



ROMÂNIA  
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RECTORATUL

## Universitatea Babeș-Bolyai Competiția Excelenței 2010

### Dosar individual

**Notă: Toate datele se referă la perioada 2005-2009**

<b>Nume, prenume, grad did.</b>	<b>SILAGHI-DUMITRESCU RADU, CONFERENTAR</b>
<b>Facultatea, Catedra</b>	Chimei si inginerie chimica, catedra de biochimie si inginerie biochimica
<b>Domeniul științific</b>	Biotehnologii, Ingineria si securitatea alimentelor
<b>Adresa paginii web personale</b>	<a href="http://chem.ubbcluj.ro/pagini/biochimie/radu/rsilaghi.htm">http://chem.ubbcluj.ro/pagini/biochimie/radu/rsilaghi.htm</a>
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### Criteriaul I – Output

**1. Articole științifice publicate în reviste indexate ISI (cu menționare factorului de impact în cazul celor cotate)**

**32 articole:**

1. Mot, Augustin Catalin; Damian, Grigore; Sarbu, Costel; Silaghi-Dumitrescu, Radu. Redox reactivity in propolis: direct detection of free radicals in basic medium and interaction with hemoglobin, Redox Report, 2009, 14(6), 267-74.

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2. Silaghi-Dumitrescu, Radu. Superoxide interaction with nickel and iron superoxide dismutases, Journal of Molecular Graphics and Modelling 2009, 28(2), 156-61.

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3. Pogorelova, Anna S.; Makarov, Sergei V.; Ageeva, Tatiana; Silaghi-Dumitrescu, Radu. Cobalt tetrasulfophthalocyaninate – a catalyst for nitrite reduction by thiourea dioxide, Russian Journal of Physical Chemistry 2009, 83(12), 2250-2254.

0.475

4. Makarov, Sergei V.; Salnikov Denis S.; Pogorelova, Anna S.; Kis, Zoltan; Silaghi-Dumitrescu, Radu. A new route to carbon monoxide adducts of heme proteins, Journal of Porphyrins and Phthalocyanines 2008, 12, 1096-1099.

1.189

5. Silaghi-Dumitrescu, Radu. Halide activation by heme peroxidases: theoretical predictions on putative adducts of halides with Compound I European Journal of Inorganic Chemistry, 2008, 5404-5407.

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6. Silaghi-Dumitrescu, Radu, Matei Uta, Andras Kallay, Jenő Bodis. Carbon dioxide activation: hydration by carbonic anhydrase and related systems - what makes a good catalyst? Journal of Molecular Structure THEOCHEM 2010, 942(1-3), 15-18.

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7. Silaghi-Dumitrescu, Radu. Nitric oxide and nitrite reduction by metalloenzymes *Revue Roumaine de Chimie*, 2009, 54(6), 513–522.

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8. Reeder, Brandon J.; Grey, Marie; Silaghi-Dumitrescu, Radu; Svistunenko, Dimitri A.; Bülow, L.; Cooper, Chris E.; Wilson, Michael T. Tyrosine residues as redox cofactors in human hemoglobin: implications for engineering non toxic blood substitutes *Journal of Biological Chemistry*, 2008, 283, (45), 30780-30787.

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9. Cooper, Chris E.; Silaghi-Dumitrescu, Radu; Rukengwa, Martine; Alayash, Abdu I.; Buehler, Paul W.. Peroxidase-activity of hemoglobin towards ascorbate and urate: a synergistic protective strategy against toxicity of hemoglobin-based oxygen carriers (HBOC) *Biochimica Biophysica Acta*, 2008, 1784, 1415–1420.

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10. Silaghi-Dumitrescu, Radu. Halide activation by heme peroxidases: theoretical predictions on putative adducts of halides with Compound I. *Journal of Biological Inorganic Chemistry*, 2007, 12(S1), S229.

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11. Silaghi-Dumitrescu, Radu. The “push” effect of the thiolate axial ligand in superoxide reductase: a density functional study *Revue Roumaine de Chimie*, 2008, 53(12), 1149–1156.

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12. Silaghi-Dumitrescu, Radu. Electronic structures of Fe(IV) and Fe(V) systems with oxo, sulfido and nitrido ligands in octahedral environments. *Revista de Chimie*, 2007, 58(5), 461-464.

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13. Svistunenko, Dimitri A.; Reeder, Brandon J.; Wankasi, Meebi M.; Silaghi-Dumitrescu, Radu; Cooper, Chris E. Rinaldo, Serena; Cutruzzolà, Francesca; Wilson, Michael T. Interaction of *Aplysia limacina* metmyoglobin with hydrogen peroxide. *Dalton Transactions* 2007, 840-50.

