

DR. MEHWISH ASLAM

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https://scholar.google.com/citations?user=-ckV_8UAAA&hl=en&authuser=5
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Researcher-ID: U-4077-2018

ACADEMIC CAREER

- Ph.D.** Department of Synthetic Chemistry and Biological Chemistry, Graduate School of Engineering, Kyoto University, Kyoto, Japan
- M.Phil.** University of Agriculture, Faisalabad, Pakistan
- M.Sc.** University of Sargodha, Sargodha, Pakistan
- B.Sc.** University of Sargodha, Sargodha, Pakistan

WORK/RESEARCH EXPERIENCE

Assistant Professor (Current Position)

School of Biological Sciences, University of the Punjab, Lahore, Pakistan

Teacher/Research Assistantship

Kyoto University, Kyoto, Japan

Research Student (Atomi Lab), Department of Synthetic Chemistry and Biological Chemistry, Graduate School of Engineering, Kyoto University, Kyoto, Japan

Draft whole genome Sequencing of *Thermococcus chitonophagus*

Data deposition of the gene sequences of *T. chitonophagus* chiA, chiC, and chiD in DDBJ/EMBL/GenBank databases under the accession no. LC134313, LC134314, and LC121823.

RESEARCH PROJECT

1. Engineering a Laccase-Xylanase bifunctional enzyme to improve biomass conversion (NRPU, **10.234 Million**) (**2021-24**)
2. Probing the role of N-Terminal Residues in Stability of Xylanase Enzyme from *Bacillus Subtilis* Strain R5 (University of the Punjab, **0.2 Million**) (**2024-2025**)
3. Optimization of Phosphoglucose Isomerase (PGI) enzyme Activity from *Pyrobaculum calidifontis* (University of the Punjab, **0.2 Million**) (**2022-2023**)
4. Production and characterization of a recombinant DNA ligase in *E. coli* from *Pyrobaculum calidifontis*, 2018-19 (HEC-SRGP, **0.5 Million**)
5. Optimized production and purification of DNA Ligase in *E. coli* from *Pyrobaculum calidifontis* (University of the Punjab, **0.2 Million**) (**2018-2019**)

SELECTED RESEARCH PUBLICATIONS

1. Zhang W., Du J., Zhu T., Wang R., **Aslam, M.**, Kanwal F., & Rehman M.F. (2024). Study on PTFE Superhydrophobic Coating Modified by IC@dMSNs and its Enhanced Antibacterial Effect, *Journal of Advanced Research Egypt*, doi.org/10.1016/j.jare.2024.04.026, Egypt, (Impact Factor: 11.4) (**W**-category) (Impact Factor: 11.4) (**W**-category)
2. Naz, Z., Lubkowski J., Saleem, M., **Aslam, M.**, Rahman, M., Wlodawer*, A., & Rashid*, N., (2024). Biophysical characterization of a novel phosphopentomutase from the hyperthermophilic archaeon *Thermococcus kodakarensis*. *International Journal of Molecular Sciences*, 25, 12893, doi.org/10.3390/ijms252312893, Switzerland (Impact Factor: 4.9), (**W**-category)

