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CAS

NASH: New Research Landscape

NASH: 研究布局新趋势

A CAS Big Data Perspective on NASH R&D

透过CAS大数据看NASH研发布局新趋势

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ABOUT CAS

关于CAS

Founded in 1907, chemists around the world understood the value to research in aggregating scientific information.

Today we are a global organization of expert scientists, technologists, and business leaders with a long and successful history of harnessing scientific information opportunities.

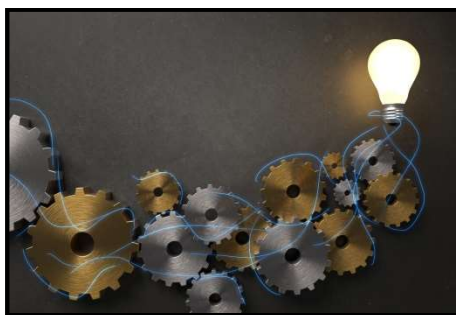


CAS notes three clear trends in published research over the past few years

通过对近年公开报道研究分析，**CAS**发现了三个显著的发展变化



**Explosive growth of
scientific information**
科技信息爆炸性增长



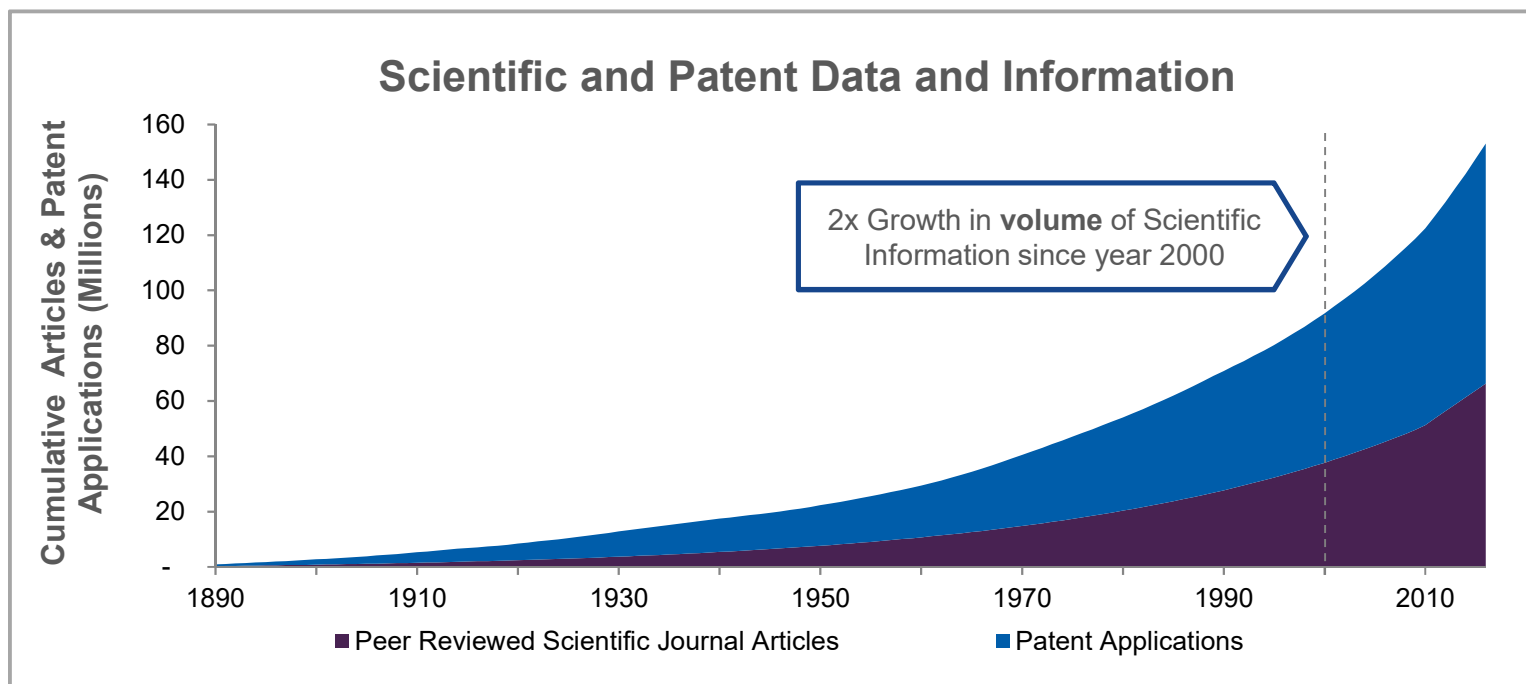
**Increasingly complex
patent filings**
专利申请复杂性增加



