

# Curriculum Vitae

**IME I PREZIME:** Maja Majerić Elenkov

**ADRESA:** Institut Ruđer Bošković  
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## OSOBNI PODACI:

Datum i mjesto rođenja: 09. 02. 1970., Zagreb  
Državljanstvo: Hrvatsko  
Bračno stanje: udana  
troje djece: Ruben (21), Ana (18) i Alma (6)  
Kućna adresa: Miroslava Krleže 76, 10290 Zaprešić

## OBRAZOVANJE:

1997-2003 Doktorski studij organske kemije, Prirodoslovno-matematički fakultet, Sveučilište u Zagrebu  
Doktorska disertacija: Biokatalitički generirani kiralni ligandi za homogene katalizatore na osnovi 1,4-benzodiazepina; voditelj Profesor Vitomir Šunjić

1996-1997 Poslijediplomski studij organske kemije, Prirodoslovno-matematički fakultet, Sveučilište u Zagrebu  
Magistarski rad: Studij enantioselektivne redukcije *para*-supstituiranih 2-metilcinamaldehida pekarskim kvascem (*Saccharomyces cerevisiae*); voditelj Profesor Vitomir Šunjić

1988-1994 Dodiplomski studij kemije, Prirodoslovno-matematički fakultet, Sveučilište u Zagrebu  
Diplomski rad: Sinteza i enzimaska kinetička resolucija *rac* 1-fenoksi-4-oktanola; voditelj Profesor Vitomir Šunjić

**STEČEN AKADEMSKI STUPANJ:** 2003. **Dr. sc.** prirodnih znanosti iz područja kemije  
1997. **Mr. sc.** prirodnih znanosti iz područja kemije  
1994. **Dipl. ing.** kemije

## ZNANSTVENO USAVRŠAVANJE:

2003-2005 Poslijedoktorski studij, Groningen Biomolecular Sciences and Biotechnology Institute, University of Groningen, Nizozemska.

**ZNANSTVENO ZVANJE:** Viši znanstveni suradnik

**POLOŽAJ:** Viši znanstveni suradnik

## PODRUČJE ISTRAŽIVANJA:

Biokataliza: Halogenhidrin dehalogenaze, lipaze, screening supstrata, reakcije u organskom mediju, biotransformacije s izoliranim enzimima i cijelim stanicama, biotransformacije na uvećanoj skali