3. Shaeer, A., Aroob, I., **Aslam, M.**, Azim N., & Rashid, N. (2024). Investigating recombinant manganese-catalases from *Geobacillus thermopakistaniensis* for sustainable and eco-friendly textile processing, *International Journal of Environmental Science and Technology*. Iran doi.org/10.1007/s13762-024-06072-y, Iran (Impact Factor: 3.0), (**W**-category)
4. Sania A., Muhammad M. A., Sajed M., Ahmad N., **Aslam, M.**, Tang X.F., & Rashid, N. (2024). Engineering Tk1656, a highly active L-asparaginase from *Thermococcus kodakarensis*, for enhanced activity and stability, *International Journal of Biological Macromolecules*, Volume 281, 136442, doi.org/10.1016/j.ijbiomac.2024.136442, Netherlands (Impact Factor: 8.2), (**W**-category)
5. Maqsood A., Shakir N.A., **Aslam, M.**, Rahman M., & Rashid, N. (2024). Structural and functional investigations of Pcal_0606, a bifunctional phosphoglucose/phosphomannose isomerase from *Pyrobaculum calidifontis*, *International Journal of Biological Macromolecules*, 279,135127. doi.org/10.1016/j.ijbiomac.2024.135127 Netherlands (Impact Factor: 8.2), (**W**-category)
6. Sania A., Muhammad M. A., Sajed M., Azim N., Ahmad N., **Aslam, M.**, Tang X.F., & Rashid, N. (2024). Structural and functional analyses of an L-asparaginase from *Geobacillus thermopakistaniensis*, *International Journal of Biological Macromolecules*, 263,130438.doi.org/10.1016/j.ijbiomac.2024.130438 Netherlands (Impact Factor: 8.2), (**W**-category)
7. Aroob, I., Shaeer, A., Ahmad, N., **Aslam, M.**, & Rashid, N. (2024). Ethylenediaminetetraacetic acid enhances structural stability and thermotolerance of recombinant cyclomaltodextrinase from *Geobacillus thermopakistaniensis* at higher temperature. *Biologia* 79, 291-298. doi.org/10.1007/s11756-023-01542-z, Germany (Impact Factor: 1.75)
8. Abbas Q., Muhammad M. A., Shakir, N.A., **Aslam, M.**, & Rashid, N. (2023). Molecular cloning and characterization of Pcal_0039, an ATP-/ NAD⁺-independent DNA ligase from hyperthermophilic archaeon *Pyrobaculum calidifontis*. *International Journal of Biological Macromolecules*, 253, 126711. doi.org/10.1016/j.ijbiomac.2023.126711, Netherlands (Impact Factor: 8.2), (**W**-category)
9. Khan, Z.I., Ashfaq, A., Ahmad, K. Batool A.I., **Aslam M.**, Ahmad T., Mehmood N., Noorka I.R., Gaafar A.R.Z., Elshikh M.S., Habib S.S., Khan R., & Ugulu I. (2023) Cobalt uptake by food plants and accumulation in municipal solid waste materials compost-amended soil: public health implications. *Biological Trace Element Research*,1-12 doi.org/10.1007/s12011-023-04040-0, United States (Impact Factor: 3.9), (**W**-category)
10. Aroob, I., Maqbool, A., Ahmad, N., **Aslam, M.**, Shaeer, A., & Rashid, N. (2023). Pcal_0976, a pullulanase homologue from *Pyrobaculum calidifontis*, displays a glycoside hydrolase activity but no pullulanase activity, *Biologia*. 78, 1875-1887. doi.org/10.1007/s11756-022-01309-y, Germany (Impact Factor: 1.653)
11. Shakir, N.A., **Aslam, M.**, Bibi, T., Falak, S., & Rashid, N. (2023). Functional analyses of a highly thermostable hexokinase from *Pyrobaculum calidifontis*. *Carbohydrate Research* 523, 108711. doi.org/10.1016/j.carres.2022.108711, United Kingdom (Impact Factor: 2.975)
12. Abbas, S.N., **Aslam, M.**, Maqsood, A., Fatima H.Z., Javed M.A., & Rashid, N. (2022). Pcal_2031, a RecA/Rad51 homologue from *Pyrobaculum calidifontis*, complements the ultraviolet light sensitivity of *Escherichia coli*. *Biologia* 77, 3319-3326. doi.org/10.1007/s11756-022-01187-4, Germany (Impact Factor: 1.653)
13. Shaeer, A., **Aslam, M.**, Aroob, I., & Rashid, N. (2022). Role of C-terminal domain in a manganese-catalase from *Geobacillus thermopakistaniensis*. *Journal of bioscience and bioengineering* 134(3), 203-212. doi.org/10.1016/j.jbiosc.2022.06.010, Japan (Impact Factor: 2.894)
14. Aroob, I., Javed, M., Ahmad, N., **Aslam, M.**, & Rashid, N. (2022). Investigating the role of carbohydrate-binding module 34 in cyclomaltodextrinase from *Geobacillus thermopakistaniensis*: structural and functional analyses. *3 Biotech*, 12(1), 1-12.
15. Shaeer, A., **Aslam, M.**, Aziz, F., Aroob, I., & Rashid, N. (2022). Looking into a highly thermostable and efficient recombinant manganese-catalase from *Geobacillus thermopakistaniensis*. *Journal of bioscience and bioengineering*, 133(1), 25-32.
16. Rehman, M.F.u.; Akhter, S.; Batool, A.I.; Selamoglu, Z.; Sevindik, M.; Eman, R.; Mustaqeem, M.; Akram, M.S.; Kanwal, F.; Lu, C.; **Aslam, M. (2021)** Effectiveness

