Prof. Dr. Anna Marciniak-Czochra

Head of the research group:
Applied Analysis and Modelling in Biosciences
Director of the
Institute for Applied Mathematics

Institute of Applied Mathematics
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Personal Data
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Date and Place of Birth: 11/03/1974, Lublin, Poland
Children: Lukasz Czochra (born 2000)

Education
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Habilitation in Mathematics (with honors)   20/12/2011, University of Wroclaw
PhD in Mathematics   12/01/2004, Heidelberg University
MS in Mathematics   22/06/1998, University of Warsaw

Academic Vita
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Since 2011	Full Professor of Applied Mathematics (W3) at the Faculty of Mathematics and Computer Sciences, Heidelberg University.
2011/2012	Visiting Professor (professeur de 1ere classe, 1 month visit), Department of Mathematics, University Claude Bernard Lyon 1, France.
2008–2011	Independent Research Group Leader (ERC Starting Grant and Emmy-Noether- Group), IWR and BIOQUANT, Heidelberg University.
10-11/2008	Visiting Faculty Member at Mathematical Bioscience Institute, Columbus Ohio.
2007–2008	Project leader, Heidelberg Academy of Sciences and Humanities (WIN Kolleg).
2004–2007	Postdoctoral project leader, Center for Modeling and Simulation in Biosciences (BIOMS), IWR, Heidelberg University.
02-07/2004	PostDoc of the International Graduate College "Complex Processes: Modelling, Simulation and Optimisation", IWR, Heidelberg University.
1999–2004	PhD training in Mathematics (supervisor: Prof.Dr. Dr. mult. h.c. Willi Jäger), Heidelberg University.

01/2000–09/2000	Maternity leave.
1993–1998	Undergraduate studies in Mathematics, Faculty of Mathematics, Informatics and Mechanics, University of Warsaw, Poland.

Coordinating functions
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Since 2016	Director of the Institute of Applied Mathematics, Heidelberg University
Since 2016	Member of the Organising Committee of the Year of Mathematical Biology 2018 (EMS/ESMTB) http://www.euro-math-soc.eu/year-mathematical-biology-2018
Since 2016	Member of the Scientific Committee of the 2018 ESMTB Conference in Lisbon.
Since 2016	Coordinator of the Research Training Group "Mathematical Modeling for the Quantitative Biosciences" (MMQB)
Since 2014	Member of the Board of European Society for Mathematical and Theoretical Biology (ESMTB).
Since 2014	Member of the Executive Board of the Heidelberg Graduate School (HGS).
Since 2014	Member of the Research Council of interdisciplinary Field of Focus "Structure and pattern formation in the material world" in the framework of Excellence Initiative, Heidelberg University.
2013–2017	Member of the Executive Board of the Mathematics Center Heidelberg (MATCH).
2012–2016	Deputy Director of the Institute of Applied Mathematics.
2012–2016	Speaker of the *Kollegiates* of Heidelberg Academy of Sciences and Humanities (*Kollegiat* since 2011).
2012–2016	Equal Opportunities Commissioner (Gleichstellungsbeauftragte) of the Faculty of Mathematics and Computer Sciences.
Since 2011	Principal Investigator at the Heidelberg Graduate School.
Since 2008	Group leader at the BIOQUANT Center.

Research grants
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2017–2021	Collaborative Research Center (SFB) 1324 "Mechanisms and functions of Wnt signaling" funded by German Research Council (DFG) (principal investigator).
2016–2019	Research Training Group (*Landesgraduiertenkolleg*) "Mathematical Modeling for the Quantitative Biosciences" (MMQB) (coordinator).
2015–2020	SCIDATOS: Scientific Computing for Improved Detection and Therapy of Sepsis - Research network of the Heidelberg University and the University Medical Center Mannheim funded by the Klaus Tschira Foundation (principal investigator).
2010–2018	Collaborative Research Center (SFB) 873 "Maintenance and Differentiation of Stem Cells in Development and Disease" funded by German Research Council (DFG) (principal investigator, 1st and 2nd funding period).
2013–2016	Grant in the framework of Mobility in international research collaborations, Excellence Initiative II, Heidelberg University, for the Heidelberg - Dundee project "Multsicale modelling, analysis and simulation of biological tissues".
2011–2014	Grant of Polish National Science Center 6085/B/H03/2011/40: "Measure spaces and Orlicz spaces in the mathematical

description of growth and transport phenomena" (principal investigator).

