

## Ion Petre

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### Personal details and date of CV

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- Surname, first name: Petre, Ion
- ResearcherID: E-1766-2013
- ORCID: 0000-0002-5014-5529
- ResearchGate: Ion-Petre

### Date and place of birth, nationality, current residence

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- Date and place of birth: June 22, 1974, Romania
- Citizenship: Finnish, Romanian
- Current residence: Finland

### Education and degrees awarded

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- (2016) Docent in Discrete Applied Mathematics at University of Turku (degree similar to Dr.Hab. in Central Europe)
- (2007) Docent in Computer Science (area of specialization: Bioinformatics) at Åbo Akademi University (degree similar to Dr.Hab. in Central Europe)
- (2002) PhD in Mathematics University of Turku, Finland. Topic of the thesis: "Commutation problems on sets and multisets of words".
- Research career phase: established researcher (professor)

### Linguistic skills

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- Mother tongue: Romanian
- Other languages: English (fluent), Finnish (cursive, certified 2010), Swedish (cursive, certified 2014), French (average)

### Current position

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- (2019-) Professor of Mathematics, University of Turku, Finland
- (2018-) Principal Investigator, the National Institute of Research and Development in Biological Science, Romania

### Previous professional appointments

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- (2019-2020) Scientific advisor for Turku City Data, Finland
- (2010-2018) Professor of Computer Science, Åbo Akademi University, Finland
- (2017-2018) Visiting Scholar, University of South Florida, USA
- (2005-2010) Research Fellow of the Academy of Finland
- (2002-2005) Assistant Professor of Computer Science, Åbo Akademi University, Turku, Finland.
- (2002-2004) Marie-Curie individual fellowship of the European Commission (declined).
- (1997-2002) PhD student, Turku Centre for Computer Science and Department of Mathematics, University of Turku, Finland.

### Major research funding and academic leadership, student supervision

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#### Substantial research founding

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- (2020-2022) Romanian Ministry of Education and Research, CCCDI – UEFISCD for “Personalised molecular networks in precision oncology” (PI): 125.000 eur
- (2016-2018) Finnish Agency for Innovation for “Network Pharmacology” (co-PI): 1.000.000 eur
- (2013-2017) Academy of Finland grant for “Quantitative model refinement” (PI): 433.188 eur
- (2013-2017) Academy of Finland grant for “Synthetic controllability of biological networks through understanding and engineering of their control elements” (PI) – funded in the “Synthetic Biology (FinSynBio) research program of the Academy of Finland: 346.290 eur.
- (2008-2010) Academy of Finland research grant for “Computational modelling of the heat shock response in eukaryotes” (PI): 138.000 eur
- (2005 – 2010) Research Fellowship of Academy of Finland (PI): 299.340 eur
- (2005 – 2010) Academy of Finland grant supporting the appointment as Research Fellow (PI): 228.400 eur.
- (2004 – 2007) Academy of Finland grant for “Computational Processes in the Living Cell” (PI) – funded in the “Systems Biology and Bioinformatics” (SYSBIO) research programme of the Academy of Finland: 249.360 eur.
- (2016) Center for International Mobility Finland (grant for Krishna Kanhaiya): 10.500 eur
- (2011-2012) Center for International Mobility Finland (grant for Bogdan Iancu): 10.800 eur
- (2009) Academy of Finland grant for inviting foreign researchers to Finland: “Networks of cell-like processors”: 13.500 eur
- (2007) Center for International Mobility Finland (grant for Andrzej Mizera): 10.800 eur
- (2006) Center for International Mobility Finland (grant for Tseren-Onolt Ishdorj): 7.200 eur

### Supervision of post-doc researchers

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- Vladimir Rogojin (2013-2018, 2009-2010), PhD from Åbo Akademi University, Finland. Currently working as research engineer, Guardtime, Estonia.
- Dwitiya Tyagi (2016-2018, 2013-2014), PhD from National Institute of Technology Bhopal, India.
- Sepinoud Azimi (2015-2018), PhD from Åbo Akademi University, Finland. Currently senior lecturer at Åbo Akademi University.
- Eugen Czeizler (2015-2017, 2008-2010), PhD from University of Turku, Finland. Currently senior researcher at University of Helsinki, Finland
- Chang Li (2014-2015), PhD from Åbo Akademi University, Finland.
- Cristian Gratie (2013-2015), PhD from the Technical University of Bucharest, Romania. Currently working as data scientist, France.
- Anne Seppänen (2013-2014), PhD from University of Turku, Finland.
- An Le Thi Thanh (2013), PhD from University of Heidelberg, Germany. Currently researcher at University of Turku.
- Elena Czeizler (2008-2010), PhD from University of Turku, Finland. Currently lead data scientist at Varian Medical Systems Finland.
- Tseren Onolt-Ishdorj (2007-2009), PhD from University of Seville, Spain. Currently professor at Mongolian State University, Ulaanbaatar, Mongolia.
- Artiom Alhazov (2007), PhD from University of Tarragona, Spain. Currently senior lecturer at State University of Moldova.

