

ALEXEY VLADIMIROVICH RAKOV

CIRRICULUM VITAE

Business address	Laboratory of Molecular Epidemiology and Microbiology Somov Institute of Epidemiology and Microbiology 1 Selskaya Street, Vladivostok, 690087
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Citizenship	Russian Federation

EDUCATION AND TRAINING

2016-2017: Postdoctoral fellowship, *Department of Pathobiology, School of Veterinary Medicine, University of Pennsylvania, Philadelphia, PA.*

2013-2015: Postdoctoral fellowship, *Genomics Research Center, Harbin Medical University, Harbin, Heilongjiang Province, China.*

2012: Bacteriology retraining courses, *Pacific State Medical University, Vladivostok, Russia.* Certificate # 950. December 15, 2012.

2012: Short-term professional retraining courses "Microbiological Diagnostics of Special Danger Infections", *Vladivostok State Medical University, Vladivostok, Russia.* Certificate # 25000. June 13, 2012.

2012: Bacteriology retraining courses, *Vladivostok State Medical University, Vladivostok, Russia.* Certificate # 48627. March 5, 2012.

2009-2010: Postdoctoral fellowship, *Department of Microbiology, University of Mississippi Medical Center, Jackson, MS.*

2009: Postdoctoral fellowship, *Department of Microbiology and Immunology, New York Medical College, Valhalla, NY.*

2006: Bacteriology certification and retraining courses, *Vladivostok State Medical University, Vladivostok, Russia.* Certificate ПК # 040045 & License of General Practitioner Bacteriologist # 24975. April 29, 2006.

2003-2004: Professional retraining extension courses "Molecular, Physical and Chemical Biology, Gene Engineering, and Biotechnology", *Moscow State University, Pushchino Branch, Moscow, Russia.* Diploma ПП # 561604. May 25, 2004.

2003: Ph.D. in Microbiology, *Research Institute of Epidemiology and Microbiology Siberian Branch of Russian Academy of Medical Sciences, Vladivostok, Russia.* Diploma KT # 099901. April 17, 2003. Theme of Master thesis is "Microbiological and Clinical Parallels of *Salmonella* Infection".

1999-2002: Postgraduate study, *Research Institute of Epidemiology and Microbiology Siberian Branch of Russian Academy of Medical Sciences, Vladivostok, Russia.* Diploma # 011. October 1, 2002.

1993-1999: M.D., Practitioner of medicine, *Medical Faculty, Vladivostok State Medical University, Vladivostok, Russia*. Diploma # ABC 0396654. June 29, 1999.

RESEARCH TECHNIQUES

- Basic molecular cloning techniques: restriction, ligation, transformation/electroporation, transduction, conjugation, Gibson assembly, etc.;
- General gene engineering techniques such as DNA purification and all sorts of PCR: Multiplex PCR, Long Range PCR, Touchdown PCR, Nested PCR, RAPD-PCR, ERIC-PCR, BOX-PCR, qPCR, digital PCR;
- Shotgun sequencing;
- PCR primer walking;
- Multiple Loci Sequence Typing (MLST);
- Multiple Loci VNTR Typing (MLVA);
- Pulse field gel electrophoresis (PFGE);
- Restriction endonuclease analysis of plasmids (REAP);
- Plasmid profile analysis;
- Broad spectrum of electrophoretic techniques with agarose gels and PAAG;
- DNA sequencing (Sanger/NGS), genomes assembling, annotation, comparative genomics;
- Protein purification;
- Protein electrophoresis (SDS-PAGE);
- Western blotting;
- ELISA;
- Liquid chromatography;
- Gel-documentation system Bio-Rad® GelDoc™ XR etc.;
- Different bioinformatics software: Galaxy, Bioconductor, DNASTar Lasergene, etc.;
- Methods of general bacteriology;
- Cell culture;
- Laboratory animals handling.

RESEARCH EXPERIENCE

2016, October – 2017, November: Postdoctoral Fellow, *Department of Pathobiology, School of Veterinary Medicine, University of Pennsylvania, Philadelphia, PA, 19104*.

Principal investigator: Prof. Dieter M. Schifferli.

