

# 臺灣研究誠信守則

Taiwan Code of Conduct  
for Research Integrity


2020





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### Taiwan Code of Conduct for Research Integrity

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# 序

## 誠信在心：做一位正直的科研人！

廿一世紀是人類歷史上科技進展最快、最精細、最有影響力的世代。走了五分之一的世紀，才不過二十年間，科技人士已經能夠把整個前二十世紀的科技知識儲存在一片小小的晶體上。一個包括8個O（Bio, Geno, Neuro, Cogno, Info, Techno, Medico, Cultural/Socio）的社會生活體系不停的因科技的進展而變得更複雜，既強調專業，更要求合作整合的科技研發，才是創新之至的主要來源。如此一來，知識的掌握者在知識經濟的社會快速變動中，很自然的就成為利益分配中的最高得利者。因此，科技知識的創造者，必須在享受學術自由的旗幟下，有責任去建造研究的正當環境，使研究者不因私利或疏忽，在研究的過程中，有意或無意地產生不端的研究行為，導致偏頗或不正確的研究結果。我們當然也會了解「人非聖賢，誰能無過」是一項必須面對的現實。但「犯錯」及「有過」所造成的生命和生活之負面影響是很可觀的，絕對不應被等閒視之。所以，營造端正研究行為的環境，是每一個研究單位必須承擔的絕對義務！

從2007年開始，國際科學界就相當重視研究行為的誠正問題。歐洲、美國、加拿大、澳洲等國家的研究基金會，啟動一系列的會議，檢討並建立研究行為的誠信規範。亞太地區，包括日本、韓國、中國大陸、新加坡、泰國和臺灣，大部份的研究主管單位，也積極建立類似的規範。在臺灣，感謝多位學者專家，在陳正成教授的召集下，多次會商檢視，終於完成這「臺灣研究誠信守則」的手冊。培育誠信在心的科研人士，讓臺灣在國際上，是可以被認定和讚揚的「可以被信賴的研究夥伴」( Trusted Partner ) !

台灣聯合大學系統 系統校長

A handwritten signature in black ink, appearing to read '陳正成' (Chen Zhengcheng), written in a cursive style.

## 前言

《臺灣研究誠信守則》(以下簡稱本守則)<sup>1</sup>提供研究人員和研究機構在進行與支持研究時的依循規範。本守則是在用來引導研究人員和研究機構追求高品質的研究成果，從而增進研究的價值與效益，以達到卓越學術研究的目標。

在本守則中，學術研究是指透過系統化的學習、思考、觀察、實證與傳播以獲得知識的歷程。學術研究必須以誠信為立基，其立即與最終之研究成果才有價值，且獲得社會大眾的信賴，進而成為社會正義與人類進步的基石。為了維持研究的可信度，研究誠信已廣為全球學術社群所重視，並成為所有領域研究人員均須理解與遵循的規範。

本守則提出貫徹研究誠信之五項原則作為在臺灣的學術環境推動研究誠信的參考。本守則亦對負責任的研究行為、不當的研究行為，以及研究人員和研究機構必須承擔的責任，提供定義與準則。

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<sup>1</sup>在臺灣，研究誠信 (research integrity)、研究倫理 (research ethics) 和學術倫理 (academic ethics) 三個字詞各有其內涵，惟常被交替使用。本守則採用「研究誠信」來規範學術研究行為可信度的最高標準。



# 研究誠信原則

研究誠信原則是研究人員 ( researchers ) 與研究相關人員 ( research-related personnel ) 在從事研究工作時，應依循的行為基礎。本守則所指的研究相關人員，包含所有在研究過程中協同參與計劃、執行、審查、報告的人員及其他研究的贊助者與參與者。

研究誠信原則之訂立，旨在敦促所有研究人員與研究相關人員，應思考其研究行為的合宜性、可信度及其行為後果。理想上，研究誠信應嵌入學術體系並內化至個人的價值觀中，並在其專門的研究工作中具體實踐。研究人員與研究相關人員應理解，本守則是規範正當研究行為的指引，並非法規。因此，本守則會因研究環境的變動而與時俱進。

在參考世界各國提出的研究誠信守則之後，本守則歸納下列研究誠信原則：

## 1. 誠實 ( Honesty )

誠實是指研究人員應據實地蒐集和處理研究資料，嚴謹地執行研究和呈現<sup>2</sup> 研究發現，避免作出毫無根據的推論。研究人員不可偽造或變造研究資料或其來源。研究

