Dr. Tvrtko Smital – CURRICULUM VITAE

Ime:	Tvrtko
Prezime:	Smital
Datum rođenja:	14.10.1968.
Mjesto rođenja:	Vinkovci, Hrvatska
Državljanstvo:	hrvatsko
Trenutno zaposlenje:	Znanstveni savjetnik, voditelj Laboratorija za molekularnu ekotoksikologiju, Zavod za istraživanje mora i okoliša, Institut Ruđer Bošković, Zagreb, Hrvatska
Bračni status:	Oženjen, supruga Biljana, kćer Mila (19 god.), sinovi Tomo (16 god.) i Mika (12 god.)

Obrazovanje

- Osnovna i srednja škola (Gimnazija M.A. Reljković) završena u Vinkovcima, maturirao 1987. god.;
- 1994. god. diplomirao biologiju, smjer dipl. inž. biologije-ekologije na Prirodoslovno-matematičkom fakultetu Sveučilišta u Zagrebu;
- 1998. god. magisterij iz prirodnih znanosti, polje biologija, grana toksikologija, na Prirodoslovno-matematičkom fakultetu Sveučilišta u Zagrebu;
- 1999. god. doktorat iz prirodnih znanosti, polje biologija, grana ekotoksikologija, na Prirodoslovno-matematičkom fakultetu Sveučilišta u Zagrebu.

Dosadašnje zapošljavanje

- 1995. – 1998. god., poslijediplomski student, znanstveni novak, mlađi asistent u Laboratoriju za molekularnu ekotoksikologiju, Zavod za istraživanje mora i okoliša, Institut Ruđer Bošković, Zagreb, Hrvatska;
- 1998. – 2000. god., znanstveni novak, asistent u Laboratoriju za molekularnu ekotoksikologiju, Zavod za istraživanje mora i okoliša, Institut Ruđer Bošković, Zagreb, Hrvatska;
- 2000. – 2002. god., znanstveni novak, viši asistent u Laboratoriju za molekularnu ekotoksikologiju, Zavod za istraživanje mora i okoliša, Institut Ruđer Bošković, Zagreb, Hrvatska;
- 2003. – 2008, znanstveni suradnik, voditelj Laboratorija za molekularnu ekotoksikologiju, Zavod za istraživanje mora i okoliša, Institut Ruđer Bošković, Zagreb, Hrvatska;
- 2009. – 2013., viši znanstveni suradnik, voditelj Laboratorija za molekularnu ekotoksikologiju, Zavod za istraživanje mora i okoliša, Institut Ruđer Bošković, Zagreb, Hrvatska;
- 2013. - znanstveni savjetnik, voditelj Laboratorija za molekularnu ekotoksikologiju, Zavod za istraživanje mora i okoliša, Institut Ruđer Bošković, Zagreb, Hrvatska

Tema diplomskog rada

Određivanje inhibitora mehanizma multiksenobiotičke otpornosti (MXR), Prirodoslovno-matematički fakultet Sveučilišta u Zagrebu, Hrvatska, 1994.; mentor akademik Branko Kurelec.

Tema magistarskog rada

In vivo *određivanje koncentracije inhibitora mehanizma multiksenobiotičke otpornosti (MXR) u riječnim vodama*, Prirodoslovno-matematički fakultet Sveučilišta u Zagrebu, Hrvatska, 1998.; mentor akademik Branko Kurelec.

Tema doktorskog rada

Aktivnost mehanizma multiksenobiotičke otpornosti (MXR) vodenih organizama kao pokazatelj kvalitete okoliša, Prirodoslovno-matematički fakultet Sveučilišta u Zagrebu, Hrvatska, 1999; mentor akademik Branko Kurelec.

Važnija usavršavanja i stipendije

- 09.-25. rujna 1995. god., *"MEDCAMPUS"-program: Monitoring of Environmental Stress Using Modern Techniques*, Rovinj, Hrvatska;
- Studeni/prosinac 1996. i 1997. god., Institut für Physiologishe Chemie, Johannes Gutenberg University, Mainz, Njemačka;
- Rujan 2003 – studeni 2004., Hopkins Marine Station of Stanford University, CA, USA – *Fulbright Scholar Program*.

