



為什麼美國
在諾貝爾獎
獨佔鰲頭？

余創豪

得主名單並不意外

- ▶ 很多得獎人都是在美國從事研究的學者。
- ▶ 法國裔美國科學家巴汶帝 (Moungi Bawendi)、俄羅斯裔美國科學家艾吉莫夫 (Alexei I. Ekimov) 及美國科學家布魯斯 (Louis E. Brus) 則榮獲化學獎。
- ▶ 匈牙利裔美籍生物科技研究人員卡里科 (Katalin Kariko) 及美國生物學家魏斯曼 (Drew Weissman) 贏取了醫學獎。

諾貝爾化學獎得主

獲獎原因：量子點的發現與合成



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THE NOBEL PRIZE
IN PHYSIOLOGY OR MEDICINE 2023

Illustrations: Niklas Elmehed



Katalin Karikó

Drew Weissman

"for their discoveries concerning nucleoside base
modifications that enabled the development
of effective mRNA vaccines against COVID-19"

THE NOBEL ASSEMBLY AT KAROLINSKA INSTITUTET

2023年諾貝爾醫學獎得主公布，由匈牙利裔美籍生技科學家卡里科（Katalin Kariko）及美國賓夕法尼亞大學教授魏斯曼（Drew Weissman）獲得殊榮。（取材自推特）

諾貝爾生醫獎得主今天揭曉，由匈牙利裔美籍女科學家卡塔林·卡里科（Katalin Kariko）和美國科學家德魯·魏斯曼（Drew Weissman）因致力開發「mRNA（信使核糖核酸）」技術，使mRNA新冠疫苗得以問世，挽救許多人的性命而共同獲獎。兩人也於今年獲頒台灣唐獎「生技醫藥獎」，唐獎生技組負責人、中研院院士張文昌說，「這是天時、地利、人和的結果，也是科學家厲害的地方。」

張文昌表示，以往要將病毒RNA（核糖核酸）送進人體有兩大挑戰，首先，RNA會觸發人體的先天性免疫反應，造成嚴重發炎反應，並於動物實驗發現，如此會讓動物死亡；其次，RNA在人體內非常容易降解，難以送達標的細胞或器官。

張文昌說，卡塔林·卡里科與德魯·魏斯曼經過多年努力，於2005年發表研究指出，透過開發的新平台，將病毒RNA經過核苷修飾後，可成為逃脫免疫系統的mRNA，克服了合成mRNA會被先天性免疫系統辨識而引發嚴重發炎反應的問題。

隨即2019年新冠疫情爆發後，立即利用此研究製造mRNA新冠疫苗，張文昌說，在不缺乏病人下，mRNA新冠疫苗立即完成三期人體臨床試驗，並救了好多人的生命，「當時真的是時機對了」。

► 文字來源：世界日報

Claudia Goldin



Claudia Goldin, a professor at Harvard University, was awarded the Nobel Prize in economics Monday for her research into women's income and employment. The Royal Swedish Academy of Sciences said Goldin had “uncovered key drivers of gender differences in the labor market.”

15 hours ago



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學者研究為什麼美國獨佔鰲頭？

- ▶ 美國社會學家哈里特·祖克曼（Harriet Zuckerman）在1977年的著作中分析了1901年至1972年間92位美國諾貝爾獎得主的歷史，
- ▶ 她發現諾貝爾獎得主往往是由早期諾貝爾獎得主培養的，在41位諾貝爾獎得主中，有15位在獲獎之前曾與其他獲獎人合作。
- ▶ 大器晚成是一個神話，諾貝爾獎得主不會輸在起跑點上，他們開始從事重要科研的平均年齡為39歲。



學者研究為什麼美國獨佔鰲頭？

- ▶ 所謂「團結就是力量、人多好辦事、眾人拾柴火焰高」，似乎這些道理並不能應用在贏取諾貝爾獎上面，雖然諾貝爾獎得主在得獎前傾向於和其他同行合寫論文，但往往他們最重要的科學貢獻是個人研究的結果，而不是團隊的產品。



