

## Rima Budvytyte



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Research Gate: [https://www.researchgate.net/profile/Rima-Budvytyte?ev=hdr\\_xprf&\\_sg=S\\_CcljOB6L1OyoL3\\_myug3dpm4VkzA72k4t6BA4Q8awP6DCjXOiB5292kad-qT-bVcmbpxAR5IBqekf8aMFzTfzV](https://www.researchgate.net/profile/Rima-Budvytyte?ev=hdr_xprf&_sg=S_CcljOB6L1OyoL3_myug3dpm4VkzA72k4t6BA4Q8awP6DCjXOiB5292kad-qT-bVcmbpxAR5IBqekf8aMFzTfzV)

**Research area:** Biochemistry and Biophysics

### **Scientific interests:**

Investigations of tethered lipid membranes and their interactions with proteins

Studies of misfolded oligomers as a key molecular components in neurodegeneration.

Lipid – based nanoparticles for CRISPR/Cas9 delivery

The postdoc research project was focusing on thermodynamic aspects of biological membranes.

**Present Position:** Senior Fellow Research, VU Life Science Center, Institute of Biochemistry.  
From 2021 04- LSC-EMBL Partner Institute Associated Researcher.

### **Education:**

2012 PhD of Biochemistry, Institute of Biochemistry, Vilnius University, Lithuania

2008 Master's degree in Biochemistry, Vilnius University, Lithuania,

2006 Bachelor's degree in Bioengineering, Vilnius Gediminas Technical University, Lithuania

### **Experience:**

2020-current Senior Fellow Research, Life Science Center, Institute of Biochemistry, Vilnius University.

2019 – current Docent at VU LFC. Course: “Membrane biology”, for Master's degree students of Biochemistry, Neurobiology, Biophysics and Microbiology I year.

2017- 2020 Research Fellow, Life Sciences Center, Institute of Biochemistry, Vilnius University

2013- 2016 PostDoc at Niels Bohr Institute, University of Copenhagen, Denmark.

### **Foreign research visits:**

07–09/2006 **National Institute of Standard and Technology**, Biochemical Sciences Division, 100 Bureau Drive, Gaithersburg, MD 20899. USA.  
2009 - 2011 **Carnegie Mellon University**, Department of Physics, Biological Physics Group. 5000 Forbes ave, Pittsburgh, PA 15213, USA. Every year for 2 months.  
12 /2011 **Université Paris Est Créteil Val-de-Marne**, Institut de Chimie & Matériaux Paris Est, UMR 7182, CNRS, Paris, France.  
12 /2012 **Université Paris Est Créteil Val-de-Marne**, Institut de Chimie & Matériaux Paris Est, UMR 7182, CNRS, Paris, France.

#### Awards:

2020 June 16 d. L'OREAL-UNESCO fellowship "For Women in Science".

#### Fellowships:

2009 PhD fellowship for achievements program. Lithuanian Science and Studies Foundation.  
2010 PhD fellowship for achievements program. Lithuanian Science and Studies Foundation.  
2010 Graduate Student Visits Abroad Program. The Research Council of Lithuania.  
2011 PhD fellowship for achievements program. The Research Council of Lithuania.  
PhD fellowship for scientific visit abroad program. The Research Council of Lithuania.

