Research Report

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Illuminating Ties: The McGovern Institute's Engagement with the PLA in Brain-Inspired AI Research

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Executive Summary

1. The **McGovern Institute for Brain Research** at MIT, while a beacon of innovation in neuroscience, has extensive collaborations with Chinese institutions that present potential risks, including those that are linked to the People's Liberation Army (PLA).
2. The establishment of **IDG/McGovern Institutes** in prestigious Chinese universities in 2011 signifies a deep intertwining of scientific goals and a potential gateway for intellectual property transfer.
3. **The Shong Fund**, created in 2015, while fostering joint scientific exchanges between MIT's McGovern Institute and Chinese partners, may inadvertently facilitate the sharing of sensitive research data with military applications to the PLA.
4. **The Feng Laboratory** at MIT, a nexus of neuroscience innovation, has broad affiliations with Chinese institutions and thus warrants particular scrutiny given the lab's cutting-edge research focus.
5. **Dr. Guoping Feng**, the lead at Feng Laboratory, combines advanced research methods which, if shared, could empower dual-use technologies beneficial for both civilian and military applications in China.
6. The Feng Laboratory's extensive affiliations, including notable institutions like the **Chinese Academy of Sciences** and **Shenzhen Institutes of Advanced Technology**, signal potential areas of risk given their ties to the Chinese government and military apparatus.
7. **China's Institute for Brain Research (CIBR)**, with its roots intertwined with military interests, presents concerns about dual-use research, raising alarms about potential misuse of joint research outcomes.
8. The dual affiliation of personnel, such as **Baolin Guo**, exemplifies potential channels for technology and knowledge transfer between U.S. institutions and Chinese military-linked entities.
9. China's insights into U.S. **Brain-Inspired AI research** through the collaborations of the McGovern Institute with Chinese institutions offers the PLA a strategic vantage point, risking U.S. technological edge.
10. The intricate relationship between the **McGovern Institute, Feng Laboratory**, and Chinese military institutions necessitates stringent oversight to prevent unintended technology transfers and safeguard national interests.
11. Recommendations emphasize the urgency for comprehensive risk assessments, stringent intellectual property safeguards, and clear delineations in collaboration agreements to ensure research security.
12. The overarching theme underscores the critical importance of vigilance, transparency, and due diligence when navigating international collaborations, especially with entities having known affiliations with the PLA.

The McGovern Institute for Brain Research: A Legacy of Innovation and Collaboration

The McGovern Institute for Brain Research at the Massachusetts Institute of Technology (MIT) represents a pioneering endeavor in the field of neuroscience. Established in the year 2000 by philanthropists Patrick J. McGovern and Lore Harp McGovern, the institute's genesis was driven by a profound vision: to unravel the mysteries of the human brain in both health and disease. This chapter delves into the institute's founding principles, subsequent expansion, and notable collaborations, particularly with China. Patrick McGovern (August 11, 1937 – March 19, 2014) MIT Alumni and 2013 Forbes 400 list of richest Americans at a net worth of $5.1 billion. In 1980 he created one of the first American-Chinese joint ventures (IDG Capital), and in 1997 Forbes estimated that "Pat McGovern has more readers in China than the People's Daily does." In 1991 his company published "DOS For Dummies", the first of the very popular "For Dummies" series of books explaining various subjects to the lay person. Bloomberg News reported that IDG had 280 million regular readers of its publications, and annual revenues of $3.6 billion. In 2000 he donated $350 million to MIT to establish the McGovern Institute for Brain Research.[1] [2]

Founding Principles and Objectives

The McGoverns' commitment to understanding the human brain was both ambitious and visionary. They recognized that the brain, the most complex organ in the human body, holds the keys to understanding a wide array of neurological and psychological conditions. By founding the McGovern Institute, they aimed to create a hub of scientific excellence, where researchers could explore the intricate workings of the brain, from basic neural mechanisms to advanced cognitive functions.

The ultimate goal of the institute was not merely academic; it was intended to translate scientific discoveries into real-world applications, such as therapeutic interventions and diagnostic tools for brain-related disorders.

Expansion into China

A decade after its inception in 2011, the McGovern Institute embarked on an extraordinary expansion by establishing three new IDG/McGovern Institutes at prestigious Chinese universities: Tsinghua University, Peking University, and Beijing Normal University. This expansion was more than a geographic outreach; it symbolized a global collaboration in the pursuit of shared scientific goals.

