Curriculum Vitae

Dr. Rustem A. Shaykhutdinov

Contact information

Phone: (+1) 403 - 923-8131
Email: rousha704@gmail.com

Objective

Looking for the research/Lab manager position in organization which uses my skills and expertise in NMR metabolomics and NMR facility maintenance.

Education

1998: Ph.D. Physics, Molecular Physics and Thermodynamics
Kazan State University, Kazan, Russia
Thesis: "Stereodynamic Properties of Middle Size Heterocycles in Solutions by One and Two Dimensional NMR".

1987: M.S. in Radiospectroscopy and Quantum Electronics, Kazan State University, Kazan, Russia

Research and Teaching Experiences

2010 – present: Research Associate, Metabolomics Research Centre, Department of Biological Sciences, University of Calgary, Calgary, Canada.

- Carry out NMR metabolomics studies of animal models and human clinical samples in different area of cancer research, inflammatory diseases and dietary deficiencies.
- Maintenance of NMR facility including four NMR spectrometers (400, 500, 600 and 700 MHz).

2006 – 2010: Postdoctoral Research Associate, Metabolomics Research Centre, Department of Biological Sciences, University of Calgary, Calgary, Canada. Advisor Prof. Hans J. Vogel.

- Carried out metabolomics analysis of human and animal biofluids and plant extracts by NMR spectroscopy and multivariable statistical analysis methods.
- Participated in development of the Human Metabolom Data Base (www.hmdb.ca, the Human Metabolom Project, Principal Investigators – Prof. David Wishart, University of Alberta, Prof. Hans J. Vogel, University of Calgary): chemical shift assignment of standard human metabolites (small molecules) in 1D proton and 2D NMR spectra.
- Assisted postdoctoral fellows and graduate students with NMR aspects of

metabolomics research.

2003 - 2006: Postdoctoral Visiting Fellow, Biotechnology Research Institute, National Research Council of Canada, Montreal, Canada. Supervisor Dr. Feng Ni.

- Studied protein/peptide structures and interactions using multidimensional NMR and structure calculation methods.

2001 - 2003: Teaching instructor (adjunct), Department of General Physics, Kazan State University, Russia.

- Taught the laboratory sections for undergraduate course of General Physics.

2000 - 2003: Senior research fellow, NMR Laboratory, Department of Chemistry, Kazan State University, Russia.

- Conducted the structure and dynamics investigations of organic heterocyclic compounds in solution and solid state by NMR Spectroscopy.
- Supervised the NMR facility in the Laboratory.

1999 - 2000: Postdoctoral Visiting Fellow, University of Turku, Turku, Finland.

- Carried out conformational studies of fused heterocyclic systems and characterization of chemical reaction products by NMR spectroscopy and quantum chemistry calculations. Supervisor Prof. Kalevi Pihlaja.

1987 – 1999: NMR manager in the NMR Laboratory, Department of Chemistry, Kazan State University, Russia.

- Was responsible for the maintenance of NMR spectrometer Varian "Unity-300".
- Collaborated in research with other members of the Laboratory and research groups at the department.
- Taught the practical courses of NMR Spectroscopy for graduate students.

Awards and Fellowships

- Visiting fellowship in Canadian government laboratories, NSERC, Canada, 2003-2006.
- Postdoctoral fellowship, McGill University, BRI NRC, Canada, 2003.
- Principal investigator of research grant, Russian Foundation for Basic Research, Russia, 1999-2001.
- CIMO scholarship grant, Centre for International Mobility, Finland, 1999-2000.

Research Interests

- Metabolomics study by NMR spectroscopy for animal models and clinical samples in different area of cancer research, inflammatory diseases and dietary deficiencies.
- Study of protein and/or peptide structures and interactions by NMR spectroscopy.
- Conformational and dynamics study of small organic molecules by solution and solid-state

NMR spectroscopy.

Skills:

Extensive knowledge of whole NMR metabolomics workflow: preparation of NMR samples of different biofluids, running NMR experiments, assigning and profiling of NMR spectra, statistical analysis using multivariate (SIMCA) and univariate methods (ANOVA).

Operating and maintaining of NMR spectrometers ranging from 300 MHz to 800 MHz from different manufacturers (Varian, Bruker, Jeol). Good knowledge of Varian and Bruker NMR hardware for solution and solid-state NMR spectroscopy. Pulse sequence programming and implementation of new NMR experiments.

Extensive use of different NMR software for data processing and analysis: XWINNMR, TopSpin, VNMR, NMRPipe, NMR-View, NUTS (Acorn NMR Inc.), MestRe-C.

NMR based protein/peptide structure calculations using multiple software packages: CNS, ARIA, TALOS (prediction of protein backbone angles using a chemical shift database), PALES (prediction of sterically induced alignment).

Expressions and purifications of recombinant isotope labeled protein samples for NMR study.

Conformational calculations and analysis using Molecular Modeling and Analysis packages (CS Chem 3D, HyperChem), computational chemistry software (Mopac, GAMESS).

Extensive use of computers working on multiple platforms (UNIX, Linux, Windows).