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14. Silaghi-Dumitrescu, Radu; Reeder, Brandon; Nicholls, Peter; Cooper, Chris E.; Wilson, Michael T. Ferryl haem protonation gates peroxidatic reactivity in globins. *Biochemical Journal* 2007, 403, 391–395.

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15. Isaza, Clara E.; Silaghi-Dumitrescu, Radu; Iyer, Ramesh B.; Kurtz, Donald M. Jr.; Chan, Michael K. Structural Basis for O<sub>2</sub> Sensing by the Hemerythrin-like Domain of a Bacterial Chemotaxis Protein: Substrate Tunnel and Fluxional N Terminus. *Biochemistry* 2006, 45(30), 9023-9031.

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16. Dunne, Jacqueline; Caron, Alexis; Menu, Patrick; Alayash, Abdu I.; Buehler, Paul W.; Wilson, Michael T.; Silaghi-Dumitrescu, Radu; Faivre, Beatrice; Cooper, Chris E. Ascorbate removes key precursors to oxidative damage by cell free hemoglobin in vitro and in vivo. *Biochemical Journal* 2006, 399(3), 513-24.

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17. Silaghi-Dumitrescu, Radu; Copper-containing nitrite reductase: a DFT study of nitrite and nitric oxide adducts. *Journal of Inorganic Biochemistry* 2006, 100(3), 396-402.

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18. Silaghi-Dumitrescu, Radu; Silaghi-Dumitrescu, Ioan; DFT and the electromerism in complexes of iron with diatomic ligands. *Journal of Inorganic Biochemistry* 2006, 100(1), 161-166.

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19. Silaghi-Dumitrescu, Radu; Cooper, Chris E., Transient species involved in catalytic dioxygen/peroxide activation by hemoproteins: possible involvement of protonated compound I species. *Dalton Transactions* 2005, 3477-3482.

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20. Iyer, Ramesh,\* Silaghi-Dumitrescu, Radu,\* Lanzilotta, William N. Kurtz, Donald M. Jr. High-resolution crystal structures of *Desulfovibrio vulgaris* (Hildenborough) nigerythrin: facile, redox-dependent iron movement, domain interface variability, and peroxidase activity in the rubrerythrin *Journal of Biological Inorganic Chemistry* 2005, 10, 407-416. (\*authors marked “contributed equally to this work”)

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21. Silaghi-Dumitrescu, Radu, Kurtz, Donald M. Jr., Ljungdahl, Lars G., Lanzilotta, William N. X-ray Crystal Structures of *Moorella thermoacetica* FprA. Novel Diiron Site Structure and Mechanistic Insights into a Scavenging Nitric Oxide Reductase. *Biochemistry* 2005, 44(17), 6492-6501.

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22. Silaghi-Dumitrescu, Radu. A density functional study of heme-peroxynitrite adducts. *Journal of Molecular Structure THEOCHEM*, (2005), 722, 233-237.

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23. Silaghi-Dumitrescu, Radu. Nitrile hydration by the cobalt-containing nitrile hydratase. DFT investigation of the mechanism *Revista de Chimie* 2005 56(4), 359-362.

0.389

24. Silaghi-Dumitrescu, Radu; Ng, Kim Yong; Viswanathan, Rathinam, Kurtz, Donald M. Jr. A Flavodiiron protein from *Desulfovibrio vulgaris* with oxidase and nitric oxide reductase activities. Evidence for an *In vivo* nitric oxide scavenging function. *Biochemistry* 2005, 44(9), 3572-9.

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25. Das, Amaresh; Silaghi-Dumitrescu, Radu; Ljungdahl, Lars G.; Kurtz, Donald M., Jr., Cytochrome bd oxidase, oxidative stress and dioxygen tolerance of the strictly anaerobic bacterium, *Moorella thermoacetica*. *Journal of Bacteriology* 2005, 187(6), 2020-2029.

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26 Deac, Florina-Violeta; Todea, Anamaria; Bolfa, Ana Maria; Podea, Paula; Petrar, Petronela; Silaghi-Dumitrescu, Radu. Ascorbate binding to globins, *Romanian Journal of Biochemistry*, 2009, 46(2), 115–121.

27. Silaghi-Dumitrescu, Radu; Kallay, Andras. Carbon dioxide hydration: mechanistic lessons from enzymatic systems *Studia Universitatis Babes-Bolyai, Chemia* 2008, (3), 47-50.

29. Silaghi-Dumitrescu, Radu; Uta, Matei-Maria. Nitrite linkage isomerism in bioinorganic chemistry – a case for mechanistic promiscuity *Studia Universitatis Babes-Bolyai, Chemia* 2008, (2), 61-65.

30. Silaghi-Dumitrescu, Radu. A density functional study of aromatic ring oxygenation by Rieske dioxygenase active sites. 2. Energetics of the proposed reaction mechanisms. *Studia Universitatis Babes-Bolyai, Chemia* 2007, (2), 127-139.

