# Europass Curriculum Vitae

## Personal information

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|---|---|
| First name(s) / Surname(s) | Loredana – Cristina MEREUTA |
| Address(es) | Blvd. Carol I, 11, 700506, Iasi, Romania |
| Telephone(s) | +(4032) 201 191 |
| Fax(es) | +(4032) 201 205 |
| E-mail | loredana.mereuta@uaic.ro |
| Nationality | romanian |
| Date of birth | March 31, 1979 |
| Gender | Female |

## Present employment / position

Professor at 'Alexandru I. Cuza' University of Iasi, Faculty of Physics, Department of Physics

## Work experience

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|---|---|
| Date | 2022 |
| Title of qualification awarded | Habilitation in Physics (title of habilitation thesis: *'Investigation of biomembrane processes at uni - molecular level, with relevance in the evolution of current pathologies'*) |
| Name and type of organisation | Ministry of Education and Research |
| Dates | 2007 - 2013 / 2013-2025 |
| Occupation or position held | Teaching assistant / Lecturer at 'Alexandru I. Cuza' University, Faculty of Physics, Department of Physics |
| Main activities and responsibilities | Laboratory, seminars and research activity with undergraduated, master or PhD students |
| Name and address of employer | Alexandru Ioan Cuza University, Faculty of Physics, Bd. Carol I, No. 11, Iasi, Romania |

## Education and training

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|---|---|
| Dates | 2010-2013 |
| Title of qualification awarded | Post-doctoral Fellow POSDRU/89/1.5/S/63663 - grant "Trans-national network of integrated management for post-doctoral research in the field of Science Communication. Institutional construction (post-doctoral school) and fellowship Programme (CommScie)" |
| Principal subjects/occupational skills covered | Investigation of existing physico-chemical correlations between molecular structure and litic potential of some natural and chimeric antimicrobial peptides |
| Name and type of organisation providing education and training | "Alexandru Ioan Cuza University, Faculty of Physics, Laboratory of Molecular Biophysics and Medical Physics , Bd. Carol I, No. 11, Iasi, Romania |
| Dates | 2007-2010 |
| Title of qualification awarded | Ph.D. in physics (summa cum laude) |
| Principal subjects/occupational skills covered | Ph. D. thesis title: *Modulation of membrane activity of certain antimicrobial peptides and porins by electric and mechanic properties of the lipid matrix;* |
| Name and type of organisation providing education and training | "Alexandru Ioan Cuza University, Faculty of Physics, Laboratory of Molecular Biophysics and Medical Physics , Bd. Carol I, No. 11, Iasi, Romania |
| Dates | 2005 – 2007 |
| Title of qualification awarded | Master degree |
| Principal subjects/occupational skills covered | Master program of Biophysics and Medical Physics |

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| Name and type of organisation providing education and training | "*Alexandru Ioan Cuza University, Faculty of Physics,* Laboratory of Molecular Biophysics and Medical Physics , *Bd. Carol I, No. 11, Iasi, Romania* |
| Dates | 2001-2005 |
| Title of qualification awarded | Bachelor degree |
| Principal subjects/occupational skills covered | Bachelor program of Medical Physics |
| Name and type of organisation providing education and training | "*Alexandru Ioan Cuza' University, Faculty of Physics,, Bd. Carol I, No. 11, Iasi, Romania* |

## Personal skills and competences

Mother tongue(s): romanian

| Self-assessment | Understanding | | Speaking | | Writing |
|---|---|---|---|---|---|
| *European level (*)* | Listening | Reading | Spoken interaction | Spoken production | |
| English | C2 | C2 | C1 | C1 | C1 |

(*) Common European Framework of Reference for Languages

**Professional skills and competences**

Areas of research: Molecular and cellular biophysics.

**Organisational skills and competences**

Team work and scientific research experience acquired as member in 11 national grants and 1 international grant and as coordinator in 2 national grant, Co-PI in one international grant.

