

PROMOTION RECOMMENDATION
THE UNIVERSITY OF MICHIGAN
MEDICAL SCHOOL
DEPARTMENT OF PATHOLOGY

Zaneta Nikolovska-Coleska, Ph.D., associate professor of pathology, with tenure, Department of Pathology, is recommended for promotion to professor of pathology, with tenure, Department of Pathology, Medical School.

Academic Degrees:

Ph.D.	1999	University Ss. Cyril and Methodius, Skopje, and National Institute of Chemistry, Ljubljana, Slovenia, Macedonia
M.S.	1993	University Ss. Cyril and Methodius, Skopje, and National Institute of Chemistry, Ljubljana, Slovenia, Macedonia
B.Sc.	1987	University Ss. Cyril and Methodius, Skopje, and National Institute of Chemistry, Ljubljana, Slovenia, Macedonia

Professional Record:

2015-present	Associate Professor of Pathology, with tenure, University of Michigan
2008-2015	Assistant Professor of Pathology, University of Michigan
2008-2008	Research Assistant Professor of Internal Medicine, University of Michigan
2004-2008	Research Investigator of Internal Medicine, University of Michigan
2000-2004	Assistant Professor of Pharmaceutical Chemistry and Drug Information, with tenure, University Ss. Cyril and Methodius, Skopje, Macedonia
1994-1999	Assistant of Pharmaceutical Chemistry, University Ss. Cyril and Methodius, Skopje, Macedonia
1989-1994	Young Assistant of Pharmaceutical Chemistry, University Ss. Cyril and Methodius, Skopje, Macedonia

Summary of Evaluation:

Teaching: Dr. Nikolovska-Coleska has had extensive teaching experience as the associate director of academic programs in Biomedical Sciences. She is involved in teaching a number of courses in pathology, medicinal chemistry and chemical biology. She developed Translational Pathology, Path 862, which is the anchor course that supports the T32 on translational research training that she also directs. Dr. Nikolovska-Coleska also provides lectures in Path 582 and Cancer 554 to graduate students on chemical genomics and chemical biology, as well as apoptotic pathways and epigenetic modifications. She lectures in Medicinal Chemistry 532 in the Medicinal Chemistry and Chemical Biology Graduate Programs. She extends teaching earlier in the pipeline where she has organized and led a journal club for undergraduate students in the REU Program on Structure and Function of Proteins in the College of Pharmacy. Dr. Nikolovska-Coleska has trained numerous undergraduate and graduate students and fellows in her laboratory and has served on an extensive number of preliminary Ph.D. exam and thesis committees across the university campus. She has provided continuous and extensive teaching commitments throughout her career at the University of Michigan and is considered an outstanding teacher and educator.

Research: Dr. Nikolovska-Coleska's research has focused upon understanding the role of epigenetics in the development of cancer and how to target key epigenetic enzymes, such as Dot1L, where her lab has developed a number of inhibitors. Her early work focused on targets in the apoptotic pathway

where she has a long and continued effort to block. These inhibitors were identified by her lab using state-of-the-art molecular screening protocols that have allowed her to progress within the field, leading efforts to target these pathways. Together, the findings derived from Dr. Nikolovska-Coleska's research has had, and will continue to have, a significant impact on the field of cancer and small molecule inhibitors of critical pathways. Her work has continually been funded from the NIH, foundations and industry, and she has been invited to present her work at national and international conferences and universities. She has published 79 peer-reviewed articles, and has been granted 12 patents.

Recent and Significant Publications:

Kump KJ, Miao L, Mady ASA, Ansari NH, Shrestha UK, Yang Y, Pal M, Liao C, Perdih A, Abulwerdi FA, Chinnaswamy K, Meagher JL, Carlson JM, Khanna M, Stuckey JA, Nikolovska-Coleska Z.: Discovery and Characterization of 2,5-Substituted Benzoic Acid Dual Inhibitors of the Anti-Apoptotic Mcl-1 and Bfl-1 Proteins. *J Med Chem.* 63(5): 2489-2510, 2020.

Gibbons GS, Chakraborty A, Grigsby SM, Umeano AC, Liao C, Moukha-Chafiq O, Pathak V, Mathew B, Lee YT, Dou Y, Schürer SC, Reynolds RC, Snowden TS, Nikolovska-Coleska Z.: Identification of DOT1L inhibitors by structure-based virtual screening adapted from a nucleoside-focused library. *Eur J Med Chem.* 189: 112023, 2020.