#### List of publications:

1. Gintaras Valincius, Frank Heinrich, **Rima Budvytyte**, David J. Vanderah, Yuri Sokolov, James E. Hall and Mathias Lösche. Soluble amyloid  $\beta$  oligomers affect dielectric membrane properties by bilayer insertion and domain formation: Implications for cell toxicity. *Biophys. Journal.*, 2008, 95:4845-61. Impact factor: 4.03
2. Paulius Cizas\*, **Rima Budvytyte\***, Ramune Morkuniene, Radu Moldovan, Matteo Broccio, Mathias Loesche, Gediminas Niaura, Gintaras Valincius, Vilmante Borutaite. Size-dependent neurotoxicity of  $\beta$ -amyloid oligomers. *Arch. Biochem. Biophys.*, 2010, 496:84-92. \*Both authors contributed equally. Impact factor: 4.3
3. G. Niaura, **R. Budvytyte**, Z. Kuprionis, G. Valincius. Sum frequency generation spectroscopy of amyloid fibrils and oligomers at air/water interface. *Proc. SPIE*, 2010, vol 7376, 73760Q1-7.
4. Vladislava Voiciuk, Gintaras Valincius, **Rima Budvytyte**, Algirdas Matijoska, Gediminas Niaura. Surface-enhanced Raman spectroscopy for detection of toxic amyloid  $\beta$  oligomers adsorbed on self-assembled monolayers. *Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy*. 2012;(95): 526–532. Impact factor: 2.91.
5. **Rima Budvytyte**, Mindaugas Mickevicius, David J. Vanderah, Frank Heinrich, Gintaras Valincius. Modification of tethered bilayer compositions by material exchange with vesicles. *Langmuir*, 2013;29:4320-4327. Impact factor: 4.46
6. Indre Dalgediene, Rita Lasickiene, **Rima Budvytyte**, Gintaras Valincius, Ramune Morkuniene, Vilmante Borutaite and Aurelija Zvirbliene. Immunogenic properties of amyloid beta oligomers. *Journal of Biomedical Science*. 2013;20:10. Impact factor: 8.4
7. **Rima Budvytyte**, Gintaras Valincius, Gediminas Niaura, Vlada Voiciuk, Hilary Stauffer Prabhanshu Shekhar, Frank Heinrich, Siddharth Shenoy, David J. Vanderah and Mathias Lösche. Anchor Molecules Affect Structure

and Properties of Tethered Bilayer Lipid Membranes. *Langmuir*. 2013; 29 (27):8645–8656. <sup>[17][17]</sup>Impact factor: 4.46

8. **Budvytyte, R.**, Pleckaityte, M., Zvirbliene, A., Vanderah, D. J., & Valincius, G. Reconstitution of cholesterol-dependent vaginolysin into tethered phospholipid bilayers: implications for bioanalysis. *PloS One*, 2013;8(12), e82536. Impact factor: 3.234.
9. Tadas Ragaliauskas, Mindaugas Mickevicius, **Rima Budvytyte**, Gediminas Niaura, Benjamin Carbonnier, Gintaras Valincius. Adsorption of b-amyloid oligomers on octadecanethiol monolayers. *Journal of Colloid and Interface Science*. 2014;425:159–167. Impact factor: 7.87.
10. Gintaras Valincius, **Rima Budvytyte**, Tadas Penkauskas, Milda Pleckaityte and Aurelija Zvirbliene. Phospholipid Sensors for Detection of Bacterial Pore-Forming Toxins. *ECS Trans*. 2014;64(1): 117-124;
11. Gonzalez-Perez A., **Budvytyte R.**, Mosgaard D.L., Nissen S., Heimburg T. Penetration of action potentials during collision in the medial giant axon invertebrates. *Phys. Rev. X.*, 2014; 4:031047. Impact factor 15.79.
12. Lars D Mosgaard, Karis A. Zecchi, Thomas Heimburg, **Rima Budvytyte**. The Effect of the Nonlinearity of the Response of Lipid Membranes to Voltage Perturbations on the Interpretation of Their Electrical Properties. A New Theoretical Description. *Membranes*, 2015;5(4):495-512. Impact factor: 3.98.
13. Alfredo Gonzalez-Perez, Lars D. Mosgaard, **Rima Budvytyte**, Edgar Villagran-Vargas, Andrew D. Jackson, Thomas Heimburg. Solitary Electromechanical Pulses in Lobster Neurons. *Biophysical Chemistry*, 2016 ;216:51-59. Impact factor: 2.363
14. Kasper Jensen, **Rima Budvytyte**, Rodrigo A. Thomas, Tian Wang, Annette Fuchs, Mikhail V. Balabas, Georgios Vasilakis, Lars Mosgaard, Thomas Heimburg, Søren-Peter Olesen, Eugene S. Polzik. Non-invasive detection of animal nerve impulses with an atomic magnetometer operating near quantum limited sensitivity. *Scientific reports*, 2016;6:29638. Impact factor: 5.59.
15. Tian Wang, Alfredo Gonzalez-Perez, **Rima Budvytyte**, Andrew D. Jackson, and Thomas Heimburg. Reply to “Comment on ‘Penetration of action potentials during collision in the median and lateral giant axons of invertebrates’”. *Phys. Rev. X*, 2017;7:028002. Impact factor: 15.79.
16. Katryna Pampuschenko, Ramune Morkuniene, Tomas Sneideris, Vytautas Smirnovas, Rima Budvytyte, Gintaras Valincius, Guy C. Brown, Vilmante Borutaite. Extracellular tau induces microglia to phagocytose neurons.. *Journal of Neurochemistry*. 2019;00:e1490. DOI: 10.1111/jnc.14940. Impact factor: 5.3
17. **Budvytyte, R.**; Milasiute, A.; Vitkus, D.; Strupas, K.; Gulla, A.; Sakinyte, I.; Razumiene, J. Tethered Lipid Membranes as a Nanoscale Arrangement towards Non-Invasive Analysis of Acute Pancreatitis. *Biomedicines*, 2021; 9:55. Impact factor: 6.08
18. Aleknavičienė I., M. Talaikis, **R. Budvytytė**, G. Valinčius. The impact of an anchoring layer on the formation of tethered bilayer lipid membranes on silver substrates. *Molecules*, 2021; 26(22): 6878. Impact factor: 4.4.

