

Curriculum Vitae

PERSONAL INFORMATION

Family name, first name, title(s):

Rázga, Filip, Chem. Eng., PhD.

e-mail:

filip.razga@savba.sk

Gender:

Male

EDUCATION

2013

Scientific degree II.a (equivalent to Associate Professor)
Slovak Academy of Sciences, Bratislava, Slovak Republic

2007

PhD.
Biomolecular chemistry
Faculty of Sciences, Masaryk University Brno, National Centre for Biomolecular Research,
Brno, Czech Republic

2002

Chemical Engineer (Master of Science)
Physical chemistry
Faculty of Chemical and Food Technology, Slovak University of Technology in Bratislava,
Bratislava, Slovak Republic

PROFESSIONAL TRAINING

2012

Completion of specialized training (Institute of postgraduate education – „IPE“): Molecular
genetical diagnostics in clinical practice

Completion of specialized training – IPE: Generic module for study programs clinical
biochemistry, alergology and clinical immunology, clinical genetics, nuclear medicine

Completion of specialized training – IPE: MIPREM module for study programs clinical
biochemistry, alergology and clinical immunology, clinical genetics, nuclear medicine

Completion of specialized training – IPE: ANAL module for study programs clinical
biochemistry, alergology and clinical immunology, clinical genetics, nuclear medicine

Completion of specialized training – IPE: Advances in medical genetics

Completion of specialized internship: Cytogenetics

Completion of specialized internship: Molecular genetics

Completion of specialized internship: Clinical biochemistry

Completion of specialized internship: Clinical microbiology

Completion of specialized internship: Genetics

2011

Enrollment to specialized training: Clinical genetics

2010

Certificate – IPE: Professional in medical laboratory methods

2009

Completion of specialized training – IPE: Basics of healthcare legislation

Completion of specialized training – IPE: Starting medical module

Completion of specialized training – IPE: General work principles in medical laboratories

Completion of specialized training – IPE: First aid

WORKING POSITION(S)

2013 -	Research Scientist Polymer Institute of the Slovak Academy of Sciences (PISAS), Bratislava, Slovak Republic
2010-2013	External Research Scientist Faculty of Medicine, Masaryk University Brno, Brno, Czech Republic
2008-2013	Research Scientist – Specialist in laboratory methods and drug preparation Department of Internal Hematology and Oncology, Faculty Hospital Brno, Brno, Czech Republic
2005-2007	Research Assistant National Centre for Biomolecular Research, Masaryk University Brno, Brno, Czech Republic Institute of Biophysics, Academy of Sciences of the Czech Republic, Brno, Czech Republic

AWARDS

2008	Award of the Ministry of Education, Youth and Sports of the Czech Republic, for excellent graduates of the study program, for outstanding achievements in study and creative activities in the field of Biomolecular chemistry Award of the Rector of the Masaryk University Brno, Czech Republic, for excellent PhD thesis at the Faculty of Sciences
2007	Award of Institute of Biophysics of the Academy of Sciences of the Czech Republic, Brno, Czech Republic, for outstanding scientific work
2006	Award of the Dean of Faculty of Sciences, Masaryk University Brno, Czech Republic, for academic excellence and success in creative work and research in the field of Physical chemistry

SUPERVISION OF GRADUATE STUDENTS

2012-2014	1/Master student Faculty of Sciences, Department of Molecular Biology and Genetics, Masaryk University Brno, Brno, Czech Republic
2013-	1/PhD student (co-supervision) Polymer Institute of the Slovak Academy of Sciences, Bratislava, Slovak Republic

TEACHING ACTIVITIES

2011-2013	Seminar tutor (4 semesters, 4 hrs/month): Internal medicine/Clinical examination in internal medicine, Faculty of Medicine, Masaryk University Brno, Brno, Czech Republic
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MEMBERSHIP OF SCIENTIFIC SOCIETIES

2012-	CELL – The Czech leukemia study group for life
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GRANTS

