# Magid Abou-Gharbia, Ph.D., FRSC

Magid Abou-Gharbia, Laura H. Carnell Professor and Founding Director of the Moulder Center for Drug Discovery Research at School of Pharmacy, Temple University. Prior joining Temple University, he spent 26 years at Wyeth Pharmaceuticals, he was senior VP of Discovery directing >600 scientists. Magid led teams that delivered numerous new chemical entities into clinical evaluation and identified 10 innovative drugs that benefited millions of patients worldwide. Among those drugs are blockbuster and First-in-Class drugs such as the antidepressant Serotonin/Norepinephrine Reuptake inhibitors Effexor® and Pristiq®, the First FDA approved antibody-drug conjugate anticancer Mylotarg®, and Tygacil®, an innovative antibiotic for treating resistant bacterial infections. He was actively involved in design and discovery of many of those marketed drugs (Dezocine®, Effexor®, Pristiq®). His active involvement in manipulating the natural product Rapamycin resulted in 25 patents of several lead drug candidates including the marketed anticancer drug Torisel®. His team's efforts resulted in receiving Five Heroes of Chemistry Awards.

In 2008 Magid transitioned into academia and joined the School of Pharmacy at Temple University where he founded the Moulder Center for Drug Discovery Research, a unique medicinal chemistry-centric academic drug discovery center whose mission is focused on the discovery of novel drugs for unmet medical needs. The center also provides guidance to academic researchers and training for new generations of drug discovery scientists. Under his leadership the Moulder Center identified novel drug candidates for the treatments of cocaine and alcohol addiction, metabolic disorders, cancer, and lysosomal storage diseases, which led to the formation of 5 spin off companies based on licensing of his Center's IP to external companies.
*https://www.youtube.com/watch?v=2yotuH6ZU0c*

Dr. Abou-Gharbia held several leadership positions since joining Temple, he served as School of Pharmacy's Associate Dean for Research (2008-2019) and as the Founding Director of the Moulder Center for Drug Discovery Research (2008-2020). In recognition of his contributions and successes, he was named Laura H. Carnell Professor in 2013, receiving Temple University Outstanding Service Award in 2022 and induction to the Rho Chi Honor society and the appointment of Class faculty advisor (2026).

## Collaboration:

- We welcome collaboration with academic and industrial institutions in the US and abroad.

- Magid welcomed visiting scholars from the US and abroad to study and train in his drug discovery laboratories at Temple University and he continues to collaborate with them after their return to their institutions. Abou-Gharbia's group are involved in several collaborations with academic and industrial institutions.

- Magid is actively involved in advancing biomedical research in the US and abroad. He played an instrumental role in establishing biomedical research centers throughout the Middle East. He worked with Arab expatriate scientists and the Qatar Foundation to establish the Qatar Biomedical Research Center (QBRI**)** in Doha (2012).

- Magid has been instrumental in establishing new ACS initiatives to promote Chemistry, his efforts with the ACS in the mid 90's led to establishing key initiatives for advancing Chemistry and fostering innovation and collaboration which are continuing annually such as the ACS Heroes of Chemistry program (1996) and Pharma Leadership meetings (2003) and the ACS MEDI-EFMC Symposium (2006).

## Scientific accomplishments:

Our research efforts resulted in over **144 publications** in peer reviewed journals. He has co-authored **6 book chapters** and delivered over **244 presentations** as an invited lecturer at scientific conferences and academic institutions worldwide. Magid holds over **145 US patents** and over **350 issued world patents**. In 1998 Magid was listed among "Prolific Inventor of the Decade" which was awarded by US Patent & Trademark in their Technology Assessment & Forecast Report citing inventors who hold > 70 issued US Patents during 1987-199. Magid has received numerous awards in recognition for his research contributions including two ACS Heroes of Chemistry awards for discovery of Effexor® and Torisel®, Induction into New Jersey Inventors Hall of Fame and the ACS Medicinal Chemistry Hall of Fame, Proctor Medal, Chemical Pioneer Award, Pennsylvania Bio Award and Educator of the Year Award, Grand Hamdan Award for Excellence in Biomedical Sciences and Drug Discovery. He is a Fellow of both the American Chemical Society and the Royal Society of Chemistry, hold adjunct professorship position at various academic institutions in the US and abroad including Adjunct Professor at the College of Science and Technology (CST), Temple University (2008-present) and serving on the Scientific Advisory board of several scientific and Professional organizations.