**Growing
interconnectedness of
research fields**
不同研究领域关联性增长

The volume of discovery and IP is increasing dramatically

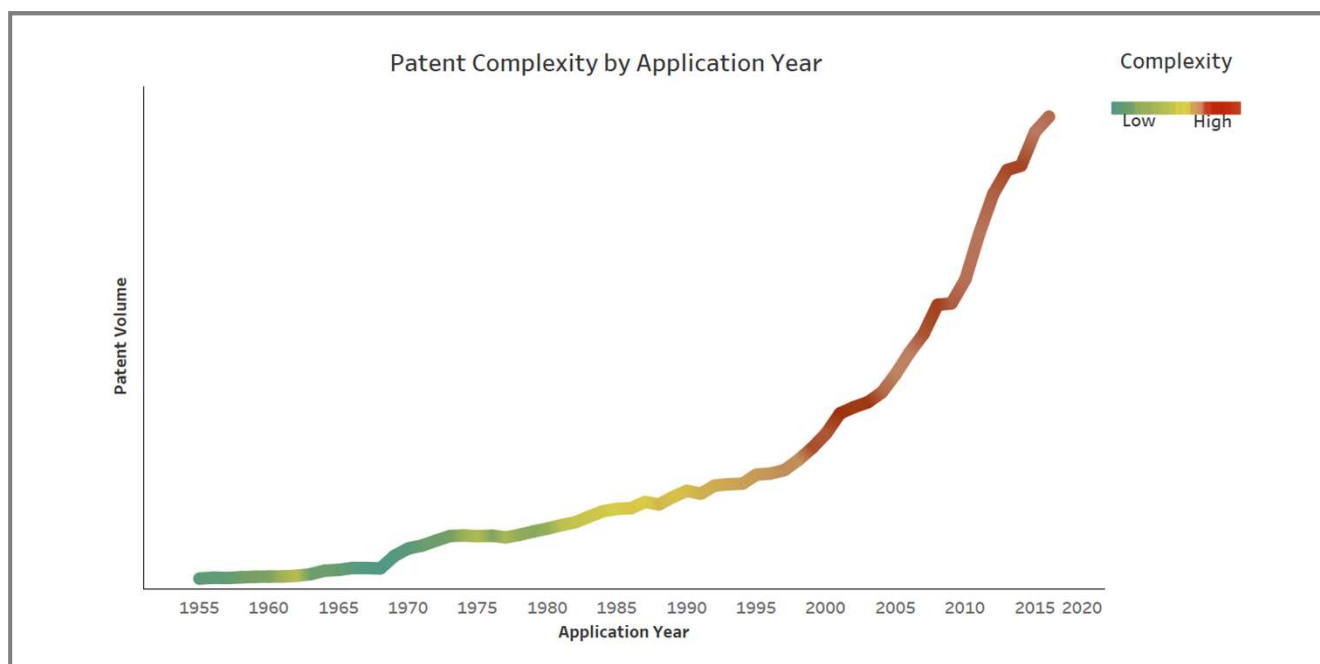
科学发现文献和专利数量急剧增长



Source: CAS Proprietary data, CAS Analytics & Insights

Patents contain more information and are increasingly complex

专利包含更多信息，且日益复杂



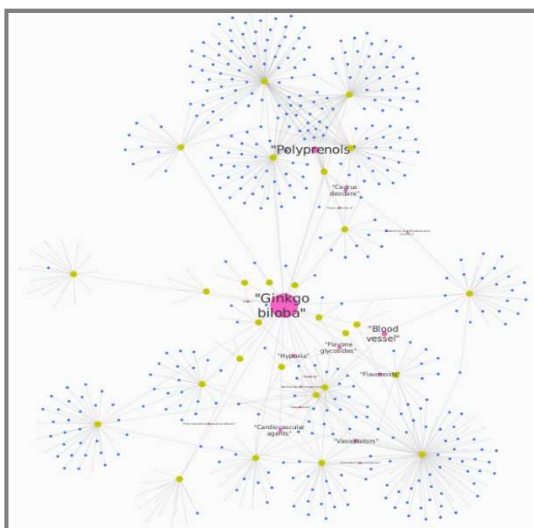
Source: CAS Proprietary data, CAS Analytics & Insights

Research across disciplines and compounds is more interconnected 跨学科研究及化合物间的关联性更强

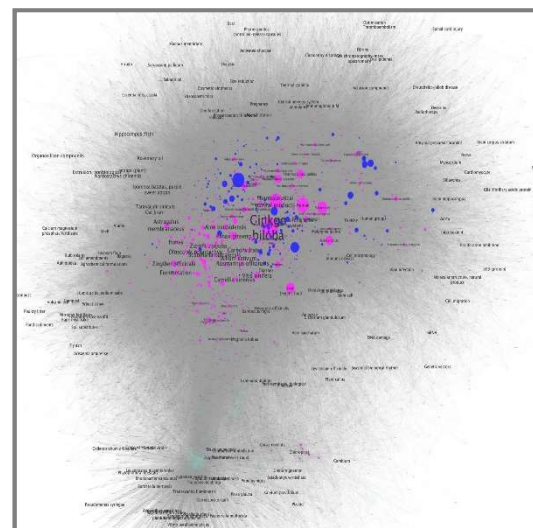
Example:

Ginkgo Biloba research area relationship mapping

1998



2018



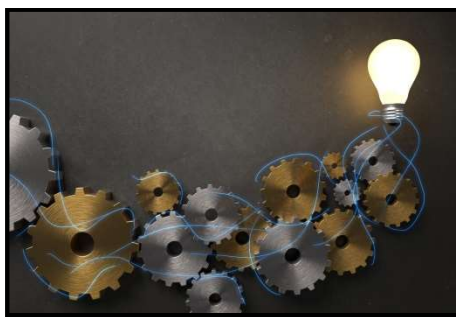
Source: CAS Proprietary data, CAS Analytics & Insights

