

## Curriculum vitae

Mgr. Vladislav SEMAK, PhD.

### Personal Data

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**Date and place of birth** 14<sup>th</sup> September 1982, Bratislava, Slovakia

**Contact** Danube University Krems  
Center for Biomedical Technology  
Dr.-Karl-Dorrek-Straße 30  
A-3500 Krems, Austria  
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**ORCID ID** 0000-0003-2156-2267

### Current Position

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**Since 01/2017 Researcher**

Project title: *“Funktionalisierbare, blutkompatible Polymere für die Vollblutapherese, insbesondere für die Lipidapherese.”*  
Funding agency: Government of Lower Austria and the European Regional Development Fund.  
Principal Investigator: Prof. Viktoria Weber

**Since 01/2018 Researcher**

Project title: *“Novel Surface Functionalized Polymers with Tailored Porosity for Cytokine Removal.”*  
Funding agency: Österreichische Austauschdienst (OeAD-GmbH).  
Principal Investigator: Dr. Vladislav Semak

### Work Experience

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**09/2015-12/2016 Postdoctoral researcher**

Field of Interest: *Development of methacrylate-based adsorbents for whole blood apheresis.*

Director: **Prof. Viktoria Weber**

Center: Center for Biomedical Technology, **Danube University Krems**, Austria

**07/2013-07/2015 Postdoctoral researcher**

Field of Interest: *Chemical functionalization of bio-ceramics to enhance endothelial cells adhesion for tissue engineering.*

Director: **Prof. Sandrine Gerber**

Center: Group for Functionalized Biomaterials, **École Polytechnique Fédérale de Lausanne (ETH-Lausanne)**, Switzerland

**02/2012-07/2013 Researcher**

Field of Interest: *Zwitterionic Polymers, Encapsulation Methods, Chitosan Nanoparticles.*

Director: **Ing. Igor Lacík, DrSc.**

Center: Department for Biomaterials Research, Polymer Institute, **Slovak Academy of Sciences**, Bratislava, Slovakia

**2007-2012 PhD in Organic Chemistry**

Thesis title: *“Synthesis of 1S-ethyl-4-substituted quinolizidines and other potentially bioactive compounds.”*

Director: **Prof. Carmen Escolano, PhD**

Center: Laboratory of Organic Chemistry, Faculty of Pharmacy, **University of Barcelona**, Spain

## Education

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**09/2008 Master (MSc.) in Experimental Pharmaceutical Sciences**

Thesis title: *"Enantioselective Synthesis of Indolizidine and Quinolizidine Alkaloids. Towards the First Enantioselective Synthesis of Quinolizidine Alkaloid (-)-207I."*

Directors: **Prof. Mercedes Amat, PhD and Prof. Carmen Escolano, PhD**

Center: Faculty of Pharmacy, **University of Barcelona**, Spain

**07/2008 Advanced Study Diploma (DEA)**

Center: Faculty of Pharmacy, **University of Barcelona**, Spain

**05/2006 Master (Mgr.) in Organic Chemistry**

Thesis title: *"Synthesis and Reactivity of 2-Hydroxy-1-tetralones. Chiral Auxiliaries in the Synthesis of  $\alpha$ -Amino Acids."*

Director: **Doc. M. Sališová, PhD**

Center: Faculty of Natural Sciences, **Comenius University**, Bratislava, Slovakia

**06/2004 Bachelor (BSc.) in Chemistry**

Center: Faculty of Natural Sciences, **Comenius University**, Bratislava, Slovakia

**06/2001 Graduation in Medicinal Chemistry**

Center: Secondary School of Industrial Chemistry, Bratislava, Slovakia

## Fellowships

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**09/2015 – 05/2016 Ernst Mach Grant** provided by OeAD-GmbH (Austria)

**2007-2011 FPU fellowship** provided by Spanish Ministry of Education

**06/2010 - 10/2010 FPU-estancia breve fellowship** provided by Spanish Ministry of Education

## International Studentships

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**06/2010 - 10/2010** Chemistry Department, **Brock University**, St. Catharines, Ontario, **Canada L2S 3A1**