Znanstveno iskustvo i kompetencije

Ekotoksikologija: istraživanje interakcije okolišnih zagađivala s temeljnim staničnim detoksikacijskim mehanizmima u vodenih organizama; detoksikacijski enzimi faza I i II; polispecifični *uptake* (SLC) i *efflux* (ABC) transmembranski proteini; identifikacije ekotoksičnih kemikalija u složenim okolišnim uzorcima (sediment, otpadna ili površinska voda, mulj, tlo…) primjenom tzv. metoda usmjerenih biološkim učincima (eng. *Effects-Directed Analyses* (EDA)

Metode: *in vitro* tehnike stanične kulture, enzimske analize, testovi citotoksičnosti, genotoksičnosti, kronične toksičnosti, indukcija ili inhibicija enzima faze I i II, *in vitro* i *in vivo* određivanje transportne aktivnosti *uptake* ili *efflux* transmembranskih proteina, molekularna i stanična biologija itd.

Publikacije: autor i koautor do sada >50 SCI (*Science Citation Index*) indeksiranih znanstvenih radova, 3 poglavlja u knjizi, jednog patenta; >1400 citata (Web of Science/Scopus); *h* index 22 (stanje siječanj 2019.).

SCI publikacije

1. **Smital T, Pivčević B.** and **Kurelec B.** (1996) Reversal of multidrug resistance by extract from the marine alga *Caulerpa taxifolia*. *Period. Biol.*, **98:** 165-171.
2. **Smital T**. and **Kurelec B.** (1997) Inhibitors of the multixenobiotic resistance mechanism in natural waters: *In vivo* demonstration of their effects. *Environ. Toxicol. Chem.* **16:** 2164-2170.
3. **Kurelec B., Smital T., Britvić S., Pivčević B., Krča S., Jelaska D., Balen S., Sauerborn R**. and **Mustajbegović S.** (1997) Multixenobiotic defence mechanism in aquatic organisms. *Period. Biol.* **99:** 319-328.

4. **Smital. T.** and **Kurelec B.** (1998) The chemosensitizers of multixenobiotic resistance mechanism in aquatic invertebrates; A new class of pollutants. *Mutat. Res.-Fund. Mol. M.* **399:** 45-53.

5. **Kurelec B., Britvić S.** and **Smital T.** (1998) Fragility of multixenobiotic resistance in aquatic organisms enhances the complexity of risk assessment. *Mar. Environ. Res.* **46:** 415-419.

6. **Smital T.** and **Kurelec B**. (1998) The activity of multixenobiotic resistance mechanism determined by rhodamine B - efflux method as a biomarker of exposure. *Mar. Environ. Res.* **46:** 443-447.

7. **Osmak M., Brozović A., Ambriović-Ristov A., Hadžija M., Pivčević B.,** and **Smital T.** (1998) Inhibition of apoptosis is the cause of resistance to doxorubicin in human breast adenocarcinoma cells. *Neoplasma* **45:** 223-230.

8. **Kurelec, B., Smital, T., Pivčević, B., Eufemia, N.** and **Epel, D.** (2000) Multixenobiotic resistance, P-glycoprotein, and chemosensitizers. *Ecotoxicology* **9:** 307-327.

9. **Smital, T., Sauerborn, R., Pivčević, B., Krča, S.** and **Kurelec, B.** (2000) Interspecies differences in P-glycoprotein mediated activity of multixenobiotic resistance mechanism in several marine and freshwater invertebrates, *Comp. Biochem. Physiol C.*, **126:** 175-186.

10. **Ramljak, S., Hackenberger, B.K., Smital, T.** and **Britvić, S.** (2000) Evaluation of the genotoxic and cytochrome P450 monooxygenase-inhibitory potential of dicuran on procariotic and eucaryotic test systems, *J. Environ. Sci. Health B.* **B35:** 751-770.

11. **Smital, T.** and **Sauerborn, R.** (2002) Measurement of the activity of multixenobiotic resistance mechanism in the common carp *Cyprinus carpio*. *Mar. Environ. Res.* **54:** 449-453.

12. **Smital, T., Sauerborn, R.** and **Hackenberger, B.K.** (2003) Inducibility of the P-glycoprotein transport activity in the marine mussel *Mytilus galloprovincialis* and the freshwater mussel *Dreissena polymorpha*. *Aquat. Toxicol.* **65:** 443-465.