Project Title	Funding source	Amount (€)	Period	PI*
Morpholino - a unique antisense system for gene silencing: synthesis and oligomerization	PISAS	1,600	2014	Yes
Peptide modified hydrogels for the improvement of immune protection of encapsulated cells	Ministry of Education, Science, Research and Sport of the Slovak Republic	15,000	2012-2014	No
Kinetics and bio-applications of zwitterionic polymers	Ministry of Education, Science, Research and Sport of the Slovak Republic	33,000	2014-2016	No
Advanced polymer technologies in biomedicine: Polymer microcapsules for immunoprotection of transplanted pancreatic islets in diabetes treatment.	Slovak research and development agency	249,000	2011-2014	No
Carbonic anhydrase IX as a functional component of cancer progression: the role in epithelial-mesenchymal transition and intercellular signaling	Slovak research and development agency	210,000	2012-2015	No
Expression of <i>hOCT-1</i> , <i>ABCB1</i> in different blood cells: a possible role of individual cell population in clinical resistance	Novartis	275,000	2009-2011	No
The hematopoietic microenvironment and the model of human physiological and malignant hematopoiesis	Novartis, BMS	51,000	2011-2013	No
Cepheid: automated system for <i>BCR-ABL1</i> monitoring	Ministry of Health of the Czech Republic, Faculty Hospital Brno	50,000	2013	No
Increase of quality and capacity of molecular diagnostics in the Dept. of Internal Hematology and Oncology, Faculty Hospital Brno	Novartis	41,000	2013	No
Analysis of CD34 + cells in patients with CML using next-generation sequencing	Novartis	39,000	2013	No

* Yes - Principal investigator; No - Member

LIST OF PUBLICATIONS

- 10 selected publications out of 32 total publications are described briefly
- these publications were prepared without the presence of PhD supervisor as co-author
- Filip Razga is in all these publications either the first author or equally contributing author

Musilova M, **Razga F**, Jurcek T, Jeziskova I, Borsky M, Nemethova V, Dvorakova D, Mayer J, Racil Z., BCR-ABL1 Kinase domain mutational analysis of CD34+ stem/progenitor cells by Next-generation sequencing. 2014. Am J Hematol, accepted, IF: 4.00, cit: 0

„Establishment of a novel, next-generation sequencing based platform for screening of entire BCR-ABL1 kinase domain mutation in pre-mature cell populations. This sensitive screening method allows early detection of any BCR-ABL1 mutation what could consequently prevent their expansion into peripheral blood through early therapeutic intervention. Compared to others, clinical relevance of this approach was discussed. Study design, data analyses and interpretation, correlation with clinical data.”

Jurcek T, **Razga F**, Mazancova P, Musilova M, Dvorakova D, Borsky M, Zackova D, Dobesova B, Semerad L, Mayer J, Racil Z. The prospective analysis of low-level BCR-ABL1 T315I mutation in the CD34+ cells of de novo CML patients. 2014. Leuk Lymphoma, accepted, IF: 2.40, cit: 0

„Optimisation and evaluation of a highly-sensitive and highly-specific ligationPCR for T315I screening, which allows for early detection of this mutation that is resistant to all clinically approved TKIs. Considering the hierarchy of hematopoiesis, the study was focused on screening of stem/progenitor cell populations that give rise to TKI resistant clones, which cause failure of ongoing TKI regimens. Sample preparation, data analyses, correlation with clinical data.”

Racil Z, **Razga F**, Klamova H, Voglova J, Belohlavkova P, Malaskova L, Potesil D, Muzik J, Zackova D, Polakova KM, Zdrahal Z, Malakova J, Suttnar J, Dyr J, Mayer J. No clinical evidence for performing trough plasma and intracellular imatinib concentrations monitoring in patients with chronic myelogenous leukaemia. 2013. Hematol Oncol, doi: 10.1002/hon.2091, in press, IF:2.04, cit: 0

„Comprehensive data that imply that monitoring of extracellular and intracellular Imatinib concentrations has no clinical impact on treatment decisions, except for cases when monitoring of long-term compliance is required. Data collection and analyses, analysis of factors that affect pre-analytical sample preparation, correlation study.”

