

Curriculum Vitae Professor Dr Marina V. Rodnina

Name: Marina V. Rodnina

Date of birth: 19 November 1960



Image: Irene Böttcher-Gajewski | Max Planck Institute for Multidisciplinary Sciences

Research Priorities: quantitative biochemistry, RNA-protein interaction, ribosome function and dynamics, quality control in protein biosynthesis, fast kinetics, enzyme catalysis, function of antibiotics, translation process, mechanisms of GTPases in translation, biophysical methods, protein biosynthesis, fluorescence measurements

Marina Rodnina is a biochemist and expert on large protein complexes. She has developed new methodological approaches for studying ribosome functions and further elucidated its mode of operation in protein biosynthesis.

Academic and Professional Career

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| 2020 - 2022 | Managing Director, Max Planck Institute for Multidisciplinary Sciences (until January 2022: Max Planck Institute for Biophysical Chemistry), Göttingen, Germany |
| since 2008 | Director, Principal Investigator, Department of Physical Biochemistry, Max Planck Institute for Biophysical Chemistry, Göttingen, Germany |
| 2000 - 2008 | Chair of Physical Biochemistry, Institute of Physical Biochemistry, Witten/Herdecke University (UW/H), Witten, Germany |
| 1998 - 2000 | Professor, Institute of Molecular Biology, UW/H, Witten, Germany |
| 1997 | Habilitation in Biochemistry, UW/H, Witten, Germany |
| 1992 - 1997 | Research Assistant, UW/H, Witten, Germany |
| 1990 - 1992 | Research Fellow (UW/H, Witten, Germany), Alexander von Humboldt Foundation, Bonn, Germany |

1989	PhD in Molecular Biology, Institute of Molecular Biology and Genetics, Ukrainian Academy of Sciences , Kiev, Ukraine
1982 - 1990	Research Associate, Institute of Molecular Biology and Genetics, Ukrainian Academy of Sciences, Kiev, Ukraine
1977 - 1982	Degree in biology with specialization in molecular biology and genetics, Taras Shevchenko National University Kiev, Kiev, Ukraine

Functions in Scientific Societies and Committees

currently	Member, 17 Thesis Advisory Committees, GGNB, and Mentor, Dorothea Schlözer Mentoring Programme, University of Göttingen, Goettingen, Germany
since 2022	Member, ERC Consolidator Grants Panel, European Commission (EC)
since 2022	Scientific Advisor Board, Institute of Molecular Biology gGmbH (IMB), Mainz, Germany
since 2021	Scientific Advisory Board, Dioscuri Centres of Scientific Excellence, Ministry of Education and Science, Poland, and Federal Ministry of Education and Research, Germany
since 2020	Board of Trustees, Boehringer Ingelheim Fonds, Mainz, Germany
since 2019	Scientific Advisory Board, Regensburg Center for Biochemistry, Regensburg, Germany
2018	Member, Review Committee, Institute for Integrative Biology of the Cell (I2BC), Gif-sur-Yvette, France
2016, 2018	Reviewer, Future Emerging Technologies (FET)-Open Programme, EC
since 2016	Reviewer, Marie Skłodowska-Curie Individual Fellowships Programme, EC
since 2016	International Advisory Board, Research Programme “Building a Synthetic Cell (BaSyC)”, Netherlands
since 2015	Scientific Advisory Board, Biochemistry Center (BZH), University of Heidelberg, Heidelberg, Germany
2015 - 2021	Member, Collaborative Research Centers Committee, Senate, German Research Foundation (DFG)
2015, 2018	Member, Review Committee, Laboratory of Biochemistry, Ecole Polytechnique, Palaiseau, France
since 2014	Chair, Minerva Weizmann Committee, Minerva-Weizmann Programme, Minerva Stiftung, Munich, Germany
2012 - 2015	Member, ERC Consolidator Grants Panel, EC

Nationale Akademie der Wissenschaften Leopoldina
www.leopoldina.org

since 2012 Dean, International Max Planck Graduate School for Molecular Biology, Goettingen, Germany

since 2012 Member and Vice Chair, Doctoral Networks Grant Review Panel, EC

2010 - 2018 Speaker, Doctoral Program “Biomolecules: Structure-Function-Dynamics” and Member, Managing Board, Goettingen Graduate School for Neurosciences and Molecular Biosciences (GGNB), University of Göttingen, Goettingen, Germany

2008 - 2015 Elected Member, Study Section 201 “Biochemistry, Biophysics, Structural Biology, Bioinformatics and Theoretical Biology”, Review Board “Basic Research in Biology and Medicine”, DFG, Germany

2008 - 2012 Member, Selection Committee for the PhD fellowships, German Academic Exchange Service (DAAD), Germany

2007 - 2009 Elected Director, The RNA Society, McLean, USA

Editorial Boards: RNA, Biochemistry, Protein Science, Scientific Reports

Project Coordination, Membership in Collaborative Projects (selection)

since 2020 Project “The function of mRNA modifications in regulation of translation”, Priority Programme (SPP) 1784, German Research Foundation (DFG), Germany

since 2019 Project “Role of Shiftless in HIV infection: Antiviral mechanism and contribution to innate immune responses”, SPP 1923, DFG, Germany

since 2019 “Multiscale Bioimaging: from Molecular Machines to Networks of Excitable Cells”, Cluster of Excellence (EXC) 2067, DFG, Germany

since 2016 Project “Co-translational protein insertion into the bacterial plasma membrane”, Collaborative Research Centre (SFB) 1190, DFG, Germany

since 2010 Project “Ribosome dynamics in translation”, SFB 860, DFG, Germany

Honours and Awarded Memberships

since 2022 Elected Member, National Academy of Sciences, USA

since 2020 Elected Member, Academia Europaea

2021 Albrecht Kossel Prize, German Chemical Society (GDCh), Germany

2019 Otto Warburg Medal, Society for Biochemistry and Molecular Biology (GBM), Frankfurt am Main, Germany

2018 Advanced Grant, European Research Council (ERC)

since 2017 Member, Göttingen Academy of Sciences and Humanities, Göttingen, Germany

2016	Gottfried Wilhelm Leibniz Prize, DFG, Germany
2015	Hans Neurath Award, Protein Society, Canyon Country, USA
since 2015	Member, Protein Society, Canyon Country, USA
since 2008	Member, German National Academy of Sciences Leopoldina, Germany
since 2004	Member, European Molecular Biology Organization (EMBO), Heidelberg, Germany

Research Priorities

Marina Rodnina is a biochemist and expert on large protein complexes. She has developed new methodological approaches for studying ribosome functions and further elucidated its mode of operation in protein biosynthesis.

Ribosomes are the power plants of cells. During protein biosynthesis in the cell, they translate the genetic hereditary information into a chain of amino acids, which then folds into a protein. Hundreds, sometimes thousands of amino acids have to be put in the correct order in this translation process. A single error in the chain can cause the protein to malfunction. With one of her major discoveries, Marina Rodnina has elucidated a complex selection mechanism that ribosomes use to keep the error rate in translation low.

The effort for these investigations is enormous because ribosomes are tiny. The researchers led by Marina Rodnina employ biophysical methods such as fluorescence measurements and fast kinetics. The working group is a global leader in developing and applying these complex methods. With the help of a 3D cryo-electron microscope, they could also show a ribosome in action for the first time. For the film sequence, ribosomes in a solution were excited and then shock-frozen at different stages. An electron microscope was thus able to take pictures of different phases of protein biosynthesis.

With her research, Marina Rodnina has significantly expanded the knowledge about translational processes. These findings help clarify the causes of diseases and provide the basis for developing new drugs.