List of selected publications:

Easaw J., Singh A.D., **Shaykhutdinov R**., Wen J., Forsyth P., Vogel H.J., Caimcross J.G., Weljie A.M. Non-invasive brain tumor diagnosis and prognostication using metabolomics. *N Engl J Med.* Submitted.

Reimer R.A., Maurer A.D., Eller L.K, Hallam M.C, **Shaykhutdinov R**., Vogel H.J., Weljie A. Satiety hormone and metabolomic response to an intermittent high energy diet differs in rats consuming longterm diets high in protein or prebiotic fibre. *J Proteome Res.* **2012**, *11*, 4065.

Schicho R., **Shaykhutdinov R.**, Ngo J., Nazyrova A., Schneider C., Panaccione R., Kaplan G.G., Vogel H.J., Storr M. Quantitative metabolomic profiling of serum, plasma and urine by (1)H NMR spectroscopy discriminates between patients with inflammatory bowel disease and healthy individuals. *J Proteome Res.* **2012**, *11*, 3344.

Bassaganya-Riera J., Viladomiu M., Pedragosa M., De Simone C., Carbo A., **Shaykhutdinov R**., Jobin C., Arthur J.C., Corl B.A., Vogel H.J., Storr M., Hontecillas R. Probiotic bacteria produce conjugated linoleic acid locally in the gut that targets macrophage PPAR γ to suppress colitis. *PLoS One*. **2012**, *7,* e31238.

Pushie M.J., **Shaykhutdinov R.**, Nazyrova A., Graham C., Vogel H.J. An NMR metabolomics study of elk inoculated with chronic wasting disease. *J Toxicol Environ Health A.* **2011**, *74*, 1476.

Booth S.C., Workentine M.L., Wen J., **Shaykhutdinov R**., Vogel H.J., Ceri H., Turner R.J., Weljie A.M. Differences in metabolism between the biofilm and planktonic response to metal stress. *J Proteome Res.* **2011**, *10*, 3190.

Bathe O.F., **Shaykhutdinov R**., Kopciuk K., Weljie A.M., McKay A., Sutherland F.R., Dixon E., Dunse N., Sotiropoulos D., Vogel H.J. Feasibility of identifying pancreatic cancer based on serum metabolomics. *Cancer Epidemiol Biomarkers Prev*. **2011**, *20*, 140.

Schicho R., Nazyrova A., **Shaykhutdinov R.**, Duggan G., Vogel H.J., Storr M. Quantitative metabolomic profiling of serum and urine in DSS-induced ulcerative colitis of mice by 1H NMR spectroscopy. *J Proteome Res*. **2010**, *9*, 6265.

White A.P., Weljie A.M., Apel D., Zhang P., **Shaykhutdinov R.**, Vogel H.J., Surette M.G. A global metabolic shift is linked to Salmonella multicellular development. *PLoS One.* **2010,** *27*, e11814.

Shaykhutdinov R.A., MacInnis G.D., Dowlatabadi R., Weljie A.M., Vogel H.J. Quantitative analysis of metabolite concentrations in human urine samples using $^{13}C\{^{1}H\}$ NMR spectroscopy.

Metabolomics. **2009**, *5*, 307.

Lee E.J., **Shaykhutdinov R.**, Weljie A.M., Vogel H.J., Facchini P.J., Park S.U., Kim Y.K. Yang T.J. Quality Assessment of Ginseng by (1)H NMR Metabolite Fingerprinting and Profiling Analysis. *J Agric Food Chem.* **2009**, *57*, 7513.

Wishart D.S., Knox C., Guo A.C., Eisner R., Young N., Gautam B., Hau D.D., Psychogios N., Dong E., Bouatra S., Mandal R., Sinelnikov I., Xia J., Jia L., Cruz J.A., Lim E., Sobsey C.A., Shrivastava S., Huang P., Liu P., Fang L., Peng J., Fradette R., Cheng D., Tzur D., Clements M., Lewis A., De Souza A., Zuniga A., Dawe M., Xiong Y., Clive D., Greiner R., Nazyrova A., **Shaykhutdinov R.**, Li L., Vogel H.J., Forsythe I. HMDB: a knowledgebase for the human metabolome. *Nucleic Acids Res*. **2009,** *37*(Database issue), D603.

Tolkatchev D., **Shaykhutdinov R.**, Xu P., Plamondon J., Watson D., Young M., Ni F. Three-Dimensional Structure and Molecular Interactions of the Low Molecular Weight Protein Tyrosine Phosphatase from *Campylobacter jejuni. Protein Sci*., **2006**, *15*, 2381.

Bhattacharjya S., Xu P., Gingras R., **Shaykhutdinov R.**, Wu C., Whiteway M., Ni F. Solution Structure of the Dimeric SAM Domain of MAPKKK Ste11 and its Interactions with the Adaptor Protein Ste50 from the Budding Yeast: Implications for Ste11 Activation and Signal Transmission Through the Ste50–Ste11 Complex. *J. Mol. Biol*. **2004**, *344*, 1071.