Research area: Allelic variation of *Salmonella enterica*

2013, December – 2015, June: Postdoctoral Fellow, *Genomics Research Center, Harbin Medical University, Heilongjiang Province, China, 150081*.

Principal investigator: Prof. Shu-Lin Liu.

Research area: Genomics and evolution of *Escherichia coli* and *Salmonella*

2009, August – 2010, June: Postdoctoral Associate, *Department of Microbiology, University of Mississippi Medical Center, Jackson, MS, 39216*. Principal investigator: Prof. D. Ashley Robinson.

Research area: Population genetics of *Streptococcus pneumoniae* serotype 12F

2009, January – 2009, July: Postdoctoral Fellow, *Department of Microbiology and Immunology, New York Medical College, Valhalla, NY, 10595*.

Principal investigator: Prof. D. Ashley Robinson.

Research area: Population genetics of *Streptococcus pneumoniae* serotype 12F

2007-current: Senior Researcher, *Laboratory of Molecular Epidemiology*, Somov Institute of Epidemiology and Microbiology, 1 Selskaya Street, Vladivostok, 690087, Russia.

Research area: Molecular epidemiology and microbiology of *Salmonella* infection

2003-2006: Researcher, *Laboratory of Molecular Epidemiology*, Research Institute of Epidemiology and Microbiology Siberian Branch of Russian Academy of Medical Sciences, 1 Selskaya Street, Vladivostok, 690087, Russia.

Research area: Molecular epidemiology of *Salmonella* infection

1999-2003: Postgraduate Student/Junior Researcher, *Laboratory of Molecular Epidemiology*, Research Institute of Epidemiology and Microbiology Siberian Branch of Russian Academy of Medical Sciences, 1 Selskaya Street, Vladivostok, 690087, Russia.

Principal investigator: Prof. Felix N. Shubin.

PhD Thesis title: Microbiological and clinical parallels of *Salmonella* infection

1998-1999: Undergraduate Research, *Department of Infectious Diseases*, Vladivostok State Medical University, 2 Prospekt Ostryakova, Vladivostok, 690106, Russia.

Principal investigator: Prof. Victoria A. Ivanis.

Research topics: Clinical and epidemiological study of *Shigella sonnei* infection, *Yersinia pseudotuberculosis* infection, and trichinosis

TEACHING EXPERIENCE

2015, September – 2016, June; 2018, October – : Associate Professor, Department of Modern Methods of Diagnostics and Medical Technologies, School of Biomedicine, **Far Eastern Federal University** (#541 2019 QS World Ranking University, #87 2019 EECA University Rankings, #87 2019 BRICS Rankings, #25 2015 Russia National Rankings), 10 Ajax, Building M, Vladivostok, 690922, Russia.

Medical Microbiology and Virology Classes (2015 Fall Semester, 2016 Spring Semester), General, Molecular, and Medical Genetics Classes and Lectures (2016 Spring Semester, 2018 Fall Semester, 2019 Spring Semester)

2012, February – 2013, November: Associate Professor, Department of Microbiology, **Pacific State Medical University**, 2 Prospekt Ostryakova, Vladivostok, 690106, Russia.

Medical Microbiology and Virology Classes (2012 Spring/Fall Semester, 2013 Spring/Fall Semester)

OTHER SKILLS

- Fluent English (conversation, writing, technical, IELTS 6.5 (2013)), Native Russian;
- Working with Linux, MacOS X, Microsoft Windows, Microsoft Office, LibreOffice, Adobe Photoshop, CorelDRAW, Prism, EndNote/EndNote Web, RefWorks, Mendeley, Prism, etc.;
- Programming (R, Python, Linux, HTML);
- Excellent communication skills.

AWARDS AND FELLOWSHIPS

2008: Golden Medal of Russian Academy of Medical Sciences “Best Scientific Work”.

Golden Medal and Diploma.

2008-2009: Young Scientist Research Grant, Regional Public Foundation of Assistance to Native Medicine. Diploma.

OTHER ACTIVITIES

- **Editorial Board Member:** *Advances in Stem Cell Research* (USA).
- **NCBI Hackathon, Bethesda, MD, August 14-16, 2017.** Project title: NastyBugs: a simple method for extracting antimicrobial resistance information from metagenomes (<https://github.com/NCBI-Hackathons/MetagenomicAntibioticResistance>). Published in F1000Research.

