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CURRICULUM VITAE

Olga Vinogradova, Ph.D.

Title: Associate Professor of Medicinal Chemistry
Department of Pharmaceutical Sciences
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EDUCATION

School or College	*Field of Study*	*Degree Earned*	*Year*
Moscow Institute of Physics and Technology, Russia	Applied Physics and Mathematics	M.S. cum laude	1991
Case Western Reserve University	Biophysics and Bioengineering	Ph.D.	1998
Cleveland Clinic Foundation Molecular Cardiology	Structural Biology	Post-doc fellowship	1998-2002

FACULTY AND ADMINISTRATIVE APPOINTMENTS

Institution	*Rank*	*Year(s)*
Cleveland Clinic Foundation	Research Associate	2002-2003
Cleveland Clinic Foundation	Project Scientist	2003-2004
University of Connecticut	Assistant Professor	2004-2010
University of Connecticut	Associate Professor	2010-

MEMBERSHIP IN ACADEMIC AND PROFESSIONAL SOCIETIES

Organizations	*Year(s)*
American Chemical Society	2011-
American Society for Biochemistry and Molecular Biology	2012-
American Heart Association	2013-

EDUCATIONAL CONTRIBUTIONS OF LAST FIVE YEARS

Lecturer in undergraduate medicinal chemistry courses for Pharmacy majors

Lecturer of graduate level medicinal chemistry and structural biology courses

Major and associate advisor to masters and doctoral degree students

PROFESSIONAL HONORS AND/OR AWARDS

1991	Graduated from MIPT with honor diploma
1994 - 1997	NIH training grant trainee during Ph.D. program
1997	Finalist of CWRU Graduate Student Symposium
1998	Student travel stipend award for ENC-39th
1998 - 2001	Lerner Research Institute Fellowship Award
1999 - 2002	NIH Research Fellowship Award
2003	Invited Speaker, 28th Congress of Japanese Society on Thrombosis and Hemostasis, Tokyo
2003	Molecular Cardiology Award for the *Best Paper of the Year*
2003 - 2007	AHA Scientist Development Grant
2004	Invited Speaker, Gordon Research Conference, Waterville, ME
2008 - 2011	AHA Grant-in-Aid
2009 - 2011	NIH R21 Grant
2011 - 2014	AHA Grant-in-Aid
2012	Invited Speaker, Eastern Analytical Symposium
2013	Invited Speaker, 10th Annual North England Structure Symposium (NESS)
2020 - 2025	NIH R01 Grant

SELECTED PROFESSIONAL EXTERNAL SERVICE ASSIGNMENTS

Reviewer:	American Heart Association, USA	2011-
	American Heart Association, Thrombosis Co-Chair	2015-16, 2022
	American Heart Association, Thrombosis Chair	2017-18, 2023
	NSF, SBIR Phase I: COVID-1	2020
	NSF, SBIR Phase I: Pharmaceutical Technologies	2020
	NSF, MRI	2022, 2024
	NIH, DMPC	2023

Ad Hoc reviewer

for grants: National Science Foundation, USA;
Florida Department of Health, USA;
Pennsylvania Department of Health, USA;
ORAU (Oak Ridge Associated Universities), USA;
La EPSCoR, Louisiana Board of Regents, USA;
Health Research Board, Ireland;
BBSRC, United Kingdom;
General Research Fund, Hong Kong;
Dutch Research Council (NWO), Netherlands
National Science Centre, Poland

for journals: Analytical Chemistry, BBAMCR, Biochemistry, Biophysical J., Blood, Cancers, Cell, FEBS Journal, CSBJ, Frontiers, JACS, JBC, JCP, JMB, Langmuir, Nature Communications, Membranes, Macromolecules, Proteins, PLoS One, Scientific Reports

Co-Chair: NESS 2012, *Protein Dynamics: From folding to Function*, Farmington, CT

Co-Chair: NESS 2014, *Structural Biology of Inflammation*, Farmington, CT

Associate Editor 2023 -

Frontiers in Biophysics: Membrane Pores, Channels, Transporters

Guest Editor

Membranes, MDPI 2021-2022

Special Issue: The Structure, Dynamics, and Function of Membrane Proteins

SELECTED SCIENTIFIC PRESENTATIONS

28th Congress of Japanese Society on Thrombosis and Hemostasis, 2003

Gordon Research Conference, 2004

Molecular and Cellular Biology Department, UConn, 2005

Physiology and Neurobiology Department, UConn, 2006

AHA 2nd Annual Research Symposium at the Rockefeller University, 2006

AHA Research Symposium, 2006

FASEB Summer Research Conference, Molecular Biophysics of Cellular Membranes, 2010

