医学科技前沿信息发现与分析

信息咨询部
杜建
2017年11月30日

本作品采用知识共享署名-非商业性使用-相同方式共享 4.0 国际许可协议进行许可

“前沿”

前瞻性

先导性

不确定性

萌芽状态

研究热点

研究前沿

论文和专利

够新吗？

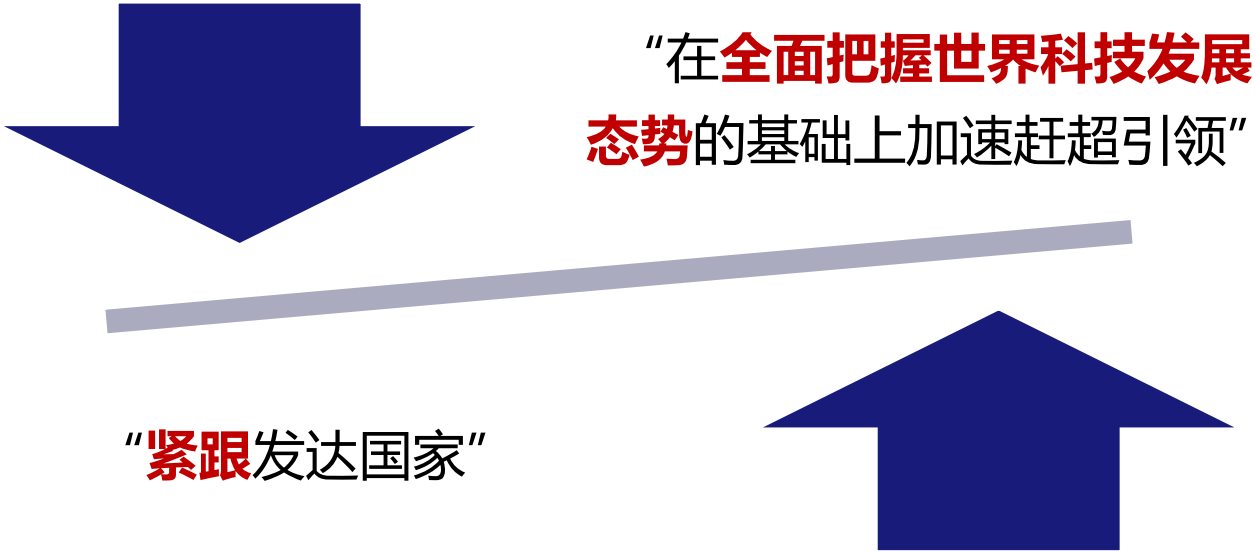
- 论文
  - 发表时滞：从投稿到正式刊出常常会超过3年
  - 等待：编辑处理，审稿，主编决定，刊出……

昨天的，今天的，明天的呢？

- 专利
  - 公开时滞：申请日到公开日：18个月
  - 授权时滞：专利申请量激增，专利审查积压

科学研究：服务国家

- **我国科技发展新战略**



- **科技发展态势？**
  - **创新状态：回顾**
  - **创新趋势：前瞻**

发现前沿、分析态势：提纲

一、从基金资助信息中发现未来研究动向
二、从智库报告中发现未来研究方向
三、通过数据库特色功能识别研究前沿
四、从文献资料分析角度初步判断领域发展态势

一、基金资助项目检索

未来3-5年的研究主题
与论文相比更具前沿性

国家	资助机构
美国	国立卫生研究院（NIH）
	国家科学基金会（NSF）
加拿大	国家卫生研究院（CIHR）
英国	医学研究理事会（MRC）
	生物技术与生物科学研究理事会（BBSRC）
德国	德国国家科学基金会（DFG）
法国	国家科研署（ANR）
日本	科技促进机构（JSPS）
澳大利亚	国立健康与医学研究理事会（NHMRC）
以色列	科学基金会（The Israel Science Foundation）
中国	国家自然科学基金（NSFC）
	国家重点研发计划重点专项

国家自然科学

http://npd.nsfc.gov.cn/fundingProjec

每页显示数据 10 条

基于microRNA表达谱研究皮肤慢性伤口的治疗
批准号：81611130075 项目类别：国际(地区)合作与交流项目
依托单位： 大连医科大学 项目负责人： 王傲雪
资助经费：25（万元） 批准年度：2016年
关键词：慢性伤口；治疗；微小RNA；皮肤屏障；伤口愈合

循环microRNA与2型糖尿病关联的前瞻性研究
批准号：81660566 项目类别：地区科学基金项目
依托单位： 赣南医学院 项目负责人： 罗晓婷 资助经费：37（万元）
批准年度：2016年
关键词：2型糖尿病；循环microRNA；前瞻性研究；危险因素；交互作用

新型MicroRNA-21小分子抑制剂的研究
批准号：81673354 项目类别：面上项目 依托单位： 西安交通大学
项目负责人： 张三奇 资助经费：60（万元） 批准年度：2016年
关键词：骨架跃迁；microRNA-21 抑制剂；药物合成；抗肿瘤药

基于模板识别的microRNA检测平台研究
批准号：21675030 项目类别：面上项目 依托单位： 复旦大学
项目负责人： 卢建忠 资助经费：65（万元） 批准年度：2016年
关键词：模板识别；microRNA；通用报告探针；错配识别；生物样品

MicroRNA等温扩增检测新技术研究
批准号：21675094 项目类别：面上项目 依托单位： 青岛大学
项目负责人： 石超 资助经费：65（万元） 批准年度：2016年
关键词：等温核酸扩增；MicroRNA检测；纳米生物传感；分子开关；均相检测

国家重点研发计划

2015年启动	2016年启动	2017年启动	下阶段布局
1. 干细胞与转化医学 2. 数字诊疗装备	1. 生殖健康与出生缺陷 2. 精准医学研究 3. 重大慢病防治研究 4. 生物医用材料研发 5. 生物安全关键技术	1. 食品安全 2. 中医药防治重大疾病	

关于国家重点研发计划“精准医学研究”和“生殖健康及重大出生缺陷防控研究”重点专项2017年度项目安排公示的通知

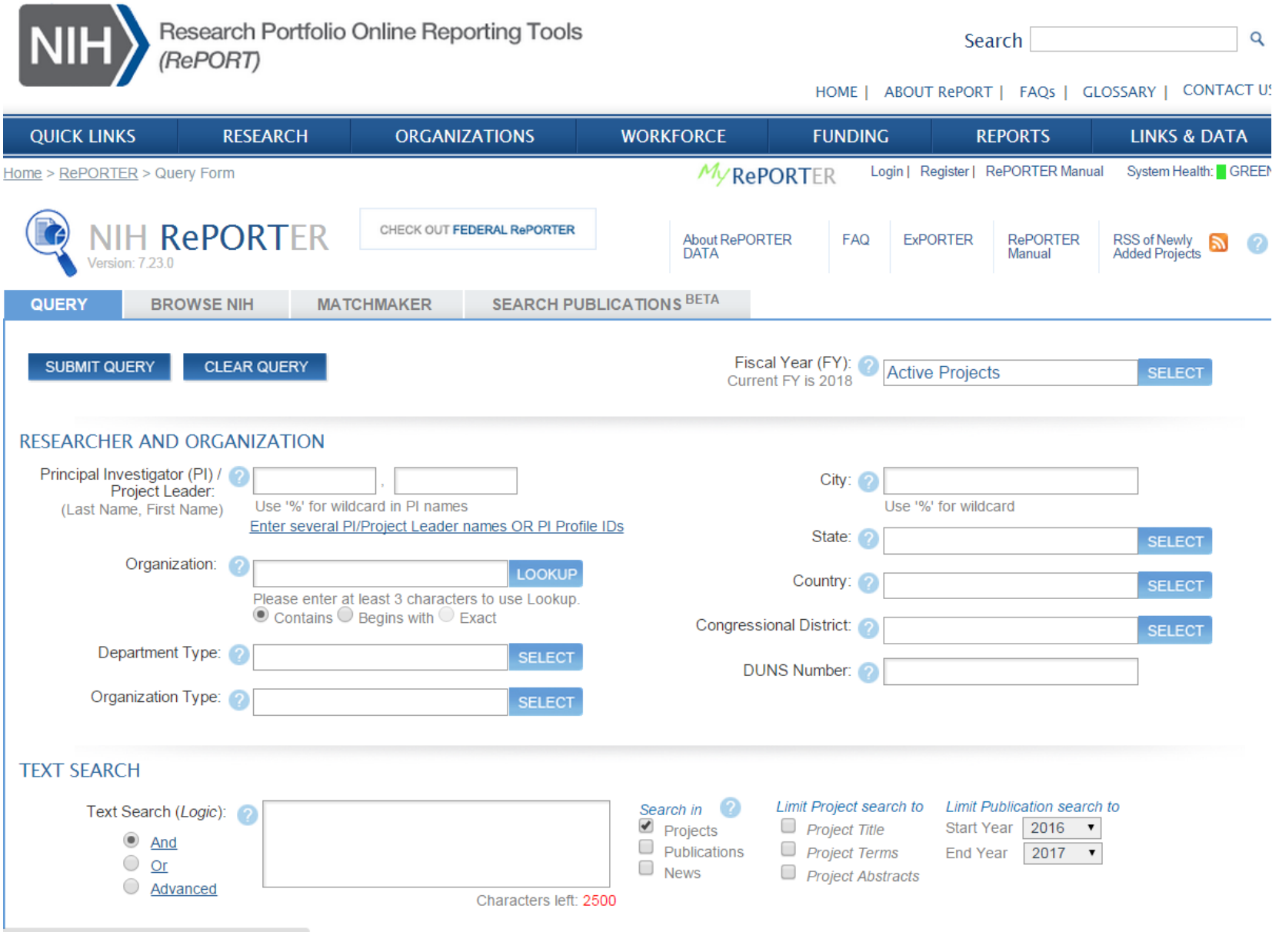
根据《国
关于深化中央财
部关于改革过渡
对“精准医学研
（详见附件）。
公示时间
式提交书面材料
位公章。联系人

国家重点研发计划“精准医学研究”重点专项拟立项的2017年度项目公示清单

序号	项目编号	项目名称	项目牵头承担单位	项目负责人	中央财政经费（万元）	项目实施周期（年）
1	SQ2017YFSF090017	新一代基因组测序技术、临床用测序设备及配套试剂的研发	深圳华大基因研究院	牟峰	1843	3
2	SQ2017YFSF090210	精准特异灵敏实用临床定量蛋白质组支撑技术研究	中国人民解放军军事医学科学院放射与辐射医学研究所	徐平	1499	3
3	SQ2017YFSF090025	临床样本代谢组的超灵敏高覆盖定量分析技术研究	复旦大学	唐惠儒	1600	3
4	SQ2017YFSF090219	应用于临床样本检测的超灵敏、高覆盖代谢组定量分析技术研发	中国科学院大连化学物理研究所	许国旺	800	3
5	SQ2017YFSF090080	华东区域自然人群队列研究	复旦大学	赵根明	1983	4
6	SQ2017YFSF090036	华南区域自然人群慢性病前瞻性队列研究	中山大学	夏敏	1951	4
7	SQ2017YFSF090013	西北区域自然人群队列研究	西安交通大学	颜虹	1734	4
8	SQ2017YFSF090144	西南区域自然人群队列研究	四川大学	李晓松	1557	4
9	SQ2017YFSF090121	东北区域自然人群队列研究	中国医科大学附属盛京医院	赵玉虹	1957	4
10	SQ2017YFSF090117	中国人群多组学参比数据库与分析系统建设	哈尔滨工业大学	王亚东	8985	4
11	SQ2017YFSF090027	中国常见风湿免疫病临床队列及预后研究	中国医学科学院北京协和医院	曾小峰	1285	4
12	SQ2017YFSF090175	神经系统疾病专病队列研究	首都医科大学宣武医院	笪宇威	1417	4
13	SQ2017YFSF090214	中国精神障碍队列研究	北京大学第六医院	黄悦勤	1368	4

https://projectreporter.nih.gov/reporter.cfm

美国NIH



美国NIH

PROJECT DETAILS

Project Number/ Application ID:
Format: 5R01CA012345-04/ 8515397

Use '%' for wildcard in project number, e.g. %R21%
Enter multiple project numbers/application IDs
OR

1	R01	CA	811099	01	A1S1

Program Officer (PO): (Last Name, First Name)

Use '%' for wildcard
Enter several Program Officer (PO) names

Project Start Date: >=
Format: mm/dd/yyyy

Project End Date: <=
Format: mm/dd/yyyy

Award Notice Date: > ▾
Format: mm/dd/yyyy

Agency/Institute/Center: ☑ Admin ☐ Funding — SELECT

NIH Spending Category: — SELECT

Funding Mechanism: — SELECT

Award Type: — SELECT

Activity Code: — SELECT

Study Section: — SELECT
Standing CSR study sections only

FOA:
Format: RFA-IC-09-003 or PA-09-003
20 entry maximum; Use % for wildcard
Funding Opportunities and Notices

ADDITIONAL FILTERS

NIH (non) ARRA Selection: — SELECT

Award Size: > ▾
Only for NIH, CDC, FDA, and ACF

ClinicalTrials.gov ID:
Format: NCT00000419
5 entry maximum separated by commas.

Newly Added Projects Only: ☐
Projects added since 11/18/2017

Exclude Subprojects: ☐

Multi-PI Only: ☐

SUBMIT QUERY | CLEAR QUERY

资助领域

NIH Research Portfolio Online Reporting Tools (RePORT)

Search

HOM

QUICK LINKS | RESEARCH | ORGANIZATIONS | WORKFORCE | FUNI

FUNDING

NIH Budge
Funding Fa
NIH Categ
Awards by
NIH Data B
Success Ra
NIH Recov
Federal Fu

Total Number of Research/Disease Areas: **282**

Click here for instructions on how to use the data table below.

New: Click here to view or download a summary table in Excel file format of historical annual fund through FY 2012.