### Research projects:

- 2008–2010 Advanced Technology Development Program Topic title “*Detection of pathogenic  $\beta$ -amyloid oligomers for diagnostics of Alzheimer’s disease (AMILOIDE)*”. The Research Council of Lithuania.
- Grant: MIP-11395. Topic title: *Surface tethered phospholipid bilayer membranes for reconstitution of functional proteins* (INFABite). The Research Council of Lithuania.

- 2011- 2012 Grant: TAP – 10037. Bilateral collaborative research and development Lithuanian-French integrated activity programme “Gilibert”. Topic title: *Separation and characterization of toxic amyloid peptide species implicated in Alzheimers disease* . The Research Council of Lithuania.
- 2013 04 -2016 09 Grant – VKR022130. Villum foundation, Denmark. Project title: “Physical Biology of Excitatory Membranes - nerves, anesthesia and membrane permeability”. (Project leader: prof. Thomas Heimburg).
- 2017-2019 EU project MTEP - "Intellect - science – business projects” (LVPA): BIOSENTOX, Biological Sensors for toxins detection UAB ENERGENAS. Project leader: dr. G. Valinčius.
- 2017-2021 MTEP, SMART - Nr. 01.2.2- LMT-K-718-01-0025. Non-Invasive Approach To Early Diagnosis Of Acute Severe Pancreatitis. Project leader: dr. Julija Razumienė.
- 2020-2021 Studentų moksliniai tyrimai: 09.3.3-LMT-K-712-22-0219. Leader: **dr. R. Budvytyte, studentė E. Jankaitytė**
- 2020- 2023 COST Action CA18133 Action Title: “European Research Network on Signal Transduction – ERNEST” Management committee member – **Rima Budvytyte**
- 2020-2022 MTEP, “Improvement of scientific qualification through individual Horizon 2020 MTEP projects” 09.3.3-LMT-K-712-18. Title: “*Interactions of misfolded proteins and phospholipid membranes: possible key in neurodegeneration (NeuroMisFolDe)*”. **Project leader: dr. Rima Budvytyte.**
- 2020 -2023 01.2.2-LMT-K-718-03-0003. Title: “*Alzheimerio ligos gydymui skirtų vaistinių kandidatinių junginių, slopinančių BACE1 fermentinį aktyvumą ir Aβ peptido agregaciją, kūrimas*” Projekto vadovas: dr. Daumantas Matulis. Projekto vykdytojas: **dr. Rima Budvytyte**
- 2020 -2023 01.2.2-CPVA-K-703 Biojutiklių tyrimų ir inžinerijos kompetencijų ir technologijų perdavimo centro kūrimas (BIOSENSE). Projekto vykdytojas: **dr. Rima Budvytyte,**