Racil Z, **Razga F**, Drapalova J, Buresova L, Zackova D, Palackova M, Semerad L, Malaskova L, Haluzik M, Mayer J. Mechanism of impaired glucose metabolism during nilotinib therapy in patients with chronic myelogenous leukemia. 2013. Haematologica, 98(10):e124-6, doi: 10.3324/haematol.2013.086355, in press, IF: 5.94, cit: 0

„Clinically significant data that indicate that first-line Nilotinib therapy induces glucose metabolism-related adverse events often resulting in hyperinsulinaemia or peripheral arterial occlusions. Molecular pathways and mechanisms of side effects were suggested. Study design, data analyses, proof-of-principle of suggested mechanisms of Nilotinib off-target action.”

Jeziskova I, **Razga F**, Toskova M, Dvorakova D, Timilsina S, Mayer J, Racil Z. Quantitative detection of IDH2 mutation for minimal residual disease monitoring in patients with acute myeloid leukemia and its comparison with mutations in NPM1 gene. 2013. Leuk Lymphoma, 54(4):867-70, IF: 2.40, cit: 1

„Development and validation of a novel real-time PCR method for monitoring of IDH2 mutations. This method allows for fast and precise monitoring of minimal residual disease in patients with AML. Design of study, method optimisation and validation of obtained results, implementation of the method into clinical practice.”

Razga F, Jurcek T, Zackova D, Dvorakova D, Toskova M, Jeziskova I, Mayer J, Racil Z. Role of treatment in the appearance and selection of BCR-ABL1 kinase domain mutations. 2012. Mol Diagn Ther; 16(4):251-9, IF: 1.69, cit: 1

„Clear evidence that long-term selective pressure of consecutive TKI administration has negative impact on the development and expansion of TKI-resistant clones that cause failure of TKI therapy regimens. Analysis of 9-year follow-up of CML patients.”

Razga F, Jurcek T, Jeziskova I, Zackova D, Dvorakova D, Borsky M, Mayer J, Racil Z. Analysis of mutations in the BCR-ABL1 kinase domain, using direct sequencing: detection of the T315I mutation in bone marrow CD34+ cells of a patient with chronic myelogenous leukemia 6 months prior to its emergence in peripheral blood. 2012. Mol Diagn Ther; 16(3):163-6, IF: 1.69, cit: 1

„Clinical consequences of evolution of TKI-resistant clones that emerge directly from stem/progenitor cell population and propagate towards the peripheral blood. Monitoring of pre-mature cell populations could allow early detection of resistant clones and thus early therapeutic intervention. Sequencing of samples, analysis of various cell populations, mutation kinetics and evolution analyses.”

Jeziskova I, **Razga F**, Bajerova M, Racil Z, Mayer J, Dvorakova D. IDH2 mutations in patients with acute myeloid leukemia: missense p.R140 mutations are linked to disease status. **2010**. Leuk Lymphoma; 51(12):2285-7, IF: 2.40, cit: 3

„For the first time, direct correlation between the presence of p.R140 mutations and course of AML was shown. This extends the portfolio of molecular markers suitable for monitoring of minimal residual disease. Sequencing of samples, correlation with clinical data, molecular marker validation.”

Racil Z, **Razga F**, Buresova L, Jurcek T, Dvorakova D, Zackova D, Timilsina S, Cetkovsky P, Mayer J. The assessment of human organic cation transporter 1 (hOCT1) mRNA expression in patients with chronic myelogenous leukemia is affected by the proportion of different cells types in the analyzed cell population. **2010**. Am J Hematol; 85(7):525-8, IF: 4.00, cit: 10

„Robust and systematic data that imply that pre-treatment hOCT-1 mRNA level has no impact on clinical response of CML patients on first-line Imatinib therapy. hOCT-1 does not seem to have responders/non-responders stratification value. Design of study, development of a molecular method for hOCT-1 mRNA assessment, analysis of various cell populations, correlation and prediction analyses.”