Supervisor: **Prof. Tomáš Hudlický, PhD** (Canada Research Chair Professor of Chemistry)

**03/2005 - 07/2005** Faculty of Pharmacy, **University of Barcelona**, Spain

Supervisor: **C. Escolano, PhD; Prof. M. Amat, PhD and Prof. J. Bosch, PhD**

## Teaching

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- Laboratory Practicum: *"Experiments in Organic Chemistry and Pharmacy"*, University of Barcelona
- Supervision of master and PhD students

## Reviewing Activities

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**Carbon**

[ISSN: 0008-6223, Elsevier B.V.]

Outstanding reviewer since 08/2018

**Journal of Applied Biomedicine**

[ISSN: 1214-021X, Elsevier B.V.]

Outstanding reviewer since 09/2017

## Languages

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**Slovak** Maternal language

**Russian** Maternal language

**English** C1

**Spanish** C1

**German** A2

**Manuscripts**

1. Ettenauer, J.; **Semak, V.**; Brandl M. "Synthesis of Fluorescein Aldehydes for the Sensitive Detection of L-Cysteine" **Proceedings 2018**, 2, 895.
2. **Semak, V.**; Fischer, M. B.; Weber, V. "Biomimetic principles to develop blood compatible surfaces" **Int. J. Artif. Organs** 2017, 40, 22-30.
3. Lacík, I.; Stach, M.; Kasák, P.; **Semak, V.**; Uhelská, L.; Chovancová, A.; Reinhold, G.; Kilz, P.; Delaittre, G.; Charleux, B.; Chaduc, I.; D'Agosto, F.; Lansalot, M.; Gaborieau, M.; Castignolles, P.; Gilbert, R. G.; Szablan, Z.; Barner-Kowollik, Ch.; Hesse, P.; Buback, M. "SEC Analysis of Polyacrylic and Polymethacrylic Acid" **Macromol. Chem. Phys.** 2015, 216, 23-37.
4. Hrobárik, P.; Hrobáriková, V.; **Semak, V.**; Kasák, P.; Rakovský, E.; Polyzos, I.; Fakis, M.; Persephonis, P. "Quadrupolar Benzobisthiazole-Cored Arylamines as Highly Efficient Two-Photon Absorbing Fluorophores" **Org. Lett.** 2014, 16, 6358–6361.
5. Bertok, T.; Klukova, L.; Sediva, A.; Kasák, P.; **Semak, V.**; Micusik, M.; Omastova, M.; Chovanová, L.; Vlček, M.; Imrich, R.; Vikartovska, A.; Tkac, J. "Ultrasensitive Impedimetric Lectin Biosensors with Efficient Antifouling Properties Applied in Glycoprofiling of Human Serum Samples" **Anal. Chem.** 2013, 85, 7324-7332.
6. Asó, E.; Semakova, J.; Joda, L.; **Semak, V.**; Halbaut, L.; Calpena, A.; Escolano, C.; Perales, J. C.; Ferrer, I. "Triheptanoin supplementation to ketogenic diet curbs cognitive impairment in APP/PS1 mice used as a model of familial Alzheimer's disease" **Curr. Alzheimer Res.** 2012, 10, 209-297.
7. Amat, M.; **Semak, V.**; Escolano, C.; Molins, E., Bosch, J. "Enantioselective, Protecting Group-Free Synthesis of 1S-Ethyl-4-Substituted Quinolizidines" **Org. Biomol. Chem.** 2012, 10, 6866-6875.
8. **Semak, V.**; Semakova, J.; Halbaut, L.; Asó, E.; Ferrer, I.; Calpena, A.; Escolano, C.; Perales, J. C. "Synthesis of triheptanoin and formulation as a solid diet for rodents." **Eur. J. Lipid Sci. Technol.** 2012, 114, 889-895.
9. **Semak, V.**; Metcalf, T. A.; Endoma-Arias, M. A. A.; Mach, P.; Hudlicky, T. "Toluene dioxygenase mediated oxidation of halogen-substituted benzoate esters" **Org. Biomol. Chem.** 2012, 10, 4407-4416.
10. Arróniz, C.; Gil-González, A.; **Semak, V.**; Escolano, C.; Bosch, J.; Amat, M. "Cooperative catalysis for the first asymmetric formal [3+2] cycloaddition reaction of isocynoacetates to  $\alpha,\beta$ -unsaturated ketones" **Eur. J. Org. Chem.** 2011, 3755-3760 (highlighted in: **ChemInform** 2011, 42, 49-109).
11. Hudlicky, R. J.; Werner, L.; **Semak, V.**; Simionescu, R.; Hudlicky, T. "Dauben - Michno oxidative transposition of allylic cyanohydrins - Enantiomeric switch of (-)-carvone to (+)-carvone" **Can. J. Chem.** 2011, 89, 535-543.
12. **Semak, V.**; Escolano, C.; Arróniz, C.; Bosch, J.; Amat, M. "2010," **Tetrahedron: Asymmetry** 2010, 21, 2542–2549 (highlighted in: **ChemInform** 2011, 42, 17-151).
13. Pažický, M.; **Semak, V.**; Gášpár, B.; Bílešová, A.; Sališová, M.; Boháč, A. "Efficient synthesis of 2-alkyl-2-hydroxy-6-X-1-tetralones" **Arkivoc** 2008, 8, 225-241.
14. **Semak, V.**; Boháč, A.; Sališová, M.; Addová, G.; Danko, P. "Preparation of  $\alpha$ -methyl- $\gamma$ -butyrolactone: Mechanism of its formation and utilization in 2-methyl-1-tetralone synthesis" **Chem. Pap.** 2008, 62, 275-280.