### Supervision of doctoral students

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- Joel Sjöberg, University of Turku, Finland (started 2022)
- David Pacoianu, University of Bucharest (started 2022), external advisor
- Nicoleta Siminea, University of Bucharest (to graduate 2023), co-supervisor
- Jose Angel Sanchez Martin, Universita Politecnica de Madrid (2021), co-supervisor

- Muhammad Sanwal, Åbo Akademi (2020)
- Krishna Kanhaiya, Åbo Akademi (2020)
  - Recipient of the *Akademikerpriset*, for outstanding scientific merits, Åbo Akademi University 2018
- Victor Popescu, Åbo Akademi University (started 2017)
- Charmi Panchal, Åbo Akademi University (2018)
- Diana-Elena Gratie, Åbo Akademi University (2016)
- Sepinoud Azimi, Åbo Akademi University (2015); degree awarded **“with honours”**
- Bogdan Iancu, Åbo Akademi University (2015)
- Andrzej Mizera, Åbo Akademi University (2011); degree awarded **“with honours”**
- Vladimir Rogojin, Åbo Akademi University (2009); degree awarded **“with honours”**
  - Recipient of the Academy of Sciences of Moldova’s award for young scientists (2009)
- Chang Li, Åbo Akademi University (2008)

### Supervision of undergraduate students

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- (2023) Mikael Mäkelä, University of Turku (Master)
- (2023) Sanna Hakomäki, University of Turku (Master)
- (2023) Emma-Leena Ahmaoja, University of Turku (Master)
- (2023) Baishakhi Chowdhury, University of Turku (Master)
- (2023, 2022) Jarno Jäppinen, University of Turku (Master, Bachelor)
- (2023, 2021) Elias Ervelä, University of Turku (Master, Bachelor)
- (2023) Amanda Myynti, University of Turku (Master)
- (2022) Saba Saif, University of Turku (Master)
- (2022) Alekski Kanervo, University of Turku (Master)
- (2022) Timo Valeri, University of Turku (Bachelor)
- (2021) Paul Luchian, University Politehnica of Bucharest (Bachelor)
- (2020) Shree Lamichhane, University of Turku (Master)
- (2020) Leo Uramoto, University of Turku (Master)
- (2020) Nancy Addo, University of Turku (Master)
- (2020) Stefan Filipescu, University Politehnica Bucharest, Romania (Bachelor)
- (2020) Tudor Dumitrascu, University Politehnica Bucharest, Romania (Bachelor)
- (2020) Bogdan Acatrinei, University Politehnica Bucharest, Romania (Bachelor)
- (2020) Daniel Ciovisa, University Politehnica Bucharest, Romania (Bachelor)
- (2019) Patric Gustafsson, Åbo Akademi University (Master)
- (2019) Denisa Ionascu, University Politehnica Bucharest, Romania (Bachelor)
- (2018) Loredana Gheorghe, University Politehnica Bucharest, Romania (Master)
- (2016) Keivan Kazemi, Åbo Akademi University (Master)
- (2016) Ami Kai Chiu Wu, Åbo Akademi University (Master)
- (2016) Victor Popescu, University Politehnica Bucharest, Bucharest (Master)
- (2012) Samuel Rönqvist, Åbo Akademi University (Master)
- (2011) Diana-Elena Gratie, University Politehnica Bucharest, Romania (Master)
- (2010) Sepinoud Azimi, University of Turku, Finland (Master)
- (2009) Bogdan Iancu, University Politehnica Bucharest, Romania (Master)
- (2009) Rolf Smeds, Åbo Akademi University (Master)
- (2008) Henrik Rönholm, Åbo Akademi University (Master)
- (2007) Zoltan Bicskei, Åbo Akademi University (Master)
- (2007) Sebastian Skogman, Åbo Akademi University (Master)
- (2007) Henry Ogoe, Åbo Akademi University (Master)
- (2006) Miika Langille, Åbo Akademi University (Master)