學者研究為什麼美國獨佔鰲頭？

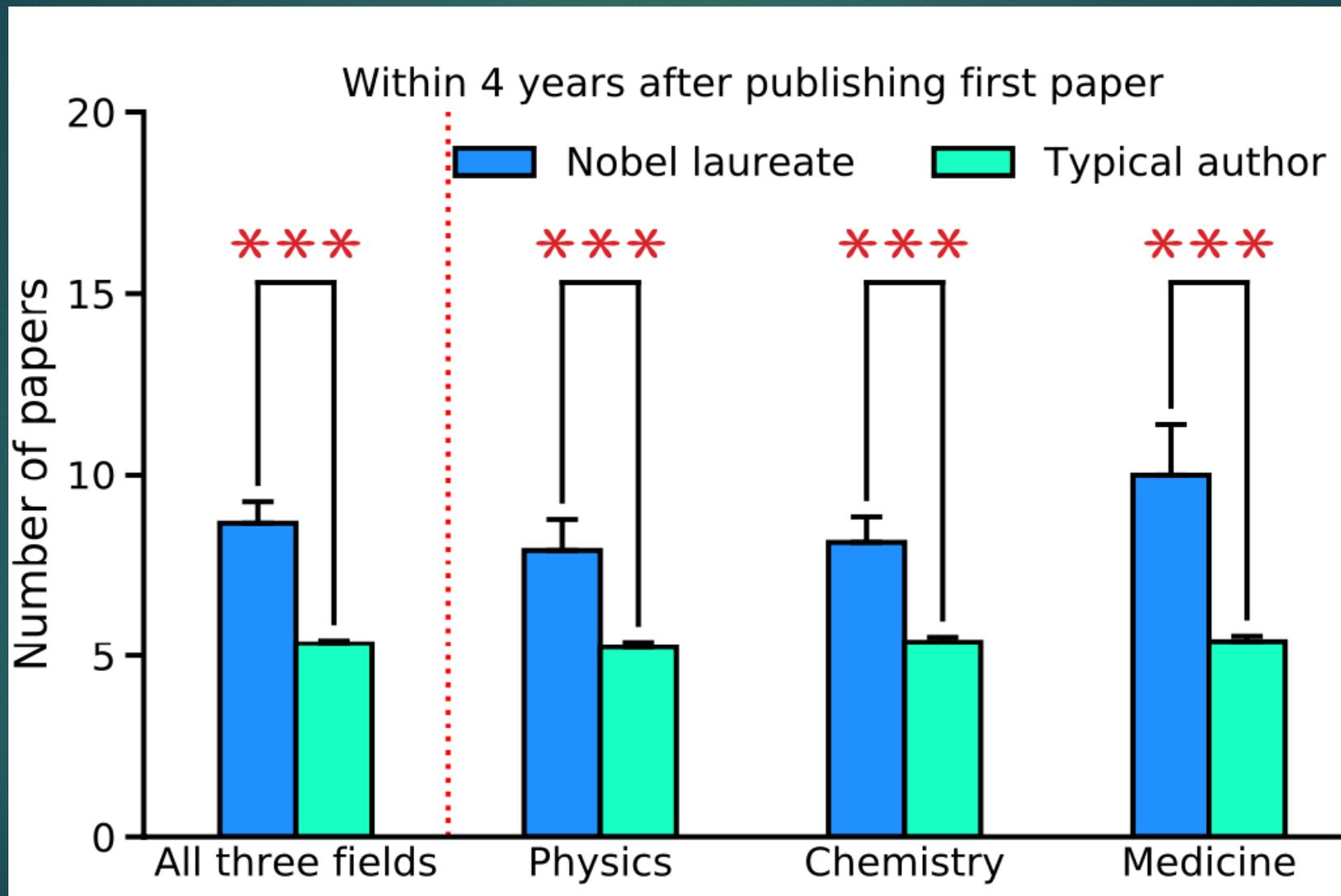
- ▶ 1997年，祖克曼發表論文去補充從前的研究，她發現在19年後，這些諾貝爾獎得主仍然是高產量的研究人員，他們發表論文的速度遠超過其他科學家。
- ▶ 雖然許多人在獲獎後的生產力暫時下降，但後來大多數都恢復了從前的高水準。祖克曼認為，美國學術界的規範和獎勵制度更加能夠鼓勵研究人員去冒險和驅動他們的好奇心，這種氛圍有助於美國科學家雄霸諾貝爾獎。



