

## CV of Prof. Robert Penchovsky, Ph.D.

**Position:** Professor of Molecular Genetics, Synthetic Biology, and Bioinformatics;  
Head of the Synthetic Biology and Bioinformatics Laboratory

**e-mail:** [robert.penchovsky@biofac.uni-sofia.bg](mailto:robert.penchovsky@biofac.uni-sofia.bg)

**e-mail:** [Robert.penchovsky@hotmail.com](mailto:Robert.penchovsky@hotmail.com)

**website:** <https://penchovsky.atwebpages.com/>

**Address:** Room 363, Synthetic Biology and Bioinformatics Laboratory, Faculty of Biology, 8 Dragan Tsankov Blvd., Sofia 1164, Bulgaria

**Office Hours:** Tuesday and Thursday: 4:00 PM – 6:00 PM

**Key Activities and Responsibilities:** Teaching and evaluating students; development of new courses; supervision of undergraduate and PhD students; scientific research; preparation and implementation of national and international research and educational projects.



*Prof. Robert Penchovsky, PhD, Head of the Synthetic Biology and Bioinformatics Laboratory, Faculty of Biology, Sofia University "St. Kliment Ohridski"*

# CV of Prof. Robert Penchovsky, Ph.D.

## Teaching Experience, Courses:

**"Molecular Genetics"** (compulsory) for 4th-year undergraduate students, major in Molecular Biology

**"Introduction to Bioinformatics"** (compulsory) for 3rd-semester graduate students, Master's program in Agrobiotechnology (in Bulgarian)

**"Bioinformatics and Molecular Evolution"** (compulsory) for 1st-year graduate students, Master's programs in Genetics and Genomics (in English and Bulgarian) and Gene and Cell Engineering (in Bulgarian); elective for 3rd-semester graduate students, Master's program in Astrobiology (in Bulgarian)

**"Synthetic Biology"** (compulsory) for 1st-year graduate students, Master's programs in Genetics and Genomics (in English and Bulgarian) and Gene and Cell Engineering (in Bulgarian)

**"Genomics"** (compulsory) for 1st-year graduate students, Master's programs in Genetics and Genomics (in English and Bulgarian) and Gene and Cell Engineering (in Bulgarian)

**"Living Organisms as Information Systems"** (compulsory) for 3rd-semester graduate students, Master's program in Astrobiology (in Bulgarian)

**"Hypotheses for the Origin of Life – Experimental Approaches"** (compulsory) for 3rd-semester graduate students, Master's program in Astrobiology (in Bulgarian)

## **Head of Master's Programs:**

- "Genetics and Genomics for Specialists" (in Bulgarian and English)
- "Genetics and Genomics for Non-specialists" (in Bulgarian and English)

## **Head of Postgraduate Professional Qualification (SDK):**

"MODERN ASPECTS OF BIOLOGY: BIOINFORMATICS, GENOMICS, and SYNTHETIC BIOLOGY" (in Bulgarian)

# CV of Prof. Robert Penchovsky, Ph.D.

## **Education and Training:**

**2003–2006** Postdoctoral degree in RNA Synthetic and Computational Biology at **Yale University**, USA, in the laboratory of Prof. Ronald R. Breaker.

**2000–2003** PhD in Genetics; Dissertation: “An Integrated DNA Selection in Micro-flow Reactors as an Approach for Molecular Computation and Diagnostics” at the **University of Cologne**, Germany.

**1999** Researcher at the Institute of Molecular Biotechnology, Jena, Germany.

**1996** Researcher in Molecular Biology, Institute of Molecular Biology, Sofia, Bulgaria.

**1994** Master’s degree in Biochemistry, Microbiology, and Genetics, **Sofia University “St. Kliment Ohridski”**.

Link: <https://penchovsky.atwebpages.com/index.php?page=16>

## **Scientometric Data:**

Link: <https://penchovsky.atwebpages.com/publications.php>

**Total citations** in all scientific databases without self-citation: 1,729

<https://penchovsky.atwebpages.com/publications.php?page=2981>

**h-index:** 22

**Total Impact Factor (IF):** 264

**Google Scholar Citations:** 1,685 for 73 publications, h-index: 22

[https://scholar.google.com/citations?hl=en&user=8WhjMXAAAAAJ&view\\_op=list\\_works&gmla=AJsN-F4mbzLF9-oxpRt5c83RMe-3H-cx2\\_HuiOH0bM8A-4F1c801R\\_lol1TPAQn7z0sSc1Olmy59wAAiA4Emzz-z7G7wugWOt\\_xyG-NrTfkTY9ALYbWSKZ6kqnfIFambJ-xoMtroc86](https://scholar.google.com/citations?hl=en&user=8WhjMXAAAAAJ&view_op=list_works&gmla=AJsN-F4mbzLF9-oxpRt5c83RMe-3H-cx2_HuiOH0bM8A-4F1c801R_lol1TPAQn7z0sSc1Olmy59wAAiA4Emzz-z7G7wugWOt_xyG-NrTfkTY9ALYbWSKZ6kqnfIFambJ-xoMtroc86)

**ResearchGate Citations:** 1,414 and h-index: 20 for 78 publications

<https://www.researchgate.net/profile/Robert-Penchovsky>

**SCOPUS Citations:** 1,192 in 837 documents, h-index: 18 for 51 publications

<https://www.scopus.com/authid/detail.uri?authorId=6506527508>

## CV of Prof. Robert Penchovsky, Ph.D.

**Prof. Robert Penchovsky, PhD, is the first or last author of 97% of his publications and the corresponding author of 94% of them. Over 87% of his publications have no more than 3 co-authors, only 11.4% have more than 4 or 5 authors, and only 1.6% of his articles feature more than 5 authors.**