CAS QUESTION

此次探讨的问题

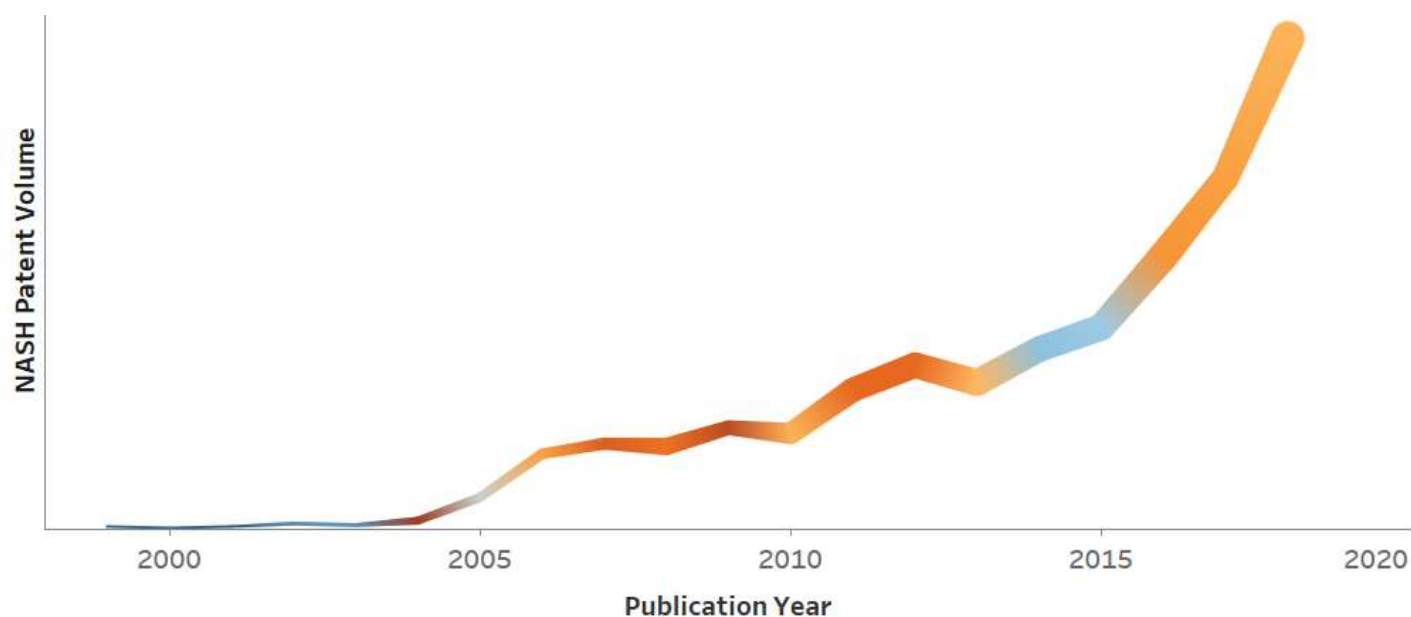
How does NASH research align with these trends, and what insights does the data hold?

NASH的研究如何契合这些趋势，且从这些数据背后可以洞见什么？

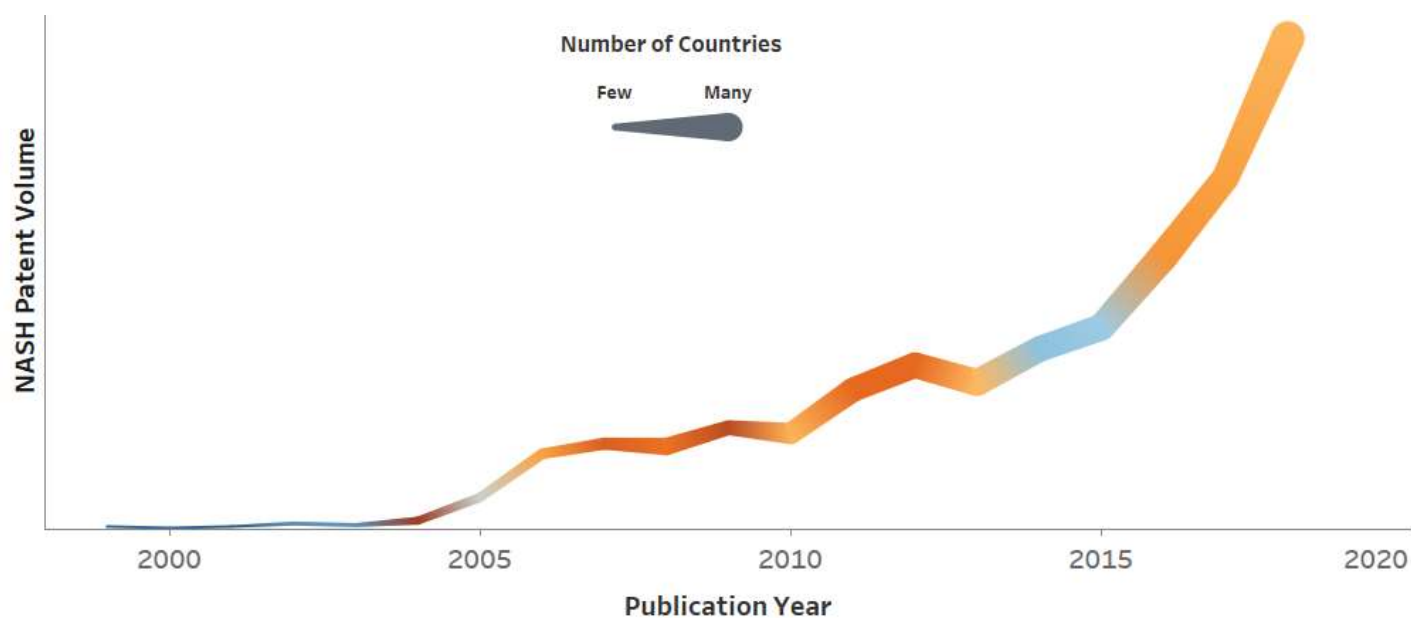


The volume of NASH patents has jumped over 300% in the past 10 years...