2009–2015   International PhD Programme "Mathematical Methods in Natural Sciences" Warsaw-Wroclaw-Heidelberg-Paris-Prag granted by Foundation for Polish Science (principal investigator, co-supervisor of 3 PhD projects).

2009–2014   WIN Kolleg of Heidelberg Academy of Sciencies and Humanities for interdisciplinary project "Principles of development and pattern formation in biology" (principal investigator).

2008–2016   Emmy Noether Group of German Research Foundation (DFG) (panel Mathematics).

2008–2013   "Ideas" - Starting grant of European Research Council (panel Mathematics).

2007–2013   WIN Kolleg of Heidelberg Academy of Sciencies and Humanities for interdisciplinary project "A man is as old as his stem cells?" (principal investigator).

Honors and Awards
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01/2011   "Kollegiat" of Heidelberg Academy of Sciences and Humanities.

10/2010   AcademiaNet Portal for Outstanding Female Scientists and Scholars of Robert Bosch Foundation (nominated by German Research Council (DFG)).

08/2008   Emmy-Noether-Programme of German Research Council (panel Mathematics).

04/2008   'Starting Grant of European Research Council (in the first call of 2007).

07/2007   Junior Academy for Young Scientists (WIN-Kolleg) of the Heidelberg Academy of Science and Humanities.

1992   Diploma of the finals of the State Mathematics Olimpics for high schools.

Selected teaching and mentoring experience
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Teaching (selected)

Since 2004   Lectures and seminars at the Heidelberg University on Calculus (Analysis: 500 students; Higher Mathematics for Physicists: 250 students), Functional Analysis (75 students), Partial Differential Equations, Dynamical Systems, Singular perturbation methods and multiscale analysis, Modelling with Differential Equations, Mathematical Methods in Systems Biology, etc.

07/2013   Series of lectures at CIMPA Research School, African Institute of Mathematical Sciences, Muizenberg, South Africa.

04/2012   Series of lectures: Biomathematics for nonmathematicians, PhD Programme MISDOMP, University of Warsaw, Poland.

12/2011   Series of lectures: Methods of relative entropy for models of structured populations, National Doctoral Studies in Mathematical Sciences, Institute of Applied Mathematics, University of Warsaw, Poland.

05-06/2011   Series of lectures: Nonlinear partial differential equations and their applications, National Doctoral Studies in Mathematical Sciences, Mathematical Institute, University of Wroclaw, Poland.

08/2010   Lectures on "Modelling and analysis of structured populations, summer school, European Commission Marie Curie Programme, University of Dundee.

Supervision of junior researchers and students

Completed PhD theses:

2017   Jan-Erik Busse, PhD Thesis: Asymptotic behaviour of a system of integro-differential equations describing leukemia. (Heidelberg University)

2016   Marcel Mohr, PhD Thesis: Mathematical modelling of plasma cell dynamics in multiple myeloma (Heidelberg University)

2016   Samuel Collaudin, PhD Thesis: Exploring the basis of robust AGAMOUS expression dynamics during flower development using a pluridisciplinary approach (supervised jointly with Dr. Pradeep Das, Ecole Normale Superieure Lyon)

2016   Przemyslaw Pazdziorek, PhD Thesis: Asymptotic behavior of stochastic models of stem cell differentiation (supervised jointly with Prof. Ryszard Rudnicki, IMPAN, Warsaw)

2016   Steffen Härting, PhD Thesis: Reaction-diffusion-ODE systems: de-novo formation of irregular patterns and model reduction (Heidelberg University)

2015   Frederik Ziebell, PhD Thesis: Mathematical modeling of neural stem cell dynamics in the adult hippocampus (Heidelberg University)

2015   Grzegorz Jamroz, PhD Thesis: Structured population models of cell differentiation (supervised jointly with Prof. Piotr Gwiazda, University of Warsaw)

2014   Thomas Stiehl, PhD Thesis: Mathematical modelling of stem cell dynamics in acute leukemias (Heidelberg University).

2014   Joanna Kawka, PhD Thesis: Mathematical modeling of SGK1 dynamics in medulloblastoma tumor cells (Heidelberg University).

