CHIARA VILLA

University of St Andrews ⋄ PhD ⋄ Mathematical Biology

Email	cv23@st-andrews.ac.uk
Website	https://chiaravilla.github.io/website/index.html
Languages	Italian, English, French
Programming	MATLAB, Python, LaTeX, Fortran90, COMSOL, Maple, R, HTML5

EDUCATION

09/18 - 03/22	**Phd, Mathematics**, *University of St Andrews*, St Andrews (UK) Supervisors: Prof Mark Chaplain, Dr Tommaso Lorenzi Funding awarded by the School of Mathematics and Statistics (£49124.25)
2014 - 2018	**MMaths, Applied Mathematics**, *University of St Andrews*, St Andrews (UK) Fast Track, First Class Honours awarded. Academic Prizes: Dean's list (2014-2018), The Principal's Scholarship for Academic Excellence (£1000)
Summer 2017	Undergraduate Summer Research Internship (*University of St Andrews*)
Summer 2016	Complex Systems Biology Research Internship (*Università degli Studi di Torino*)

RESEARCH INTERESTS AND PUBLICATIONS

I am interested in mathematical modelling of cell populations to study problems in development (vasculogenesis) and cancer (intratumour phenotypic heterogeneity). I have been focussing on continuous, deterministic models of time- and space-dependent population dynamics. These models comprise systems of nonlinear, nonlocal partial differential equations, pose interesting analytical and numerical challenges, and complement experimental research by providing a theoretical framework for *in silico* investigations.

Journal articles and conference proceedings

6. F. Mottes, C. Villa, M. Osella, M. Caselle, The impact of whole genome duplications on the human gene regulatory networks, PLoS Computational Biology 17(12): e1009638, 2021

5. C. Villa, A. Gerisch, M.A.J. Chaplain, A novel nonlocal partial differential equation model of endothelial progenitor cell cluster formation during the early stages of vasculogenesis, Journal of Theoretical Biology, 110963, 2021

4. C. Villa, M.A.J. Chaplain, A. Gerisch, T. Lorenzi, Mechanical models of pattern and form in biological tissues: the role of stress-strain constitutive equations, *Bulletin of Mathematical Biology*, 83:80, 2021

3. C. Villa, M.A.J. Chaplain, T. Lorenzi, Evolutionary dynamics in vascularised tumours under chemotherapy: Mathematical modelling, asymptotic analysis and numerical simulations, *Vietnam Journal of Mathematics*, 49, 143–167, 2021

2. C. Villa, M.A.J. Chaplain, T. Lorenzi, Modelling phenotypic heterogeneity in vascularised tumours, *SIAM Journal on Applied Mathematics*, 81, 434–453, 2021

1. T. Lorenzi, F.R. Macfarlane, C. Villa, Discrete and continuum models for the evolutionary and spatial dynamics of cancer: a very short introduction through two case studies, (pp. 359-380) in *Trends in Biomathematics: Modeling Cells, Flows, Epidemics, and the Environment*, Ed. R. Mondaini, Springer, Cham, 2019

PROFESSIONAL RESPONSIBILITIES AND OUTREACH

**School of Mathematics and Statistics, University of St Andrews*

09/20 - today	**StAMBio seminars organiser***, Weekly talks by internal and guest speakers, online
09/18 - today	**Mentor in Peer Mentoring scheme*** of 4 Undergraduate, 3 Master, 1 PhD students
03/21 - 04/21	**Journal Peer Reviewer**, *Frontiers in Ecology and Evolution*
11/20	**Piscopia Society***, PhD testimonial to promote equality and diversity in STEM
09/18 - 09/19	**PGR Rep & PGR Exec Rep***, **UoSA Student Rep**, *SMSTC*
11/18	**Outreach event organiser***, 'MT234 Research and Party'

SELECTED CONFERENCES, WORKSHOPS AND FORUMS

Selected meetings in which I presented my research in the form of a talk/poster (talk details on my website)

Jan-Mar 2022	**Mathematical modeling of organization in living matter** Thematic trimester program at Institut Henri Poincaré (IHP), Paris, Financial support awarded by IHP (€4500)
Jun 2021	**SoftMech Workshop** *University of St Andrews*, Online
May 2021	**Mathematical Biology on the Mediterranean Coast (Invited speaker)** *Sorbonne University (LJLL)*, Online
Apr 2021	**Mathematical Population Dynamics, Ecology and Evolution** *CIRM*, Online
Aug 2020	**Society for Mathematical Biology** Online conference, Awarded SMBdevBio Poster Prize 1 ($250)
Jun 2020	**Interplay between Oncology, Mathematics and Numerics (Invited speaker)** *Sorbonne University (LJLL), Inserm, University of Poitiers*, Online conference
Dec 2019	**Scottish Mathematical Biology Forum (Invited speaker)** *Maxwell Institute for Mathematical Sciences*, Edinburgh
May 2019	**EMS Postgraduate Meeting** *Edinburgh Mathematical Society*, The Burn House, Edzell
May 2019	**Research School: PDEs in Mathematical Biology: Modelling and Analysis** *London Mathematical Society & Clay Mathematics Institute*, ICMS, Edinburgh
Apr 2019	**British Applied Mathematics Colloquium** *University of Bath*, Bath

Other conferences and yearly recurrent meetings attended.

Oct 2021	**Mathematics Challenges in Biology and Medicine** *Politecnico di Torino*, Torino
Apr 2021	**British Applied Mathematics Colloquium** *University of Glasgow*, Online
2019-2021	**Postgraduate Interdisciplinary Mathematics Symposium (2020 Organiser)** *School of Mathematics and Statistics*, The Burn House, Edzell (Online in 2021)
2019-2021	**School of Mathematics and Statistics Research Day** *School of Mathematics and Statistics*, St Andrews (Online in 2021)
Aug 2020	**S12th European Conference on Mathematical and Theoretical Biology (Minisymposium invited speaker)** *SMB & ESMTB*, Cancelled due to COVID-19, LMS ECR Travel Grant awarded (£500)
Nov 2019	**Modeling, analysis and simulation** – 50 years of Laboratoire Jacques-Louis Lions *Sorbonne University*, Paris

TEACHING

All available student feedback data is included and reported on a scale of 1 (excellent) to 5 (poor) in the categories of Explanation (E), Organisation (O) and Availability (A).

Autumn 2020	**MT2000 Computing Workshop**, *Demonstrator, University of St Andrews*
Autumn 2019	**MT2000 Computing Workshop**, *Demonstrator, University of St Andrews*
Autumn 2019	**MT2501 Linear Mathematics**, *Tutor, University of St Andrews* E=1.44, O=1.33, A=1.33
Spring 2019	**MT2507 Mathematical Modelling**, *Tutor/Demonstrator, University of St Andrews* E=1.45, O=1.85, A=1.45
Autumn 2018	**MT2503 Multivariate Calculus**, *Tutor, University of St Andrews* E=1.17, O=1.5, A=1.17