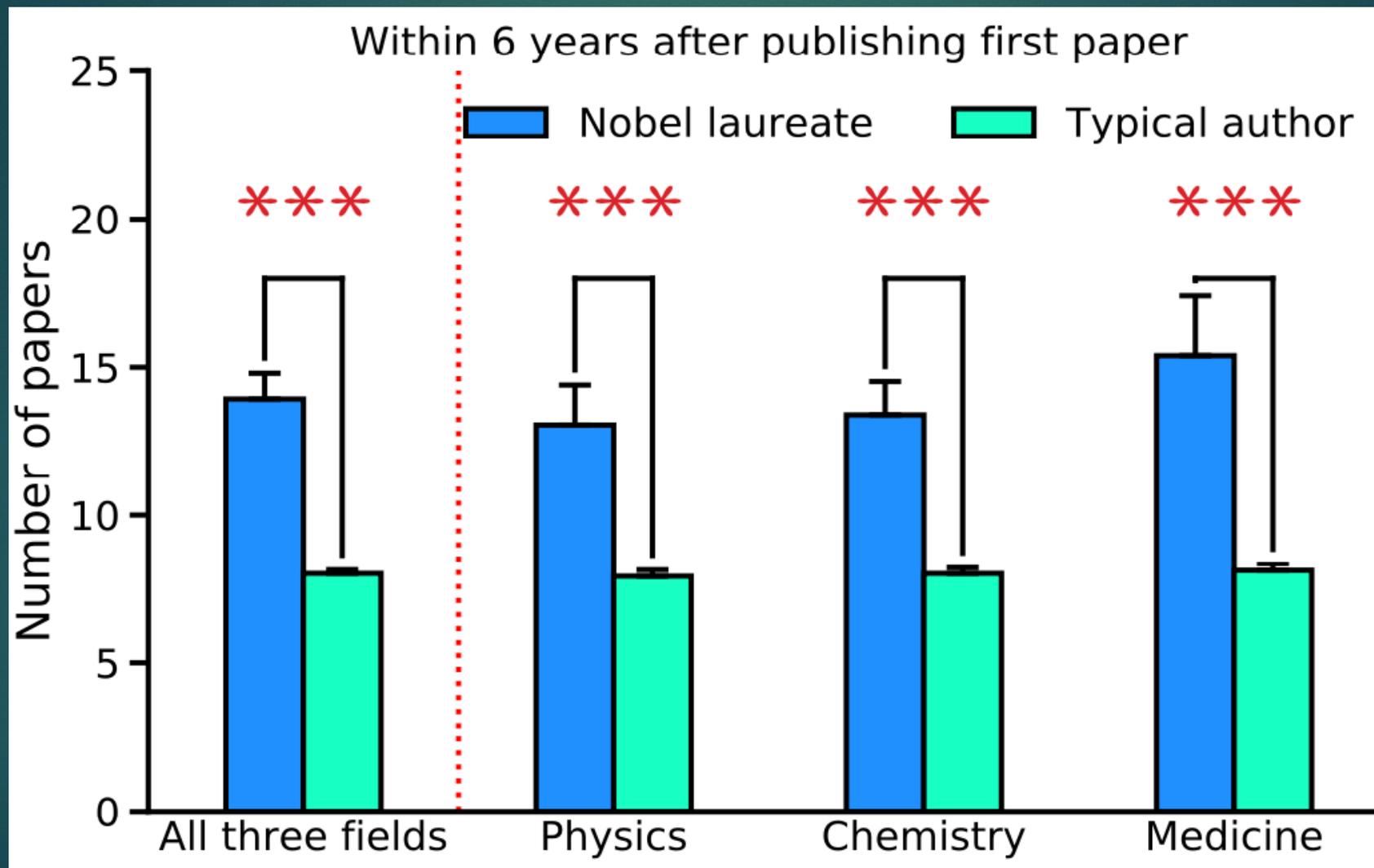
個人發表與團隊合作

- ▶ 2015年，瓦格納（Caroline Wagner）等美國學者印證了祖克曼的說法，當他們檢查了1969年至2011年間諾貝爾獎得主的數據後，他們發現諾貝爾獎得主在獲獎前後單獨發表的論文數量是多過合著的，
- ▶ 諾貝爾獎得主在其整個職業生涯中的共同作者數量少於未獲獎的科學家。

諾貝爾獎得主和沒有獲獎科學家論文數目的差別



諾貝爾獎得主和沒有獲獎科學家論文數目的差別



Nobel Dip?

- ▶ 2020年，一位中國國防大學的學者與六位美國學者在祖克曼的基礎上繼續研究諾貝爾獎得主的特質，他們的一部份結論印證了祖克曼的觀點。
- ▶ 例如諾貝爾獎得主從一開始就是多產作家，發表的論文數量幾乎是未獲獎科學家的兩倍。在獲獎後的兩年內，諾貝爾獎得主論文的平均影響力顯著下降，但這種影響並不是永久性的，到第四年其影響力就會迅速反彈到以前的的水平。

Nobel Dip?

- ▶ 這情況可能是因為一些諾貝爾獎得主希望在其他新領域尋求突破，因而忽略了本行。
- ▶ 舉例說，1987年諾貝爾化學獎得主 Jean-Marie Lehn 發表了700多篇論文，1987年之前，他的研究議程幾乎完全集中在密碼子（cryptands）相關的研究上。在獲獎後的十年裏面，他的研究卻轉移到新的題目。



諾貝爾獎魔咒？科學家得獎後 生產力反降低

編譯尤寶琪／綜合1日電 2023-10-02 10:57 ET



The graphic is a blue banner for the Nobel Prize in Physics 2020. At the top left is the Nobel Prize logo. At the top right is the logo of the Royal Swedish Academy of Sciences. The banner features three portraits of the winners: Roger Penrose, Reinhard Genzel, and Andrea Ghez. Below each portrait is their name and the award citation in Swedish and English. At the bottom of the graphic, two men in suits are shown speaking at a podium.