### Scientific Publications:

**111 scientific publications:** <https://ras.nacid.bg/dissertation-preview/32000>

### Selected Scientific Publications:

1. Dimitrios Kaloudas, Martina Traykovska, Nikolet Pavlova, Robert Penchovsky, **Design and Applications of riboregulators**, ISBN:978-981-95395-6-7, Springer, Ref, Book chapter, 2026
2. Vanya Dyakova, Martina Traykovska, Nikolet Pavlova, Dimitrios Kaloudas, Robert Penchovsky, **Rational Design of Chimeric Antisense Oligonucleotides that Target FMN Riboswitch mRNAs and Inhibit the Growth of Methicillin-Resistant Staphylococcus aureus**, ACS Infectious Diseases, 2025, ISSN (print):2373-8227, doi:10.1021/acsinfecdis.5c00779, Ref, Web of Science, IF (3.8 - 2025), Web of Science Quartile: Q1 (2025), SCOPUS, SJR (1.241 - 2025), SCOPUS Quartile: Q1 (2025)
3. Lozena A. Otcheva, Martina Traykovska, Robert Penchovsky, **Targeting Bacterial Adenylate Kinase mRNA with a Chimeric Antisense Oligonucleotide for Rational Antibacterial Drug Development**, Molecules, vol:30, 2025, ISSN (online): 1420-3049, doi:10.3390/molecules30163425, Ref, IF (4.6 - 2025), Web of Science Quartile: Q1 (2025), SCOPUS, SJR (0.865 - 2025), SCOPUS Quartile: Q1 (2025)
4. Nikolet Pavlova, Vanya Dyakova, Martina Traykovska, Dimitrios Kaloudas, Robert Penchovsky, **The Application of Aptamers in Pharmacological Drug Development and Therapeutic**, ChemistrySelect, vol:10, issue:28, 2025, ISSN (print):2365-6549, ISSN (online):2365-6549, doi:10.1002/slct.202502954, Ref, Web of Science, IF (1.9 - 2024), SCOPUS, SJR (0.366 - 2024), SCOPUS Quartile: Q3 (2025)
5. Martina Traykovska, Robert Penchovsky, **Design of antisense oligonucleotides and their application as antibacterial agents: principles, mechanisms of action, and challenges**, Monograph, ISBN: 978-954-07-6132-9, Sofia University Press "St. Kliment Ohridski", Sofia, Ref, 2025
6. Dimitrios Kaloudas, Nikolet Pavlova and Robert Penchovsky **Computational Design of Allosteric Ribozymes via Genetic Algorithms**, 2024, Methods in Molecular Biology,

## CV of Prof. Robert Penchovsky, Ph.D.

MIMB, volume 2822, RNA Amplification and Analysis,  
[https://link.springer.com/protocol/10.1007/978-1-0716-3918-4\\_28](https://link.springer.com/protocol/10.1007/978-1-0716-3918-4_28)

7. Robert Penchovsky, Antoniya V. Georgieva, Vanya Dyakova, Martina Traykovska and Nikolet Pavlova, **Antisense and Functional Nucleic Acids in Rational Drug Development**, Antibiotics 2024, IF: 4.3, <https://doi.org/10.3390/antibiotics13030221>,
8. Katya B. Popova and Robert Penchovsky, **General and Specific Cytotoxicity of Chimeric Antisense Oligonucleotides in Bacterial Cells and Human Cell Lines**, Antibiotics 2024, IF: 4.3, <https://doi.org/10.3390/antibiotics13020122>
9. Nikolet Pavlova, Martina Traykovska, Robert Penchovsky, **“Targeting FMN, TPP, SAM-I, and glmS Riboswitches with Chimeric Antisense Oligonucleotides for Completely Rational Antibacterial Drug Development”**, Antibiotics, 2023.
10. Dimitrios Kaloudas, Nikolet Pavlova, Robert Penchovsky, **„GHOST-NOT and GHOST-YES: Two programs for generating high-speed biosensors with randomized oligonucleotide binding sites with NOT or YES Boolean logic functions based on experimentally validated algorithms“**, Journal of Biotechnology Volume 373, 20 August 2023, Pages 82-89, doi: <https://doi.org/10.1016/j.jbiotec.2023.07.005>
11. Robert Penchovsky , Dimitrios Kaloudas, **“Molecular factors affecting tomato fruit size”**, Plant Gene Volume 33, March 2023, 100395, <https://doi.org/10.1016/j.plgene.2022.100395>
12. Martina Traykovska, Robert Penchovsky, **“Engineering antisense oligonucleotides as antibacterial agents that target FMN riboswitches and inhibit the growth of Staphylococcus aureus, Listeria monocytogenes, and Escherichia coli”**, ACS Synthetic Biology, 2022, ISSN: 2161-5063, doi: 10.1021/acssynbio.2c00013, Q1, IF 5
13. Martina Traykovska, Robert Penchovsky, **“Targeting SAM-I Riboswitch Using Antisense Oligonucleotide Technology for Inhibiting the Growth of Staphylococcus aureus and Listeria monocytogenes”**, Antibiotics, 2022, IF 5.0 <https://www.mdpi.com/2079-6382/11/11/1662/pdf>
14. Martina Traykovska, Lozena A. Otcheva, Robert Penchovsky, **“Targeting TPP riboswitches using chimeric antisense oligonucleotide technology for antibacterial drug development“**, ACS Applied Bio Materials, 2022, Q1, IF 4.5, doi: 10.1021/acsabm.2c00628

