



Seminars in Biotechnology BTEC 592 & BTEC 692

Thursday, March 25, 2021

13:30

Assoc. Prof. Dr. Mustafa GÜZEL

Director of Drug Discovery and Development Research Center



Dr. Güzel graduated from Hacettepe University School of Engineering with a B. Sc degree in Chemistry in 1987 and completed his M. Sc. and Ph. D. Degrees on Medicinal Chemistry at Clemson University, Clemson, SC in 1996 and 2001 respectively. He worked as organic lab coordinator at Northeastern University and later joined to ArQule Inc. as Sr. Synthetic Organic Chemist upon his graduation. He then joined to TransTech Pharma Inc, in High Point, NC and assumed various positions in Medicinal Chemistry Department between 2001 and 2014. In 2014 he started working as an Assistant Professor at International School of Medicine in Department of Medical Pharmacology at Istanbul Medipol University. In 2017 he was promoted to Associate Professor in medical pharmacology acting as a chair. In 2019 he was appointed as the department chair of Molecular Medicine and Biotechnology. In January 2020, he then became the director of Drug Discovery and Development Research Center in newly established Health Sciences and Technologies Research Institute, currently leading two critical drug development projects for Covid-19 with a local pharma company as well as several domestic and European granted drug discovery projects in Molecular Discovery and Development laboratories of the university.

RESEARCH INTERESTS

Research and development in medicinal chemistry specifically cancer/cancer metabolism and kinase inhibitors, GPCRs for the treatment of diabetic disorders (NIDDM), obesity, CNS and neurodegenerative disorders (ALS, Alzheimer's and Parkinson's disease), and inflammatory disorders (COPD, RA).

Research and development with an emphasis in design and synthesis of both symmetric and asymmetric organic drug-like molecules leading to new drug substances and natural products. Discovery of drugs to treat unmet medical needs in the world especially in rare diseases, cancer as well as common chronic and metabolic diseases such as diabetes, and neurodegenerative diseases.

Elucidation of the catalytic asymmetric induction reactions and their mechanisms, development of new enantioselective catalysts and their applications in the synthesis of biologically active agents.

SELECTED PATENTS AND PUBLICATIONS (LAST 5 YEARS)