13. **Sauerborn, R.**, **Stupin Polancec, D., Zaja, R.** and **Smital, T.** (2004) Identification of the multidrug resistance-associated protein (MRP) related gene in the red mullet (*Mullus barbatus*). *Mar. Environ. Res.*, **58:** 199-204.

14. **Smital, T., Luckenbach, T., Sauerborn, R., Hamdoun, A.M., Vega, R.L.** and **Epel, D.** (2004) Emerging contaminants – pesticides, PPCPs, microbial degradation products and natural substances as inhibitors of multixenobiotic defense in aquatic organisms. *Mut. Res.-Fund. Mol. M.*, **552**: 101-117.

15. **Žaja, R., Klobučar, G.I.V., Sauerborn Klobučar, R., Hackenberger, B.,** and **Smital, T.** (2006) Haemolymph as compartment for efficient and non-destructive determination of Pgp mediated MXR activity in bivalves. *Comp. Biochem. Physiol. C.*, **143**: 103-112.

16. **Žaja, R., Sauerborn Klobučar R. and Smital, T.** (2007) Detection and functional characterization of Pgp1 (ABCB1) and MRP3 (ABCC3) efflux transporters in the PLHC-1 fish hepatoma cell line. *Aquat. Toxicol.,* **81**: 365-376.

17. **Krča, S., Žaja, R., Čalić, V., Terzić, S., Grubešić, M.S., Ahel, M.** and **Smital, T.** (2007) Hepatic biomarker responses to organic contaminants in feral chub (*Leuciscus cephalus*) – laboratory characterization and field study in the Sava River, Croatia. *Environ. Toxicol. Chem.,* **26**: 2620-2633.

18. **Žaja, R., Caminada, D., Lončar, J., Fent, K.** and **Smital, T.** (2008) Development and characterization of P-glycoprotein 1 (Pgp1; ABCB1) mediated doxorubicin-resistant PLHC-1 hepatoma fish cell line. *Toxicol. Appl. Pharmacol.,* **227**: 207-218.

19. **Žaja, R., Munić, V.,** and **Smital, T.** (2008) Cloning and mRNA expression analysis of an ABCG2 (BCRP) efflux transporter in rainbow trout (*Oncorhynchus mykiss*) liver and primary hepatocytes. *Mar. Environ. Res.,* **66**: 77-79.

20. **Källqvist, T., Milačič, R., Smital, T., Thomas, K.V., Vranes, S.** and **Tollefsen, K-E.** (2008) Chronic toxicity of the Sava River (SE Europe) sediments and river water to the algae *Pseudokirchneriella subcapitata*. *Water Res.,* **42**: 2146-2156.

21. **Epel, D., Stevenson, C.N., MacManus-Spencer, L.A., Luckenbach, T., Hamdoun, A.,** and **Smital, T.** (2008) Efflux transporters: newly appreciated roles in protection against pollutants. *Environ. Sci. Tech.,* **42**: 3914-3920.

22. **Traven, L., Žaja, R., Lončar, J., Smital, T. and Mićović, V.** (2008) CYP1A induction potential and the concentration of priority pollutants in marine sediment samples – *In vitro* evaluation using the PLHC-1 fish hepatoma cell line. *Toxicol. In Vitro*, **22**: 1648-1656.

23. **Caminada, D., Žaja, R., Smital, T. and Fent, K.** (2008) Human pharmaceuticals modulate P-gp1 (ABCB1) transport activity in the fish cell line PLHC-1. *Aquat. Toxicol.,* **90**: 214–222.

24. **Žaja, R., Munić, V., Sauerborn Klobučar, R., Ambriović-Ristov, A., Smital, T.** (2008) Cloning and functional characterization of apical efflux transporters (ABCB1, ABCB11 and ABCC2) in rainbow trout (*Oncorhynchus mykiss*) hepatocytes. *Aquat. Toxicol.* **90**: 322-332.

25. **Bošnjak, I., Heim, W., Smital, T., Epel, D., Coale, K., Franekić-Čolić, J., Hamdoun, A.** (2009) Multidrug resistance associated protein transport activity mediates differences in accumulation and toxicity of inorganic and organic mercury in sea urchin embryos. *Environ. Sci. Tech*. **43**: 8374-8380.