2013   Agnieszka Ulikowska, PhD Thesis: Structured population models in metric spaces (supervised jointly with Prof. Piotr Gwiazda, University of Warsaw)

2013   Alexandra Köthe, PhD Thesis: Hysteresis-driven pattern formation in reaction-diffusion-ode models (Heidelberg University).

On-going PhD projects:

Since 2015   Chris Kowall (Heidelberg University)

Since 2015   Diana Patricia Danciu (Heidelberg University)

Undergraduate students:

MSc/Diploma   Chris Kowall (2015), Mareike Janssen (2013), Franziska Knauer (2012), Zhoubin Maneshi (2017), Christian Düll (since 2017), Markus Alt (since 2017), David Nohe (since 2017).

BSc   Lars Helmstädter (2017), Aliosa Marjanovic (2016), Julian Teichgräber (2016), Alexander Poremba (2015), David Nohe (2015), Philipp Walch (2015), Frederike Kreplin (2014).

Postdoctoral researchers:

- Maria V. Barbarossa (Margarete von Wrangell Habilitation Grant, 2016-2021), Thomas Stiehl (since 2016), Moritz Mercker (since 2013), Marcel Mohr (since 2016), Nikolaos Sfakianakis (since 2017), Jan-Erik Busse (since 2017), Filip Klawe (MATCH Postdoctoral fellow, 2015-2016), Frederik Ziebell (2016-2017), Romain Yvinec (MATCH Postdoctoral fellow, 2013-2014), Alexandra Köthe (2012-2014).

Co-organised international conferences

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1. Mini-Workshop: PDE Models of Motility and Invasion in Active Biosystems, Oberwolfach Research Institute for Mathematics (MFO), 10/2017.

2. Conference: Modern Trends in Structures Forming Systems, Heidelberg, 08/2017

3. Conference: Mathematics of Pattern Formation', Bedlewo, Poland, 09/2016.

4. SIAM Conference on Control and its Applications, Paris, France, 07/2015.

5. Session: PDE models of poroelastic materials, InterPore2015, Padua, Italy, 05/2015.

6. Session: Nonlinear PDEs with applications in materials science and biology, DMV/PTM 2014, Poznan, Poland, 09/2014.

7. Minisymposium: Challenges in mathematical modeling of pattern formation in developmental biology", JSMB/SMB 2014, Osaka, Japan, 07/2014.

8. Minisymposium: Mathematical modelling of stem cell renewal and differentiation", ECMTB 2014, Goethenborg, Sweden, 06/2014.

9. MInisymposium "Thin poroelastic media and applicationsąt Equadiff, Prague, 08/2013

10. Workshop "PDEs models of multiscale biological systems", Heidelberg, 06/2013

11. Conference "Turing symposium on Morphogenesis", Sendai, Japan, 08/2012.

12. Workshop on Mathematics in Life Sciences, Material Sciences and Economy during Japanese-German Presidents' Conference, Kyoto, Japan, 03/2012.

13. Workshop on Mathematical Models of Biological Phenomena and their Analysis, Sendai, Japan, 11/2011.

14. Workshop "The role of multiscale structure in biological systems", Warsaw 09/2011.

15. European Conference on Mathematical and Theoretical Biology - ECMTB 2011, Krakow, Poland, 06/2011.

16. Minisymposium on Stem cells and cancer, ECMTB 2011, Krakow, Poland, 06/2011.

17. Minisymposium on Applications of nonnegative Radon measure spaces with metric structure to population dynamic models, ECMTB 2011, Krakow, Poland, 06/2011.

18. Kepler Workshop on Complex Living Systems "Managing Complexity, Reducing Perplexity", Heidelberg, 05/2011.

19. Workshop on Trends in Stem Cell Research, Heidelberg, 10/2010.

20. Conference on Partial Differential Equations in Mathematical Biology, Bedlewo, Poland, 09/2010.

21. Workshop on Mathematics in Life Sciences, Material Sciences and Economy during Japanese-German Presidents' Conference, Heidelberg, 07/2010.