- of natural antioxidants against SARS-CoV-2? Insights from the *in-silico* world, *Antibiotics (Switzerland)* *10*, 1011. 2021, doi.org/10.3390/antibiotics10081011.
17. Shaeer, A; **Aslam, M**; Rashid, N, (2021) Structural and functional analyses of a novel manganese-catalase from *Bacillus subtilis* R5, *International Journal of Biological Macromolecules*, *180*, 222-2331, 2021, doi.org/10.1016/j.ijbiomac.2021.03.074.
 18. Shakir, N.A; **Aslam, M**; Bibi, T; Rashid, N (2021). ADP-dependent glucose/ glucosamine kinase from *Thermococcus kodakarensis*: cloning and characterization, *International Journal of Biological Macromolecules*, *173*, 15, 168-179, 2021, doi.org/10.1016/j.ijbiomac.2021.01.019.
 19. Batool, A.I; Naveed, N.H; **Aslam, M**; Silva, J.D; Rehman, M.F.u, (2020) Coal dust-induced systematic Hypoxia and redox imbalance among coal mine workers, *ACS Omega*, *5*, 43, 28204–28211, 2020, doi.org/10.1021/acsomega.0c03977.
 20. Shakir, N. A., Bibi, T., **Aslam, M.**, & Rashid, N. (2020). Biochemical characterization of a highly active ADP-dependent phosphofructokinase from *Thermococcus kodakarensis*. *Journal of bioscience and bioengineering*, *129*(1), 6-15, (Impact Factor 2.36), Japan
 21. Nisar A Shakir, Tahira Bibi, **Mehwish Aslam**, Naeem Rashid (2019), Biochemical characterization of a highly active ADP-dependent phosphofructokinase from *Thermococcus kodakarensis*, *Journal of Bioscience and Bioengineering*, S1389-1723(19)30447-5, Doi: 10.1016/j.jbiosc.2019.06.014
 22. Abeera Shaeer, **Mehwish Aslam**, Naeem Rashid (2019), A highly stable manganese catalase from *Geobacillus thermopakistaniensis*: molecular cloning and characterization, *Extremophiles*, 1-12 <https://doi.org/10.1007/s00792-019-01124-5>
 23. Iqra Aroob, Nasir Ahmad, **Mehwish Aslam**, Abeera Shaeer, Naeem Rashid, (2019) A highly active alpha-cyclodextrin preferring cyclomaltodextrinase from *Geobacillus thermopakistaniensis*, *Carbohydrate Research*, doi.org/10.1016/j.carres.2019.06.004
 24. Naeem Rashid, **Mehwish Aslam** (2019) An overview of 25 years of research on *Thermococcus kodakarensis*, a genetically versatile model organism for archaeal research, *Folia Microbiologica*, 1-12, doi: 10.1007/s12223-019-00730-2
 25. Nishitani Y, Horiuchi A., **Mehwish Aslam**, Kanai T., Atomi H and Miki K (2018) Structure analyses of a novel archaeal chitinase reveal the reaction mechanism and the importance of the C-terminal region for chitin-chain binding. *Glycobiology*, cwy024, <https://doi.org/10.1093/glycob/cwy024>.
 26. **Mehwish Aslam**, Takahashi N., Matsubara K., Siebers B., Imanaka T., Kanai T and Atomi H. (2017) Identification of the glucosamine kinase in the chitinolytic pathway of *Thermococcus kodakarensis*. *Journal of Bioscience and Bioengineering* <https://doi.org/10.1016/j.jbiosc.2017.10.005>
 27. **Mehwish Aslam**, Horiuchi A., Simons J., Jha S., Odani T., Fujimoto R., Yamamoto Y., Gunji R., Imanaka T., Kanai T., Atomi H. (2017) Engineering of a hyperthermophilic archaeon, *Thermococcus kodakarensis*, that displays chitin-dependent hydrogen production Appl. Environ. Microbiol. 10.1128/AEM.00280-17
 28. Horiuchi A, **Aslam M**, Kanai T, Atomi H. (2016) A structurally novel chitinase from the chitin-degrading hyperthermophilic archaeon *Thermococcus chitonophagus*. *Appl. Environ. Microbiol.* doi:10.1128/AEM.00319-16
 29. **Mehwish Aslam**, M Shahid, FU Rehman, MA Murtaza, S Sharif, A Ata, S Noor (2012) Production optimization and characterization of a low molecular weight bacteriocin from *Lactococcus lactis* subsp. *Lactis* A *J Microbiol Res* *6*(30):5924-5933
 30. **Mehwish Aslam**, M Shahid, FU Rehman, NH Naveed, AI Batool, S Sharif, A. Asia (2011) Purification and characterization of bacteriocin isolated from *Streptococcus thermophilus*. *A. J. Microbiol. Res.* *5*(18):2642-2648
 31. Rehman F. U., **Mehwish Aslam et al** (2009) Inhibition Studies of Cellulolytic Activities Isolated from *Planococcus Citri* Open Enzy Inhibition J *2*:8-11
 32. Rehman F. U., **Mehwish Aslam et al.**, (2009) Isolation of Cellulolytic activities from *Tribolium Castaneum* (Red Flour Beetle) *A. J. biotechnol* *8*(23):6710-6715

