

## Alexander Kornienko

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### ***Education***

Postdoctoral Fellowship	Université de Montréal, Canada (Prof. Stephen Hanessian)	1999–2001
Ph.D. in Chemistry	Tufts University, Boston, USA (Prof. Marc d'Alarcao)	1994–1999
B.S in Chemical Engineering	Mendeleev University, Moscow, Russia	1989–1994

### ***Appointments***

Professor	Texas State University	2016-present
Associate Professor (with tenure)	Texas State University	2012-2016
Adjunct Professor	New Mexico Tech	2012-present
Chemistry Department Chair	New Mexico Tech	2010-2012
Chemistry Department Associate Chair	New Mexico Tech	2007-2009
Associate Professor (with tenure)	New Mexico Tech	2006–2012
Visiting Professor of Chemistry	Wits Univ., Johannesburg, South Africa	summer 2008
Assistant Professor of Chemistry	New Mexico Tech	2001–2006

### ***Areas of Expertise***

- Synthetic Organic Chemistry (total synthesis and methodology)
- Chemical Biology (focus on cancer signaling and death pathways)
- Medicinal Chemistry (rational drug design and library screening)
- Natural Product Chemistry (isolation, structure elucidation and analogue synthesis)

### ***Honors and Professional Activities***

- Presidential Award for Excellence in Scholarly/Creative Activities, 2016
- National Institutes of Health, Oncology 2 - Translational Clinical (OTC) Study Section Member, ad hoc, 2014.
- National Science Foundation, Division of Chemistry, Chemical Synthesis Review Panel, 2011.
- National Institutes of Health, Synthetic and Biological Chemistry B Study Section Member, ad hoc, 2010.
- Proposal reviewer for: American Chemical Society – Petroleum Research Fund, Arizona Biomedical Research Commission, Alexander von Humboldt Foundation, European Fund for Research Training in Industry and Agriculture.
- Associate Editor, Chemistry of Heterocyclic Compounds, 2014-current.
- Editor, Special Issue in Chemistry of Heterocyclic Compounds “Creative Design in the Synthesis of Heterocycles,” May 2014.
- Journal Peer-Reviewer: Oncotarget, Journal of Organic Chemistry, Journal of Medicinal Chemistry, Organic Letters, Tetrahedron Letters, Bioorganic and Medicinal Chemistry Letters, ChemMedChem, Journal of Ethnopharmacology, Journal of Fluorine Chemistry, Journal of Natural Products, Synlett, Chemical Reviews, European Journal of Medicinal Chemistry, Pharmacological Research, Canadian Journal of Chemistry, Current Organic Chemistry, Journal of Visualized Experiments, Journal of Molecular Catalysis A, Chemistry of Heterocycles

clic Compounds, Chirality, Marine Drugs, Current Medicinal Chemistry, Heterocyclic Communications, European Journal of Organic Chemistry, Molecules, ACS sustainable Chemistry and Engineering, ACS Omega, MedChemComm, RSC Advances, Phytochemistry, Journal of Agricultural and Food Chemistry, Tetrahedron, Accounts of Chemical Research, Journal of Cellular and Molecular Medicine, European Journal of Pharmacology, Scientific Reports, Bioorganic Chemistry, Cancer Letters.

### **Patents**

6. Methods for treatment of resistant cancer. US 62/329,393. Pending.
5. Novel Polygodial Analogues for the Treatment of Cancer and other Proliferative Diseases. US 62/208,656. Pending.
4. Antibiotic sensitivity-restoring and photosensitive agents. US 62/149,738. Pending.
3. 2-Aryl-2-(3-indolyl)acetohydroxamates for the Treatment of Drug-Resistant Cancer. US 61/891,746 2013. Awarded.
2. Synthetic Rigidin Analogues as Anticancer Agents, Salts, Solvates and Prodrugs Thereof, and Method of Producing Same. US 08/946,246 2012. Awarded.
1. Pyrano[3,2-c]Pyridones and Related Heterocyclic Compounds as Pharmaceutical Agents for Treating Disorders Responsive to Apoptosis, Antiproliferation or Vascular Disruption, and the Use Thereof. US 12/407,358 2009. Awarded.

### **Book Chapters**

1. In “Natural products targeting clinically relevant enzymes”: *Targeting enzymatic pathways with marine-derived clinical agents*. Ed. Andrade, P. B, 2017, Wiley-VCH Verlag GmH & Co.
2. In “The alkaloids”: The rigidins: isolation, bioactivity, and total synthesis – novel pyrrolo[2,3-d]pyrimidine analogues using multicomponent reactions. Ed. Knolker, H. –J. Vol. 79, 2018, Elsevier Inc. Academic Press.