**Computer skills and competences**

Good knowledge of LabView, Mathematica, Origin, Matlab, Adobe (Photoshop, Acrobat), Microsoft (Office)

**Teaching activities**

- General biophysics (B.Sc. students)
- Modeling of Biological Processes (B. Sc. Students)
- Sensory Systems biophysics (M.Sc. students)
- Electromagnetic field action on complex systems (M.Sc. students)
- Biocompatibility and biomaterials (M.Sc. students)
- Neurotransmitters and neuro-pharmaceuticals (M.Sc. students)
- Biomechanics (M.Sc. students)
- Bioelectricity. Fundamentals and clinical applications (M.Sc. students)
- Quality esurance in the practice of medical physicists (M.Sc. students)
- Biophysics of sensorial systems (M.Sc. students)
- Electromagnetic field action on complex systems (M.Sc. students)
- Radiobiology (B.Sc. students)

**Scientific research activity**

**Molecular biophysics.**

- Study of natural nanopores by electrical and spectroscopic methods.
- Studying the physical properties of artificial planar lipid membranes and liposomes.
- Studying the transport mechanisms of some peptides and ions through biological membranes by fluorescence spectroscopy and UV-VIS techniques.

h-index 19 (according to Web of Science), >600 citations ( excluding self-citations);
>50 communications presented at international and national conferences;

November 2010 - EBSA (European Biophysical Societies' Association) Bursary for attendance at ESF-EMBO Symposium Molecular Perspectives on Protein-Protein Interactions – Spain

May 2011 - Participation at Gordon Research Conference on Antimicrobial Peptides, Lucca (Barga) Italy

**Affiliation**

- Romanian Society of Pure and Applied Biophysics

- Scientific evaluator in national programs (National RDI Plan, 2007 - 2013 - Program Ideas - Explorers Workshops)