Figure 1Ceremony for the Establishment of IDG/McGovern Institute for Brain Research at Beijing Normal University

These new institutes were designed to foster cutting-edge research, integrating various disciplines of

[1] Patrick Joseph McGovern, https://en.wikipedia.org/wiki/Patrick_Joseph_McGovern
[2] The Legacy of Patrick J. McGovern, https://www.mcgovern.org/the-legacy-of-patrick-j-mcgovern/

neuroscience, and leveraging the strengths and expertise of both American and Chinese scientific communities.[3]

The Shong Fund and Scientific Exchange[4]

In 2015, the collaborative spirit of the McGovern Institute was further cemented by Hugo Shong, the Executive Vice President of IDG and Chairman of IDG Greater China. Shong established a fund to support joint scientific exchanges and symposia between the McGovern Institute at MIT and its partners in China.

Named the Shong Fund, this initiative has played a vital role in bridging the gap between Western and Eastern neuroscience research. By funding scientific exchanges between institutes in China and MIT's Feng Lab, the Shong Fund has facilitated collaborative research, knowledge sharing, and the development of innovative research methodologies.

Signing Ceremony for the Establishment of IDG/McGovern Institute for Brain Research at Tsinghua University

The McGovern Institute for Brain Research at MIT is more than just a research center; it is a beacon of international collaboration and a testament to the power of shared vision and purpose. From its founding principles to its expansion into China and the establishment of the Shong Fund, the institute has consistently pushed the boundaries of neuroscience, promoting a culture of innovation and collaboration that resonates across borders.

The legacy of Patrick and Lore Harp McGovern continues to inspire, and the impact of their vision can be felt not only in the laboratories of MIT but in the broader global scientific community. Their dedication to understanding the human brain serves as a reminder that great scientific achievements are often born from bold dreams and relentless pursuit of knowledge. The McGovern Institute stands as a vivid example of how international collaboration can drive scientific progress and make meaningful contributions to humanity's well-being.

Feng Laboratory: A Nexus of Neuroscience and Innovation

The Feng Laboratory at MIT represents the cutting edge of neuroscience research. Led by Dr. Guoping Feng, the Poitras Chair Professor of Neuroscience, the laboratory's work centers on the intricate development of synapses and neural circuitry, and how disruptions in these systems may lead to psychiatric disorders. This chapter provides an in-depth look at the Feng Laboratory, its principal investigator, active projects, and affiliations.[5]

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[3] 2011 International Data Group (IDG) signs the agreement with Tsinghua to establish IDG/Mcgovern Institute for Brain Research at Tsinghua University, http://mcgovern.life.tsinghua.edu.cn/en/infoshow-1632.html, 2011-04-24

[4] Hugo Shong Establishes Fund to Support Joint Scientific Exchanges and Symposia, http://www.mcgoverninstitute.org/news/hugo-shong-establishes-fund-support-joint-scientific-exchanges-and-symposia, 2015-02-13

[5] Feng Laboratory, https://fenglaboratory.org/

The Principal Investigator: Dr. Guoping Feng[6]

A Passion for Neuroscience

Dr. Feng is not only an acclaimed neuroscientist but also a passionate advocate for understanding the neurobiological underpinnings of psychiatric disorders. His research is dedicated to unraveling the mechanisms that regulate the development and function of synapses in the brain.

Educational and Professional Journey

Dr. Feng began his medical studies at Zhejiang University School of Medicine in Hangzhou, China. He later pursued Ph.D. training with Linda Hall at the State University of New York at Buffalo and postdoctoral training with Joshua Sanes at Washington University in St. Louis. Before joining MIT, he served as a faculty member at Duke University School of Medicine.

Multidisciplinary Approach

Utilizing genetically engineered animal models, Dr. Feng's laboratory combines state-of-the-art technologies and a multidisciplinary approach. This unique combination allows the team to delve into the complex neurobiology of neurodevelopmental and psychiatric disorders.

Active Projects of the Feng Lab[7]

1. Development and Function of Synapses: Investigating how synapses form and function, and how their proper development contributes to neural communication.

2. Neurocircuit Mechanisms of Behavior: Exploring how neural circuits govern behavior, enabling a deeper understanding of how circuit disruptions can lead to behavioral abnormalities.

3. Synapse and Circuit Dysfunction in Brain Disorders: Identifying how dysfunction in synapses and circuits can lead to psychiatric disorders, with an eye towards developing targeted therapies.

4. Genetic Tools for Neuroscience: Developing innovative genetic tools that facilitate the study of neural circuits and their roles in brain function and dysfunction.

