Industry-university collaboration study using comprehensive digital resources from ProQuest

“产学研”课题研究与ProQuest全套数字资源

CALIS 2018 ChongQing 重庆

May 16, 2018

Latest update from ProQuest
ProQuest的最新进展

Ex Libris and Alma

- 1,200 Ex Libris Alma customers globally
  全球已有一千二百多家Alma客户
- 18 Alma customers in Greater China: 6 in mainland China, 10 in Hong Kong, 2 in Taiwan
  大中华区有十八家客户：大陆六家，香港十家，台湾两家。
- CASHL has opted to Primo-SFX discovery and delivery solution.
  CASHL决定采用Primo-SFX资源发现系统和调度方案。

Ebook Central

- Most ebrary, EBL, MyiLibrary customers have moved to Ebook Central.
  全球的ebrary、EBL与MyiLibrary客户大多数已升级到Ebook Central。
- The flagship platform provides over one million books from 1,000 publishers.
  全球最大的电子书平台:超过一千家出版商，一百多万册书籍。
- Ebook Central will make it easier to download DRM-free book chapters and add more DRM-free books.
  Ebook Central将为用户提供无限制篇章下载，增加无限制下载图书。

ProQuest Platform

- As world largest content aggregation platform, it is comprised of over 1.4 billion documents, with increased volume of OA and video content.
  作为全球最大的文献整合平台，其文献量已超过14亿，并在加注海量的公开获取文献和视频资源。
- Its eight types of digital content sources can provide one-stop services to support research of multi-discipline topics.
  学位论文、报刊、政府文献、视频资料、研究报告、文摘索引、期刊论文和图书等八类数字文献能为综合性课题研究提供一站式服务。

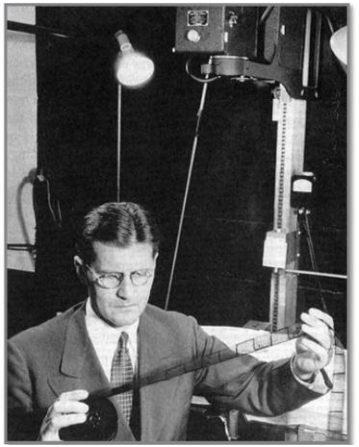
Industry-University collaboration: Introduction with UMI and ProQuest
缩微胶片产–学–研和ProQuest的早期创业史：UMI公司与密歇根大学的合作

ProQuest Founder: In 1938, Eugene Power convinced of the commercial potential for the then-cutting edge microfilm technology and created University Microfilms International (UMI) at Ann Arbor.

ProQuest创始人：Power先生在1938年研发了缩微胶片技术并创办了大学缩微胶片公司(UMI)

Focusing on dissertations: When he learned about the challenges surrounding dissemination of dissertations from the head librarians at the University of Michigan, Power saw an opportunity to sell dissertations on microfilm.
应用于学位论文：在同密歇根大学图书馆领导人员交流过程中，Power意识到缩微胶片能对学位论文的保存和快速传播起到革命性的作用。

Reaching out to the University of Michigan: He invited the Dean of the Graduate School to visit his new company. The Dean was so impressed Power's idea and operation, he made the university one of UMI's first publishing partners.
密歇根大学：Power邀请研究生院院长参观UMI，院长完全同意缩微胶片能加速学位论文的传播，并使密歇根大学成为UMI首批合作伙伴之一。



Creating a market: In 1951 the librarians in The Association of Research Libraries and their graduate schools deans accepted microfilm as the medium of dissertation publication because of major cost savings.
新兴产业：1951年美国研究图书馆协会和许多大学研究生院同意用缩微胶片来保存和传播学位论文

Returning to the University of Michigan: In 1963, Power's gift to the university became the Power Center for the Performing Arts. He also served as university's Regent from 1955 to 1965.
回报密歇根大学：Power在1963年捐款新建了表演艺术中心。在1955到1965年期间他就任该大学董事。