## CV of Prof. Robert Penchovsky, Ph.D.

15. Dimitrios Kaloudas, Robert Penchovsky, **“An allosteric ribozyme generator and an inverse folding ribozyme generator: Two computer programs for automated computational design of oligonucleotide-sensing allosteric hammerhead ribozymes with YES Boolean logic function based on experimentally validated algorithms”**, Computers in Biology and Medicine Volume 145, June 2022, 105469, <https://doi.org/10.1016/j.combiomed.2022.105469>
16. Robert Penchovsky, Nikolett Pavlova, Georgi Miloshev, Antoniya Georgieva, Martina Traykovska, **“Versatile Tools of Synthetic Biology applied for Drug Discovery and Production”**, Future Medicinal Chemistry, Q2, IF 4.75, 2022
17. Georgi Y. Miloshev, Martina Traykovska, Dimitrios Kaloudas, Robert Penchovsky, **“ENGINEERING A PLASMID AS A REPORTER SYSTEM FOR QUANTIFYING GENE EXPRESSION IN ESCHERICHIA COLI”** Proceedings of the Bulgarian Academy of Sciences, 2022
18. Aikaterini Valsamatzi, Martina Traykovska, Robert Penchovsky, **“Coronavirus SARS-CoV-2: Where do we stand?”**, Acta Microbiologica Bulgarica, ISSN: 26033755, 2022, SJR 0.115, Q4
19. Nikolett Pavlova and Robert Penchovsky, **“Bioinformatics and Genomic Analyses of the Suitability of Eight Riboswitches for Antibacterial Drug Targets”**, Antibiotics 2022, Impact Factor: 4.8 (2022); 5-Year Impact Factor: 4.9 (2022)
20. Robert Penchovsky, Georgi Miloshev, Nikolett Pavlova, Katya Popova, Lozena Otcheva, Aikaterini Valsamatzi, Martina Traykovska, **Book: New Frontiers and Applications of Synthetic Biology; chapter 8. Small RNA based systems for sensing and therapeutic applications**, Elsevier, 2022, ISBN: 9780128244692
21. Aikaterini Valsamatzi, Robert Penchovsky, **“Environmental factors influencing the transmission of the coronavirus 2019”**: a review, [\*Environmental Chemistry Letters\* volume 20](#), pages 1603–1610 (2022)
22. Martina Traykovska, Katya B. Popova, Robert Penchovsky, **“Targeting glmS Ribozyme with Chimeric Antisense Oligonucleotides for Antibacterial Drug Development”**, ACS Synthetic Biology, 2021, doi: <https://pubs.acs.org/doi/10.1021/acssynbio.1c00443>, SJR 5.5, Q1

## CV of Prof. Robert Penchovsky, Ph.D.

23. Dimitrios Kaloudas, Nikolet Pavlova & Robert Penchovsky, “**Lignocellulose, algal biomass, biofuels and biohydrogen**”: a review, *Environmental Chemistry Letters* volume 19, pages2809–2824 (2021)
24. Dimitrios Kaloudas, Nikolet Pavlova & Robert Penchovsky, “**Phycoremediation of wastewater by microalgae**”: a review, *[Environmental Chemistry Letters](#)* volume 19, pages2905–2920 (2021), Published: 28 March 2021
25. Robert Penchovsky, “**Nucleic Acids-Based Nanotechnology: Engineering Principals and Applications**”, *Biomedical Engineering: Concepts, Methodologies, Tools and Applications*, DOI: 10.4018/978-1-5225-3158-6.ch006
26. Aikaterini Valsamatzi-Panagiotou, Katya B. Popova & Robert Penchovsky, „**Methods for prevention and constraint of antimicrobial resistance**“: a review, *Environmental Chemistry Letters* volume 19, pages2005–2012 (2021), Published: 18 February 2021
27. Aikaterini Valsamatzi-Panagiotou, Katya B. Popova & Robert Penchovsky, “**Chapter: Strategies for Prevention and Containment of Antimicrobial Resistance**,” January 2021, *Sustainable Agriculture Reviews* book series
28. Katya B. Popova, Aikaterini Valsamatzi-Panagiotou & Robert Penchovsky, „**New drug discovery strategies for targeting drug-resistant bacteria**“, *Environmental Chemistry Letters* volume 19, pages1995–2004 (2021), Published: 13 February 2021
29. Katya B Popova, Robert Penchovsky, „**Current Activators of the glmS Riboswitch**” *Biomedical Journal of Scientific and Technical Research*, January 22, 2021, **DOI: [10.26717/BJSTR.2021.33.005348](#)**
30. Lozena A Otcheva, Nikolet Pavlova, Katya B Popova, Martina Traykovska, Robert Penchovsky, “**Why some Riboswitches are Suitable Targets for Antibacterial Drug Discovery**”, *EC Microbiology*, 2020
31. Aikaterini Valsamatzi-Panagiotou, Martina Traykovska, Robert Penchovsky, “**Mechanisms of antibacterial drug resistance and approaches to overcome**”, *Drug Discovery Targeting Drug-Resistant Bacteria*, 2020, ISBN: B978-0-12-818480-6.00002-3
32. Nikolet Pavlova, Dimitrios Kaloudas, Robert Penchovsky, „**Riboswitch distribution, structure, and function in bacteria**“, *Gene* Volume 708, 5 August 2019, Pages 38-48, <https://doi.org/10.1016/j.gene.2019.05.036>

