Marco Colnaghi

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EMPLOYMENT

2023 – present	Postdoctoral research associate, Vrije Universiteit Amsterdam
2021 – 2023	Postdoctoral research fellow, University College London
2017 – 2021	Ph.D. candidate, University College London
2017 – 2021	Teaching assistant, University College London

EDUCATION

Jan 2022	Ph.D. 'Mathematical Biology and Complexity Science', University College London
Sep 2017	M.Res. 'Modelling Biological Complexity' (*distinction*), University College London
Sep 2016	M.Sc. 'Complex Systems Modelling' (*distinction*), King's College London
Mar 2015	B.Sc. 'Physics', University of Messina

PUBLICATIONS

M Colnaghi, PAM Van Lange, FP Santos, D Balliet (under consideration). *Power asymmetry destabilizes reciprocal cooperation in social dilemmas.*

M Colnaghi, N Lane, and A Pomiankowski (in preparation). *Muller's ratchet and its impact on genome architecture.*

M Colnaghi, PAM Van Lange, FP Santos, D Balliet (2023). *Adaptations to infer fitness interdependence promote the evolution of cooperation*. PNAS, 120(50), e2312242120.

R Palmeira, M Colnaghi, SA Harrison, N Lane, and A Pomiankowski (2022). *The limits of metabolic heredity in protocells*. Proc Royal Soc B, 9;289(1986):20221469.

M Colnaghi, N Lane, and A Pomiankowski (2022). *Repeat sequences limit the effectiveness of LGT and favoured the*

evolution of meiotic sex in early eukaryotes. PNAS, 119(35):e2205041119.

M Foti, MT Spena, V Fisichella, A Mascetti, M Colnaghi, M Grasso, and R Grasso (2022). *Cultivable bacteria associated with the microbiota of troglophile bats*. Animals, 12(19):2684

M Colnaghi, A Pomiankowski, and N Lane (2021). *The need for high-quality oocyte mitochondria at extremeploidy dictates mammalian germline development*. eLife, 10:e69344.

M Colnaghi, N Lane, and A Pomiankowski (2020). *Genome expansion in early eukaryotes drove the transition from lateral gene transfer to meiotic sex*. eLife, 9:e58873.

M Foti, R Grasso, V Fisichella, A Mascetti, MA Zafarana, M Colnaghi, M Grasso, and MT Spena (2020). *Analysis of Eurasian Stone curlew (Burhinus oedicnemus) microbial flora reveals the presence of multi-drug resistant pathogens in agro-pastoral areas of Sicily (Italy)*. Heliyon, 6(10):e05401.

MT Spena, M Foti, V Fisichella, A Mascetti, MA Zafarana, M Colnaghi, M Grasso, C Piraino, F Sciurba and R Grasso (2020). *Physiological and potentially pathogenic microbial flora in stone curlew (Burhinus oedicnemus), Southeastern Sicily*. Journal of Wildlife and Biodiversity, 4(3):24-36.

PRESENTATIONS AND CONFERENCES

M Colnaghi (2024), Interdependence and cultural evolution: a game theoretical approach. Cooperation is not WEIRD – Cross-cultural methods and insights, Amsterdam, the Netherlands.

M Colnaghi (2024), How interdependence shapes the evolution of cooperation. Cooperation Colloquia (online).

M Colnaghi (2023), Interdependence and cooperation: a mathematical modelling approach. Cognition, Behavior, and Evolution Network (CBEN), Utrecht, the Netherlands.

M Colnaghi (2023), Interdependence and the evolution of human cooperation. Invited talk, Socially Intelligent Artificial Systems group, University of Amsterdam, the Netherlands.

M Colnaghi (2022), The evolution of meiosis from eukaryogenesis. European Society for Evolutionary Biology (ESEB) ’22, Prague, Czech Republic.

M Colnaghi (2022), Meiotic sex: the road to genomic integrity in ancestral eukaryotes. SMBE Satellite Meeting, Lisbon, Portugal.

M Colnaghi (2021), The impact of deleterious mutations on the transition to meiotic sex. Public Viva, University College London, London, United Kingdom.

M Colnaghi (2021) The origins of meiotic sex on the road to eukaryogenesis. Netherlands Society for Evolutionary Biology (NLSEB) ’21 (online).

M Colnaghi (2020), The evolutionary origins of meiotic sex. Centre for Life’s Origins and Evolution (CLOE) Symposium, London, United Kingdom.

M Colnaghi (2020), To be or not to be sexual: from LGT to the origins of sex. Genetics, Evolution and Environment Seminar Series, University College London, London, United Kingdom.

M Colnaghi (2019), The failure of lateral gene transfer led to the origins of sex. Evolutionary Biology Meeting Marseille, Marseille, France.

M Colnaghi (2019), Bacterial genome size determines the conservative benefits of LGT. Genetics, Evolution and Environment Symposium, University College London, London, United Kingdom.

M Colnaghi (2018), Quality and quantity: selection over mitochondrial genomes determines female germline development. Models in Population Dynamics, Ecology, and Evolution (MPDEE) ’18. Manchester, United Kingdom.

M Colnaghi (2017), Variance and selection of mitochondria in the female germline. Genetics, Evolution and Environment Symposium, University College London, London, United Kingdom [best talk award].

M Colnaghi (2016), Mitochondrial dynamics during female germline development. CoMPLEX Graduate Symposium, University College London, London, United Kingdom.

TEACHING

Guest Lecturer (UCL)	Quantitative Biology (BSc, 2018)
Teaching Assistant (UCL)	Quantitative Biology (BSc, 2017–2020) Introduction to Genetics (BSc, 2018–2019) Methods in Ecology and Evolution (BSc, 2018–2020) Sex, Genes, and Evolution (BSc, 2017–2021) Introduction to MATLAB programming (MSc, 2017–2018) Quantitative Methods (BA, 2020–2021)
Seminar Instructor (UCL)	Computational Systems Biology Summer School (BSc, MSc, 2021) Dynamical Biological Systems (MSc, 2019–2020)
Supervision	2 Ph.D. candidates, 1 M.Res. thesis, 4 research internships/summer projects (6-8 weeks).

FURTHER TRAINING

2019	Advanced topics in Machine Learning, University College London, United Kingdom
2019	Deep Learning Onramp, MathWorks (online).
2018	Philosophy of Science workshop, University College London, United Kingdom
2017	Research and Integrity workshop, University College London, United Kingdom
2018	Teaching Associate Programme, Institute of Education, United Kingdom
2017	Arena Gateway workshop, Institute of Education, United Kingdom
2015	'Complex Systems Modelling' Summer School, University of Catania, Italy
2014	Research Internship, Department of Physics, University of Messina, Italy

FELLOWSHIPS AND AWARDS

2018	Associate Fellowship, Higher Education Academy UK
2017–2021	Ph.D. scholarship, University College London (£17,400/yr.)
2017	Travel grant, University College London (£700)
2016–2017	M.Sc. scholarship, University College London (£17,400)

SKILLS

Programming languages

MATLAB, Python, R, Fortran

Languages

Italian (native speaker)
English (near-native)
Dutch (intermediate)
Spanish (basic)
French (basic)
Latin (written)
Ancient Greek (written)