### **Publications (H-index 37; 4,000 citations)**

101. Microtubule-targeting 7-deazahypoxanthines derived from marine alkaloid rigidins: exploration of the N3- and N9 positions and interaction with multidrug resistance proteins. Dasari, R.; Blauz, A.; Medelin, D.; Kassim, R.; Viera, C.; Santarosa, M.; Van der Westhuyzen, A.; van Otterlo, W. A. L.; Olivas, T.; Yildiz, T.; Betancourt, T.; Shuster, C. B.; Rogelj, S.; Rychlik, B.; Hudnall, T. Frolova, L.; Kornienko, A. *ChemMedChem*, **2019**, in press.
100. Algae metabolites: from in vitro growth inhibitory effects to promising anticancer activity. Lefranc, F.; Koutsaviti, A.; Ioannou, E.; Kornienko, A.; Roussis, V.; Kiss, R.; Newman, D. J. *Nat. Prod. Rep.* **2019**, in press.
99. A nitroalkane-based approach to one-pot three-component synthesis of isocyptolepine and its analogs with potent anti-cancer activities. Aksenov, N. A.; Aksenov, A. V.; Kornienko, A.; De Carvalho, A.; Mathieu, V.; Aksenov, D. A.; Ovcharov, S. N.; Griaznov, G. D.; Rubin, M. *RSC Adv.* **2018**, 8, 36980.
98. Novel polygodial analogs P3 and P27: Efficacious therapeutic agents disrupting mitochondrial function in oral squamous cell carcinoma. De La Chapa, J.; Singha, P. K.; Sallaway M.; Self, K.; Nasreldin, R.; Dasari, R.; Hart, M.; Kornienko, A.; Just, J.; Smith, J. A.; Bissimber, A. C.; Gonzales, C. B. *Int. J. Oncol.* **2018**, 53, 2627-2636..
97. Photoactivated 2,3-distyrylindoles kill multi-drug resistant bacteria. Edwards, L.; Turner, D.; Champion, C.; Khandelwal, M.; Zingler, K.; Stone, C.; Rajapaksha, R. D.; Yang, J.; Ranasinghe, M. I.; Kornienko, A.; Frolova, L.; Rogelj, S. *Bioorg. Med. Chem. Lett.* **2018**, 28, 1879-1886.
96. Effect of polygodial and its direct derivatives on the mammalian Na<sup>+</sup>/K<sup>+</sup>-ATPase activity. Garcia, D. G.; Goncalves-de-Albuquerque, C. F.; da Silva C. I.; Kiss, R.; Dasari, R.; Chandra, S.; Kornienko, A.; Burth, P. *Eur. J. Pharmacol.* **2018**, 831, 1-8.

