

Institute of Structural and Molecular Biology  
University College London  
Gower Street  
London  
WC1E 6BT  
United Kingdom

**Tomasz Włodarski**

tomek.wlodarski@gmail.com

- born November 6<sup>th</sup> 1984
- citizen of the Republic of Poland

**Education**

- 2008 - 2013      **University of Warsaw**, Warsaw, Poland  
Inter-Faculty Interdisciplinary Doctoral Studies in Natural Sciences and Mathematics  
PhD studies in Bioinformatics and Biophysics  
*Thesis: "Application of computational biophysics and bioinformatics to multiscale biological problems" (advisors: Prof. Paweł Golik and Prof. Marek Niezgódka)*
- 2003 - 2008      **Jagiellonian University**, Krakow, Poland  
M. Sc. in Biophysics, 2008  
*Thesis: "Study of interactions of fluorescent dyes (Col-F and Sulphorodamine B) with collagens"*  
*(advisors: Prof. Jerzy Dobrucki and Prof. Marta Pasenkiewicz-Gierula )*

**Work Experience**

- 2013 - ...      **University College London**, Institute of Structural and Molecular Biology, London, UK
- 10/2016 - 04/2019      **University of Cambridge**, Chemistry Department, Cambridge, UK  
Joint EMBO Postdoctoral Fellow in Prof. John Christodoulou (UCL) and Prof. Michele Vendruscolo (Univ. of Cambridge) groups.

## Scientific Experience

- 11/2011 – 02/2012 **University of Cambridge, Chemistry Department**, Cambridge, UK  
visiting student in Prof. Michele Vendruscolo group  
(*EMBO Short Term Fellowship*)
- 07/2011 **Max F. Perutz Laboratories**, Vienna, Austria  
visiting student in Computational Biophysics of Macromolecules Group  
(*advisor: Dr. Bojan Zagrovic*)
- 02/2010 **University of Texas Medical Branch at Galveston**, Galveston, TX, USA  
visiting student in Bioinformatics and System Biology Group  
*Project: “Analysis of sequencing data of human fragile sites”*  
(*advisor: Prof. Maga Rowicka*)
- 08/2009 **Mediterranean Institute for Life Sciences**, Split, Croatia  
Summer studentship in Computational Biophysics of Macromolecules Group  
*Project: “Conformational selection vs induced fit in protein-protein binding”*  
(*advisor: Dr. Bojan Zagrovic*)
- 07/2008 – 08/2008 **Mediterranean Institute for Life Sciences**, Split, Croatia  
FEBS Summer Scholarship in Computational Biophysics of Macromolecules Group  
*Project: “Conformational selection vs induced fit in protein-protein binding”*  
(*advisor: Dr. Bojan Zagrovic*)
- 07/2007 – 08/2007 **University of Illinois in Urbana-Champaign**, Urbana-Champaign, IL, USA  
Summer studentship in Theoretical and Computational Biophysics Group  
*Project: “Computational study of solvation and hydrophobic effect around a simple molecular compound”*  
(*advisor: Prof. Klaus Schulten*)

## Research Interest:

- protein folding and missfolding
- computational protein design
- molecular dynamics simulations
- integrative structural biology
- protein structure and dynamics
- structural bioinformatics
- machine learning

## Honors and Fellowships:

- EMBO Long Term Fellowship (2013)

- EMBO Short Term Fellowship (2011)
- Foundation for Polish Science Scholarship - START 2011
- FEBS Summer Scholarship (2008)
- FEBS prize for the best Summer Scholarship report in 2008

#### Computational Grants:

- HECBioSim grant (2022)
- Access to high performance computing EPSRC grant (2022)
- ARCHER Leadership Grant (2015-2017)
- ICM Okeanos - Grand Challenges (2016)
- ICM Okeanos - Grand Challenges (2017)

#### Other Experience:

- EMBO Laboratory Leadership Course for Postdocs (2018)
- Polonium Foundation Scientific Content Manager (2017 - 2021)