26. **Lončar, J., Popović, M., Žaja, R., Smital, T.** (2010) Gene expression analysis of the ABC efflux transporters in rainbow trout (*Oncorhynchus mykiss*). *Comp. Biochem. Physiol. C*. **151**: 209-215.

27. **Popović, M., Žaja, R., Lončar, J., Smital, T**. (2010) A novel ABC transporter: the first insight into zebrafish (*Danio rerio*) Abch1. *Mar. Environ. Res.* **69**: S11-S13.

28. **Popović, M., Žaja, R., Smital, T.** (2010) Organic anion transporting polypeptides (OATP) in zebrafish (*Danio rerio*): phylogenetic analysis and tissue distribution. *Comp. Biochem. Physiol. A* **155**: 327-335.

29. **Bošnjak, I., Šegvić, T., Smital, T., Franekić, J., Mladineo, I.** (2011) Sea Urchin Embryotoxicity Test for Environmental Contaminants—Potential Role of the MRP Proteins. *Water Air Soil Poll.* **217**: 627-636.

30. **Fischer, S., Loncar, J., Zaja, R., Schnelle, S., Schirmer, K., Smital, T., Luckenbach, T.** (2011) Constitutive mRNAexpression and protein activity levels of nine ABC efflux transporters in seven permanent cell lines derived from different tissues of rainbow trout (*Oncorhynchus mykiss*). *Aquat. Toxicol.* **101**: 438-446.

31. **Smital, T., Terzic, S., Zaja, R., Senta, I., Pivcevic, B., Popovic, M., Mikac, I., Tollefsen, K.E., Thomas, K.V., Ahel, M.** (2011) Assessment of toxicological profiles of the municipal wastewater effluents using chemical analyses and bioassays. *Ecotoxicol. Environ. Saf.* **74**: 844-851.

32. **Sauerborn Klobučar, R., Zaja, R., Franjević, D., Brozović, A., Smital, T.** (2011) Presence of Ecotoxicologically Relevant Pgp- and MRP- Transcripts and Proteins in Cyprinid Fish. *Arh. Hig. Rada Toksikol.* **61**: 175-181.

33. **Zaja, R., Loncar, J., Popovic, M., Smital, T.** (2011) First characterization of fish P-glycoprotein (abcb1) substrate specificity using determinations of its ATPase activity and calcein-AM assay with PLHC-1/dox cell line. *Aquat. Toxicol.* **103**: 53-62.

34. **Reifferscheid, G., Maes, H., Allner, B., Badurova, J., Belkin, S., Blum, K., Brauer, F., Bressling, J., Domeneghetti, S., Elad, T., Flückiger-Isler, S., Grummt, H.J., Guertler, R., Hecht, A., Heringa, M., Hollert, H., Huber, S., Kramer, M., Magdeburg, A., Ratte, T., Sauerborn-Klobucar, R., Sokolowski, A., Soldan, P., Smital, T., Stalter, D., Venier, P., Ziemann, C., Zipperle, J., Buchinger, S.** (2012) International round-robin study on the Ames fluctuation test. *Environ. Mol. Mutag*. **53**: 185-197.

35. **Della Torre, C., Zaja, R., Loncar, J., Smital, T., Focardi, S., Corsi, I.** (2012) Interaction of ABC transport proteins with toxic metals at the level of gene and transport activity in the PLHC-1 fish cell line. *Chem. Biol. Interac.* **198**: 9-17.

36. **Smital, T., Terzić, S., Lončar, J., Senta, I., Zaja, R., Popović, M., Mikac, I., Tollefsen, K-E., Thomas, K.V., Ahel, M**. (2013) Prioritisation of organic contaminants in a river basin using chemical analyses and bioassays. *Environ. Sci. Poll. Res.* **20:** 1384-1395.

37. **Zaja, R., Terzić, S., Senta, I., Lončar, J., Popović, M., Ahel, M., Smital, T.** (2013) Identification of P-glycoprotein (P-gp, Abcb1) inhibitors in contaminated freshwater sediments. *Environ. Sci. Tech.* **47**: 4813-4821.