Industry-university collaboration: A brief history and Bayh-Dole Act
产–学–研简史及拜杜法案

United States
Bahy-Dole Act in 1980
美国
1980年的拜杜法案调整了政府专利政策，下放专利权于学术单位和教研人员，激活遭到闲置的科研成果，促进经济发展。

1900s – 1970s:
Isolated collaboration and exchange of researchers
大学各自同工业界合作，交换人员

Massachusetts Institute of Technology
STANDARD OIL COMPANY (NEW JERSEY)

1920s – 1970s
Outsourced management of technology licensing
许多大学聘请第三方管理技术转让

RESEARCH CORPORATION for SCIENCE ADVANCEMENT

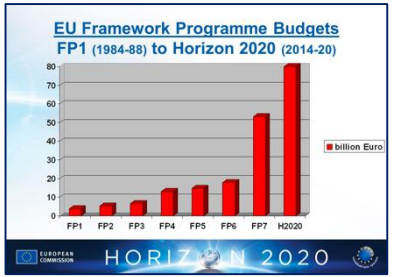
1980 – 2018
Post Bahy-Dole Act, university-managed technology transfer and partnership
拜杜法案实施后，各大学都自己管理与工业界的合作及技术转让


Birch Bayh

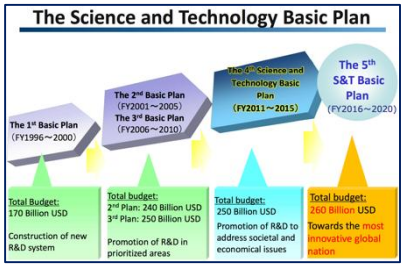

Bob Dole

European Union
Japan
China
欧盟、日本、中国
Emulating Bayh-Dole Act
都在效仿拜杜法案

EU 欧盟 1984 – 2020
Framework Programme 1 to 8: Flow of funding and researchers across the countries
总体规划一至八：鼓励经费和人员跨国流动



Japan 日本 1996 – 2020
S&T Basic Plan 1 to 5: Matching Government research funding to other countries
科技基本方案一至五：跟进主要国家的研究经费



China 中国 2002 – 2020
S&T Progress Law: University's IP ownership & transfer
科技进步法：大学知识产权的拥有及转让

Industry-university collaboration: Japan
产–学–研国家案例：日本

1980s: Created collaborative research centers at national universities and allowed them to take private funds.

在国家直属大学组建合作研究中心并允许接受商业资金。

1990s: Enacted the legislature “the Science and technology Basic Plan” to increase Government funding.
颁布科技基本方案第一版，增加政府经费

2000 - 2016: Enacted four more versions of this Basic Plan to drive collaboration between universities, industry and the Government.

颁布二至五版科技基本方案，鼓励大学，工业界和政府间的合作，解决社会经济最迫切的问题。

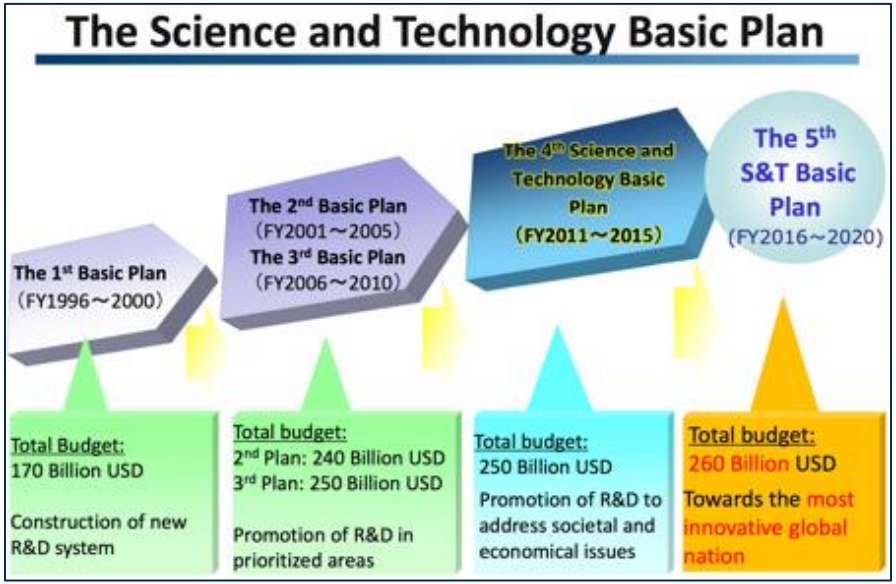
- Lifted any ceiling that researchers at universities can earn from Government-held patents

