Curriculum vitae: Zinaida Osipova

Address

Shemyakin–Ovchinnikov Institute of bioorganic chemistry RAS, Moscow, Russia

Contacts

zkaskova@ibch.ru
https://www.ibch.ru/en/users/981

Education

2007–2012	Moscow	Higher Chemical College RAS
2005–2007	Moscow	Moscow Chemical Lyceum 1303

IBCh positions

2024–to date	Senior research fellow
2026–2026	Associate Professor
2019–2024	Senior research fellow

Language Proficiency

russian, english

Titles

2016	Doctor of Philosophy (Chemistry)

Grants and projects

2021–2024	Identification of the intermediates of Odontosyllis luciferin biosynthetic pathway
2018–2020	-Разработка методов синтеза аналогов люциферина высших грибов и изучение их фотохимических свойств

Publications

1. Iuzabchuk DA, Andrianova AA, Yampolsky IV, **Kaskova ZM**, Smirnov IV (2026). Beyond Antiviral Therapy: Untapped Potential of HIV & HCV Protease Inhibitors. *Med Res Rev* , , 10.1002/med.70040
2. Kuznetsova AA, Makhin AP, Bulygin AA, Andrianova AA, Miturich VS, Zagitova RI, Shmygarev VI, Fadeeva AA, Yatskin ON, Belozerova OA, Smirnov IV, Yampolsky IV, **Kaskova ZM**, Kuznetsov NA (2026). Design and In Vitro Evaluation of Novel GC373-like SARS-CoV-2 Main Protease Inhibitors. *Curr Issues Mol Biol* 48 (2), , 10.3390/cimb48020142
3. Zamuner CK, Soares DMM, Nóbrega BB, Bechara EJH, **Kaskova ZM**, Mishin AS, Sarkisyan KS, Yampolsky IV, Stevani CV (2026). Caffeylpyruvate hydrolase from the bioluminescent fungus Neonothopanus gardneri is the key recycling enzyme in the fungal bioluminescence pathway. *FEBS J* , , 10.1111/febs.70554
4. Malyshevskaia AK, Barykin AD, Kisilichuk DA, Chepurnykh TV, Shakhova ES, Perfilov MM, Belozerova OA, Palkina KA, Markina NM, Zamuner CK, Soares DMM, Zagitova RI, **Kaskova ZM**, Stevani CV, Gorokhovatsky AY, Mishin AS, Sarkisyan KS, Yampolsky IV (2026). Fungal oxyluciferin is recycled by caffeylpyruvate hydrolases. *FEBS J* , , 10.1111/febs.70555