**Appendices**

Selection of journal papers, research grant

# Appendix to the CV (Loredana Cristina MEREUTA)

Selection of papers published in peer-reviewed journals

1. Mereuta, Loredana; Park, Jonggwan; Park, Yoonkyung; Luchian, Tudor, Repurposing an antimicrobial peptide for the development of a dual ion channel/molecular receptor-like platform for metal ion detection; NANOSCALE 2024 16; 10.1039/d4nr02433h
2. Mereuta, Loredana; Bhatti, Huma; Asandei, Alina; Cimpanu, Adina; Ying, Yi-Lun; Long, Yi-Tao; Luchian, Tudor; Controlling DNA Fragments Translocation across Nanopores with the Synergic Use of Site-Directed Mutagenesis, pH-Dependent Charge Tuning, and Electroosmotic Flow; ACS APPLIED MATERIALS & INTERFACES 2024 16 10.1021/acsami.4c03848
3. Mereuta, Loredana; Asandei, Alina; Schiopu, Irina; Park, Jonggwan; Park, Yoonkyung; Luchian, Tudor; Synthetic Receptor Based on a Peptide Antibiotic-Functionalized Chimera for Hybridization-Based Polynucleotide Detection; ACS APPLIED MATERIALS & INTERFACES 2023 15 10.1021/acsami.3c06086
4. Loredana Mereuta, Alina Asandei, Ioan Andricioaei, Jonggwan Park, Yoonkyung Park, Tudor Luchian, Considerable Slowdown of Short DNA Fragment Translocation Across a Protein Nanopore Using pH-induced Generation of Enthalpic Traps Inside the Permeation Pathway, Nanoscale, 2023, DOI: 10.1039/D3NR03344A
5. Luchian, T; Mereuta, L; Park, Y; Asandei, A; Schiopu, I. Single-molecule, hybridization-based strategies for short nucleic acids detection and recognition with nanopores, PROTEOMICS, 2021
6. Alina Asandei, Loredana Mereuta, Irina Schiopu, Jonggwan Park, Chang Ho Seo, Yoonkyung Park and Tudor Luchian, Non-Receptor-Mediated Lipid Membrane Permeabilization by the SARS-CoV-2 Spike Protein S1 Subunit ,ACS Appl. Mater. Interfaces 2020, 12, 50, 55649–55658
7. Alina Asandei, Giovanni Di Muccio, Irina Schiopu, Loredana Mereuta, Isabela S. Dragomir, Mauro Chinappi and Tudor Luchian, Nanopore-Based Protein Sequencing Using Biopores:Current Achievements and Open Challenges, Small Methods 2020, DOI: 10.1002/smtd.201900595
8. Loredana Mereuta, Alina Asandei, Isabela S. Dragomir, Ioana C. Bucataru, Jonggwan Park, Chang Ho Seo, Yoonkyung Park & Tudor Luchian, Sequence-specific detection of single-stranded DNA with a gold nanoparticle-protein nanopore approach, Scientific Reports 2020 volume 10, Article number: 11323
9. Jong-kook Lee, Loredana Mereuta, Tudor Luchian, Yoonkyung Park, Antimicrobial Peptide HPA3NT3-A2 Effectively Inhibits Biofilm Formation in Mice Infected with Drug-Resistant Bacteria, Biomaterials Science, 2019, DOI: 10.1039/C9BM01051C
10. Asandei, A., Mereuta, L., Park, J., Seo, C.H., Park, Y., Luchian, T., Nonfunctionalized PNAs as Beacons for Nucleic Acid Detection in a Nanopore System, ACS Sensors 2019,, Volume 4, Issue 6, Pages 1502-1507
11. Mereuta, L., Asandei, A., Schiopu, I., Park, Y., Luchian, T., Nanopore-Assisted, Sequence-Specific Detection, and Single-Molecule Hybridization Analysis of Short, Single-Stranded DNAs, Analytical Chemistry 2019, Volume: 91 Issue: 13 Pages: 8630-8637
12. Tudor Luchian, Yoonkyung Park, Alina Asandei, Irina Schiopu, Loredana Mereuta, and Aurelia Apetrei, Nanoscale Probing of Informational Polymers with Nanopores. Applications to Amyloidogenic Fragments, Peptides, and DNA–PNA Hybrids, Accounts of Chemical Research., 2019, 52 (1), pp 267–276 (doi.org/10.1021/acs.accounts.8b00565)
13. Ciuca, A Asandei, A; Schiopu, I; Apetrei,; Mereuta, L; Seo, CH; Park, Y; Luchian, T *Single-Molecule, Real-Time Dissecting of Peptide Nucleic Acid-DNA Duplexes with a Protein Nanopore Tweezer*, ANALYTICAL CHEMISTRY Volume: 90 Issue: 12 Pages: 7682-7690 Published: JUN 19 2018
14. Asandei, A., Ciuca, A., Apetrei, A., Schiopu, I., Mereuta, L., Seo, C.H., Park, Y., Luchian, T, *Nanoscale Investigation of Generation 1 PAMAM Dendrimers Interaction with a Protein Nanopore*, SCIENTIFIC REPORTS Volume: 7 Article Number: 6167 Published: JUL 21 2017
15. Alina Asandei, Mauro Chinappi, Jong-kook Lee, Chang Ho Seo, Loredana Mereuta,Yoonkyung Park & Tudor Luchian*, Placement of oppositely charged aminoacids at a polypeptide termini determines the voltagecontrolled braking of polymer transport through nanometer-scale pores,* Scientific Reports 5, Article number: 10419 doi:10.1038/srep10419 Published 01 June 2015
16. Asandei, A., Chinappi, M., Kang, H.-K., Seo, C.H., Mereuta, L., Park, Y., Luchian, T., *Acidity-Mediated, Electrostatic Tuning of Asymmetrically Charged Peptides Interactions with Protein Nanopores*, ACS APPLIED MATERIALS & INTERFACES Volume: 7 Issue: 30 Pages: 16706-16714 Published: AUG 5 2015
17. Loredana Mereuta, Alina Asandei, Chang Ho Seo, Yoonkyung Park,and Tudor Luchian *Quantitative Understanding of pH- and Salt-Mediated Conformational Folding of Histidine-Containing, β-Hairpin-like Peptides, through Single-Molecule Probing with Protein Nanopores*, | ACS Appl. Mater. Interfaces DOI: 10.1021/am5031177 Publication Date (Web): July 18, 2014
18. Alina Asandei, Sorana Iftemi,Loredana Mereuta, Irina Schiopu and Tudor Luchian, *Probing of various physiologically relevant metals - amyloid-peptide interactions with a lipid membrane-immobilized protein nanopore*, Journal of Membrane Biology, DOI 10.1007/s00232-014-9662-z. Volume 247, Issue 6, June 2014, Pages 523-530
19. L. Mereuta, M. Roy, A. Asandei, J. Kook Lee, Y. Park, I. Andricioaei & T. Luchian, *Slowing down single-molecule trafficking through a protein nanopore reveals intermediates for peptide translocation*, Scientific Reports (Nature Publishing Group) 27 January 2014 | 4 : 3885 | www.nature.com/scientificreports
20. Asandei, A., Schiopu, I., Iftemi, S., Mereuta, L., Luchian, T. Investigation of Cu2+ binding to human and rat amyloid fragments Aβ (1-16) with a protein nanopore 2013 Langmuir 29 (50) , pp. 15634-15642
21. Loredana Mereuta, Irina Schiopu, Alina Asandei, Yoonkyung Park, Kyung-Soo Hahm, and Tudor Luchian, *Protein Nanopore-Based, Single-Molecule Exploration of Copper Binding to an Antimicrobial-Derived, Histidine-Containing Chimera Peptide* Source: dx.doi.org/10.1021/la303782d | Langmuir 2012, 28, 17079−17091
22. Loredana Mereuta, Alina Asandei and Tudor Luchian, '*Meet me on the other side: trans-bilayer modulation of a model voltage-gated ion channel activity by membrane electrostatics asymmetry*', PLoS ONE, 2011 6(9): e25276. doi:10.1371/journal.pone.0025276