31. Silaghi-Dumitrescu, Radu. Dioxygen activation by Rieske dioxygenases – computational studies. 1. Possible catalytic intermediates. *Studia Universitatis Babes-Bolyai, Chemia* 2007, (2), 103-126.

32. Silaghi-Dumitrescu, Radu. A paradigm for O-O bond cleavage in ferric-hydroperoxo complexes. *Studia Universitatis Babes-Bolyai, Chemia* 2007, 52, 47-54.

## 2. Articole științifice publicate în ISI proceedings

## **2 articole:**

Structure/function correlations in binuclear non-heme ferrous sites: Specific characterization of the active sites in m-Ferritin and nitric oxide reductases

Author(s): Schwartz, JK; Liu, XF; Albetel, AN, et al.

Conference Information: 231st National Meeting of the American-Chemical-Society, Date: MAR 26-30, 2006 Atlanta GA

Source: ABSTRACTS OF PAPERS OF THE AMERICAN CHEMICAL SOCIETY Volume: 231 Meeting Abstract: 589-INOR Published: 2006

Novel non-heme diiron bacterial peroxidases.

Author(s): Iyer, RB; Silaghi-Dumitrescu, R; Lanzilotta, WN, et al.

Conference Information: 229th National Meeting of the American-Chemical-Society, Date: MAR 13-17, 2005 San Diego CA

Source: ABSTRACTS OF PAPERS OF THE AMERICAN CHEMICAL SOCIETY Volume: 229 Pages: U1047-U1047 Published: 2005

Meeting Abstract: 556-INOR

## **3. Articole științifice indexate în BDI (din lista CNCSIS)**

### **7 articole:**

1. Silaghi-Dumitrescu, Radu. Hemes Revisited by Density Functional Approaches. 2. A Paradigm for Axial Ligation In Hemoproteins. Studia Universitatis Babes-Bolyai, *Chemia* 2006, 51, 167-174.

2. Silaghi-Dumitrescu, Radu. Fe(IV)-Fe(II) electromerism in hemoprotein complexes: implications for ferryl chemistry. Proceedings of the Romanian Academy Series B 2006, 2-3, 95-101.

3. Silaghi-Dumitrescu, Radu. Discontinuum between ferrous-superoxo and ferric-peroxo in heme [FeO<sub>2</sub>]<sup>9</sup> complexes? Studia Universitatis Babes-Bolyai, *Chemia* 2005, 11-16.

4. Silaghi-Dumitrescu, Radu. Bonding in biologically-relevant high-valent iron centers International Journal of Chemical Modeling 2008, 1 (4).

5. Silaghi-Dumitrescu, Radu. The ferric-oxo moiety in porphyrin complexes – a ferryl in disguise? *Macroheterocycles*, 2008, 1, 79-81.

6. Silaghi-Dumitrescu, Radu; Silaghi-Dumitrescu, Ioan; Editorial – special issue on Computational Inorganic Chemistry. *Chemtracts – Inorganic Chemistry* 2005, 50, 11-16.

7. Silaghi-Dumitrescu, Radu; Silaghi-Dumitrescu, Ioan; Computational Inorganic Chemistry – a useful tool, and more. *Chemtracts – Inorganic Chemistry* 2005, 684-708.

## **4. Alte articole științifice/capitole publicate în reviste/volume cu referenți (peer-reviewed)**

### **7 articole:**

1. Arkosi, Mariann-Kinga; Deac, Florina; Silaghi-Dumitrescu, Radu. Hemoglobin peroxidase activity: interaction with hydroquinone and anthracene, *Metal Elements in Environment, Medicine and Biology Tome IX*, Radu Silaghi-Dumitrescu, Gabriela Garban, Eds., 2009, Cluj University Press, Cluj-Napoca, Romania, pp 99-110.

2. Mot, Augustin; Roman, Alina; Silaghi-Dumitrescu, Radu. Blood substitutes: can we do without hemoglobin?, *Metal Elements in Environment, Medicine and Biology Tome IX*, Radu Silaghi-Dumitrescu, Gabriela Garban, Eds., 2009, Cluj University Press, Cluj-Napoca, Romania, pp 122-125.

3. Taciuc, Vicentiu; Bischin, Cristina; Silaghi-Dumitrescu, Radu. A novel mechanism for platinum-based drugs: cisplatin and related compounds as pro-oxidants in blood, *Metal Elements in Environment*,

Medicine and Biology Tome IX, Radu Silaghi-Dumitrescu, Gabriela Garban, Eds., 2009, Cluj University Press, Cluj-Napoca, Romania, pp 130-134.