过去的十年，NASH专利数量已经激增3倍多

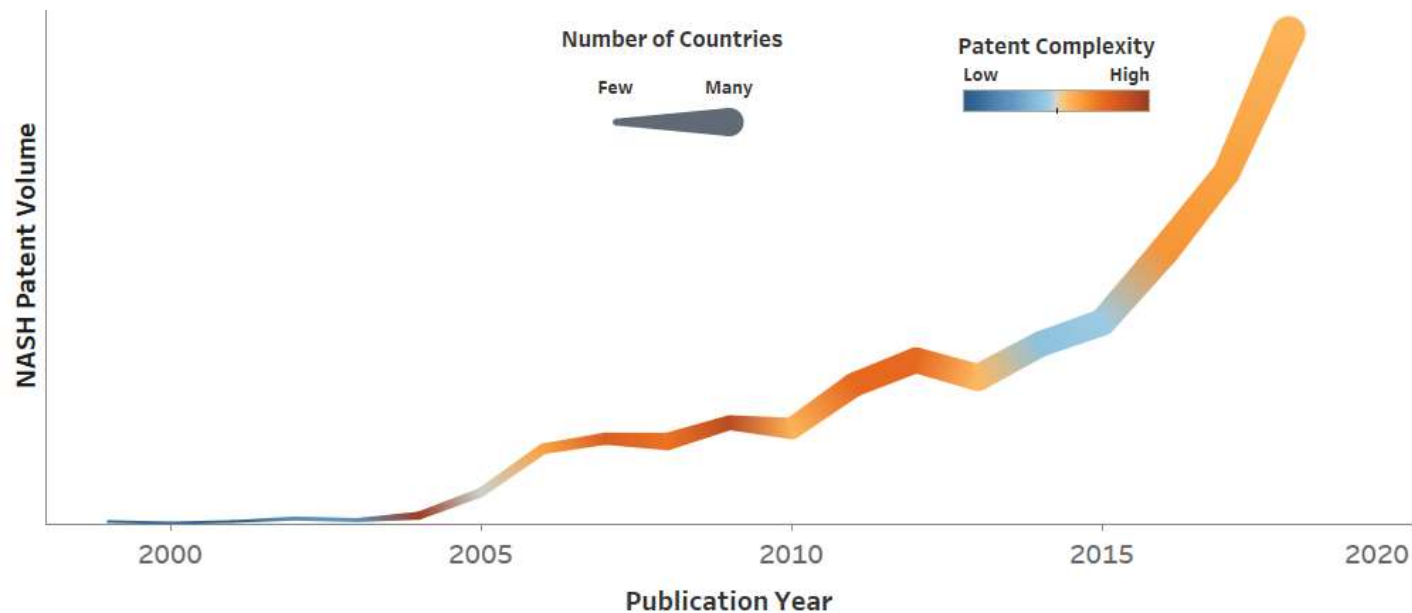


... though interestingly we find that NASH research in particular is increasingly global
NASH研究增长趋于全球化

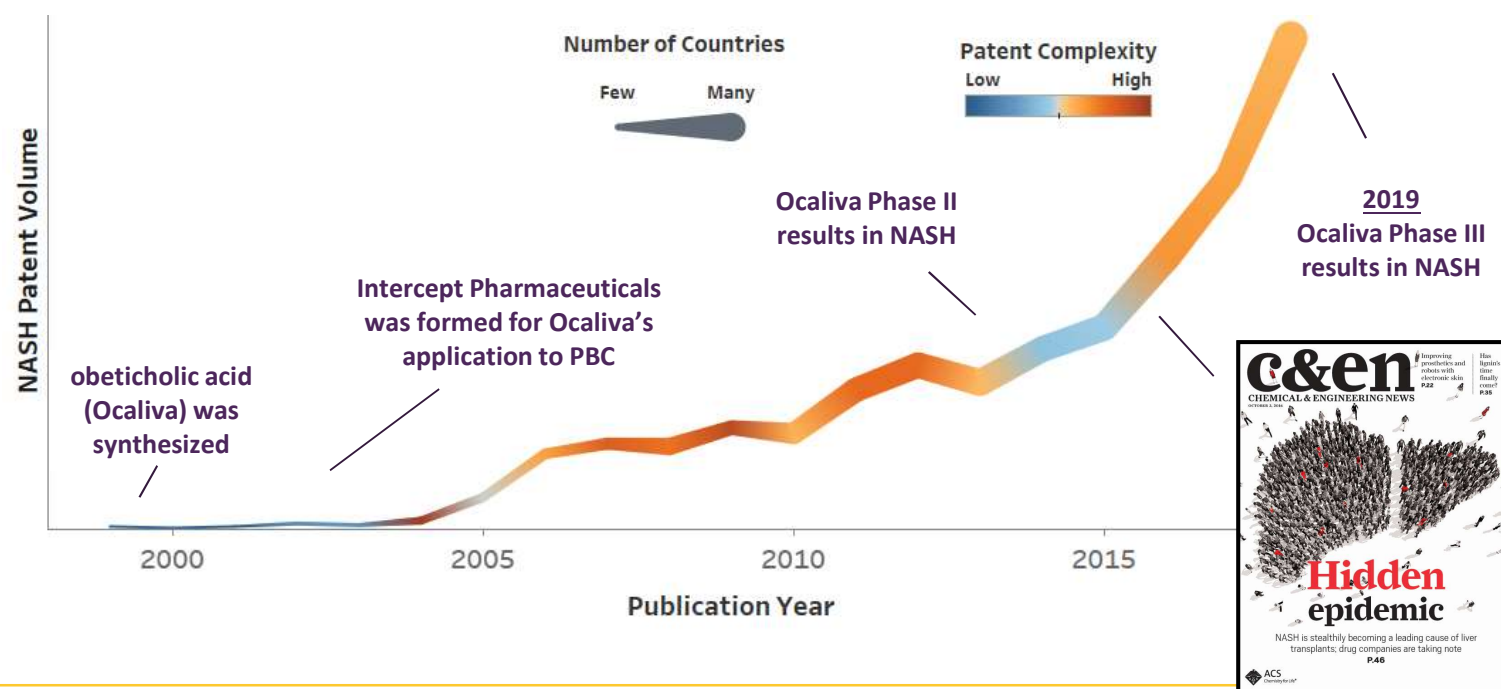


The complexity (e.g. number of therapeutic compounds in patent filings) initially grew, but more recently has countered the overall pharma research trend...

