Curriculum Vitae

Personal Info

Name & Surname: **Eliza Cristina Martin**

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LinkedIn: https://www.linkedin.com/in/eliza-cristina-martin-b81a0710a/

ResearchGate: https://www.researchgate.net/profile/Eliza_Martin2

Nationality: Romanian

Work Experience

Date: 07.2015 - present

Position: **Research Assistant (full time)**

Employer: Romanian Academy Institute of Biochemistry, Bioinformatics & Structural Biochemistry Department

Main activities & responsibilities:

- Sequence and structural analysis of RAG-like proteins aiming to provide a better understanding of the RAG transposon evolution in invertebrates and its domestication process in vertebrates.
- Structural analysis and homology/ab initio modelling of biomolecular complexes, especially plant immunity related complexes (NLRs and RLKs).
- Generating an online interactive plant NLRs atlas (https://nlrscape.biochim.ro/), which gathers and organizes ~80k candidate NLRs and provides web-based bioinformatic analysis tools.
- Development of prediction tools for several 3D structural motifs in proteins involved in plant immunity using machine learning.
- Metal-binding proteins *in silico* structural studies and de novo peptide design for enhanced functionality
- Software engineering development and testing tasks for Robosample, a molecular sampling and dynamics simulations software.

Education

2016 - present

PhD in Bioinformatics and Structural Biology

PhD Supervisor: Professor Andrei-Jose Petrescu
Institution: Institute of Biochemistry of the Romanian Academy and the Romanian Academy Advanced Studies School (SCOSAAR)

Multidisciplinary programme that focusses on developing statistical methods for studying protein 3D structure and dynamics as well as applied applications on proteins involved in immunity.

Main topics :

1. Genome/transcriptome data screening to identify novel RAG-like genes, transposon activity markers detection, structural analysis and modelling of RAG-like protein complexes in invertebrates.

2. Structural investigation of protein families involved in plant immunity – modelling and simulation of specific protein complexes (ZAR1, Rx1, TSW and others) aiming for a better understanding of pathogen detection mechanisms and for pathogen control engineering purposes.

3. Machine learning (ML) based prediction methods for identifying sequence patterns responsible for irregular solenoid 3D architecture proteins, by including more context information and learning data resampling to obtain a more robust predictor particularly designed for irregular pattern detection

2021

BSc in Computer Science

Spiru Haret University, Faculty of Engineering and Informatics, Bucharest

2018 **MSc in Food Technology and Processing**
Carol Davila University of Medicine and Farmacy Bucharest,

2016 **MSc in Biochemistry and Molecular Biology**
University of Bucharest, Faculty of Biology

2014 **BSc in Chemistry**
University of Bucharest, Faculty of Chemistry

Technical Skills

Programming: C/C++, Python

Statistics: Machine learning, Bayesian statistics, modelling, data analysis, data visualisation. (Scikit-learn, Tensorflow)

Computational Biology: Molecular processes modelling and molecular dynamics simulation, bioinformatics analysis using statistical methods.

Wet lab: Recombinant DNA, cloning, cell culture, protein purification techniques

Awards

2004 - 2008: Participation at 5 editions of Chemistry National Olympiad (in middle/high school), with the following awards: 1st place (2005), 3rd place (2004), best practical probe prize (2006), best theoretical probe prize (2004), special mentions (2006), mention (2007, 2008).

Participation at the final selection step of the national team camp for the International Chemistry Olympiad (5^{th} and 7^{th} place).

2005: Bronze Medal - International Environmental Project Olympiad (INEPO)

Personal Skills

Native language: Romanian

Other languages: English (B2), Spanish (A2)

Publications

Martin EC*, Vicari C*, Tsakou-Ngouafo L, Pontarotti P, Petrescu AJ, Schatz DG. "*Identification of RAG-like transposons in protostomes suggests their ancient bilaterian origin*." *Mobile DNA*. 11, 12 (**2020**) [PMID: 32399063]
IF: 4.06; AI: 2.6 Citations (WoS): 11