Du L, Grigsby M.S, Yao A, Chang Y, Johnson G, Sun H, Nikolovska-Coleska Z: Peptidomimetics for Targeting Protein-Protein Interactions between DOT1L and MLL oncofusion proteins AF9 and ENL *ACS Med Chem Lett* 9(9): 895-900, 2018.

Mady ASA, Liao C, Bajwa N, Kump KJ, Abulwerdi FA, Lev KL, Miao L, Grigsby SM, Perdih A, Stuckey JA, Du Y, Fu H, Nikolovska-Coleska Z: Discovery of Mcl-1 inhibitors from integrated high throughput and virtual screening. *Sci. Rep.* 8(1): 10210, 2018.

Anwar T, Arellano-Garcia C, Ropa J, Chen YC, Kim HS, Yoon E, Grigsby S, Basrur V, Nesvizhskii AI, Muntean A, Gonzalez ME, Kidwell KM, Nikolovska-Coleska Z, Kleer CG.: p38-mediated phosphorylation at T367 induces EZH2 cytoplasmic localization to promote breast cancer metastasis *Nat Commun.* 9(1): 2801, 2018.

Service: Dr. Nikolovska-Coleska is the director of the Pathology Graduate Program and is also involved in the Chemical Biology and Medicinal Chemistry Graduate courses at the University of Michigan. In 2018, she was appointed as the associate director for the PIBS Graduate Program in the Medical School to help to further develop and refine the umbrella program that runs the recruiting and early stage programming for the entering Ph.D. students. She has also provided service nationally on study sections for the National Institutes of Health and reviews ad hoc and as a regular member of the committees, as well as scientific journal reviews. She is an editorial board member for *Oncobiology and Targets*, the *Journal of Molecular Cell Biology*, *Future Medicinal Chemistry* and is the associate editor for the *Royal Society of Chemistry Biology* in the United Kingdom.

External Reviewers:

Reviewer A: "Presentations at prominent national and international conferences, along with prestigious awards are additional proof of the national and international recognition of the scholarly activity of Dr. Nikolovska-Coleska by experts in her field for being an innovator of scientifically and clinically important research, and serve as proof that her research has had a high impact on the medicinal chemistry and oncology fields."

Reviewer B: “Additional important advances included efforts to target protein-protein interactions between DOT1L and MLL oncofusion proteins AF9 and ENL using a peptidomimetic approach. This work published in ACS Med Chem Lett led to an issued patent. Additional virtual drug screening led to identification of DOT1L inhibitors to suppress leukemogenic transformation, work published in Eur J Med Chem in 2020. Yet other impactful work involved identification of dual inhibitors of anti-apoptotic Mcl-1 and Bfl-1 proteins, published in J Med Chem in 2020, molecules that are intended to address drug resistance in cancer therapy. This paper was highlighted in a special issue of the journal focused on Women in Medicinal Chemistry, has led to a nice collaboration with investigators at the University of Pittsburgh, and submitted patents. These are truly outstanding contributions to the field by a highly regarded productive investigator.”


Reviewer C: “ Dr. Nikolovska-Coleska has shown outstanding productivity during her independent career at the University of Michigan. She is recognized to be a leader in medicinal chemistry of protein-protein in apoptosis and epigenetic targets.”

Reviewer D: “ Dr. Nikolovska-Coleska has made significant research contributions to the field and is widely considered an expert in research on chemical genomics and discovery and application of active chemical compounds for the interrogation of biological systems. She is widely known and highly respected for her on [sic] developing molecularly targeted therapeutics for the treatment of human cancer. ”

Reviewer E: “Since her promotion to associate professor in 2015, she has continued to have a major impact in field of chemical biology and medicinal chemistry, especially in the area of design, synthesis, characterization and development of molecularly targeted novel small molecules for the treatment of human cancer with a focus on protein-protein interactions involved in regulation of apoptosis and signaling pathways.”

Summary of Recommendations:

Dr. Nikolovska-Coleska is an outstanding researcher with many years of expertise in medicinal chemistry designing potential therapeutic targets in apoptotic and epigenetic biology for use in cancer treatment. She has top tier scholarship in research, outstanding mentorship, teaching and service institutionally, and within the research community. I am pleased to recommend Zaneta Nikolovska-Coleska, Ph.D. for promotion to professor of pathology, with tenure, Department of Pathology, Medical School.



Marschall S. Runge, M.D., Ph.D.
Executive Vice President for Medical Affairs
Dean, Medical School

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