Acknowledged Affiliations of the Feng Lab

The Feng Lab is affiliated with several prestigious institutions and initiatives, including the McGovern Institute for Brain Research, the MIT Department of Brain and Cognitive Sciences, the Stanley Center for Psychiatric Research, the Broad Institute of MIT and Harvard, the Simons Center for the Social Brain, and the Massachusetts Institute of Technology.[8]

Domestic and International Affiliation Networks[9]

[6] Feng Laboratory Principal Investigator Home Page of Guoping Feng, https://fenglaboratory.org/guoping-feng/
[7] Feng Laboratory Active Projects, https://fenglaboratory.org/research/#active-projects
[8] Feng Laboratory Affiliations, https://fenglaboratory.org/
[9] Feng Laboratory Publications, https://fenglaboratory.org/research/publications/

The Feng Laboratory's commitment to collaborative research is evident in its extensive co-authorship affiliations, which span across prestigious institutes, universities, and research centers. Analyzing the laboratory's publication history reveals a pattern of consistent collaboration with leading institutions, reflecting the laboratory's interconnected approach to neuroscience research.

- **McGovern Institute for Brain Research**: Topping the list with 174 occurrences, the McGovern Institute stands as a primary collaborator, symbolizing a deep-rooted partnership in pioneering brain research.
- **Massachusetts Institute of Technology (MIT)**: With 169 occurrences, MIT's collaboration underscores the laboratory's alignment with cutting-edge technological research and academic excellence.
- **Broad Institute**: The 112 occurrences with the Broad Institute highlight a shared focus on genetic research and multidisciplinary approaches to psychiatric disorders.
- **Chinese Academy of Sciences**: A significant collaborator with 54 occurrences, indicating a strong link with Chinese research institutions and a global perspective.
- **Shenzhen Institutes of Advanced Technology**: Collaboration in 48 publications emphasizes the laboratory's engagement with innovative technologies and advanced research methodologies.
- **Duke Medical Center**: 39 occurrences reflect a connection with medical research and translational applications in neurobiology.
- **Zhejiang University**: With 29 occurrences, this affiliation connects back to Dr. Feng's educational roots and represents a bridge between Eastern and Western scientific communities.
- **Duke University**: Also with 29 occurrences, collaboration with this esteemed university underscores a strong academic partnership in neuroscience.
- **Duke University Hospital**: 28 occurrences illustrate a link with clinical research, bridging laboratory discoveries with patient care.
- **Jilin Agricultural University**: 23 occurrences reflect a possibly unique collaboration, hinting at interdisciplinary research involving agriculture and possibly the neurobiology of non-human species.

These affiliations not only reflect the Feng Laboratory's wide-reaching influence but also demonstrate a commitment to collaborative research that transcends geographical and disciplinary boundaries. The laboratory's network of affiliations fosters a dynamic and innovative research environment, contributing to its status as a leader in the field of neuroscience. The variety of collaborations, from premier technology institutes to agricultural universities, showcases the laboratory's versatility and its ability to forge meaningful connections across diverse areas of study.

Context and Considerations Regarding Collaboration with Chinese Institutions

While the above affiliations represent a rich tapestry of collaboration, it is essential to consider the nuanced complexities that may arise when engaging with Chinese institutions, especially when leveraging federal funds from U.S. agencies such as NSF, NIH, DARPA, and others.

1. **Compliance with Regulations**: Collaborations must be conducted in strict accordance with U.S. federal laws and regulations, ensuring transparency and adherence to ethical guidelines.
2. **Intellectual Property Concerns**: Protection of intellectual property must be a paramount consideration, given varying legal frameworks and potential risks associated with technology transfer.
3. **National Security Considerations**: Collaborative research with military-affiliated institutions in China may raise concerns related to national security and require careful evaluation and oversight.
4. **Alignment with U.S. Research Priorities**: Ensuring that collaborations align with the strategic research priorities and values of U.S. funding agencies is essential to maintaining trust and integrity in the research process.

These considerations underscore the need for vigilance, transparency, and adherence to legal and ethical standards when engaging in international collaborations, particularly with Chinese institutions. The dynamic interplay between scientific innovation and regulatory compliance presents both opportunities and challenges, requiring a balanced approach that fosters collaboration while safeguarding national interests and research integrity.