#### Publications:

1. **Włodarski, T.**, Deckert, A., Cassaignau, A.M.E., Wang, X., Chan, S.H.S., Waudby, C.A., Kirkpatrick, J.P., Vendruscolo, M., Cabrita, L.D., Christodoulou, J., 2021. *Common sequence motifs of nascent chains engage the ribosome surface and trigger factor.* **Proc Natl Acad Sci USA** 118. doi:10.1073/pnas.2103015118
2. Cassaignau, A.M.E., **Włodarski, T.**, Chan, S.H.S., Woodburn, L.F., Bukvin, I.V., Streit, J.O., Cabrita, L.D., Waudby, C.A., Christodoulou, J., 2021. *Interactions between nascent proteins and the ribosome surface inhibit co-translational folding.* **Nat. Chem.** doi:10.1038/s41557-021-00796-x
3. Burrige, C., Waudby, C.A., **Włodarski, T.**, Cassaignau, A.M.E., Cabrita, L.D., Christodoulou, J., 2021. *Nascent chain dynamics and ribosome interactions within folded ribosome-nascent chain complexes observed by NMR spectroscopy.* **Chem. Sci.** 12, 13120–13126. doi:10.1039/d1sc04313g
4. Waudby, C.A., **Włodarski, T.**, Karyadi, M.-E., Cassaignau, A.M.E., Chan, S.H.S., Wentink, A.S., Schmidt-Engler, J.M., Camilloni, C., Vendruscolo, M., Cabrita, L.D., Christodoulou, J., 2018. *Systematic mapping of free energy landscapes of a growing filamin domain during biosynthesis.* **Proc Natl Acad Sci USA** 115, 9744–9749. doi:10.1073/pnas.1716252115
5. Redondo, R.A.F., de Vladar, H.P., **Włodarski, T.**, Bollback, J.P., 2017. *Evolutionary interplay between structure, energy and epistasis in the coat protein of the  $\phi$ X174 phage family.* **J. R. Soc. Interface** 14. doi:10.1098/rsif.2016.0139
6. Deckert, A., Waudby, C.A., **Włodarski, T.**, Wentink, A.S., Wang, X., Kirkpatrick, J.P., Paton, J.F.S., Camilloni, C., Kukic, P., Dobson, C.M., Vendruscolo, M., Cabrita, L.D., Christodoulou, J., 2016. *Structural characterization of the interaction of  $\alpha$ -synuclein nascent chains with the ribosomal surface and trigger factor.* **Proc Natl Acad Sci USA** 113, 5012–5017. doi:10.1073/pnas.1519124113
7. Cabrita, L.D., Cassaignau, A.M.E., Launay, H.M.M., Waudby, C.A., **Włodarski, T.**, Camilloni,

- C., Karyadi, M.-E., Robertson, A.L., Wang, X., Wentink, A.S., Goodsell, L., Woolhead, C.A., Vendruscolo, M., Dobson, C.M., Christodoulou, J., 2016. *A structural ensemble of a ribosome-nascent chain complex during cotranslational protein folding*. **Nat. Struct. Mol. Biol.** 23, 278–285. doi:10.1038/nsmb.3182
8. **Włodarski, T.**, Kutner, J., Towpik, J., Knizewski, L., Rychlewski, L., Kudlicki, A., Rowicka, M., Dziembowski, A., Ginalski, K., 2011. *Comprehensive structural and substrate specificity classification of the *Saccharomyces cerevisiae* methyltransferase*. **PLoS ONE** 6, e23168. doi:10.1371/journal.pone.0023168
9. **Włodarski, T.**, Zagrovic, B., 2009. *Conformational selection and induced fit mechanism underlie specificity in noncovalent interactions with ubiquitin*. **Proc Natl Acad Sci USA** 106, 19346–19351. doi:10.1073/pnas.0906966106

### Preprints:

1. Javed, A., **Włodarski, T.**, Cassaignau, A.M.E., Cabrita, L.D., Christodoulou, J., Orlova, E.V., „*Visualising nascent chain dynamics at the ribosome exit tunnel by cryo-electron microscopy*” doi: <https://doi.org/10.1101/722611>

### Under revision:

1. **Włodarski, T.**, Ahn, M., Mitropoulou A., Chan, S.H.S., Sidhu, H., Plessa, E., Becker, T.A., Waudby, C.A., Beckmann, R., Cassaignau, A.M.E., Cabrita, L.D., Christodoulou, J. “*Modulating co-translational protein folding by rational design and ribosome engineering*” **Nature Communication**
2. Chan, S.H.S., **Włodarski, T.**, Streit, J., Cassaignau, A.M.E., Woodburn, L., Ahn, M., Waudby, C.A., Budisa, N., Cabrita, L.D., Christodoulou, J. “*The ribosome stabilises partially folded intermediates of a nascent multi-domain protein*” **Nature Chemistry**

### Languages

- **Polish** - native
- **English** - fluent
- **Russian** – basic
- **German** – basic