RAMA/RADA/RASA 8th Joint National Medical and Scientific Conference, 2011

Center for Vascular Biology & Calhoun Cardiology Center Joint Seminar, UCHC, 2011

Penn State University, Department of Biochemistry and Molecular Biology, 2012

Eastern Analytical Symposium, 2012

NESS, Structural Biology of Cancer, 2013

Cleveland Clinic Foundation, Department of Molecular Cardiology, 2014

Pfizer, Groton CT, 2014

Molecular Biology and Biophysics Department, UConn Health, 2015

Uconn/URI-AAPS Joint Symposium, Uconn, 2018

Pharmaceutical Sciences Department, UConn School of Pharmacy, 2018

RESEARCH ACTIVITIES

Masters thesis research: Investigation of rhythmo-inotropic relations in human heart *in vivo*. Completed May, 1991.

Doctoral thesis research: Exploring the allowed space for solution NMR studies of membrane proteins. Completed June, 1998.

Post-doctoral research: NMR studies of integrin $\alpha_{IIb}\beta_3$ "inside-out" activation and membrane-mediated structural transition at the cytoplasmic face.

Current research: Biomolecular NMR and Drug Design, Structural Biology and Cell Signaling, Cell Adhesion, Migration and Remodeling, Membrane and Membrane-Associated Proteins.

PUBLICATIONS

Book chapters:

J. Qin, **O. Vinogradova**, and A.M. Gronenborn, “Protein-protein interactions probed by nuclear magnetic resonance spectroscopy”, Elsevier, *Meth. Enzymol.* 2001, **339**, 377-389.

O. Vinogradova, and J. Qin, “NMR as a Unique Tool in Assessment and Complex Determination of Weak Protein-Protein Interactions”. Springer, *Topics in Current Chemistry*, *NMR of Proteins and Small Biomolecules*, 2012.

P. Katyal, Y. Yang, **O. Vinogradova**, and Y. Lin, ”Expression of Cellulolytic Enzyme as a Fusion Protein that Reacts Specifically with Polymeric Scaffold”, Elsevier, *Meth. Enzymol.* 2017, **590**, 259–276.

B.J. Aneskievich, R. Shamilov, and **O. Vinogradova**, “Intrinsic disorder in Integral Membrane Proteins”, Elsevier, 'Dancing protein clouds: Intrinsically disordered proteins in the norm & pathology', Volumes C, *Progress in Molecular Biology and Translational Science*, 2021, **183**, Pages 101-134.

C. Mundrane, M. Chorsi, **O. Vinogradova**, H. Ilies, and K. Kazerounian, “Exploring Electric Field Perturbations as the Actuator for Nanorobots and Nanomachines”, *Advances in Robot Kinematics*, 2022. ARK 2022. Springer Proceedings in Advanced Robotics, vol 24. Springer, Cham. DOI:10.1007/978-3-031-08140-8_28

Articles:

C.R. Sanders, L. Czerski, **O. Vinogradova**, P. Badola, D. Song, and S.O. Smith, "*E.Coli* Diacylglycerol Kinase is an α-Helical Polytopic Membrane Protein and Can Spontaneously Insert into Preformed Lipid Vesicles”, *Biochemistry* 1996, **35**, 8610-8618.

O. Vinogradova, P. Badola, L.. Czerski, F.D. Sonnichsen, and C.R. Sanders, "*E.Coli* Diacylglycerol Kinase: A Case Study in the Application of Solution NMR Methods to an Integral Membrane Protein”, *Biophysical J.* 1997, **72**, 2688-2701.

O. Vinogradova, C. Carlin, F.D. Soennichsen, and C.R. Sanders, "A Membrane Setting for the Sorting Motifs Present in the Adenovirus E3-13.7 Protein which Down-Regulates the Epidermal Growth Factor Receptor", *J. Biol. Chem.* 1998, **273**, 17343-17350.

O. Vinogradova, F. Soennichsen, and C.R. Sanders, "On Choosing a Detergent for Solution NMR Studies of Membrane Proteins”, *J. of BioMol. NMR* 1998, **4**, 381-386.