Assessment and Vetting of Collaborations with Chinese Defense Universities: Navigating Dual-Use AI Research and U.S. Federal Funding

The extensive collaboration with Chinese defense universities and PLA entities presents a complex landscape that requires careful vetting and assessment, especially when leveraging U.S. federal funds. The list of affiliations provided, including prominent institutions like the Chinese Academy of Sciences, Shenzhen Institutes of Advanced Technology, and Zhejiang University, signifies a robust network of research collaboration and academic exchanges. Within this context, potential dual-use AI research that has defense applications becomes a subject of particular concern.

Dual-use technologies are those that have both civilian and military applications, and in the realm of AI, they can encompass areas like surveillance, autonomous systems, and cybersecurity. When collaborating with entities that may have connections to Chinese defense sectors, there is a need for rigorous due diligence to ensure that research integrity is maintained and that technologies do not inadvertently contribute to military capabilities that conflict with U.S. national interests. This becomes especially pertinent given the strategic competition in the technology domain and the potential implications for international security and geopolitical stability. The alignment of research collaboration with U.S. laws,

regulations, and ethical considerations is vital in navigating this multifaceted and sensitive area.

Affiliation	Publication_Count
Chinese Academy of Sciences	54
Shenzhen Institutes of Advanced Technology	48
Zhejiang University	29
Jilin Agricultural University	23
South China Agricultural University	22
University of Chinese Academy of Sciences	19
Center for Excellence in Brain Science and Intelligence Technology	18
East China Normal University	15
Zhengzhou University	15
Air Force Medical University	14
HKUST Shenzhen Research Institute	13
National Institute of Biological Sciences, Beijing	11
Hong Kong University of Science and Technology	10
Central South University	9
PharmacoGenetics (China)	9
Shanghai Institutes for Biological Sciences	8
Shanghai Jiao Tong University	8
Sun Yat-sen University	8
University of Science and Technology of China	7
Wuhan Institute of Physics and Mathematics	6
Capital Medical University	5
Center for Excellence in Molecular Cell Science	5
Huazhong University of Science and Technology	5
Peking University People's Hospital	5
Beijing University of Posts and Telecommunications	4
Northeast Institute of Geography and Agroecology	4
Peking Union Medical College Hospital	4
Plastic Surgery Hospital	4
Shandong University of Science and Technology	4

Another 39 additional unique Chinese affiliations in the collaboration landscape further emphasizes the complexity and breadth of the engagement. Among these entities are notable institutions such as Tsinghua University, ShanghaiTech University, and the China National Nuclear Corporation, along with specialized entities like the Institute of Zoology and the Key Laboratory of Guangdong Province. The presence of diverse affiliations spanning academia, industry, healthcare, and research institutes necessitates a careful evaluation of potential risks associated with Chinese military connections. Such connections could extend to areas like nuclear technology, biological research, and advanced manufacturing, warranting a robust due diligence process to mitigate potential security risks and ensure alignment with

international norms and regulations.[10]

IDG/McGovern Institute for Brain Research: Key Labs Behind the Curtain[11]

The IDG/McGovern Institute for Brain Research, a renowned hub for neuroscience, finds itself entangled in a complex web of international collaborations that spans across the fields of Brain-Computer Interface (BCI), cognitive neuroscience, and cutting-edge biomedical research. Many of these collaborations involve dual affiliations with some of China's most prestigious State Key Laboratories, MOE Laboratories, and universities, including Beijing Normal University, Peking University, and Tsinghua University.

Joint Laboratories and Staffing

Evidence of joint laboratories and staff affiliations reveals that the IDG/McGovern Institute has cultivated deep ties with China's Brain-Computer Interface (BCI) State Key Laboratories and other high-profile research entities. Most of these collaborations are staffed and operated by Beijing's Science and Technology (S&T) Commission, PLA, the Academy of Military Medical Sciences, and the Chinese Communist Party.

IDG/McGovern Personnel Dual Affiliated With Key Labs

The affiliations extend to some of the most significant research facilities in China, showcasing a wide array of interdisciplinary engagements:

- **State Key Laboratory of Cognitive Neuroscience and Learning**
- **National Key Experiment of Cognitive Neuroscience and Learning**
- **State Key Laboratory of Membrane Biology**
- **MOE Key Laboratory of Protein Sciences**
- **State Key Laboratory of Precision Measurement Technology and Instruments**
- **Key Laboratory of Brain and Intelligence, Tsinghua University**

PLA Linkages and Operations

It is noteworthy that all of these laboratories have acknowledged affiliations with the PLA and often are operated by the PLA itself. This raises concerns around potential dual-use applications of the research, with implications for both civilian and military domains.

