

# CURRICULUM VITAE, SVETLANA YURGEL

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## CURRICULUM VITAE, SVETLANA YURGEL

### Name, Rank, and Status

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Svetlana Yurgel, Associate professor

Ph.D. National Research Institute of Agricultural Microbiology, St. Petersburg, Russia, 1996

M.Sc. St. Petersburg State Polytechnic University, Russia, 1990

### Employment History

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2015 – present, Associate Professor, Department of Environmental Sciences, Dalhousie Agricultural Campus, Dalhousie University

2015 – present, Adjunct Faculty, School of Molecular Biosciences, Washington State University, Pullman, WA, USA

2003 – 2015, Assistant Research Professor, Institute of Biological Chemistry, Washington State University, Pullman, WA, USA

1998 – 2003, Postdoctoral Research Associate, Institute of Biological Chemistry, Washington State University, Pullman, WA, USA

1996 – 1998, Research Scientist, National Research Institute of Agricultural Microbiology, St. Petersburg, Russia,

1996, 1997, Visiting Research Scientist, Department of Genetics, University of Bielefeld. Germany,

1992 – 1996, Graduate Student, Laboratory of Genetics, National Research Institute of Agricultural Microbiology, St. Petersburg, Russia,

1991 – 1992, Research Assistant, Laboratory of Genetics, National Research Institute for Agricultural Microbiology, St. Petersburg, Russia,

### Scholarly and Professional Academic Activities

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#### **Editorial services**

Assistant Editors, Applied Biochemistry and Biotechnology, 2016 – present

Review Editor in Microbial Symbioses, Frontiers, 2017 – present

#### **Ad-hoc reviews**

NSF, 2010 – 2013

UK's Biotechnology and Biological Sciences Research Council (BBSRC), 2015 – 2016

MITACS Accelerate research proposal, 2015, 2017

NSERC, Strategic Partnership Grants competition, 2017

#### **Panel Services**

Plant Photosynthetic Efficiency and Nutrient Utilization in Agricultural Plants Panel, USDA-AFRI, 2014

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### **Ad-hoc Manuscript Reviews**

Microbiome, Molecular Plant Microbe Interaction, Frontiers in Microbiology, Applied Microbiology, FEMS Microbiology Letters, Microbiology, Symbiosis, PlosONE, Microbiology, African Journal of Biotechnology.

### **External Referee**

2016 – promotion application, Department of Biological Sciences at Thompson Rivers University

### **Awards and Honors**

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23rd North American Conference on Symbiotic Nitrogen Fixation Poster Competition, Best Poster Presentation, 2015

Special Award for Excellence in Teaching, School of Molecular Biosciences, WSU, 2013

Recipient of a NSF sponsored Travel Award to attend the 20th North American Symbiotic, Nitrogen Fixation Conference, 2007

Recipient of a NSF sponsored Travel Award to attend the International Symposium on the Comparative Biology of the Alpha-Proteobacteria, 2006

Recipient of a CAMBIA scholarship, 12th International Congress on Molecular Plant-Microbe Interactions, 2005

### **External Research Funding**

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#### **Current**

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#### **NSERC CFI, JELF, PI**

Infrastructure for Plant Microbiome and Plant-Microbe Interaction Research Program, 2018 - 2022, \$157,840

#### **NSERC Discovery, PI**

Identifying novel components of the riboflavin biosynthetic pathway in invasive bacteria, 04/01/2017 – 05/30/2022, \$140,000

#### **NSERC CRD, Co-PI with D. Percival (PI) and L.E. Jaakola (Co-PI)**

Wild blueberry physiological and molecular responses to floral diseases and improved detection and mitigation technologies, 03/30/2017 - 04/01/2022; \$742,160 (total allocation), including \$272,822 industry matching

Industry partners: Bragg Lumber and Wild Blueberry Producers Association of Nova Scotia

Completed

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**NSERC ENGAGE, PI**

Application of PGPM in haskap berry production, 08/01/2018 –04/30/2019, \$25,000. Island Beach Company, **Role: PI**