1. Cost Effective Industrial Scale Bulk Synthesis of Favipiravir to Domestically Combat with Covid-19"; Hacer Karatas, Essam A. H. Alshahaby, Yasar Enes Butun, Zeynep Atabay Taskent, Sahin Gursel, Adil, Kaya and **Mustafa Guzel**; *TPO-Patent*, **2021**, patent submitted.
2. "Cost Effective Industrial Scale Bulk Synthesis of Favipiravir to Domestically Combat with Covid-19"; Hacer Karatas, Essam A. H. Alshahaby, Yasar Enes Butun, Unal Catal, Sahin Gursel, Adil, Kaya and **Mustafa Guzel**; *Organic Process Research & Development*, **2021**, manuscript in preparation.
3. "Novel Strategies for the Synthesis of A_{2A} Adenosine Receptor Antagonist Analogs"; Şükran Özdatlı, Hanife Pekel, Bilgesu Onur Sucu, and **Mustafa Guzel**; *European Journal of Medicinal Chemistry*, **2021**, manuscript in preparation.
4. "The Neutralization Effect of Montelukast on SARS-CoV-2 is Shown by Multiscale in Silico Simulations and Combined in Vitro Studies"; Serdar Durdagi, Timucin Aysar, Muge Didem Orhan, Muge Serhatli, Bertan Koray Balcioglu, Hasan Umit Ozturk, Alisan Kayabolen, Yuksel Cetin, Seyma Aydinlik, Tugba Bagci-Onder, Saban Tekin, Hasan Demirci, **Mustafa Guzel**, Atilla Akdemir, Seyma Calis, Lalehan Oktay, Ilayda Tolu, Yasar Enes Butun, Ece Erdemoglu, Alpsu Olkan, Nurettin Tokay, Seyma Işik, Aysenur Ozcan, Elif Acar, Seherban Buyukkilic, Yesim Yumak; *Nature Communications*, volume: 12, number: 1410, page: 1-37, **2021**. DOI: 10.1101/2020.12.26.424423.
5. "Design and Synthesis of Novel Caffeic Acid Phenethyl Ester (CAPE) Derivatives and Their Biological Activity Studies in Glioblastoma Multiforme (GBM) Cancer Cell Lines"; Bilgesu Onur Sucu, Elif Beyza Koc, Ozgecan Savlug Ipek, Afranur Mirat, Furkan Almas, Melike Aybal Guzel, Nihal Karakas, Berna Dogan, Serdar Durdagi, and **Mustafa Guzel**; *Bioorganic Chemistry*, **2020**, manuscript submitted.
6. "Antifungal and Antibacterial Activity of Some Marine Invertebrates from Turkish Coastlines"; Ayse Esra Karadag, Hajar Heydari, Ismail Korpe, Belma Konuklugil, Betül Giray, and **Mustafa Guzel**; *Frontiers in Microbiology*, **2020**, manuscript submitted.
7. "Design and synthesis of novel cylopentapyrazoles bearing 1,2,3-thiadiazole moiety as potent antifungal agents"; Betül Giray, Ayse Esra Karadag, Ozgecan Savlug Ipek, Hanife Pekel, **Mustafa Guzel**, and Hatice Baspinar Kucuk; *Bioorganic Chemistry*, vol:95, p:103509, **2020**, DOI: 10.1016/j.bioorg.2019.103509.
8. "Novel Heteroaryl-Pyrazole Derivative Molecules and Their Use as Antifungal Agents"; Hatice Baspinar Kucuk, **Mustafa Guzel**, Ayse Esra Karadag, Betül Giray, and Ozgecan Savlug Ipek; TR Patent, Istanbul Medipol University, Istanbul, Patent No: 2019/06570, 02/05/2019.
9. "Novel Synthetic Approaches for Bisnaphthalimidopropyl (BNIP) Derivatives as Anti-Parasitic Agents for the Treatment of Leishmaniasis"; Elif Keskin, Mehmet Hikmet Ucisik, Bilgesu Onur Sucu, and **Mustafa Guzel**; *Molecules*, Volume: 24, No:24, **2019**, doi:10.3390/molecules24244607.
10. "Identification and in-vitro Bioactivity Screening of Some Marine-Derived Fungi from Turkish Coastlines"; Hajar Heydari, Aslı Koc, Belma Konuklugil, Betül Giray, Ayse Esra Karadag, and **Mustafa Guzel**; *Frontiers in Microbiology*, **2019**, manuscript submitted.
11. "Synthesis of Novel Methyl Jasmonate Derivatives and Evaluation of Their Biological Activity in Various Cancer Cell Lines"; Bilgesu Onur Sucu, Ozgecan Savlug Ipek, Sukran Ozdatlı Kurtulus, Busra Emine Yazici, Nihal Karakas, and **Mustafa Guzel**; *Bioorganic Chemistry*, Volume: 91, **2019**, p: 103146. (<https://doi.org/10.1016/j.bioorg.2019.103146>).
12. "Primary tumor-induced immunity eradicates disseminated tumor cells in syngeneic mouse model"; Raziye Piranlioglu, EunMi Lee, Maria Ouzounova, Roni J. Bollag, Alicia H. Vinyard, Ali S. Arbab, Daniela Marasco, **Mustafa Guzel**, John K. Cowell, Muthushamy Thangaraju, Ahmed Chadli, Khaled A. Hassan, Max S. Wicha, Esteban Celis and Hasan Korkaya; *Nature Communications*, volume: 10, number: 1410, pages: 1-13, **2019**. DOI: 10.1038/s41467-019-09015-1.