38. **Traven, L., Mićović, V., Vukić Lušić, D., Smital, T.** (2013) The responses of the hepatosomatic index (HSI), 7-ethoxyresorufin-O-deethylase (EROD) activity and glutathione-S-transferase (GST) activity in sea bass (*Dicentrarchus labrax*, Linnaeus 1758) caged at a polluted site: implications for their use in environmental risk assessment. *Environ Monit Assess.* **185:** 9009-9018.

39. **Bošnjak, I., Zaja, R., Klobučar, R.S., Sver, L., Franekić, J., Smital, T.** (2013) Identification of ABC Transporter Genes in Gonad Tissue of Two Mediterranean Sea Urchin Species: Black, *Arbacia lixula* L., and Rocky, *Paracentrotus lividus* L. *Bull. Environ. Contam. Toxicol.* **91:** 415-419.

40. **Popovic, M., Zaja, R., Fent, K., Smital, T**. (2013) Molecular characterization of zebrafish Oatp1d1 (Slco1d1), a novel Organic anion transporting polypeptide. *J. Biol. Chem*. **288:** 33894–33911.

41. **Ferreira, M., Santos, P., Rey-Salgueiro, L., Zaja, R., Reis-Henriques, M.A., Smital, T.** (2014) The first demonstration of CYP1A and the ABC protein(s) gene expression and activity in European seabass (*Dicentrarchus labrax*) primary hepatocytes. *Chemosphere* **100:** 152-159.

42. **Popovic, M., Zaja, R., Fent, K., Smital, T**. (2014) Interaction of environmental contaminants with zebrafish uptake transporter Oatp1d1 (Slco1d1). *Toxicol. Appl. Pharmacol.* **280:** 149-158.

43. **Glisic, B., Mihaljevic, I., Popovic, M., Zaja, R., Loncar, J., Fent, K., Kovacevic, R., Smital, T.** (2015) Characterization of glutathione-S-transferases in zebrafish (*Danio rerio*). *Aquat. Toxicol.* **158:** 50-62.

44. **Lončar, J., Popović, M., Krznar, P., Zaja, R., Smital, T**. (2016) The first characterization of multidrug and toxin extrusion (MATE/SLC47) proteins in zebrafish (*Danio rerio*). *Sci. Rep*. **6**: 28937, DOI: 10.1038/srep28937.

45. **Mihaljević, I**., **Popović, M., Zaja, R., Smital, T.** (2016) Phylogenetic, syntenic, and tissue expression analysis of slc22 genes in zebrafish (*Danio rerio*). *BMC Genomics*, **17**: 626, DOI 10.1186/s12864-016-2981-y.

46. **Zaja, R., Popović, M., Lončar, J., Smital, T.** (2016) Functional characterization of rainbow trout (*Oncorhynchus mykiss*) Abcg2a (Bcrp) transporter. *Comp. Biochem. Physiol. C*, 190, 15-23.

47. **Mihaljević, I., Popović, M., Žaja, R., Maraković, N., Šinko, G., Smital, T.** (2017) Interaction between the zebrafish (*Danio rerio*) organic cation transporter 1 (Oct1) and endo- and xenobiotics. *Aquat. Toxicol*. **187**: 18-28.

48. **Marić, P., Ahel, M., Senta, I., Terzić, S., Mikac, I, Žuljević, A., Smital, T.** (2017) Effect-directed analysis reveals inhibition of zebrafish uptake transporter Oatp1d1 by caulerpenyne, a major secondary metabolite from the invasive marine alga *Caulerpa taxifolia. Chemosphere* **174**: 643-654.

49. **Dragojević, J., Mihaljević, I., Popović, M., Zaja, R., Smital, T.** (2017) *In vitro* characterization of zebrafish (*Danio rerio*) organic anion transporters Oat2a-e. *Toxicol In Vitro* **46**: 246-256.

50. **Terzić, S., Udikovic-Kolić, N., Jurina, T., Krizman-Matašica, I., Senta, I., Mihaljević, I., Lončar, J., Smital, T., Ahel, M.** (2018) Biotransformation of macrolide antibiotics using enriched activated sludge culture: Kinetics, transformation routes and ecotoxicological evaluation. *J. Haz. Mat.* 349: 143-152.

51. **Lončar, J., Smital, T.** (2018) Interaction of environmental contaminants with zebrafish (*Danio rerio*) multidrug and toxin extrusion protein 7 (Mate7/Slc47a7). *Aquat. Toxicol.* 205: 193-203.