NOBELPRISET I FYSIK 2020
THE NOBEL PRIZE IN PHYSICS 2020

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Roger Penrose
"för upptäckten att bildandet av svarta hål är en robust förutsägelse av den allmänna relativitetsteorin"
"for the discovery that black hole formation is a robust prediction of the general theory of relativity"

Reinhard Genzel
"för upptäckten av ett supermassivt kompakt objekt i Vintergatans centrum"
"for the discovery of a supermassive compact object at the centre of our galaxy"

Andrea Ghez

諾貝爾獎主辦單位2020年宣布三位學者因研究黑洞而獲物理學獎；一項研究發現資深科學家在獲得重大獎項後，生產力不增反降。（Getty Images）

由史丹福大學(Stanford University)流行病學家約安尼迪斯(John Ioannidis)所帶領的團隊，8月於英國「皇家學會開放科學」(Royal Society Open Science)期刊發表一項研究，試圖量化重大獎項是否推動科學進步，並發現資深科學家在獲得重大獎項後，生產力不增反降。

約安尼迪斯博士研究小組，分析本世紀72位諾貝爾獎(Nobel Prize)得主和119名俗稱「天才獎」的「麥克阿瑟獎」(MacArthur Fellowship)得主，比較每位得主在獲獎前三年和獲獎後的發表和被引用次數，分析獲獎後生產力如何受到年齡和職業階段的影響；約安尼迪斯博士說，出版物可以讓我們深入瞭解每位學者有多少新作品，引用量化則可以看出該作品在該領域的影響力。