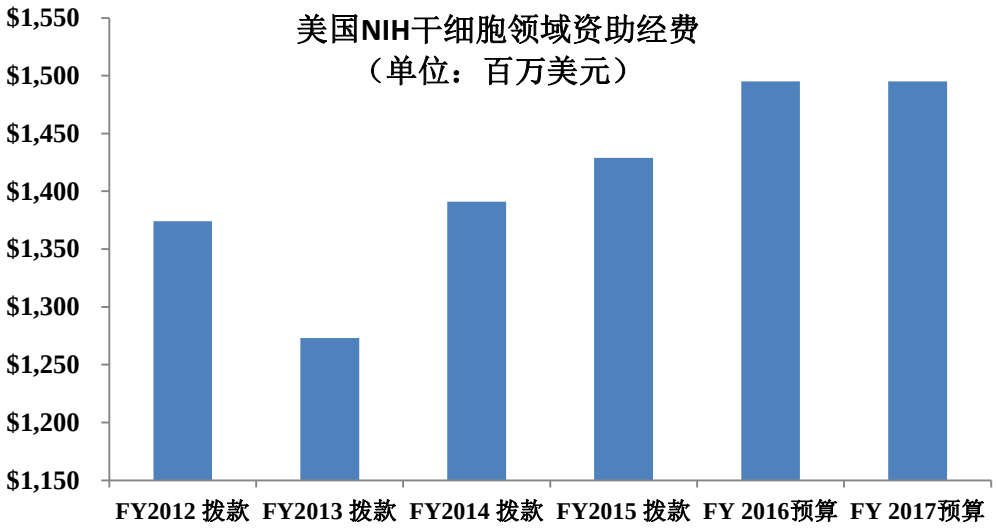
SEARCH RESEARCH/ DISEASE AREAS

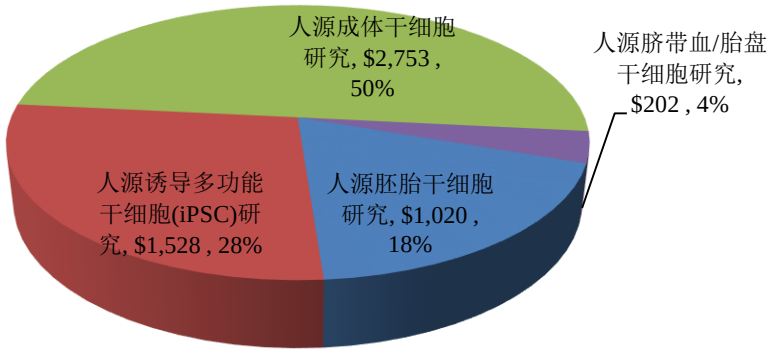
PR

Research/Disease Areas (Dollars in millions and rounded)	FY 2013 Actual	FY 2014 Actual	FY 2015 Actual	FY 2016 Actual	FY 2017 Estimated (Enacted)
Acquired Cognitive Impairment	+	+	$798	$1,132	$1,180
Acute Respiratory Distress Syndrome	$95	$85	$108	$103	$106
Adolescent Sexual Activity	$70	$68	$85	$91	$94
Agent Orange & Dioxin	$10	$8	$9	$9	$10
Aging	$2,429	$2,556	$2,698	$3,150	$3,651
Alcoholism, Alcohol Use and Health 1/	$437	$475	$473	$486	$503
Allergic Rhinitis (Hay Fever)	$9	$6	$5	$7	$7
ALS	$39	$48	$49	$52	$55
Alzheimer's Disease	$504	$562	$589	$929	$1,348
Alzheimer's Disease including Alzheimer's Disease Related Dementias (AD/ADRD) 2/	+	+	$631	$986	$1,414
Alzheimer's Disease Related Dementias (ADRD) 2/	+	+	$120	$175	$234

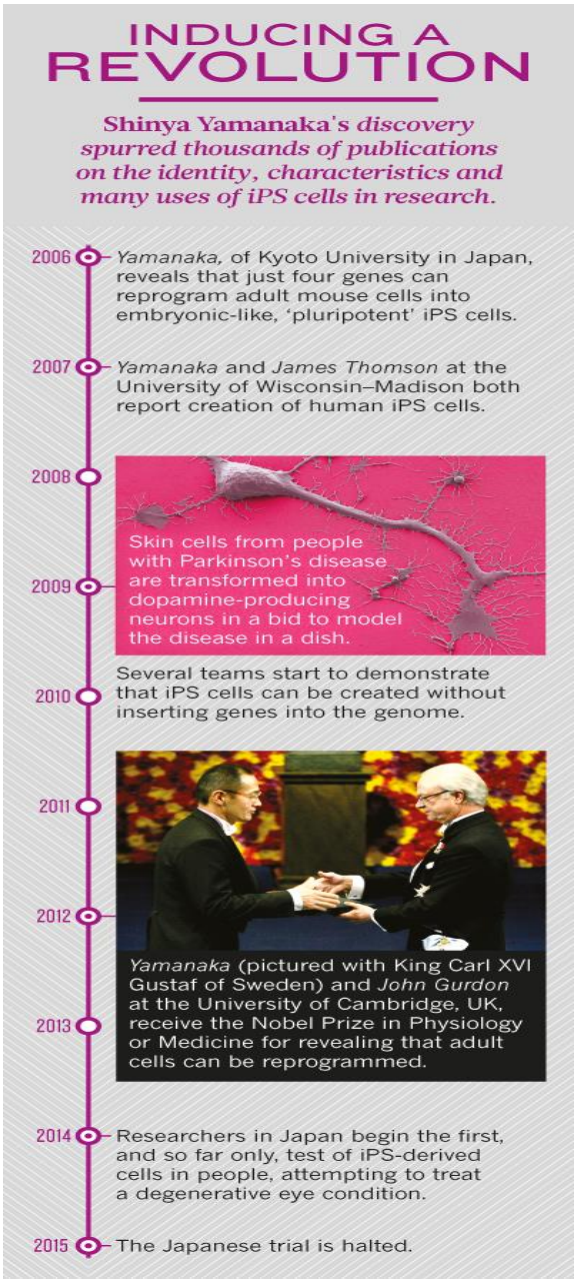
- Stem Cell Research
- Stem Cell Research - Embryonic - Human
- Stem Cell Research - Embryonic - Non-Human
- Stem Cell Research - Induced Pluripotent Stem Cell
- Stem Cell Research - Induced Pluripotent Stem Cell - Human
- Stem Cell Research - Induced Pluripotent Stem Cell - Non-Human
- Stem Cell Research - Nonembryonic - Human
- Stem Cell Research - Nonembryonic - Non-Human
- Stem Cell Research - Umbilical Cord Blood/ Placenta
- Stem Cell Research - Umbilical Cord Blood/ Placenta - Human
- Stem Cell Research - Umbilical Cord Blood/ Placenta - Non-Human

测算出年均投入
美国NIH：15亿美元，中国：3.8亿元





iPSC临床转化still takes a long time



How iPS cells changed the world. Nature, 2016, 534(7607):310-312.

https://federalreporter.nih.gov/

何时启动？

Project Search Results (63)

REVISE QUERY | SHARE QUERY | EXPORT

100 Records per page | Show/Hide Search Criteria | « ‹ 1 of 1 › »

LIST | CHARTS | TOPICS | MAP

Refine By

- FISCAL YEAR
- DEPARTMENT
- AGENCY
- ORGANIZATION
- STATE
- COUNTRY
- FUNDING

Agency	Project Number	Contact PI/ProjectLeader	Organization	FY	FY Total Cost	Similar Projects
DEVELOPMENT OF THERAPEUTICS FOR BIODEFENSE AND EMERGING INFECTIOUS DISEASES						
NIAID	272201600029C-0-0-1	HENKEL, TIMOTHY	VENATORX PHARMACEUTICALS INC	2016	$7,098,583	
STRUCTURAL AND FUNCTIONAL CHARACTERIZATION OF THE EBOLA VIRUS REPLICATION COMPLEX						
NIAID	1P01AI120943-01A1	AMARASINGHE, GAYA K.	WASHINGTON UNIVERSITY	2016	$2,876,287	
COBRE:EUKARYOTIC PATHOGENS INNOVATION CENTER (EPIC)						
NIGMS	1P20GM[illegible]	[illegible]	[illegible]ERSITY	2016	$2,126,626	
IMMUNODOMINANT VIRAL MEMORY CD4 EPITOPES OF BIOSECURITY AND GERIATRIC MEDICINE CONCERN						
NIAID	272201400049C-2-0-1	MHYRE, TIM	UNIVERSITY OF WASHINGTON	2016	$1,653,063	
SELECTIVE AAK1 AND GAK INHIBITORS FOR COMBATING DENGUE AND OTHER EMERGING VIRAL INFECTIONS						
CDMRP	PR151090	EINAV, SHIRIT	STANFORD UNIVERSITY	2015	$1,590,730	
IDENTIFICATION AND VALIDATION OF B-CELL EPITOPES ON RICIN TOXIN						
NIAID	272201400021C-5-0-1	COLOMB, JOLIE	WADSWORTH CENTER	2016	$1,456,129	
GLOBAL HEALTH SECURITY PARTNER ENGAGEMENT: EXPANDING EFFORTS AND STRATEGIES TO PROTECT AND IMPROVE PUBLIC HEALTH GLOBALLY						
CGH	1U2GGH001800-01	SCHNEIDER, BRAD S	GLOBAL VIRAL FORECASTING INC	2016	$1,170,000	
PHENOMICS FOR GENETIC AND GENOME-ENABLED IMPROVEMENT OF RESILIENCE IN PIGS						
NIFA	2017-67007-26144	DEKKERS, JACK C et al.	IOWA STATE UNIVERSITY	2016	$980,000	
SCHOLARSHIPS TARGETING RECRUITMENT OF INDIVIDUALS FOR DEGREES IN ENVIRONMENTAL SCIENCE (STRIDES)						
NSF	1564652	SERRANO, DAVID et al.	BROWARD COLLEGE	2016	$941,265	

埃博拉病毒结构与功能研究

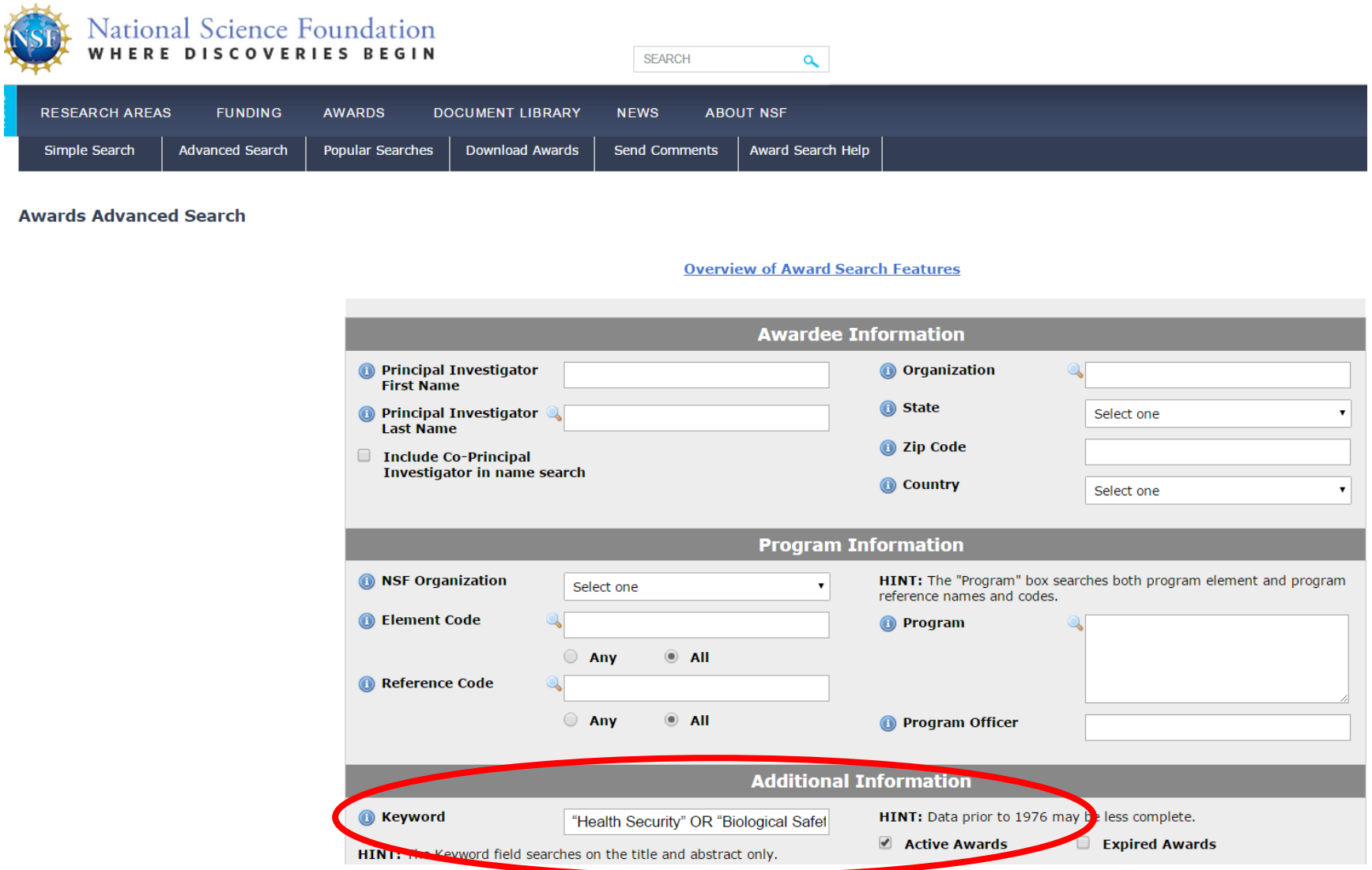
AGENCY

- HHS/NIH (36)
- USDA/NIFA (11)
- HHS/ALLCDC (9)
- NSF (4)
- DOD/CDMRP (2)
- VA (1)

COUNTRY

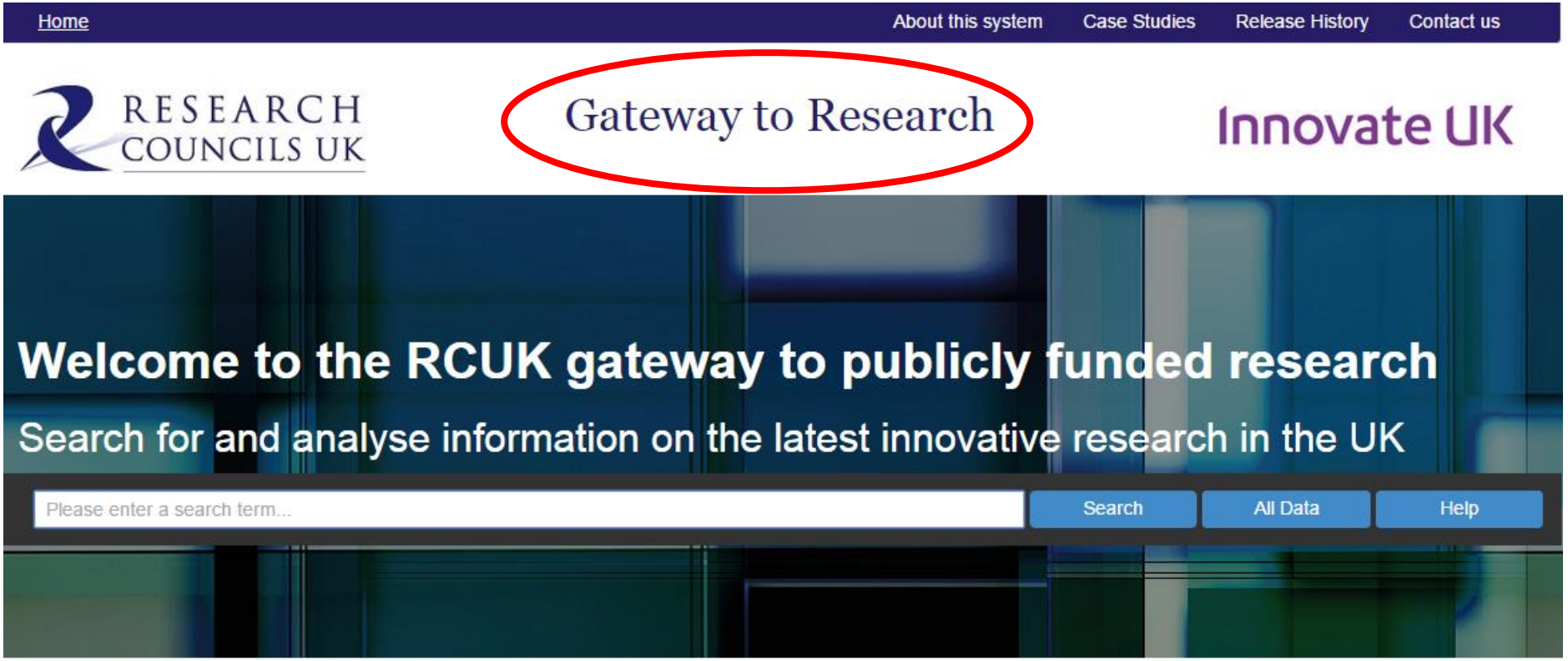
- UNITED STATES (61)
- JORDAN (1)
- SENEGAL (1)