In the publication titled “Cdyl Deficiency Brakes Neuronal Excitability and Nociception through Promoting Kcnb1 Transcription in Peripheral Sensory Neurons”, Zhao-Wei Sun stands out. He is primarily affiliated with the State Key Laboratory of Natural and Biomimetic Drugs at Peking University but also has ties with the Institute of Military Cognitive and Brain Sciences, Academy of Military Medical Sciences (AMMS). Co-author Yun Wang shares a dual affiliation with both the State Key Laboratory at Peking University and the PKU-IDG/McGovern Institute for Brain Research. Intriguingly, Jarod M Waybright,

[10] Feng Laboratory Publications, https://fenglaboratory.org/research/publications/
[11] ANNEX A: Navigating Dual Affiliations – An In-Depth Analysis of McGovern Institute Personnel and the Associated Risks

Caroline A Foley, and Lindsey I James from the Center for Integrative Chemical Biology and Drug Discovery at the University of North Carolina at Chapel Hill, brings multiple NIH grants to the table while collaborating with the PLA (Grants: “R61 DA047023/DA/NIDA NIH HHS/United States”, “R61DA047023-01/DA/NIDA NIH HHS/United States”, “R61DA047023-01/DA/NIDA NIH HHS/United States”). This collaboration exemplifies the intersection of U.S. funding with Chinese defense research. It's also significant to highlight that this collaboration likely occurred post the inclusion of AMMS on the entity list, for using biotechnology processes to support PRC military end uses, including purported brain-control weaponry. [12] [13] [14]

In the study titled "SORL1 rs1699102 polymorphism modulates age-related cognitive decline and gray matter volume reduction in non-demented individuals", the contributions of He Li, Chenlong Lv, and Caishui Yang are particularly striking. While He Li and Caishui Yang are affiliated with both the Institute of Basic Research in Clinical Medicine at the China Academy of Chinese Medical Sciences and the BABRI Centre at Beijing Normal University, Chenlong Lv stands out with his association with the Consulting Center of Biomedical Statistics, which is under the Academy of Military Medical Sciences in Beijing. Furthermore, Caishui Yang and Zhanjun Zhang share ties with the State Key Laboratory of Cognitive Neuroscience and Learning as well as the IDG/McGovern Institute for Brain Research at Beijing Normal University. Notably, Kewei Chen brings an international dimension to the collaboration, representing the Computational Image Analysis at the Banner Alzheimer's Institute in Phoenix, AZ, USA. This paper serves as another instance where international research collaborations intertwine with affiliations associated with Chinese military institutions. NIH is responsible for funding this research under grants “P30 AG019610/AG/NIA NIH HHS/United States” and “R01 AG031581/AG/NIA NIH HHS/United States”[15]

The IDG/McGovern Institute's deep-rooted ties with Chinese entities underscore a blatant collaboration with the PLA. While these partnerships may drive scientific advancement, they also unveil significant challenges and risks. Given the obvious connections to the PLA and the implications in a broader geopolitical context, it's imperative to approach these affiliations with heightened scrutiny, ensuring transparency, ethical and legal standards, and alignment with both national and international interests.

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[12] Sun ZW, Waybright JM, Beldar S, Chen L, Foley CA, Norris-Drouin JL, Lyu TJ, Dong A, Min J, Wang YP, James LI, Wang Y. Cdyl Deficiency Brakes Neuronal Excitability and Nociception through Promoting Kcnb1 Transcription in Peripheral Sensory Neurons. Adv Sci (Weinh). 2022 Apr;9(10):e2104317. doi: 10.1002/advs.202104317. Epub 2022 Feb 4. PMID: 35119221; PMCID: PMC8981457.

[13] Department of Commerce Bureau of Industry and Security, Addition of Certain Entities to the Entity List and Revision of an Entry on the Entity List, Docket No. 211213-0259

[14] Statement of Thea D. Rozman Kendler Assistant Secretary of Commerce for Export Administration Before the Senate Banking, Housing, and Urban Affairs Committee Hearing Entitled, “Countering China: Advancing U.S. National Security, Economic Security, and Foreign Policy”, https://www.banking.senate.gov/imo/media/doc/Kendler%20Testimony%205-31-23.pdf, May 31, 2023

[15] Li H, Lv C, Yang C, Wei D, Chen K, Li S, Zhang Z. SORL1 rs1699102 polymorphism modulates age-related cognitive decline and gray matter volume reduction in non-demented individuals. Eur J Neurol. 2017 Jan;24(1):187-194. doi: 10.1111/ene.13182. Epub 2016 Oct 25. PMID: 27779372; PMCID: PMC5177470.