4. Deac, Florina; Todea, Anamaria; Silaghi-Dumitrescu, Radu. Glutaraldehyde derivatization of hemoglobin: a potential blood substitute, Metal Elements in Environment, Medicine and Biology Tome IX, Radu Silaghi-Dumitrescu, Gabriela Garban, Eds., 2009, Cluj University Press, Cluj-Napoca, Romania, pp 165-173.

5. Silaghi-Dumitrescu, Radu; Bischin, Cristina; Deac, Florina; Kis, Zoltan; Mot, Augustin; Makarov, Sergei V. Unusual metal oxidation states in metalloproteins and related complexes: from degenerate orbitals to apoptosis, Metal Elements in Environment, Medicine and Biology Tome IX, Radu Silaghi-Dumitrescu, Gabriela Garban, Eds., 2009, Cluj University Press, Cluj-Napoca, Romania, pp 174-182.

6. Haiduc, Ionel; Silaghi-Dumitrescu, Ioan; Garban, Zeno; Fischer-Fodor, Eva; Silaghi-Dumitrescu, Radu. Metallomics, Metal Elements in Environment, Medicine and Biology Tome VIII, Corneliu Davidescu, Gabriela Garban, Iosif Gergen, Simona Dragan, Nicolae Vaszilcsin, Adina Avacovici, Eds., 2008, Eurobit Publishing House, Timisoara, Romania, pp 5-14.

7. Silaghi-Dumitrescu, Radu; Deac, Florina. The redox reactivity of globins: the chicken and egg paradox, Metal Elements in Environment, Medicine and Biology Tome VIII, Corneliu Davidescu, Gabriela Garban, Iosif Gergen, Simona Dragan, Nicolae Vaszilcsin, Adina Avacovici, Eds., 2008, Eurobit Publishing House, Timosara, Romania, pp 271-276.

#### **5. Cărți științifice publicate în edituri internaționale**

1. Radu Silaghi-Dumitrescu, Horseradish peroxidase – a versatile catalyst, 2006, Research Signpost, India, 136 pp.

2. Radu Silaghi-Dumitrescu, Bonding in biologically-relevant high-valent iron centers, in „Quantum Frontiers of Atoms and Molecules”, Ed. Mihai V. Putz, NOVA Publishing Inc. (New York), 22pp

#### **6. Cărți științifice publicate în edituri naționale acreditate**

#### **7. Editor de volume publicate în edituri naționale și internaționale**

Metal Elements in Environment, Medicine and Biology Tome IX, Radu Silaghi-Dumitrescu, Gabriela Garban, Eds., 2009, Cluj University Press, Cluj-Napoca, Romania

#### **8. Brevete internaționale**

#### **9. Brevete naționale**

#### **10. Impact tehnologic al brevetelor: resurse financiare extrabugetare atrase în relație cu economia**

#### **11. Realizări artistice naționale și internaționale (Domeniul Arte)**

(Expoziții, spectacole, concerte, publicații, filme, înregistrări)

## **Criteriul II – Prestigiu profesional**

### **1. Citări ale articolelor ISI listate la Criteriul I**

**133:**

Nitric oxide and nitrite reduction by metalloenzymes. Silaghi-Dumitrescu, Radu. Department of Chemistry and Chemical Engineering, "Babes-Bolyai" University, Cluj-Napoca, Rom. *Revue Roumaine de Chimie* (2009), 54(6), 513-522. Publisher: Editura Academiei Romane, CODEN: RRCHAX ISSN: 0035-3930. Journal; General Review written in English. CAN 152:232895 AN 2010:237163 CAPLUS (Copyright (C) 2010 ACS on SciFinder (R))

Acetaminophen inhibits hemoprotein-catalyzed lipid peroxidation and attenuates rhabdomyolysis-induced renal failure. Boutaud, Olivier; Moore, Kevin P.; Reeder, Brandon J.; Harry, David; Howie, Alexander J.; Wang, Shuhe; Carney, Clare K.; Masterson, Tina S.; Amin, Taneem; Wright, David W.; Wilson, Michael T.; Oates, John A.; Roberts, L. Jackson, II. Department of Pharmacology, Vanderbilt University, Nashville, TN, USA. *Proceedings of the National Academy of Sciences of the United States of America* (2010), 107(6), 2699-2704, S2699/1-S2699/5. Publisher: National Academy of Sciences, CODEN: PNASA6 ISSN: 0027-8424. Journal written in English. AN 2010:220837 CAPLUS (Copyright (C) 2010 ACS on SciFinder (R))