95. Polygodial analog induces apoptosis in LNCaP prostate cancer cells. Dasari, S.; Samy, A. L. P. A.; Narvekar, P.; Dontaraju, V. S.; Dasari, R.; Kornienko, A.; Munirathinam, G. *Eur. J. Pharmacol.* **2018**, 828, 154-162.
94. Novel topologically complex scaffold derived from alkaloid haemanthamine. Govindaraju, K.; Masi, M.; Colin, M.; Mathieu, V.; Evidente, A.; Hudnall, T. W.; Kornienko, A. *Molecules*, **2018**, 23, 255.
93. Synthetic analogues of the montanine-type alkaloids with activity against apoptosis-resistant cancer cells. Govindaraju, K.; Ingels, A.; Hasan, M. N.; Sun, D.; Mathieu, V.; Masi, M.; Evidente, A.; Kornienko, A. *Bioorg. Med. Chem. Lett.* **2018**, 28, 589-593.
92. The Amaryllidaceae alkaloid haemanthamine binds the eukaryotic ribosome to repress cancer cell growth. Pellegrino, S.; Meyer, M.; Zorbas, C.; Bouchta, S. A.; Saraf, K.; Pelly, S. C.; Yusupova, G.; Evidente, A.; Mathieu, V.; Kornienko, A.; Lafontaine, D. L. J.; Yusupov, M. *Structure*, **2018**, 26, 416-425.
91. Aspergillus candidis is a newly recognized source of sphaeropsidin A: Isolation, semisynthetic derivatization and anticancer evaluation. Li, Y.; Scott, R.; Hooper, A.; Bartholomeusz, G. A.; Kornienko, A.; Bills, G. F. *Bioorg. Med. Chem. Lett.* **2017**, 27, 5436-5440.
90. Covalent modification of biological targets with natural products through Paal-Knorr pyrrole formation. Kornienko, A.; La Clair, J. J. *Nat. Prod. Rep.* **2017**, 34, 1051-1060.
89. Irreversible protein labeling by Paal-Knorr conjugation. Dasari, R.; La Clair, J. J.; Kornienko, A. *ChemBioChem*. **2017**, 18, 1792-1796.
88. One-pot, three-component assembly of indoloquinolines: Total synthesis of isocryptolepine. Aksenov, A.; Aksenov, D.; Orazova, N.; Aksenov, N.; Griaznov, G.; de Carvalho, A.; Kiss, R.; Mathieu, V.; Kornienko, A.; Rubin, M. *J. Org. Chem.* **2017**, 82, 3011-3018.
87. A harmine-derived beta-carboline displays anticancer effects in vitro by targeting protein synthesis. Carvalho, A.; Chu, J.; Meinguet, C; Kiss, R.; Vandenbussche, G.; Massereel, B.; Wouters, J.; Kornienko, A.; Peltier, J.; Mathieu, V. *Eur. J. Pharmacol.* **2017**, 805, 25-35.
86. Marine Mollusk-derived agents with antiproliferative activity as promising anticancer agents to overcome chemotherapy resistance. Ciavatta, M. L.; Lefranc, F.; Carbone, M.; Mollo, E.; Gavagnin, M.; Betancourt, T.; Dasari, R.; Kornienko, A.; Kiss, R. *Med. Res. Rev.* **2017**, 37, 702-801.
85. Novel Microtubule-Targeting 7-Deazahypoxanthines Derived from Marine Alkaloid Rigidins with Potent in Vitro and in Vivo Anticancer Activities. Medellin, D. C.; Zhou, Q.; Scott, R.; Hill, R. M.; Frail, S. K.; Dasari, R.; Ontiveros, S. J.; Pelly, S. C.; van Otterlo, W. A. L.; Betancourt, T. B.; Shuster, C. B.; Hamel, E.; Bai, R.; LaBarbera, D. V.; Rogelj, S.; Frolova, L. V.; Kornienko, A. *J. Med. Chem.* **2016**, 59, 480-485.
84. Single dish gradient screening of small molecule localization. Beuzer, P.; Axelrod, J.; Trzoss, L; Fenical, W.; Dasari, R.; Evidente, A.; Kornienko, A.; Cang, H.; La Clair J. J. *Org. Biomol. Chem.* **2016**, 14, 8241-8245.
83. Marine invertebrate metabolites with anticancer activities: solutions to the “supply problem.” Gomes, N. G. M.; Dasari, R.; Chandra, S.; Kiss, R.; Kornienko, A. *Mar. Drugs* **2016**, 14, 98.
82. 5,10b-Ethanophenanthridine Amaryllidaceae Alkaloids Inspire the Discovery of Novel Bicyclic Ring Systems with Activity against Drug Resistant Cancer Cells. Henry, S.; Kidner, R.; Reisenauer, M. R.; Magedov, I. V.; Quintana, R.; Kiss, R.; Mathieu, V.; Lefranc, F.; Dasari, R.; Evidente, A.; Yu, X.; Ma, X.; Pertsemidis, A.; Cencic, R.; Pelletier, J.; Cavazos, D. A.; Brenner, A. J.; Aksenov, A. V.; Rogelj, S.; Kornienko, A.; Frolova, L. V. *Eur. J. Med. Chem.* **2016**, 313-328.
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80. Crystal structure and absolute configuration of sphaeropsidin A and its 6-O-p-bromobenzoate. Masi, M.; Cimmino, A.; Maddau, L.; Kornienko, A.; Tuzi, A.; Evidente A. *Tetrahedron Lett.* **2016**, 57, 4592-4594.
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77. Activity of 2-Aryl-2-(3-indolyl)acetohydroxamates Against Drug-Resistant Cancer Cells. Aksenov, A. V.; Smirnov, A. N.; Magedov, I. V.; Reisenauer, M. R.; Aksenov, N. A.; Aksenova, I. V.; Nguyen, G.; Johnston, R. K.; Rubin, M.; Kiss, R.; Mathieu, V.; Lefranc, F.; Correa, J.; Cavazos, D. A.; Brenner, A. J.; Rogelj, S.; Kornienko, A.; Frolova, L. V. *J. Med. Chem.* **2015**, 58, 2206-2220.
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71. Lipophilic prodrug conjugates allow facile and rapid synthesis of high-loading capacity liposomes without the need for post-assembly purification. Mikhlin, A. A.; Evdokimov, N. M.; Frolova, L. V.; Magedov, I. V.; Kornienko, A.; Johnston, R.; Rogelj, S.; Tartis, M. S. *J. Liposome Res.* **2015**, 25, 232-260.
70. Towards a Cancer Drug of Fungal Origin. Kornienko, A.; Evidente, A.; Vurro, M.; Mathieu, V.; Cimmino, A.; Evidente, A.; van Otterlo, W. A. L.; Dasari, R.; Lefranc, F.; Kiss, R. *Med. Res. Rev.* **2015**, 35, 937-967.
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68. Synthetic and Biological Studies of Tubulin Targeting C2-Substituted 7-Deazahypoxanthines Derived from Marine Alkaloid Rigidins. Scott, R.; Karki, M.; Reisenauer, M. R.; Rodrigues, R.; Dasari, R.; Smith, W. R.; Pelly, S. C.; van Otterlo, W. A. L.; Shuster, C. B.; Rogelj, S.; Magedov, I. V.; Frolova, L. V.; Kornienko, A. *ChemMedChem*, **2014**, 9, 1428-1435.
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66. C-H Functionalization Directed by Transformable Nitrogen Heterocycles: Synthesis of ortho-Oxygenated Arylnaphthalenes from Arylphthalazines. Rastogi, S. K.; Medellin, D. C.; Kornienko, A. *Org. Biomol. Chem.*

