

ENGLISH: Ph.D. Supervisor: C.S.I. Dr. Habil. Vlad Cojocaru

PhD position without governmental scholarship dedicated to the MSC Doctoral Network

EVADERE: <https://evadere1.eu>

Admission exam topics

1. The principles governing the structures of biomolecules (proteins, nucleic acids, lipids, carbohydrates)
2. Experimental and theoretical methods for determining the structures of biomolecules
3. Basic concepts of Immunology
4. Antibodies and antigens
5. Basic concepts in Linux and programming
6. Basic concepts in Molecular Modeling

Bibliography:

- Stryer, L., et al. (2019): *Biochemistry*. 9th Edition
- Punt, J. et. al (2018): *Kuby Immunology*. Freeman.
- Stigliano A.F. (2020): *Biomolecular Interfaces*. Springer Verlag
- Leach, A. R. (2001): *Molecular Modeling: Principles and Applications*. (2nd or 3rd edition)
- Schlick, T. (2013): *Molecular Modeling and Simulation: An Interdisciplinary Guide*
- Dettmer, P. (2021): *Immune*. Hodder & Stoughton
- Yi, Q. (2015): Structural biology of innate immunity, Annual Rev Immunol (doi: <https://doi.org/10.1146/annurev-immunol-032414-112258>)
- Gao, M. (2024): Improved deep learning prediction of antigen-antibody interactions; PNAS (<https://doi.org/10.1073/pnas.2410529121>)

Recommended software tutorials:

VMD (<https://www.ks.uiuc.edu/Research/vmd/>), Amber (www.ambermd.org), Haddock (<https://www.bonvinlab.org/software/>), Chimera (<https://www.cgl.ucsf.edu/chimera/>), Pymol (<https://github.com/schrodinger/pymol-open-source>)

ROMANA: Tematica concursului de admitere la doctorat (loc cu bursa):

Loc bugetat fara bursa dedicat retelei doctorale Marie Curie EVADERE:
<https://evadere1.eu>

- Principiile ce stau la baza structurilor tri-dimensionale ale biomoleculelor (proteine, acizi nucleici, lipide, glucide)
- Tehnici experimentale si computationale pentru determinarea structurilor biomoleculelor
- Concepte de baza in imunologie
- Anticorpi si antigeni
- Concepte de baza in Linux si programare
- Concepte de baza in Modelare Moleculara

Bibliografie:

- Stryer, L., et al. (2019): *Biochemistry*. 9th Edition
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