Book Chapters

13. **Aslam, M.**, and Rashid N., 2021. Bioenergy production in extremophiles. In *Microbial Extremozymes* (pp. 9-30). Academic Press.
14. Mukhtar, S., and **Aslam, M.**, 2021 Biofuel synthesis by extremophilic microorganisms

- In Biofuels Production–Sustainability and Advances in Microbial Bioresources. (pp. 115-138). Biofuel and Biorefinery Technologies.
15. Rehman, M.F., Batool, A.I., Qadir, R., and **Aslam, M.**, 2022. Hesperidin and naringenin. In A centum of valuable plant bioactives (pp. 403-444). Academic Press.
 16. Rehman, M.F., Shaeer, A., Batool, A.I., and **Aslam, M.**, 2022. Structure-function relationship of extremozymes. In Microbial Extremozymes (pp. 9-30). Academic Press.

SCIENTIFIC WORKSHOPS AND CONFERENCES ATTENDED

1. **Attended** Faculty Development Program training by Pakistan Higher Education Commission titled "Use of Artificial Intelligence in Higher Education" (22-23 May 2025)
2. **Attended** Two Days 1st National Hands-on Training Workshop on "Advanced Bioinformatics Tools used in Microbial Secondary Metabolite" organized by BZU, Multan (28-29 April 2025)
3. **Attended** 4th International Conference on "Recent Trends in Natural Sciences 2025-Hybrid (RTNS-2025)" organized by University of Education Lahore, Jauharabad Campus, Jauharabad, (22-23 April 2025)
4. **Workshop Instructor** National workshop on current techniques in protein purification and characterization jointly organized by School of Biological Sciences (SBS), University of the Punjab, Lahore and Punjab chapter, Pakistan Academy of Sciences (PAS) (December 02-06, 2024)
5. **Attended** 7th International Conference on Applied Zoology (ICAZ-2024) at University of Sargodha, Sargodha (22-23 October 2024)
6. **Workshop Instructor** in Production and purification of recombinant proteins, School of Biological Sciences, University of the Punjab, Lahore (November 13-17, 2023)
7. **Organizer** in International conference on advances in biological sciences at School of Biological Sciences, University of the Punjab, Lahore (March 6-8, 2023)
8. Hands-on workshop: Use of conventional and artificial intelligence-based referencing tools organized by Institute of Chemistry, UOS, June 10-11, 2024
9. **Invited speaker:** Hands-on workshop on Scientific writing, plagiarism and referencing tools jointly organized by Institute of Chemistry, department of Zoology & department of Botany, UOS, November 21-22, 2023
10. **Invited speaker:** International seminar on Bioanalytical trends in Chemistry organized by Institute of Chemistry, UOS, November 6, 2023
11. Participated: International conference on current trends, prospects & opportunities in vaccine research organized by Centre of Excellences in Molecular Biology, Lahore February 28-29, 2024
12. **Invited speaker:** Hands-on workshop on Scientific writing, plagiarism and referencing tools jointly organized by Institute of Chemistry, department of Zoology & department of Botany, UOS, November 21-22, 2023
13. **Invited speaker:** International seminar on Bioanalytical trends in Chemistry organized by Institute of Chemistry, UOS November 6, 2023
14. Participated: 1-hour training session on IEEE Preparing your research Paper for publication: An IEEE Perspective October 12, 2022
15. **Poster Presentation/ Abstract:** Development of plant-based biopesticides to control *Spodoptera frugiperda* presented in 2nd International Conference on Research Advancements in Chemistry (ICRA-C) 2022 Organized by department of chemistry, School of Natural Sciences, National University of Science and Technology (NUST), Islamabad, Pakistan. August 24 -25, 2022
16. Participated - "Learn from a cell press editor: how to publish and optimize resource for groundbreaking journal by Dr. S. W. Cranford" presented by Vishal Gupta, Sr. Customer Consultant, Manish Uniyal, Sr. Marketing manager, February 25, 2021
17. Participated - Get the necessary knowledge to maximize your chance for your paper to get accepted in academic journals – Part1, in partnership with Higher Education Commission March 16, 2021
18. Participated - "How to design effective figures for review articles" presented by Tom Dursch, Matt Pavlovich, Stacey Chin, March 16, 2021
19. Participated - "How to prepare a proposal for a review article" presented by Matt Pavlovich, Andrea Stephens, March 17, 2021