23. Aurelia Apetrei, **Loredana Mereuţă,** Tudor Luchian *The RH 421 styryl dye induced, pore model-dependent modulation of antimicrobial peptides activity în reconstituted planar membranes*, Biochimica et Biophysica Acta (BBA) - General Subjects 1790 (8), 2009, 809-816
24. **Loredana Mereuţă**, Tudor Luchian, Yoonkynung Park and Kyung-Soo Hahm, *The role played by lipids unsaturation upon the membrane interaction of the Helicobacter pylori HP(2–20) antimicrobial peptide analogue HPA3*, Journal of Bioenergetics and Biomembranes 41, 2009, 79–84
25. **Loredana Mereuţă**, Tudor Luchian, Yoonkyung Park and Kyung-Soo Hahm, *Single-molecule investigation of the interactions between reconstituted planar lipid membranes and an analogue of the HP(2–20) antimicrobial peptide,* Biochemical and Biophysical Research Communications 373 (4), 2008, 467-472
26. Tudor Luchian, **Loredana Mereuţă**, *Selective transfer of energy through an alamethicin-doped artificial lipid membrane studied at discrete molecular level*, Bioelectrochemistry 69, 2006, 94-98
27. **Loredana Mereuţă**, Tudor Luchian, *A virtual instrumentation based protocol for the automated implementation of the inner field compensation method*, Central European Journal of Physics 4(3), 2006, 405-416
28. Tudor Luchian, **Loredana Mereuţă**, *Phlorizin- and 6-ketocholestanol-mediated antagonistic modulation of alamethicin activity în phospholipid planar membranes,* Langmuir 22(20), 2006, 8452-8457
29. **Loredana Mereuţă**, Tudor Luchian *How could a chirp be more effective than a louder clock – resonant transfer of energy between sub-threshold excitation pulses and excitable tissues,* Journal of Cellular and Molecular Medicine 9(2), 2005, 446-456

## RESEARCH GRANTS

As coordinator:

