

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
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. 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](#)
2. 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](#)
3. 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](#)
4. Makhin AP, Miturich VS, Vavilov MV, Lyakhovich MS, Andrianova AA, Zagitova RI, Shmygarev VI, Fadeeva AA, Yatskin ON, Belozero 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)* , , [10.1007/s10593-024-03331-1](#)
5. 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](https://doi.org/10.1016/j.bbrc.2023.07.035)

6. Bolt YV, Dubinnyi MA, Litvinenko VV, Kotlobay AA, Belozero 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 undecimdonata*. *Org Lett* 25 (26), 4892–4897, [10.1021/acs.orglett.3c01696](https://doi.org/10.1021/acs.orglett.3c01696)
7. 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](https://doi.org/10.24075/vrgmu.2023.014)
8. Zagitova RI, Purtov KV, Shcheglov AS, Mineev KS, Dubinnyi MA, Myasnyanko IN, Belozero 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](https://doi.org/10.3390/ijms24119466)
9. Blokhina AE, Palkina KA, Shakhova ES, Malyshevskaya 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](https://doi.org/10.24075/brsmu.2023.014)
10. 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](https://doi.org/10.1134/S1068162022060164)
11. 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](https://doi.org/10.1055/s-0040-1720925)
12. 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](https://doi.org/10.1021/acs.orglett.1c02410)
13. 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](https://doi.org/10.1002/slct.202003075)
14. 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](https://doi.org/10.32607/actanaturae.10967)
15. 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](https://doi.org/10.32607/ACTANATURAE.11152)
16. 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](https://doi.org/10.1073/pnas.1902095116)
17. (book) Shimomura O, Stevani CV, **Kaskova ZM**, Tsarkova AS, Yampolsky IV (2019). Luminous fungi. , 301–348.
18. (book) Shimomura O, Oba Y, Stevani CV, Tsarkova AS, **Kaskova ZM** (2019). Other luminous organisms. , 349–379.
19. **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](https://doi.org/10.24075/brsmu.2019.083)
20. 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](https://doi.org/10.1134/S0132342319020027)
21. Bubyrev AI, Tsarkova AS, **Kaskova ZM** (2019). Optimization of Fungal Luciferin Synthesis. *Russ. J. Bioorganic Chem.* 45 (2), 183–185, [10.1134/S106816201902002X](https://doi.org/10.1134/S106816201902002X)
22. 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, Zaisky AG, Mishin AS, Dolgov SV, Mitouchkina 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](https://doi.org/10.1073/pnas.1803615115)
23. **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](https://doi.org/10.24075/brsmu.2018.063)
 24. 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](https://doi.org/10.1134/S1607672918030134)
 25. 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.
 26. (conference) Мяснянко ИН, **Осипова Касьякова ЗМ**, Пуртов КВ (2018). Выделение и установление структуры люциферина многощетинкового червя рода CHAETOPTERUS. XXX ЗМНШ, .
 27. **Осипова ЗМ**, Щеглов АС, Ямпольский ИВ (2018). Новая билюминесцентная система грибов: перспективы использования в медицинских исследованиях. (1), 80–83, [10.24075/vrgmu.2018.004](https://doi.org/10.24075/vrgmu.2018.004)
 28. **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](https://doi.org/10.24075/brsmu.2018.004)
 29. 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](https://doi.org/10.1134/S1607672917060059)
 30. Пуртов КВ, **Осипова ЗМ**, Петушков ВН, Родионова НС, Царькова АС, Котлобай АА, Чепурных ТВ, Гороховатский АЮ, Ямпольский ИВ, Гительсон ИИ (2017). Структура оксилуциферина грибов – продукта реакции билюминесценции. 477 (2), 245–248, [10.7868/S0869565217320226](https://doi.org/10.7868/S0869565217320226)
 31. **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](https://doi.org/10.1126/sciadv.1602847)
 32. **Osipova ZM** (2017). Synthetic analogue of Fridericia luciferin with improved spectral properties. *Russ. J. Bioorganic Chem.* 43 (2), 223–225, [10.1134/S1068162017020108](https://doi.org/10.1134/S1068162017020108)
 33. Baranov MS, **Kaskova ZM**, Gritcenko R, Postikova SG, Ivashkin PE, Kislukhin AA, Moskvina 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](https://doi.org/10.1055/s-0036-1588104)
 34. **Осипова ЗМ** (2017). Синтетический аналог люциферина Fridericia с улучшенными спектральными характеристиками. 43 (2), 222–224, [10.7868/S0132342317020129](https://doi.org/10.7868/S0132342317020129)
 35. 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](https://doi.org/10.1021/acs.accounts.6b00322)
 36. **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](https://doi.org/10.1039/c6cs00296j)
 37. 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](https://doi.org/10.1002/anie.201501779)
 38. 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](https://doi.org/10.1002/anie.201501668)
 39. 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](https://doi.org/10.1002/chem.201406498)

40. 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](https://doi.org/10.1016/j.carres.2011.01.005)
41. 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](https://doi.org/10.1134/S0036023610040017)