AI Frontiers and Dual Affiliations: Exploring IDG/McGovern Institute's Collaborative Landscape with China's AI Centers[16]

The entwinement between IDG/McGovern Institute for Brain Research and China's AI Centers focused on Brain-Computer Interface (BCI) and Future AI Chip research illustrates the cutting-edge nature of these collaborations and the potential strategic implications they may harbor.

IDG/McGovern Personnel Dual Affiliated With AI Centers

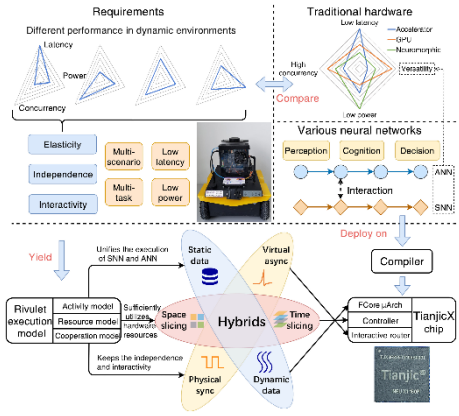
The affiliations extend beyond conventional neuroscience and delve into the realms of artificial intelligence, neuromorphic computing, and next-generation chip technology. Several AI Centers have been identified with dual affiliations:

- **Center for Brain-Inspired Computing Research**
- **Beijing Innovation Center for Future Chips**
- **Center for Collaboration and Innovation in Brain and Learning Sciences**
- **National Basic Science Data Center**
- **Collaborative Innovation Center for Brain Science (CAS)**
- **Center for Excellence in Brain Science and Intelligence Technology (CAS)**
- **Shenzhen Institutes of Advanced Technology (CAS)**

It is imperative to note that all the above Institutes and Centers have affiliations with the PLA, underscoring the complex nature of these collaborations.

Joint Prototype and Dual-Use Risks

A particularly striking example of these collaborations is a joint prototype developed between the Center for Brain-Inspired Computing Research and the Beijing Innovation Center for Future Chips. The prototype, titled **'Neuromorphic computing chip with spatiotemporal elasticity for multi-intelligent-tasking robots',** showcases the pioneering work in neuromorphic computing, a technology that mimics the human brain's architecture and could revolutionize AI applications.



A neuromorphic computing platform for multi-intelligent-tasking robotics. The key designs of the platform include three levels: a Rivulet execution model, a TianjicX chip with a specially designed compiler, and a robotic system based on the TianjicX.

These researchers were affiliated and funded by the IDG/McGovern Institute for Brain Research at Tsinghua University, highlighting the scientific prowess and innovation that these collaborations foster. However, the prototype also brings to light the risks of dual-use AI-enabled military technologies.

The intricate web of affiliations between IDG/McGovern Institute and Chinese AI Centers operating in frontier technologies presents a multifaceted challenge. While the

[16] ANNEX B: Co-Authors of Dual Affiliated McGovern Individuals of Risk

collaborations drive innovation and technological advancement, they also necessitate robust scrutiny to ensure that the research aligns with ethical considerations, national security interests, and international agreements. The potential for dual-use applications that could serve military purposes underscores the importance of transparency, accountability, and due diligence in navigating these collaborations. The balance between fostering scientific progress and safeguarding against potential risks requires careful thought, planning, and oversight.[17]

Unraveling the Complexities: The Chinese Institute for Brain Research (CIBR) and the Intersection of Science, Military, and Ethics

The example of the Chinese Institute for Brain Research (CIBR) provides a vivid illustration of the risks and implications inherent in international scientific collaborations, particularly when they intersect with military interests and dual-use technologies.

Background and Structure

Founded in March 2018, CIBR was "strategically deployed" by Beijing's Science and Technology (S&T) commission. It acts as a cooperative framework that brings together Beijing-area universities, the PLA Academy of Military Science, and other entities. Its mission is "coordinating research institutes and managing research programs under the guidance of the China Brain Initiative and Beijing Brain Initiative, and making Beijing the world epicenter for neuroscience and brain-inspired computation."[18] Besides medical research, CIBR studies brain-inspired AI, optical imaging, and brain computer interaction.[19]