复杂性（例如，专利申请中药物的数量）呈波浪性增长，但总趋势是向上的



... as effort has focused on fewer, more promising leads
研发聚焦于更有前景的先导化合物



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CAS QUESTION

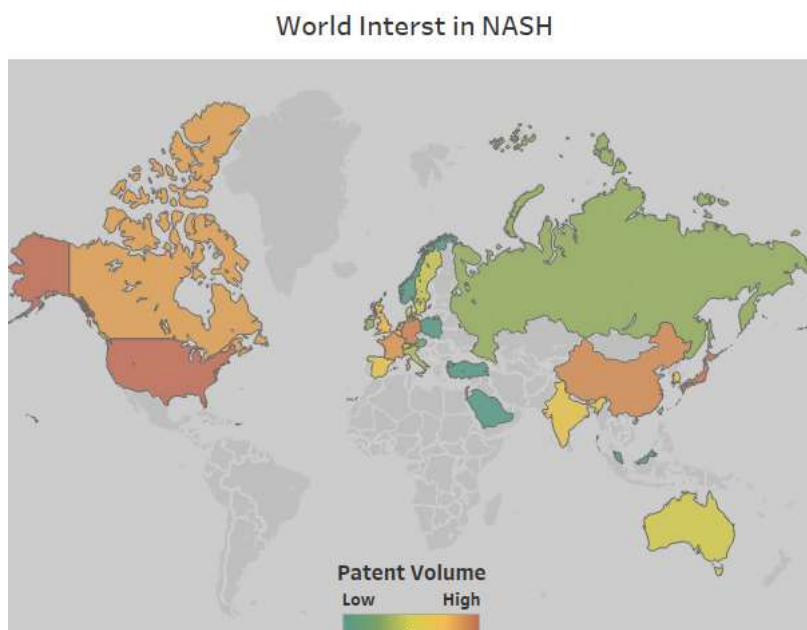
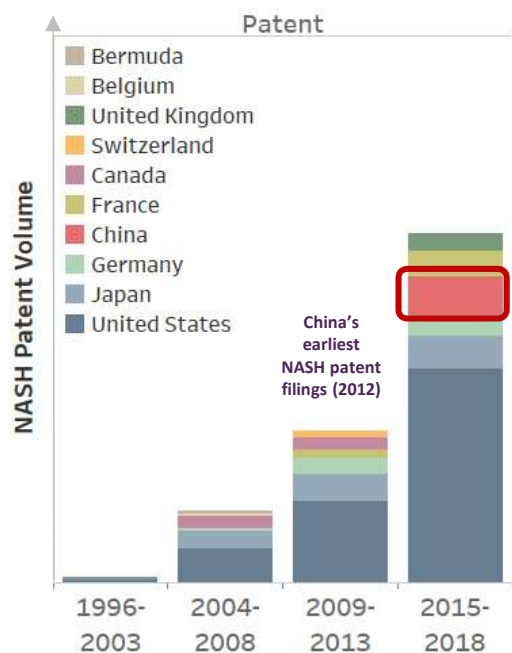
此次探讨的问题

Where is this research being done and filed?
这些研究在哪里完成，并在哪里提出申请？



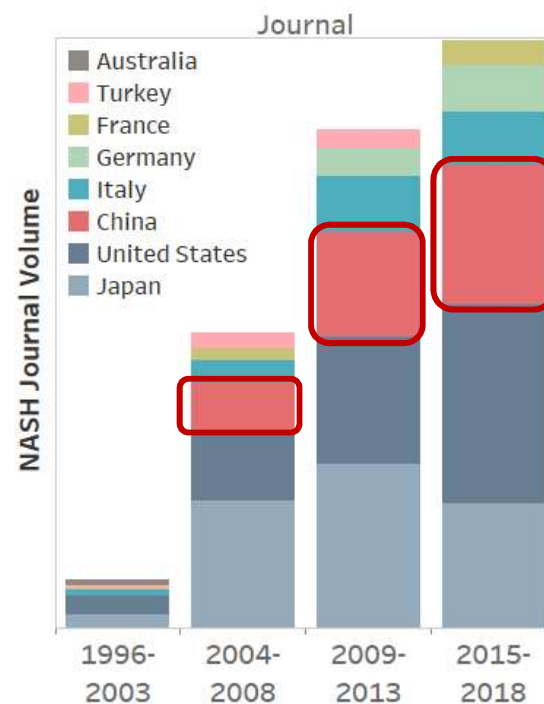
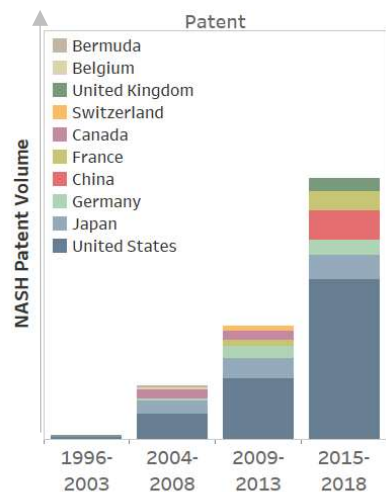
On the surface Chinese firms may seem to be relatively new to patenting **NASH** research; however...

表面上看，中国企业似乎刚开始申请**NASH**专利；然而...