**2014**, *12*, 410-413.

65. First Multicomponent Synthesis of Pyrrolo[2,3-*d*]pyrimidines. Dasari, R.; Kornienko, A. *Chem. Heterocycl. Comp.* **2014**, 160-165.
64. Synthesis of 4-azapodophyllotoxins with anticancer activity by multicomponent reactions. Botes, M. G.; Pelly, S. C.; Blackie, M. A. L.; Kornienko, A.; van Otterlo, W. A. L. *Chem. Heterocycl. Comp.* **2014**, 139.
63. C1,C2-Ether Derivatives of the Amaryllidaceae Alkaloid Lycorine: Retention of Activity of Highly Lipophilic Analogues Against Apoptosis-Resistant Cancer Cells. Dasari, R.; Banuls, L. M. Y.; Masi, M.; Pelly, S. C.; Mathieu, V.; Green, I. R.; van Otterlo, W. A. L.; Evidente, A.; Kiss, R.; Kornienko, A. *Bioorg. Med. Chem. Lett.* **2014**, 24, 923-927.
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### **Research Support**

CA213199	08/01/17 – 07/31/20
NIH/NCI	
Discovery of New Differentiation Agents for Neuroblastoma Therapy	
Role: co-PI	
CA186046	07/15/14 – 06/30/17
NIH/NCI	
Mode of Action of the Amaryllidaceae Alkaloid Lycorine – Promising Anticancer Agent	
Role: PI	
RR016480	05/01/09 – 02/28/14
NIH/NIGMS	
Chemical Biology and Screening Collaborative Core	
Role: co-PI	
CA135579	03/01/09 – 02/29/12
NIH/NCI	
Heterocyclic Analogues of Podophyllotoxin Accessible by a One-Step Multicomponent Synthesis	
Role: PI	
RR016480	01/07/04 – 06/30/09

NIH/NCRR		
Elucidation of the Pancratistatin Cytotoxic Pharmacophore		
Role: PI		
MH074425		11/30/05 – 05/31/09
NIH/NIMH and NHGRI		
New Mexico Molecular Libraries Screening Center		
Role: co-PI		
CA099957-02		06/01/05 – 05/31/08
NIH/NCI		
Practical Enantiodivergent Synthesis of (+) and (-)-Pancratistatin from D-Xylose		
Role: PI		
CA099957-01		06/01/03 – 05/31/05
NIH/NCI		
Practical Enantiodivergent Synthesis of (+) and (-)-Pancratistatin from D-Xylose		
Role: PI		
Sandia National Laboratories		10/01/03 – 09/30/04
Sandia-University Research Program		
Direct Route to Propylene Oxide: Confronting an Industrial “Holy Grail” with a Versatile Platinum Catalyst		
Role: PI		

### ***Teaching***

1. *General Chemistry I and II* (freshman)
2. *Organic Chemistry I and II* (sophomore)
3. *Intermediate Organic Chemistry* (junior)
4. *Organic Chemistry Laboratory I and II* (sophomore)
5. *Green Organic Chemistry Laboratory* (sophomore)
6. *Polymer Chemistry* (senior)
7. *Biochemistry I and II* (senior)
8. *Advanced Organic Synthesis* (graduate)
9. *Medicinal Chemistry* (graduate)
10. *Physical Organic Chemistry* (graduate)
11. *Advanced Organic Chemistry* (graduate)
11. *The Logic of Chemical Synthesis* (short course)
12. *Medicinal Chemistry* (short course)