他的團隊發現，諾貝爾獎得主發表論文數量在得獎前後大致相同，但獲獎後的作品被引用的次數遠少於獲獎前的作品；麥克阿瑟獎得主論文量在得獎後稍有增加，但引用量基本上保持不變；諾貝爾獎和麥克阿瑟獎得主每篇論文的引用率，均出現下降。

研究發現，年齡在獲獎者的科學生產力中有重大影響；42歲或以上得主，獲獎後的引用和發表數量皆有所下降；41歲或以下的得主，獲獎後的論文發表數量和引用次數均有增加。

「這些獎項似乎並沒有提高科學家的生產力，」約安尼迪斯博士指出，「真要說的話，甚至產生了反效果。」

► 文字來源：世界日報

德國學者的觀點

- ▶ 德國學者Thomas Heinze、Marie von der Heyden、David Pithan 在一篇2019年發表的論文中指出，美國於1920年代崛起為科學強國，其領導地位在1970年代進一步鞏固。
- ▶ 踏入了21世紀，美國的科學霸權開始受到挑戰，其諾貝爾獎得主比例有所下降。
- ▶ 自2010年以來，美國在培育科研人才方面出現了青黃不接的現象。
- ▶ 儘管歐洲和亞太地區在科研上急起直追，目前沒有跡象顯示將會出現可以取代美國的全球科學中心。

德國學者的觀點

- ▶ 在另一篇 2020年發表的文章中，同樣的三位德國學者發現，對高等教育控制較少的國家，往往比對大學控制較多的國家產生更多的諾貝爾獎得主，前者的例子包括美國和英國，後者則包括法國和德國。
- ▶ 法國大學如果想設立新的學位課程，就必須先要獲得教育部的批准，該部門還可以決定學位課程的資助金額。此外，高級學術人員的職位數量和薪資也是由政府規定，大學必須從全國範圍內的合適候選人名單中招募教授。相反，英美大學沒有這些限制，無怪乎很多不願意受到箝制的科學家都移民到美國。

個人創作是不是比團隊合作優勝？

- ▶ 個人創作是不是比團隊合作更加能夠導致科學的突破呢？這並不一定。2003年完成的人類基因圖譜計畫（Human Genome Project）涵蓋了人類基因序列的92%，毫無疑問，這是一項突破性的成就。
- ▶ 有很多科學家參與這個計劃，然而，諾貝爾獎委員會只能夠在每個組別中將獎項頒予最多三個人，因此，那些拆解了人類基因圖譜的科學家並沒有得到諾貝爾獎。