52. **Dean Karaica, Davorka Breljak, Jovica Lončar, Mila Lovrić, Vedran Micek, Ivana Vrhovac Madunić, Hrvoje Brzica, Carol M. Herak-Kramberger, Jana Ivković Dupor, Marija Ljubojević, Tvrtko Smital, Željka Vogrinc, Gerhard Burckhardt, Birgitta C. Burckhardt, Ivan Sabolić** (2018) Sex-independent expression of chloride/formate exchanger Cfex (Slc26a6) in rat pancreas, small intestine, and liver, and male-dominant expression in kidneys. *Arh. Hig. Rada Toksikol.* 69: 286-303

53. **Kostanjevecki, P., Petric, I., Loncar, J., Smital, T., Ahel, M., Terzic, S**. (2019) Biodegradation study of methadone by adapted activated sludge: elimination kinetics, transformation products and ecotoxicological evaluation. *Chemosphere* **214:** 719-728.

54. **Bašica, B., Mihaljević, I., Maraković, N., Kovačević, R., Smital, T.** (2019) Molecular characterization of zebrafish Gstr1, the only member of teleost-specific glutathione S- transferase class. *Aquat. Toxicol.* **208:** 196-207.

Poglavlja u knjigama

1. **Epel, D.** and **Smital, T.** (2001) Chapter 14: Multidrug-Multixenobiotic Transporters and Their Significance with Respect to Environmental Levels of Pharmaceuticals and Personal Care Products. In: ACS Symposium Series 791 – *Pharmaceuticals and Personal Care Products in the Environment: Scientific and Regulatory Issues*, Daughton, C.G. & Jones-Lepp, T. (Eds.), ACS/Oxford University Press, USA, p. 244-263.

2. **Smital T.** (2008) Acute and Chronic Effects of Emerging Contaminants. In: THE HANDBOOK OF ENVIRONMENTAL CHEMISTRY - Emerging Contaminants from Industrial and Municipal Wastewaters. Barcelo, D. & Petrovic, M. (Eds.), Springer-Verlag, Heidelberg, Germany, p.105-142.

3. **Smital, T.** and **Ahel, M.** (2013) Ecotoxicological characterization of the Sava River – biomarker responses and biological assays. In: THE HANDBOOK OF ENVIRONMENTAL CHEMISTRY – The Sava River. Milacic, R. (Ed), Springer-Verlag, Heidelberg, Germany. *in press*

Patent

- **Kurelec B., Pivčević B.** and **Smital T.** (1996) Extract from marine tropic alga introduced into Mediterranean, *Caulerpa taxifolia*, reverts multidrug resistence (MDR) in tumour cell culture. *Croat. Pat. App.,* No 559-03-86-01.

Pozvana predavanja

1. **Smital, T.**, Use of efflux transporters as biomarkers - Marine Pollution Class, Hopkins Marine Station of Stanford University, CA, USA, 09.02.2004;

2. **Smital, T.**, Ecotoxicological relevance of MultiXenobiotic Resistance (MXR) defense system in aquatic organisms, Bodega Bay Marine Laboratory – University of California Davis, Davis, CA, 03.04.2004;

3. **Smital, T.** Ecotoxicological relevance of the MultiXenobiotic Resistance (MXR) inhibitors – MXR inhibitors as a new class of hazardous chemicals among pharmaceuticals, personal care products, pesticides and other conventional pollutants, *Swiss National Research Programme 50 Seminars*, University of Zürich and University of Lausanne, Switzerland, 27.-30.04.2005;

4. **Smital, T.** Inhibitors of the ABC Transport Proteins as Emerging Polltants - Determination and Ecotoxicological Relevance. EUROTOX 2006/6CTDC Congress (43rd Congress of the European Societies of Toxicology and 6th Congress of Toxicology in Developing Countries), Cavtat/Dubrovnik, Croatia, 20-24.09.2006;

5. **Smital, T.** Ecotoxicological Relevance of the ABC Transport Proteins in Aquatic Organisms - from multidrug (MDR) to multixenobiotic (MXR) resistance and back. CIIMAR, University of Porto, Porto, Portugal, June 26-27, 2007.