- Recipient of the yearly award for the best Master of Science thesis in Computer Science in Finland. Awarded by the Society for Computer Science in Finland
- (2006) Kristian Nylund, Åbo Akademi University (Master)
- (2006) Andreas Pada, Åbo Akademi University (Master)
- (2005) Vladimir Rogojin, Åbo Akademi University (Master)
- (2004) Satu Jääskeläinen, Åbo Akademi University (Master)
- (2004) Peter Bäck, Åbo Akademi University (Master)
- (2016) Maria Ström-Bestor, Åbo Akademi University (Bachelor)
- (2016) Anton Björklund, Åbo Akademi University (Bachelor)
- (2016) Markus Liljeberg, Åbo Akademi University (Bachelor)
- (2012) Markus Miekkoja, Åbo Akademi University (Bachelor)
- (2012) Stefan Virtanen, Åbo Akademi University (Bachelor)
- (2012) Daniel Wärnå, Åbo Akademi University (Bachelor)
- (2011) Marc Englund, Åbo Akademi University (Bachelor)

## **Major teaching duties and pedagogical competence**

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### Involvement in curriculum planning and the implementation of courses

- (2020-) Introduced the Data Analytics line in the Master program in Mathematics at University of Turku, Finland
- (2020-) Introduced the Foundations of Machine Learning series of courses at University of Turku, offered also freely online and watched more than 22000 times on YouTube.
- (2016-2018) Introduced the first fully-online Master-level study module (25 sp) in Data Science in Finland, at Åbo Akademi
- (2017) Restructured the Master of Science program in Computer Science at Åbo Akademi, following the university-wide reorganization of the Master education
- (2012-2013) Restructured the Bachelor curriculum in Computer Science at Åbo Akademi
- (2011-2012) Chair of the Curriculum Committee in Computer Science at Åbo Akademi
- (2010) Restructured the Master of Science program in Computer Science at Åbo Akademi University to allow for the admission of international students to the program
- (2010) Introduced the International Master Degree Program in Computer Science at Åbo Akademi University, consistently in top 3 the most popular programs of the university
- (2002-2017) Planned and implemented several new advanced courses in Computer Science at Åbo Akademi:
  - Advanced computational modeling
    - Cross-listed in the International Masters School in Bioinformatics at University of Turku, Finland
  - Computability and computational complexity
  - Cryptography and network security
  - Computational modeling techniques
    - Cross-listed in the International Masters School in Bioinformatics at University of Turku, Finland
    - Redeveloped as a fully-developed online course, 2017-2018
  - Rule-based modeling in systems
    - Cross-listed in the International Masters School in Bioinformatics at University of Turku, Finland
  - Computational models for cell processes

- Cross-listed in the International Masters School in Bioinformatics at University of Turku, Finland
- o Computational processes in living cells
- o Molecular informatics: theory and applications
- o Introduction to biocomputing
- Developed and lectured several tutorials and guest courses:
  - o Tutorial on Computational Systems Biology, a satellite event of the International Conference on Formal Methods 2009, Eindhoven, the Netherlands and 2008, Turku, Finland
  - o Tutorial on Computational Systems Biology, a satellite event of the International Conference on Biocomputation, Bioinformatics, and Biomedical Technologies 2008, Bucharest, Romania
  - o Lectures on Computational Systems Biology at the International Doctoral Course of Latvia University of Agriculture, 2007, 2008.

### Pedagogical qualifications

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- (1996) Completed the pedagogical qualification module at University of Bucharest, as part of my undergraduate studies. The module included the following courses:
  - o Methods of informatics teaching
  - o Psychology
  - o Pedagogy
  - o Pedagogic training (including teaching high-school classes)
- (2003) Completed the module on “Academic presentation skills” at Åbo Akademi University

### Pedagogical awards

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- (2003, 2004, 2011) Voted “Teacher of the year” by the students in Computer Science and Engineering, Åbo Akademi University

### Scientific awards and honours

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- (2018) Top 100 (5%) most read oncology papers in Scientific Reports in 2017
- (2016) Best paper award at the 14<sup>th</sup> International Conference on Computational Methods in Systems Biology, Cambridge, UK.
- (2011) Best paper award at the 9<sup>th</sup> International Conference on Computational Methods in Systems Biology, Paris, France.
- (2009) My research project Computational Processes in Living Cells was nominated as 1 of only 6 outstanding projects (of the 16 funded projects) in the final evaluation report of Academy of Finland’s Systems Biology and Bioinformatics research programme (2004-2007)
- (2008) The yearly Computer Science award of Academy of Romania (the “Grigore Moisil” award), for work published during 2006 on “Computational nature of gene assembly in ciliates”

### Other scientific or academic merits and activities

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#### Preliminary examiner, opponent, or membership in dissertation committees