## RESEARCH INTERESTS:

• Manipulation of synthetic approaches in the design and synthesis of biologically active agents. Methodologies included: 1,3-dipolar cycloaddition reactions, Claisen's rearrangement, Diels-Alder reactions, chemistry of ketenes, sulfilimines, synthesis of substituted steroids.
• Use of receptor homology, bioisosteric replacement strategies, rational and structure-based drug design approaches

• Utilizing natural products as a unique resource for discovering innovative therapeutics.
• Applying enabling technology platforms to evaluate drug-like properties of all discovered molecules to ensure clinical effectiveness of drug candidates.
• Design of chemical probes in support of translational medicineResearch Projects include Addiction and Substance Abuse, Caner, CNS Disorders (Depression, Anxiety, Cerebral Palsy), RSV and COVID-19 infections.

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## Moulder Center for Drug Discovery Research:

The Moulder Center began as the Center for Drug Discovery Research in 2008 when Magid Abou-Gharbia joined TUSP after a long and successful career in the pharmaceutical industry. Magid's objective was to establish an academic drug discovery center where he could inspire and mentor future generations of students and researchers.
Temple University supported Dr. Abou-Gharbia's Drug Discovery Initiative with $8.3M in 2010, which transformed the Center by facilitating the hiring of experienced faculty and staff and supporting the introduction of state-of-the- art drug discovery technologies such as high throughput screening, in vitro ADME and a dedicated compound library. The center was officially dedicated on May 14, 2009, and its name was changed to the "Moulder Center for Drug Discovery Research" in recognition of a gift from Lonnie '80 and Sharon Moulder '80. In 2014 the Moulders provided another gift in the form of a $4.3 million endowment to enable the Center's continuing enhancement of its capabilities and resources.

***Fig1: Dedication of the Moulder Center for Drug Discovery Research (2009)***

***Fig 2: Moulder Center Team at the 10th anniversary (2019)***

## Moulder Center Published News article:

*History of the establishment of Moulder Center in 2009* ***(A video presentation)***
**https://www.youtube.com/watch?v=2yotuH6ZU0c**

*10 Years of Research Moulder Center Generating A Healthy ROI for Temple* ***(Philadelphia Business Journal Apr 4, 2019)***
**https://acrobat.adobe.com/link/review?uri=urn:aaid:scds:US:381c87ac-e30a-37d5-b803-690ccb3a19c3**

***I****nside the first 15 years of drug discovery at Temple (The Philadelphia Inquirer,* ***October 9,2024)***
**https://cst.temple.edu/news/2024/10/temples-moulder-center-drug-discovery-research-profiled-philadelphia-inquirer**

*The great pharmaceutical-academic merger, The Moulder Center is celebrating its 15th anniversary this year* ***(ACS C&E News article Oct 7, 2024):***
**https://cen.acs.org/pharmaceuticals/drug-discovery/great-pharmaceutical-academic-merger/102/i31**

## Publications: 144 (Peer reviewed)
**https://scholar.google.com/citations?user=9lstbyMAAAAJ&hl=en&oi=ao**

## Selected Publications:

1. MC-100093, a synthetic beta-lactam compound and ceftriaxone modulate nicotine consumption, neuroinflammation and glutamatergic transporters in nicotine self-administration mouse model, Jawaher A. Alotaibi, Fawaz Alasmari, Awatif B. Albaker, Fatin A. Alrashedi, Mohamed Mohany, Musaad A. Alshammari, Abdullah F. AlAsmari, Salim S. Al-Rejaie, Wayne E. Childers, **Magid Abou-Gharbia**, Youssef Sari, Psychopharmacology, **(2026)** 243:873-888.

2. Modulatory Effects of GLT-1 enhancer, MC-100093, on neuroinflammatory factors in mesocorticolimbic brain region of female P rats exposed chronically to ethanol, Khokon Kanti Bhowmik, Ahmed Alotabi, **Magid Abou-Gharbia**, Wayne E. Childers, Youssef Sari, Neruroscience Letters, 875: 138525, March 26, **2026**.