22. Workshop on Mathematical modelling of cellular biosystems, Warsaw, 10/2009.

23. Minisymposium on Mathematical and Computational Problems in Life Sciences, Hanoi, Vietnam, 03/2009.

24. Minisymposium on Pattern formation and mechanics in developmental biology, ESMTB Conference, Edinburgh, 07/2008.

25. Workshop on Mathematical Modelling and Analysis in Biology, Warsaw, 03/2008.

26. Workshop on Mathematical Techniques for Multiscale Analysis, Heidelberg, 10/2005.

27. Minisymposium on Deterministic and stochastic models of metabolic pathways in the immune response, ESMTB Conference, Dresden, 07/2005.

28. International conference on Mathematical Models and Methods in Biology and Medicine, Bedlewo, Poland, 29/05 - 03/06/2005.

29. US-Polish Workshop on Spatial and Stochastic Phenomena in Gene Regulation and Signalling Pathways, Bedlewo, Poland, 19/05 - 3/06, 2005.

30. Joint MPD 7 - DeStoBio 3 Conference on Computational and Mathematical Population Dynamics, Trento, Italy, 21–25/06/2004.

Invited talks (during last 5 years)
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Invited conference and workshop presentations

1. International Conference on Systems Biology of Human Disease 2017, Heidelberg (invited lecture)

2. 2017 Keystone Symposia on Single Cell Omics., Stockholm, Sweden, 05/2017 (plenary lecture).

3. Workshop "Frontiers in Mathematical Oncology: Young Investigators Workshop", University of Maryland, US, 04/2017 (plenary lecture).

4. ESMTB Conference, Nottingham, UK, 07/2016 (invited minisymposium talk).

5. AIMS International Conference on Dynamical Systems, Differential Equations and Applications, Orlando, US, 07/2016 (2 invited mini-symposium talks).

6. HeKKSaGOn Miniworkshop "Mathematical Approaches to Medical and Life Sciences", Sendai, Japan, 06/2016 (invited talk).

7. International Conference on Reaction-Diffusion Equations and their Applications to the Life, Social and Physical Sciences, Beijing, China, 05/2016 (plenary lecture).

8. 10th Annual Cells-in-Motion International Max Planck Research Graduate School Meeting, Münster, Germany, 05/2016 (plenary lecture).

9. Workshop: Present challenges of mathematics in oncology and biology of cancer", CIRM, Marseille, France, 12/2015 (invited lecture).

10. BIOMS-EMBL conference: Physics of cells and tissues, Heidelberg, 9/2015 (invited lecture).

11. GAMM-PDE Workshop, Kassel, Germany, 09/2015 (invited lecture).

12. Symposium on Nonlinear Analysis, Torun, Poland, 09/2015 (plenary lecture).

13. Workshop "Models in Cancer Therapy", Vienna, Austria, 07/2015 (invited lecture).

14. Workshop "Computational and multiscale mathematical modelling of cancer growth and spread", Edinburgh, Scottland, 06/2015 (invited lecture).

15. Conference "Micro and macro systems in life sciences", Bedlewo, Poland, 06/2015 (invited talk).

16. MPD Workshop "Bio & Fluid", Warsaw, Poland, 04/2015 (invited lecture).

17. MBI Workshop on Stem Cells, Cancer and Development, Columbus Ohio, US, 04/2015 (invited lecture).

18. Workshop: Hybrid and multiscale modelling in cell and cell population biology", Paris, France, 03/2015 (invited lecture).

19. Conference "Mathematical Methods and Modeling of Biophysical Phenomena", Cabo Frio, Brasil, 03/2015 (invited lecture).

20. JSMB/SMB 2014, Osaka, Japan, 08/2014 (2 minisymposium talks).

21. AIMS International Conference on Dynamical Systems, Differential Equations and Applications, Madrid, Spain, 07/2014 (2 invited minisymposium talks).

22. Conference "PDEs, Continuum Mechanics and Numerical Analysis" Dubrovnik, Croatia, 05/2014 (invited talk).

23. Workshop on Numerical Methods and Emerging Computational Challenges in Mathematical Biology, Dundee, Scottland, 05/2014 (invited talk).

24. Workshop on Structured Integro-Differential Models in Mathematical Biology, Vienna, Austria, 04/2014 (invited talk).

25. 7th Multi-Rate Processes and Hysteresis (MURPHYS) Workshop and 2nd International Workshop on Hysteresis and Slow-Fast Systems (HSFS), WIAS, Berlin, Germany, 04/2014 (invited talk).