**NSDA Research Acceleration, PI**

Rhizo-microbiome as a tool for understanding *V. angustifolium*-microbe interaction, 04/01/2016 – 03/30/18, \$80,000, including \$20,000 industry matching  
Industry partners: Wild Blueberry Producers Association of Nova Scotia

**NSERC ENGAGE, PI**

Evaluation of the link between soil microbiota and potato crop yield, 10/01/2017 –03/30/2017, \$25,000. Industry partner: Prince Edward Island (PEI) Potato Board, **Role: PI**

**NSERC-ENGAGE, PI,**

Microbiological evaluation of novel technology for fruit puree processing, 02/01/2017 –07/30/2017, \$25,000  
Industry partner: Noggins Corner Farm

**NSDA Research Acceleration, PI**

Evaluation of Bacterial and Fungal Diversity in Natural and Managed Blueberry Habitats, 04/01/2015 – 03/30/2017, \$76,000, including \$19,000 industry matching  
Industry partners: Bragg Lumber Company and Wild Blueberry Producers Association of Nova Scotia

**NSERC-ENGAGE, PI**

The effect of organic cultivation practice on wild blueberry fruit yield and soil quality, 08/15/2015 – 02/14/2016, \$25,000.  
Industry partner: Slack Farms Ltd

**US Department of Energy Physical Biosciences, Co-PI, with Dr. M. Kahn**

Unbalancing Symbiotic Nitrogen Fixation: Can We Make Effectiveness More Effective?, 07/15/2014 – 07/15/2016, USD\$360,000

**The Center for Sustaining Agriculture and Natural Resources (CSANR), WSU, Biologically-Intensive Agriculture and Organic Farming (BIOAg), PI**

Role of flavins in the resistance of *S. meliloti*-alfalfa association to *Aphanomyces* root rot, 04/01/2013 – 03/30/2014, USD\$39,000

**College of Agricultural, Human, and Natural Resource Sciences, Emerging Research Issues for Washington Agriculture, Internal Competitive Grant Program, PI**

Role of flavin in Rhizobium-Legume association, 02/01/2013 – 01/30/2015, USD\$74,000

**US Department of Energy, Energy Biosciences, Co-PI, with Dr. M. Kahn**

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The Rhizobial Nitrogen Stress Response and Effective Nitrogen Fixation, 07/15/2011 – 70/14/2014, USD\$540,000

### CRDF Cooperative Grants Program, Climate change, PI

Sinorhizobium-alfalfa symbiosis for restoring land damaged by global warming and human activity, 09/01/2009 – 08/31/2011, USD\$40,000

### US Department of Energy, Energy Biosciences, Co-PI, With Dr. M. Kahn

The Rhizobial Nitrogen Stress Response and Effective Nitrogen Fixation, 07/15/2008 – 07/14/2011, USD\$510,000

### USDA-NRI, Co-PI, with Dr. M. Kahn

Respiration, polymer synthesis and effectiveness in symbiotic nitrogen fixation, 2005 – 2006, USD\$100,000

## Publications

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### Journal Articles (Under review)

\* - Corresponding author

Douglas G.M., V.J. Maffei, J. Zaneveld, **S.N. Yurgel**, J.R. Brown, C.M. Taylor, C. Huttenhower, M.G.I. Langille. PICRUSt2: Improved pipeline for hidden state prediction and multi-kingdom metagenome inference, *Nature Methods*. (IF=25.062)

Sandepogu, M., P.S. Shukla, S.K Asiedu, **S. Yurgel**, and B Prithiviraj. Combination of Ascophyllum nodosum extract and humic acid improve seed germination, early growth and reduces post-harvest loss of lettuce and spinach, *Front Plant Sci*. (IF=3.677)

### Journal Articles (Published)

\* - Corresponding author

37. **Yurgel\***, S, G.M. Douglas, and M.G.I. Langille. 2019. Metagenomic functional shifts to plant induced environmental changes, *Front Microbiol*. (IF=4.09)

36. Esan, E.O., L. Abbey, and **S.N. Yurgel\***. 2019. Exploring the long-term effect of plastic on compost microbiome. *PlosOne*. Brazilian J. Food Technol. 22:1-11.