The institute is co-directed by Rao Yi (饶毅), president of Capital Medical University in Beijing, former dean of sciences at Peking University, and founding director of the PKU IDG/McGovern Institute for Brain Research, and Luo Minmin (罗敏敏), an investigator at Beijing's National Institute of Biological Sciences and a professor at Tsinghua University. Additionally, the CIBR advisory board includes significant international collaborators such as the Allen Institute's Christof Koch, which had previously received funding from IARPA and DARPA for projects like "Machine Intelligence From Cortical Networks, or MICRONS."[20] [21]

Risks and Implications

1. **Dual-Use Concerns**: The collaboration between academic, military, and governmental entities raises concerns about the potential dual-use nature of the

[17] Songchen Ma et al. ,Neuromorphic computing chip with spatiotemporal elasticity for multi-intelligent-tasking robots.Sci. Robot.7,eabk2948(2022).DOI:10.1126/scirobotics.abk2948, 2022-06-15
[18] The Chinese Institute for Brain Research, Beijing (CIBR), https://jobs.sciencecareers.org/employer/15ba1770-062f-4783-90e8-bddec61434b6/the-chinese-institute-for-brain-research-beijing-cibr
[19] Beijing Brain Science and Brain-Inspired Research Center, https://baike.baidu.com/item/%E5%8C%97%E4%BA%AC%E8%84%91%E7%A7%91%E5%AD%A6%E4%B8%8E%E7%B1%BB%E8%84%91%E7%A0%94%E7%A9%B6%E4%B8%AD%E5%BF%83/22450631
[20] Wm. C. Hannas, Huey-Meei Chang, Daniel H. Chou, Brian Fleeger, China's Advanced AI Research MONITORING CHINA'S PATHS TO "GENERAL" ARTIFICIAL INTELLIGENCE, Center for Security and Emerging Technology, 2022-07
[21] Allen Institute joins in IARPA's massive MICrONS project to create a tiny bit of virtual brain tissue, GeekWire, https://www.geekwire.com/2016/allen-institute-joins-in-iarpas-100-million-microns-project-to-create-a-tiny-bit-of-virtual-brain-tissue/, 2016-03-10

research. Technologies developed in the realms of brain research and AI could have both civilian and military applications, ranging from healthcare advancements to surveillance and autonomous weapons systems.

2. **Ethical Considerations**: Engaging in collaborations with entities linked to military organizations may pose ethical challenges, particularly if the research is applied in ways that conflict with human rights principles or international norms.
3. **Intellectual Property and Technology Transfer**: The integration of international collaborators, such as the Allen Institute, into projects funded and directed by military-linked entities could lead to issues related to intellectual property rights and potential technology transfer that may not align with national security interests.
4. **Regulatory Compliance**: The involvement of U.S. entities like the Allen Institute, which received funding from IARPA and DARPA, necessitates careful consideration of regulatory compliance, export controls, and adherence to funding agreements.
5. **Reputational Risks**: The affiliations with military and governmental organizations may carry reputational risks for academic and research institutions, potentially affecting their credibility, funding opportunities, and international collaborations.

The CIBR example underscores the complexity and multifaceted nature of international scientific collaborations, especially when they intersect with military and governmental interests. It highlights the need for a comprehensive risk assessment, transparent governance, ethical oversight, and alignment with national and international regulations. The delicate balance between fostering innovation and safeguarding against potential misapplications requires a nuanced approach that takes into account the broader geopolitical context, the evolving landscape of technology, and the fundamental principles that guide scientific inquiry and cooperation.

Dual affiliated personnel serve as vital connectors between MIT's McGovern Institute and the PLA, creating channels for collaboration that may span both civilian and military domains. The intersection of these affiliations is sometimes openly acknowledged in publications, as evidenced by the example of Baolin Guo, who is associated with both the Stanley Center for Psychiatric Research at the Broad Institute of MIT, McGovern Institute, Feng Lab at MIT, Harvard and the Department of Neurobiology at the Fourth Military Medical University in Xi'an, China. The transparent acknowledgment of these affiliations, as seen in the linked publications, provides an important starting point for understanding and assessing the complex landscape of international scientific collaboration.[22] Another example is Miao Jing who is dual affiliated with The Picower Institute for Learning and Memory, Department of

[22] Qian Chen, Christopher A. Deister, Xian Gao, Baolin Guo, Taylor Lynn-Jones, Naiyan Chen, Michael F. Wells, Runpeng Liu, Michael J. Goard, Jordane Dimidschstein, Shijing Feng, Yiwu Shi, Weiping Liao, Zhonghua Lu, Gord Fishell, Christopher I. Moore & Guoping Feng, Dysfunction of cortical GABAergic neurons leads to sensory hyper-reactivity in a Shank3 mouse model of ASD, Nature Neuroscience volume 23, pages 520–532 (2020), 2020-03-02

Brain and Cognitive Sciences, Massachusetts Institute of Technology and the Chinese Institute for Brain Research (CIBR) which is operated by AMMS.[23]

The intricate web of these international research collaborations seems endless, and such affiliations urgently demand meticulous examination and rigorous oversight, given their potential ramifications on the transfer of knowledge and technology, adherence to ethical norms, and alignment with crucial national security interests.