20. Participated - "How to prepare your manuscript" presented by Anthony Newman, March 19, 2021
21. Participated - "Discover HEC resources using summon search and take your research to the next level using RefWorks reference management tool" March 9, 2021
22. Participated - Boost your knowledge with the ProQuest business premium collection database, February 16, 2021
23. Participated - Boost your knowledge with ProQuest dissertation & thesis global database, February 02, 2021
24. Participated - Dissertation & thesis e-learning companions & authors services marketplace January 19, 2021
25. Participated - E-workshop on bioinformatics, December 14-18, 2020
26. ProQuest's introduction to publishing in academic journal, December 15, 2020
27. Participated - Workshop: Quantitative Data Analysis for Quality Control by using SPSS, Online Workshop, Karachi University July 21-22, 2020
28. Participated - Recent trends in modern biology, December 10-12, 2020
29. Participated - International symposium on recent trends in chemistry, December 8, 2020
30. Participated - ProQuest's introduction to publishing in academic journal, December 8, 2020, Online.
31. Participated - How to manage your references using RefWorks December 1, 2020, Online.
32. Participated - One day hands-on virtual workshop on Endnote and Mendeley, November 21, 2020
33. Participated - Antiviral drug design and discovery, October 10, 2020
34. Participated - 5 Tips for getting published: Maximize your chances to get your paper accepted in academic journals, October 7, 2020
35. Participated - How to manage your references using RefWorks October 26, 2020
36. Participated - How to utilize ProQuest journals, dissertations, and varied content types in teaching and research October 19, 2020
37. Participated - One day virtual workshop on Endnote and Mendeley November 11, 2020
38. Participated - Synthesis of biofunctionalization of Nanocrystalline cellulose from cotton fibers for optimum cell growth December 21, 2020
39. Participated - Characterization and biological evaluation of Nanocellulose-Bioactive Glass based biomaterial for cell differentiation December 21, 2020
40. Participated - Workshop: One Day Workshop on Technical Writings, University of Sargodha, Sargodha, November 21, 2019
41. Participated - Workshop: Hands-on Workshop on Computational Tools in Chemistry and Biology, University of Sargodha, Sargodha, December 16, 2019
42. Participated - Symposium: International Seminar on Recent Trends in Chemotherapeutics and Nano-Chemistry, University of Sargodha, Sargodha, December 15, 2019
43. Participated - Workshop: How to deal with qualitative data by using NVivo software, Online Workshop, Karachi University, July 13-22, 2020
44. Participated - Synthesis of biochar-based composites to evaluate morphological attributes of wheat seedling. October 16, 2020
45. Poster Presentation - Comparison of Archaeal biodiversity from the rhizospheric and non-rhizospheric soils of halophytes
International Conference of Punjab University, 2019 – Recent Innovation in Molecular Sciences, University of the Punjab, Lahore, November 6-8, 2019
46. Poster Presentation - Biochemical characterization of highly active ADP-dependent phosphofructokinase from *Thermococcus kodakarensis*
International Conference of Punjab University, 2019 – Recent Innovation in Molecular Sciences, University of the Punjab, Lahore, November 6-8, 2019
47. Poster Presentation - Molecular cloning and characterization of highly stable manganese catalase from *Geobacillus thermopakistaniensis*
International Conference of Punjab University, 2019 – Recent Innovation in Molecular Sciences, University of the Punjab, Lahore, November 6-8, 2019