## CV of Prof. Robert Penchovsky, Ph.D.

33. Dimitrios Kaloudas, Robert Penchovsky, **“Plant-Derived Compounds and Their Potential Role in Drug Development”**, Research Anthology on Recent Advancements in Ethnopharmacology and Nutraceuticals, DOI: 10.4018/978-16684-3546-5.ch026
34. Aikaterini Valsamatzi-Panagiotou, Martina Traykovska, Robert Penchovsky, **“Mechanisms of Drug resistance and Approaches to overcome it”**, Elsevier, 2019
35. Robert Penchovsky, **„Automated DNA hybridization transfer with movable super-paramagnetic microbeads in a microflow reactor“**, Biosensors and Bioelectronics Volume 135, 15 June 2019, Pages 30-35, <https://doi.org/10.1016/j.bios.2019.04.014>
36. Robert Penchovsky, **“Nucleic Acids-Based Nanotechnology: Engineering Principals and Applications”**, Source Title: Biomedical Engineering: Concepts, Methodologies, Tools, and Applications, 2018, DOI: 10.4018/978-1-5225-31586.ch006
37. Dimitrios Kaloudas, Robert Penchovsky, **“Arabidopsis Homologues to the LRAT: A Possible Substrate for New Plant-Based Anti-Cancer Drug Development”**, International Journal of Biomedical and Clinical Engineering (IJBCE) 7(1), 2018, DOI: 10.4018/IJBCE.2018010103
38. Robert Penchovsky, Martina Traykovska, **“Synthetic Approaches to Biology: engineering gene control circuits, synthesizing, and editing genomes, Emerging Research on Bioinspired Materials Engineering”**, IGI Global, DOI: 10.4018/978-1-4666-9811-6, 2016 <https://www.igi-global.com/chapter/synthetic-approaches-tobiology/146511>
39. Katya B Popova, Lozena A Otcheva, Martina Traykovska, Robert Penchovsky, **“RNA as A Potent Target for Antibacterial Drug Discovery”**, Biomedical Journal of Scientific and Technical Research, 2018, ISSN: 2574-1241, doi: 10.26717/BJSTR.2018.10.001938
40. Robert Penchovsky, Martina Traykovska, **“Designing drugs that overcome antibacterial resistance: where do we stand and what should we do?”** Expert opinion on drug discovery, doi: 10.1517/17460441.2015.1048219, 2015, IF 5.7
41. Penchovsky R, Kostova C., **“Computational selection and experimental validation of allosteric ribozymes that sense a specific sequence of human telomerase reverse transcriptase mRNAs as universal anticancer therapy agents”**, Nucleic Acid Therapeutics (2013) 23(6) 408-417, DOI: 10.1089/nat.2013.0446

## CV of Prof. Robert Penchovsky, Ph.D.

42. Robert Penchovsky, **“Engineering Gene Control Circuits with Allosteric Ribozymes in Human Cells as a Medicine of the Future”**, Bioinformatics: Concepts, Methodologies, Tools, and Applications, 2013, DOI: 10.4018/978-14666-3604-0.ch047
43. Penchovsky R., **“Engineering integrated digital circuits with allosteric ribozymes for scaling up molecular computation and diagnostics”**, ACS synthetic biology (2012) 1(10) 471-482, DOI: [10.1021/sb300053s](https://doi.org/10.1021/sb300053s)
44. Kenneth Blount, Izabela Puskarz, Robert Penchovsky, Ronald Breake, **„Development and Application of a High-Throughput Assay for glmS Riboswitch Activators“**, RNA Biology, 2006

### Patents:

1. International Publication Patent Number: WO 2008/127382 PCT/US20071973: **“Computational design of ribozymes”**, Nov. 2011 <https://penchovsky.atwebpages.com/publications.php?page=1>
2. International Publication Patent Number: WO 2018/197926 A1 **“Methods for creating novel antibacterial agents using chimeric antisense oligonucleotides”**, Nov. 2018 <https://penchovsky.atwebpages.com/publications.php?page=227>
3. Bulgarian patent **"Use of antisense oligonucleotides with antibacterial action"** <https://penchovsky.atwebpages.com/publications.php?page=270>

### Participation and leadership in Research Projects:

1. Project **"Sofia University – Marker for Innovation and Technological Transfer (SUMMIT)"**, No. 70-123-194/02.02.2024, **"Development of software systems for computational design of fast allosteric ribozymes sensing the presence of oligonucleotides with precisely defined sequences and a database of clinically significant human genetic variations for two patent applications"**, Budget: 200,000 BGN, Duration: 2 years.
2. Project **"Sofia University – Marker for Innovation and Technological Transfer (SUMMIT)"**, No. 70-123-505/05.07.2023, **"Design of antisense oligonucleotides conjugated with cell-penetrating oligopeptides as novel antibacterial agents against resistant human pathogenic bacteria for a European patent application"**, Budget: 200,000 BGN, Duration: 2 years.

## CV of Prof. Robert Penchovsky, Ph.D.

3. **"Comparative analysis of the effectiveness of novel antibacterial agents based on various antisense oligonucleotides using different molecular mechanisms of RNA inhibition"**, Funding Institution: Bulgarian National Science Fund (BNSF), Ministry of Education and Science, 2022–2024.
4. **"Design of functional nucleic acids for synthetic regulation of gene expression in prokaryotes and eukaryotes"**, Funding Institution: Bulgarian National Science Fund, Ministry of Education and Science, 2019–2022. This project was recognized as one of the most successfully completed and reported projects for 2024 by the National Science Fund. Available video <https://www.youtube.com/watch?v=a054D9I-bU4&t=1s>
5. **"Design and experimental testing of chimeric antisense oligonucleotides as antibacterial agents"**, Funding Institution: Bulgarian National Science Fund (BNSF), Ministry of Education and Science, 2017–2020.
6. **"Application of antisense oligonucleotides as antibacterial agents in *Enterococcus faecalis*"**, Funding Institution: Scientific Research Fund of Sofia University (SRF SU), 2020–2020.
7. **"Antisense oligonucleotides specifically binding to FMN and SAM riboswitches in human pathogenic bacteria"**, Funding Institution: SRF SU, 2019–2019.
8. **"Application of antisense oligonucleotides as antibacterial agents in *Staphylococcus aureus*"**, Funding Institution: SRF SU, 2018–2018.
9. **"Novel methods for creating antibacterial agents against *Listeria monocytogenes* using antisense oligonucleotides"**, Funding Institution: SRF SU, 2018–2018.
10. **"Novel methods for creating antibiotics against resistant *Escherichia coli* strains using antisense oligonucleotides inhibiting biochemical pathways controlled by riboswitches"**, Funding Institution: SRF SU, 2017–2017.
11. **"Novel methods for discovering antibiotic agents against resistant *Staphylococcus aureus* strains through the application of antisense oligonucleotides"**, Funding Institution: SRF SU, 2016–2016.