## SCIENTIFIC DISSEMINATION:

### *Articles and interviews in Press or websides:*

1. 2020 06 18 Patricija Kilminavičienė. “Dvi lietuviškos mokslininkės pagerbtos prestižiniais „Moterims mokslė“ apdovanojimais” Portalas LRT. Mokslas ir IT. (Rima Budvytytė).
2. 2020 06 18 DELFI. Delfi moterys. “Dvi lietuviškos mokslininkės pagerbtos prestižiniais „Moterims mokslė“ apdovanojimais” (Rima Budvytytė).
3. 2020 07 09 15 min “Tarptautiniu apdovanojimu įvertinta VU mokslininkė siekia suprasti neurodegeneracines ligas” (Rima Budvytytė).
4. 2020 07 18 Portalas LRT. Mokslas ir IT. “Mokslininkė apie smegenis niokojančias Alzheimerio ir Parkinsono ligas: jos linkusios vis „jaunėti“ (išplėstinis interviu Rima Budvytytė).

5. 2020 08 05 Mokslo Lietuva “Biochemijos mokslų daktarė Rima Budvytytė: dirbti skatina mintis, kad visas pasaulis kenčia nuo šios ligos”.

6. 2020 08 05 MITA. “Biochemijos mokslų daktarė Rima Budvytytė: dirbti skatina mintis, kad visas pasaulis kenčia nuo šios ligos”. (išplėstinis interviu, Rima Budvytytė).

7. 2020 08 13 Vytautė Merkytė. DELFI mokslas. Mokslas. ”Mokslininkė Budvytytė įvardijo veiksnius, lemiančius Alzheimerio atsiradimą: sergančiųjų amžiaus pokyčiai gąsdina” (Išplėstinis interviu, Rima Budvytytė).

8. 2021 Birželis. IQ žurnalas. Diena su mokslininku. **Dr. Rima Budvytytė.** „Nematomų ligų paieškos“

#### *Participation in radio and television show:*

2021 September. Delfi Tv Show: Sentient. **Dr. Rima Budvytyte** „Neurodegenerative diseases: what risk factors you can control “.

#### *Lectures for secondary school pupil and society:*

Lectures for school children – schools belonging to UNESCO list: Cycle of lectures in LOREAL-Women in Science program.

Title: „Paprastas užmarštumas ar prasidėjęs Alzheimeris?“ **dr. Rima Budvytytė**

1. 2021 03 04 Šakių “Žiburio” gimnazija
2. 2021 03 15 Žalioji Valdorfo mokykla
3. 2021 04 15 Alytaus progimnazija
4. 2021 09 Vilniaus Žirmūnų gimnazija

2021 08 23-24 – National pupil academy of Science, Druskininkai, Lithuania. **Dr. Rima Budvytytė.** Paskaitų ciklas: Membranų sudėtis ir savybės. Lipidiniai membranų modeliai. Lipidiniai biosensoriai. Alzheimerio ligos mechanizmas.

#### **International Conferences:**

#### **Invited Lectures and Presentations**

2020 3<sup>rd</sup> Cost Action ERNEST meeting “*Signal transduction: From the genomic to the systems level (and everything in between)*” . *Online meeting.* **Oral presentation.**

2020 10 15 “Baltic Biophysical conference – OPEN LECTURES. **Oral presentation.**

2019 05 26-30 XXV International Symposium on Bioelectrochemistry and Bioenergetics held in Limerick, Ireland. **Oral presentation.**

2019 03 18-20 3<sup>rd</sup> ARBRE-MOBIEU plenary meeting “Molecular Biophysics: ABC of the Puzzle of Life”, Zagreb, Croatia. **Oral presentation.**

2018 09 10-14 7<sup>th</sup> Amyloid Disease Annual meeting (ADAM7) , Druskininkai, Lithuania. **Oral presentation**