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<sup>2</sup> 本守則所提及之「呈現」係指對研究者或大眾所作的各層面的口述或書寫的報告，包括計畫申請、會議海報或演講。

人員應呈現能對應研究紀錄的準確結果，並避免呈現比實際研究紀錄更有利或不利的結果。

誠實也是研究機構應積極建立和維護的正向研究文化。讓研究機構內的研究人員能誠實客觀地審視自己和別人的研究，並盡最大努力確保研究資料和結果的準確性。同時，研究人員應適時敘明他人的貢獻，且不應參與或隱瞞不當研究行為。

## 2. 尊重 ( Respect )

研究人員及研究機構應尊重研究中直接或間接參與者的自主、權益、福祉及尊嚴。此處所指的參與者包含 ( 但不限於 ) 研究人員、研究相關人員、研究對象、實驗動物、合作者、志願者或客座研究人員、期刊編輯與代表、研究人員所屬之機構或計畫執行機構、資助機構、委託方，以及其他任何可能受該研究所影響的人士或單位。

## 3. 嚴謹 ( Scrupulousness )

研究人員和研究機構在從事研究時，在研究的全部階段，包括設計、執行和呈現結果，皆應謹慎處理所有的研究細節。研究設計應奠基於過去的研究之上，並持續精進，同時應確保研究設計與研究方法切合研究目標，且已將所有非必要的風險降至最低。在進行研究的過程

中，研究人員應確實執行所有必要的研究程序，並詳實記錄研究的過程和發現。在呈現研究結果時，研究人員應根據其領域的標準，客觀地詮釋研究發現，並確保其內容的正確性與合宜性。此外，研究人員所從事之研究活動，均應符合現行的學術倫理規範與適用的專業標準。

#### 4. 課責 ( Accountability )

研究人員和研究機構皆應確保其研究符合法規、協議、條款和規範等，且皆應有妥當的管理。研究人員必須省察自身應承擔的個人及社會責任，並遵守相關領域、所屬專業機構或社群，以及研究資助機構或其他相關組織所提出的倫理規範和守則。研究人員也應該盡可能考量影響利益相關者的風險與效益。

#### 5. 透明 ( Transparency )

透明是指研究人員和研究機構應該確保他人能清楚瞭解研究，包括所蒐集的資料或數據、採行的研究方法、獲得的結果，以及外部利益相關者所扮演的角色等。為求透明，研究人員和研究機構應以負責任的態度，透過合宜的管道去分享和交流研究的進展或成果。任何與利益衝突相關的事項也應適當地揭露和管理，或於必要時加以去除。

# 負責任的研究行爲

本守則定義以下負責任的研究行爲，研究人員應該力求恪守之。

## 1. 嚴謹地蒐集與分析研究資料或數據

研究人員應客觀地蒐集研究資料與數據，採行合宜的分析方法，詳實揭露所有的研究細節，並清楚呈現研究的發現、詮釋與推論，以及研究的限制與可能的意義。

## 2. 確保研究紀錄的完整性以供驗證

研究人員應以完整、清楚、準確與客觀的方式蒐集和記錄研究資料、數據與方法，並於相當期間內妥善保存原始資料或數據，以俾自己或他人能驗證或重現研究結果。

## 3. 分享與公開研究資料、數據與結果

研究人員應依循相關的研究協議或規範，分享其研究資料或成果。使用國家或公共研究經費所完成的研究成果，應適度公開給學術社群及社會大眾參考。

## 4. 註明他人與自己的貢獻

研究人員在引用他人或自己已出版之研究資料、數據或論點時，應尊重智慧財產權及著作人格權，包括準確地註明來源及其貢獻。此一準確性有助於確認每位著作人對該研究的貢獻，也避免誤導他人對於原創性的主張或推論。

## 5. 遵守作者列名原則及擔負責任

只有對研究成果的出版或發表品有相當程度之實質學術貢獻者，例如，設計構思、資料與數據蒐集及處理、研究執行、資料與數據分析及解釋，以及論文稿件撰寫等，始得列名共同作者。基於榮辱與共的原則，一旦在研究成果中列名，共同作者即應在合理範圍內對論文內容負連帶責任。共同作者之認定亦應基於研究領域內普遍可接受的作法，及依循會議、期刊或資助機構之相關要求，且理想上應註明每位共同作者所負的特定責任。

