

Aleksey Yu Fedorov

University	National Research Lobachevsky State University of Nizhny Novgorod
Level of English proficiency	C1
Educational program and field of the educational program for which the applicant will be accepted	1.4. Chemical Sciences 1.4.3. Organic chemistry
List of research projects of the potential supervisor (participation/leadership)	<p>1. Grant of the Russian Science Foundation (RSF) 19-13-00158 (2019-2023) Creation of libraries of heterocyclic allocolchicinoids: promising agents for the treatment of oncological diseases and liver fibrosis;</p> <p>2. RSF grant 16-13-10248 (2016-2018) New functionally substituted colchicinoids as the prototype for cardiovascular and oncological diseases drugs;</p> <p>3. RFBR- DFG 18-503-12087 (2019-2021) Enzyme-activated CO-releasing complexes as potential antimalarial and antibacterial agents;</p> <p>4. RFBR-a 16-03-00464 (2017-2019) Creation of a new generation of targeted agents based on conjugates of natural chlorine photosensitizers with 4-arylquinazoline ligands of growth factor receptors for the combined treatment of oncological diseases.</p>
List of the topics offered for the prospective scientific research	<ul style="list-style-type: none"> • Creation of targeted photosensitizers based on natural porphyrins for photodynamic therapy of oncological diseases; • Bioorthogonal transformations; • PROTAC technologies; • Design of CO-releasing therapeutic agents; • Design of anti-cancer agents regulating the functions of aerobic glycolysis; <p>Organic photoredox catalysis in flow reactors</p>
	<p style="text-align: center;">Chemistry and Materials Sciences</p> <p>Supervisor's research interests Organic synthesis, chemistry of natural compounds, homogeneous catalysis, medicinal chemistry</p> <p>Research highlights Fine organic synthesis</p> <p>Supervisor's specific requirements:</p> <ul style="list-style-type: none"> • Knowledge of organic chemistry, stereochemistry, homogeneous catalysis and organic synthesis. • Knowledge of physics methods (NMR, IR, UV and mass spectroscopy, methods of gas, liquid and preparative column chromatography). • Good command of English/French.
Research supervisor: Aleksey Yu Fedorov, Doctor of Sciences (Chemistry) (Russia) (Lobachevsky State University of Nizhny Novgorod)	<p>Supervisor's main publications</p> <ol style="list-style-type: none"> 1. E. S Kudriashova, M. A Yarushina, A. E Gavryushin, I. D Grishin, Y. B Malysheva, V. F Otvagin, A. Yu Fedorov, One-Pot Lewis Acid Mediated Water-Promoted Transformation of Styrenes to α-Substituted Conjugated Enals, <i>Org. Lett.</i>, 2023, 25(27), 4996-5000. 2. I.A Gracheva, H.-G. Schmalz, E. V Svirshchevskaya, E. S Shchegrevina, A. Yu Fedorov, Design of an aryne-platform for the

	<p>synthesis of non-racemic heterocyclic allocolchicinoids, <i>Org. Biomol. Chem.</i>, 2023, <i>21</i> (30), 6141-6150.</p> <p>3. I. A Gracheva, E. V Svirshchevskaya, E. S Shchegrevina, Y. B Malysheva, A. R Situdikova, A. Yu Fedorov, <i>Pharmaceutics</i>, 2023, <i>15</i> (4), 1034.</p> <p>4. A.A. Sachkova, D.V. Andreeva, A.S. Tikhomirov, A.M. Scherbakov, D.I. Salnikova, D.V. Sorokin, F.B. Bogdanov, Y.D.Rysina, A.E. Shchekotikhin, E.S. Shchegrevina, A.Yu. Fedorov. Design, Synthesis and In Vitro Investigation of Cabozantinib-Based PROTACs to Target c-Met Kinase. <i>Pharmaceutics</i> 2022, <i>14</i>, 2829.</p> <p>5. N.S. Kuzmina, V.F. Otvagin, A.A. Maleev, M.A. Urazaeva, A.V. Nyuchev, S.K. Ignatov, A.E. Gavryushin, A.Yu. Fedorov. Development of novel porphyrin/combretastatin A-4 conjugates for bimodal chemo and photodynamic therapy: synthesis, photophysical and TDDFT computational studies. <i>Journal of Photochemistry and Photobiology A: Chemistry</i> 2022, 114138.</p> <p>6. V.F. Otvagin, N.S. Kuzmina, E.S. Kudriashova, A.V. Nyuchev, A.E. Gavryushin, A.Yu. Fedorov. Conjugates of porphyrinoid-based photosensitizers with cytotoxic drugs: current progress and future directions toward selective photodynamic therapy. <i>J. Med. Chem.</i> 2022, <i>65</i>, 3, 1695–1734.</p> <p>7. A. Stein, P. Hilken née Thomopoulos, C. Frias, S.M. Hopff, P. Varela, N. Wilke, A. Mariappan, J.-M. Neudörfl, A.Yu. Fedorov, J. Gopalakrishnan, B. Gigant, A. Prokop, H.-G. Schmalz. B-nor-methylene colchicinoid PT-100 selectively induces apoptosis in multidrug-resistant human cancer cells via an intrinsic pathway in a caspase-independent manner. <i>ACS Omega</i> 2022, <i>7</i>, 2591-2603.</p> <p>8. E.S. Shchegrevina, E.V. Svirshchevskaya, S. Combes, D. Allegro, P. Barbier, B. Gigant, P.F. Varela, A.E. Gavryushin, D.A. Kobanova, A.E. Shchekotikhin, A.Yu. Fedorov. Discovery of dihydrofuranoallocolchicinoids - highly potent antimitotic agents with low acute toxicity. <i>Eur. J. Med. Chem.</i>, 2020, <i>207</i>, 112724.</p> <p>9. Iu.A. Gracheva, E.S. Shchegrevina, H.-G. Schmalz, I.P. Beletskaya, A.Yu. Fedorov. Colchicine Alkaloids and Synthetic Analogues: Current Progress and Perspectives. <i>J. Med. Chem.</i>, 2020, <i>63</i>, 10618–10651.</p> <p>10. E.S. Sazanova, Iu.A. Gracheva, D. Allegro, P. Barbier, S. Combes, E.V. Svirshchevskaya, A.Yu. Fedorov. Allocolchicinoids bearing a Michael acceptor fragment for possible irreversible binding of tubulin. <i>RSC Med. Chem.</i>, 2020, <i>11</i>, 696–706.</p> <p>11. V.F. Otvagin, N.S. Kuzmina, L.V. Krylova, A.B. Volovetsky, A.V. Nyuchev, A.E. Gavryushin, I.N. Meshkov, Y.G. Gorbunova, Y.V. Romanenko, O.I. Koifman, I.V. Balalaeva, A.Y. Fedorov. Water-Soluble Chlorin/Arylaminoquinazoline Conjugate for Photodynamic and Targeted Therapy. <i>J. Med. Chem.</i>, 2019, <i>62</i>, 24, 11182–11193.</p> <p>12. N.S. Sitnikov, Yu.B. Malysheva, A.Yu. Fedorov, H.-G. Schmalz. Design and Synthesis of New Protease-Triggered CO-Releasing Molecules. <i>Eur. J. Org. Chem.</i>, 2019, <i>40</i>, 6830–6837.</p> <p>13. E.S. Shchegrevina, D.S. Tretiakova, A.S. Alekseeva, T.R. Galimzyanov, Y.N. Utkin, Y.A. Ermakov, E.V. Svirshchevskaya,</p>
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