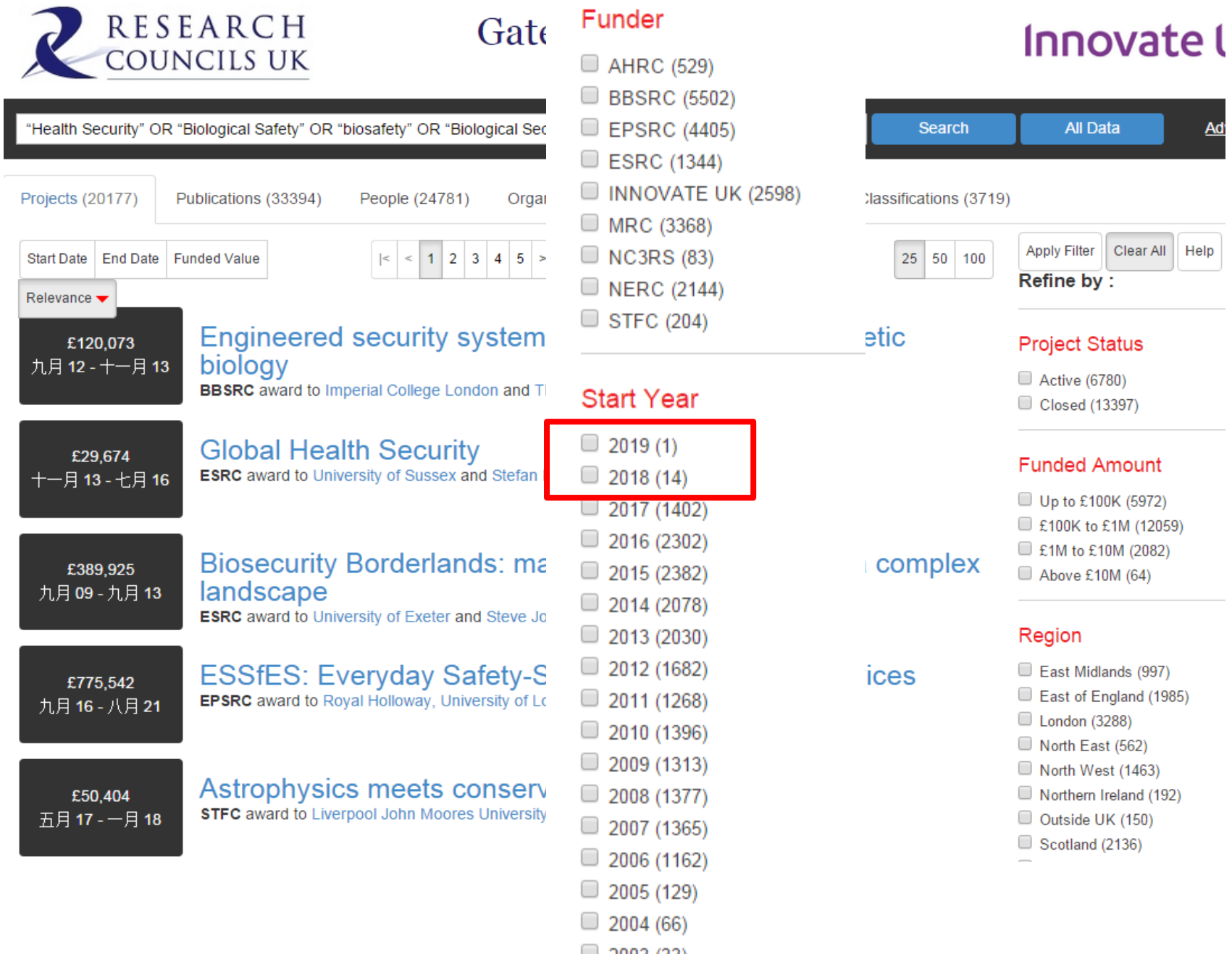
美国国家科学基金会


National Science Foundation
WHERE DISCOVERIES BEGIN
SEARCH
RESEARCH AREAS
FUNDING
AWARDS
DOCUMENT LIBRARY
NEWS
ABOUT NSF
Simple Search
Advanced Search
Popular Searches
Download Awards
Send Comments
Award Search Help
Awards Advanced Search
Overview of Award Search Features
Awardee Information
Principal Investigator First Name
Principal Investigator Last Name
Include Co-Principal Investigator in name search
Organization
State
Select one
Zip Code
Country
Select one
Program Information
NSF Organization
Select one
HINT: The "Program" box searches both program element and program reference names and codes.
Element Code
Any
All
Reference Code
Any
All
Program
Program Officer
Additional Information
Keyword
"Health Security" OR "Biological Safet
HINT: The Keyword field searches on the title and abstract only.
HINT: Data prior to 1976 may be less complete.
Active Awards
Expired Awards

英国国家研究理事会（RCUK）

- http://gtr.rcuk.ac.uk/




RESEARCH COUNCILS UK
Gate
Innovate
"Health Security" OR "Biological Safety" OR "biosafety" OR "Biological Sec
Search
All Data
Projects (20177)
Publications (33394)
People (24781)
Orgar
Classifications (3719)
Start Date
End Date
Funded Value
1 2 3 4 5
25 50 100
Apply Filter
Clear All
Help
Refine by :
Relevance
£120,073
九月 12 - 十一月 13
Engineered security system
biology
BBSRC award to Imperial College London and
etic
£29,674
十一月 13 - 七月 16
Global Health Security
ESRC award to University of Sussex and Stefan
£389,925
九月 09 - 九月 13
Biosecurity Borderlands: ma
landscape
ESRC award to University of Exeter and Steve Jo
complex
£775,542
九月 16 - 八月 21
ESSfES: Everyday Safety-S
EPSRC award to Royal Holloway, University of Lo
ices
£50,404
五月 17 - 一月 18
Astrophysics meets conserv
STFC award to Liverpool John Moores University
Funder
AHRC (529)
BBSRC (5502)
EPSRC (4405)
ESRC (1344)
INNOVATE UK (2598)
MRC (3368)
NC3RS (83)
NERC (2144)
STFC (204)
Start Year
2019 (1)
2018 (14)
2017 (1402)
2016 (2302)
2015 (2382)
2014 (2078)
2013 (2030)
2012 (1682)
2011 (1268)
2010 (1396)
2009 (1313)
2008 (1377)
2007 (1365)
2006 (1162)
2005 (129)
2004 (66)
Project Status
Active (6780)
Closed (13397)
Funded Amount
Up to £100K (5972)
£100K to £1M (12059)
£1M to £10M (2082)
Above £10M (64)
Region
East Midlands (997)
East of England (1985)
London (3288)
North East (562)
North West (1463)
Northern Ireland (192)
Outside UK (150)
Scotland (2136)

法国国家科研署（ANR）

- French National Research Agency

http://www.agence-nationale-recherche.fr/en/about-anr/about-the-french-national-research-agency/

Projects and Results

- Scientific Panorama
- Find a project
- Work Programme 2016
- Work Programme 2015
- Work Programme 2014
- 2013 and previous editions
- Archive of calls for proposals

"biosafety" OR "biosecurity" OR Bioterrorism OR bi Search

Found 21 results in 31 milliseconds. Searched for ""biosafety" OR "biosecurity" OR Bioterrorism OR biodefense".

1) **SENSAIV : Development of a smart BioSENSor for the rapid diagnosis of Avian Influenza Viruses**
Montage de Réseaux Scientifiques Européens ou Internationaux 2015
12.10.2015 (⇄30.08.2017)
strain identification will be highly useful for disease surveillance as well as for optimizing biosecurity measures on farms. Current methods for detection of AIV include conventional virus culture [...] molecular identifications. Those methods are time consuming, require expensive equipment, high biosafety facilities and take relatively long. In this project proposal, a multidisciplinary and multicultural

2) **UVfactor : Ultra-compact and portable fibre gas laser for bio-defense applications**
Accompagnement Spécifique de Travaux de Recherches et d'Innovation Défense 2011
01.11.2011 (⇄30.08.2017)
pressing need for compact UV laser sources. These fields relate to the atmospheric pollutant and bio-defense by LIDAR and Raman spectroscopy, the photobiology and the microelectronics industry. Hitherto, [...] REGIONALE ILE-DE-FRANCE SECTEUR SUD,UNIVERSITE DE LIMOGES Fibre optique; laser UV; microplasma; biodefense

3) **TULASEQ : Next generation deep sequencing (NGS) for the development of new genotypic markers in Francisella tularensis: implications for epidemiological surveillance of tularemia in France and in the field of bio-defense.**
Accompagnement spécifique des travaux de recherches et d'innovation défense 2015
01.10.2015 (⇄30.08.2017)
TULASEQ Francisella tularensis is the causative agent of tularemia, a zoonotic disease of mandatory notification in France both in human health since 2002 within the reactivation of the Biotox plan, a

- Relevance
- Title
- Type
- Date
- Thème

Content Types
- Funded projects (21)

Years
- 2010 (2)
- 2011 (4)
- 2012 (4)
- 2013 (3)
- 2014 (2)
- 2015 (3)
- 2016 (3)

The 33rd (2017) International Prize for Biolog

The 33rd (2017) International Prize for Biology is awarded
Rossi Colwell, Distinguished University Professor at the Un
Maryland.

Fellows Plaza

Supports JSPS Fellows and offers information on both living and doing research in Japan.

Grants-in-Aid for Scientific Research <KAKENHI>

科研費 KAKENHI

KAKENHI

These grants cover a full range of creative and pioneering research from basic to applied fields across the humanities, social sciences and natural sciences.

KAKEN Database of Grants-in-Aid for Scientific Research

KAKENHI Database

Contains project-selection

What's New

08/24/2017	Research Proposal Document for FY2018 Grants-in-Aid for Scientific Research -KAKENHI-
08/10/2017	The recipient of the 33rd (2017) International Prize for Biology was announced.
07/07/2017	JSPS Quarterly No.60 was updated
06/01/2017	10th HOPE Meeting Outline and Organizing Committee were posted.
04/20/2017	Science Dialogue Program was updated to include lectures given in March 2017

More

Current Calls for Applications

08/09/2017	FY2017 Panel Review (Hearing) Guidelines is now available.
07/03/2017	Core-to-Core Program FY2018, Call for Proposals was posted.
06/01/2017	Domestic Call for Applications for the 10th HOPE Meeting was posted.
05/22/2017	FY2017 Call for Proposals for new centers posted.
04/18/2017	Application guidelines for Postdoctoral Fellowships for Research in

KAKEN Grants

Grants-in-Aid for Scientific Research Database

https://kaken.nii.ac.jp/en/

Database of Grants-in-Aid for Scientific Research(KAKEN) is a public database which includes information on adopted projects, assessment, and research achievements from the Grants-in-Aid for Scientific Research(KAKENHI) Program. This system is hosted by the National Institute of Informatics (NII) in cooperation with MEXT and JSPS.

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Search

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Research Project Title Safety" OR "biosafety" OR "Biological Security" OR "biosecurity" OR Bioterrorism OR biodefense **Project/Area Number**

Project Type Research Project | Innovative Areas | Organizer | Wrapup | Planned | Publicly | International

Research Category Find Research Category

Allocation Type Single-year Grant | Multi-year Fund | Partial Multi-year Fund

Research Field Find Research Field

Research Institution Find Research Institution

Project Period (FY) ~ FY of Projec

Total Cost (Overall)

Project Status Adopted | Granted | Ceased | Suspended | Completed | Declined | Discontinued

Keywords

Research Abstract

Researcher

Name

Affiliation

Researcher Number

Role Principal Investigator | Area Organizer | Co-Investigator(Kenkyū-buntansha) | Co-Investigator(Renkei-kenkyūsha) | Research Collaborator | Research Fellow | Host Researcher | Foreign Research Fellow | Principal Investigator(Support) | Co-Investigator(Kenkyū-buntansha)(Support)

KAKEN | Search Research Projects | Search Researchers | English

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Research Category

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- Grant-in-Aid for Scientific Research (A) 1
- Grant-in-Aid for Scientific Research (C) 1
- Grant-in-Aid for Scientific Research (C) 1
- Grant-in-Aid for Young Scientists (B) 1
- Grant-in-Aid for Scientific Research (A) 1

Allocation Type

- Single-year Grant 14

Search Results: 14results / Research Project Title: "Health Security" OR "Biological Safety" OR "biosafety" OR "Biological Security" OR "biosecurity" OR Bioterrorism OR biodefense

Select All | Export as XM | Execute | Display : 20 | Project Start Year(Newest)

1. Immunological and genomic studies on interation between kuruma shrimp Immune and biodefense and microbial pathogens — Research Project

Research Category	Grant-in-Aid for Scientific Research (A)
Research Field	General fisheries
Research Institution	Tokyo University of Marine Science and Technology
Principal Investigator	Hirono Ikuo 東京海洋大学，その他部局等，教授
Project Period (FY)	2011-04-01 – 2015-03-31 Completed
Keywords	クルマエビ / WSSV / RNA干渉 / マイクロアレイ / 抗菌タンパク質 / ホワイトスポット病ウイルス / ホワイトスポット病 / 生体防御 / ノックダウン / ウイルス遺伝子ホモログ
Outline of Final Research Achievements	We found that c-type lysozyme and penaeidin like peptide are necessary for normal living of shrimp. In contrast, shrimp can sruvive without i-type lys ...