## 6. 充分的揭露與迴避利益衝突

研究人員應揭露可能會造成研究執行偏差的相關利益資訊，包括個人、專業或財務方面的利益。這些利益應在申請計畫經費、尋求或進行論文稿件審查，與呈現研究成果時揭露。公開揭露對於實際或可預期利益衝突的預防至關重要，因利益衝突可能會降低研究執行時的公平性和客觀性。

## 7. 接受與尊重研究倫理審查

研究人員應申請相關的倫理審查，讓機構能從專家與客觀的角度來審查及批准研究，包括評估風險程度、保密性課題和知情同意，以及其他對保障人類受試者與實驗動物之福祉與權益的重要面向。研究人員在研究計畫的所有階段，都應該尊重倫理審查的決定。

# 不當的研究行爲

未能合於負責任且適當研究行為的作為，且嚴重的違反前述所陳的研究誠信原則者，為不當研究行為。然而，不當研究行為類型包含範圍甚廣，以下所列舉者，係主要的行為類別；惟在針對個案進行判別時，仍須考量研究性質、不當作為的嚴重性、涉及的範圍、涉案人員的動機與態度，並應考慮各別學域具獨特性的研究慣例。

嚴重違反研究誠信者，主要有以下三項：

- 1. 造假**：虛構研究資料、數據或結果，記錄或發表虛構的研究成果。
- 2. 變造**：不實變更研究資料、設備、研究過程，改變或忽略研究資料或結果，導致研究紀錄無法正確呈現。
- 3. 抄襲**：援用他人的文字、構想、研究過程、發現或著作，而未適當註明出處以承認其原創。

下列（但不限於）研究行為情節嚴重者，亦得被視為不當研究行為：

## 1. 與資料或數據相關的研究行為

- (1) 未妥善保管研究資料及成果。
- (2) 刻意隱瞞或毀損重要的資料或數據。

(3) 洩漏具隱私或機密性質的資訊。

## 2. 與執行研究相關的研究行為

(1) 不當的對待人類受試者或實驗動物。

(2) 侵害人類受試者或實驗動物的權利與福祉。

(3) 未遵守倫理審查委員會所核准的研究程序及範圍。

## 3. 與研究寫作及發表相關的研究行為

(1) 由他人代寫或不當的作者列名。

(2) 未經註明而將相同或類似的論文稿件，一稿多投至多個期刊。

(3) 未適當引註自己已發表的成果或著作，致有單一研究貢獻被重複不當地計算。

(4) 不當地影響審查的公正性，包括經費申請、論文稿件或其他研究相關程序，例如學位論文之審查。

上述不當研究行為之認定，應依據可信性、專一性及實質性的證據證明。此一證據應該足以在合理可能性下顯示研究人員故意違反不良行為，或研究人員違反其領域中應有的知識和技能的不良行為。而可能會發生的無心之過或意見分歧，不應視為不當研究行為。該證據並應足以顯示其不當研究行為有誤導他人且嚴重悖離相關研究社群所普遍接受之作為的可能。

# 研究機構的責任

研究機構應該提供及保障良好的研究環境，確保研究人員能在安全、友善和開放的環境中進行研究工作。研究人員得擁有適當的機構管道，藉以就工作中的困境尋求支援，或針對所犯的錯誤進行檢討及獲得改善的建議。以下說明研究機構為培養良好的研究環境，建議可採取之作為。

## 1. 建立教育培訓和管理機制

- (1) 研究機構應提高組織內部關於研究誠信的知能與作為，並定期針對學生、研究計畫主持人、研究執行人員、研究管理人員，及機構內與研究相關的行政人員等，提供適切且符合其需求的教育培訓課程。
- (2) 研究機構應針對各類研究人員，制定完備與健全的研究誠信政策及管理機制，並確保這些政策可供所有人取用。
- (3) 研究機構應與機構內的成員，經由健全的訓練、指導、監督和正向的激勵，來共同塑造一個能促進負責任研究行為的工作環境。



## 2. 培養與支持負責任的研究文化

- (1) 研究機構應確保機構內成員的研究行為，均符合相關法規、協議、條款和規範等，且能提供落實負責任研究文化的教育和訓練。如果有未符合的情況，或是有潛在未符合的風險，應積極採取相應的措施，提供明確的原則與指示，以協助成員解決問題。
- (2) 研究機構應採取適當措施防止不當研究行為的發生，例如可加強對研究人員的監督管理，以及對於學位論文口試委員會的組成採取更審慎的作法，且鼓勵有效的指導作法。
- (3) 研究機構應提供開放、安全、友善和多元的研究文化，使研究人員能夠積極參與研究誠信議題的討論，且能落實符合誠信規範的永續研究行為。