Toxicological consequences of extracellular hemoglobin: biochemical and physiological perspectives. Buehler, Paul W.; D'Agnillo, Felice. Laboratory of Biochemistry and Vascular Biology, Division of Hematology, Center for Biologics Evaluation and Research (CBER), Food and Drug Administration (FDA), Bethesda, MD, USA. *Antioxidants & Redox Signaling* (2010), 12(2), 275-291. Publisher: Mary Ann Liebert, Inc., CODEN: ARSIF2 ISSN: 1523-0864. Journal; General Review written in English. CAN 152:234830 AN 2010:153041 CAPLUS (Copyright (C) 2010 ACS on SciFinder (R))

Hemoglobin can attenuate hydrogen peroxide-induced oxidative stress by acting as an antioxidative peroxidase. Widmer, Corinne C.; Pereira, Claudia P.; Gehrig, Peter; Vallelian, Florence; Schoedon, Gabriele; Buehler, Paul W.; Schaer, Dominik J. Division of Internal Medicine, University Hospital, Zurich, Switz. *Antioxidants & Redox Signaling* (2010), 12(2), 185-198. Publisher: Mary Ann Liebert, Inc., CODEN: ARSIF2 ISSN: 1523-0864. Journal written in English. CAN 152:234877 AN 2010:153034 CAPLUS (Copyright (C) 2010 ACS on SciFinder (R))

"Super-reduced" iron under physiologically-relevant conditions. Mot, Augustin; Zoltan, Kis; Svistunenko, Dimitri A.; Damian, Grigore; Silaghi-Dumitrescu, Radu; Makarov, Sergei V. "Babes-Bolyai" University, Cluj-Napoca, Rom. *Dalton Transactions* (2010), 39(6), 1464-1466. Publisher: Royal Society of Chemistry, CODEN: DTARAF ISSN: 1477-9226. Journal written in English. AN 2010:112641 CAPLUS (Copyright (C) 2010 ACS on SciFinder (R))

Acetogens: anaerobic gamblers at the oxic-anoxic interface. Drake, Harold L.; Goessner, Anita S. Department of Ecological Microbiology, University of Bayreuth, Bayreuth, Germany. Editor(s): Liu, Shuang-Jiang; Drake, Harold L. *Microbes and the Environment* (2008), 59-66. Publisher: Science Press, Beijing, Peop. Rep. China CODEN: 69MJYC Conference written in English. AN 2010:100128 CAPLUS (Copyright (C) 2010 ACS on SciFinder (R))

Redox reactivity in propolis: direct detection of free radicals in basic medium and interaction with hemoglobin. Mot, Augustin-Catalin; Damian, Grigore; Sarbu, Costel; Silaghi-Dumitrescu, Radu. Department of Chemistry and Chemical Engineering, "Babes-Bolyai" University, Cluj-Napoca, Rom. *Redox Report* (2009), 14(6), 267-274. Publisher: Maney Publishing, CODEN: RDRPE4 ISSN: 1351-0002. <http://www.ingentaconnect.com/content/maney/rer/2009/00000014/00000006/art00006> Journal; Online Computer File written in English. AN 2010:56090 CAPLUS (Copyright (C) 2010 ACS on SciFinder (R))

Electronic Structure of Selected {FeNO}7 Complexes in Heme and Non-Heme Architectures: A Density Functional and Multireference ab Initio Study. Radon, Mariusz; Broclawik, Ewa; Pierloot, Kristine.

Faculty of Chemistry, Jagiellonian University, Krakow, Pol. *Journal of Physical Chemistry B* (2010), 114(3), 1518-1528. Publisher: American Chemical Society, CODEN: JPCBFK ISSN: 1520-6106. Journal written in English. CAN 152:200526 AN 2010:7919 CAPLUS (Copyright (C) 2010 ACS on SciFinder (R))

The quaternary structure of tetrameric hemoglobin regulates the oxygen affinity of polymerized hemoglobin. Palmer, Andre F.; Sun, Guoyong; Harris, David R. William G. Lowrie Dept. of Chemical and Biomolecular Engineering, The Ohio State University, Columbus, OH, USA. *Biotechnology Progress* (2009), 25(6), 1803-1809. Publisher: Wiley-Blackwell, CODEN: BIPRET ISSN: 8756-7938. <http://www3.interscience.wiley.com/journal/122582305/abstract> Journal; Online Computer File written in English. CAN 152:222906 AN 2010:7781 CAPLUS (Copyright (C) 2010 ACS on SciFinder (R))

The Side-On Copper(I) Nitrosyl Geometry in Copper Nitrite Reductase Is Due to Steric Interactions with Isoleucine-257. Merkle, Anna C.; Lehnert, Nicolai. Department of Chemistry, University of Michigan, Ann Arbor, MI, USA. *Inorganic Chemistry* (Washington, DC, United States) (2009), 48(24), 11504-11506. Publisher: American Chemical Society, CODEN: INOCAJ ISSN: 0020-1669. Journal written in English. CAN 151:566486 AN 2009:1480599 CAPLUS (Copyright (C) 2010 ACS on SciFinder (R))