  大学研究人员可以用政府拥有的专利获取不受限制的经济收入

- Encouraged universities to establish technology transfer offices, allowed professors to consult for private companies and take managerial jobs there

  要求大学设立技术转让机构，允许教授开展咨询服务并在公司任职

1996 – 2016: 日本科学技术基本方案一至五版，保持日本与美国，欧盟和中国的总体竞争力



Industry-university collaboration: New drug development in the US
产–学–研产业案例：医药研发在美国

Academia collaboration with pharmaceutic industry
大学与制药业的合作

- Shared common goal to improve health of patients
  共同目标是为病人解除病患
- Mandated by Bayh-Dole Act in the US
  合作是出于拜杜法案的实施

Industry relies on academia for
制药业依赖学术界的

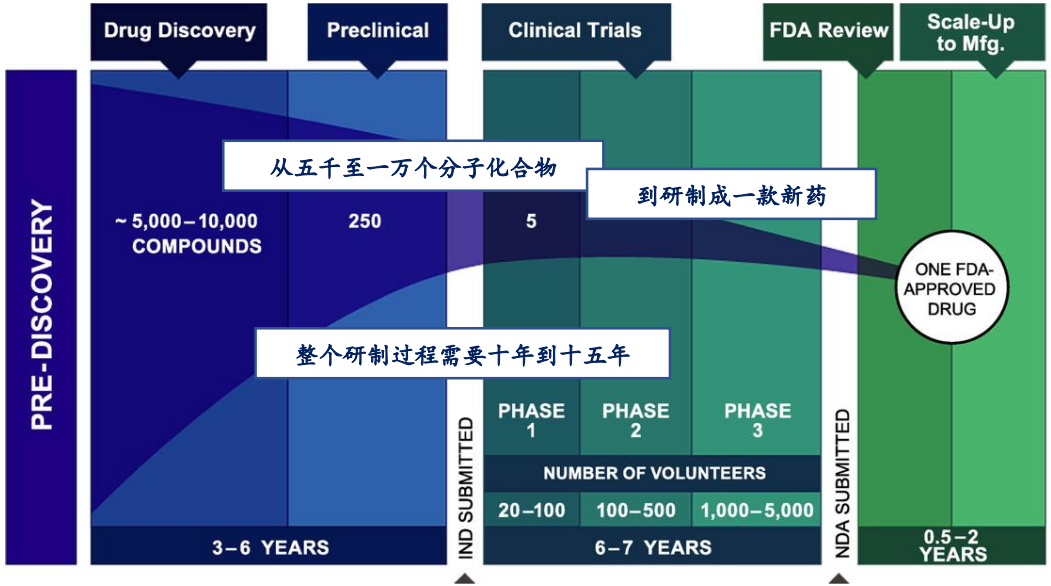
- Basic research to identify novel molecular targets
  基础研究，新发现的分子化合物
- Clinical trials that evaluate efficacy and safety of new medical invention
  新药有效性及安全性的临床实验

Academia needs industry for
学术界依赖制药业的

- Funding for clinic research
  临床研究费用
- Research resources such as technology, diagnostics and equipment
  先进的临床技术和诊断设备