## 3. 制訂與實施資料或數據的管理政策與作為

- (1) 研究機構應制訂研究資料或數據管理政策與措施。這些政策應很明確地與內部和外部的研究合作者進行溝通。
- (2) 研究機構應責成所有研究人員，盡力並妥善地儲存及維護所有與研究相關的資料與數據，並清楚指示特定的保存期限，以備必要時的回顧與檢索。

#### **4. 管理研究協定、執行、發表和出版流程等事宜**

- (1) 研究機構應確保與研究委託方或資助機構間合約的完整和妥適性，包括研究資料、數據與成果的歸屬或公開等內容。
- (2) 研究機構應盡力確保研究結果的發表及出版過程公開且嚴謹。

#### **5. 設立倫理審查與監控機制**

- (1) 研究機構應針對組織內進行的研究計畫視需要採行必要的倫理審查機制，且需確保研究計畫的適當監控。
- (2) 研究機構應制定個人、專業與財務利益衝突的揭露與管理政策，包括落實該政策的措施與要求。

#### **6. 制定通報及審理疑似不當研究行為或違反研究誠信案件的機制**

- (1) 研究機構應提供通報疑似不當研究行為或違反研究誠信案件的明確流程。該流程的實施應有書面紀錄，並確保其機密性；同時應在程序公正原則的前提下保護案件的相關人士，包括通報者、證人、案件審查人與疑似違規者。
- (2) 研究機構應對疑似不當研究行為或違反研究誠信案件的調查應制定清楚且詳實的審議要點，且能具體和公

正的落實，以達到徹底與客觀的審查和解決，包括研究紀錄的更正。

- (3) 一旦發現涉嫌造假、變造、抄襲或其他違反研究誠信的情事，研究機構應對通報人及被通報人善盡隱私與保密的保護責任，並在合理期限內秉持公平原則進行審理、調查與裁處。被通報人未經證明違反屬實，不得以違反學術倫理視之。

## 結論

透過理解與遵循本守則所闡述的規範，我們期望研究人員和研究機構能增進臺灣的學術研究價值和可信度。對於研究誠信原則的堅持將能強化我們貢獻新知識及創新發現，及與全球的研究者合作，且能激勵下一代研究人員以深切的尊嚴和責任感來從事研究。

## 參考文獻

起草委員會在編撰本守則時，參考下列國家和國際的守則和規範。委員會感謝眾多專家制定這些守則和規範的貢獻，此亦啟發制定一部適合臺灣學術環境的研究誠信守則。

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## 後記：臺灣研究誠信守則編撰

《臺灣研究誠信守則》係由台灣聯合大學系統陳正成系統副校長（兼召集人）、中央研究院孫以瀚特聘研究員、國立成功大學黃美智教授暨臺南護理專科學校教授兼校長、國立臺灣大學蔡甫昌教授、國立清華大學范建得教授、國立交通大學周倩教授，以及臺灣學術倫理教育資源中心執行秘書潘璿安博士，共組起草委員會編撰而成。

編撰過程參考各國研究誠信守則、教育部《專科以上學校學術倫理案件處理原則》、《科技部學術倫理案件處理及審議要點》及《科技部對研究人員學術倫理規範》，並經中央研究院、國家實驗研究院、全國公、私立大學、科技大學及獨立學院的學術倫理辦公室或學術倫理委員會協助修訂完成。

起草委員會感謝Zoë Hammatt女士（美國Z顧問公司總裁；夏威夷大學兼任副教授）修訂本守則英文版。

# Preface

Since the first World Conference on Research Integrity (WCRI) was convened in Lisbon in 2007, international research collaboration has increased, and the field of research integrity has been marked by heightened global attention on addressing research misconduct and teaching the responsible conduct of research. Experts have gathered for the WCRI in Singapore, Montreal, Rio de Janeiro, Amsterdam, and most recently, Hong Kong, to exchange ideas around handling misconduct and fostering an environment where research can ultimately be trusted.