INVITED TALKS

- **Cornell University, College of Veterinary Medicine, Ithaca, NY. Seminar, November 27, 2017.** Topic title: “Molecular Diversity of *Salmonella enterica*”.
- **Drexel University, Institute for Molecular Medicine and Infectious Disease, Center for Advanced Microbial Processing, Center for Genomic Sciences, Philadelphia, PA. Seminar, September 28, 2017.** Topic title: “Molecular Diversity of *Salmonella enterica*”.

MEMBERSHIP

- **International Society for Infectious Diseases (ISID), 2011-**
- **International Society for Subsurface Microbiology (ISSM), 2012-**

LIST OF PUBLICATIONS

Papers (selected only)

In preparation

Rakov A.V., Mastriani E., Liu S.L., Schifferli D.M. Association of *Salmonella* virulence factor alleles with intestinal and invasive serovars. *BMC Genomics*, submitted.

Rakov A.V., Mastriani E. HamHeat: A fast and simple package for calculating Hamming distance from multilocus sequence data for heatmap visualization. *bioRxiv*, in preparation.

Rakov A.V., Wang X.Y., Zhou Y.J., Deng X., Li B., Liu H., Wei X.W., Wang C.X., Souza V., Li Y.G., Johnston R.N., Sanderson K.E., Liu G.R., Liu S.L. Genetic divergence among *Escherichia coli* inhabiting 88 vertebrate species. *PLOS ONE*, in preparation.

Slabenko E.V., Balabanova L.A., Martynova A.V., Lobova T.G., **Rakov A.V.** Emergence of pneumotropic multidrug-resistant *Streptococcus pneumoniae* in the Far East of Russia: molecular characterization and antibiotic susceptibility. *PLOS ONE*, in preparation.

2019

Rakov A.V., Shubin F.N. Comparative genomics analysis of *Salmonella enterica* subsp. *enterica* serotype Enteritidis virulence plasmid. *Russian Journal of Genetics* 2019, No. 2. P. 1-10. (indexed in MedLine/PubMed/WoS/Scopus).

Rakov A.V., Shubin F.N., Kuznetsova N.A., Solovyeva A.S. Heterogeneity of 2.3 MDa plasmids in *Salmonella* Enteritidis strains. *Siberian Scientific Medical Journal* 2019, No. 1 (in press).

2018

Rakov A.V., Kuznetsova N.A., Solovyeva A.S., Yakovlev A.A. Cluster analysis of *Salmonella* Enteritidis isolated in the Siberia and Far East of Russia. *Pacific Medical Journal* 2018, No. 4, P. 23-26.

Kuznetsova N.A., Shubin F.N., **Rakov A.V.**, Yakovlev A.A. Molecular epidemiological evaluation of the impact of globalization processes on the formation of populations of *Salmonella* Typhimurium in Primorye and other regions of Siberia and the Far East. *Pacific Medical Journal* 2018, No. 3, P. 47-53.

Shubin F.N., Kuznetsova N.A., **Rakov A.V.**, Solovyeva A.S. Specific features of molecular epidemiology of imported morbidity caused by *Salmonella* Enteritidis introduced strains with specific plasmid types. *Epidemiology and Infectious Diseases* 2018, Vol. 23, No. 2, P. 73-76. (indexed in Ulrich's International Periodical Directory)

Shubin F.N., Kuznetsova N.A., **Rakov A.V.** Specific particularities of morbidity in the Far East region of Russia caused by *Salmonella* Enteritidis introduced strains with specific plasmid types. *Health, Medical Ecology, Science*. 2018, No. 1(73), P. 20-24.

2017

Tsang H., Moss M., Fedewa G., Farag S., Quang D., **Rakov A.V.**, Busby B. NastyBugs: a simple method for extracting antimicrobial resistance information from metagenomes. *F1000Research*. 2017, 6:1971.

De Masi L., Yue M., Hu C., **Rakov A.V.**, Rankin S.C., Schifferli D.M. Cooperation of Adhesin Alleles in *Salmonella*-Host Tropism. *mSphere*. 2017 Mar 8; 2(2). pii: e00066-17. (indexed in [MedLine/PubMed/WoS/Scopus](#)).