A superoxide dismutase-human hemoglobin fusion protein showing enhanced antioxidative properties. Grey, Marie; Yainoy, Sakda; Prachayasittikul, Virapong; Bulow, Leif. Department of Pure and Applied Biochemistry, Centre for Chemistry and Chemical Engineering, Lund University, Swed. *FEBS Journal* (2009), 276(21), 6195-6203. Publisher: Wiley-Blackwell, CODEN: FJEOAC ISSN: 1742-464X. Journal written in English. CAN 151:545210 AN 2009:1318686 CAPLUS (Copyright (C) 2010 ACS on SciFinder (R))

A life with acetogens, thermophiles, and cellulolytic anaerobes. Ljungdahl, Lars G. Department of Biochemistry and Molecular Biology, The University of Georgia, Athens, GA, USA. *Annual Review of Microbiology* (2009), 63 1-25. Publisher: Annual Reviews Inc., CODEN: ARMAZ ISSN: 0066-4227. Journal; General Review written in English. AN 2009:1301646 CAPLUS (Copyright (C) 2010 ACS on SciFinder (R))

Multiple antioxidant proteins protect *Chlorobaculum tepidum* against oxygen and reactive oxygen species. Li, Hui; Jubelirer, Sara; Garcia Costas, Amaya M.; Frigaard, Niels-Ulrik; Bryant, Donald A. Department of Biochemistry and Molecular Biology and Center for Biomolecular Structure and Function, The Pennsylvania State University, University Park, PA, USA. *Archives of Microbiology* (2009), 191(11), 853-867. Publisher: Springer, CODEN: AMICCW ISSN: 0302-8933. Journal written in English. CAN 151:524262 AN 2009:1270575 CAPLUS (Copyright (C) 2010 ACS on SciFinder (R))

Oxidized Hemoglobin Is an Endogenous Proinflammatory Agonist That Targets Vascular Endothelial Cells. Silva, Gabriela; Jeney, Viktoria; Chora, Angelo; Larsen, Rasmus; Balla, Jozsef; Soares, Miguel P. Instituto Gulbenkian de Ciencia, Oeiras, Port. *Journal of Biological Chemistry* (2009), 284(43), 29582-29595. Publisher: American Society for Biochemistry and Molecular Biology, CODEN: JBCHA3 ISSN: 0021-9258. Journal written in English. CAN 151:467173 AN 2009:1269848 CAPLUS (Copyright (C) 2010 ACS on SciFinder (R))

The predictability of evolution: glimpses into a post-Darwinian world. Conway Morris, Simon. Department of Earth Sciences, University of Cambridge, Cambridge, UK. *Naturwissenschaften* (2009), 96(11), 1313-1337. Publisher: Springer, CODEN: NATWAY ISSN: 0028-1042. Journal written in English. AN 2009:1245777 CAPLUS (Copyright (C) 2010 ACS on SciFinder (R))

Structure elucidation and preliminary assessment of hydrolase activity of PqsE, the *Pseudomonas* quinolone signal (PQS) response protein. Yu, Shen; Jensen, Vanessa; Seeliger, Janine; Feldmann, Ingo; Weber, Stefan; Schleicher, Erik; Haussler, Susanne; Blankenfeldt, Wulf. Department of Physical Biochemistry, Max-Planck-Institute of Molecular Physiology, Dortmund, Germany. *Biochemistry* (2009), 48(43), 10298-10307. Publisher: American Chemical Society, CODEN: BICHAW ISSN:

0006-2960. Journal written in English. CAN 151:419934 AN 2009:1225493 CAPLUS (Copyright (C) 2010 ACS on SciFinder (R))

Flavonoids as reductants of ferryl hemoglobin. Gebicka, Lidia; Banasiak, Ewa. Institute of Applied Radiation Chemistry, Faculty of Chemistry, Technical University of Lodz, Lodz, Pol. *Acta Biochimica Polonica* (2009), 56(3), 509-513. Publisher: Polish Biochemical Society, CODEN: ABPLAF ISSN: 1734-154X. [http://www.actabp.pl/pdf/3\\_2009/509.pdf](http://www.actabp.pl/pdf/3_2009/509.pdf) Journal; Online Computer File written in English. CAN 151:375605 AN 2009:1221626 CAPLUS (Copyright (C) 2010 ACS on SciFinder (R))

Superoxide interaction with nickel and iron superoxide dismutases. Silaghi-Dumitrescu, Radu. Department of Chemistry, "Babes-Bolyai" University, Cluj-Napoca, Rom. *Journal of Molecular Graphics & Modelling* (2009), 28(2), 156-161. Publisher: Elsevier, CODEN: JMGMFI ISSN: 1093-3263. Journal written in English. CAN 151:464615 AN 2009:1184760 CAPLUS (Copyright (C) 2010 ACS on SciFinder (R))