In February 2018, an international meeting with a focus on research integrity in Asia and the Pacific Rim was held in Taipei, Taiwan. Among the concerns discussed was possible breaches of integrity given that many academic researchers in the region are threatened by harmful societal pressures and improper commercial incentives. One example is financial and other rewards for publishing in important scholarly journals. This trend seems to coincide with an increase in retracted papers by authors from countries where such rewards have become more prevalent. Research misconduct in varying degrees clearly undermines the value and trustworthiness of research. Raising awareness of the negative effects of breaches of integrity and designing education programs that encourage responsible research behavior are necessary steps in cultivating a positive atmosphere where research partnerships can thrive and study results can be trusted. To this end, establishing practical codes

serves to articulate common values, strengthen opportunities for collaboration, and share best practices in research integrity for all involved in the research enterprise.

In the development of such codes, it is critical to acknowledge potential threats to research integrity that have emerged in the rapidly changing scientific context in Taiwan.

1. Taiwan is a high-tech “knowledge society,” in which the socio-economic gap between the rich and the poor is expanding. Rather than a gradual evolution, this expansion has occurred suddenly and quickly, leaving little time for the society to adapt. Profit-oriented high-tech companies often demand immediate short-term gains without paying attention to emerging inequities, social injustice and long-term effects.
2. Technological and scientific advances have intervened, often adversely, in various dimensions of human life--including its origin, its ending, and its physical and social environments. Examples such as “gene-edited babies” can be particularly disturbing when contemplating the potential for hidden dangers and ethical violations. Moreover, powerful scientists are often regarded as omniscient, and some make unjustified claims that can affect social and legislative policies beyond their areas of expertise.
3. Another example of rapid technological advances is the “information society” in which we live, with the Internet, social media, and social networking dominating our communication and learning to a great extent. While it is



easy to access information, verifying the accuracy of such information has become a challenge. The prevalence of virtual reality, fake news, twisting facts, and distorting images using modern software has likely contributed to a shift in attitudes toward plagiarism, for example, where copying text from the Internet is often deemed as common and therefore morally justifiable.

4. The political context in which research of all kinds is conducted has changed, giving rise to competing interests around privatization and stronger governmental control. In light of tensions between these and other interests, it is fundamental to create opportunities for diverse stakeholders to scrutinize and openly discuss issues of research ethics and integrity.

We must acknowledge that these threats can pose challenges that undermine the trustworthiness of research in all disciplines. To address these challenges, and with the noble goal of encouraging honest, responsible research behavior that contributes to the advancement of knowledge while ultimately benefiting society as a whole, the Drafting Committee has thoughtfully considered the principles and practical guidance offered in this code. I am certain their dedicated efforts will not be in vain.



Ovid J. L. Tzeng  
Chancellor  
University System of Taiwan

# Introduction

*The Taiwan Code of Conduct for Research Integrity* (the “Code”) <sup>1</sup> provides researchers and research institutions with guidelines to be followed when conducting and supporting research. The *Code* is designed to guide researchers and research institutions in their pursuit of high-quality research results, and thereby to achieve the goal of excellence in academic studies that enhances the value and benefit of research.

In this *Code*, academic research is defined as a process of obtaining knowledge through a systematic procedure of learning, thinking, observation, validation, and dissemination. Academic research must be based on integrity so that immediate and ultimate research results are valuable and worthy of the public’s trust, thereby serving as a cornerstone of social justice and human progress. To perpetuate the trustworthiness of research, the field of research integrity has become recognized by the global academic community as establishing universal norms and specific practices that those engaging in research of all disciplines should understand and follow.

To serve as a reference for the enhancement of research integrity in Taiwan’s academic context, the *Code* proposes five principles related to the implementation of research integrity. The *Code* also offers definitions and guidelines for responsible research conduct, research misconduct, and responsibilities that researchers and research institutions should bear.

# Research Integrity Principles

The research integrity principles described here are guidelines that researchers and research-related personnel should follow when engaging in research. The term “research-related personnel” referenced in this *Code* includes all people collaboratively involved in the processes of proposing, performing, reviewing, and reporting research and other research supporters and participants.

These principles serve to inspire all researchers and research-related personnel to think about the appropriateness, trustworthiness, and consequences of their conduct. Ideally, research integrity should be imbedded in the academic system and internalized by researchers through their personal values, enabling them to adhere to these principles in their specific research tasks. Researchers and research-related personnel should understand that the *Code* offers a guideline for appropriate behavior, not a law. As such, this *Code* is a dynamic document that will be subject to change as the research environment evolves.