2. Nuclear, Biological and Chemical Security and International Law: Regulatory Mechanisms for Peaceful Use of Dual-Use Substance — Research Project

Research Category	Grant-in-Aid for Young Scientists (B)
Research Field	International law
Research Institution	Aoyama Gakuin University
Principal Investigator	ABE Tatsuya 青山学院大学，国際政治経済学部，准教授
Project Period (FY)	2010-04-01 – 2014-03-31 Completed
Keywords	国際法 / 軍備管理 / 汎用物質 / 不拡散 / 化学兵器 / 化学セキュリティ / 化学兵器禁止機関 / セキュリティ / 平和利用 / 核セキュリティ / 生物セキュリティ
Research Abstract	Dual-use nature of chemical substance requires a balance between ensuring its peaceful use and preventing its misuse. The balance may vary depending o ...

二、智库报告的检索与利用

- **案例：精准医学**
  - **关键发展历史**
    - “人类基因组计划”是起点
    - 1999年，首次提出现代意义上的个体化医学的概念，前瞻性地建议制药企业要基于个体患者的基因特征开展靶向药物研发。
    - 2011年，首次提出精准医学的概念。
  - **六大研究领域**
    - 基于PubMed论文主要主题词（MeSH Major Topic）的共现

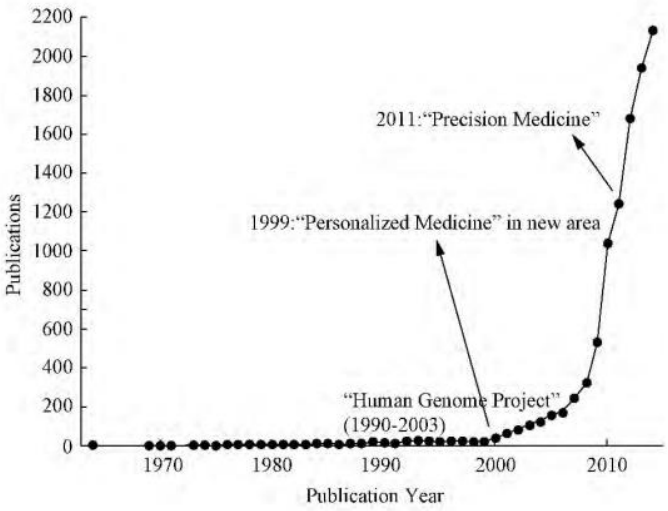
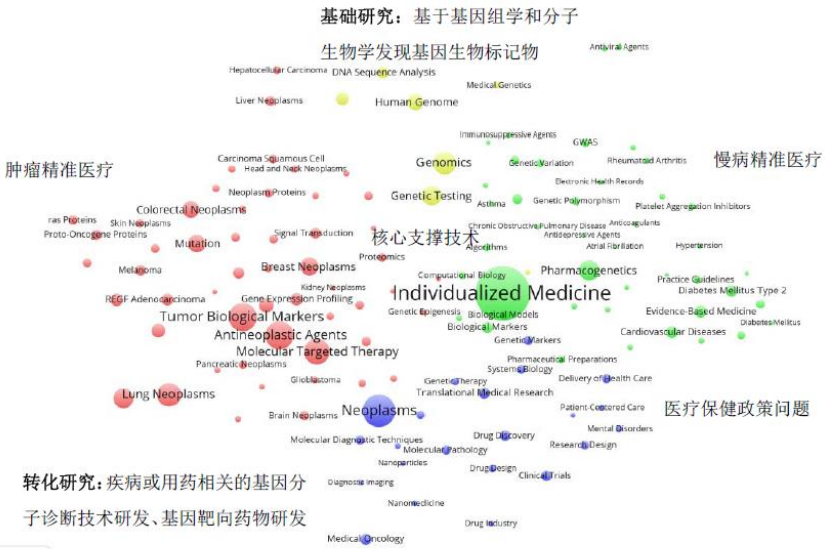


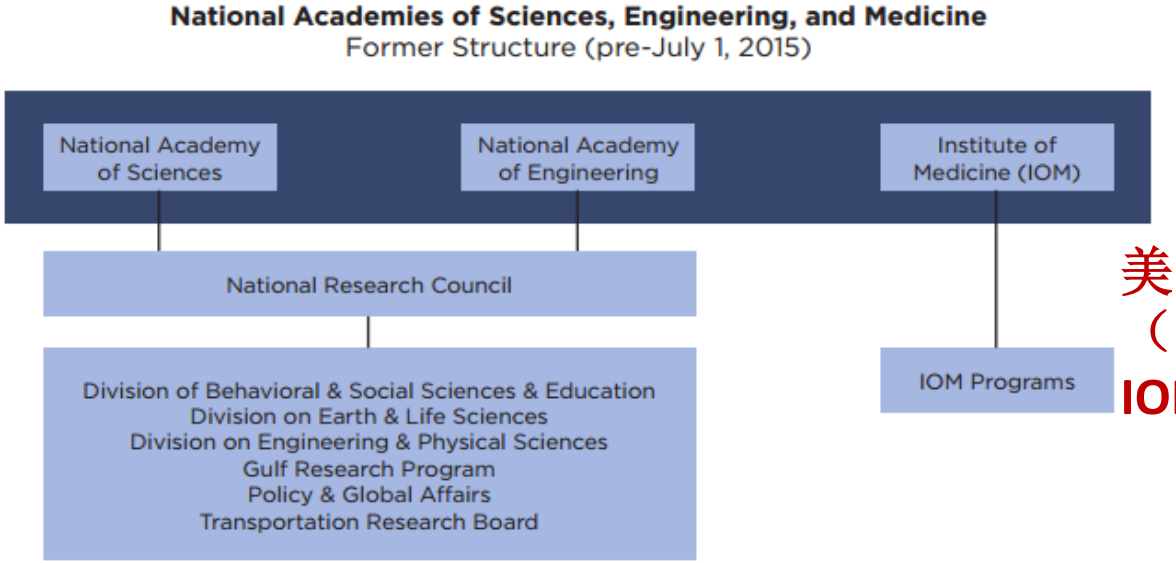
图 1　PubMed 收录的有关精准医学（或个体化医学）相关的论文①



关注政府智库报告

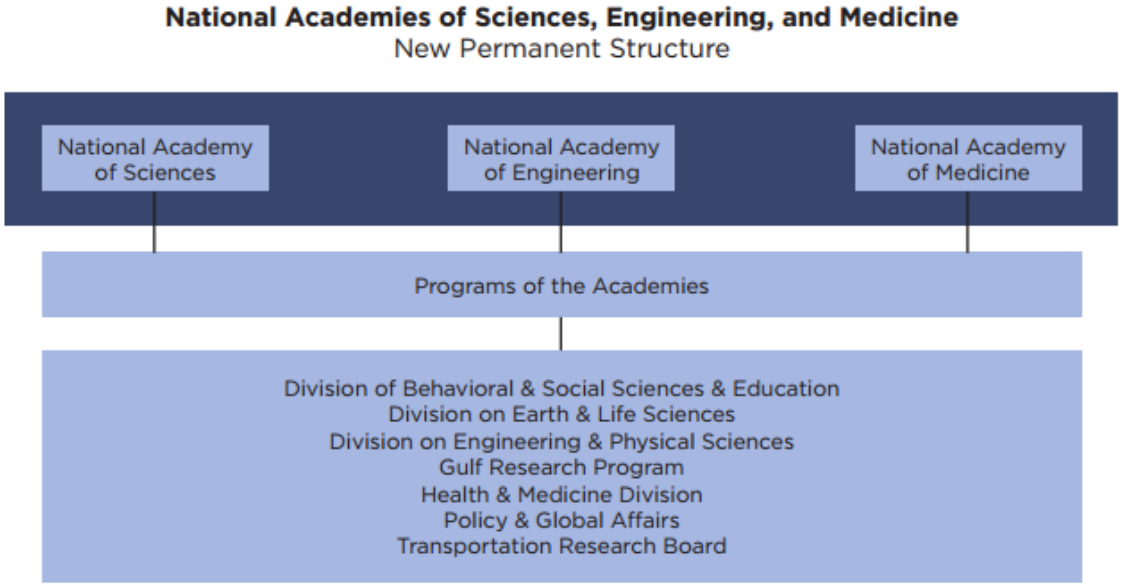
- 美国白宫科技政策办公室（OSTP）
  - 美国总统科技顾问委员会（President‘s Council of Advisors on Science and Technology，PCST）
  - 美国总统的科技智囊团
  - 定期就重大科技创新问题发布研究报告
- 美国医学科学院（NAM）
  - 医学最高学术荣誉机构
  - 咨询机构，在政府框架之外独立工作

智库报告 Report on Independence, Technology, and Connection in Older Age



美国国家科学院医学研究所（Institute of Medicine, IOM）

2015年7月1日，医学研究所（IOM）更名、升格为国家医学科学院（National Academy of Medicine）



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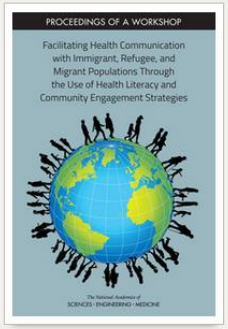

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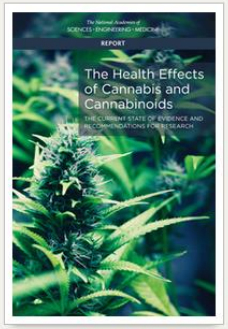

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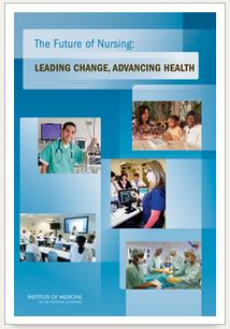

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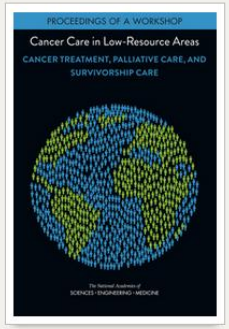

Cancer Care in Low-Resource Areas: Cancer Treatment, Palliative Care, and Survivorship Care: Proceedings of a Workshop

https://obamawhitehouse.archives.gov/administration/eop/ostp/nstc/docsreports

精准医学两个重要的智库报告

美国国家研究委员会（NRC）：
《迈向精准医学》（2011）

Toward Precision Medicine:
Building a Knowledge Network for Biomedical Research and a New Taxonomy of Disease

Committee on A Framework for Developing a New Taxonomy of Disease

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美国总统科技顾问委员会（PCAST）：
《个体化医学的优先领域》（2008）

★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★

Priorities for Personalized Medicine

Report of the
President's Council of Advisors on Science and Technology
September 2008

精准医学概念源于个体化医学

美国国家研究委员会（National Research Council），《迈向精准医学》，2011

Toward Precision Medicine:
Building a Knowledge Network for Biomedical Research and a New Taxonomy of Disease

Personalized Medicine (also see: Precision Medicine): "Personalized medicine" refers to the tailoring of medical treatment to the individual characteristics of each patient. It does not literally mean the creation of drugs or medical devices that are unique to a patient, but rather the ability to classify individuals into subpopulations that differ in their susceptibility to a particular disease or their response to a specific treatment. Preventive or therapeutic interventions can then be concentrated on those who will benefit, sparing expense and side effects for those who will not." (PCAST 2008) This term is now widely used, including in advertisements for commercial products, and it is sometimes misinterpreted as implying that unique treatments can be designed for each individual. For this reason, the Committee thinks that the term "Precision Medicine" is preferable to "Personalized Medicine" to convey the meaning intended in this report.

"个体化医学"这一概念被商业炒作，故而更名"精准医学"

《个体化医学的优先领域》

Priorities for Personalized Medicine

总统科技顾问委员会, 2008

Report of the
President's Council of Advisors on Science and Technology

September 2008

Table of Contents

PCAST(2008)

- 个体化医学的优先领域
  - 分子诊断
  - 基因组测序
  - 靶向药物研发与伴随诊断
  - 药物基因组学个体化用药
- 要将基因技术取得的进展转变成实际的临床医疗，需要将基因变异与患病风险以及药物治疗结果（治疗无效、良好疗效或不良反应）联系起来，三个关键领域：
  - 全基因组关联研究
  - 分子诊断学的发展
  - 生物样本库

Individualized Medicine

Clinical, therapeutic and diagnostic approaches to optimal disease management based on individual variations in a patient's genetic and environmental profile.

Year introduced: 2010

2010年，“Individualized Medicine”被收录到美国国立医学图书馆的医学主题词表（MeSH），其含义是指基于患者遗传与环境特征的个体差异，实现最佳的疾病诊断与治疗。

2016年，更名为“Precision Medicine”，仅强调 genetic profile！

Precision Medicine

Clinical, therapeutic and diagnostic approaches to optimal disease management based on individual variations in a patient's genetic profile.