26. Conference: Mathematics, Mechanics, Modeling, a tribute to Zbigniew Peradzynski", Bedlewo, Poland, 09/2013 (plenary lecture).

27. IHES Stem Cells and Regeneration Interdisciplinary Workshop, Orsay, France, 06/2013 (invited talk, Discussion Sessions organiser).

28. Workshop "Modeling and analysis of cancer cell dynamics" (Interdisciplinary Symposium on Signals and Systems for Medical Applications), Paris, France, 06/2013 (invited talk).

29. Workshop "Mathways into cancer", Carmona, Spain, 04/2013 (invited talk).

30. Workshop: Mathematical Methods and Modeling of Biophysical Phenomena", Cabo Frio, Brasil, 03/2013 (invited talk).

31. 5th Polish-Japanese Days on Nonlinear Analysis in Interdisciplinary Sciences, Kyoto, Japan, 11/2012 (invited talk).

32. Workshop: Cell biology and physiology: PDE models", Heraklion, Greece, 10/2012 (invited talk).

33. XVIII National Conference on Application of Mathematics in Biology and Medicine (KKZM-BiM), Krynica Morska, Poland, 09/2012 (invited lecture).

34. 2012 Summer School of the HeKKSaGOn Consortium 'Crossing Borders: Unraveling Principles of Life with Quantitative Tools", Heidelberg, 9/2012 (invited lecture).

35. "Turing symposium on Morphogenesis", Sendai, Japan, 08/2012 (invited lecture).

36. Workshop "Beyond Basic Science- Mathematics Today" Bialka Tatrzanska, Poland, 02/2012 (invited lecture).

Invited seminar lectures:

- University of Castilla-La Mancha, 2/2017 (Mathematical Oncology Laboratory Seminar).

- University of Augsburg, 11/2015 (Augsburg-Munich Colloquium).

- TU Darmstadt, 7/2015 (Faculty Colloquium).

- University of Mainz, 7/2014 (Institute Colloquium).

- Edinburgh Mathematical Society Lecture, 3/2013.

- TU Dortmund, 11/2013 (Oberseminar Applied Analysis).

- Laboratoire J.-L. Lions Seminar, Univ. P. et M. Curie, Paris 10/2012.

Selected editorial and reviewing activities (during last 5 years)
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- Appointment of European Research Council referees in peer review evaluations.

- Reviewer of projects for German Research Council (DFG), European Research Council (ERC), Foundation for Polish Science (FNP), National Science Center (NCN), Vienna Science and Technology Fund (WWTF), Einstein Foundation, Netherlands Organisation for Scientific Research (NWO), National Research Foundation (NRF) in South Africa, Alexander von Humboldt Foundation, PRESTIGE Marie Curie post-doc fellowships programme.

- Reviewer of 3 habilitations and 8 PhD theses.

- Series Editor of the Springer Briefs in Mathematical Methods.

- Member of Editorial Boards of Royal Society Open Science; European Journal of Applied Mathematics; Frontiers in Systems Biology; Journal of Theoretical Biology; Mathematical Biology Section of Biology Direct; Mathematica Applicanda.

- Member of the Selecting Committee of the International PhD Programme "Mathematical Methods in Natural Sciences" Warsaw-Wroclaw-Heidelberg-Paris-Prag, University of Warsaw.

- Member of Selecting Committee of Benz-Deimler Foundation.

- Reviewer of articles for Math. Mod. Meth. Appl. Sci., SIAM Appl. Math., J. Diff. Eq., E. J. Appl. Math., J. Math. Anal. Appl., ESAIM: Control, Optimization and Calculus of Variations, Math. Biosciences, J. Math. Biol., J. Theor. Biol., Math. Med. Biol., J. Biol. Syst., Chem. Eng. Res. Design, Communications in PDEs, Genetics, Biology Direct, Appl. Math., BMC Systems Biology, Int. J. App. Math. Comp. Sci. (AMCS), Comp. Math. Appl., Frontiers Mol. Cellular Oncology, PLOS Comp. Biol., Bull. Math. Biol., Appl. Anal. Discr. Math., J. Royal Society Interface, Cancer Research, Integrative Biology, Biophysical J., J. Stat. Mechanics, Math. Mod. Natural Phenomena, IEEE/ACM Trans. Comp. Biol. Bioinf. Zeitschrift Angew. Math. Mech., Nonlin. Anal. RWA