Rázga F, Dvoráková D, Jurcek T, Jezisková I, Kristková Z, Mayer J. CEBPA gene mutational status: a complete screening using high-resolution melt curve analysis. **2009**. Mol Diagn Ther; 13(3):195-200, IF: 1.69, cit: 3

„Development and validation of a novel diagnostic tool for screening of CEBPA mutations, based on high-resolution melt curves analysis. Design of study, analysis of patients samples, method optimisation and validation of obtained results, implementation into clinical practice.”

- **Other publications where Filip Razga is either the first author or equally contributing author**

Malcikova J, **Razga F**, Jurcek T, Dvorakova D, Zackova D, Toskova M, Sebejova L, Smardova J, Oltova A, Vankova G, Jurackova L, Trbusek M, Pospisilova S, Mayer J, Racil Z. The BCR-ABL1 T315I mutation and additional genomic aberrations are dominant genetic lesions associated with disease progression in chronic myelogenous leukemia patients resistant to tyrosine kinase inhibitor therapy. **2013**. Leuk Lymphoma, 54(9): 2083-7, IF: 2.40, cit: 0

Razga F, Racil Z, Machova Polakova K, Buresova L, Klamova H, Zackova D, Dvorakova D, Polivkova V, Cetkovsky P, Mayer J. The predictive value of human organic cation transporter 1 and ABCB1 expression levels in different cell populations of patients with de novo chronic myelogenous leukemia. **2011**. Int J Hematol; 94(3):303-6, IF: 1.17, cit: 1

Racil Z, **Razga F**, Polakova KM, Buresova L, Polivkova V, Dvorakova D, Zackova D, Klamova H, Cetkovsky P, Mayer J. Assessment of adenosine triphosphate-binding cassette subfamily B member 1 (ABCB1) mRNA expression in patients with de novo chronic myelogenous leukemia: the role of different cell types. **2011**. Leuk Lymphoma; 52(2):331-4, IF: 2.40, cit: 4

Jezisková I, **Rázga F**, Gazdová J, Doubek M, Jurcek T, Koristek Z, Mayer J, Dvoráková D. A case of a novel PML/RARA short fusion transcript with truncated transcription variant 2 of the RARA gene. **2010**. Mol Diagn Ther; 14(2):113-7, IF: 1.69, cit: 2

Jurcek T, **Razga F**, Jeziskova I, Dvorakova D, Zackova D, Tomasikova L, Oltova A, Mayer J. Failure of molecular diagnostics in chronic myeloid leukemia: an aberrant form of e13a2 BCR-ABL transcript causing false-negative results by standard polymerase chain reaction. **2010**. Leuk Lymphoma; 51(3):558-61, IF: 2.40, cit:2

Rázga F, Koca J, Mokdad A, Sponer J. Elastic properties of ribosomal RNA building blocks: molecular dynamics of the GTPase-associated center rRNA. **2007**. Nucleic Acids Res; 35(12):4007-17, IF: 8.28, cit: 21

Rázga F, Zacharias M, Réblová K, Koca J, Sponer J. RNA kink-turns as molecular elbows: hydration, cation binding, and large-scale dynamics. **2006**. Structure; 14(5):825-35, IF: 5.99, cit: 40

Rázga F, Koca J, Sponer J, Leontis NB. Hinge-like motions in RNA kink-turns: the role of the second a-minor motif and nominally unpaired bases. **2005**. Biophys J; 88(5):3466-85, IF: 3.67, cit: 68

Rázga F, Spackova N, Réblová K, Koca J, Leontis NB, Sponer J. Ribosomal RNA kink-turn motif--a flexible molecular hinge. **2004**. J Biomol Struct Dyn; 22(2):183-94, IF: 4.99, cit: 36