Drawing upon guidelines for research integrity proposed by different countries around the world, this *Code* is founded upon the following research integrity principles:

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<sup>1</sup> In Taiwan, the terms “research integrity” (研究誠信), “research ethics” (研究倫理), and “academic ethics” (學術倫理) each have distinct meanings and interpretations, but these terms are often used interchangeably. This *Code* uses the term “research integrity” to indicate the highest standards of trustworthiness in the conduct of academic research.

## 1. Honesty

Honesty means researchers should truthfully collect and process data, conscientiously implement and present<sup>2</sup> research findings, and avoid making unfounded inferences. Researchers must not fabricate or falsify research data or their sources. Researchers should present accurate results as reflected in the research record, and should avoid presenting results that are more or less favorable than the actual record reveals.

Honesty is also inherent to a positive research culture that research institutions should rigorously establish and maintain. Acting honestly, researchers in the institution can objectively scrutinize their own work and the work of others, thereby doing their best to ensure the accuracy of research data and results. At the same time, researchers should properly acknowledge the contributions of others and must not participate in or conceal research misconduct.

## 2. Respect

Researchers and research institutions should respect the autonomy, rights and benefits, welfare, and dignity of any participants directly or indirectly involved in a study. “Participants” may include research personnel, research subjects, experimental animals, collaborators, volunteers

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<sup>2</sup> The terms “present” and “presentation” used in this *Code* refer to all aspects of reporting, such as describing verbally or in writing to others (in a grant application or a conference poster or presentation, for example), releasing to other researchers or to the general public, and publishing (such as in a journal, book, or other form).

or visitors, journal editors, institutions or project implementation agencies with which the researcher is affiliated, funding agencies, the commissioning parties, and any others affected by the study.

### **3. Scrupulousness**

Researchers and research institutions should carefully handle all research details during all stages of the research, including design, implementation, and presentation of results. Research design should be built upon and continue to improve past research, ensuring that the study design and methodology meets the research objectives while reducing all unnecessary risks. In the process of implementing a study, researchers should meticulously carry out all necessary research procedures and accurately record the process and findings in detail. When presenting research results, researchers should objectively interpret research findings and ensure the correctness and appropriateness of the interpretation based upon standards of their specific discipline. In addition, researchers should comply with current norms of academic ethics and applicable professional standards when conducting research activities.

### **4. Accountability**

Researchers and research institutions should ensure that their studies comply with laws and regulations, agreements, terms, and guidelines, and that they are properly managed.

Researchers must examine the individual and societal responsibilities that may apply, and should observe the ethical norms and guidelines proposed by their research fields, professional institutions or communities, and research funding agencies or other related organizations. To the extent possible, researchers should also consider the risks and benefits that may affect relevant stakeholders.

## **5. Transparency**

Transparency means that researchers and research institutions should ensure that others can clearly understand the study, including the data collected, the data collection methods, the results obtained, and the role of any external stakeholders. In being transparent, researchers and research institutions should share the progress and results of their studies through appropriate channels and in a responsible manner. Matters related to potential conflicts of interest should be properly disclosed and managed or eliminated if necessary.

# Responsible Conduct of Research

Researchers should strive to adhere to the following fundamental elements of the responsible conduct of research.

## **1. Scrupulously collect and analyze research data**

Researchers should objectively collect research materials and data, adopt the appropriate method of analysis, accurately disclose all processes in detail, and clearly present research findings, interpretation, and inference, along with study limitations and possible implications.

## **2. Ensure a complete record of research for verification**

Researchers should record their research methods and data in a thorough, clear, accurate, and objective manner, and properly preserve the original data for a reasonable period of time in order to enable the verification or reproduction of the study results by the individual researcher or by other colleagues.

## **3. Share and publicize research data and results**

Researchers should share their research data and results according to pertinent research agreements or regulations. Research results that are subsidized by national or public research funding should be freely released to the academic community and the general public for reference.

#### **4. Indicate specific contributions to the research**

When citing others or referencing their own published research data or ideas, researchers must honor intellectual property and moral rights by accurately indicating the source and the specific contribution. Such accuracy serves to acknowledge each author's contributions to the work and prevents misleading statements or inferences.

#### **5. Follow authorship guidelines and bear shared responsibility**

Only those who make substantial contributions to a publication or presentation, such as research design, data collection and processing, implementing the study, data analysis and interpretation, and writing the manuscript, should be listed as co-authors. Based on the principle of sharing credit and blame, once a person is named as a co-author on a paper, poster, or presentation, he or she should bear joint responsibility for the content to a reasonable extent. Authorship should be based upon the commonly accepted practices and criteria of different research fields and according to the conference, journal or funder requirements, ideally listing each co-author's specific responsibilities.