35. Correa, J.A.F., **Yurgel S.N.**, Udeniqwe, C., Luciano, F.B. 2019. The establishment of a bacterial expression system for peptides derived from the vegetable enzyme RuBisCO.

34. **Yurgel\***, **S.N.**, G.M. Douglas, A. Dusault, D. Percival, and M.G.I. Langille. 2018. Identification of keystone taxa and community structure in blueberry root and soil microbiomes. *Front Microbiol*. 9:1-14 (IF=4.165)

33. **Yurgel, S.N.\***, L. Abbey, N. Loomer, R. Madden, and M. Mammoliti. 2018. Microbial communities associated with storage onion. *Phytobiomes J*. 3:12-17

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32. **Yurgel\***, S.N., G.M. Douglas, A.M. Comeau, M. Mammoliti, A. Dusault, D. Percival, M.G.I. Langille. 2017. Wild blueberry selective pressure, agricultural management, and soil properties differentially shape bacterial and eukaryotic communities. *Phytobiomes J.* 1:102-113.
31. *Hagberg, K.L., S.N. Yurgel, M. Mulder, M.L. Kahn.* 2016. Interaction between Nitrogen and Phosphate Stress Responses in *Sinorhizobium meliloti*. *Front Microbiol.* 7:1928 (IF=4.165)
30. Thiaville, J.J., J. Flood, **S. Yurgel**, L. Prunetti, M. Elbadawi-Sidhu, G. Hutinet, F. Forouhar, X. Zhang, V. Ganesan, P. Reddy, O. Fiehn, J.A. Gerlt, J.F. Hunt, S.D. Copley, V. de Crécy-Lagard V. 2016. Members of a Novel Kinase Family (DUF1537) Can Recycle Toxic Intermediates into an Essential Metabolite. *ACS Chem Biol.* 11:2304-2311 (IF=5.33)
29. Frelin, O., L. Huang, D. Hasnain, J.G. Jeffryes, M.J. Ziemak, J.R. Rocca, B. Wang, J. Rice, S. Roje, S.N. **Yurgel**, J.F. Gregory, A.S. Edison, C.S. Henry, V. de Crécy-Lagard, and A.D. Hanson. 2015. A directed-overflow and damage-control N-glycosidase in riboflavin biosynthesis. *Biochem J.* 466:137-145. Highlights in *Nature Chemical Biology* (2015, 11:96) (IF=4.39)
28. Provorov, N., O. Onishchuk, **S. Yurgel**, O. Kurchak, E. Chizhevskaya, N. Vorobyov, T. Zatovaskaya, and B. Simarov. 2014. Construction of highly-effective symbiotic bacteria: Evolutionary model and genetic approaches. *Russ J Genetics.* 50:1125-1136 (IF=0.448)
27. **Yurgel\***, S.N., J. Rice, E. Domreis, J. Lynch, N. Sa, Z. Qamar, S. Rajamani, M. Gao, S. Roje, and W. D. Bauer. 2014. *Sinorhizobium meliloti* flavin secretion and bacteria-host interaction: Role of the bifunctional RibBA protein. *MPMI.* 27:437-445 (IF=4.27)
26. **Yurgel, S.N.,** N. Sa, J. Rice and S. Roje. 2014. Assay for GTP Cyclohydrolase II Activity in Bacterial Extracts. *Bio-protocols.* 4
25. **Yurgel\***, S.N., J. Lynch, J. Rice, N. Adhikari, and S. Roje. 2014. Quantification of Flavin Production by Bacteria. *Bio-protocols.* 4
24. **Yurgel\***, S.N., J. Rice, M.L. Kahn. 2013. Transcriptome analysis of the role of GlnD/GlnBK in nitrogen stress adaptation by *Sinorhizobium meliloti* Rm1021. *PLoS ONE.* 8 (IF=3.32)
23. **Yurgel, S.N.,** M.W. Mortimer, J. Rice, J. Humann, M.L. Kahn. 2013. Directed construction and analysis of a *Sinorhizobium meliloti* pSymA deletion mutant library. *Appl Environ Microbiol.* 79:2081-2087 (IF=3.67)
22. **Yurgel\***, S.N., J. Rice, M. Mudler, M.L. Kahn, *V. Belova*, M. Roumiantseva. 2013 Truncated betB2-144 plays a critical role in *Sinorhizobium meliloti* Rm2011 osmoprotection and glycine-betaine catabolism. *Eur J Soil Biol.* 54:48-55 (IF=1.72)
21. **Yurgel\***, S.N., J. Rice, and M.L. Kahn. 2012. Nitrogen metabolism in *S. meliloti*-alfalfa symbiosis: Dissecting the role of GlnD and PII proteins. *MPMI.* 25:355-362 (IF=4.27)
20. Roumiantseva M.L., V.S. Belova, **S.N. Yurgel**, D. Rays, T.B. Rumyantseva, and B.V. Simarov 2011. Vitality of *Sinorhizobium meliloti* CIAM1775 in soils of different acidity. *Proceedings of the International Conference on Agrobiological (Ulyanovsk).* 20-24.
19. **Yurgel\***, S.N., J. Rice, M. Mudler, and M.L. Kahn. 2010. GlnB/GlnK PII proteins and regulation of the *Sinorhizobium meliloti* Rm1021 nitrogen stress response and symbiotic function. *J Bacteriol.* 192:2473-2481 (IF=2.69)