## Izdvojeni radovi na području halogenhidrin-dehalogenazama kataliziranih biotransformacija:

1. **Majerić Elenkov, M.**; Čičak, M.; Knežević, A.; Smolko, A.; Halohydrin dehalogenase-catalysed transformations of epifluorohydrin, *Tetrahedron Lett.*, **2018**, 59, 406-408. (IF 2.259)
2. Mikleušević, A.; Hameršak, Z.; Salopek-Sondi, B.; Tang, L.; Janssen, D. B.; **Majerić Elenkov, M.**; *Adv. Synth. Catal.* **2015**, 357, 1709-1714. (IF 5.663)
3. Schallmeyer, M.; Jekel, P.; Tang, L.; **Majerić Elenkov, M.**; Höffken, H. W.; Hauer, B.; Janssen, D. B.; *Enzyme Microb. Technol.* **2015**, 70, 50-57. (IF 2.322)
4. **Majerić Elenkov, M.**; Primožič, I.; Hrenar, T.; Smolko, A.; Dokli, I.; Salopek-Sondi, B.; Tang, L.; *Org. Biomol. Chem.* **2012**, 10, 5063-5072. (IF 3.562)
5. Tang, L.; Zhu, X.; Zheng, H.; Jiang, R.; **Majerić Elenkov, M.**; *Appl. Environ. Microbiol.* **2012**, 78, 2631-2637. (IF 3.668)
6. **Majerić Elenkov, M.**; Tang, L.; Hauer, B.; Janssen, D.B.; *Org. Lett.* **2008**, 10, 2417-2420. (IF 6.364). *Ovaj rad izabran je od strane uredništva Synfacts-a zbog značajnih rezultata u području te je citiran pod naslovom "Enzyme-Mediated Transformation of Epoxides to Oxazolidinones" u Synfacts, 2008, 8, 879.*
7. Hasnaoui, G.; **Majerić Elenkov, M.**; Spelberg, J.H.L.; Hauer, B.; Janssen, D.B.; *ChemBioChem.* **2008**, 9, 1048-1051. (IF 3.088). *Objavljen na naslovnici časopisa.*
8. **Majerić Elenkov, M.**; Hoeffken, W.; Tang, L.; Hauer, B.; Janssen, D.B.; *Adv. Synth. Catal.* **2007**, 349, 2279-2285. (IF 5.542)
9. **Majerić Elenkov, M.**; Tang, L.; Hauer, B.; Janssen, D.B.; *Org. Lett.* **2006**, 8, 4227-4229. (IF 6.364). *Procedura za pripremu enantiomerno čistih spojeva objavljena iz ovog rada uvrštena je kao poglavlje knjige "Practical Methods for Biocatalysis and Biotransformations", Wiley, 2009.*
10. **Majerić Elenkov, M.**; Hauer, B.; Janssen, D.B.; *Adv. Synth. Catal.* **2006**, 348, 579-585. (IF 5.663)
11. Janssen, D.B.; **Majerić Elenkov, M.**; Hasnaoui, G.; Hauer, B.; Spelberg, J.H.L.; *Biochem. Soc. Trans.* **2006**, 34, 291-295. (IF 3.1946)

## VOĐENJE PROJEKATA:

"Enzymatic Synthesis of Fluorinated Chiral Building Blocks (EnzyFluor)" (2018-2020); Hrvatska zaklada za znanost (850.000 HRK).

„Semi-rational design of halohydrin dehalogenase HheA for its application in the synthesis of chiral building blocks“ (2011-2013); Bilateralni projekt s Narodnom Republikom Kinom (60.000 HRK), zajednička potpora hrvatskog Ministarstva znanosti, obrazovanja i športa te kineskog Ministarstva tehnologije.

"Biocatalytic application of halohydrin dehalogenases for production of chiral building blocks" (2009-2011); potpora "Moje prvo istraživanje" (472.500 HRK), Fond "Jedinstvo uz pomoć znanja" (UKF).

"Protein engineering of halohydrin dehalogenases for the production of fine chemicals and pharmaceutical intermediates". (2007-2009); Bilateralni projekt s Narodnom Republikom Kinom (80.000 HRK), zajednička potpora hrvatskog Ministarstva znanosti, obrazovanja i športa te kineskog Ministarstva tehnologije.

## MENTORSTVO:

**Valentina Ević:** "Kinetička rezolucija fluoriranih alkohola katalizirana lipazama", diplomski rad, Prirodoslovno-matematički fakultet, Sveučilište u Zagrebu, 2019.

**Ana Mikleušević:** „Enantioselektivna sinteza optički aktivnih 2-oksazolidinona i alkohola katalizirana halogenhidrin dehalogenazama“, doktorska disertacija, Prirodoslovno-matematički fakultet, Sveučilište u Zagrebu, 2016.

**Tamara Šmidlehner:** „Regioselektivna azidoliza aromatskih epoksida katalizirana halogenhidrin dehalogenazama“, diplomski rad, Prirodoslovno-matematički fakultet, Sveučilište u Zagrebu, 2013.

**Sandra Klen:** „Biokatalitička svojstva halogenhidrin dehalogenaze HheA u reakcijama nukleofilnog otvaranja epoksida“, diplomski rad, Prirodoslovno-matematički fakultet, Sveučilište u Zagrebu, 2012.

**Mateja Djetelić:** „Enzimski kinetička rezolucija metil-3,4-epoksibutanoata katalizirana halogenhidrin dehalogenazama“, diplomski rad, Prirodoslovno-matematički fakultet, Sveučilište u Zagrebu, 2009.