Successful collaborations 成功的合作范例:

- Statins and reduction in deaths from cardiovascular disease in 1980s
  八十年代用于治疗心血管病的他酊类药物
- Anti-HIV medicine and reduction in deaths from AIDS in 1990s
  九十年代用于治疗艾滋病的抗体药物



Industry-university collaboration: MIT 1908 - 2017
产–学–研大学案例:麻省理工学院1908–2017

2017

- 700+ companies working with MIT
  同七百多家企业合作
- 794 new invention disclosures
  七百九十四项新发明
- $47 million in total licensing revenue
  四千七百万美元技术转让费
- $144 million R&D funding from industry
  一亿四千四百万美元来自于工业界的研发经费

1908 - 2017

- Launched 30,200 companies
  创立了三万多家公司
- Employed 4.6 million people
  雇佣了四百六十多万员工
- Generating $1.9 trillion in annual revenues
  总创收超过一万九千亿美元

Massachusetts Institute of Technology

STANDARD OIL COMPANY (NEW JERSEY)

Birth of chemical engineering: Teaching chemical engineering at MIT began in 1888, it was established in 1908 when partnering with Standard Oil had made funding and industry problem-solving accessible to faculty and students.
化学工程的诞生：化工课程在MIT始于1888，正式建立则是在1908，该年MIT同标准石油公司合作，获得了资金并接触到实用的化工课题。

Massachusetts Institute of Technology

Merrill Lynch

Establishing financial engineering: In 1999. a 5-year collaboration with Merrill Lynch established a discipline in financial engineering, including $11M funding for research, $9M for education and for a new graduate minor program.
金融工程的诞生：MIT在1999年同美林证券合作，获得了一千一百万美元的研究经费，九百万美元的教学资金，建立了金融工程研究生学位。

Summary 结论

- The industrial partnerships gave MIT an alternative source of research funding for faculty and fellowship grants for students.
  与工业界的合作为师资提供了另一种研究资金渠道,为学生群体争取到了奖学金。
- Faculty members are closer to real problems in industry, enforcing a balance between theory and relevance to society.
  教研人员对实际工程课题的研究促使着理论研究与实际应用的有效结合。

Industry-university collaboration: EBI and BP
产–学–研公司案例:生物能源学院和英国石油公司

The Energy BioScience Institute (EBI)
生物能源学院

- BP created this 10-year, $550M partnership in 2007 to develop biofuels and reduce use of fossil fuels and global warming.
  2007年BP投资五亿五千万美元建立起这所合作期十年的学院,研发生物燃料。
- Its partners are the university of California, Berkeley and the university of Illinois.
  合作伙伴有加州大学,伯克利大学及伊利若州立大学。
- EBI hosts 60 research groups including 129 faculty members and over 300 postdoctors and graduate students.
  生物能源学院有129位教授,300多名博士后生和研究生。
- EBI is governed by a three-person directorate, two academics and one senior manager from BP.

  学院由一个董事会负责,董事包括两名教授和一名公司资深经理。

Forming energy biosciences: By integrating biology, chemistry, engineering, environment, agriculture and economics, the EBI covers the entire value chain, from crop selection and sustainable farming all the way to conversion of crops to fuels.
建立生物能源学科:学院综合生物、化学、工程、环境、经济与农业等学科,研究作物选择,可持续性耕作直到作物与燃料的转换。

Results: Developed a energy biosciences curriculum at the partner universities; enabled faculty to become recognized leaders in this new cross-disciplinary field and win federal grants.
结果:三所大学都设立了生物能源课程,教授们成为该综合学科的领军人物,获得了很多政府研究经费。