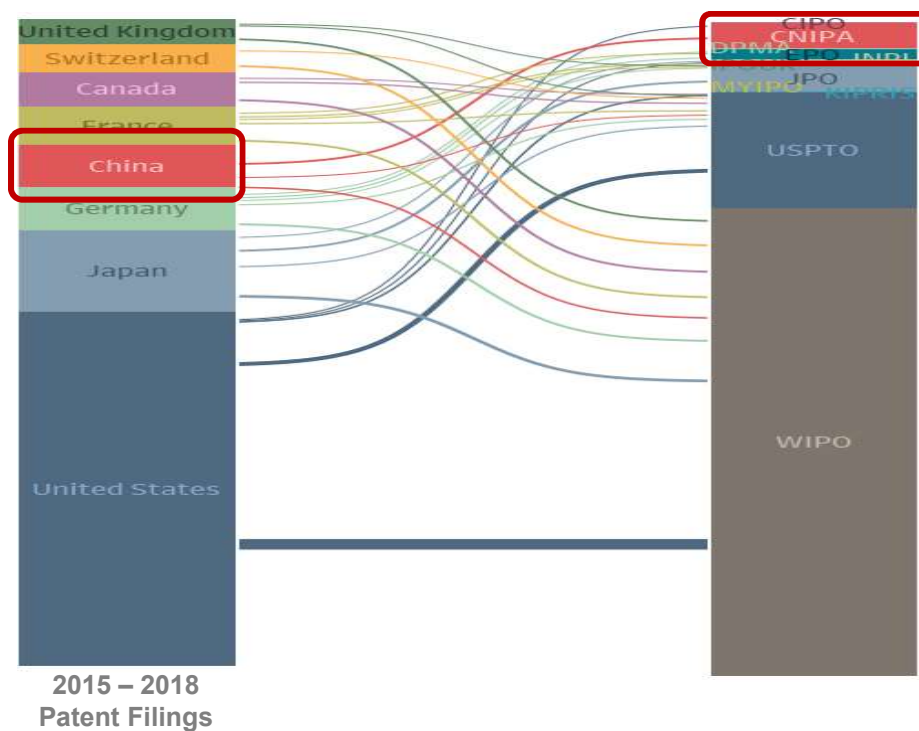
... a different perspective based on journals shows China's strong efforts in NASH research started much earlier

基于期刊数据的不同视角显示，中国在较早的时候就在**NASH**研究上投入了巨大努力



China's NASH research is having a global impact

中国的NASH研究具有全球影响力



Two important findings:

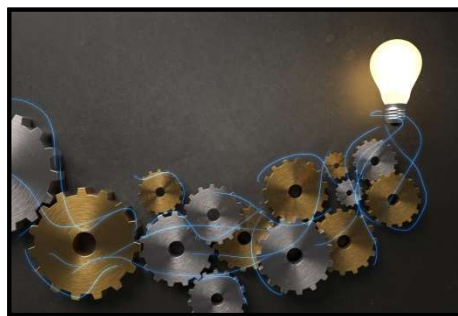
- **CNIPA only receives filings within China** 国家知识产权局专利局仅受理中国申请
- **Historically Chinese firms file almost exclusively with the home patent office CNIPA; however a substantial portion of its NASH patents were also filed with WIPO and USPTO**
中国公司过去主要在国内申请专利；
但是有相当部分的NASH专利却通过WIPO和USPTO提交申请

CAS QUESTION

此次探讨的问题

What treatment and compound research is of greatest competitive interest?

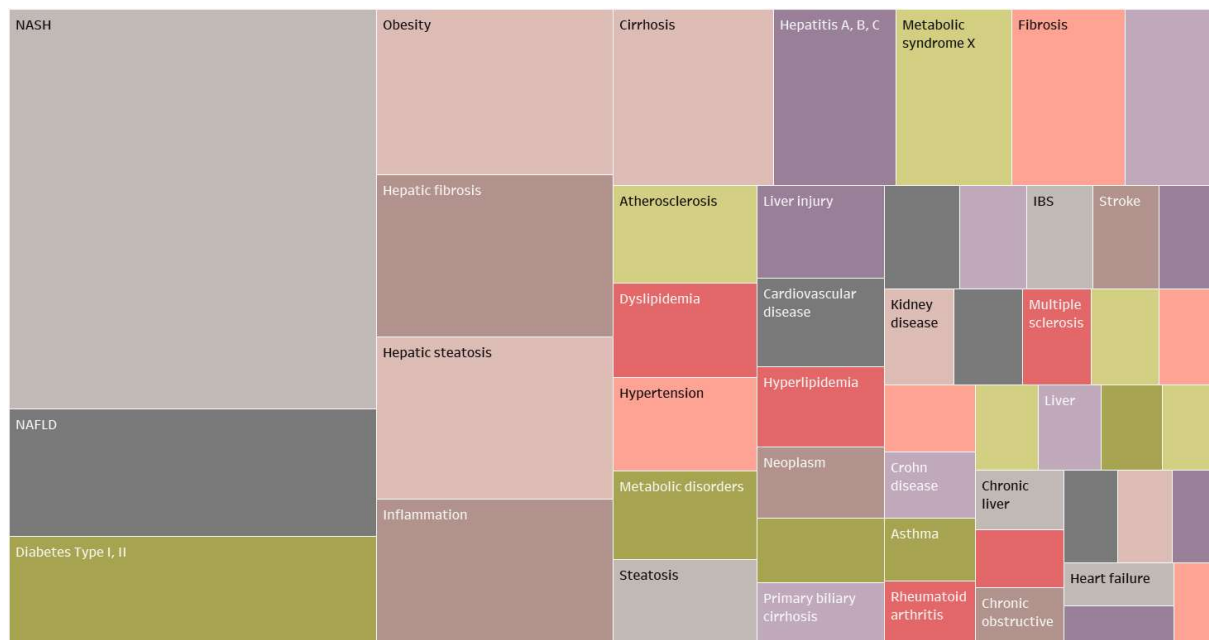
哪种治疗和化合物具有最大的竞争潜力？



NASH research shows a high correlation with other disease research, highlighting recent combination therapies research