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#### **4. Distincții, premii și alte recunoașteri naționale și internaționale**

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- Îndrumare lucrări de disertație (număr lucrări susținute) 3
- Doctoranzi (lista nominală a doctoranzilor înmatriculați resp. lista nominală a tezelor susținute)
- Post-doctoranzi (lista nominală)

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**2004-2007      3 500 000 RON**

## **10. Participări la programe/granturi finanțate din sursă națională (se menționează și valoarea)**

IZOMERIA NITRO/NITRITO IN METALOCOMPLECSI CU RELEVANTA BIOCATALITICA, 2006-2008, CEEX-ET (Proiect de cercetare de excelență pentru tineri cercetători) cod proiect 98      Director de proiect  
de proiect      2006-2008      120000 RON

METALLOPROTEIN-BASED BLOOD SUBSTITUTES: STRATEGIES FOR TACKLING OXIDATIVE AND NITROSATIVE STRESS – PNII Idei      Director de proiect      2007-2010  
1000000

SUPEROXID DISMUTAZE SI SUPEROXID REDUCTAZE: NOI MECANISME, NOI ENZIME – Academia Romana      Director de proiect      2007-2008      10000 RON

Centru de modelare moleculara si chimie cuantica computationala – CMMCCC – PNII Capacitati Partener  
2007-2010      2000000 RON

Metalocomplecsi cu relevanta biologica ai azotitului: izomerie de legatura la ligand si proprietati redox – Russian Foundation for Basic Science si Academia Romana      Director de proiect, partea romana  
2008-      18000 RON

Reactivi si intermediari organometalici in sinteze stereocontrolate cu derivati de relevanta biologica (RIOSIN) - CEEX      Executant      2006-2008      1500000 RON

PNII Parteneriate- Fluorodent  
2008-2011      director      2000000 RON

## **11. Coordonări de programe/granturi finanțate din sursă internațională (se menționează și valoarea)**

## **12. Coordonări de programe/granturi finanțate din sursă națională (se menționează și valoarea)**

IZOMERIA NITRO/NITRITO IN METALOCOMPLECSI CU RELEVANTA BIOCATALITICA, 2006-2008, CEEX-ET (Proiect de cercetare de excelenta pentru tineri cercetatori) cod proiect 98 Director de proiect 2006-2008 120000 RON

METALLOPROTEIN-BASED BLOOD SUBSTITUTES: STRATEGIES FOR TACKLING OXIDATIVE AND NITROSATIVE STRESS – PNII Idei Director de proiect 2007-2010 1000000

SUPEROXID DISMUTAZE SI SUPEROXID REDUCTAZE: NOI MECANISME, NOI ENZIME – Academia Romana Director de proiect 2007-2008 10000 RON

Metalocomplecsi cu relevanta biologica ai azotitului: izomerie de legatura la ligand si proprietati redox – Russian Foundation for Basic Science si Academia Romana Director de proiect, partea romana 2008- 18000 RON

PNII Parteneriate- Fluorodent 2008-2011 director 2000000 RON

### **13. Profesor invitat la universitati de prestigiu, cu titlu oficial**

### **14. Membru în comisii profesionale relevante, cu titlu oficial**

### **15. Conferințe invitate internaționale**

1. Fe(I) and Fe(0) states in biologically-relevant systems, Radu Silaghi-Dumitrescu, Zoltan Kis, Sergei V. Makarov, Molecular modeling in chemistry and biochemistry MOLMOD 2009, Cluj-Napoca, May 2009

2. Bioinorganic spectroscopy, Radu Silaghi-Dumitrescu, SOE Workshop “From Molecules to Functionalised Materials” – Cluj-Napoca, October 2009

3. The redox reactivity of globins: the chicken and egg paradox, Radu Silaghi-Dumitrescu, Metal Elements in Environment, Medicine and Biology, 8th edn., Timisoara, Romania, 2008

4. Unusual metal oxidation states in metalloproteins and related complexes: from degenerate orbitals to apoptosis, Radu Silaghi-Dumitrescu Metal Elements in Environment, Medicine and Biology, 9th edn., Cluj-Napoca, Romania, 2009

5. Sang et orbitales, Radu Silaghi-Dumitrescu, Le Cinquième Colloque Franco – Roumain De Chimie Appliquée (COFrRoCA), Bacau, Romania, 2008

6. The reactivity of myoglobin towards sulfoxylate, Radu Silaghi-Dumitrescu, Sergei Makarov, The Fifth International Conference on Porphyrins and Phthalocyanines (ICPP5), Moscow, 2008

7. Drawing blood over computational arguments: the ferryl case, Radu Silaghi-Dumitrescu, From Molecular Informatics to Bioinformatics – an International Symposium, Budapest, Hungary, 2008