L. Tsai, P.A. Szweda, **O. Vinogradova**, and L.I. Szweda, "Structural Characterization and Immunochemical Detection of a Fluorophore Derived from 4-Hydroxy-2-nonenal and Lysine”, *Proc. Natl. Acad. Sci. USA* 1998, **95**, 7975-7980.

O. Vinogradova, T. Haas, E.F. Plow, J. Qin, "Structural Basis for Integrin Activation by the Cytoplasmic Tail of the α_{IIb} Subunit”, *Proc. Natl. Acad. Sci. USA* 2000, **97**, 1450-1455.

L. Czerski, **O. Vinogradova**, C.R. Sanders, "NMR-Based Amide Hydrogen-Deuterium Exchange Measurements for Complex Membrane Proteins: Development and Critical Evaluation", *J. of. Mag. Res.* 2000, **142**, 111-119.

O. Vinogradova, A. Velyvis, A. Velyviene, B. Hu, T. Haas, E.F. Plow, J. Qin, "A structural mechanism of integrin $\alpha_{IIb}\beta_3$ "inside-out" activation as regulated by its cytoplasmic face", *Cell* 2002, **110**, 587-97. **[chosen as an "exceptional" read by the Faculty of 1000]**

A. Velyvis, J. Vaynberg, Y. Yang, **O. Vinogradova**, Y. Zhang, C. Wu, J. Qin, "Structural and functional insights into PINCH LIM4 domain-mediated integrin signaling", *Nature Structural Biology* 2003, **10**(7), 558-64.

O. Vinogradova, J. Vaynberg, X. Kong, T. Haas, E.F. Plow, J. Qin, "Membrane-mediated structural transition at the cytoplasmic face during integrin activation", *Proc. Natl. Acad. Sci.* 2004, **101**, 4094-99.

J. Qin, **O**. **Vinogradova**, E.F. Plow, "Integrin bidirectional signaling: a molecular view", *PLoS Biol*., 2004, **6**, 726-9. Review.

J. Vaynberg, T. Fukuda, K. Chen, **O. Vinogradova**, A. Velyvis, Y. Tu, L. Ng, C. Wu, and J. Qin, "Structure of an Ultraweak Protein-Protein Complex and Its Crucial Role in Regulation of Cell Morphology and Motility", *Molecular Cell* 2005, **17**, 513-523. **[chosen as a "recommended" read by the Faculty of 1000]**

Y. Mao, J. Yang, M. Pesho, **O. Vinogradova**, J. Qin, and E. Plow, "Regulation of Integrin AlphaIIbBeta3 Activation by Distinct Regions of its Cytoplasmic Tails", *Biochemistry* 2006, **45**, 6656-62.

L. Deshmukh, S. Tyukhtenko, J. Liu, J.E.B. Fox, J. Qin and **O. Vinogradova**, "Structural Insight into the Interaction between Platelet Integrin $\alpha_{IIb}\beta_3$ and Cytoskeletal Protein Skelemin", *JBC* 2007, **288**, 32349-32356.

S. Tyukhtenko, L. Deshmukh, V. Kumar, J. Lary, J. Cole, V. Lemmon, **O. Vinogradova**, "Characterization of neuron specific L1-CAM cytoplasmic tail: Naturally disordered in solution it exercises different binding modes for different adaptor proteins", *Biochemistry* 2008, **47**, 4160-4168. **[chosen as a "Hot Article"]**

L. Deshmukh, L. Wu, R. P. Guttmann, **O. Vinogradova**, "NMR Structural Characterization of the Penta-Peptide Calpain Inhibitor", *FEBS Letters* 2009, **583**, 135-40.

J. M. Beierlein, L. Deshmukh, K. M. Frey, **O. Vinogradova**, A. C. Anderson. "The Solution Structure of *Bacillus anthracis* Dihydrofolate Reductase Yields Insight into the Analysis of Structure-Activity Relationships for Novel Inhibitors", *Biochemistry* 2009, **48**, 4100-4108. **[chosen as a "recommended" read by the Faculty of 1000]**

E. Tiburu, S. Tyukhtenko, L. Deshmukh, **O. Vinogradova**, D. Janero, A. Makriyannis, "Structural biology of human cannabinoid receptor-2 helix 6 in membrane-mimetic environments", *BBRC* 2009, **384**, 243-248.

S. Tyukhtenko, E. Tiburu, L. Deshmukh, **O. Vinogradova,** D. Janero, A. Makriyannis "NMR solution structure of human cannabinoid receptor-1 helix 7/8 peptide:

Candidate electrostatic interactions and microdomain formation", *BBRC* 2009, **390**, 441-446.