- 2012 - 2015 "Homogenous immunoassay technique based on functionalized nanoparticles. Application to detection of pesticide contaminant 2,4-dichlorophenoxyacetic acid from alimentary and environmental samples" (HINANODET), PN II PCCA1 nr. 98/2012
- 2020 – 2022 *„Detecţia multiplă şi ultra-senzitivă a fragmentelor scurte de acizi nucleici, utilizând nanoparticule de aur şi nanopori proteici// Nanopore-based, ultra-sensitive and multivalent detection of short nucleic acid fragments, with functionalized gold nanoparticles', acronim NANOSENSEDNA*, cod PN-III-P1-1.1-TE-2019-0037, nr. 18/2020.
- 2020 – 2024 'Design and Development of Therapeutic AMPs against Epidemic Superbugs'. nr. 830/21.01.2015 (Romania-Korea collaboration), National Research Foundation of Korea (co PI)
- 2024 - 2028' Development of Core Technology for Advanced Peptide-based New Drugs and Establishment of the Platform', (National Research Foundation of Korea (NRF)), RS-2024-00401422, PI– Prof. Yoonkyung Park (Chosun University, Republic of Korea), PI– Prof. dr. Tudor Luchian and Conf. dr. Loredana Mereuta (UAIC)

As team member:

1. 2022- 2024 'Noi structuri peptidice cu potențiale aplicații în terapia țintită și diagnosticul timpuriu în cancer/New peptides for targeted cancer therapy and early diagnosis, PN-III-P1-1.1-TE-2021-0331, contract 63/2022.
2. 2021 - 2023 'Detectia multiplex, cu sensibilitate si selectivitate moleculara, a unor miRNAs relevante fiziologic, cu ajutorul unor xeno acizi nucleici' , acronim RNANANODETECT, cod proiect: PN-III-P4-ID-PCE-2020-0011
3. 2020 - 2022 'Label-free, real-time detection platform of Hepatitis B Virus antigens with protein biosensors'//'Platformă integrată pentru detecția în timp real a antigenilor virusului hepatitei B, cu ajutorul biosenzorilor proteici', acronim HEPATVIRDETECT, cod proiect PN-III-P2-2.1-PED-2019-0016.
4. 2018-2020 PN-III-P1-1.1-TE-2016-0508 Nanopore-based, pattern recognition on the primary structure of polypeptides at uni-molecular level
5. 2018 - 2020 N-III-P1-1.2-PCCDI-2017-0010 'Emerging molecular technologies based on micro and nano-structured systems with biomedical applications
6. 2017 - 2019 PN-III-P4-ID-PCE-2016-0026 A nanopore tweezer-based approach for studying intermolecular interactions at uni-molecular level. application to exploring metal-mediated, mismatched base pairs hybridization in nucleic acids
7. 2014 – 2019 'Design and Development of Therapeutic AMPs against Epidemic Superbugs'. nr. 830/21.01.2015 (Romania-Korea collaboration), National Research Foundation of Korea
8. 2012-2015 'Rational design and generation of synthetic, short antimicrobial peptides. Linking structure to function' (BIOPEP), PN II PCCA tip1 nr.123/2012
9. 2012-2015 'Ion sensing and separation through modified cyclic peptides, cyclodextrins and protein pores/ Detecţia şi separarea ionică prin intermediul peptidelor ciclice, al ciclodextrinelor şi al porilor proteici' (BIOSENS) PN II IDEI PCCE nr.1/2012
10. 2008-2011 "Elucidation of mechanisms of interaction of selected cytotoxic peptides with tumor cells, and optimization of anti-tumoral properties of such peptides", PN II nr. 62061/2008
11. 2007-2010 'Molecular characterization of antimicrobial peptides action mechanisms and de-novo prediction of molecular structures with enhanced antimicrobial potential' PN II nr.61-016/2007
12. 2006-2008 'Nano-scale approach towards studying couplings between biomembranes, bacterial toxins and proteins with roles in drugs penetration' 2-Cex 06-11-49 / 2006
13. 2006-2008 'Study of impermeability-mediated antimicrobial resistance mechanisms of Gram-negative bacteria in natural and reconstituted membranes' CEEX nr.168/2006