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18. Becker, A, M.J. Barnett, D. Capela, M. Dondrup, P-B. Kamp, E. Krol, B. Linke, S. Rüberg, K. Runte, B.K. Schroeder, S. Weidner, **S. Yurgel**, J. Batut, S.R. Long, A. Pühler, and A. Goesmann. 2009. A portal for rhizobial genomes: *RhizoGATE* integrates a *S. meliloti* genome annotation update with postgenome data. *J Biotechnology*. 140:45-50 (IF=2.67)
17. Humann, J.L., H.T. Ziemkiewicz, **S.N. Yurgel** and M.L. Kahn. 2009. Regulatory and DNA repair genes contribute to desiccation resistance in *Sinorhizobium meliloti* SM1021. *Appl Environ Microbiol*. 75:446-453 (IF=3.67)
16. **Yurgel\***, **S.N.** and M.L. Kahn. 2008. A mutant GlnD nitrogen sensor protein leads to a nitrogen-fixing but ineffective *Sinorhizobium meliloti* symbiosis with alfalfa. *PNAS*. 105:18958-18963 (IF=9.42)
15. Humann, J.L., B.K. Schroeder, M.W. Mortimer, B.L. House, **S.N. Yurgel**, S.C. Maloney, K.L. Ward, H.M. Fallquist, H.T. Ziemkiewicz and M.L. Kahn. 2008. Construction and expression of sugar kinase transcriptional gene fusions using the *Sinorhizobium meliloti* ORFeome. *Appl Environ Microbiol*. 74:6756-6765. (IF=3.67)
14. **Yurgel\***, **S.N.**, J. Berrocal, C. Wilson and M.L. Kahn. 2007. Pleiotropic effects of mutations that alter the *S. meliloti* cytochrome *c* respiratory system. *Microbiol*. 153: 399-410 (IF=2.96)
- Trainer M.A., **S.N. Yurgel** and M.L. Kahn. 2007. Role of a conserved membrane glycine residue in a dicarboxylate transporter from *Sinorhizobium meliloti*. *J Bacteriol*. 189: 2160-2163 (IF=2.69)
13. Schroeder, B.K., B.L. House, M.W. Mortimer, **S.N. Yurgel**, S.C. Maloney, K.L. Warren, S.R. Long and M.L. Kahn. 2005. Developing a Functional Genomics Platform for *Sinorhizobium meliloti*: Constructing an ORFeome. *Appl Environ Microbiol*. 71: 5858-5864 (IF=3.67)
12. **Yurgel S.N.** and M.L. Kahn. 2005. *Sinorhizobium meliloti* *dctA* mutants with partial ability to transport dicarboxylate acids. *J Bacteriol*. 187: 1161-1172. Article includes cover illustration (IF=2.69)
11. Schroeder, B.K., B.L. House, M.W. Mortimer, C., Maloney, K.W. Ziemkiewicz, J. Bovitz, **S. Yurgel**, M.L. Kahn. 2005. Use of a functional genomics platform for analysis of the *Sinorhizobium meliloti* 1021 ORFeome. *Phytopathology*. 95(6)
10. Schroeder, B., **S. Yurgel**, H. Jin, M.L. Kahn. 2005. Visual Basic and Perl applications for genome project management. *Phytopathology*. 95(6).
9. **Yurgel\***, **S.N.** and M.L. Kahn. 2004. Dicarboxylate transport by rhizobia. *FEMS Microbiol Revs*. 28: 485-501 (IF=13.69)
8. **Yurgel S.N.**, M.W. Mortimer, K.N., Rogers and M.L. Kahn. 2000. New substrates for the dicarboxylate transport system of *Sinorhizobium meliloti*. *J Bacteriol*. 182: 4216-4221 (IF=2.69)
7. Zatiowskaia T.V., L.V. Kosenko, **S.N. Yurgel** and B.V. Simarov. 2000. LPS mutants of *Sinorhizobium meliloti* and their nodulation competitiveness. *Microbiol. (Russ)*. 62: 27-37 (IF=0.71)
6. Sharypova L.A., **S.N. Yurgel**, M. Keller, B.V. Simarov, A. Puhler and A. Becker. 1999. The eff-482 locus of *Sinorhizobium meliloti* CXM1-105 that influences symbiotic effectiveness consists of three genes encoding an endoglycanase, a transcriptional regulator and an adenylate cyclase. *Mol Gen Genet*. 261: 1032-1044 (IF=2.76)