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- (2022) PhD external reviewer for Jana Dražanová, Masaryk University, Czech Republic
- (2021) PhD external reviewer for Florin Bilbie, University of Bucharest, Romania
- (2020) PhD external examiner for Gurjit S. Randhawa, Department of Computer Science, University of Western Ontario, Canada

- (2019) PhD thesis reviewer for Artur Meski, Institute of Computer Science, Polish Academy of Science, Poland
- (2019) PhD thesis reviewer for Martin Demko, Masaryk University, the Czech Republic
- (2017) External member of the PhD jury for Qixia Yuan, University of Luxembourg, Luxembourg.
- (2016) PhD external examiner for Matteo Rucco, University of Camerino, Italy.
- (2015) PhD external examiner for Manasi Kulkarni, University of Western Ontario, Canada
- (2014) PhD opponent for Mari Huova, University of Turku, Finland
- (2014) PhD thesis examiner for Johannes Tuikkala, University of Turku, Finland
- (2013) PhD thesis external examiner for Mayur Bapodra, University of Leicester, UK
- (2012) PhD thesis reviewer for Ivars Mozga, Latvia University of Agriculture, Department of IT, Latvia
- (2012) Member of the evaluation committee for Jozsef Mezei, Åbo Akademi University
- (2012) Member of the evaluation committee for Fredrik Degerlund, Åbo Akademi University
- (2012) Member of the evaluation committee for Siw Lundqvist, Åbo Akademi University
- (2011) Member of the evaluation committee for Marta Olszewska, Åbo Akademi University
- (2010) Member of the dissertation committee for Virgil Serbanuta's thesis, University of Bucharest, Romania
- (2010) Member of the evaluation committee for Leonidas Tsiopoulos, Åbo Akademi University
- (2010) Member of the evaluation committee for Johannes Eriksson, Åbo Akademi University
- (2007) PhD thesis reviewer for Tseren-Onolt Ishdorj's thesis, University of Seville, Spain
- (2006) Member of the dissertation committee for Peter Leupold's PhD disputation, University of Tarragona, Spain

### Evaluation of scientific competence

- (2021) Reviewer for the promotion to associate professor of Dr. Hendrik Jan Hoogeboom, University of Leiden, the Netherlands.
- (2020, 2012) Reviewer for the tenure evaluation of Dr. Daniela Genova, University of North Florida, US.
- (2019) Reviewer for the promotion to full professor of Dr. Jetty Kleijn, University of Leiden, the Netherlands
- (2019) Reviewer for the promotion to associate professor of Dr. Jun Pang, University of Luxembourg, Luxembourg
- (2019) Reviewer for the Habilitation committee for Dr. David Safranek, Masaryk University, Czech Republic
- (2017) Reviewer for the promotion to full professor of Dr. Ian McQuilan, University of Saskatchewan, Canada
- (2017) Reviewer for University of South Florida for Prof. Natasha Jonoska's appointment as a "Distinguished University Professor"
- (2017) Reviewer for the tenure evaluation of Dr. Andre Sanchez Ribeiro, University of Tampere, Finland
- (2013) Reviewer for the appointment as Professor of Computer Science of Dr. Andrei Paun, University of Bucharest, Romania.
- (2012) Reviewer for the appointment as Professor of Computer Science of Dr. Florentin Ipate, University of Bucharest, Romania.
- (2011) Reviewer for the tenure evaluation of Dr. Ovidiu Lipan, University of Richmond, US.
- (2011) Reviewer for the docentship application of Dr. Laura Elo, University of Turku, Finland.

### Membership and positions of trust in scientific societies

- (2016-2022) Co-director of the “Computational and Molecular Methodologies for Life Sciences” research program of BioCity Turku, a multi-disciplinary community of 15 research groups, with 50 PhD students and 30 postdocs.
- (2017-) Member of [Svenska Tekniska Vetenskapsakademien i Finland](#) (Finland's Swedish Academy for Technical Sciences).
- (2015-2018) Director of Turku Centre for Computer Science. As director, I wrote the new strategy of TUCS, re-launching TUCS as a research institute, after a 20-year period as a graduate school. I also launched the TUCS Internship Program, a collaborative program between TUCS and local companies, that created 40 paid positions for our students in its first two editions (2016, 2017).
- (2015-2017) Member of the board of the Finnish Society for Computer Science
- (2011-2014) Vice-director of Turku Centre for Computer Science. As vice-director, I initiated the TUCS Distinguished Lecture Series, a series of high-level international guest lectures that gathers audiences of around 100 students and researchers.
- (2010-2018) Head of the Computer Science programs at Department of IT, Åbo Akademi University, Finland. In this position, I reformed the curriculum in Computer Science both on the Bachelor and on the Master level, based on the latest ACM curriculum guidelines. I also launched the International Master’s Program in Computer Science at Åbo Akademi, that ranks consistently in top 3 at Åbo Akademi University in terms of number of yearly applications.
- (2005-) Leader of the Computational Biomodelling Laboratory, Turku Centre for Computer Science.