Shubin, F.N., **Rakov, A.V.**, Kuznetsova, N.A., Yakubich, T.V., Snetkova, I.P. Formation of population morbidity with salmonellosis caused by *Salmonella* Enteritidis in regions with incomplete supply of local poultry products. *Zh. Mikrobiol. (Moscow)*, 2017, No. 1, P. 61-67. (indexed in [PubMed/MedLine/Scopus](#)).

Shubin F.N., **Rakov A.V.**, Solovyeva A.S. Plasmid p30 and its participation in formation of plasmid types of *Salmonella* Enteritidis. *Health, Medical Ecology, Science*, 2017. No. 3. P. 46-50.

2016

Rakov A.V., Shubin F.N., Kuznetsova N.A., Perederiy N.G. The outbreak of salmonellosis in the child care institution in Murmansk. *Health, Medical Ecology, Science*, 2016. No. 4. P. 26-30.

Shubin F.N., **Rakov A.V.**, Kuznetsova N.A., Loginov S.I., Hakimova M.I. Molecular epidemiology of *Salmonella* Enteritidis in the Irkutsk region. *Health, Medical Ecology, Science*, 2016. No. 4. P. 30-36.

Solovyeva A.S., **Rakov A.V.**, Kuznetsova N.A., Shubin F.N. Epidemiological characteristic of salmonellosis caused by *Salmonella* Enteritidis plasmid type 38:3.0:1.4 MDa. *Health, Medical Ecology, Science*, 2016. No. 2(65). P. 36-38.

2015

Rakov A.V., Shubin F.N., Kuznetsova N.A. Delivery of products contaminated by *Salmonella*, in Primorye Region, and their realization in population morbidity. *Health, Medical Ecology, Science*, 2015. No. 5(63). P. 26-30.

Shubin F.N., **Rakov A.V.**, Kuznetsova N.A., Matosova E.V. Zoonotic salmonellosis in the Far East: main aspects of a problem. *Far-Eastern Journal of Infectious Pathology* 2015, No. 29, P. 72-79.

2013

Zulz T., Wenger J.D., Rudolph K., Robinson D.A., **Rakov A.V.**, Bruden D., Singleton R.J., Bruce

M.G., Hennessy T.W. Molecular characterization of *Streptococcus pneumoniae* serotype 12F isolates associated with rural community outbreaks in Alaska. *J. Clin. Microbiol.* 2013, Vol. 51, No. 5, P. 1402-1407. (indexed in [MedLine/PubMed/WoS/Scopus](#)).

Rakov A.V., Shubin F.N., Kuznetsova N.A. Heterogeneity of 1.4 MDa plasmids in *Salmonella enteritidis* strains. *Bulletin SB RAMS* 2013, Vol. 33, No. 2, P. 10-15.

2012

Kuznetsova N.A., Shubin F.N., **Rakov A.V.**, Rud L.A., Shapovalenko S.N. Plasmid characteristics of the population *Salmonella enteritidis* in the Kamchatka region. *Pacific Medical Journal* 2012, No. 4, P. 11-13.

2011

Rakov A.V., Ubukata K., Robinson D.A. Population structure of hyperinvasive serotype 12F, clonal complex 218 *Streptococcus pneumoniae* revealed by multilocus *boxB* sequence typing. *Infect. Genet. Evol.* 2011, Vol. 11, No. 8, P. 1929-1939. (indexed in [MedLine/PubMed/WoS/Scopus](#)).

Shubin F.N., **Rakov A.V.**, Kuznetsova N.A. Microbiological molecular genetic monitoring of enteric infection pathogens as an element of epidemiological surveillance. *Bulletin SB RAMS* 2011, Vol. 31, No. 4, P. 99-105.

2010

Kuznetsova N.A., Shubin F.N., **Rakov A.V.**, Tarasenko T.T., Voronok V.M., Smirnova L.A. Connection between outbreak and sporadic morbidity of *Salmonella* infection in accordance to plasmid types of pathogen. *Pacific Medical Journal* 2010, No. 4, P. 38-40.