5. Ayogu JI, Lyu M, Barykin AD, Fadeeva AA, **Kaskova ZM**, Anderson JC (2025). Chimeric fungal–firefly luciferins exhibit red shifted fungal bioluminescence. *Org Biomol Chem* 23 (44), 10186–10193, 10.1039/d5ob01589h
6. Fadeeva AA, **Osipova ZM**, Chepurnykh TV, Myshkina NM (2025). Modern tumor imaging models for rodents: potential and prospects in translational medicine. *Bulletin of Russian State Medical University* (2), , 10.24075/brsmu.2025.015
7. Dobronos MA, **Osipova ZM**, Myshkina NM (2024). Potential of non-traditional cell cultures for production of biotherapeutic proteins. *Bulletin of Russian State Medical University* (3), 52–55, 10.24075/brsmu.2024.022
8. Stevani CV, Zamuner CK, Bastos EL, Nóbrega BB, Soares DM, Oliveira AG, Bechara EJ, Shakhova ES, Sarkisyan KS, Yampolsky IV, **Kaskova ZM** (2024). The living light from fungi. *Journal of Photochemistry and Photobiology C: Photochemistry Reviews* 58, , 10.1016/j.jphotochemrev.2024.100654
9. Barykin AD, Chepurnykh TV, **Osipova ZM** (2024). Deep learning in modelling the protein–ligand interaction: new pathways in drug development. *Bulletin of Russian State Medical University* (1), 49–53, 10.24075/brsmu.2024.002
10. Makhin AP, Miturich VS, Vavilov MV, Lyakhovich MS, Andrianova AA, Zagitova RI, Shmygarev VI, Fadeeva AA, Yatskin ON, Belozerova OA, Tsatsakis A, Yampolsky IV, **Kaskova ZM** (2024). Improved synthesis of two quisqualic acid analogs containing hydantoin and imidazolidinone moieties. *Chem Heterocycl Compd (N Y)* 60 (5-6), 262–268, 10.1007/s10593-024-03331-1
11. Kotlobay AA, Dubinnyi MA, Kovalchuk SI, Makhin AP, Miturich VS, Lyakhovich MS, Fontaine DM, Southworth TL, Shmygarev VI, Yatskin ON, Branchini BR, Yampolsky IV, **Kaskova ZM** (2023). Structure elucidation of Keroplatus (Diptera:Keroplatidae) fungus gnat oxyluciferin. *Biochem Biophys Res Commun* 676, 1–5, 10.1016/j.bbrc.2023.07.035
12. Bolt YV, Dubinnyi MA, Litvinenko VV, Kotlobay AA, Belozerova OA, Zagitova RI, Shmygarev VI, Yatskin ON, Guglya EB, Kublitski VS, Baranov MS, Yampolsky IV, **Kaskova ZM**, Tsarkova AS (2023). Total Synthesis of Racemic Thieno[3,2-f]thiochromene Tricarboxylate, a Luciferin from Marine Polychaeta Odontosyllis undecimdonta. *Org Lett* 25 (26), 4892–4897, 10.1021/acs.orglett.3c01696
13. Блохина АЕ, Палкина КА, Шахова ЕС, Малышевская АК, **Осипова ЗМ**, Мышкина НМ (2023). МЕТАБОЛИЧЕСКАЯ ИНЖЕНЕРИЯ — ПЕРСПЕКТИВНЫЙ ПУТЬ ПОЛУЧЕНИЯ ВЫСОКОЭФФЕКТИВНЫХ ПРОДУЦЕНТОВ БИОЛОГИЧЕСКИ АКТИВНЫХ ВЕЩЕСТВ. , , 10.24075/vrgmu.2023.014
14. Zagitova RI, Purtov KV, Shcheglov AS, Mineev KS, Dubinnyi MA, Myasnyanko IN, Belozerova OA, Pakhomova VG, Petushkov VN, Rodionova NS, Lushpa VA, Guglya EB, Kovalchuk S, Kozhemyako VB, Mirza JD, Oliveira AG, Yampolsky IV, **Kaskova ZM**, Tsarkova AS (2023). Conjugated Dienoic Acid Peroxides as Substrates in Chaetopterus Bioluminescence System. *Int J Mol Sci* 24 (11), 9466, 10.3390/ijms24119466
15. Blokhina AE, Palkina KA, Shakhova ES, Malyshevskaia AK, **Osipova ZM**, Myshkina NM (2023). Metabolic engineering is a promising way to generate highly effective producers of bioactive substances. *Bulletin of Russian State Medical University* 2023 (2), 53–55, 10.24075/brsmu.2023.014
16. Kotlobay AA, Dubinnyi MA, Polevoi AV, Kovalchuk SI, **Kaskova ZM** (2022). Riboflavin as One of Possible Components of Keroplatus (Insecta: Diptera: Keroplatidae) Fungus Gnat Bioluminescence. *Russ. J. Bioorganic Chem.* 48 (6), 1215–1220, 10.1134/S1068162022060164
17. Bolt YV, Baleeva NS, Nelyubina YV, Andrianova AA, **Kaskova ZM**, Tsarkova AS (2021). Novel Benzothiophene-Based Fluorescent Dye Exhibiting a Large Stokes Shift. *Synlett* 32 (20), 2059–2062, 10.1055/s-0040-1720925
18. Burakova LP, Lyakhovich MS, Mineev KS, Petushkov VN, Zagitova RI, Tsarkova AS, Kovalchuk SI, Yampolsky IV, Vysotski ES, **Kaskova ZM** (2021). Unexpected Coelenterazine Degradation Products of Photoprotein Photoinactivation. *Org Lett* 23 (17), 6846–6849, 10.1021/acs.orglett.1c02410
19. Dubinnyi MA, Ivanov IA, Rodionova NS, Kovalchuk SI, **Kaskova ZM**, Petushkov VN (2020). α-C-Mannosyltryptophan is a Structural Analog of the Luciferin from Bioluminescent Siberian Earthworm Henlea sp. *ChemistrySelect* 5 (42), 1–5, 10.1002/slct.202003075
20. Kotlobay AA, **Kaskova ZM**, Yampolsky IV (2020). Palette of Luciferases: Natural Biotools for New Applications in Biomedicine. *Acta Naturae* 12 (2), 15–27, 10.32607/actanaturae.10967
21. Kotlobay AA, **Kaskova ZM**, Yampolsky IV (2020). Palette of luciferases: Natural biotools for new applications