China's Front Row Seat to U.S. AI Research: Insights, Implications, and Recommendations

A Strategic Vantage Point

For years, the Chinese Government has been strategically positioned to observe and engage with the United States' cutting-edge Brain-Inspired Artificial Intelligence research. This research, largely supported and funded by federal research dollars and national security-operated funding agencies like IARPA and DARPA, represents the forefront of technological innovation and national defense capabilities.

The programs funded by IARPA and DARPA are transformative, leading the way in strengthening the future of national security and preserving freedom. They represent a critical component of the United States' strategic preparedness and technological advantage.

All this time, China's PLA, encompassing the Army, Rocket Force, and Air Force, has not only indirectly benefited from this research but also directly collaborated. This collaboration has been facilitated by dual affiliated personnel supporting projects both at MIT in the United States and abroad at the IDG/McGovern Institutes within Chinese University labs.

Recommendations

In light of these insights, several critical measures are recommended to safeguard U.S. interests, ensure transparency, and maintain the integrity of the research ecosystem:

1. **Full National Security Review**: Conduct a comprehensive review of the MIT headquartered McGovern Institute, as well as the IDG/McGovern Institute, to assess potential vulnerabilities and compliance with regulations.
2. **Cyber Assessment of Network Access**: Undertake a detailed cyber assessment of foreign network access across MIT's networks, McGovern Institutes' networks, Feng Lab networks, and any connections to IDG/McGovern Institutes and its Chinese occupants.
3. **Research Conduct and Access Analysis**: Perform a cyber assessment of where U.S.-funded research has been conducted, including classified programs, with a thorough analysis of who had direct or indirect access.

[23] Kimchi Eyal Y., Burgos-Robles Anthony, Matthews Gillian A., Chakoma Tatenda, Patarino Makenzie, Weddington Javier, Siciliano Cody A., Yang Wannan, Foutch Shaun, Simons Renee, Fong Ming-fai, Jing Miao, Li Yulong, Polley Daniel B., Tye Kay M. (2023) Reward contingency gates selective cholinergic suppression of amygdala neurons eLife 12:RP89093

4. **Federal Funding Review and Reporting Practices**: Review the federal funding mechanisms and reporting practices of McGovern Institute, Feng Lab, IDG/McGovern Institute, and Allen Institute PI's to ensure transparency and adherence to guidelines.
5. **Due Diligence Assessment of Foreign Affiliations**: Implement a rigorous due diligence assessment of Principal Investigators (PIs), Researchers, Post Docs, and others to uncover reported and unreported foreign affiliations, foreign military involvement, and other foreign interests and funding.

China's front-row seat to U.S. AI research underscores the multifaceted challenges and opportunities inherent in international collaboration. While fostering innovation and global cooperation, these engagements also necessitate robust oversight, transparency, and alignment with national security priorities. The outlined recommendations provide a roadmap for navigating this complex landscape, balancing the pursuit of scientific excellence with the imperative to protect and promote U.S. interests in an increasingly interconnected and competitive world.

Annex A: Navigating Dual Affiliations – An In-Depth Analysis of McGovern Institute Personnel and the Associated Risks

This annex delves into the complexities and potential hazards associated with individuals affiliated with the McGovern Institute who also maintain ties to other organizations, providing a comprehensive examination of the implications for the institute's operations.

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Annex B: Co-Authors of Dual Affiliated McGovern Individuals of Risk

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Annex C: Assessing Risks of Dual Affiliations and PLA Ties of Chinese Laboratories

In our deep dive into the McGovern Institute, we utilized Data Abyss, an advanced OSINT (Open-Source Intelligence) search engine, to uncover the dual affiliations and intricate relationships between Chinese laboratories and the People's Liberation Army (PLA). Data Abyss, with its adeptness in research security and associated analytic fields, facilitated the identification of potential risks stemming from these affiliations. By merging deep web collection techniques with S&T data repositories, this tool provided a comprehensive

perspective on the interconnectedness of these laboratories to the PLA, emphasizing potential security and operational concerns.