## CV of Prof. Robert Penchovsky, Ph.D.

12. "Application of antisense oligonucleotides for specific inhibition of bacterial RNAs as a novel method for antibiotic development", Funding Institution: SRF SU, 2015–2015.

**Scientific Supervision:** Currently, Prof. Robert Penchovsky, PhD, is the supervisor of one part-time PhD student. To date, a total of 7 PhD students and 16 Master's students have successfully defended their dissertations in the Synthetic Biology and Bioinformatics Laboratory under his guidance. Among the Master's students, 7 specialized in "Molecular (Gene) and Cell Engineering" and 9 in "Genetics and Genomics" (in English or Bulgarian). These 23 individuals represent 5 different nationalities. Applications from Master's and PhD candidates to conduct dissertation research at the Synthetic Biology and Bioinformatics Laboratory are welcome.

### Awards and Honors:

1. RNA Synthetic Biology Outstanding Award, Invention Awards, November 2025  
<https://inventionawards.org/robert-penchovsky-rna-synthetic-biology-outstanding-scientist-award-25830/>
2. Outstanding Scientist Award at the 7th Edition of the International Research Awards on Sensing Technology, August 5, 2023.



*Certificate of Excellence, Prof. Robert Penchovsky, PhD, August 2023.*

3. Award from the Bulgarian National Competition for Scientific Achievements in the fields of Synthetic Biology, Bioinformatics, and Molecular

# CV of Prof. Robert Penchovsky, Ph.D.

**Evolution** for senior researchers (over 35 years of age), organized by the **Union of Scientists in Bulgaria**.



*Award ceremony of Prof. Robert Penchovsky, PhD, Sofia University "St. Kliment Ohridski", Sofia, Bulgaria, 2015*

**4. Best Poster Award** for the topic: "**Design of novel antisense oligonucleotides targeting the Flavin mononucleotide riboswitch in *Staphylococcus aureus***" at the 4th International Electronic Conference on Antibiotics, organized by the journal *Antibiotics*, May 2025. Link: [https://penchovsky.atwebpages.com/pdf/award\\_NP.pdf](https://penchovsky.atwebpages.com/pdf/award_NP.pdf)

**5. Recognition for the publication** "*Engineering antisense oligonucleotides as antibacterial agents that target FMN riboswitches and inhibit the growth of *Staphylococcus aureus*, *Listeria monocytogenes*, and *Escherichia coli**" – selected as an **Editors' Choice** by the **American Chemical Society** and ranked among the most popular articles in *ACS Synthetic Biology*, 2022. Link: <https://penchovsky.atwebpages.com/publications.php>

A screenshot of the ACS Publications website. The page features a navigation bar with 'ACS Publications', 'ACS Journals', 'ACS Books', and 'ACS Solutions' logos. Below the navigation bar, there are four main sections: 'RESEARCHERS' with the 'acsaxial' logo, 'AUTHORS' with the 'ACS PUBLISHING CENTER' logo, 'REVIEWERS' with the 'ACS REVIEWER LAB' logo, and 'ORGANIZATIONS' with the 'ACS SOLUTIONS CENTER' logo. The 'ACS Editors' Choice' section is highlighted, featuring a featured article titled 'Engineering Antisense Oligonucleotides as Antibacterial Agents That Target FMN Riboswitches and Inhibit the Growth of *Staphylococcus aureus*, *Listeria monocytogenes*, and *Escherichia coli*'. The article is by Bruce J. Wittmann, Kadina E. Johnston, Patrick J. Almhyel, and Frances H. Arnold, published on February 17, 2022. Other articles visible include 'evSeq: Cost-Effective Amplicon Sequencing of Every Variant in a Protein Library' and 'Codon-Rate Both Eliminate Intra-genomic Promoters'.

## CV of Prof. Robert Penchovsky, Ph.D.

**6. Award for the Most Successful Project** in the Biological Sciences category at the **Sofia Science Festival** for the topic: "Application of antisense oligonucleotides as antibacterial agents in *Enterococcus faecalis*", under the National Program "Young Scientists and Postdocs", May 15–16, 2021, Sofia, Bulgaria.

**7. Eight awards** were won by four young scientists working under the supervision of **Prof. Robert Penchovsky, PhD**, at the Synthetic Biology and Bioinformatics Laboratory as part of his research projects. These include 4 awards from 3 national scientific competitions, 1 startup award, and 2 teaching awards since 2021. The full list can be viewed here: <https://penchovsky.atwebpages.com/research.php>