in biomedicine. *Acta Naturae* 12 (2), 15–27, 10.32607/ACTANATURAE.11152
22. Kotlobay AA, Dubinnyi MA, Purtov KV, Guglya EB, Rodionova NS, Petushkov VN, Bolt YV, Kublitski VS, **Kaskova ZM**, Ziganshin RH, Nelyubina YV, Dorovatovskii PV, Eliseev IE, Branchini BR, Bourenkov G, Ivanov IA, Oba Y, Yampolsky IV, Tsarkova AS (2019). Bioluminescence chemistry of fireworm Odontosyllis. *Proc Natl Acad Sci U S A* 116 (38), 18911–18916, 10.1073/pnas.1902095116
23. **(book)** Shimomura O, Stevani CV, **Kaskova ZM**, Tsarkova AS, Yampolsky IV (2019). Luminous fungi. , 301–348.
24. **(book)** Shimomura O, Oba Y, Stevani CV, Tsarkova AS, **Kaskova ZM** (2019). Other luminous organisms. , 349–379.
25. **Osipova ZM**, Shcheglov AS, Yampolsky IV (2019). Autonomous bioluminescent systems: Prospects for use in the imaging of living organisms. *Bulletin of Russian State Medical University* 9 (6), 62–65, 10.24075/brsmu.2019.083
26. Бубырев АИ, Царькова АС, **Каськова ЗМ** (2019). Оптимизация синтеза 3-гидроксигиспидина – люциферина биолюминесцентной системы высших грибов. *Bioorg Khim* 45 (2), 218–221, 10.1134/S0132342319020027
27. Bubyrev AI, Tsarkova AS, **Kaskova ZM** (2019). Optimization of Fungal Luciferin Synthesis. *Russ. J. Bioorganic Chem.* 45 (2), 183–185, 10.1134/S106816201902002X
28. Kotlobay AA, Sarkisyan KS, Mokrushina YA, Marcet-Houben M, Serebrovskaya EO, Markina NM, Gonzalez Somermeyer L, Gorokhovatsky AY, Vvedensky A, Purtov KV, Petushkov VN, Rodionova NS, Chepurnyh TV, Fakhranurova LI, Guglya EB, Ziganshin R, Tsarkova AS, **Kaskova ZM**, Shender V, Abakumov M, Abakumova TO, Povolotskaya IS, Eroshkin FM, Zaraisky AG, Mishin AS, Dolgov SV, Mitiouchkina TY, Kopantzev EP, Waldenmaier HE, Oliveira AG, Oba Y, Barsova E, Bogdanova EA, Gabaldón T, Stevani CV, Lukyanov S, Smirnov IV, Gitelson JI, Kondrashov FA, Yampolsky IV (2018). Genetically encodable bioluminescent system from fungi. *Proc Natl Acad Sci U S A* 115 (50), 12728–12732, 10.1073/pnas.1803615115
29. **Osipova ZM**, Shcheglov AS, Yampolsky IV (2018). Bioluminescent imaging: new opportunities. *Bulletin of Russian State Medical University* 2018 (5), 87–90, 10.24075/brsmu.2018.063
30. Purtov KV, Gorokhovatsky AY, Kotlobay AA, **Osipova ZM**, Petushkov VN, Rodionova NS, Tsarkova AS, Chepurnykh TV, Yampolsky IV, Gitelson JI (2018). Isolation and Purification of Fungal Luciferase from Neonothopanus nimbi. *Dokl Biochem Biophys* 480 (1), 177–180, 10.1134/S1607672918030134
31. Пуртов КВ, Гороховатский АЮ, Котлобай АА, **Осипова ЗМ**, Петушков ВН, Родионова НС, Царькова АС, Чепурных ТВ, Ямпольский ИВ, Gitelson JI (2018). Люцифераза гриба Neonothopanus nambi: Выделение и очистка. 480 (6), 747–750.
32. **(conference)** Мяснянко ИН, **Осипова Каськова ЗМ**, Пуртов КВ (2018). Выделение и установление структуры люциферина многощетинкового червя рода CHAETOPTERUS. *XXX ЗМНШ* , .
33. **Осипова ЗМ**, Щеглов АС, Ямпольский ИВ (2018). Новая биолюминесцентная система грибов: перспективы использования в медицинских исследованиях. (1), 80–83, 10.24075/vrgmu.2018.004
34. **Osipova ZM**, Shcheglov AS, Yampolsky IV (2018). A bioluminescent system of Fungi: Prospects for application in medical research. *Bulletin of Russian State Medical University* 7 (1), 80–83, 10.24075/brsmu.2018.004
35. Purtov KV, **Osipova ZM**, Petushkov VN, Rodionova NS, Tsarkova AS, Kotlobay AA, Chepurnykh TV, Gorokhovatsky AY, Yampolsky IV, Gitelson JI (2017). Structure of fungal oxyluciferin, the product of the bioluminescence reaction. *Dokl Biochem Biophys* 477 (1), 360–363, 10.1134/S1607672917060059
36. Пуртов КВ, **Осипова ЗМ**, Петушков ВН, Родионова НС, Царькова АС, Котлобай АА, Чепурных ТВ, Гороховатский АЮ, Ямпольский ИВ, Гительзон ИИ (2017). Структура оксилюциферина грибов – продукта реакции биолюминесценции. 477 (2), 245–248, 10.7868/S0869565217320226
37. **Kaskova ZM**, Dörr FA, Petushkov VN, Purtov KV, Tsarkova AS, Rodionova NS, Mineev KS, Guglya EB, Kotlobay A, Baleeva NS, Baranov MS, Arseniev AS, Gitelson JI, Lukyanov S, Suzuki Y, Kanie S, Pinto E, Mascio PD, Waldenmaier HE, Pereira TA, Carvalho RP, Oliveira AG, Oba Y, Bastos EL, Stevani CV, Yampolsky IV (2017). Mechanism and color modulation of fungal bioluminescence. *Sci Adv* 3 (4), e1602847, 10.1126/sciadv.1602847
38. **Osipova ZM** (2017). Synthetic analogue of Fridericia luciferin with improved spectral properties. *Russ. J.*