Year introduced: 2010

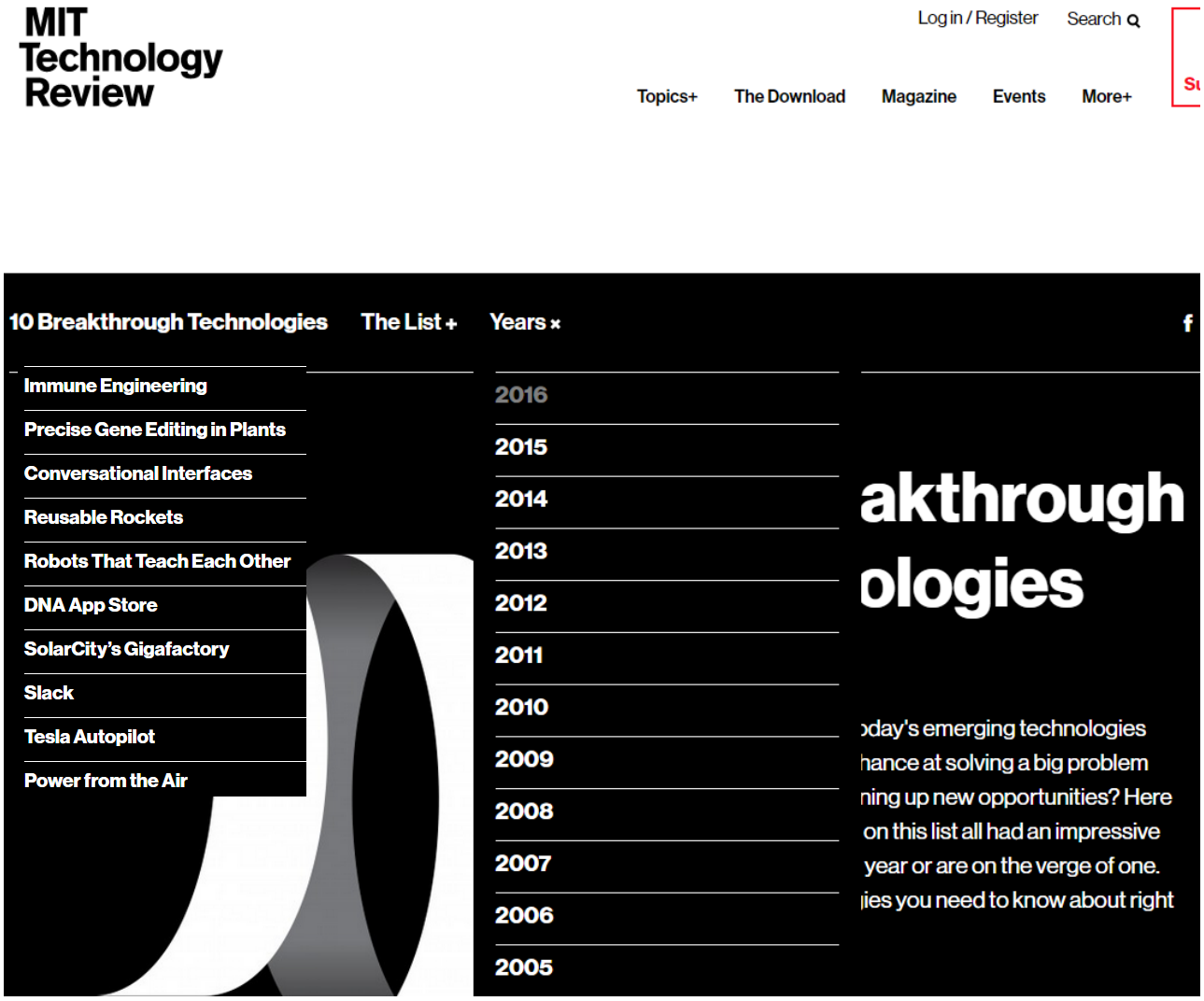
Entry Terms:

- Medicine, Precision
- Medicines, Precision
- **Individualized Medicine**
- Medicine, Individualized
- Personalized Medicine
- Medicine, Personalized
- **Precision-Medicine**

“Precision Medicine”“一统江湖”

现在来看，其表达的内涵是基本一致的。精准医学的概念并不是新的，而是与之前个体化医学一脉相承。

其他涉及科技前沿的智库报告



https://www.technologyreview.com/lists/technologies/2016/

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Reviewing the Hong Kong Research Grants Council

The Hong Kong RGC has a positive reputation as the territory's primary research grant funder. Stakeholders shared many positive views about what the council has achieved, as well as suggestions for

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European societies expect science, technology and innovation to promote economic growth and improved wellbeing. Research alone is insufficient. Its translatic into discoveries of new processes, services and produ vital. And evaluation of the impact of scientific and so sciences research can lead to better funding decisions

The factors that lead to innovation are complex and evolve. We use evidence to untangle complexity, recc ught. Our ience, ety and th

Selected Research

Explore

Exploring Health Futures

Through a survey of experts from across the health and science fields, researchers captured diverse perspectives on what health challenges in England will be like in 20–30 years' time, to info future strategy and with a rational view future.

Some key findings fact that ageing po living longer but nc in better health, he inequalities are risi is an increasing infl

Backgroun

The rapid advanceme health challenges tha the landscape of heal those today. With this look into what the fut

RAND EUROPE

Future of Health

Findings from a survey of stakeholders on the future of health and healthcare in England

Jennie Corbett, Camilla d'Angelo, Lorenzo Gangitano, Jon Freeman

https://www.rand.org/randeurope/research/projects/exploring-healthfutures.html

兰德：医学研究团队

Biomedical Research

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JOURNAL ARTICLE

Cleaning Up Medical Research

Book review of "Rigor Mortis: How Sloppy Science Creates Worthless Cures, Crushes Hope, and Wastes Billions" by Richard Harris.

Nov 10, 2017

Report

REPORT

The Small Business Research Initiative (SBRI) Healthcare programme: An evaluation of programme activities, outcomes and impacts

This study explores the contribution of the Small Business Research Initiative (SBRI) Healthcare programme to innovation in the NHS (National Health Service). It was commissioned by the UK Department of Health Policy Research Programme.

Oct 30, 2017

Journal Article

JOURNAL ARTICLE

Assessing and Communicating the Value of Biomedical Research: Results From a Pilot Study

The pilot demonstrated not only the usefulness of examining the impact of research from the perspectives of a range of stakeholders but also, notably, the extent and variety of the benefits that accrue from research.

Oct 27, 2017

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Researcher Spotlight

Camilla d'Angelo

Analyst

Camilla d'Angelo is an analyst at RAND Europe working on innovation, health and science policy. She holds a Ph.D. in experimental psychology from the University of Cambridge and a B.Sc. in pharmacology from University College London.

Carla Cox

Analyst

Carla Cox is an analyst at RAND Europe working in the area of innovation, health and science with a particular focus on health. She completed her doctoral studies in biochemistry and holds a bachelors degree with industrial placement form the University of Bath.

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Medicine Prizes | 2015

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▶ William C. Campbell
▶ Satoshi Ōmura
▶ Youyou Tu

All Nobel Prizes in Physiology or Medicine
All Nobel Prizes in 2015

The Nobel Prize in Physiology or Medicine 2015
William C. Campbell, Satoshi Ōmura, Youyou Tu

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The Nobel Prize in Physiology or Medicine 2015

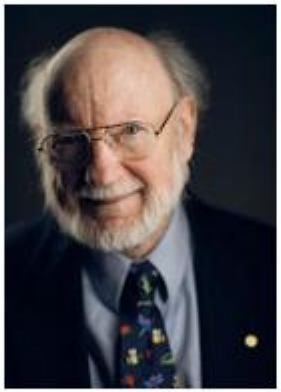

Photo: A. Mahmoud
William C. Campbell
Prize share: 1/4

Photo: A. Mahmoud
Satoshi Ōmura
Prize share: 1/4

Photo: A. Mahmoud
Youyou Tu
Prize share: 1/2

The Nobel Prize in Physiology or Medicine 2015 was divided, one half jointly to William C. Campbell and Satoshi Ōmura *"for their discoveries concerning a novel therapy against infections caused by roundworm parasites"* and the other half to Youyou Tu *"for her discoveries concerning a novel therapy against Malaria"*.

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▶ William C. Campbell
▶ Satoshi Ōmura
▶ Youyou Tu

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All Nobel Prizes in 2015

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Swedish
Swedish (pdf)

Nobelförsamlingen
The Nobel Assembly at Karolinska Institutet

Press Release

2015-10-05

The Nobel Assembly at Karolinska Institutet has today decided to award

the 2015 Nobel Prize in Physiology or Medicine

Key publications:

Burg et al., *Antimicrobial Agents and Chemotherapy* (1979) 15:361-367.

Egerton et al., *Antimicrobial Agents and Chemotherapy* (1979) 15:372-378.

Tu et al., *Yao Xue Xue Bao* (1981) 16, 366-370 (Chinese)

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1. **QINGHAOSU (ARTEMISININ) - AN ANTIMALARIAL DRUG FROM CHINA**

作者: KLAYMAN, DL
SCIENCE 卷: 228 期: 4703 页: 1049-1055 出版年: 1985
出版商处的全文

被引频次: 1,558
(来自 Web of Science 的核心合集)
使用次数

2. **The discovery of artemisinin (qinghaosu) and gifts from Chinese medicine**

作者: Tu, Youyou
NATURE MEDICINE 卷: 17 期: 10 页: 1217-1220 出版年: OCT 2011
出版商处的全文

被引频次: 241
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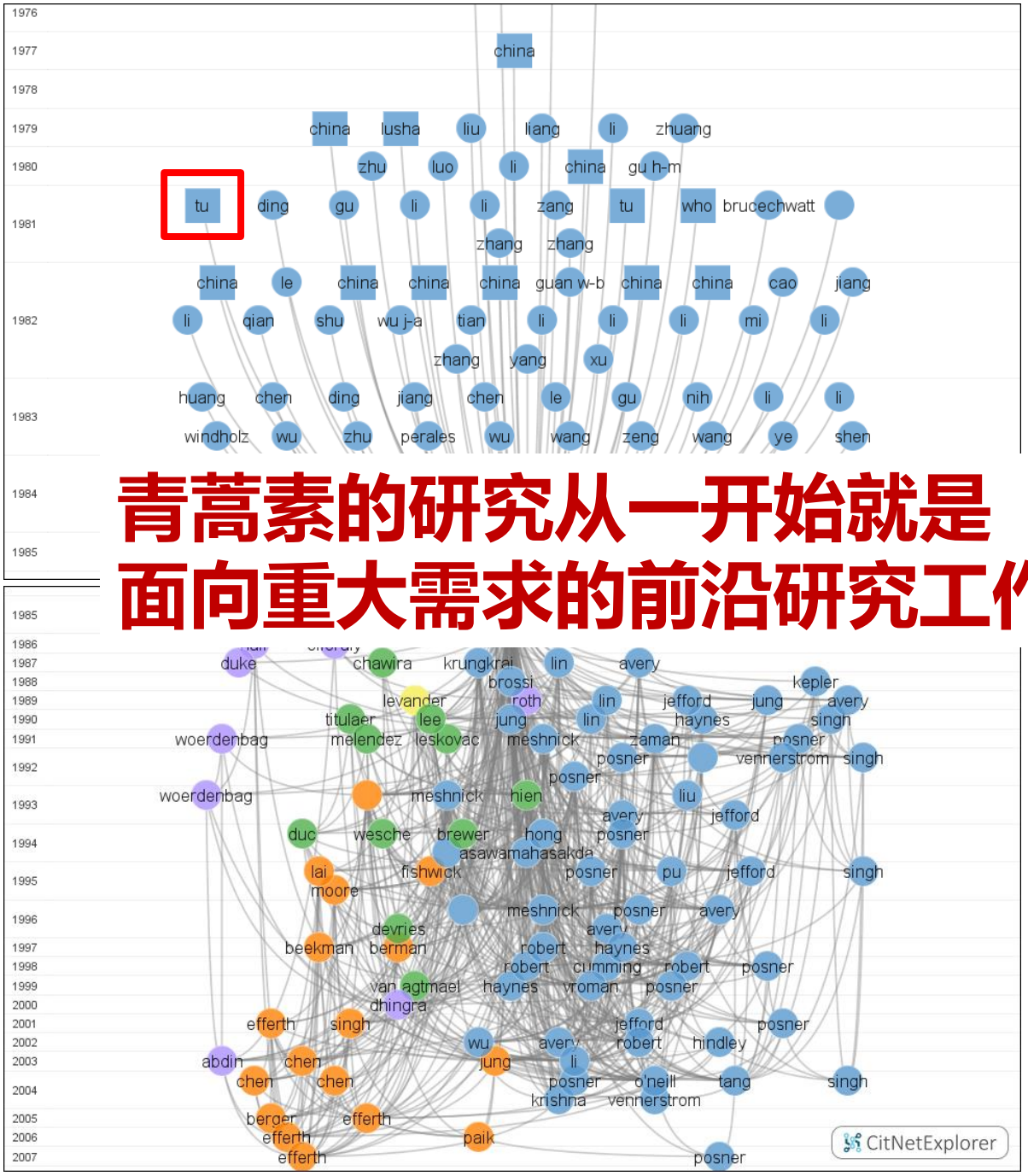

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ıan, 1985 (*Science*)

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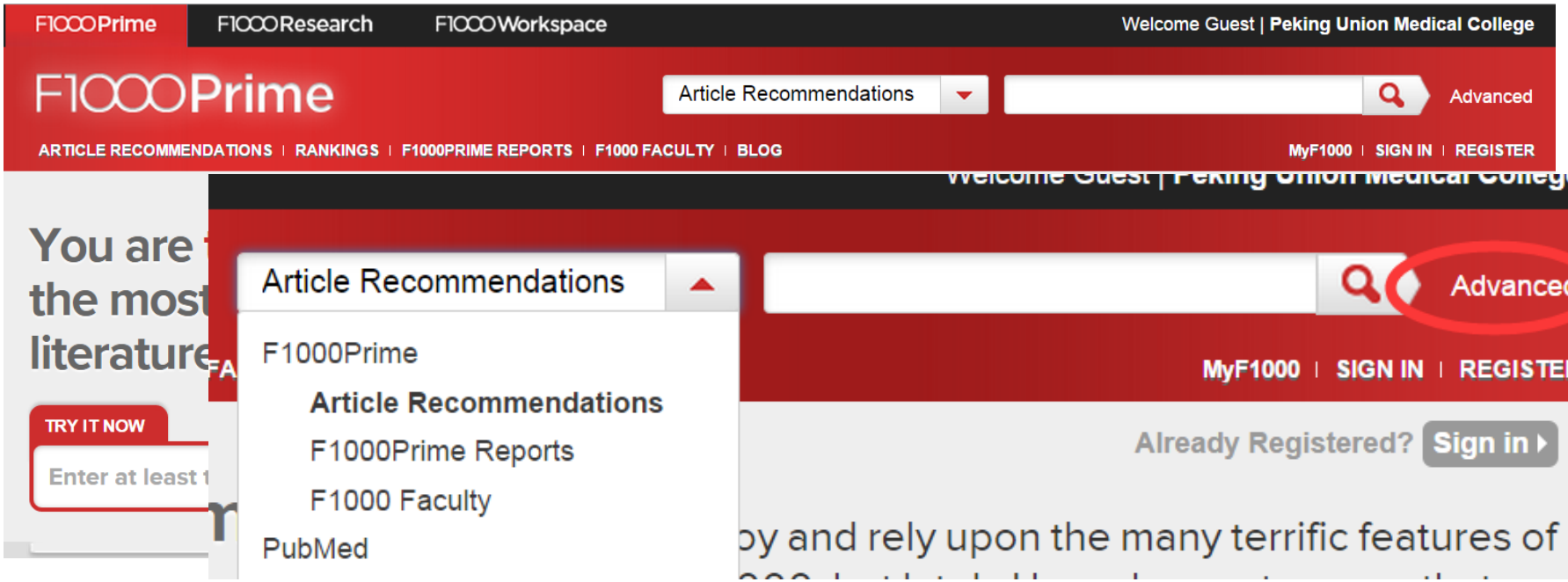