#### **6. Fully disclose and avoid conflicts of interest**

Researchers should disclose relevant information related to



interests that may bias the research process, including personal, professional or financial interests. Such interests should be disclosed when applying for research funding, seeking or conducting manuscript review, and presenting research results. Open disclosure is critical to preventing real or perceived conflicts of interest that may reduce the fairness and objectivity of the research process.

## **7. Accept and honor research ethics review**

Researchers should apply for the relevant research ethics review to enable the institution to examine and approve the study from an expert and objective perspective, assessing the degree of risk, issues of confidentiality and consent, and other aspects vital to protecting the welfare and rights of human subjects and animals. Ethics review decisions should be honored throughout all stages of the research project.

# Research Misconduct

Failure to meet the standards of responsible and appropriate conduct of research and serious violations of the above principles of research integrity are considered research misconduct. Although a broad range of improper behaviors may constitute research misconduct, the following section describes only the major forms. When judging a case of alleged misconduct, those conducting review should consider the nature of the study, the severity and extent of the alleged violation, the intention and attitude of the person(s) concerned, and the standards and conventions of the specific research field.

There are three major types of serious violations of research integrity:

- 1. Fabrication:** making up research data or findings, and presenting, recording or publishing fictitious research results.
- 2. Falsification:** inappropriate alteration of research materials, equipment, or research processes, or changing or ignoring research data or findings, such that the research record is not accurately presented.
- 3. Plagiarism:** using the words, ideas, research process, findings, or publications of others without attributing the

source in order to appropriately acknowledge the original work.

The following research behaviors (including but not limited to those listed), when they occur to a serious extent, are also considered research misconduct:

## **1. Data related research conduct**

- (a) Failure to properly preserve research materials and findings.
- (b) Deliberately concealing or destroying important data.
- (c) Leaking information that should be kept private or confidential.

## **2. Implementation related research conduct**

- (a) Improper treatment of human or animal subjects.
- (b) Violating the rights and undermining the benefits of human or animal subjects.
- (c) Failure to comply with the research procedures and scope approved by the Institutional Review Board/Research Ethics Committee or funding agency.

## **3. Writing and publishing related research conduct**

- (a) Using ghostwriters or improper listing of co-authors.
- (b) Submitting the same or similar manuscripts to multiple journals without full disclosure.

- (c) Not properly citing one's own published results or works such that single research contributions are inappropriately counted multiple times.
- (d) Improperly influencing the fairness of the review of a grant application, manuscript, or other research-related process such as dissertation review.

The determination of whether research misconduct occurred and who is responsible should be based on credible, specific, and substantive evidence. Such evidence should be strong enough to demonstrate the reasonable likelihood that the person(s) concerned deliberately committed the misdeeds or committed the misdeeds without regard for knowledge and skill that researchers in the field should typically acquire. Honest errors or differences of opinion may occur and should not be considered misconduct. The evidence should also demonstrate that the misconduct is likely to mislead others and constitutes a serious deviation from commonly accepted practices adopted by the relevant research community.

# Responsibilities of Research Institutions

Research institutions should provide and maintain a positive research setting to ensure that researchers can carry out their work in a secure, friendly, and open environment. Researchers should have access to appropriate institutional channels through which they can seek support, review, and suggestions for improvement when facing difficulties in their work or making mistakes. This section describes some measures that institutions are advised to adopt as they foster a positive research environment.

## **1. Establish education, training, and management mechanisms**

- (a) Research institutions should improve the knowledge and practice of research integrity within the organization, and regularly provide appropriate and necessary education and training courses for students, research implementing personnel, principal investigators, research managers, and research-related administrative staff.
- (b) Research institutions should establish comprehensive and fair research integrity policies and management mechanisms for research personnel, and make these available and accessible for all.
- (c) Research institutions should collaborate with members of

the organization to create a work environment that raises awareness of and promotes the responsible conduct of research through robust training, mentoring, supervision, and positive incentives.

## **2. Foster and support a responsible research culture**

- (a) Research institutions should ensure that all research behaviors of the institutional members align with relevant regulations, agreements, terms, and guidelines, offering educating and training to increase awareness. If there are situations, or potential risks, of non-compliance, institutions should take appropriate action and provide clear guidance and instructions to facilitate resolution of the problem.
- (b) Research institutions should take appropriate measures to prevent research misconduct from occurring. For example, they may strengthen the supervision and management of research personnel, or they may adopt a conscientious approach to the composition of dissertation committees and encourage strong mentoring practices.
- (c) Research institutions should provide an open, safe, friendly, and inclusive research culture that enables researchers to actively participate in the discussion of issues of research integrity and to perpetuate conduct that is consistent with the norms of research integrity.