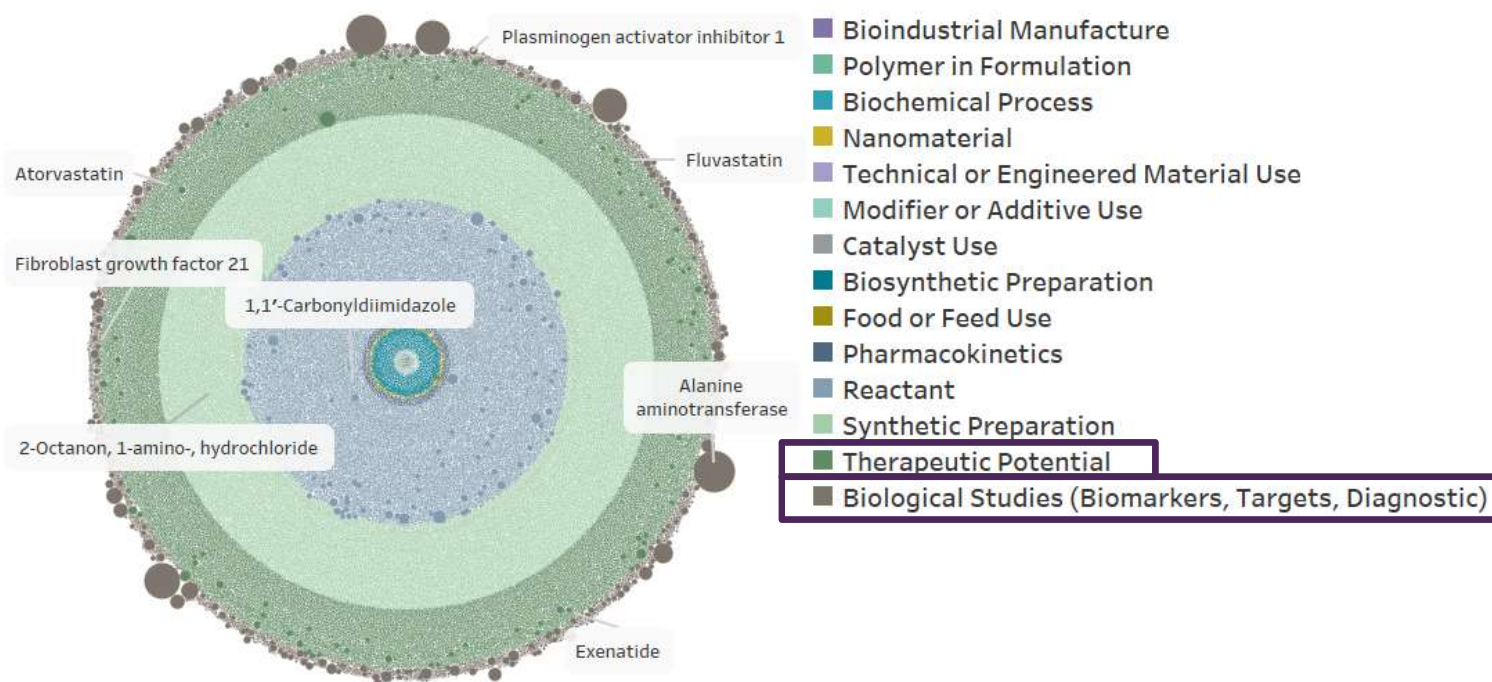
NASH与其他疾病研究显示了高度的相关性，突显近期的联合疗法

Disease research with highest NASH compound research correlation



Over 150,000 distinct compounds are indexed in NASH publications with various functions and roles

从NASH研究文献中，标引了具有各种功能和角色的150,000余个独特物质

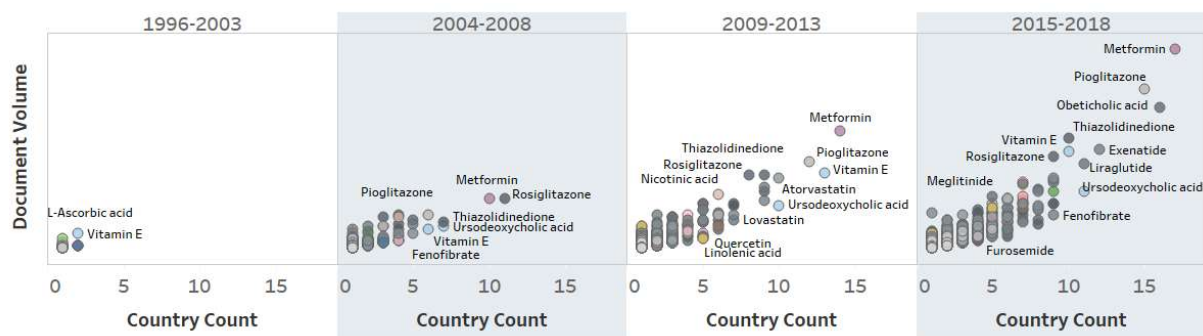


~ 90,000 distinct compounds have therapeutic indication potential, including drug candidates from leading organizations
约90,000个独特化合物具有治疗适应症的潜力，包括来自领先机构的药物候选物

Leading drug candidates by highest research-producing organizations

Metformin	Boehringer Ingelheim Perle Bioscience, Inc. NuSirt Sciences, Inc.
Vitamin E	Virginia Commonwealth University Nara City Hospital Aichi Medical University
Pioglitazone	Salk Institute for Biological Studies Relypsa, Inc. Boehringer Ingelheim
Thiazolidinedione	Salk Institute for Biological Studies Sanofi-Aventis Perle Bioscience, Inc.
Rosiglitazone	Salk Institute for Biological Studies Saint Louis University Relypsa, Inc.
Obeticholic acid	Intercept Pharmaceuticals Enanta Pharmaceuticals Amarin Pharmaceuticals Ireland
Nicotinic acid	GlaxoSmithKline Catabasis Pharmaceuticals, Inc. Relypsa, Inc.
Ursodeoxycholic acid	NGM Biopharmaceuticals, Inc. Dr. Falk Pharma GmbH Amarin Pharmaceuticals Ireland
Atorvastatin	Relypsa, Inc. Hiroshima University Catabasis Pharmaceuticals, Inc.
Exenatide	Amylin Pharmaceuticals Pfizer Perle Bioscience, Inc.