#### Membership in national or international expert, evaluation or steering groups as well as other expert duties

- (2022, 2016) Member of the award panel for “The Best PhD thesis in Bioinformatics in Finland”.
- (2021, 2016) Scientific officer and reviewer for the Romanian National Council for Scientific Research
- (2020-2024, 2011-2015) Member of the national committee for the evaluation and the ranking of computer science university education and research in Romania. In this position I contribute to overseeing the quality of the computer science research in all Romanian universities and research institute.
- (2022-2026, 2017-2019) Member of the board of the Doctoral School in Computer Science at University of Bucharest, Romania
- (2017, 2016, 2015) Member of the 3-member award panel for “The Best PhD thesis in Computer Science in Finland”. Chair of the panel in 2017.
- (2019) Scientific reviewer for NOW, the Netherlands
- (2016) Scientific reviewer for European Union’s Horizon 2020 and Cost programmes
- (2016) Scientific evaluator for NSERC, Canada
- (2016) Member of the award panel of the Ad-Astra association for “Romanian Researcher of the Year in Computer Science”

#### Membership in editorial committees and guest editor of scientific journals

- Associate editor of the Royal Society Open Science (2020-2023)
- Member of the advisory board of the Springer Natural Computing Book Series (since 2018)
- Associate editor of the Frontiers in Genomics, track on Computational Genomics (2011-2021)
- Associate editor of the Theoretical Computer Science. Track C on “Natural Computing” (since 2010), Elsevier.
- Associate editor of the Journal of Natural Computing (since 2009), Springer.
- Associate editor of the International Journal on Nanotechnology and Molecular Computation (since 2008), IGI Global.
- Associate editor of the Fundamenta Informaticae (2007-2009), IOS Press.

- Guest co-editor of a special issue of Theoretical Computer Science, track C, on “Reaction systems”, to appear, 2021
- Guest co-editor of a special issue of Theoretical Computer Science, track C, dedicated to Academician Gheorghe Paun, to appear, 2021
- Guest co-editor of a special issue of the Journal of Membrane Computing on “Reaction systems”, vol. 2(3), 2020
- Guest co-editor of a special issue of Theoretical Computer Science, track C, vol. 701, 2017
- Guest co-editor of a special issue of Theoretical Computer Science, track A, vol. 429, 2012.
- Guest co-editor of Transactions on Computational Systems Biology for a special issue on “Computational models for cell processes”, LNCS 7625, 2012.
- Guest co-editor of Natural Computing for a special issue on “Unconventional Computing”, vol 11(4), 2012.
- Guest co-editor of Transactions on Computational Systems Biology XIII for a special issue on “Computational models for cell processes”, LNBI 6575, 2011.
- Guest co-editor of Transactions on Computational Systems Biology XI for a special issue on “Computational models for cell processes”, LNBI 5750, 2009.

#### Program committee member in international conferences and workshops

- International Conference on Computational Methods in Systems Biology (CMSB), 2022 (**PC co-chair**), 2021, 2019, 2018, 2011, 2010
- Workshop on Algorithms in Bioinformatics (WABI), 2022, 2021.
- Middle-European Conference on Applied Theoretical Computer Science, 2022, 2019
- International Conference on Unconventional Computation and Natural Computing (UCNC), 2020, 2018, 2015, 2011, 2006, 2005 (**PC co-chair**)
- IEEE International Conference on Computational Intelligence in Bioinformatics and Computational Biology, 2020.
- Szeged Workshop on Discrete Structures, 2020.
- International Workshop on Hybrid Systems and Biology, 2020, 2019
- International Workshop on Reaction Systems, 2020, 2019, 2018
- Working Formal Methods Symposium (FROM), 2020, 2019, 2018
- Special session on Bio-Inspired Computing and Bioinformatics at Knowledge-Based and Intelligent Information and Engineering Systems (KES), 2019
- 16<sup>th</sup> IEEE International Conference on Computational Intelligence in Computational Biology and Bioinformatics, 2019
- 30<sup>th</sup> Nordic Workshop on Programming Theory, 2018
- 6<sup>th</sup> International Conference on ASM, Alloy, B, TLA, VDM, and Z (ABZ), 2018
- Special session of PDP 2018 on High Performance Computing in Systems Biology, 2018, Cambridge, UK.
- International Symposium on Molecular Logic and Computational Synthetic Biology, 2018, Santiago de Chile, Chile.
- Computability in Europe, 2017 (**PC co-chair**), 2016
- AUTOMATA, Milan, Italy, 2017.
- International Conference on Algebraic Informatics, Kalamata, Greece, 2017.
- International Conference on Formal Engineering Methods, Xi’an, China, 2017.
- Workshop on Interactions between Computer Science and Biology (CS2Bio), Berlin, Germany, 2014 (**PC co-chair**).
- Workshop on Computational Processes in Living Cells (CompMod), Turku, Finland, 2013 (**PC chair**)
- International Workshop on Interactions between Computer Science and Biology (CS2Bio), Florence, Italy, 2013.