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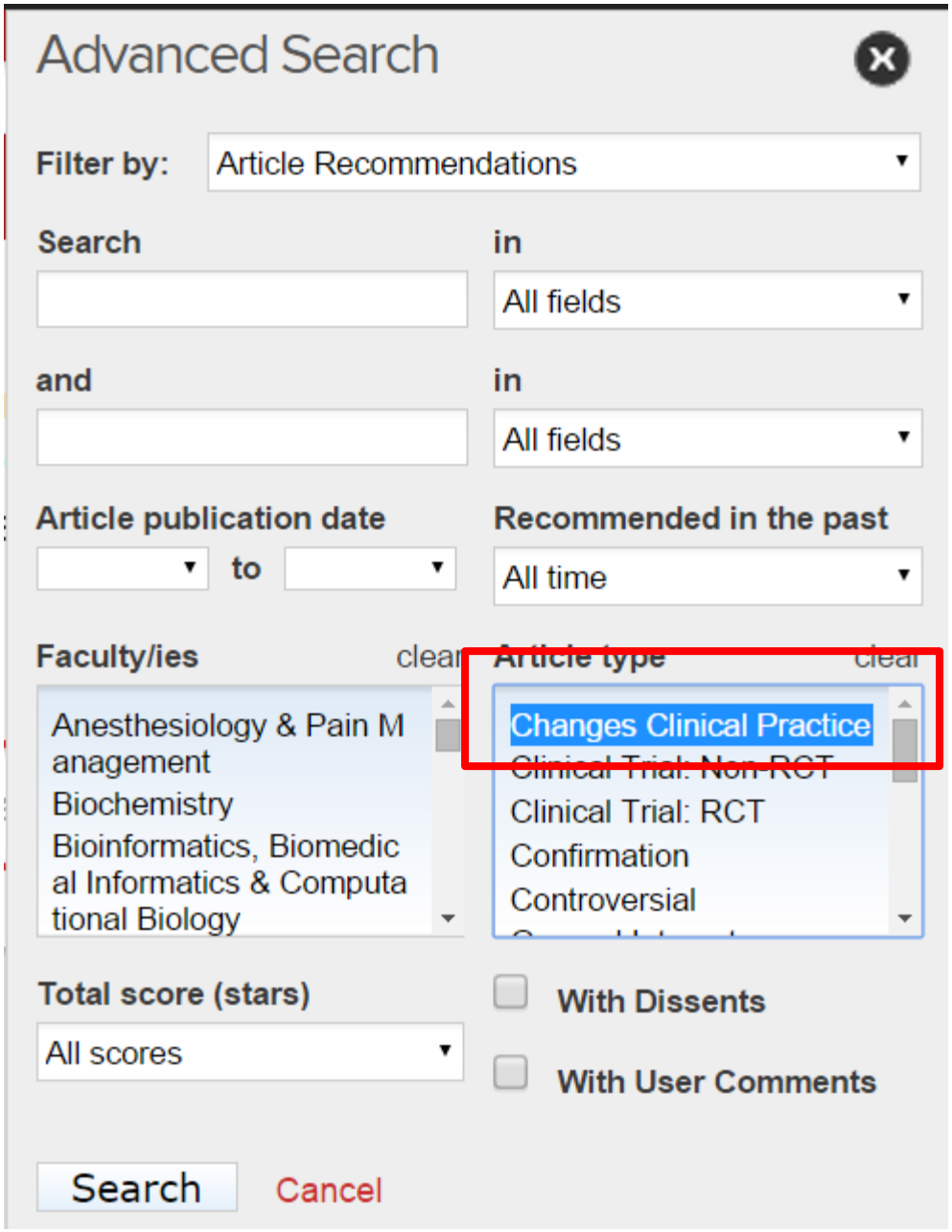

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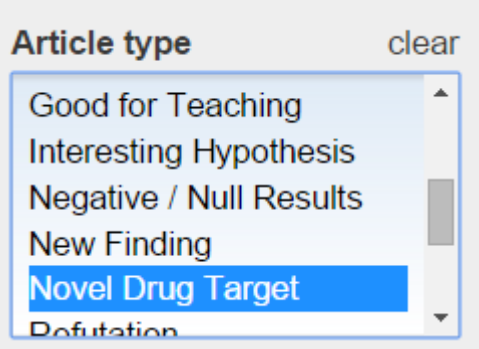

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3

Lithium plus valproate combination therapy versus monotherapy for relapse prevention in bipolar I disorder (BALANCE): a randomised open-label trial.

BALANCE investigators and collaborators, Geddes JR, Goodwin GM, Rendell J ... Ostacher MJ, Morriss R, Alder N, Juszczak E. Lancet. 2010 Jan 30; 375(9712):385-95

Based on this large trial, lithium alone or a lithium-valproate combination should be used as first-line maintenance treatment for bipolar affective disorder type I instead of valproate monotherapy.

2 Recommendations | Janusz Rybakowski NEW 17 Nov 2017 | Rudolf Uher with Nader Perroud

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3

Abiraterone for Prostate Cancer Not Previously Treated with Hormone Therapy.

James ND, de Bono JS, Spears MR, Clarke NW ... Zarkar A, Parmar MKB, Sydes MR, STAMPEDE Investigators. N Engl J Med. 2017 07 27; 377(4):338-351

ADT plus Abiraterone and Prednisolone should be given to men with locally advanced or

RECOMMENDATIONS 1 | ABSTRACT | COMMENTS collapse all ▲

★★★ Exceptional 22 Jun 2017

FM **Christian Bach**

F1000 Urology

Freeman Hospital, Newcastle upon Tyne, UK.

ADT应该和另外两种药联合应用，而不是单用ADT

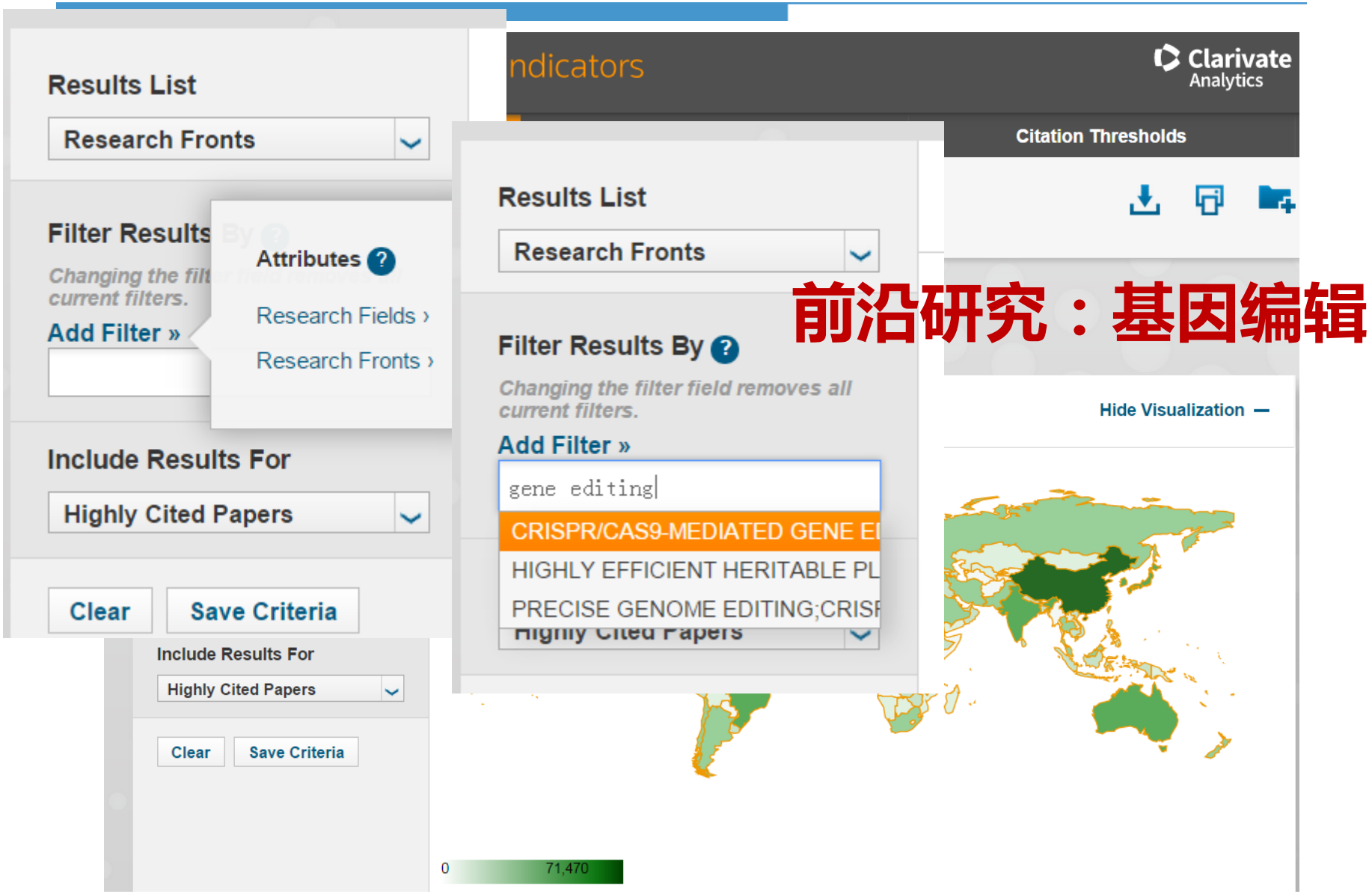
NEW FINDING

DOI: 10.3410/f.727682848.793533364

CHANGES CLINICAL PRACTICE - ADT plus Abiraterone and Prednisolone should be given to men with locally advanced or metastatic prostate cancer rather than ADT alone.

This groundbreaking work will change the standard of care for patients who receive long-term androgen-deprivation therapy (ADT), as the data clearly prove that the combination with abiraterone is superior to ADT alone.

ESI研究前沿



前沿研究：基因编辑

Report View by Selection

	Research Fronts	Highly Cited Papers
1	CRISPR/CAS9-MEDIATED GENE EDITING; HUMAN TRIPRONUCLEAR ZYGOTES; HUMAN ZYGOTES; HUMAN 3PN EMBRYOS; CRISPR/CAS-MEDIATED GENOME EDITING	3

Highly Cited Papers	Cites to Highly Cited Papers	Mean Year
3	234	2016

Papers by Research Field

Citation Trends

Documents

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× CRISPR/CAS9-MEDIATED GENE EDITING; HUMAN TRIPRONUCLEAR ZYGOTES; HUMAN ZYGOTES; HUMAN 3PN EMBRYOS; CRISPR/CAS-MEDIATED GENOME EDITING

Include Results For

Highly Cited Papers

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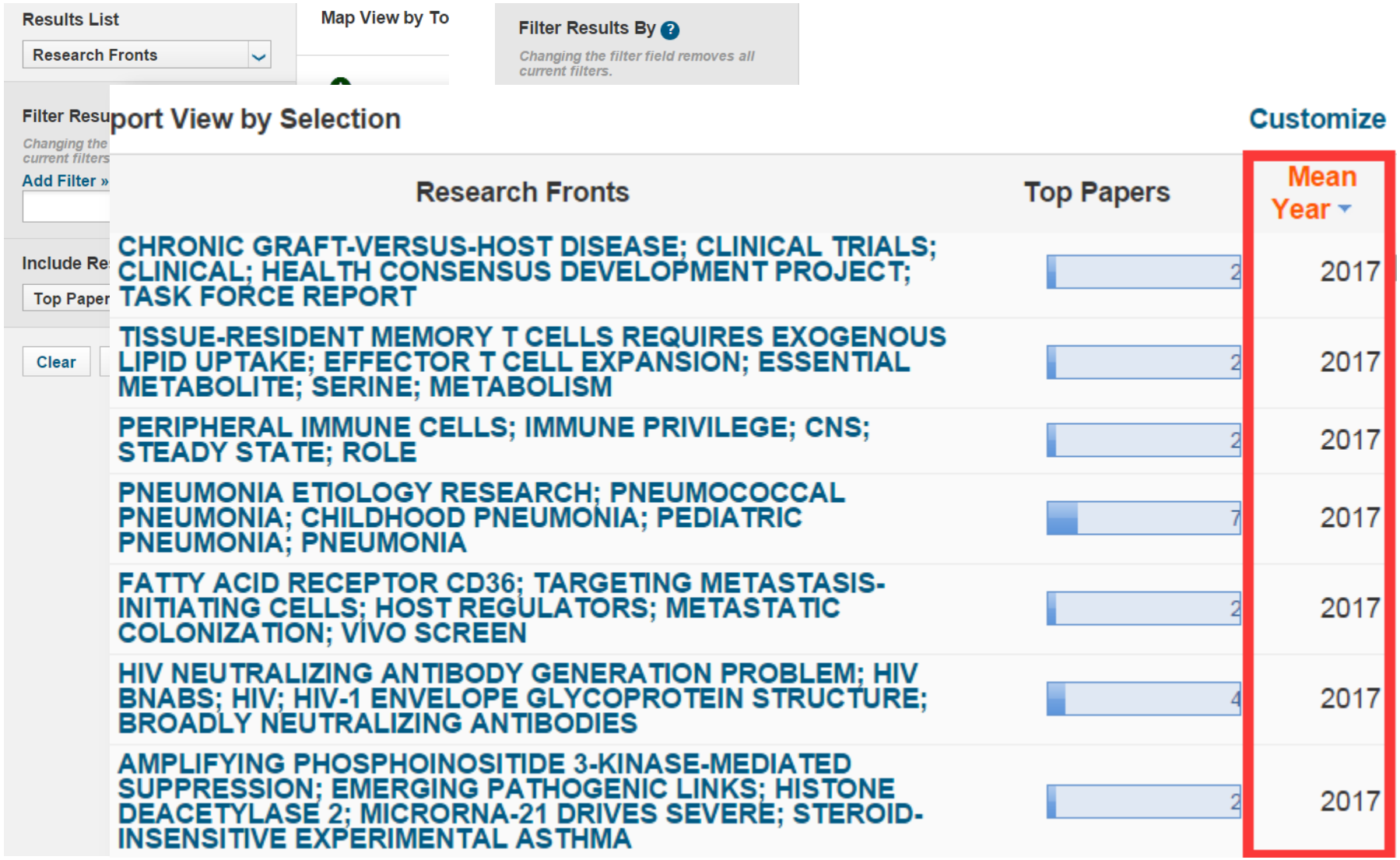
Sort By Citations | Customize Documents | 1 - 3 of 3

1 **CRISPR/CAS9-MEDIATED GENE EDITING IN HUMAN TRIPRONUCLEAR ZYGOTES**
By: LIANG, PP; XU, YW; ZHANG, XY; et.al
Source: PROTEIN CELL 6 (5): 363-372 MAY 2015
Research Fields: BIOLOGY & BIOCHEMISTRY
Times Cited: 195
Research Front

2 **INTRODUCING PRECISE GENETIC MODIFICATIONS INTO HUMAN 3PN EMBRYOS BY CRISPR/CAS-MEDIATED GENOME EDITING**
By: KANG, XJ; HE, WY; HUANG, YL; et.al
Source: J ASSIST REPROD GENET 33 (5): 581-588 MAY 2016
Research Fields: CLINICAL MEDICINE
Times Cited: 32
Research Front

3 **CRISPR/CAS9-MEDIATED GENE EDITING IN HUMAN ZYGOTES USING CAS9 PROTEIN**
By: TANG, LC; ZENG, YT; DU, HZ; et.al
Source: MOL GENET GENOMICS 292 (3): 525-533 JUN 2017
Research Fields: MOLECULAR BIOLOGY & GENETICS
Times Cited: 7
Research Front