- **Publications where Filip Razga is co-author**

Potěšil D, Stejskal S, Borský M, Šimara P, Havelková M, Rázga F, Koutná I, Dvořáková D, Mayer J, Ráčil Z, Zdráhal Z. Determination of Imatinib in the Blood Cells of Chronic Myelogenous Leukemia Patients by Ion-Trap Mass Spectrometry. **2014**. *Analytical Letters*; 47(6). 944-957, IF: 0.95, cit: 0

Mesárošová M, Kozics K, Bábelová A, Regendová E, Pastorek M, Vnuková D, Buliaková B, Rázga F, Gábelová A. The role of reactive oxygen species in the genotoxicity of surface-modified magnetite nanoparticles. **2014**. *Toxicol Lett*; 226(3):303-13, IF: 3.15, cit: 0

Zackova D, Klamova H, Muzik J, Cmunt E, Racil Z, Machova Polakova K, Dvorakova D, Jurcek T, Rázga F, Cetkovsky P, Dusek L, Mayer J. Efficacy and Tolerance of Dasatinib after Imatinib Failure or Intolerance for Chronic Myeloid Leukemia Patients Treated in Three Different Hospitals Compare Well with Results Achievable in Formal Clinical Trials. **2013**. *Leuk Lymphoma*, 54(10):2310-3, IF: 2.40, cit: 0

Dvorakova D, Racil Z, Borsky M, Robesova B, Jeziskova I, Rázga F, Lengerova M, Mayer J. Clonal heterogeneity in patients with cytogenetically normal acute myeloid leukemia with NPM1 mutations. **2013**. *Leuk Lymphoma*, 54(5):1056-60, IF: 2.40, cit: 0

Simara P, Peterkova M, Stejskal S, Potesilova M, Koutna I, Racil Z, Rázga F, Jurcek T, Dvorakova D, Mayer J. BCR-ABL activity measured by 50% inhibitory concentration for imatinib, p-CrkL/CrkL ratio or p-CrkL ratio in CD34+ cells of patients with chronic myeloid leukemia does not predict treatment response. **2012**. *Leuk Lymphoma*; 53(8):1627-9, IF: 2.40, cit: 1

Racil Z, Toskova M, Dvorakova D, Jeziskova I, Rázga F, Buresova L, Timilsina S, Mayer J. Treatment of molecular relapse in patients with acute myeloid leukemia using clofarabine monotherapy. **2012**. *Am J Hematol*; 87(2):211-3, IF: 4.00, cit: 0

Horky O, Mayer J, Kablaskova L, Rázga F, Krejci M, Kissova J, Borsky M, Jeziskova I, Dvorakova D. Increasing hematopoietic microchimerism is a reliable indicator of incipient AML relapse. **2011**. *Int J Lab Hematol*; 33(1):57-66, IF: 1.30, cit: 4

Racil Z, Buresova L, Brejcha M, Prochazkova J, Zounar R, Timilsina S, Rázga F, Toskova M, Cetkovsky P, Mayer J. Clinical and laboratory features of leukemias at the time of diagnosis: an analysis of 1,004 consecutive patients. **2011**. *Am J Hematol*; 86(9):800-3, IF: 4.00, cit: 0

Zackova D, Klamova H, Dusek L, Muzik J, Polakova KM, Moravcova J, Jurcek T, Dvorakova D, Racil Z, Pospisil Z, Oltova A, Michalova K, Brezinova J, Rázga F, Doubek M, Cetkovsky P, Trneny M, Mayer J. Imatinib as the first-line treatment of patients with chronic myeloid leukemia diagnosed in the chronic phase: can we compare real life data to the results from clinical trials? **2011**. *Am J Hematol*; 86(3):318-21, IF: 4.00, cit: 8