- International Conference on the Theory and Practice of Natural Computing (TPNC), Tarragona, Spain, 2012.
- International Workshop on Interactions between Computer Science and Biology (CS2Bio), Stockholm, Sweden, 2012.
- International Conference on Computability in Europe, 2011, Sofia, Bulgaria. Special session on Natural Computing (**PC co-chair**)
- Workshop on Computational Processes in Living Cells, Aachen, Germany, 2011 (**PC co-chair**)
- CS2Bio 2011: 2nd Workshop on Computer Science to Biology. June 9, Reykjavik, Iceland.
- Special Track on Modelling for sustainable development at the 9th International Conference on Software Engineering and Formal Methods, Montevideo, Uruguay, 2011.
- Workshop and Tutorials on Natural Computing, 2010, Enschede, the Netherlands (**PC co-chair**).
- Workshop on Computer Science in Systems Biology, Amsterdam, the Netherlands, June 10, 2010.
- International Workshop on Applications of Membrane Computing, Concurrency and Agent-based Modeling in Population Biology, 2010, Jena, Germany.
- International ISoLA Workshop on Modelling, Analyzing, Discovering Complex Biological Structures, 2009, Potsdam, Germany.
- Workshop on Computational Processes in Living Cells, Eindhoven, the Netherlands, 2009 (**PC co-chair**)
- Workshop on Natural Computing and Graph Transformation, satellite event of the International Conference on Graph Transformation, Leicester, UK, 2008 (**PC co-chair**)
- Workshop on Computational Processes in Living Cells, Turku, Finland, 2008 (**PC co-chair**)
- The 14<sup>th</sup> international meeting on DNA-based computers, DNA 14, 2008, Prague, Czech Republic.
- The 13<sup>th</sup> international meeting on DNA-based computers, DNA 13, 2007, Memphis, USA.
- International conference on Developments in Language Theory (DLT) 2004, Auckland, New Zealand, 2004.
- Workshop on word avoidability, complexity, and morphisms (WACAM), affiliated with ICALP 2004, Turku, Finland, 2004.

### Scientific refereeing activities

- Referee for many papers submitted to journals such as Nature Protocols, Bioinformatics, Briefings in Bioinformatics, Scientific Reports, Theoretical Computer Science, Theoretical Informatics and Applications (RAIRO), Discrete Applied Mathematics, Discrete Mathematics, Journal of Logic and Computation, Journal of Theoretical Biology, Journal of Mathematical Biology, Journal of Natural Computing, PLoS Computational Biology, BMC Biophysics, and conferences such as International Colloquium on Automata, Languages, and Programming, Mathematical Foundations of Computer Science, Developments in Language Theory, Fundamentals of Computation Theory, ACM Symposium on Applied Computing, Conference on Implementation and Application of Automata, Combinatorics on Words, Computational Methods in Systems Biology, and others.
- Reviewer for Mathematical Reviews

### Administrative responsibilities at university or research organizations

- (2021-2024) Member of the Research Council of the University of Turku. The mission of the Council is to guide the research strategy of the University, including its profiling strategy, development plans, research evaluation, international collaborations, research infrastructure development, collaboration with the industry.
- (2015-2018) Director of Turku Centre for Computer Science

- (2015-2018) Member of the board of the Faculty of Science and Engineering, Åbo Akademi University
- (2013-2014) Member of the board of Department of IT, Åbo Akademi University
- (2011-2014) Vice-director of Turku Centre for Computer Science
- (2010-2018) Head of the Computer Science programs at Department of IT, Åbo Akademi University, Finland