**Selected congress contributions**

- **Semak, V.**; Weiss, R.; Eichhorn, T.; Fischer, M. B.; Weber, V.: "Polysulfobetainic Coating of Adsorbents for Apheresis" **10<sup>th</sup> International BioNanoMed 2019 Congress**, Graz, Austria. 04/2019.
- **Semak, V.**; Weiss, R.; Tripisciano, C.; Fendl, B.; Harm, S.; Fischer, M. B.; Hartmann, J.; Weber, V.: "Protamine Beads for the Adsorption of Extracellular Vesicles" **9<sup>th</sup> International BioNanoMed 2018 Congress**, Graz, Austria. 04/2018.
- **Semak, V.**; Fischer, M. B.; Weber, V.: "Synthesis and Photodeposition of Zwitterionic Terpolymer. Towards Blood Compatible Matrices for Whole Blood Apheresis" **8<sup>th</sup> International BioNanoMed 2017 Congress**, Krems, Austria. 03/2017.
- **Semak, V.**; Sautaux, J.; Gerber-Lemaire, S.: "Development of multifunctional organic coatings for bioceramics; towards functional cell-engineered bone implants" **8<sup>th</sup> Conference of Scandinavian Society for Biomaterials**, Sigulda, Latvia. 05/2015.
- **Semak, V.**; Borcard, F.; Prior, S.; Gerber-Lemaire, S.: "Synthesis of multifunctional ligands for bioceramic coating; towards functional cell-engineered bone implants" **Fall Meeting 2014**, Zürich, Switzerland. 09/2014.
- **Semak, V.**; Vnuková, D.; Kasák, P.; Janikovičová, L.; Takáčová, M.; Zaťovičová, M.; Pastoreková, S.; Lacík, I.: "Chitosan Nanoparticles with the Inhibiting Effect on Carbonic Anhydrase in Tumor Diagnosis and Treatment." **3<sup>rd</sup> Austrian-Slovenian Polymer Meeting**, Bled, Slovenia. 04/2013.
- **Semak, V.**; Escolano, C.; Amat, M.; Bosch, J.: "An Appeal to Synthetic Organic Chemistry to Resolve the Supply of Triheptanoin." **11<sup>th</sup> International Child Neurology Congress**, El Cairo, Egypt. 05/2010.