## OBJAVLJENI RADOVI:

1. **Majerić Elenkov, M.**; Čičak, M.; Knežević, A.; Smolko, A.  
Halohydrin dehalogenase-catalysed transformations of epifluorohydrin  
*Tetrahedron Lett.*, **2018**, *59*, 406-408.
2. Panić, M.; **Majerić Elenkov, M.**; Roje, M.; Cvjetko Bubalo, M.; Radojčić Redovniković I.  
Plant-mediated stereoselective biotransformations in natural deep eutectic solvents  
*Process Biochem.* **2018**, *66*, 133-139.
3. Hrenar, T.; Primožič, I.; Fijan, D.; **Majerić Elenkov, M.**  
Conformational analysis of spiro-epoxides by principal component analysis of molecular dynamics trajectories  
*Phys. Chem. Chem. Phys.*, **2017**, *19*, 31706-31713.
4. Mikleušević, A.; Primožič, I.; Hrenar, T.; Salopek-Sondi, B.; Tang, L.; **Majerić Elenkov, M.**  
Azidolysis of epoxides catalysed by the halohydrin dehalogenase from *Arthrobacter* sp. AD2 and a mutant with enhanced enantioselectivity: an (S)-selective HDDH  
*Tetrahedron: Asymmetry* **2016**, *27*, 930-935.
5. Mikleušević, A.; Hameršak, Z.; Salopek-Sondi, B.; Tang, L.; Janssen, D. B.; **Majerić Elenkov, M.**  
Oxazolidinone Synthesis through Halohydrin Dehalogenase-Catalyzed Dynamic Kinetic Resolution  
*Adv. Synth. Catal.* **2015**, *357*, 1709-1714.
6. Schallmeyer, M.; Jekel, P.; Tang, L.; **Majerić Elenkov, M.**; Höffken, H. W.; Hauer, B.; Janssen, D.  
A single point mutation enhances hydroxynitrile synthesis by halohydrin dehalogenase.  
*Enzyme Microb. Technol.* **2015**, *70*, 50-57.
7. Kokan, Z.; Glasovac, Z.; **Majerić Elenkov, M.**; Gredičak, M.; Jerić, I.; Kirin, S. I.  
"Backdoor induction" of chirality: asymmetric hydrogenation with rhodium(I) complexes of triphenylphosphane-substituted beta-turn mimetics  
*Organometallics* **2014**, *33*, 4005-4015.
8. Resta, C.; Di Pietro, S.; **Majerić Elenkov, M.**; Hameršak, Z.; Pescitelli, G.; Di Bari, L.  
Consequences of Chirality on the Aggregation Behavior of Poly[2-methoxy-5-(2'-ethylhexyloxy)-p-phenylenevinylene] (MEH-PPV)  
*Macromolecules* **2014**, *47*, 4847-4850.
9. **Majerić Elenkov, M.**; Primožič, I.; Hrenar, T.; Smolko, A.; Dokli, I.; Salopek-Sondi, B.; Tang, L.  
Catalytic activity of halohydrin dehalogenases towards spiroepoxides  
*Org. Biomol. Chem.* **2012**, *10*, 5063-5072.
10. Tang, L.; Zhu, X.; Zheng, H.; Jiang, R.; **Majerić Elenkov, M.**  
Key Residues for Controlling Enantioselectivity of Halohydrin Dehalogenase from *Arthrobacter* sp. Strain AD2, Revealed by Structure-Guided Directed Evolution  
*Appl. Environ. Microbiol.* **2012**, *78*, 2631-2637.
11. **Majerić Elenkov, M.**; Tang, L.; Hauer, B.; Janssen, D.B.  
Formation of enantiopure 5-substituted oxazolidinones through enzyme-catalysed resolution of epoxides  
*Org. Lett.* **2008**, *10*, 2417-2420.
12. Hasnaoui, G.; **Majerić Elenkov, M.**; Spelberg, J.H.L.; Hauer, B.; Janssen, D.B.  
Catalytic Promiscuity of Halohydrin Dehalogenase and its Application in Enantioselective Epoxide Ring Opening  
*ChemBioChem.* **2008**, *9*, 1048-1051.
13. **Majerić Elenkov, M.**; Hoeffken, W.; Tang, L.; Hauer, B.; Janssen, D.B.  
Enzyme-catalysed ring opening of epoxides for the preparation of enantiopure tertiary alcohols  
*Adv. Synth. Catal.* **2007**, *349*, 2279-2285.