识别学科领域研究前沿


Results List
Research Fronts
Map View by To
Filter Results By
Changing the filter field removes all current filters.
Filter Resu
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Add Filter »
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Top Paper
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Research Fronts
Top Papers
Mean Year
CHRONIC GRAFT-VERSUS-HOST DISEASE; CLINICAL TRIALS; CLINICAL; HEALTH CONSENSUS DEVELOPMENT PROJECT; TASK FORCE REPORT
2
2017
TISSUE-RESIDENT MEMORY T CELLS REQUIRES EXOGENOUS LIPID UPTAKE; EFFECTOR T CELL EXPANSION; ESSENTIAL METABOLITE; SERINE; METABOLISM
2
2017
PERIPHERAL IMMUNE CELLS; IMMUNE PRIVILEGE; CNS; STEADY STATE; ROLE
2
2017
PNEUMONIA ETIOLOGY RESEARCH; PNEUMOCOCCAL PNEUMONIA; CHILDHOOD PNEUMONIA; PEDIATRIC PNEUMONIA; PNEUMONIA
7
2017
FATTY ACID RECEPTOR CD36; TARGETING METASTASIS-INITIATING CELLS; HOST REGULATORS; METASTATIC COLONIZATION; VIVO SCREEN
2
2017
HIV NEUTRALIZING ANTIBODY GENERATION PROBLEM; HIV BNABS; HIV; HIV-1 ENVELOPE GLYCOPROTEIN STRUCTURE; BROADLY NEUTRALIZING ANTIBODIES
4
2017
AMPLIFYING PHOSPHOINOSITIDE 3-KINASE-MEDIATED SUPPRESSION; EMERGING PATHOGENIC LINKS; HISTONE DEACETYLASE 2; MICRORNA-21 DRIVES SEVERE; STEROID-INSENSITIVE EXPERIMENTAL ASTHMA
2
2017

四、文献资料分析初步研判态势

NCBI Resources How To

PubMed.gov
US National Library of Medicine
National Institutes of Health

PubMed | Federal Funding for Health Security in FY2018

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从一篇文章出发。。。

See 1 citation found by title matching your search:

Health Secur. 2017 Jul/Aug;15(4):351-372. doi: 10.1089/hs.2017.0047. Epub 2017 Jun 27.

Federal Funding for Health Security in FY2018.

年度系列分析报告

Watson C, Watson M, Kirk Sell T.

Johns Hopkins Center for Biosecurity, Baltimore, Maryland.

Abstract

This ar... It
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THIS ARTICLE IS THE LATEST in an annual series analyzing federal funding for health security programs.[1-14] It examines proposed funding in the President's Budget Request for FY2018 and provides updated amounts for FY2017 and actual funding for FY2010 through FY2016.

从资料上可看到几个变化？

FY 2001-2014 biodefense funding

⇩

FY 2015-2018 health security funding

Biosecur Bioterror

⇩

Health Secur

1. Schuler A. Billions for biodefense: federal agency biodefense funding, FY2001-FY2005. *Biosecur Bioterror* 2004;2(2):86-96.
2. Schuler A. Billions for biodefense: federal agency biodefense budgeting, FY2005-FY2006. *Biosecur Bioterror* 2005;3(2):94-101.
3. Lam C, Franco C, Schuler A. Billions for biodefense: federal agency biodefense funding, FY2006-FY2007. *Biosecur Bioterror* 2006;4(2):113-127.
4. Franco C, Deitch S. Billions for biodefense: federal agency biodefense funding, FY2007-FY2008. *Biosecur Bioterror* 2007;5(2):117-133.
5. Franco C. Billions for biodefense: federal agency biodefense funding, FY2008-FY2009. *Biosecur Bioterror* 2008;6(2):131-146.
6. Franco C. Billions for biodefense: federal agency biodefense funding, FY2009-FY2010. *Biosecur Bioterror* 2009;7(3):291-309.
7. Franco C, Sell TK. Federal agency biodefense funding, FY2010-FY2011. *Biosecur Bioterror* 2010;8(2):129-149.
8. Franco C, Sell TK. Federal agency biodefense funding, FY2011-FY2012. *Biosecur Bioterror* 2011;9(2):117-137.
9. Franco C, Sell TK. Federal agency biodefense funding, FY2012-FY2013. *Biosecur Bioterror* 2012;10(2):162-181.
10. Sell TK, Watson M. Federal agency biodefense funding FY2013-FY2014. *Biosecur Bioterror* 2013;11(3):196-215.
11. Sell TK, Franco C. Funding for nuclear consequence-related programs, FY2012-FY2013. *Biosecur Bioterror* 2012;10(4):417-419.
12. Boddie CR, Sell TK, Watson MC. Federal funding for health security in FY2015. *Health Secur* 2014;12(4):163-177.
13. Boddie CR, Sell TK, Watson MC. Federal funding for health security in FY2016. *Health Secur* 2015;13(3):186-206.
14. Boddie CR, Watson MC, Sell TK. Federal funding for health security in FY2017. *Health Secur* 2016;14(5):284-304.

全部基于公开数据

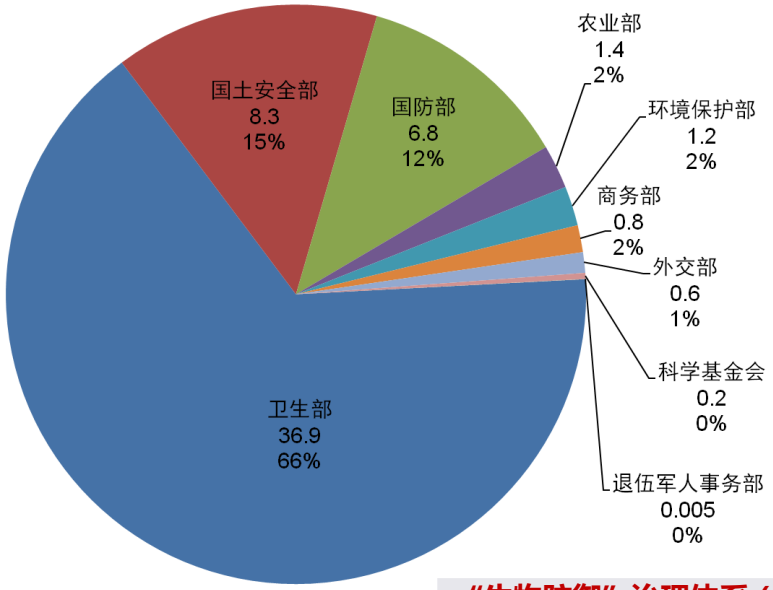
Supplementary Data

Supplementary Table S1. Federal Civilian Biosecurity Program Funding (in $millions)

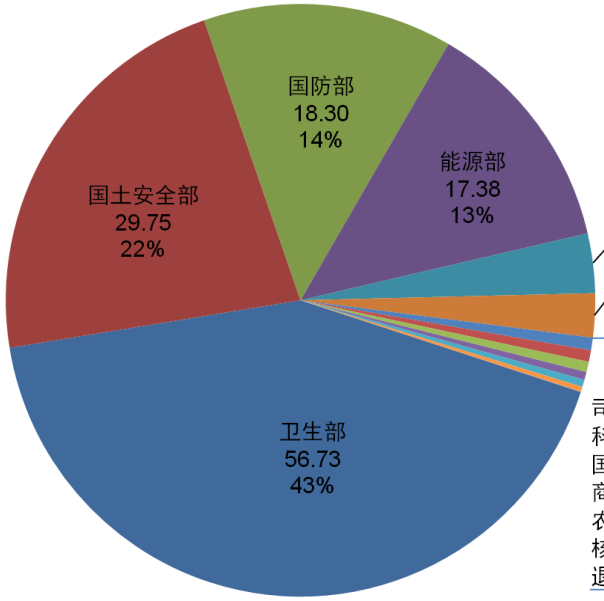
	FY2010	*FY2011*	*FY2012*	*FY2013*	*FY2014*	*FY2015*	*FY2016 (actual)*	*FY2017 (estimated)*	*FY2018 (budget)*
Department of Defense (DoD)									
Defense Threat Reduction Agency (DTRA)									
Cooperative Biological Engagement	169.1	255.9	229.5	211.0	320.0	256.8	222.0	214.0	172.8
DARPA									
Research, Development, Testing and Evaluation (RDT&E)									
Defense Research Sciences									
Transformative Sciences									
Living Foundries									.5
Biological Robustness in Comp									.8
Autonomous Diagnostics to En									
Understanding Biological Com									.2
New Functionalities for Biologi									.5
Basic Operational Medical Science									
Autonomous Diagnostics to Enabl									
Dialysis-Like Therapeutics									
Biomedical Technology									
Autonomous Diagnostics to Enabl									
Dialysis-Like Therapeutics									
Pathogen Defeat									
Biologically Based Materials and De									
BioDesign									.0
Living Foundries									.0
Adaptive Immunomodulation-Bas									.0
Biological Robustness in Complex									.0
Biosecurity for Biotechnology									.8
Accelerated Agricultural Engineeri									.7
Engineering Function									.5
Department of Health and Human Services (HHS)									
Food and Drug Administration (FDA)									
Bioterrorism									
Food Defense									
Advancing Medical Countermeasures Initiative (MCMi)									
Physical Security									
Life Sciences Biodefense Lab (operationalizing)									.0
Health Resources and Services Administration (HRSA)									
Countermeasure Injury Compensation Fund (smallpox)									.8
Assistant Secretary for Emergency Preparedness and Response (ASPR)									.5
Medical Countermeasures Dispensing (USPS pilot program)									*d)*
Subtotal HHS Civilian Biosecurity Program Funding									

基于经费投入数据，得出美国生物安全政府治理体系

“生物防御”框架下美国9个部委年度经费投入
单位：亿美元，2001-2014财年



“健康安全”框架下美国13个部委年度经费投入
单位：亿美元，2010-2018财年



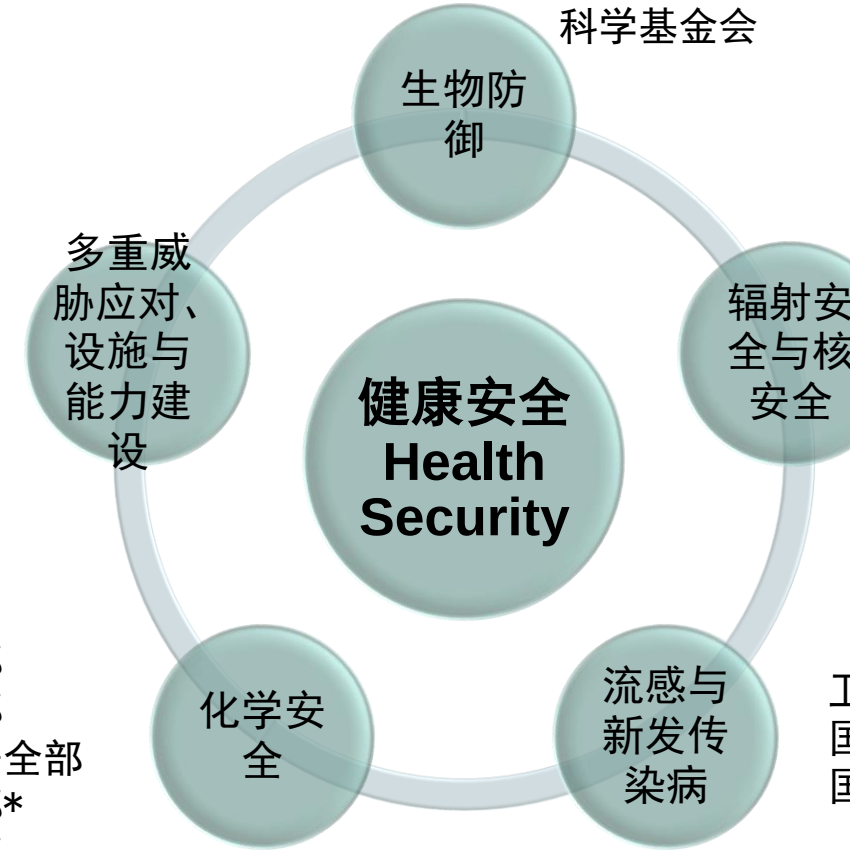
	年均经费(亿美元)	%
司法部	0.91	0.68
科学基金会	0.84	0.63
国际开发署(USAID)	0.75	0.56
商务部	0.58	0.43
农业部	0.52	0.39
核管理委员会(NRC)	0.37	0.28
退伍军人事务部	0.01	0.01

“生物防御”治理体系（9个）	“健康安全”治理体系（13个）
卫生部	卫生部
国土安全部	国土安全部
国防部	国防部
农业部	**能源部**
环境保护部	环保部
商务部	外交部
外交部	**司法部**
国家科学基金委员会	**国际开发署(USAID)**
退伍军人事务部	科学基金会
	商务部
	农业部
	核管理委员会(NRC)
	退伍军人事务部

美国国家健康安全的五大领域

- 生物防御
  - 生物剂恐怖袭击和生物材料意外泄露威胁的预防与应对
- 辐射安全与核安全
  - 放射性物质和核恐怖袭击，以及大规模的放射性泄露事故的预防与应对
- 化学安全
  - 对人为制造或意外事故导致的大规模有害化学物质人群暴露的预防、应对和应急处置
- 流感与新发传染病
  - 对大规模、自然发生的、可能造成社会混乱的传染病的预防和应对
- 多重威胁应对、基础设施与能力建设
  - 不专门属于以上4类生物安全领域的任务则归入多重（多类型）威胁应对，以及覆盖上述4类安全领域综合性、普适性的基础设施和能力建设