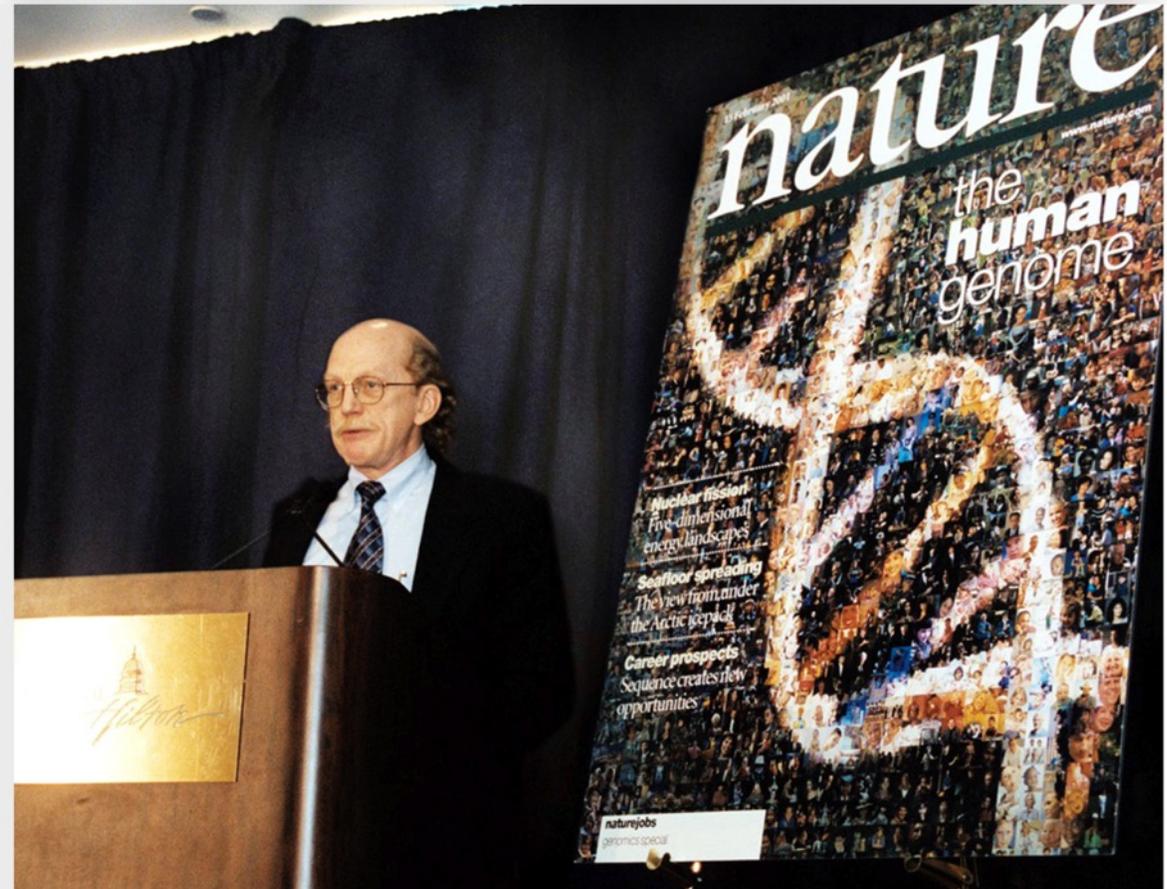
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What was the Human Genome Project?

The Human Genome Project was a large, well-organized, and highly collaborative international effort that generated the first sequence of the human genome and that of several additional well-studied organisms. Carried out from 1990–2003, it was one of the most ambitious and important scientific endeavors in human history.

Photo: Robert Waterston, M.D., Ph.D., at the 2001 press conference announcing the publication describing the draft sequence of the human genome generated by the Human Genome Project. Dr. Waterston was an instrumental planner, prominent leader, and major participant of the Human Genome Project. (NHGRI Photo Archive)





What were the goals of the Human Genome Project?

A special committee of the U.S. National Academy of Sciences outlined the original goals for the Human Genome Project in 1988, which included sequencing the entire human genome in addition to the genomes of several carefully selected non-human organisms.

Eventually the list of organisms came to include the bacterium *E. coli*, baker's yeast, fruit fly, nematode and mouse. The project's architects and participants hoped the resulting information would usher in a new era for biomedical research, and its goals and related **strategic plans** were updated periodically throughout the project.

In part due to a deliberate focus on technology development, the Human Genome Project ultimately exceeded its initial set of goals, doing so by 2003, two years ahead of its originally projected 2005 completion. Many of the project's achievements were beyond what scientists thought possible in 1988.

What is DNA sequencing? How was it performed during the Human Genome Project?

DNA sequencing involves determining the exact order of the bases in DNA — the As, Cs, Gs and Ts that make up segments of DNA. Because the Human Genome Project aimed to sequence all of the DNA (i.e., the genome) of a set of organisms, significant effort was made to improve the methods for DNA sequencing.

Ultimately, the project used one particular method for DNA sequencing, called Sanger DNA sequencing, but first greatly advanced this basic method through a series of major technical innovations.



Who carried out the Human Genome Project?