8. Nitrite linkage isomerism in hemoproteins and related complexes: experimental and theoretical evidence, Radu Silaghi-Dumitrescu, Sergei Makarov, 37th Inorganic Reaction Mechanisms Group Meeting, 37IRMG, Barcelona, Spain, 2008

9. Nitrite linkage isomerism in hemoproteins and related complexes: experimental and theoretical evidence, Radu Silaghi-Dumitrescu, Molecular and supramolecular chemistry of multimetallic systems, Bucharest, Romania, 2007

10. Artificial blood: how and why do we make it?, Radu Silaghi-Dumitrescu, Workshop in Material Science and Engineering, Cluj-Napoca, Romania, 2007

11. Nitrite linkage isomerism in hemoproteins and related complexes – a case for mechanistic promiscuity, Radu Silaghi-Dumitrescu, From Molecular Informatics to Bioinformatics – an International Symposium, Budapest, Hungary, 2007

12. Nitrite linkage isomerism in hemoproteins and related complexes: experimental and theoretical evidence, Radu Silaghi-Dumitrescu, Molecular Modelling in Chemistry and Biochemistry – MolMod, Aralia, Romania, 2007

13. Transient species involved in catalytic dioxygen/peroxide activation by hemoproteins: possible involvement of protonated Compound I species, Radu Silaghi-Dumitrescu, Chris E. Cooper, Dalton Discussions 8, Metals: Centers of Biological Activity, Nottingham, UK, 2005

14. Ferryl heme protonation gates reactivity in hemoproteins, Radu Silaghi-Dumitrescu, Brandon J. Reeder, Peter Nicholls, Chris E. Cooper, Michael T. Wilson, Young Researchers Forum, 8th European Biological Chemistry Conference, EUROBIC 8, Aveiro, Portugal, 2006

15. Walking the plank in small molecule activation by metalloenzymes and related centers, Radu Silaghi-Dumitrescu, Humboldt Conference on non-covalent interactions, Vrsac, Serbia, 2009

16. Small molecule activation by metalloproteins and related centers, Radu Silaghi-Dumitrescu, invited conference, Ivanovo State University for Chemistry and Technology, Ivanovo, Russia, 2008

**16. Membru în comitete de organizare sau științifice ale unor conferințe internaționale**



### **III. Realizare remarcabilă**

(Descrieți într-o manieră cât mai accesibilă (în maximum 1 pagină) cea mai importantă realizare științifică/tehnică/artistică din ultimii 5 ani și impactul acesteia.)

Interesul meu se concentrează asupra starilor de valență neobisnuite pe care metalele le pot atinge în medii de relevanță biologică, pe care le abordez în manieră multidisciplinară – de la biologie moleculară la biochimie, chimie de sinteză anorganică și organică, chimie analitică, biofizică, cinetică și modelare moleculară. Corpul de lucrări științifice publicate în ultimii ani de mine în acest domeniu are următoarele 3 merite:

1. aduce noutăți și propune paradigme pentru înțelegerea mecanismelor stresului oxidativ și nitrozativ în organismele vii; menționez aici structura și reactivitatea centrilor metalici de valență înaltă sau a celor suprareduși, dar și noi idei de tehnologii de producere și modalități de analiză a substitutelor de sânge („sânge artificial”)
2. se găsesc în reviste de impact, astfel încât pentru perioada 2005-2009 **suma factorilor de impact** ai articolelor publicate, raportată la numărul de autori, este după știința mea **cea mai mare din țara în domeniile chimie și biologie**, și a fost de fapt în acest fel în ultimii 4 ani, în condițiile în care comparăm datele mele (la vârsta prezentă de 35 de ani și fără calitatea de conducător de doctorat) inclusiv cu cele ale principalelor personalități în domeniu din România – profesori, conducători de școli doctorale.
3. prin componenta de substitut de sânge a atras atenția presei naționale. În particular, după știința mea sunt singurul caz de cercetător UBB pentru care rețelele naționale de televiziune și-au trimis reprezentatii în laboratoarele universității și au transmis reportajele **în buletinele de știri prime-time pe toate canalele majore din România**, fără ca aceste apariții să fie solicitate sau popularizate prin comunicate de presă ale noastre.

Consider că suma rezultatelor de până acum acoperă atât criteriul de calitate științifică (număr mare de lucrări ISI, cu factori de impact mari, și implicit vizibilitate internațională), cât și cel al contactului direct cu societatea (componenta substitut de sânge), cât și cel financiar (atrageră de fonduri semnificative către universitate), criterii care justifică o candidatură la titulatura de „personalitate de excelență a UBB”.

Data:

Semnătura:

**Certific validitatea datelor prezentate**

Sef de catedră,