美国的国家健康安全体系



国防部
国土安全部
卫生部
科学基金会

能源部
国土安全部
国防部
外交部*
环保部
核管理委员会(NRC)
卫生部

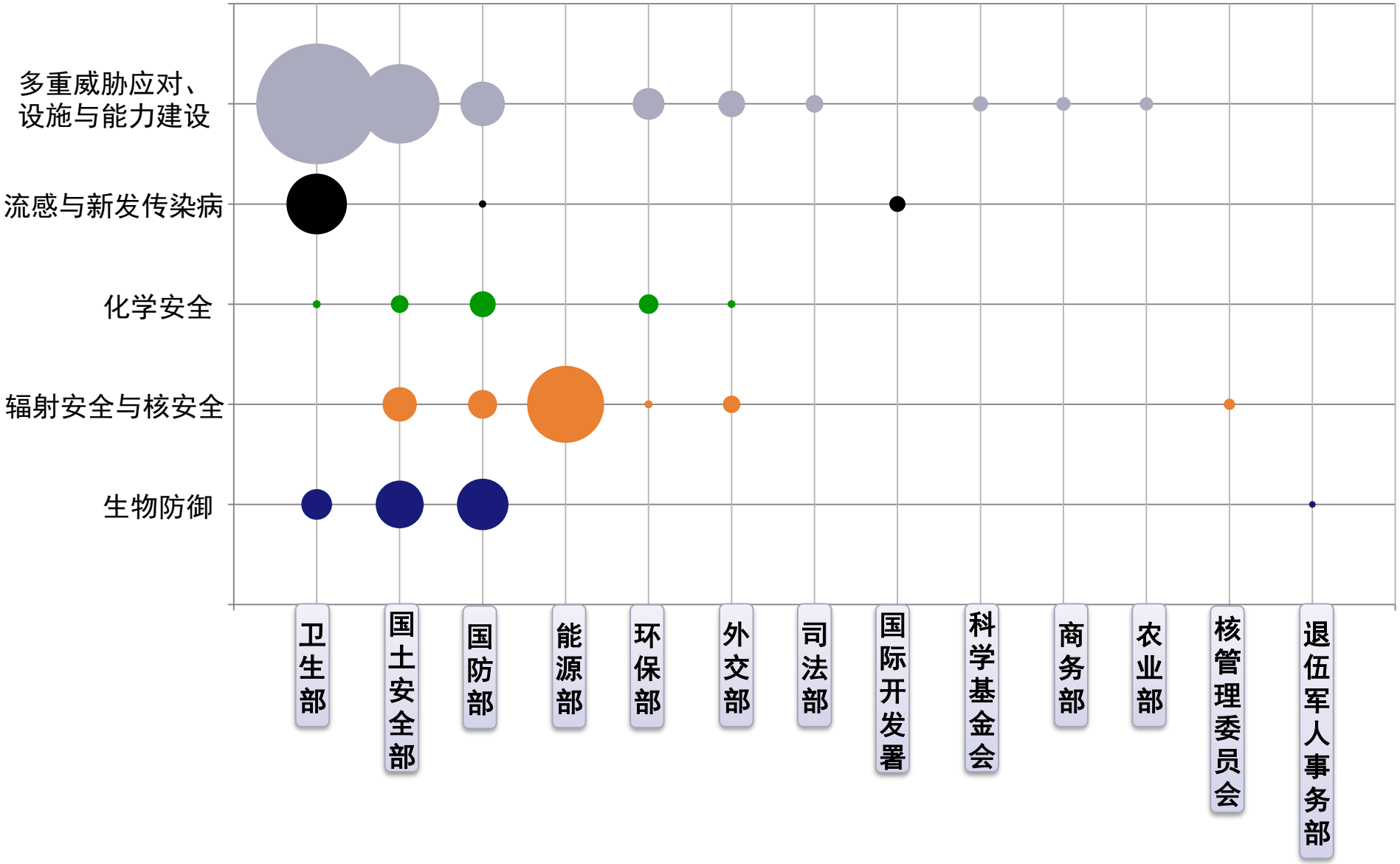
卫生部
国际开发署(USAID)
国防部

国防部
环保部
国土安全部
外交部*
卫生部

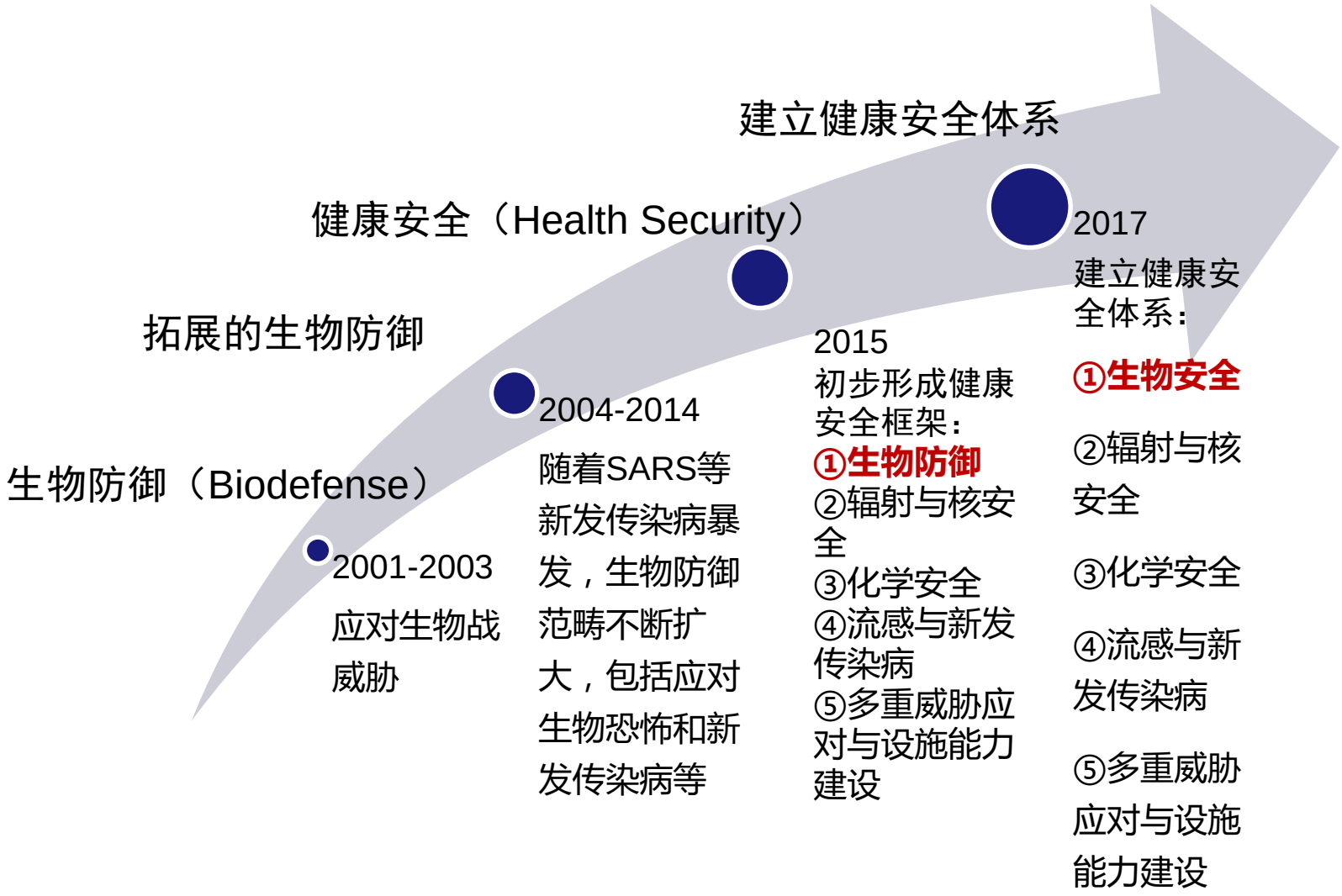
卫生部
国土安全部
国防部
外交部
环保局
司法部
科学基金会
商务部
农业部
退伍军人事务部

*美国国务院相当于外交部

部委任务


多重威胁应对、设施与能力建设
流感与新发传染病
化学安全
辐射安全与核安全
生物防御
卫生部
国土安全部
国防部
能源部
环保部
外交部
司法部
国际开发署
科学基金会
商务部
农业部
核管理委员会
退伍军人事务部

美国生物安全发展态势


生物防御（Biodefense）
2001-2003
应对生物战威胁
拓展的生物防御
2004-2014
随着SARS等新发传染病暴发，生物防御范畴不断扩大，包括应对生物恐怖和新发传染病等
健康安全（Health Security）
2015
初步形成健康安全框架：
①生物防御
②辐射与核安全
③化学安全
④流感与新发传染病
⑤多重威胁应对与设施能力建设
建立健康安全体系
2017
建立健康安全体系：
①生物安全
②辐射与核安全
③化学安全
④流感与新发传染病
⑤多重威胁应对与设施能力建设

战略重点转移的证据

- **证据：美国生物安全战略调整**
  - **国家规划：卫生部牵头**
    - 2009年《国家健康安全战略》
    - 2012年《国家健康安全战略实施计划》
  - **智库响应**
    - 匹兹堡大学生物安全研究中心更名为健康安全研究中心(2013)
    - 约翰霍普金斯大学(2017)
    - 专业期刊：Biosecurity and Bioterrorism更名为Health Security (2014)

过去是生物防御；
未来是健康安全

重点任务领域：

全球健康安全；
传染病与流感；
灾害应急
生物威胁、化学威胁与核威胁

生物安全投入结构（一）

美国生物防御与健康安全领域的投入占美国联邦研发和研发设施（R&D 和 R&D plant）投入的比例（单位：亿美元）

	2001-2005	2006	2007	2008	2009	2010	2011
生物防御	243.7	58.4	54.9	54.6	81.8	56.5	57.3
健康安全						147.5	132.8
研发和研发设施财政总投入	5701.6	1360.2	1418.9	1443.9	1642.9	1489.6	1443.8
生物防御所占比例(%)	4.3	4.3	3.9	3.8	5.0	3.8	4.0
健康安全所占比例(%)						9.9	9.2

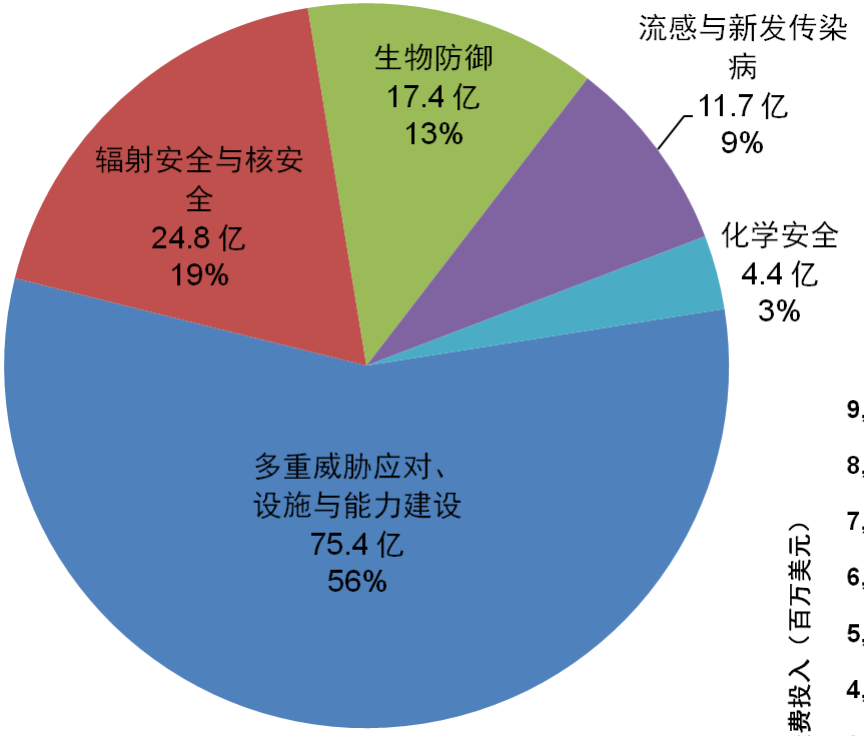
续表

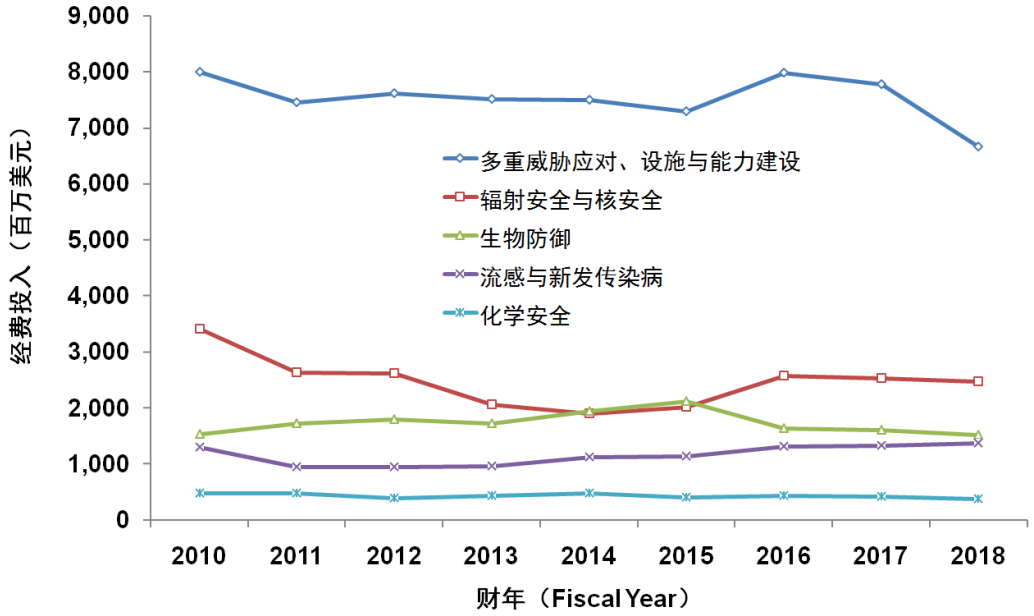
	2012	2013	2014	2015	2016	2017	2018
生物防御	55.6	58.6	66.9				
健康安全	134.1	127.3	129.9	130.1	139.9	137.1	124.5
研发和研发设施财政总投入	1437.4	1324.8	1361.6	1385.4	1490.0	1539.2	
生物防御所占比例(%)	3.9	4.4	4.9				
健康安全所占比例(%)	9.3	9.6	9.5	9.4	9.4	8.9	

注：美国研发和研发设施财政总预算数据来源：National Science Foundation, National Center for Science and Engineering Statistics. 2017. Federal R&D Funding, by Budget Function: Fiscal Years 2015–2017，https://www.nsf.gov/statistics/2017/nsf17305/#chp2

生物安全投入结构（二）

2010-2018财年美国健康安全分领域年均经费投入（美元）





对态势的基本判断

- 生物安全的战略重点正在由军事国防领域的“生物防御”拓展至社会民生领域的“健康安全”，涵盖了生物防御、化学安全、放射与核安全、流感与新发传染病、复杂危害及其应急等内容。
- 正在形成以卫生、安全、国防和能源部门为主体，多部门参与的协同治理体系。
- 卫生部门不仅在传染病暴发等公共卫生应对方面起到核心作用，在生物恐怖等生物安全防御方面也发挥着重要作用。
- 美国生物安全领域年度投入约占联邦研发与研发设施总投入的4.5%，按管理部门，卫生与健康部门（含基础研究资助）投入约占50%；按任务领域，基础设施和能力建设投入占50-60%。这些数据可考虑供我国制定生物安全年度预算和具体任务时参考。

发现前沿、分析态势

今后可重点关注以下点
与论文、专利形成有益补充

一、从基金资助信息中发现未来研究动向
二、从智库报告中发现未来研究方向
三、通过数据库特色功能识别研究前沿
四、从文献资料分析角度初步判断领域发展态势

谢谢!

Q & A

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E-mail: windowsdujian@163.com