Shubin F.N., Kuznetsova N.A., Ananiev V.Yu., **Rakov A.V.**, Polevikova N.Ya., Malko O.I., Kotova I.V., Klimova L.M., Baranova I.O., Kushnareva I.A., Pilipchuk S.D., Bankeeva L.A. Dynamics of multiyear ethiological importance of different plasmid types of *S. Enteritidis* in forming of sporadic morbidity of *Salmonella* infection for Primorye Region population. *Pacific Medical Journal* 2010, No. 4, P. 34-37.

Shubin F.N., Kuznetsova N.A., **Rakov A.V.**, Tchishagorova I.V., Trigorlova T.N. *Salmonella enteritidis* population plasmid characteristics in the Khabarovsk Region. *Far-Eastern Journal of Infectious Pathology* 2010, No. 17, P. 143-147.

Kuznetsova N.A., Shubin F.N., **Rakov A.V.**, Tarasenko T.T., Yakunina O.Y. Salmonellosis outbreaks in Siberia and the Far East. Molecular and epidemiological aspects. *Far-Eastern Journal of Infectious Pathology* 2010, No. 17, P. 137-142.

Rakov A.V., Shubin F.N., Kuznetsova N.A. *Salmonella* infection caused by *Salmonella enteritidis* not containing virulence plasmid. *Epidemiology and Infectious Diseases* 2010, No. 2, P. 31-33. (indexed in [Ulrich's International Periodical Directory](#))

2007

Rakov A.V., Shubin F.N., Kuznetsova N.A. Features of *Salmonella* infection caused by *Salmonella enteritidis* not containing virulence plasmid. *Pacific Medical Journal* 2007, No. 4, P. 21-23.

2006

Rakov A.V., Shubin F.N., Kuznetsova N.A., Khoroshko V.A. Phenotypical and plasmid characteristics of rarely isolated *Salmonella* serotypes isolated from patients in Primorye Region.

Far-Eastern Medical Journal 2006, No. 4, P. 42-45.

Kuznetsova N.A., Shubin F.N., **Rakov A.V.**, Tarasenko T.T., Voronok V.M. Age structure of the salmonellosis caused by dominating plasmidovars of *Salmonella* enteritidis in Vladivostok. *Pacific Medical Journal* 2006, No. 3, P. 80-82.

Kuznetsova N.A., Shubin F.N., **Rakov A.V.**, Tarasenko T.T., Grebenkova L.K. Intraannual dynamics of *Salmonella* infection caused by heterogeneous *Salmonella* enteritidis population. *Journal of Microbiology, Epidemiology and Immunobiology* 2006, No. 3, P. 32-36. (indexed in [PubMed/MedLine](#))

Shubin F.N., **Rakov A.V.**, Kuznetsova N.A., Maslov D.V., Ananjev V.Yu. Structure of *Salmonella* enteritidis population in Primorye Region on the plasmid analysis data. *Journal of Microbiology, Epidemiology and Immunobiology* 2006, No. 3, P. 28-32. (indexed in [PubMed/MedLine](#))

Rakov A.V., Shubin F.N., Kuznetsova N.A., Ivanis V.A., Shklyar G.M. Comparative analysis of *Salmonella* enteritidis strains isolated from patients with systemic *Salmonella* infection. *Journal of Microbiology, Epidemiology and Immunobiology* 2006, No. 3, P. 36-39. (indexed in [PubMed/MedLine](#))

2002

Shubin F.N., Kovalchuk N.I., Kuznetsova N.A., Revina G.V., **Rakov A.V.**, Belogolovkina N.A., Nechuhaeva E.M. Microbiological monitoring for *Salmonella* enteritidis in Primorye Region. Phenotypical and plasmid characterization of pathogen. *Epidemiology and Infectious Diseases* 2002, No. 1, P. 36-40. (indexed in [Ulrich's International Periodical Directory](#))

2001

Rakov A.V., Shubin F.N., Ivanis V.A., Kuznetsova N.A., Kovalchuk N.I., Revina G.V., Kosheleva N.G., Grebenkova L.K. Comparative characterization of infections caused by different plasmid profiles of *Salmonella* enteritidis. *Epidemiology and Infectious Diseases* 2001, No. 5, P. 50-54. (indexed in [Ulrich's International Periodical Directory](#))

Abstracts and Presentations (selected from more than 100)

Rakov A.V., Liu S.L. Genetic boundaries delineating *Escherichia coli* into genetic clusters of bacteria. *Abstracts of the Second International Symposium on Salmonella and Human Diseases: Infections, Cancers, and Genomics*. July 4-6, 2014. Harbin, China. P. 48-49.