48. Oral Presentation - Genetic and adaptive engineering of a hyperthermophilic Archaeon, *Thermococcus kodakarensis*, to produce biohydrogen from chitin
International Conference of Punjab University, 2019 – Recent Innovation in Molecular Sciences, University of the Punjab, Lahore, November 6-8, 2019
49. Attended the 5th international workshop on deep sea microbiology, September 10 - 11, 2016, Kyoto University, Japan (Member of organizing team)
50. 11th International Congress on Extremophiles (12th Sep 2016-16th Sep 2016), Kyoto University, Japan - Poster Presentation
51. Development of a chitin assimilating strain of the hyperthermophilic archaeon, *T. kodakarensis* Oral Presentation
at "The 96th CSJ Annual Meeting" March 24-27, 2016, Kyotanabe Campus, Doshisha University, Kyoto, Japan
52. Studies on chitin degradation and assimilation systems in hyperthermophilic archaea (2016) Oral Presentation at 7th Advanced biological chemistry seminar (ABC seminar), January 14, 2016, University of Kyoto, Kyoto.
53. Attended JGP Student Exchange Workshop 2016, Kyoto Univ./MIT, USA, Jun 11,
54. Attended 2nd One Day Workshop on Young Researchers Skill Development, Punjab University, Lahore (2012)
55. Attended The 4th and 5th Virtual Training Workshop on Bioinformatics
<http://gibk21.bio.kyutech.ac.jp/abren2010/abren/> (2010, 2011-12)
56. Workshop on Mushroom Production & applications (2011), Institute of Horticulture, University of Agriculture, Faisalabad
57. Workshop on analytical Laboratory Management (2010), Attended the Workshop conducted by Department of Biochemistry. And Mol. Bio. University of Gujrat, Gujrat
58. Workshop on Excel English, Excel Math, urdu (2010)
Attended the Workshop conducted by Oxford University Press at university of Agriculture, Faisalabad.
59. Workshop on Leadership and Communication Skill Development (2009)
Attended the Workshop conducted by university of Agriculture, Faisalabad.
60. Workshop on chemical and Pharmaceuticals for the development
(2007) Attended the Workshop conducted by Department of Chemistry, university of Sargodha, Sargodha.
61. Food Sci. and Tech. Conference (2010), Conference attended at University of Agriculture, Faisalabad

Distinction, Awards & Certificates

1. MEXT Scholarship Award for PhD (2013-2017)
2. MPhil Biochemistry, Stood 1st in Biochemistry

Skills Profile

Language and Computer Skills

- **Japanese Language**
Japanese Intensive Language course, International Education and Student Mobility Division, Youshida Campus, Kyoto University, Kyoto
I am well familiar with the basics of Japanese culture and society
- **English Language**
I am fluent in reading, writing, and speaking English
- **Urdu Language**
Native Speaker, I am fluent in reading, writing, and speaking Urdu
- **Microsoft Window/ Microsoft Office**
Basics of Microsoft Office, including MS word, MS PowerPoint, and MS Excel
- **Bioinformatics**
Basic knowledge of bioinformatics tools, including the Protein-ligand interaction mapping, docking, and analysis

Laboratory Skills

I have got mastery over genetic engineering methods, including gene recombination, gene knockout, pop-in/pop-out techniques, along with the development of adaptive engineering of hyperthermophilic strains.

I have experienced hands-on genome sequencing, soluble protein overexpression, protein engineering, site-directed mutagenesis, microbe handling in an anaerobic environment, molecular hydrogen estimation, and development of enzyme assays.

Student Supervised

Supervised and co-supervised more than 20 MPhil Students and 3 PhD Students under supervision/co-supervision

REFERENCES:

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