## Invited lectures

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- Tutorial speaker, International Conference on Unconventional Computing and Natural Computing, University of North Florida, USA, 2023
- Plenary talk, Discrete and Topological Models in Biology, University of South Florida, USA, 2022
- Invited talk at Sorbonne University, France, 2021
- Invited talk at University of Bergen, Norway, 2021
- Plenary talk, Computational Methods in Systems Biology, Bordeaux, France, 2021
- Plenary talk, International Conference on Unconventional Computation and Natural Computation, Japan, 2019
- Special session talk, Life Science Live, Finland, 2019
- Plenary talk, Asian Chapter of Membrane Computing, New Zealand, 2018
- Plenary talk, AlgoNano: Algorithmic and Computational Methods in BioMedicine and Nanotechnology, 2018
- Invited talk at Université d'Évry Val d'Essonne, 2018
- Invited talk at the National Cancer Institute, NIH, Bethesda, USA, 2018.
- Plenary talk, Workshop on Formal Methods in Computational Systems Biology, Luxembourg, 2017
- Invited talk at Department of Mathematics and Statistics, University of South Florida, USA, 2017
- Invited talk at the Moffitt Cancer Research Institute, USA, 2017
- Plenary talk, International Symposium on Foundations of Computer Science (FROM), Bucharest (Romania), 2017
- Plenary talk, International Conference on Membrane Computing, Valencia (Spain), 2015
- Special session talk, Computability in Europe, Bucharest (Romania), 2015
- Special session talk, Congress of Romanian Mathematicians, Iasi (Romania), 2015
- Plenary talk, Theory Day in Computer Science, Bucharest (Romania), 2014
- Plenary talk, 13<sup>th</sup> Biennial Baltic Electronics Conference, Tallinn (Estonia), October 2012
- Plenary talk, Workshop on Logics in Systems Biology, Edinburgh (UK), July 2010
- Special session talk, Finnish Mathematical Days, Jyväskylä (Finland), January 2010
- Special session talk, Computability in Europe, Heidelberg (Germany), July 2009
- The international doctoral course on Systems Biology and Bioinformatics, Latvia University of Agriculture, Jelgava (Latvia), November 2008
- Plenary talk, The Jacques Monod conference dedicated to the biology of the heat shock factor, Roscoff (France), September 2008
- Plenary talk, Exploratory workshop on biology and bioinformatics, Bucharest (Romania), September 2008
- Plenary talk, The 5th Conference on New Exploratory Techniques NEXT 2008, Turku (Finland), August 2008
- Plenary talk, International Conference on Biocomputation, Bioinformatics, and Biomedical Technologies, Bucharest (Romania), June 2008
- Plenary talk, International conference on Automata and Formal Languages, Balatonfüred (Hungary), May 2008
- Tutorial on Computational Systems Biology, satellite event of the International conference on formal methods, Turku (Finland), May 2008

- Special session talk, Finnish Mathematical Days, Espoo (Finland), January 2008
- Plenary talk, Workshop on Algorithmic bioprocesses, Leiden (the Netherlands), December 2007
- The international doctoral course on Systems Biology and Bioinformatics, Latvia University of Agriculture, Jelgava (Latvia), October 2007
- Tutorial, International Conference on Unconventional Computing. Tutorial on Computational processes in living cells. Sevilla (Spain), October 2005.
- Tutorial, International Conference on Graph Transformation, the DNA-GRA Tutorial Day on DNA Computing and Graph Transformation, Rome (Italy), 2004.
- Tutorial, International Conference on Graph Transformation, the DNA-GRA Tutorial Day on DNA Computing and Graph Transformation, Barcelona (Spain), 2002.
- Plenary talk, Weighted Automata: Theory and Applications, Dresden, Germany, 2002.

### Membership in organizing committees of international workshops and conferences

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- Computational Methods in Systems Biology, 2022, Bucharest, Romania
- The International Salomaa Symposium, 2014, Turku, Finland
- Computability in Europe 2011, special track on Natural Computing
- International Conference in Unconventional Computing, 2011, Turku, Finland
- *Workshop on Applications of Membrane Computing, Concurrency and Agent-Based Modeling in Population Biology, Jena, Germany, August 2010*
- *Workshop Series on Computational Process in Living Cells. Turku, Finland (2008), Eindhoven, the Netherlands (2009), Limerick, Ireland (2011)*
- *Tutorial Series on Computational Systems Biology, satellite event of the International Conference on Formal Methods. Turku, Finland (2008), Eindhoven, the Netherlands (2009), Limerick, Ireland (2011)*
- *31st International Colloquium on Automata, Languages and Programming, ICALP 2004, Turku, July 2004*
- *Words 2003 conference, Turku, September 2003*
- *The Spring meeting 2003 of the European Molecular Computing Consortium, Abo Akademi, Turku, May, 2003*

### Scientific and societal impact of research

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#### Publications

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- (September 2022) More than 110 articles, including one monograph, 76 peer-reviewed journal articles, 31 articles in peer-reviewed conference proceedings, 2 handbook chapters, 22 edited books and special issues of journals.