**Participation in Scientific Forums, Symposia, and Conferences:**

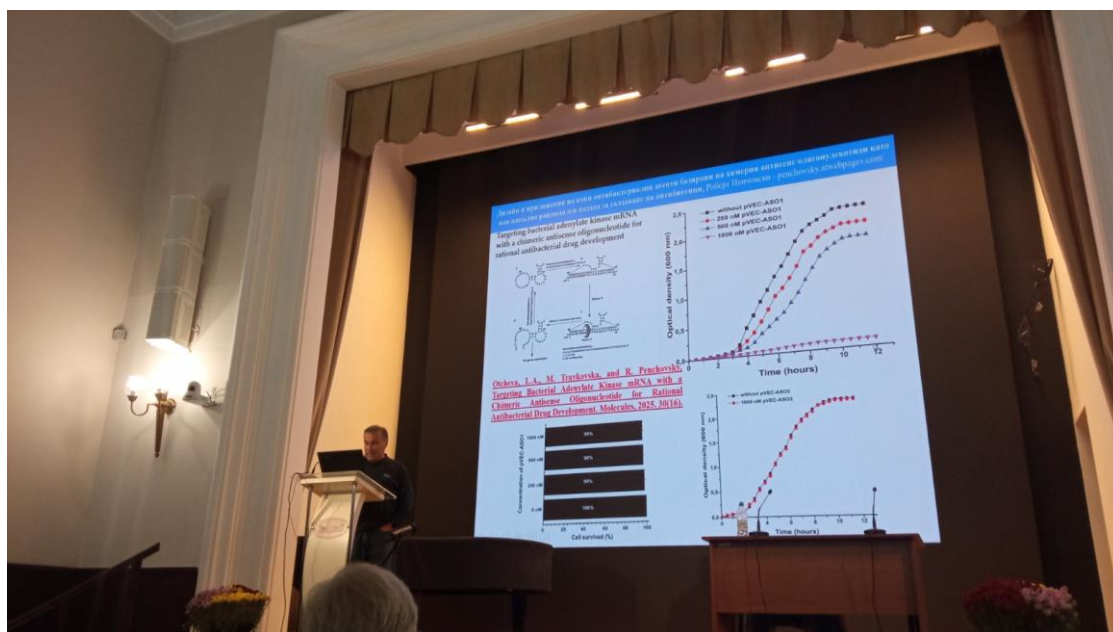
1. **Guest Speaker** at the International Conference on Natural Sciences and Biotechnology – "Kliment Days", November 7, 2025, Sofia, Bulgaria. Presentation topic: **"Computational design of allosteric ribozymes as biosensors"**.



*Prof. Robert Penchovsky, PhD, presenting "Computational design of allosteric ribozymes as biosensors" to participants at the International Conference on Natural Sciences and Biotechnology – Kliment Days, November 7, 2025, Faculty of Biology, Sofia University "St. Kliment Ohridski", Sofia, Bulgaria.*

2. **Academic Seminar "Current Problems in Science"**, October 23, 2025, Sofia, Bulgarian Academy of Sciences (BAS). Featured speaker: Prof. Robert Penchovsky, PhD, on the topic: **"Design and applications of novel antibacterial agents based on chimeric antisense oligonucleotides as a new fully rational approach for antibiotic development"**. A video of the event is available at the following

link: <https://www.youtube.com/watch?v=Joh4fwcgEwo&feature=youtu.be>



*Prof. Robert Penchovsky, PhD – Keynote speaker at the Academic Seminar "Current Problems in Science", October 23, 2025, BAS, Sofia, Bulgaria.*

## CV of Prof. Robert Penchovsky, Ph.D.

**3. Invited Participation** in the 4th International Electronic Conference on Antibiotics – *Challenges and Strategies for Antibiotic Resistance Crisis*, organized by the journal *Antibiotics*, May 2025. Presentation and poster titled: "**Design of novel antisense oligonucleotides targeting the Flavin mononucleotide riboswitch in *Staphylococcus aureus***".

The poster can be viewed here:

[https://penchovsky.atwebpages.com/pdf/FMN\\_Pavlova\\_18.pdf](https://penchovsky.atwebpages.com/pdf/FMN_Pavlova_18.pdf)

The award can be viewed here:

[https://penchovsky.atwebpages.com/pdf/award\\_NP.pdf](https://penchovsky.atwebpages.com/pdf/award_NP.pdf)

**4. Participation with two posters** at the Second Annual Conference for reporting activities and results of the **SUMMIT project** (Sofia University Marking Momentum for Innovation and Technological Transfer), April 1, 2025, Sofia University "St. Kliment Ohridski", Sofia, Bulgaria.



- **4.1 "Design of antisense oligonucleotides conjugated with cell-penetrating oligopeptides as novel antibacterial agents against resistant human pathogenic bacteria"**, Nikolet Pavlova, Martina Traykovska, Robert Penchovsky – poster reporting results from project No. 70-123-505/05.07.2023 for a European patent application.



- **4.2 "Development of software systems for computational design of fast allosteric ribozymes sensing the presence of oligonucleotides with precisely defined sequences and a database of clinically significant human genetic variations"**, Nikolet Pavlova, Martina Traykovska, Robert Penchovsky – poster reporting results from project No. 70-123-194/02.02.2024 for two European patent applications.

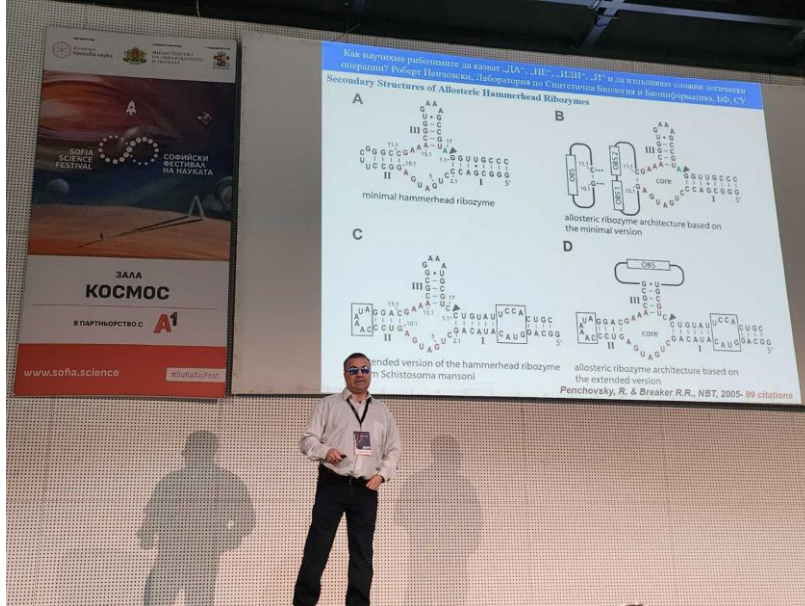
Event information is available here:

[https://uni-sofia.bg/index.php/bul/novini/novini\\_i\\_s\\_bitiya/vtora\\_godishna\\_konferenciya\\_po\\_proekta\\_summit](https://uni-sofia.bg/index.php/bul/novini/novini_i_s_bitiya/vtora_godishna_konferenciya_po_proekta_summit)

# CV of Prof. Robert Penchovsky, Ph.D.

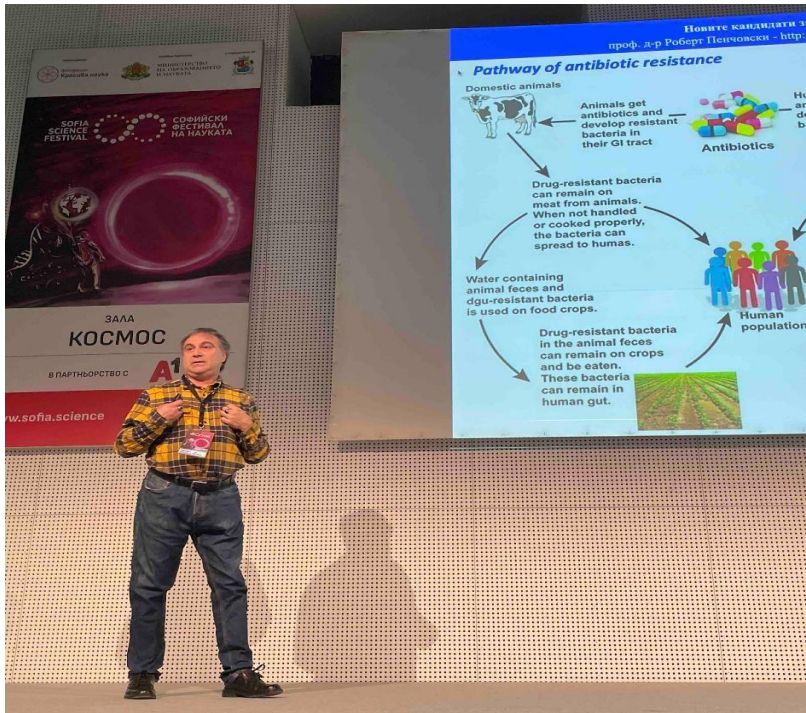
5. **Guest Speaker at the 14th Sofia Science Festival, May 9–12, 2024, Sofia, Bulgaria. Topic: „How did we make ribozymes to say “YES”, “NO”, “OR”, “AND””.**

Available video: <https://www.youtube.com/watch?v=21WeTAU7FB0>



Prof. Robert Penchovsky, PhD, presenting his topic at the 14th Sofia Science Festival, Sofia, Bulgaria

6. **Guest Speaker at the 13th Sofia Science Festival, May 11–14, 2023, Sofia, Bulgaria. Topic: “The New Antibiotics”.**



Prof. Robert Penchovsky, PhD, presenting his topic at the 13th Sofia Science Festival, Sofia, Bulgaria

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**7. Guest Speaker** at a SUMMIT project meeting held on April 24, 2024, at the Faculty of Biology, Sofia University, Bulgaria. Topic: **"Targeting riboswitches with chimeric antisense oligonucleotides for a fully rational development of antibacterial drugs"**.



*Prof. Penchovsky, PhD, during the SUMMIT meeting on April 24, 2024.*

**8. Guest Speaker** with a lecture at the **15th Congress of Bulgarian Microbiologists with International Participation -"Targeting glmS and FMN riboswitches with antisense oligonucleotides for antibacterial drug development"**, May 5–8, 2022, Koprivshtitsa, Bulgaria.



*Presentation of Prof. Robert Penchovsky, PhD, during the 15th Congress of Bulgarian Microbiologists, Koprivshtitsa, Bulgaria, May 2022.*

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9. **Guest Speaker** at the Beneficiaries' Week of the Bulgarian National Science Fund (BNSF). Topic: "**Design and experimental validation of chimeric antisense oligonucleotides as antibacterial agents**", July 1–5, 2019, Sofia, Bulgaria.
10. **Guest Speaker** at the 9th EuroSciCon Conference on Microbiology and Virology. Topic: "**Engineering antisense oligonucleotides as antibacterial agents**", April 22–23, 2019, Athens, Greece.
11. **Guest Speaker** at the 14th Congress of Microbiologists in Bulgaria with international participation. Topic: "**Design and application of antisense oligonucleotides as antibacterial agents**", October 10–13, 2018, Hisarya, Bulgaria.
12. **Poster Session Participant** at the German Conference on Bioinformatics (GCB). Topic: "**EBWS: Essential bioinformatics web services for sequence analysis**", September 25–28, 2018, Vienna, Austria.
13. **Guest Speaker** at the 10th Balkan Congress of Microbiology - Microbiologia Balkanica. Topic: "**Developing drugs that overcome antibacterial resistance: where are we and what should we do?**", November 16–18, 2017, Sofia, Bulgaria.
14. **Guest Speaker** at the First Balkan Conference on Personalized Medicine. Topic: "**Microfluidics and functional nucleic acids as tools in personalized medicine**", October 26–27, 2017, Sofia, Bulgaria.
15. **Guest Speaker** at the 12th Balkan Congress of Human Genetics. Topic: "**Engineering integrated digital circuits with allosteric ribozymes for scaling molecular computation and rare disease diagnostics**", September 8–10, 2017, Plovdiv, Bulgaria.
16. **Guest Speaker** at the Jubilee Conference "125 Years of Mathematics and Natural Sciences", Faculty of Mathematics and Informatics, Sofia University, Sofia, Bulgaria.
17. **Guest Speaker** at the "National Conference on Biotechnology", Faculty of Biology, October 17–18, 2014, Sofia, Bulgaria.  
Link: <https://penchovsky.atwebpages.com/conferences.php>