Bioorganic Chem. 43 (2), 223–225, 10.1134/S1068162017020108
39. Baranov MS, **Kaskova ZM**, Gritcenko R, Postikova SG, Ivashkin PE, Kislukhin AA, Moskvin DI, Mineev KS, Arseniev AS, Labas YA, Yampolsky IV (2017). Synthesis of Panal Terpenoid Core. *Synlett* 28 (5), 583–588, 10.1055/s-0036-1588104
40. **Осипова ЗМ** (2017). Синтетический аналог люциферина Fridericia с улучшенными спектральными характеристиками. 43 (2), 222–224, 10.7868/S0132342317020129
41. Tsarkova AS, **Kaskova ZM**, Yampolsky IV (2016). A Tale of Two Luciferins: Fungal and Earthworm New Bioluminescent Systems. *Acc Chem Res* 49 (11), 2372–2380, 10.1021/acs.accounts.6b00322
42. **Kaskova ZM**, Tsarkova AS, Yampolsky IV (2016). 1001 lights: Luciferins, luciferases, their mechanisms of action and applications in chemical analysis, biology and medicine. *Chem Soc Rev* 45 (21), 6048–6077, 10.1039/c6cs00296j
43. Purtov KV, Petushkov VN, Baranov MS, Mineev KS, Rodionova NS, **Kaskova ZM**, Tsarkova AS, Petunin AI, Bondar VS, Rodicheva EK, Medvedeva SE, Oba Y, Oba Y, Arseniev AS, Lukyanov S, Gitelson JI, Yampolsky IV (2015). The Chemical Basis of Fungal Bioluminescence. *Angew Chem Int Ed Engl* 54 (28), 8124–8128, 10.1002/anie.201501779
44. Dubinnyi MA, **Kaskova ZM**, Rodionova NS, Baranov MS, Gorokhovatsky AY, Kotlobay A, Solntsev KM, Tsarkova AS, Petushkov VN, Yampolsky IV (2015). Novel Mechanism of Bioluminescence: Oxidative Decarboxylation of a Moiety Adjacent to the Light Emitter of Fridericia Luciferin. *Angew Chem Int Ed Engl* 54 (24), 7065–7067, 10.1002/anie.201501668
45. Dubinnyi MA, Tsarkova AS, Petushkov VN, **Kaskova ZM**, Rodionova NS, Kovalchuk SI, Ziganshin RH, Baranov MS, Mineev KS, Yampolsky IV (2015). Novel peptide chemistry in terrestrial animals: Natural luciferin analogues from the bioluminescent earthworm fridericia heliota. *Chemistry* 21 (10), 3942–3947, 10.1002/chem.201406498
46. Krylov VB, **Kaskova ZM**, Vinnitskiy DZ, Ustyuzhanina NE, Grachev AA, Chizhov AO, Nifantiev NE (2011). Acid-promoted synthesis of per-O-sulfated fucooligosaccharides related to fucoidan fragments. *Carbohydr Res* 346 (5), 540–550, 10.1016/j.carres.2011.01.005
47. Karavanova YA, **KasKova ZM**, Veresov AG, Yaroslavtsev AB (2010). Diffusion properties of bilayer membranes based on MC-40 and MF-4SC modified with silicon and zirconium oxides. *RUSS J INORG CHEM+* 55 (4), 479–483, 10.1134/S0036023610040017