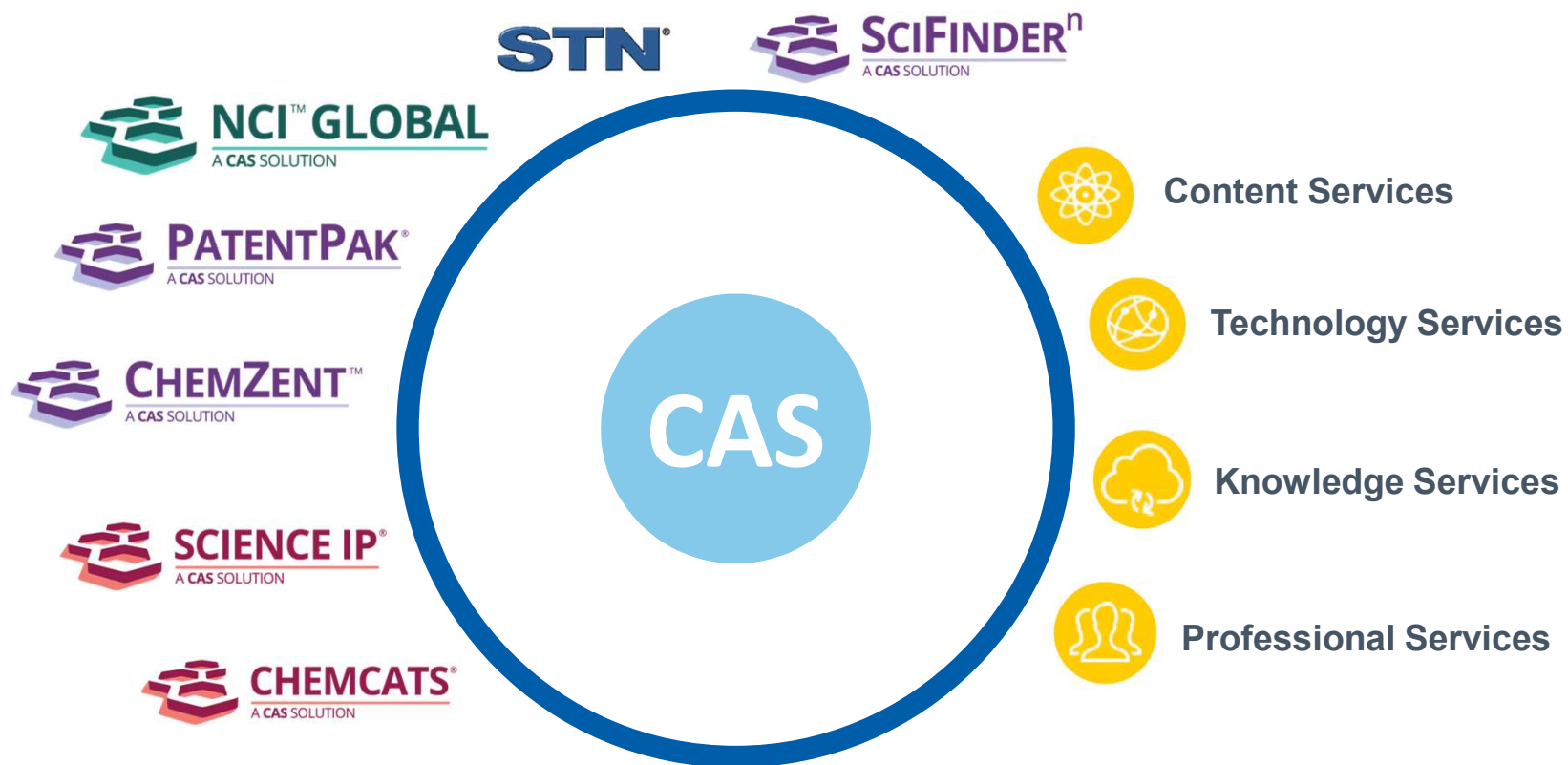
These same compounds are then quickly investigated by others...



Speed to market is critical for success!

Information enables speed: CAS Products and Services

信息加速研发速度：CAS产品及服务



This industry leadership requires broad thinking

行业领导需要战略性的思考



A looming global intellectual property crisis: Is your organization at risk?



Can enhanced search engine relevance drive increased R&D pipeline velocity?



It's not just a haystack anymore: Why research leaders must prioritize information strategy to drive innovation



Accelerate discovery by standing on the shoulders of giants



Innovation drives transformation: 3 ways AI is accelerating research breakthroughs



The importance of human-curated data enrichment for big data analysis

<https://www.cas.org/blog>

CAS is proud of our partnership with leaders in every industry who rely on our solutions

各行业的领导者都信赖**CAS**解决方案，我们为彼此的伙伴关系感到自豪



48 of the top 50
Pharmaceutical
Companies ¹



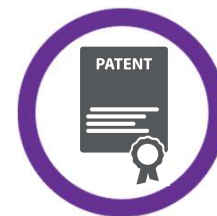
20 of the top 25
Biotechnology
Companies ²



48 of the top 50
Chemical
Companies ³



100 of the top 100
Chemistry Schools⁴



96% of Patent
Applications

1. Pharm Exec's Top 50 Companies 2017
2. The Top Biotech Companies of 2017
3. C&EN's Global Top 50
4. Shanghai Ranking's Global Ranking of Academic Subjects 2017 – Chemistry

Thank You

CAS is a global team of scientists helping scientists

For more than 110 years, CAS has been the leader in developing cutting-edge information solutions to advance innovation across the spectrum of science and technology.

Every day at CAS hundreds of scientists analyze the world's disclosed scientific discoveries and, leveraging the latest technologies, infuse insights to deliver answers.