Racil Z, Klamova H, Voglova J, Faber E, Rázga F, Zackova D, Buresova L, Cetkovsky P, Mayer J. Persistent splenomegaly during imatinib therapy and the definition of complete hematological response in chronic myelogenous leukemia. **2010**. *Am J Hematol*; 85(5):386-9, IF: 4.00, cit: 0

Réblová K, Rázga F, Li W, Gao H, Frank J, Sponer J. Dynamics of the base of ribosomal A-site finger revealed by molecular dynamics simulations and Cryo-EM. **2010**. *Nucleic Acids Res*; 38(4):1325-40, IF: 8.28, cit: 24

Dvorakova D, Racil Z, Jeziskova I, Palasek I, Protivankova M, Lengerova M, Rázga F, Mayer J. Monitoring of minimal residual disease in acute myeloid leukemia with frequent and rare patient-specific NPM1 mutations. **2010**. *Am J Hematol*; 85(12):926-9, IF: 4.00, cit: 8

Réblová K, Lankas F, Rázga F, Krasovska MV, Koca J, Sponer J. Structure, dynamics, and elasticity of free 16s rRNA helix 44 studied by molecular dynamics simulations. **2006**. *Biopolymers*; 82(5):504-20, IF: 2.88, cit: 42

PARTICIPATION IN CONGRESSES/CONFERENCES

- 5 selected conference proceedings in the last 3 years

Ježíšková I, Rázga F, Dvořáková D, Semerád L, Sustkova Z, Mayer J, Ráčil Z. Are mutations in the IDH2 gene suitable molecular markers for MRD monitoring in AML patients? 18th Congress of the European Hematology Association in Haematologica, 2013. IF: 5.94

Ráčil Z, Rázga F, Drápalová J, Burešová L, Žáčková D, Palacková M, Semerád L, Malášková L, Haluzík M, Mayer J. Mechanism of Impaired Glucose Metabolism during Nilotinib Therapy in Patients with Chronic Myelogenous Leukemia. 18th Congress of the European Hematology Association in Haematologica, 2013. IF: 5.94

Borský M, Némethová V, Rázga F, Mayer J, Ráčil Z. Surface antigen CD26 as a marker for purification of CML stem cells. Stem cells and cell therapy: from research to modern clinical application, 2013.

Malčíková J, Jurček T, Rázga F, Dvořáková D, Žáčková D, Darzentas N, Šebejová L, Šmardová J, Oltová A, Juračková L, Trbušek M, Doubek M, Pospíšilová Š, Mayer J, Ráčil Z. T315I mutations are clustered with advanced phases contrary to other aberrations in CML patients resistant to TKI therapy. 17th Congress of the European Hematology Association, Amsterdam, 2012. IF: 5.94

Milosevic J, Rázga F, Dvorakova D, Jurcek T, Berg T, Puda A, Klampfl T, Harutyunyan A, Gisslinger B, Gisslinger H, Orlandi E, Bernasconi P, Indrak K, Divoka M, Faber E, Mayer J, Racil Z, Kralovics R. Cytogenetic aberration profile of chronic myeloid leukemia and its dynamic changes during imatinib therapy. 53rd ASH meeting, 2011. IF: 9.89

TECHNOLOGY TRANSFER ACTIVITIES - PATENT(S)

Rázga F, Nemethova V. Enhanced specificity and selectivity of antisense systems for cancer therapy: targeted inhibition of causal fusion genes, filed 25/14 3.1, in progress 2014

Rázga F, Nemethova V. Immune-inertness: Morpholino-modified surfaces of materials for *in vivo* biomedical applications, filed 26/14 3.1, in progress 2014

OUTREACH ACTIVITIES

Rázga F. Cukrovka. Slobodný vysieláč, Informačná vojna; 20.12.2013

(<http://www.slobodnyvysielac.sk/redata/other/play.php?file=informacna%20vojna%20-%2020.12.2013.mp3>)

Rázga F, Lacík I. Nádej na liečbu cukrovky typu I. 2014, Zem a vek; p.85