Martin EC, Sukarta OCA, Spiridon L, Grigore LG, Constantinescu V, Tacutu R, Goverse A, Petrescu A-J, "*LRRpredictor - A New LRR Motif Detection Method for Irregular Motifs of Plant NLR Proteins Using an Ensemble of Classifiers*", *Genes* 11(3), 286-300, **2020** [PMID: 32182725]
IF: 3.69; AI: 1.2 Citations (WoS): 13

Mernea M*, Martin EC*, Petrescu AJ, Avram S., "*Deep Learning in the Quest for Compound Nomination for Fighting COVID-19.*", *Curr.Med.Chem* 28(28), 5699-5732, **2021** [PMID: 33441063]
IF: 4.53; AI: 0.8 Citations (WoS): -

Manoliu LCE*, Martin EC*, Milac AL, Spiridon L, *"Effective Use of Empirical Data for Virtual Screening against APJR GPCR Receptor."*, *Molecules*; 26(16):4894, **2021**. [PMID: 34443478]
IF: 4.41; AI: 0.7 Citations (WoS): -

Manica G, Ghenea S, Munteanu CVA, Martin EC, Butnaru C, Surleac M, Chiritoiu GN, Alexandru PR, Petrescu AJ, Petrescu SM, *"EDEM3 Domains Cooperate to Perform Its Overall Cell Functioning."*, *Int.J.Mol.Sci*; 22(4):2172 (**2021**). [PMID: 33671632]
IF: 5.92; AI: 1.2 Citations (WoS): 1

Baudin M, Martin EC, Sass C, Hassan JA, Bendix C, Sauceda R, Diplock N, Specht CD, Petrescu AJ, Lewis JD, *"A natural diversity screen in Arabidopsis thaliana reveals determinants for HopZ1a recognition in the ZAR1-ZED1 immune complex."*, *Plant Cell Environ.*; 44(2):629-644, **2021**. [PMID: 33103794]
IF: 7.33; AI: 1.9 Citations (WoS): 1

Baudin M, Schreiber KJ, Martin EC, Petrescu AJ, Lewis JD, *"Structure-function analysis of ZAR1 immune receptor reveals key molecular interactions for activity."*, *Plant J.*; 101(2):352-370, **2020**. [PMID: 31557357]
IF: 6.41; AI: 2.2 Citations (WoS): 10

Ionescu AE, Mentel M, Munteanu CVA, Sima LE, Martin EC, Necula-Petrareanu G, Szedlacsek SE., *"Analysis of EYA3 Phosphorylation by Src Kinase Identifies Residues Involved in Cell Proliferation."*, *Int.J.Mol.Sci.*; 20(24):6307, **2019**. [PMID: 31847183]
IF: 5.92; AI: 1.2 Citations (WoS): 5

Wróblewski T, Spiridon L, Martin EC, Petrescu AJ, Cavanaugh K, Truco MJ, Xu H, Gozdowski D, Pawłowski K, Michelmore RW, Takken FLW., *"Genome-wide functional analyses of plant coiled-coil NLR-type pathogen receptors reveal essential roles of their N-terminal domain in oligomerization, networking, and immunity."*, *PLoS Biology.*; 16(12): e2005821, **2018**. [PMID: 30540748]
IF: 8.38; AI: 4.0 Citations (WoS): 26

Slootweg EJ, Spiridon LN, Martin EC, Tameling WIL, Townsend PD, Pomp R, Roosien J, Drawska O, Sukarta OCA, Schots A, Borst JW, Joosten MHAJ, Bakker J, Smant G, Cann MJ, Petrescu AJ, Goverse A., *"Distinct Roles of Non-Overlapping Surface Regions of the Coiled-Coil Domain in the Potato Immune Receptor Rx1."*, *Plant Physiol.*; 178(3): 13010-1331, **2018**. [PMID: 30194238]
IF: 6.30; AI: 2.4 Citations (WoS): 7

Martin EC, Tudor V, Madalan A, Maxim C, Tuna F, Lloret F, Julve M, Andruh M. Heterometallic CoII-CoIII-MII alkoxido-bridged heptanuclear motifs (M = Cu, Zn). "*Syntheses, crystal structures and magnetic properties*". *Inorganica Chimica Acta*, (475): 98-104, **2018**.
IF=2.43; AI 0.3; Citations(WoS): 3

* equal contribution

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