Shubin F.N., Kuznetsova N.A., **Rakov A.V.** Molecular epidemiology of salmonellosis in Siberia and Far East: Epidemiological and epizootological aspects of problem. *Abstracts of the VIII All-Russian Scientific Conference with international participation "Molecular Diagnostics-2014"*. P. 376-377.

Kuznetsova N.A., Sinyanskiy I.T., Shubin F.N., **Rakov A.V.** Plasmid characterization and antibiotic resistance of *Salmonella* typhimurium strains, isolated from food, and its reflection in epidemiology of salmonellosis in Siberia and Far East. *Abstracts of the VIII All-Russian Scientific Conference with international participation "Molecular Diagnostics-2014"*. P. 378-379.

Rakov A.V., Shubin F.N., Kuznetsova N.A., Isaeva M.P. Transcontinental distribution and epidemiological significance of *Salmonella* enteritidis strains, carrying the 1.4 MDa (pJ) plasmid, on the Eurasian continent. *Abstracts of the 4th ASM Conference on Salmonella: The Bacterium, the Host and the Environment*. October 5-9, 2013. Boston, MA, USA. P. 132-133.

Shubin F.N., **Rakov A.V.**, Kuznetsova N.A. Molecular epidemiology of salmonellosis, caused by *Salmonella enterica* serovar Enteritidis, in Siberia and Far East. *Infection and Immunity* 2013, Vol. 3, No. 2, P.189.

Rakov A.V., LeRoy C.E., Smyth D.S., Luo X., Dagan R., Rudolph K.M., Robinson D.A. Tn6078:

A novel mobile genetic element discovered in pneumococcal outbreak strains has geography-specific invasive disease associations. *Abstracts of the 8th International Symposium on Pneumococci and Pneumococcal Diseases*. March 11-15, 2012. Iguacu Falls, Brasil. P. 436.

Shubin F.N., Kuznetsova N.A., **Rakov A.V.**, Yakunina O.Yu. Molecular epidemiology of zoonotic salmonellosis in the South of West Siberia. *Abstracts of the Russia-Wide Scientific Conference "Omsk Research Institute of Zoonotic Infections"*. November 1-2, 2011. Omsk, Russia, 2011. P. 164-165.

Shubin F.N., Kuznetsova N.A., **Rakov A.V.**, Katarskaya T.V., Granina E.G. *Salmonella* infection in poultry farms of Siberia and Far-East. Molecular and epizootological aspects. *Abstracts of the Russia-Wide Scientific Conference "Ecological and geographical aspects of infectology"*. June 28 – 30, 2011. Ulan-Ude, Russia. P. 250-255.

Kuznetsova N.A., Shubin F.N., **Rakov A.V.**, Katarskaya T.V., Granina E.G. Migrations of *Salmonella* with flocks and their significance in *Salmonella enteritidis* population formation in the poultry farm. *Abstracts of the Russia-Wide Scientific Conference "Ecological and geographical aspects of infectology"*. June 28 – 30, 2011. Ulan-Ude, Russia. P. 148-152.

Rakov A.V., Shubin F.N., Kuznetsova N.A. Short communication about morbidity of *Salmonella* infection caused by *S. braenderup* in Vladivostok. *Proceedings of Regional Workshop for Epidemiologists and Bacteriologists of Far-Eastern Federal District in Vladivostok "Molecular Epidemiology of Salmonellosis and Pseudotuberculosis"*. Vladivostok, 2011. P. 84-85.

Shubin F.N., **Rakov A.V.**, Kuznetsova N.A. *Salmonella* migrations caused by transportation of food. Molecular epidemiology of *Salmonella* infection in Khabarovsk Region. *Proceedings of Regional Workshop for Epidemiologists and Bacteriologists of Far-Eastern Federal District in Vladivostok "Molecular Epidemiology of Salmonellosis and Pseudotuberculosis"*. Vladivostok, 2011. P. 80-83.