14. Janssen, D.B.; **Majerić Elenkov, M.**; Hasnaoui, G.; Hauer, B.; Spelberg, J.H.L.  
Enantioselective formation and ring-opening of epoxides catalysed by halohydrin dehalogenases  
*Biochem. Soc. Trans.* **2006**, *34*, 291-295.
15. **Majerić Elenkov, M.**; Tang, L.; Hauer, B.; Janssen, D.B.  
Sequential kinetic resolution catalyzed by halohydrin dehalogenase  
*Org. Lett.* **2006**, *8*, 4227-4229.
16. **Majerić Elenkov, M.**; Hauer, B.; Janssen, D.B.  
Enantioselective ring opening of epoxides with cyanide catalysed by halohydrin dehalogenases:  
A new approach to non-racemic  $\beta$ -hydroxy nitriles  
*Adv. Synth. Catal.* **2006**, *348*, 579-585.
17. **Majerić Elenkov, M.**; Hameršak, Z.; Šunjić, V.  
Kinetic Resolution of Diastereomeric Racemates of 7-Bromo-3-(1'-hydroxyethyl)-1-methyl-5-(2'-pyridyl)-2,3-dihydro-1H-1,4-benzodiazepin-2-one by Immobilized CAL-B  
*Tetrahedron: Asymmetry* **2003**, *14*, 2725-2730.
18. Višnjevac, A.; Tušek Božić, Lj.; **Majerić Elenkov, M.**; Hameršak, Z.; Kooijman, H.; de Clercq, E.; Kojić Prodić, B.  
Synthesis, Structural Characterisation and Biological Activity of Zn(II) and Pd(II) Complexes of 3-Substituted 5-(2'-Pyridyl)-1,4-benzodiazepin-2-one Derivatives  
*Polyhedron* **2002**, *21*, 2567-2577.
19. **Majerić Elenkov, M.**; Žiher, D.; Višnjevac, A.; Hameršak, Z.; Kojić-Prodić, B.; Šunjić, V.  
Diastereoselective Aldol Reaction of 7-Bromo-5-pyrido-1,4-benzodiazepin-2-one; Relative and Absolute Configuration of All Stereoisomers  
*Croat. Chem. Acta* **2001**, *74*, 707-724.
20. Leščić, I.; Vukelić, B.; **Majerić Elenkov, M.**; Saenger, W.; Abramić, M.  
Substrate specificity and effects of water-miscible solvents on the activity and stability of extracellular lipase from *Streptomyces rimosus*  
*Enzyme Microb. Technol.* **2001**, *29*, 548-553.
21. Višnjevac, A.; Tušek-Božić, Lj.; **Majerić Elenkov, M.**; Šunjić, V.; Kojić Prodić, B.  
Copper(II)-Promoted Chemical Transformations of 3-Substituted 5-(2'-Pyridyl)-1,4-Benzodiazepin-2-one Derivatives. Crystal Structures and Spectroscopic Characterisation of Metal Complexes  
*Eur. J. Inorg. Chem.* **2001**, 2647-2654.
22. Čiško-Anić, B.; **Majerić Elenkov, M.**; Hameršak, Z.; Šunjić, V.  
Combined Biocatalytic Preparation of (*R*)-2-Ethylhexanol and 2-Ethylhexyl Laurate  
*Food Technol. Biotechnol.* **1999**, *37*, 65-70.
23. Ljubović, E.; **Majerić Elenkov, M.**; Avdagić, A.; Šunjić, V.  
Novel Biocatalytic Methodology: Low Temperature Enhanced Enantioselectivity of Enzyme Catalyzed Reactions in Organic Solvents  
*Food Technol. Biotechnol.* **1999**, *37*, 215-224.
24. **Majerić, M.**; Šunjić, V.; Preparation of *S*-2-Ethylhexyl-*para*-methoxycinnamate by Lipase Catalyzed Sequential Kinetic Resolution  
*Tetrahedron: Asymmetry* **1996**, *7*, 815-824.
25. Šunjić, V.; **Majerić, M.**; Hameršak Z.; Study of Enantioselective Reduction of *para*-Substituted 2-Methyl-cinnamaldehydes by Baker's Yeast  
*Croat. Chem. Acta* **1996**, *69*, 643-660.
26. **Majerić, M.**; Avdagić, A.; Hameršak, Z.; Šunjić, V.  
Short Chemoenzymatic Synthesis of *S*-Enantiomers of Two Systemic Fungicides  
*Biotechnol. Letters* **1995**, *17*, 1189-1194.
27. **Majerić, M.**; Gelo-Pujić, M.; Šunjić, V.; Lévai, A.; Sebök, P.; Timar, T.  
Structural Effects on the Enantioselective Acetylation of 4-Hydroxychromans Catalyzed by Microbial Lipases,  
*Tetrahedron: Asymmetry* **1995**, *6*, 937-944.
28. Hollosi, M.; Majer, Zs.; Levai, A.; **Majerić, M.**; Šunjić, V.  
CD Study of Absolute Conformation and Configuration of Some 4-Hydroxychromans,  
*Spectroscopy Letters* **1995**, *28*, 1181-1190.