Success Factors 成功的因素

Long-term relationship 长期合作	Master agreement 主契约	Intellectual property 知识产权	Progress reporting 进度汇报
A 10-year term and EBI building ensuring collaboration in a long-run 十年契约和学院大楼赢得各方的认可	Applicable to every partner, e.g., publications subject to review 主契约适用于每一方,如文献发表需审查	IP can be owned by every partner, but exclusivity is a priced option 每一方都可拥有知识产权,但需要付加价	Annual progress reporting to the 3 directors who make timely adjustment 项目年度汇报时董事会对项目做实时调整

Key issues in managing industry-university collaboration
产–学–研经营管理中需要关注的要点

Long-term relationship
长期合作关系

- A foundation of mutual trust?
  各方有无相互信任的基础?
- Agreeable contributions from all parties?
  各方有无清晰的贡献和投入范畴?

Collaboration agreement
协作合同的核心

- Shared vision?
  各方有无共同的战略意愿?
- Understanding of different incentives and goals?
  能否理解各方不同的目标和激励因素?

Intellectual property
知识产权归属

- Defined ownership?
  有无对所有权清楚的定义?
- Balanced practices in publication and confidentiality?
  有无对文献发表和技术保密的有效协调?

Leadership and contact
领导能力和交流界面

- Leaders capable of fostering ties across business and academia?
  领导人能否扶植企业和学术人员的有效交往?
- Stable contact during project?
  合同实施期有无稳定的交流界面?

Expectation management
合同实施管理

- Understanding of different working paces?
  企业和大学教研人员能否理解各方不同的工作方式和进程?
- Addressing communication obstacles?
  各方人员能否解除交流障碍?

Major operating models in industry-university collaboration
产–学–研主要的运营模式

1920 – 2018: Transaction-based Partnership
单项技术转让

- Contract research work
  单项研究合同
- Licensing patents
  专利许可协议
- Minimum risk but limited innovation
  低风险，有限的创新度

1980 – 2018: University-sponsored partnership
大学主导的合作项目

- Business incubator with state-of-the-art facilities
  创业园及先进的研究设施
- Springboard for startup
  扶持初创企业
- Startup ties to the university
  初创企业与学校的密切关系

2000 – 2018: Long-term strategic alliance
长远的战略合作

- Focusing on one study area
  注重于某一个研究领域
- Shared common goals
  各方享有共同的战略目的
- The greatest risk, groundbreaking innovation
  高风险，开拓性的创新

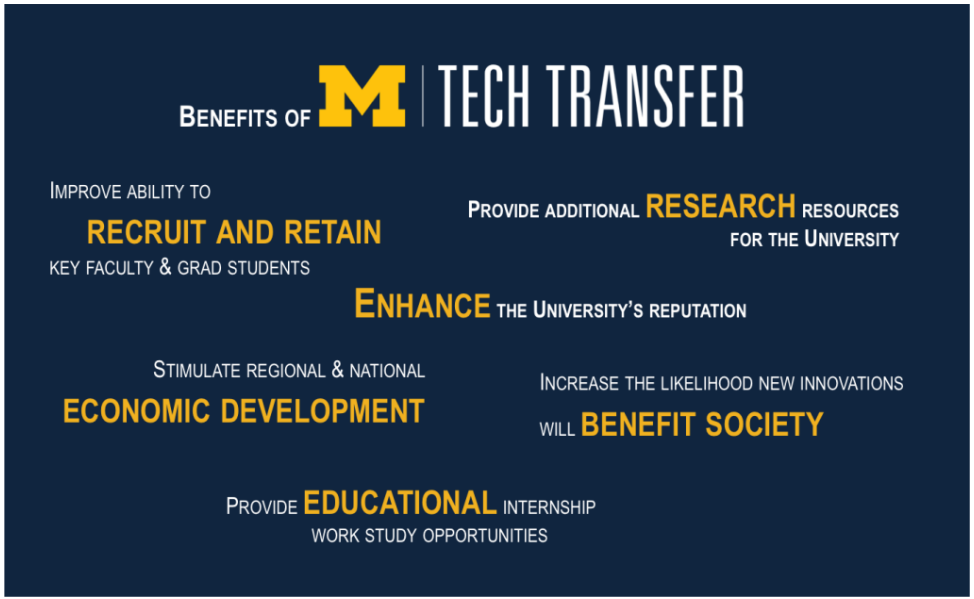
2010 - 2018: Internet-based open source research
网络支持的多方合作研究