6. **Smital T.** ABC Transport Proteins in Aquatic Organisms – Identification, Characterization and Ecotoxicological Relevance. 2nd FEBS Special Meeting on ABC Proteins, ABC2008, Innsbruck, Austria, March 1-8, 2008.

7. **Smital T.** Effect-directed analyses (EDA) approach for identification of hazardous chemical contamination in the Sava River basin. 2nd REP LECOTOX Workshop: „TRENDS IN ECOLOGICAL RISK ASSESSMENT“, Novi Sad, Serbia, Sep 23, 2009.
8. **Smital, T.,** Zaja, R., Popović, M., Lončar, J. Uptake and efflux transporters versus the ADME-Tox concept in aquatic toxicology. Primo 16 - Pollutant Responses in Marine Organisms Conference, Long Beach, CA, SAD, May 14-18, 2011
9. **Smital T**. Uptake and efflux transport proteins as integral elements of the cellular detoxification and environmental stress response in aquatic organisms. 28th ESCPB Congress (European Society for Comparative Physiology and Biochemistry), Bilbao, Spain, Sep 2-5, 2012.
10. **Smital T**. Polyspecific uptake and efflux membrane transport proteins as integral elements of the cellular detoxification and environmental stress response in zebrafish. EZRC (European Zebrafish Reseource Center), KIT (Karlsruhe Institute of Technology). Dec 2, 2014.
11. **Smital, T**., Bakran-Petricioli, T., Hamer, B., Petricioli, D., Mlinarić, D. Current practices in environmental impact assessment of drilling and gas exploitation activities in the Croatian part of the Adriatic Sea. 8th International Oil and Gas Conference and Exhibition, Šibenik, Croatia, October 2015.
12. **Smital, T.** Molecular Ecotoxicology - an exciting journey from basic understanding of cellular defense to new biological indicators of environmental quality. Festival of education and science, Oct 29, 2015, Sinj, Croatia.
13. **Smital, T.** (2018) Research on uptake and efflux transporters in ecotoxicology – a strong link between Switzerland and Croatia. „15th International Symposium on Persistent Toxic Substances“ (ISPTS2018), Basel, Switzerland, Nov 8-10, 2018.

Sudjelovanje/vođenje znanstvenih projekata

Završeni projekti:

- *The environmental implications of the multixenobiotic resistance mechanism expressed in marine invertebrates*, (1995-1996) - UNEP, FAO, Mediterranean Action Plan, Athens. – member of the project team;
- *Multixenobiotic Resistance in the Environmental Risk Assessment*, (1996-2001) – Project supported by the Croatian Ministry of Science and Tehnology, project No P00981510 – member of the project team;
- *An integrated environmental monitoring system for Croatian freshwater, estuarine and coastal marine areas*, (2002-2004) – Project supported by the Research Council of Norway. Collaborative institutions were Norwegian Institute for Water Research (NIVA, Oslo, Norway), Ruđer Bošković Institute (Zagreb, Croatia), Faculty of Science (Zagreb, Croatia) and Department of Biology, University of Osijek (Osijek, Croatia) – leader of the project workgroup;
- *Multixenobiotic Resistance Mechanism as a Biomarker of Environmental Quality*, (2002-2006) – Project supported by the Croatian Ministry of Science and Technology, project No P0098135 – principal investigator;
- *EMCO - Reduction of environmental and health risks, posed by Emerging Contaminants, through advanced treatment of municipal and industrial wastes*. EC FP6 Project (2004-2007) – leader of the project workgroup;
- *SARIB – Sava River Basin: Sustainable use, management and protection of resources*. EC FP6 Project (2004-2007) - leader of the project workgroup;
- *Profiling of transcript levels and functional properties of (eco)toxicologically relevant ABC transport proteins in rainbow trout (Oncorhynchus mykiss) tissues and corresponding cell lines*, (2008-2009) – Croatia (Ministry of Science Education and Sports) – Germany (DAAD) bilateral project – co-principal investigator;