### **POGLAVLJA U KNJIGAMA:**

1. **Majerić Elenkov, M.**; Szymanski, W.; Janssen D. B.;  
Reactions Catalyzed by Halohydrin Dehalogenases  
Science of Synthesis; Biocatalysis in Organic Synthesis 2  
Faber, K.; Fessner, W.-D. ; Turner, N. (ur.), Stuttgart: Georg Thieme Verlag KG, **2014**, 507-527.
2. **Majerić Elenkov, M.**; Tang, L.; Hauer, B.; Janssen, D. B.;  
One-pot Biocatalytic Synthesis of (S)-4-Chloro-3-hydroxybutanoate and Methyl (S)-Cyano-3-hydroxybutanoate  
Practical Methods for Biocatalysis and Biotransformations  
Whittall, J.; Sutton, P. (ur.), Weinheim: John Wiley & Sons, **2009**, 199-202.

### **PATENTI:**

1. Hauer, B.; Janssen, D.B.; **Majerić Elenkov, M.**;  
A process for the preparation of optically active 5-substituted 2-oxazolidinones from racemic epoxides and cyanate employing a halohydrin dehalogenase  
PCT/EP2007/051861
2. Hauer, B.; Janssen, D.B.; **Majerić Elenkov, M.**;  
A process for the production of an optically enriched tertiary alcohol  
PCT/EP2006/069626
3. V. Šunjić, Z Hameršak, **M. Majerić Elenkov**, B. Čiško Anić  
Biocatalytic Preparation of (*R*)-2-Ethylhexanol.  
*Croat. Pat. Appl.* 559-0399, 1999.
4. V. Šunjić, **M. Majerić**, Z. Hameršak, A. Avdagić  
Method for the enantioselective synthesis of chiral derivatives of *S*-3-(4-tert-butyl)phenyl-2-methylpropylamine, systemic fungicides.  
*USA Pat. Appl.* 5,733,755, 1998.
5. V. Šunjić, **M. Majerić**, L. Cotarca  
*S*-2-Etilsil-para-metossicinamato e metodo per la sua produzione.  
*Ital. Pat. Appl.* 01283579, 1998.