- Interdisciplinary and across academic, industry, Government, foundation and investor
  跨学科，合作者包括工业界，政府，基金会和私人投资者
- Diversified funding
  多元化研发基金

Industry-university collaboration: Competitiveness of the University of Michigan
产–学–研对研究型大学竞争力的影响：密歇根大学案例

2016年度 FY 2016

428 **Invention reports** 发明报告	**135** **Patents issued** 获取的专利	**173** **License agreements** 技术转让合同	**12** **Startups** 初创公司	**$23 million** **Tech transfer revenue** 技术转让收入



Technology transfer and industrial collaboration have improved the competitiveness of the university.

技术转让和产–学–研促进了密歇根大学的竞争力

- 有助于师资招聘及留任
- 增加研究教学经费
- 提高学校的声誉
- 促进地区性的经济发展
- 推动创新及社会进步
- 扩展学生在高科技行业的就业

ProQuest provides one-stop services to industry-university collaboration studies
ProQuest六类数字文献资源为产–学–研研究提供一站式的服务

Sample search results using ProQuest digital resources

用ProQuest数字文献资源查询产–学–研课题的几个检索结果

☒ Unique to ProQuest专有

Sample searches 检索案例 ↓	Reports ☒咨询报告	Dissertations ☒学位论文	Government Documents ☒美国政府文献	Newspapers ☒当今报刊 ☒早期报刊	Journals 学术期刊	eBooks 电子图书
"industry university collaboration" 超过115万篇	86,348 **7%**	258,612 **22%**	62,073 **5%**	249,993 47,157 **26%**	179,192 **16%**	268,198 **23%**
"university technology transfer to industry" 超过130万篇	115,822 **9%**	390,645 **30%**	103,758 **8%**	57,212 78,234 **10%**	239,063 **18%**	316,258 **24%**
"university intellectual" property 超过157万篇	57,503 **4%**	419,729 **27%**	57,019 **4%**	414,652 70,124 **31%**	218,044 **14%**	337,567 **21%**
"sustainability of university industry partnership" 超过23万篇	39,437 **17%**	44,540 **19%**	14,700 **6%**	19,740 626 **9%**	29,732 **13%**	83,903 **36%**

Partnering with customers to support research in industry-university collaboration
ProQuest愿同国内大学图书馆一起探讨产-学-研方面的合作交流

- ProQuest plan to seek a couple of partnership opportunities with academic libraries in China to develop products and support research in industry-university collaboration.
  ProQuest准备寻求同一两个国内大学图书馆合作研发产-学-研方面的专项产品。

  - ProQuest has identified all of its digital content resources in the six categories to support research in industry-university collaboration.
    ProQuest拥有研究产-学-研所需的六类数字文献资源。
  - Journals and books are important, however, dissertations, reports, Government documents and newspaper sources are mandatory in studying industry-university collaboration.
    在研究产-学-研综合课题时，期刊和图书非常重要，但学术论文，咨询报告，政府文献及新闻报刊则是必须的。
  - The goal of partnership is to provide China-specific research services that integrates all of these six categories of critical digital resources by using machine learning and other cutting-edge data analytical technologies.
    合作目的是探讨利用最新的智能分析技术来整合ProQuest六类数字资源，为国内产-学-研课题研究提供切合国情的服务。

欢迎各位老师参加
ProQuest公司用户培训

时间：5月17日上午11：30 – 12：10

地点：第一培训教室：第一实验楼S1421

Thank You

谢 谢

Allan Lu 鲁昕

Vice President

Research Tools, Services & Platforms

ProQuest LLC