L. Deshmukh, V. Gorbatyuk, **O. Vinogradova,** "Integrin β_3 Phosphorylation Dictates its Complex with Shc PTB Domain", *JBC* 2010, **285**, 34875-84.

L. Deshmukh, N. Meller, N. Alder, T. Byzova, **O. Vinogradova**, "Tyrosine Phosphorylation as a Conformational Switch: A Case Study of Integrin β3 Cytoplasmic Tail", *JBC* 2011, **47**, 40943-53.

P. D. Bona, L. Deshmukh, V. Gorbatyuk, **O. Vinogradova,** D. A. Kendall, "Structural Studies of a Signal Peptide in Complex with Signal Peptidase I Cytoplasmic Domain: the Stabilizing Effect of Membrane-Mimetics on the Acquired Fold", *Proteins* 2011, **80**, 807-817.

X. Z. West, N. Meller, N. L. Malinin, L. Deshmukh, J. Meller, G.H. Mahabeleshwar, M.E. Weber, B.A. Kerr, **O. Vinogradova**, T.V. Byzova, "Integrin β_3 crosstalk with VEGFR accommodating tyrosine phosphorylation as a regulatory switch", *PLos One* 2012, **7**, e31071. **[top 25% citations]**

R. Puthenveetil and **O. Vinogradova**, "Optimization of the Design and Preparation of Nanoscale Phospholipid Bilayers for its Application to Solution NMR", *Proteins* 2013, **81**, 1222-1231.

P. Katyal, R. Puthenveetil and **O. Vinogradova**, "Structural Insights into the Recognition of β_3 Integrin Cytoplasmic Tail by SH3 Domain of Src Kinase", *Protein Science* 2013, **22**, 1358-65.

C.C. Hsiao, X. Lin, R.J. Barney, R.R. Shippy, J. Li, **O. Vinogradova**, D.F. Wiemer, and A.J. Wiemer, "Synthesis of a novel phosphoantigen prodrug that potently activates Vγ9Vδ2 T-lymphocytes", *Chemistry & Biology* 2014*,* **21**, 945–954.

V. Gorbatyuk, K. Nguyen, N.P. Podolnikova, L. Deshmukh, X. Lin, T.P. Ugarova and **O. Vinogradova**, "Skelemin Association with $\alpha_{IIb}\beta_3$ Integrin: A Structural Model", *Biochemistry* 2014, **53**, 6766−6775.

X. Lin and **O. Vinogradova**, "Phospho-Tyrosine(s) vs. Phosphatidylinositol Binding in Shc Mediated Integrin Signaling", *AJMB* 2015, 5, 17-31.

A. Anand, M. LeDoyt, C. Karanian, A. Luthra, M. Koszelak-Rosenblum3, M.G. Malkowski, R. Puthenveetil, **O. Vinogradova**, and J.D. Radolf "Bipartite Topology of Treponema pallidum Repeat Proteins C/D and I: Outer Membrane Insertion and Porin Function Requires a C-terminal β-barrel Domain", *JBC* 2015, **290**, 12313–12331.

S. Fiorucci, X. Lin, K. Sadoul, G. Fournet, D. Bouvard, **O. Vinogradova**, B. Joseph, and M.R. Block, "Targeting Integrin-dependent Adhesion and Signaling with 3-Arylquinoline and 3-Aryl-2-quinolone Derivatives: A new Class of Integrin Antagonists", *PLoS One* 2015, **10**, e0141205.

R. Puthenveetil, K. Nguyen, and **O. Vinogradova**, "Nanodiscs and Solution NMR: preparation, application and challenges", *Nanotechnology Reviews* 2017, ISSN (Online) 2191-9097, ISSN (Print) 2191-9089, DOI: 10.1515/ntrev-2016-0076.

K. Nguyen, R. Puthenveetil, and **O. Vinogradova**, "Investigation of the adaptor protein PLIC-2 in multiple pathways", *Biochemistry and Biophysics Reports* 2017, **9**, 341-348.

R. Shippy, X. Lin, S. Agabiti, J. Li, B. Zangari, B. Foust, C.C. Hsiao, **O. Vinogradova**, D.F. Wiemer, and A.J. Wiemer, "Phosphinophosphonates and their tris-pivaloyloxymethyl prodrugs reveal a negatively cooperative butyrophilin activation mechanism", *Journal of Medicinal Chemistry* 2017, **60**, 2373-2382.