3. Parkin Induces Ubiquitination and Large Extracellular Vesicle Release of HMGB1 to Activate Antitumor Immunity, Minjeong , Yeon, Michela Perego , Khaled M Elokely , **Magid Abou-Gharbia** , Wayne E Childers , Andrew T Milcarek , Irene Bertolini , Hsin-Yao Tang , Lucia R Languino , Gary S Stein , Prachi N Ghule , Brad P Vietje , Douglas T Taatjes , Dario C Altieri, Cancer Res. **2025** Sep 10. doi: 10.1158/0008-5472.CAN-25-0904

4. Dezocine and addiction: Friend or Foe? W. Childers, K. Elokely and **M. Abou-Gharbia**, Pharmaceuticals, **2025**, 18 (3), 386.

5. Differential Modulation of Glutamate Transporter-1 by Cocaine and Oxycodone and the Efficacy of MC-100093 to Reduce Reinstatement of Self-Administration, Damyan W. Hart, Yanaira Alonso-Caraballo, Britta Hornback, Angel Robert, Megan A. Brickner, Manuel Esguerra, Wayne E. Childers, Magid Abou-Gharbia and Mark J. Thomas, Brain and Behavior, **2025**; 15:e70616

6. W. Childers, K. Elokely and M. Abou-Gharbia, Dezocine and addiction: Friend or Foe? Pharmaceuticals, 2025, 18 (3), 386.

7. Neuroinflammation and Neurometabolomic Profiling in Fentanyl Overdose Mouse Model Treated with Novel B-Lactam, MC-100093, and Ceftriaxone, Mohammed S. Alasmari, Fawaz Alasmari , Shakir D. Alsharari , Abdullah F. Alasmari , Nemat Ali ,Syed Rizwan Ahamad , Abdullah M. Alghamdi , Aban A. Kadi , Alaa M. Hammad , Yousif S. Mohamed Ali 1,Wayne E. Childers, Magid Abou-Gharbia and Youssef Sari,Toxics 2024, 12, 604.

8. MC180295 is a highly potent and selective CDK9 inhibitor with preclinical in vitro and in vivo efficacy in cancer, Hanghang Zhang, Chen Huang, John Gordon, Sijia Yu, George Morton, Wayne Childers, Magid Abou-Gharbia, Yi Zhang, Jaroslav Jelinek and Jean-Pierre J. Issa, Clinical Epigenetics, 6:3, (2024).

9. Ceftriaxone and MC-100093 mitigate fentanyl-induced cardiac injury in mice: Preclinical investigation of its underlying molecular mechanisms, Abdullah F. AlAsmari a,1,

Mohammed M. Alshehri, Nemat Ali a, Fawaz AlAsmari a, Youssef Sari b, Wayne E. Childers, Magid Abou-Gharbia, Metab Alharbi a, Doaa M. Elnagar, Wejdan S. AL-Qahtani, Saudi Pharmaceutical Journal, 32 (2024), 1021-48.

10. MC-100093, reduces sex-specific ethanol preference and depressive-like behaviors in mice, Brandon Emanuel Leon, Lee Peyton, Hesham Essa, Tia Wieden, Nicole Marion, Wayne C. Childers, Magid Abou-Gharbia, Doo-Sup Choi,Neuropharmacology, 232, 109515, 2023.

11. Effects of a Novel beta lactam compound MC-100093 on the expression of glutamate transporters/receptors and ethanol drinking behavior of alcohol preferring rats, Hassan Alhadad, Woonyen Wong, Magid Abou-Gharbia, Wayne Childers, Edward Melenski, Richard Richard L Bell and Youssef Sari,, J.Pharmacol.Exp.Ther, 383(3): 208–216, 2022.

12. MC-100093, a novel B-lactam GLT-1 enhancer devoid of antimicrobial properties attenuates cocaine relapse in rats, L. A. Knackstedt, L. Wu, J. D. Rothstein, S. Vidensky, J. Gordon, M. Ramanjulu, P. Dunman, B. Blass, W. Childers, M. Abou-Gharbia, J. Pharmacol. Exp. Ther., 378 (2) 51-59, 2021

13. "I'll be Back": The Resurrection of Dezocine, Wayne Childers and Magid Abou-Gharbia, ACS Med.Che,Lett., 12(6): 961-968, 2021

14. Discovery of Novel Class of Histone Deacetylase Inhibitors as Potential Anticancer Agents, R. El-Awady, E. Saleh, R. Hamoude, W. S. Ramadan, R. Mzaitschek, M. A. Nael, K. M. Elokely, M. Abou-Gharbia, W. E. Childers, V. Srinivasulu, L. Aloum, V. Menon, T. H. Al-Tel, Bioorg. Med. Chem. 2021,
10. The Resurrection of Phenotypic Drug Discovery, Wayne E. Childers, Khaled M. Elokely and Magid-Abou-Gharbia, ACS Med.Chem.Lett, 11, 1820-1828, 2020.