The Human Genome Project could not have been completed as quickly and effectively without the dedicated participation of an international consortium of thousands of researchers. In the United States, the researchers were funded by the Department of Energy and the National Institutes of Health, which created the Office for Human Genome Research in 1988 (later renamed the National Center for Human Genome Research in 1990 and then the National Human Genome Research Institute in 1997).

The sequencing of the human genome involved researchers from 20 separate universities and research centers across the United States, United Kingdom, France, Germany, Japan and China. The groups in these countries became known as the International Human Genome Sequencing Consortium.

Photo: Researcher at Washington University in St. Louis handling frozen clones containing human DNA being studied by Human Genome Project researchers. (NHGRI Photo Archive)



One Tiny Particle Inspires Scientific Paper With More Than 5,000 Authors

Tiny Particle Inspires Paper With THOUSANDS Of Authors

By **Macrina Cooper-White**

Jun 1, 2015, 03:07 PM EDT | **Updated** Jun 1, 2015

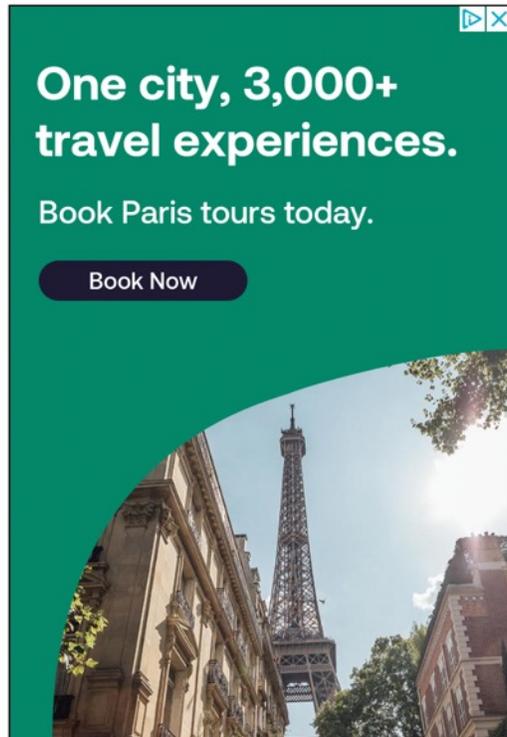
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Randomised Controlled Trial Evaluating the Strengths Model Case Management in Hong Kong

[Samson Tse](#) , [Chong Ho Yu](#) , [Winnie Wing-Yan Yuen](#), [Catalina Sau-Man Ng](#), [Iris Wann-Ka Lo](#), [Sadaaki Fukui](#), [Richard J. Goscha](#), [Sunny H.W. Chan](#), [Eppie Wan](#), [Stephen Wong](#), and [Sau-Kam Chan](#)  [View all authors and affiliations](#)

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Abstract

Objectives: Strengths-based approaches to case management for people with mental illness have been widely used in Western countries. The aim of this study was to evaluate the effectiveness of Strengths Model Case Management (SMCM) among mental health clients in Hong Kong. **Method:** Two hundred and nine service clients were recruited from three Integrated Community Centres. Multiple measures related to recovery progress (e.g., Recovery Assessment Scale) were reported by both the clients and caseworkers before intervention and at 6 and 12 months post-recruitment. **Results and conclusion:** Although there were no significant differences in improvement of most outcomes between the SMCM and control groups, the recovery scores of the SMCM group remained stable over time regardless of age, and also middle-aged participants (i.e., 40–59 years old) in the SMCM group achieved higher recovery scores over time than those in the control group. **Trial registration number:** Australian New Zealand Clinical Trials Registry (ACTRN) 12617001435370.



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Effects of mindfulness-based intervention programs on sleep among people with common mental disorders: A systematic review and meta-analysis

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結語

- ▶ 若果你認為自己的研究有希望榮獲諾貝爾獎，而你有三位合作夥伴，那麼你最好踢走其中一個人！說穿了，諾貝爾獎的性質並不鼓勵大型團隊，故此，我們沒有必要過於美化美國的個人主義。