K. Nguyen, J. Li, R. Puthenveetil, X. Lin, C.C. Hsiao, **O. Vinogradova**, and A.J. Wiemer, “The butyrophilin 3A1 intracellular domain undergoes a conformational change involving the juxtamembrane region”, *FASEB Journal* 2017, **31**.

R. Puthenveetil, S. Kumar, M.J. Caimano, A. Dey, A. Anand, **O. Vinogradova**, and J.D. Radolf, “The major outer sheath protein forms distinct conformers and multimeric complexes in the outer membrane and periplasm of Treponema denticola”, *Scientific Reports* 2017, DOI: 10.1038/s41598-017-13550-6.

P. Katyal, Y. Yang, Y. Fu, J. Iandosca, **O. Vinogradova,** and Y. Lin, "Binding and backbone dynamics of protein under topological constraint: calmodulin as a model system", *Chem.Comm* 2018, **54**, 8917—8920.

K. Nguyen, E. Zecca, **O. Vinogradova,** and D.S. Kalonia, "NMR as a Semi-Quantitative Tool for Evaluating Protein Surface Hydrophobicity", *SciFed Pharma J.* 2018**, 1:2**.

R. Puthenveetil, and **O. Vinogradova**, “Solution NMR: A powerful tool for structural and functional studies of membrane proteins in reconstituted environments”, Review, *JBC* 2019, **294**, 15914–15931, DOI: 10.1074/jbc.REV119.009178.

R. Shamilov, **O. Vinogradova**, and B.J. Aneskievich, “The Anti-Inflammatory Protein TNIP1 Is Intrinsically Disordered with Structural Flexibility Contributed by Its AHD1-UBAN Domain”, *Biomolecules* 2020, **10**(11), 1531, DOI: 10.3390/biom10111531.

C.C. Hsiao, K. Nguyen, Y. Jin, **O. Vinogradova**, and A.J. Wiemer, “Ligand-induced interactions between Butyrophilin 2A1 and 3A1 internal domains in the HMBPP receptor complex”, *Cell Chemical Biology* 2022, **29**, 1–11, DOI: 10.1016/j.chembiol.2022.01.004.

R. Puthenveetil, E.T. Christenson, and **O. Vinogradova**, “New Horizons in Structural Biology of Membrane Proteins: Experimental Evaluation of the Role of Conformational Dynamics and Intrinsic Flexibility”, Review, *Membrane*s 2022, **12**, 227, DOI:10.3390/membranes12020227.

K. Nguyen, Y. Jin, M. Howell, C.C. Hsiao, A.J. Wiemer, and **O. Vinogradova**, “Mutations to the BTN2A1 linker region impact its homodimerization and its cytoplasmic interaction with phosphoantigen bound BTN3A1”, *Journal of Immunology* 2023, **211**, 1-11, DOI:10.4049/jimmunol.2200949.

M. Chorsi, W. Linthicum, A. Pozhidaeva, C. Mundrane, V.K. Mulligan, Y. Chen, P. Tavousi, V. Gorbatyuk, **O. Vinogradova**, J.C. Hoch, B.D. Huey, T.D. Nguyen, H.T. Soh, K. Kazerounian, H. Ilies, “Ultra-Confined Controllable Cyclic Peptides as Supramolecular Biomaterials”, *NanoToday* 2024, **56**, DOI:10.1016/j.nantod.2024.102247.

B. Klebansky, M. Backer, V. Gorbatyuk, **O. Vinogradova**, and J. Backer, “In Search for Better Peptide-(Derived from PD-L2)-Based Immune Checkpoint Inhibitors”, *Biomolecules* 2024, **14**(5), 97, DOI:10.3390/biom14050597.

GRANTS OF LAST FIVE YEARS

Radolf, Justin (Principal), **Vinogradova**, **Olga** (collaborator), "A global syphilis vaccine targeting outer membrane proteins of *Treponema pallidum* program" NIH U19(July 1, 2019 - June 30, 2024).

Aneskievich, Brian (Principal), **Vinogradova**, **Olga** (Co-PI), Robinson, Victoria (Co-PI), "Cytoplasmic Suppression of Inflammatory Signaling", DoD, (October 1, 2020 – September 30, 2024).

Wiemer, Andrew (Principal), **Vinogradova**, **Olga** (Principal), "Role of immune modulating butyrophilins in γδ-T cell activation", NIH R01 (September 27, 2020- August 30, 2025)