15. Targeting CDK9 reactivates epigenetically silenced genes in cancer Hanghang Zhang, Somnath Pandey, Meghan Travers, Jittasak Khowsathit, George Morton, Hongxing Sun, Carlos Barrero, Carmen Merali, Yasuyuki Okamoto, Takahiro Sato, Judit Garriga, Natarajan Bhanu, Bela Patel, Jozef Madzo, Noël J.-M. Raynal, Benjamin Garcia, Marlene A. Jacobson, Salim Merali, Yi Zhang, Wayne Childers, Magid Abou-Gharbia, John Karanicolas, Stephen B. Baylin, Cynthia Zahnow, Jaroslav Jelinek, Xavier Graña and Jean-Pierre J. Issa, Cell, 175, 1244-1258, 2018.

## Patents: Over 145 US Patents & >350 World Patents
**https://patents.justia.com/inventor/magid-a-abou-gharbia**

## Selected Patents:

***Functionalized N,N-dialkylamino phenyl ethers and their method of use:***

1. Magid A. Abou-Gharbia, Wayne E. Childers, Marlene A. Jacobson, Rong Fan, Rogelio L. Martinez**, US Patent number: 11873267 (2024)**

2. Edward G. Melenski, Wayne E. Childers, Marlene A. Jacobson, Magid A. Abou-Gharbia, **US Patent number: 11325883 (2022)**

***5-hydroxytryptamine receptor 7 activity modulators and their method of use:***

3. Daniel J. Canney, Benjamin E. Blass, Rong Gao, Magid Abou-Gharbia **US Patent number: 11192871 (2022)**
4. Daniel J. Canney, Benjamin E. Blass, Rong Gao, Magid Abou-Gharbia, **US Patent number: 1054411 (2020)**
5. Daniel J. Canney, Benjamin E. Blass, Rong Gao, Magid Abou-Gharbia**, US Patent number: 10676464 (2019).**
6. Daniel J. Canney, Benjamin E. Blass, Rong Gao, Magid Abou-Gharbia, **US Patent number: 10287274 (2019)**

***Bridged bicycloalkyl-substituted aminothiazoles and their methods of use:***

7. Wayne C. Childers, Magid A. Abou-Gharbia, George C. Morton, Jean Pierre J. Issa, Hanghang Zhang**, US Patent number: 10941126 (2021)**

***Beta lactams as modulators of glutamate uptake and methods for use thereof***

8. Magid A. Abou-Gharbia, Benjamin E. Blass, Wayne E. Childers, Mercy Ramanjulu,George C. Morton, **US Patent number: 10759750 (2020)**
9. Magid Abou-Gharbia, Wayne E. Childers, Rogelio L. Martinez, Mercy M. Ramanjulu, Benjamin E. Blass, **US Patent number: 9975879 (2018)**

***Anti-PCSK9 compounds and methods for the treatment and/or prevention of cardiovascular diseases***

10. Sherin Salaheldin Abdel-Meguid, Magid Abou-Gharbia, Benjamin Blass, Wayne Childers, Nabil Elshourbagy, Victor Ghidu, Rogelio Martinez, Harold Meyers, Shaker A. Mousa, **US Patent number: 10131637 (2018)**

***Ethers of O-desmethyl venlafaxine***

11. John P. Yardley, Magid A. Abou-Gharbia, John W. Ullrich**, US Patent number: 7291646 (2007)**

***Branched adamantyl and noradamantyl aryl- and aralkylpiperazines with serotonin 5-HT1A activity***

12. Wayne E. Childers, Jr., Horace Fletcher, III, Magid A. Abou-Gharbia, John P. Yardley**, US Patent number: 6831084 (2004)**

***Carbamates of Rapamycin***

13. Skotnicki, Y. Palmer, W. Kao and M.A. Abou-Gharbia, **U.S. Patent Number 5,567,709 (1996)**