2018 10 04-05 “Baltic Biophysical conference, Kaunas, Lithuania. **Oral presentation.**

2018 10 10-12 APROPOS 16 Advanced Properties and Processes in Optoelectronic Materials and Systems. **Oral presentation.**

2017 07 21-22 EBSA Satellite meeting 2017: Biophysical Approaches to Protein Folding and Disease, Edinburgh, Great Britain. **Invited speaker.**

2017 03 22-24 ARBRE-MOBIEU 2017 plenary meeting, Building bridges in Biophysics, Porto, Portugal. **Oral presentation.**

2015 02 07-11 Biophysical Society 59th Annual Meeting, Baltimore, Maryland, USA. **Oral presentation.**

2014 09 14-17 German Biophysical Society meeting, Lubeck, Germany. **Oral presentation.**

2010 06 15-17 XI International conference of Lithuanian Biochemistry society . Tolieja, Lithuania. **Oral presentation.**

2007 04 27 The International student conference „Chemistry and Chemistry Technology“. **Oral presentation.**

### **Poster presentations**

2021 April 7-9th, 7th European Joint Theoretical/Experimental Meeting on Membranes (EJTEMM 2021). Gracas, Austrija; Poster presentation: **Rima Budvytyte**, Akvile Milasiute, Julija Razumiene “The Interaction of Heat Shock Proteins with Lipid Membranes: a Novel Diagnostic Target“. **Poster presentation.**

2021 September 27-30<sup>th</sup>. SFB-GEM Virtual Meeting. Organized jointly by the French Biophysical Society „Biophysics of Membranes and Beyond“. Poster presentation. **Dr. Rima Budvytyte** “The Interaction of Heat Shock Proteins with Lipid Membranes“. **Poster presentation.**

2020 02 24-26 ARBRE-MOBIEU Plenary Meeting : “Living Molecules: towards Integrative Biophysics of the Cell“. Prague. **Poster presentation.**

2019 12 11-13 Bilayers at the ILL (BILL 2019), Grenoble, France. **Poster presentation**

2019 07 20-24 11<sup>th</sup> European Biophysics Congress (EBSA 2019) Madrid, Spain. **Poster presentation.**

2018 06 16-22 GRC Biointerface Science "Surfaces and Compartments in Biology and Medicine, Luca, Italy. **Poster presentation..**

2018 09 10-14 4<sup>th</sup> NGP-NET Symposium on Non-Globular Proteins, Druskininkai, Lithuania. **Poster presentation.**

2017 07 16-21. 10<sup>th</sup> European Biophysics Congress (EBSA 2017) Edinburgh, Great Britain. **Poster presentation.**

2016 02 27- 03 02. Biophysical Society 60th Annual Meeting, Los Angeles, CA USA. **Poster presentation.**

2015 07 18-22. 10<sup>th</sup> European Biophysics Congress (EBSA 2015) Dresden, Germany. **Poster presentation.**

2014 09 1-3. Biomembrane days, Berlin, Germany. **Poster presentation.**

2014 02 14-18. Biophysical Society 58th Annual Meeting, San Francisco, California, USA. **Poster presentation.**

2012 09 06-09. Engineering Lipid Bilayers 2012 Leeds, United Kingdom. **Poster presentation.**

2012 07 23-27. ICNT, International Conference on Nanoscience +Technology, Paris, France. **Poster presentation.**

2012 05 19-25 Biointerface Science, Les Diablerets, Switzerland. **Poster presentation.**

2011 03 05-09 Biophysical Society 55th Annual Meeting, Baltimore, Maryland, USA. **Poster presentation.**

2007 05 27- 2007 06 02 Nanoscale Engineering of the Biointerface, A Max-Planck / NSF Graduate Research School on Polymer Materials, Hotel Cap Roig, Playa de Aro, Spain. **Poster presentation.**

**Other Related Activities:**

VU MBA study committee member

Member of the American Biophysical Society

Member of Lithuanian Biophysical Society