Shubin F.N., **Rakov A.V.**, Kuznetsova N.A. Plasmid characteristics of *Salmonella* isolated from patients of Siberian and Far-Eastern federal districts. *Proceedings of Regional Workshop for Epidemiologists and Bacteriologists of Far-Eastern Federal District in Vladivostok "Molecular Epidemiology of Salmonellosis and Pseudotuberculosis"*. Vladivostok, 2011. P. 79-80.

Shubin F.N., **Rakov A.V.**, Kuznetsova N.A. Plasmid characteristics of *Salmonella* isolated from patients of Primorye Region. Clinical and epidemiological characteristics of *Salmonella* infection caused by heterogenous *S. enteritidis* population in Primorye Region. *Proceedings of Regional Workshop for Epidemiologists and Bacteriologists of Far-Eastern Federal District in Vladivostok "Molecular Epidemiology of Salmonellosis and Pseudotuberculosis"*. Vladivostok, 2011. P. 73-78.

Shubin F.N., **Rakov A.V.**, Kuznetsova N.A. Methods of intraspecific molecular genetic typing of *Salmonella*. *Proceedings of Regional Workshop for Epidemiologists and Bacteriologists of Far-Eastern Federal District in Vladivostok "Molecular Epidemiology of Salmonellosis and Pseudotuberculosis"*. Vladivostok, 2011. P. 71-72.

Shubin F.N., **Rakov A.V.**, Kuznetsova N.A. Molecular epidemiology of salmonellosis and pseudotuberculosis. Centralized microbiological molecular genetic monitoring of *Salmonella* and *Yersinia pseudotuberculosis* in the Siberia and the Far East. *Proceedings of Regional Workshop for Epidemiologists and Bacteriologists of Far-Eastern Federal District in Vladivostok "Molecular Epidemiology of Salmonellosis and Pseudotuberculosis"*. Vladivostok, 2011. P. 69-70.

Shubin F.N., **Rakov A.V.** Organization of microbiological molecular genetic monitoring of *Salmonella* in Russian Federation subjects. New approaches for salmonellosis prevention. *Proceedings of Regional Workshop for Epidemiologists and Bacteriologists of Far-Eastern Federal District in Vladivostok "Molecular Epidemiology of Salmonellosis and Pseudotuberculosis"*. Vladivostok, 2011. P. 49-56.

Kuznetsova N.A., Shubin F.N., **Rakov A.V.**, Tarasenko T.T., Yakunina O.Yu. Features of salmonellosis outbreak morbidity in federal subjects of Siberian and Far-Eastern federal districts. *Proceedings of Regional Workshop for Epidemiologists and Bacteriologists of Far-Eastern Federal District in Vladivostok "Molecular Epidemiology of Salmonellosis and Pseudotuberculosis"*. Vladivostok, 2011. P. 26-34.

Robinson D.A., **Rakov A.V.**, Beall B., Rudolph K., Ubukata K., Farell D.J. Population structure