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5. **Yurgel\* S.N.** and B.V. Simarov. 1999. Rhizobial electron transport chain and its genetic determination. *Russ. J. Genetics* 35: 101-109 (IF=0.45)
4. Zatovskaya T.V., K.V. Ushakov, **S.N. Yurgel**, L.V. Kosenko, I.Y. Zakharova and B.V. Simarov. 1998. *Tn5* mutants of *Rhizobium meliloti* with altered composition of polysaccharides and analysis of their symbiotic properties. *Russ. J. Genetics* 34: 606-611 (IF=0.45)
3. **Yurgel\* S.N.**, L.A. Sharypova and B.V. Simarov. 1998. Mutations *Tn5* of *Rhizobium meliloti* enhancing the redox potential of free-living cell and the effectiveness of their symbiosis with alfalfa. *Russ. J. Genetics* 34: 601-605 (IF=0.45)
2. **Yurgel\* S.N.**, M. Soberon, L.A. Sharypova, J. Miranda, C. Morera and B.V. Simarov. 1998. Isolation of *Sinorhizobium meliloti Tn5* mutants with altered cytochrome terminal oxidase expression and improved symbiotic performance. *FEMS Microbiol Lett.* 165: 167-173 (IF=1.86)
1. **Yurgel\* S.N.**, L.A. Sharypova., L.A. Syrtsova, S.Y. Druzhinin, A.P. Sadkov and B.V. Simarov. 1996. Respiratory activity and symbiotic effectiveness in the nodule bacterium *Rhizobium meliloti*. *Microbiol. (Russ)* **65**: 517-521 (IF=0.71)