## CV of Prof. Robert Penchovsky, Ph.D.

### News and Research Article Reviews:

- **Research News and Article**  
Reviews: <https://penchovsky.atwebpages.com/publications.php?page=2>
- **Media Coverage and Scientific**  
Commentaries: <https://penchovsky.atwebpages.com/publications.php?page=3>
- **Selected Scientific**  
Insights: <https://penchovsky.atwebpages.com/publications.php?page=3121>
- **Additional Research**  
Updates: <https://penchovsky.atwebpages.com/publications.php?page=4>

### Media Appearances and Coverage of Research Successes (Research Team led by Prof. Robert Penchovsky, PhD):

1. **Official Website of Prof. Robert Penchovsky, PhD:**  
<https://penchovsky.atwebpages.com/research.php>
2. **Distinction for Prof. Robert Penchovsky from the Faculty of Biology:**  
[https://www.uni-sofia.bg/index.php/eng/news/news\\_and\\_events/distinction\\_for\\_prof\\_dr\\_robert\\_penchovsky\\_from\\_the\\_faculty\\_of\\_biology](https://www.uni-sofia.bg/index.php/eng/news/news_and_events/distinction_for_prof_dr_robert_penchovsky_from_the_faculty_of_biology)
3. **Video dedicated to the work of Prof. Robert Penchovsky and his team** at the Synthetic Biology and Bioinformatics Laboratory, Faculty of Biology, Sofia University "St. Kliment Ohridski". The video features one of the most successfully reported projects for 2024 by the Bulgarian National Science Fund (BNSF).  
Watch here: <https://www.youtube.com/watch?v=a054D9I-bU4&t=1s>
4. **Invitation to the Academic Seminar "Current Problems in Science":**  
[https://www.bas.bg/?tribe\\_events=59114](https://www.bas.bg/?tribe_events=59114) and video of the event: <https://www.youtube.com/watch?v=Joh4fwcgEwo&t=1560s>

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5. **Seven awards won by four young scientists** from the Faculty of Biology in various competitions: [https://www.uni-sofia.bg/index.php/novini/novini\\_i\\_s\\_bitiya/chetirima\\_mladi\\_ucheni\\_ot\\_biologicheskiya\\_fakultet\\_poluchiha\\_nagradi\\_ot\\_konkursi](https://www.uni-sofia.bg/index.php/novini/novini_i_s_bitiya/chetirima_mladi_ucheni_ot_biologicheskiya_fakultet_poluchiha_nagradi_ot_konkursi)
6. “How Science is Done at Sofia University, the USA and Europe”, interview with Prof. Penchovsky for BG Nauka:  
[https://www.facebook.com/watch/live/?ref=watch\\_permalink&v=5248314608547317](https://www.facebook.com/watch/live/?ref=watch_permalink&v=5248314608547317)
7. “That which does not kill us” - Prof. Robert Penchovsky and his team developed a new technology that overcomes antibiotic resistance, story on the Bulgarian National Radio:  
<https://bnr.bg/post/101625294>
8. “Design and experimental testing of chimeric antisense oligonucleotides as antibacterial agents”, Prof. Penchovsky, BG Nauka:  
<https://www.youtube.com/watch?v=4wq1FwFDYDo>
9. “How Prof. R. Penchovsky and his team fight antibiotic resistance”, BG Nauka podcast:  
<https://www.youtube.com/watch?v=xNdp04OiF9>
10. “Senior Asst. Dr. Martina Traykovska and her work as a geneticist at Sofia University” in an interview with BG Nauka: <https://www.youtube.com/watch?v=02douKt1Zmc>
11. Participation of Prof. Penchovsky in the 13th Sofia Science Festival:  
<https://bnr.bg/sofia/post/101818513/festival-na-naukata>
12. First prize of the Stefan Angelov Foundation for the best work of a young Bulgarian microbiologist in 2022: <https://microbio.bas.bg/pages-409-76-godini-ot-osnovavaneto-na-institut-po-mikrobiologiya-stefan-angelov-kam-ban-chlen-na-mrejata-pastior->
13. First prize of the Stefan Angelov Foundation for the best work of a young Bulgarian microbiologist in 2022: <https://www.bas.bg/?p=43141>
14. Four young scientists under the scientific leadership of Prof. Dr. Robert Penchovsky received five awards within the period 2021 – 2023: <https://nauka.bg/chetirima-mladi-ucheni-poluchiha-pet-nagradi-nauchnotorakovodstvo/>

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15. Four young scientists under the scientific leadership of Prof. Dr. Robert Penchovsky received five awards within the period 2021 – 2023: <https://naukamon.eu/chetirimaladi-ucheni-pod-nauchnoto-rakovodstvo-naprof-d-r-robert-penchovski-poluchiha-pet-nagradi-v-ramkite-na-perioda-20212023-g/>
16. Interview with Senior Assistant Martina Traykovska in the magazine "Bulgarian Science", issue 111: <https://kupinauka.com/product/balgarska-nauka-broy-111-v-pdf>
17. Participation of Prof. Penchovsky in the 13th Sofia Science Festival: <https://bnr.bg/sofia/post/101818513/festival-na-naukata>
18. Participation of Prof. Penchovsky in the 13th Sofia Science Festival: <https://artsofia.bg/bg/events/2023/05/11/sofijskijat-festival-na-naukatasybira-ucheni-ot-11-dyrjavi>
19. Participation of Prof. Penchovsky in the 13th Sofia Science Festival: <https://nauka.offnews.bg/novini/sofijski-festival-na-naukata-2023-temazdrave-199040.html>
20. Round table in BCCI for Innovation in Research Universities: <https://www.bcci.bg/news/10388>