- of an outbreak-causing clonal group of *Streptococcus pneumoniae* in the United States as revealed by boxB minisatellite sequencing. *Abstracts of the 9th International Meeting on Microbial Epidemiological Markers, September 1-4, 2010*. Wernigerode, Germany, 2010. P. 45.
- A.V. Rakov**, F.N. Shubin. Epidemiological features of morbidity caused by imported *Salmonella* Enteritidis plasmid types in Primorye Territory. *Abstracts of the 3rd ASM Conference on Salmonella: Biology, Pathogenesis & Prevention*. October 5-9, 2009. Aix-en-Provence, France, 2009. P. 31-32.
- Shubin F.N., Maslov D.V., Kuznetsova N.A., **Rakov A.V.** *Salmonella* infection in Siberia and Far East: molecular and epidemiological aspects. *Abstracts of conference "Prospects of cooperation between countries members of Shanghai Cooperation Organization for retroaction of infectious diseases threats"*. May, 14-15, 2009. Novosibirsk, Russia, 2009. P. 215-219.
- A.V. Rakov**, F.N. Shubin. Genetically marked *Salmonella* enteritidis populations in northern regions of the Far-East of Russia. *Abstracts of the 13th International Congress on Infectious Diseases. June 19-22, 2008*. Kuala Lumpur, Malaysia, 2008. P. 81.
- A.V. Rakov**. Molecular epidemiology of *Salmonella* infection. *Materials of the V youth scientists of Russia with international participation "Fundamental Sciences and Progress of Clinical Medicine"*. May, 19-22, 2008. Moscow, 2008. P. 357. (Award for the best report and presentation).
- A.V. Rakov**. Molecular epidemiology of *Salmonella* infection in Siberia and Far East. *Materials of the I youth scientific conference of East Siberian Scientific Centre of Siberian Branch of Russian Academy of Medical Science*. Irkutsk, 2007.
- N.A. Kuznetsova, F.N. Shubin, **A.V. Rakov**. Plasmid characteristics of *Salmonella* enteritidis as pathogen of series of *Salmonella* infection outbreaks in one subject of Russian Federation. *Materials of IX congress of All-Russian scientific and practical society of epidemiologists, microbiologists & parasitologists. April, 26-27, 2007*. Moscow, 2007. Vol. 2. – P. 253.
- F.N. Shubin, **A.V. Rakov**, N.A. Kuznetsova. *Salmonella* infection problem in Siberia and Far East: molecular epidemiology aspects. *Materials of IX congress of All-Russian scientific and practical society of epidemiologists, microbiologists & parasitologists. April, 26-27, 2007*. Moscow, 2007. Vol. 1. – P. 224-225.
- A.V. Rakov**, F.N. Shubin, N.A. Kuznetsova. Epidemiological features of *Salmonella* infection morbidity caused by imported part of *Salmonella* enteritidis population. *Materials of IX congress of All-Russian scientific and practical society of epidemiologists, microbiologists & parasitologists. April, 26-27, 2007*. Moscow, 2007. Vol. 1. – P. 185-186.
- Rakov A.V.** Molecular epidemiology of *Salmonella* infection in Siberia and Far East. *Newsletter of East-Siberian Scientific Center of SB RAMS 2007*, No. 1, Vol. 53, P. 236-237.
- A.V. Rakov**, F.N. Shubin, N.A. Kuznetsova. Epidemiological value of imported *Salmonella* enteritidis plasmidovars in Primorye Region. *Materials of IX All-Russian congress of epidemiologists, microbiologists & parasitologists*. Moscow, 2006. P. 67.
- A.V. Rakov**, F.N. Shubin, N.A. Kuznetsova. Etiological importance of rarely isolated *Salmonella* serovars and source of its isolation. *Materials of XIII congress of infectionists. October, 25-27, 2006*. Nizhniy Novgorod, 2006. P. 99.
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RESEARCH INTERESTS

Current Research: I use *Salmonella* as model for study of molecular epidemiology and other problem. My current (2018-) project is devoted to polymicrobial interactions, including virus-bacteria, bacteria-bacteria intergenera, interspecies, interserovar, and intraserovar interactions (*in vitro* and *in vivo* models). In my last (2017) project I tried to use genome-wide association study (GWAS) methods to elucidate genome-phenotype correlation in *Salmonella enterica* host-specialists and generalists serotypes. Except *Salmonella*, also I have an extensive experience of work with *Streptococcus pneumoniae*, *Escherichia coli* and *Yersinia pseudotuberculosis* genetics. As one of the leading *Salmonella* researcher in Russia, in my lab I have one of the largest collection of Russian *Salmonella enterica* strains from 1990s to 2010s.

General Interests: My main research interests are in the fields of molecular **microbiology**, **epidemiology**, pathogenesis and **evolution** of bacterial infectious diseases, microbial diversity, microbial **genetics**, **metagenomics**, and **comparative genomics** using **bioinformatics**. I wish to work in a strong research team for study of questions of population genetics, molecular genetics, comparative genomics and experimental molecular microbiology. I believe that a large amount of data derived from NGS/HTS is a subject for future breakthrough in understanding of microbial pathogens and their interaction with host. For that, combination of highly experienced geneticist/microbiologist with strong bioinformatics skills is of great demand.

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