- *Assessment of hazardous chemical contamination in the Sava River basin*, (2007-2010) – NATO Science for Piece Project – co-director of the project;
- *Establishing and developing of an ecotoxicology platform in Serbia and Croatia: a focus on zebrafish (Danio rerio)* – Swiss National Science Fondation (SNSF), SCOPES 2009-2012: Joint Research Project – co-principal investigator;
- *Systematic Research of the Adriatic Sea as a Base for Sustainable Development of the Republic of Croatia* - Project "Adriatic", (1998-2010) – Project supported by the Government of the Republic of Croatia - leader of the project workgroup;
- *Ecotoxicological significance of ABC transport proteins in aquatic organisms,* (2008-2013) – Project supported by the Ministry of Science Education and Sports – principal investigator.
- *EDA-EMERGE - Innovative biodiagnosis meets chemical structure elucidation – Novel tools in effect directed analysis to support the identification and monitoring of emerging toxicants on a European scale,* (2012-2015) – Marie Curie Initial Training Networks (ITN) project - leader of the project workgroup.
- *Identification and characterization of cyanobacterial toxins based on their interaction with basic cellular detoxification systems in zebrafish (Danio rerio) and zooplankton Daphnia magna,* (2014-2016) – Swiss National Science Fondation (SNSF), SCOPES 2014-2016: Joint Research Project – co-principal investigator
- *Identification and functional characterization of (eco)toxicologically relevant polyspecific membrane transport proteins in zebrafish (Danio rerio),* (2015-2018) – Croatian National Science Foundation project – principal investigator;

Aktualni projekti:

- *Ecotoxicological characterization of biologically active substances and complex marine environment samples – Project within the Centre for Excellence for Science and Technology – Integration of Mediterranean Region (ZCI-STIM; https://stim.unist.hr/hr/) (2017-2021) – leading institution University of Split, other partners Ruđer Bošković Institute, Zagreb (IRB) and Mediteranean Institute for Life Sciences (MEDILS); principal investigator.*

Obrazovne aktivnosti

- M. Erk, **T. Smital** – Kolegij *Biološki učinci metala i organskih zagađivala na morske organizme*; Doktorski studij iz Oceanologije, Prirodoslovno-matematički fakultet, Sveučilište u Zagrebu;
- **T. Smital** – Kolegij *Ekotoksikologija*; Doktorsko studij "Zaštita prirode i okoliša", Sveučilište u Osijeku;
- G. Klobučar, M. Pavlica, V. Garaj-Vrhovac, **T. Smital** – Kolegij *Biomarkeri u biomonitoringu zagađenja okoliša*; Doktorski studij iz Biologije, Prirodoslovno-matematički fakultet, Sveučilište u Zagrebu

Mentorstvo

Do sada vođenje/mentoriranje 7 diplomskih, jednog magistarskog i 9 doktorskih radova na hrvatskim sveučilištima. Suvoditeljstvo 7 doktorskih/poslijedoktorskih studenata iz inozemstva (Norveška, Italija, Srbija, Njemačka, Portugal, Švicarska).

Recenzent za znanstvene časopise

Analytical and Bioanalytical Chemistry; Aquatic Toxicology; Archives for Environmental Contamination and Toxicology; Comparative Biochemistry and Physiology; Chemosphere; Development, Growth and Differentiation; Environmental Pollution; Environmental Science and Technology; Environmental Science and Pollution Research; Environmental Toxicology; Journal of Cell Physiology; Marine Biology; Marine and Environmental Research; Mutation Research; Water Research, PLOS ONE.

Recenzent za nacionalne znanstvene fondacije

Njemačka znanstvena zaklada (German Research Foundation; DFG), Portugalska nacionalna znanstvena zaklada (Portuguese National Science Foundation; FCT), Nacionalna znanstvena zaklada SAD-a (US National Science Foundation; NSF), Češka znanstvena zaklada (Czech Science Foundation; GACR).

Članstva u stručnim društvima

Član Hrvatskog biološkog društva, Hrvatskog toksikološkog društva, te član International Society of Ecotoxicology and Environmental Safety (SECOTOX).

Ostale aktivnosti, doprinosu razvoju sustava znanosti i visokog obrazovanja

U tri navrata član radnih skupina za izradu prijedloga Zakona o znanosti i visokog obrazovanja. U više mandata član Velikog, Malog, odnosno Upravnog vijeća, te trenutno potpredsjednik Nezavisnog sindikata znanosti i visokog obrazovanja.

Dodatne informacije

Raspoložive na: http://www.irb.hr/en/str/zimo/laboratoriji/lme