#### Most important recent 10 publications

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1. Victor Popescu, Krishna Kanhaiya, Iulian Nastac, Eugen Czeizler, Ion Petre. Identifying efficient controls of complex interaction networks using genetic algorithms. *Scientific Reports* 12, 1437, 2022. <https://doi.org/10.1038/s41598-022-05335-3>
2. Usman Sanwal, Thai Son Hoang, Luigia Petre, and Ion Petre. Scalable reaction network modeling with automatic validation of consistency in Event-B. *Scientific Reports* 12(1), 2022. <http://10.1038/s41598-022-05308-6>
3. Victor Popescu, Jose Angel Sanchez-Martin, Daniela Schacherer, Sadra Safadoust, Negin Majidi, Andrei Andronescu, Alexandru Nedea, Diana Ion, Eduard Mititelu, Eugen Czeizler, Ion Petre. NetControl4BioMed: A web-based platform for controllability analysis of protein-protein

- interaction networks. *Bioinformatics* 37 (21), 3976-3978, 2021.  
<http://10.1093/bioinformatics/btab570>.
4. Nicoleta Siminea, Victor Popescu, Jose Angel Sanchez Martin, Daniela Florea, Georgiana Gavril, Ana-Maria Gheorghe, Corina Itcus, Krishna Kanhaiya, Octavian Pacioglu, Laura Ioana Popa, Romica Trandafir, Maria Iris Tusa, Manuela Sidoroff, Mihaela Paun, Eugen Czeizler, Andrei Paun, Ion Petre. Network analytics for drug repurposing in COVID-19. Briefings in *Bioinformatics*, 2021. <https://doi.org/10.1093/bib/bbab490>.
  5. Adrian Lita, Joel Sjöberg, Stefan Filipescu, Orieta Celiku, Luigia Petre, Mark Gilbert, Houtan Noushmehr, Ion Petre, Mioara Larion, PATH-45. APOLLO: RAMAN-BASED PATHOLOGY OF MALIGNANT GLIOMA, *Neuro-Oncology*, Volume 23, Issue Supplement\_6, 2021, vi125, <https://doi.org/10.1093/neuonc/noab196.497>.
  6. Krishna Kanhaiya, Eugen Czeizler, Cristian Gratie, Ion Petre, Controlling Directed Protein Interaction Networks in Cancer. *Scientific Reports*, 7(1), 10327, 2017. **Top 5% most read oncology papers in Scientific Reports 2017.**
  7. Eugen Czeizler, Cristian Gratie, Wu Kai Chiu, Krishna Kanhaiya, Ion Petre. Structural target controlability of linear networks. *IEEE/ACM Transactions on Computational Biology and Bioinformatics*, 15(4), 1217-1228, 2018. **nVidia Best Paper Award CMSB 2016.**
  8. Mark B. Meads, Rafael Renatino Canevarolo, Praneeth Reddy Sudalagunta, Paula S. Oliveira, Dario M. Magaletti, Bin Fang, Maria D Coelho Siqueira Silva, Amit Kulkarni, Hongyue Dai, William S. Dalton, Ion Petre, John M. Koomen, Ariosto Siqueira Silva and Kenneth H. Shain. Systems Biology Analysis Identifies Targetable Vulnerability Networks to Proteasome Inhibitors in Multiple Myeloma. *Blood* vol. 132, supplement 1, 2018. DOI: 10.1182/blood-2018-99-120269.
  9. Rafael Renatino Canevarolo, Praneeth Reddy Sudalagunta, Maria D Coelho Siqueira Silva, Mark B. Meads, Priscilla Granados, Anders Berglund, Amit Kulkarni, Hongyue Dai, William S. Dalton, Ion Petre, Kenneth H. Shain and Ariosto Siqueira Silva. A Systems Biology Approach to Identify Mechanisms of Therapy Resistance in Multiple Myeloma. *Blood* vol. 132, supplement 1, 2018. DOI: 10.1182/blood-2018-99-118784.
  10. Bogdan Iancu, Usman Sanwal, Cristian Gratie, Ion Petre. Refinement-based modeling of the ErbB signaling pathway. *Computers in Biology and Medicine* 106, 91-96, 2019.