### **Book Chapters**

4. Provorov, N., O. Onishchuk, **S. Yurgel**, O. Kurchak, E. Chizhevskaya, and N. Vorobyov. 2016. Altruistic model of N<sub>2</sub>-fixing microbe-plant symbiosis: evolutionary and agronomic aspects. In: *Microbes in the Spotlight: Recent Progress in the Understanding of Beneficial and Harmful Microorganisms*. Ed: A. Mendez-Vilas. pp 1-17 Brown Walker Press.
3. Schroeder, B.K., B.L. House, M.W. Mortimer, S.C. Maloney, C.A. Taylor, K.L. Ward, H.T. Ziemkiewicz, S. Clark, J.J. Bovitz, H. Jin, S. Yurgel, and M.L. Kahn. 2006. Analyzing a *Sinorhizobium meliloti* 1021 ORFeome in a functional genomic platform. In: *Biological Nitrogen Fixation, Sustainable Agriculture and the Environment*. Eds: Y-P. Wang *et. al.* pp 127-128 International Nitrogen Fixation Meeting, Springer.
2. Yurgel SN, B.K. Schroeder, B.L. House, M.W. Mortimer, S.C. Maloney, C.A. Taylor, K.L. Ward, H.T. Ziemkiewicz, JJ Bovitz, H. Jin, and M.L. Kahn. 2006. Genomic and Genetic approaches to understanding the physiology of *Sinorhizobium meliloti*. In: *Biology of Molecular Plant-Microbe Interactions*, Volume 5, Eds: F. Sanchez, C. Quinto, I. Lopez-Lara, and O. Geiger pp 126-131. IS-MPMI Press St Paul.
1. Kahn M.L., B.K. Schroeder, B.L. House, M.M. Mortimer, S.N. Yurgel, S.C. Maloney, K.L. Warren, R.F. Fisher, M.J. Barnett, C. Toman and S.R. Long. 2004. Foraging for meaning—Postgenome approaches to *Sinorhizobium meliloti*. In: *Biology of Molecular Plant-Microbe Interactions*. Volume 4, Eds: B. Lugtenberg, I. Tikhonovich, and N. Provorov pp 416-422. IS-MPMI Press, St Paul.



## CURRICULUM VITAE, SVETLANA YURGEL

### Student Supervision (since 2014)

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Ph.D. supervision: 3 (3 in progress)

M.Sc. supervision: 3 (3 completed)

M.Sc. supervisory committee member: 6 (4 completed, 2 in progress)

Ph.D. supervisory committee member: 6 (5 completed, 1 in progress)

Postdoctoral supervision: 1 (1 completed)

Research associate supervision: 5 (4 completed, 1 in progress)

### Undergraduate and Graduate Courses Taught

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Semester	Course Code	Course Title	Student #	Role
Summer 2019	ENVA3003	Environmental studies field course	6	Professor, team teaching
Winter 2019	MCRA2000	Microbiology	67	Professor
Fall 2018	AGRI5660	Food Microbiology	4	Professor
Fall 2018	MCRA4001	Food Microbiology	4	Professor
Winter 2018	MCRA2000	Microbiology	42	Professor
Fall 2017	MCRA4001	Food Microbiology	3	Professor
Winter 2017	MCRA4000, AGRI5250	Soil Microbiology	Unknown	Guest Lecturer, Soil Microbiomes Component
Winter 2017	BIOA2002	Cell Biology	Unknown	Guest Lecturer
Winter 2017	MCRA2000	Microbiology	36	Professor
Fall 2016	MCRA3000	Food Microbiology	4	Professor
Winter 2016	MCRA2000	Microbiology	27	Professor
Fall 2015	MCRA3000	Food Microbiology	10	Professor
Winter 2015	MCRA2000	Microbiology	95	Professor
Spring 2013	MBioS490	Bacterial Genetics (WSU)	6	Professor

### New Undergraduate and Graduate Courses

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Semester	Course Code	Course Title	Student #	Role
Winter 2020	MCRA4002	Microbiomes in Agriculture		Professor
Winter 2020	AGRI5661	Microbiomes in Agriculture		Professor