profile/Aniek_Ivens