13. "The pleiotropic effects of TNF α in breast cancer subtypes is regulated by TNFAIP3/A20"; Eunmi Lee, Maria Ouzounova, Raziye Piranlioglu, Minh Thu Ma, **Mustafa Guzel**, Daniela Marasco, Ahmed Chadli, Jason E. Gestwicki, John K. Cowell, Max S. Wicha, Khaled A. Hassan, and Hasan Korkaya; *Oncogene*, volume: 37, number: 36, pages: 1-14, **2019**. DOI: 10.1038/s41388-018-0472-0.
14. "Heterobivalent Ligands Suitable for Use in The Treatment of Parkinson's Disease"; Ozge Sensoy, **Mustafa Guzel**, Bilal Ersen Kerman, Neslihan Ustundag Okur, Samman Mansoor, Essam Alshahaby, Elif Keskin, Serdar Durdagi, and Gulru Kayik; WO Patent, Istanbul Medipol University and Bahcesehir University, Istanbul, Patent No: WO2019004970, 03/01/2019.
15. "Novel Bisnaphthalimidopropyl (BNIP) Derivatives as Active Pharmaceutical Ingredients"; **Mustafa Guzel**, Mehmet Hikmet Ucisik, Fikrettin Sahin, Elif Keskin, and Zeynep Islek; TR Patent, Istanbul Medipol University, and Yeditepe University, Istanbul, Patent No: 2018/20740, 27/12/2018.
16. "Development of Novel Caffeic Acid Phenethyl Ester (CAPE) Analogs as Anticancer Agents and Determination of Their Biological Activities"; **Mustafa Guzel**, Nihal Karakas, Ozgecan Savlug Ipek, Bilgesu Onur Sucu, Elif Beyza Koc, Melike Aybala Guzel, Irem Ozturk, Ibrahim Serkut Tosyalı, and Rabia Yilmaz; TR Patent, Istanbul Medipol University, and Uskudar University, Istanbul, Patent No: 2018/15127, 11/10/2018.
17. "Methyl Jasmonate Derivatives as Possible Drug Candidates for Use in Treatment of Cancer"; **Mustafa Guzel**, Sukran Ozdatlı Kurtulus, Ozgecan Savlug, and Bilgesu Onur Sucu; WO Patent, Istanbul Medipol University, Istanbul, Patent No: PCT/TR2018/050522, 25/09/2018.
18. "Original Drug Molecules for The Treatment of Parasitic and Neoplastic Diseases and Methods for Preparation Thereof"; Mehmet Hikmet Ucisik, **Mustafa Guzel**, Elif Keskin, Bilgesu Onur Sucu, and Aslihan Golcuk; WO Patent, Istanbul Medipol University, Istanbul, Patent No: WO2018106200, 14/06/2018.
19. "Substituted Fused Imidazole Derivatives, Pharmaceutical Compositions, and Methods of Use Thereof"; Adnan MM Mjalli, Dharma Rao Poliseti, Jareer Nabeel Kassis, Matthew J Kostura, **Mustafa Guzel**, Otis Clinton Attucks, Robert Carl Andrews, Samuel Victory, and Suparna Gupta; US Patent, vTv Therapeutics, High Point, NC, Patent Application # 16007532, 10/11/2018.
20. "Tricyclic Compounds As Modulators Of Tnf-Alpha Synthesis And As Pde4 Inhibitors"; Adnan MM Mjalli, Babu Gaddam, Dharma Rao Poliseti, Matthew J Kostura, and **Mustafa Guzel**; US Patent, vTv Therapeutics, High Point, NC, Patent Application # 15800794, **2018**/3/15.
21. "Do neuropathy and hypertension associated with increased risk of hearing loss among type 2 diabetic patients?"; Abdulbari Bener, Lütfü Hanoglu, Hakan Cincik, **Mustafa Güzel**, Mustafa Öztürk, Ralph A. DeFronzo, and Muhammad Abdul-Ghani; *International Journal of Neuroscience and Behavior Studies*, volume:1, no:2, pages: 41-46, **2017**.
22. "Essential Parameters and Risk Factors of the Patients for Diabetes Care and Treatment"; Abdulbari Bener, Fatma E. Keskin, Eda M. Kurtulus, **Mustafa Guzel**, Elif I. Çekirdekçi, Pınar Kadioğlu, Dildar Konukoğlu, and Mustafa Öztürk; *Diabetes & Metabolic Syndrome: Clinical Research & Reviews*, volume: 1, number:1, page: S315-S320, **2017**. DOI: <https://doi.org/10.1016/j.dsx.2017.03.008>.
23. "Gender Satisfaction among Type 2 Diabetes Patients: A Comparison between Intensive Diets, Lifestyle Intervention with Medication Controlled Management"; Abdulbari Bener, Abdulla O. A. A. Al-Hamaq, Funda Çatan, Kaleem U. Rajput and **Mustafa Guzel**; *British Journal of Medicine & Medical Research*, volume: 18, number: 7, p: 1-13, **2016**, DOI: 10.9734/BJMMR/2016/29418.
24. "Inhibitors of Hexokinase and Methods of Use Thereof"; Adnan M.M. Mjalli, Babu Gaddam, Devi Reddy Gohimukkula, Dharma Rao Poliseti, Mohan Rao, **Mustafa Guzel**, Nidhi Singh, Rima Hajjo, Robert Carl Andrews, Rongyuan Xie, Santhosh Kalpathy, Soumya Prakash Sahoo, and Stephen Thomas Davis; vTv Therapeutics, High Point, NC, **2016**, Patent # WO 2016196890 A1 (PCT/US2016/035663).
25. "The Role and Importance of Medicinal Chemistry in Novel Drug Discovery and Development"; **Mustafa Guzel**, ve Sezgin Kiren; Turkish Clinics, Türkiye Klinikleri J Pharm Sci 2016;5(1):36-45, **2016**. DOI: 10.5336/pharmsci.2015-48211.