### **3. Establish and implement data management policies**

- (a) Research institutions should establish policies and measures of research data management. These policies should be clearly communicated among internal and external research collaborators.
- (b) Research institutions should instruct all researchers to properly preserve and maintain all research-related data and materials for a specified amount of time, in order to review and retrieve them when necessary.

### **4. Manage matters related to research agreements, implementation, and publication**

- (a) Research institutions should ensure that contracts signed with research commissioning parties or funding agencies are appropriate and comprehensive, including the attribution and disclosure of research data and results.
- (b) As much as possible, research institutions should ensure that the publication processes of research results are open and scrupulous.

### **5. Establish ethical review and monitoring mechanisms**

- (a) Research institutions should adopt ethical review mechanisms necessary to research being conducted within the organization and ensure appropriate monitoring of studies.

- (b) Research institutions should establish policies regarding disclosure of personal, professional and financial interests and management of conflicts of interest, including measures and requirements for implementing the policies.

## **6. Establish a mechanism for reporting and investigating suspected research misconduct or violations of research integrity**

- (a) Research institutions should provide a clear process for reporting and handling cases of suspected research misconduct or violations of research integrity. The process should be in writing and should ensure confidentiality, protecting those involved in accordance with principles of procedural fairness, including those reporting misconduct, witnesses, those reviewing the case, and those suspected of misconduct.
- (b) Research institutions should establish clear and detailed procedures for handling and investigating cases of suspected research misconduct or integrity violations and implement them in a consistent and fair manner, with regard for thorough and objective review and resolution, including correction of the research record.
- (c) Once detecting suspicions of fabrication, falsification, plagiarism, or other violations of research integrity,



research institutions should bear the responsibility to protect the privacy and confidentiality of the reporting and the reported persons, and handle, investigate, and determine the outcome of cases impartially and in a reasonable amount of time. Persons accused should be considered innocent unless and until proven otherwise.

## Conclusion

By understanding and following the guidelines set forth in this *Code*, we envisage that researchers and research institutions will enhance the value and trustworthiness of academic research in Taiwan. Upholding the principles of research integrity strengthens our capacity to contribute new knowledge and exciting discoveries, collaborate with researchers around the world, and inspire the next generation of researchers to conduct research with a deep sense of honor and responsibility.

## References

The following national and international codes and guidelines were reviewed by the Drafting Committee in preparation of this *Code*. The Drafting Committee is grateful to the many experts who contributed to development of these codes and guidelines, all of which offered inspiration for establishing a code that is appropriate to the academic research context in Taiwan.

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## Postscript: The Drafting of the *Taiwan Code of Conduct for Research Integrity*

The Drafting Committee of the *Taiwan Code of Conduct for Research Integrity* consists of the convener Prof. Cheng-Chen Chen (Vice Chancellor of the University System of Taiwan), Prof. Y. Henry Sun (Distinguished Research Fellow of Academia Sinica), Prof. Mei-Chih Huang (Professor of National Cheng Kung University and President of National Tainan Junior College of Nursing), Prof. Daniel Fu-Chang Tsai (Professor of National Taiwan University), Prof. Chien-Te Fan (Professor of National Tsing Hua University), Prof. Chien Chou (Professor of National Chiao Tung University), and Dr. Sophia Jui-An Pan (Executive Secretary of the Center for Taiwan Academic Research Ethics Education).

The *Code* was written by referring to research integrity guidelines proposed by many different countries, *Principles of Handling Academic Ethics Cases for Higher Education* by the Ministry of Education, *Guidelines for Handling and Investigating Research Misconduct* by the Ministry of Science and Technology, and *Academic Ethics Guidelines for Researchers* by the Ministry of Science and Technology. The *Code* has been reviewed and revised by the academic ethics offices or

academic ethics committees of Academia Sinica, National Applied Research Laboratories, and public and private universities, universities of science and technology, and independent colleges around the country.

The Drafting Committee extends its gratitude to Ms. Zoë Hammatt (President, Z Consulting, LLC; Adjunct Associate Professor, University of Hawaii, USA) for editing the English language version of the *Code*.





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