

INVESTMENT DIGEST

TEASER
AI IN PHARMA 2021

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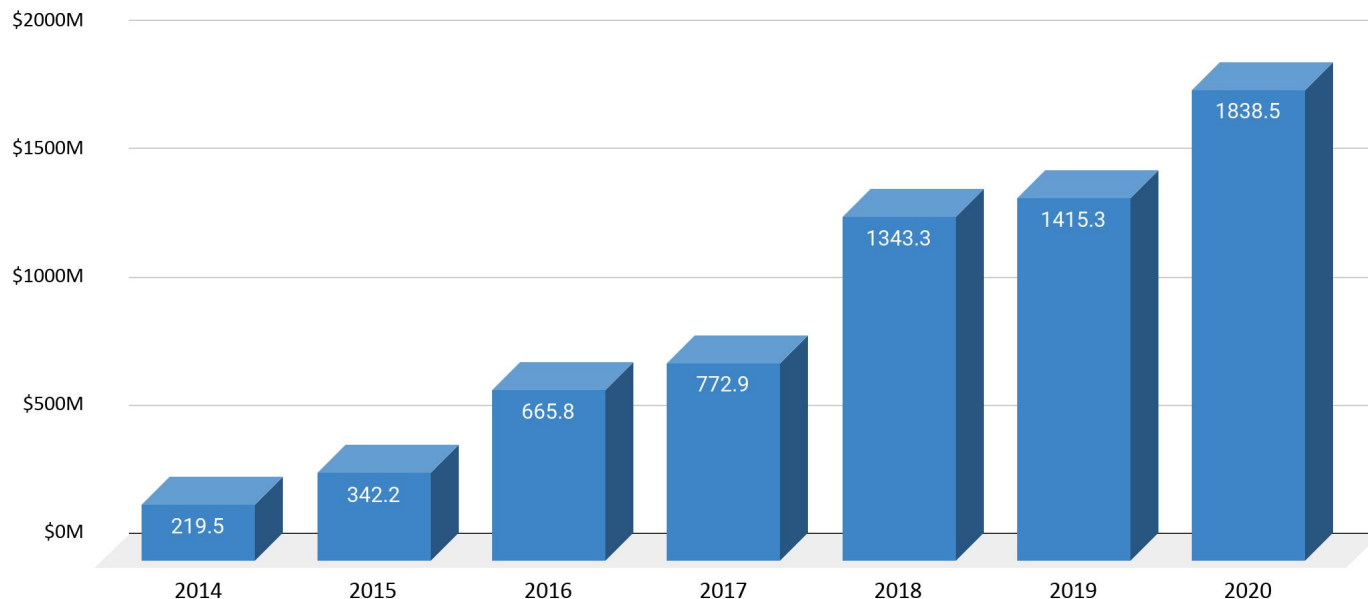
Investment Digest at a Glance

This Investment Digest is summarizing key players and observations in the private equity and venture capital ecosystem, focusing on the pharmaceutical artificial intelligence (AI). Here we have summarized information about key industry trends, 240 promising AI-driven biotech startups, and 50 leading biotech investors in this sector, outlining major investment rounds and relevant R&D partnerships illustrating the industry traction and readiness of institutional investors (big pharma/biotech) to potentially acquire most successful AI-vendors.

It is also found that the ongoing COVID19 pandemics catalyzed further interest toward pharmaceutical AI technologies, and generally created favorable investment climate in the area of pharmaceutical artificial intelligence.

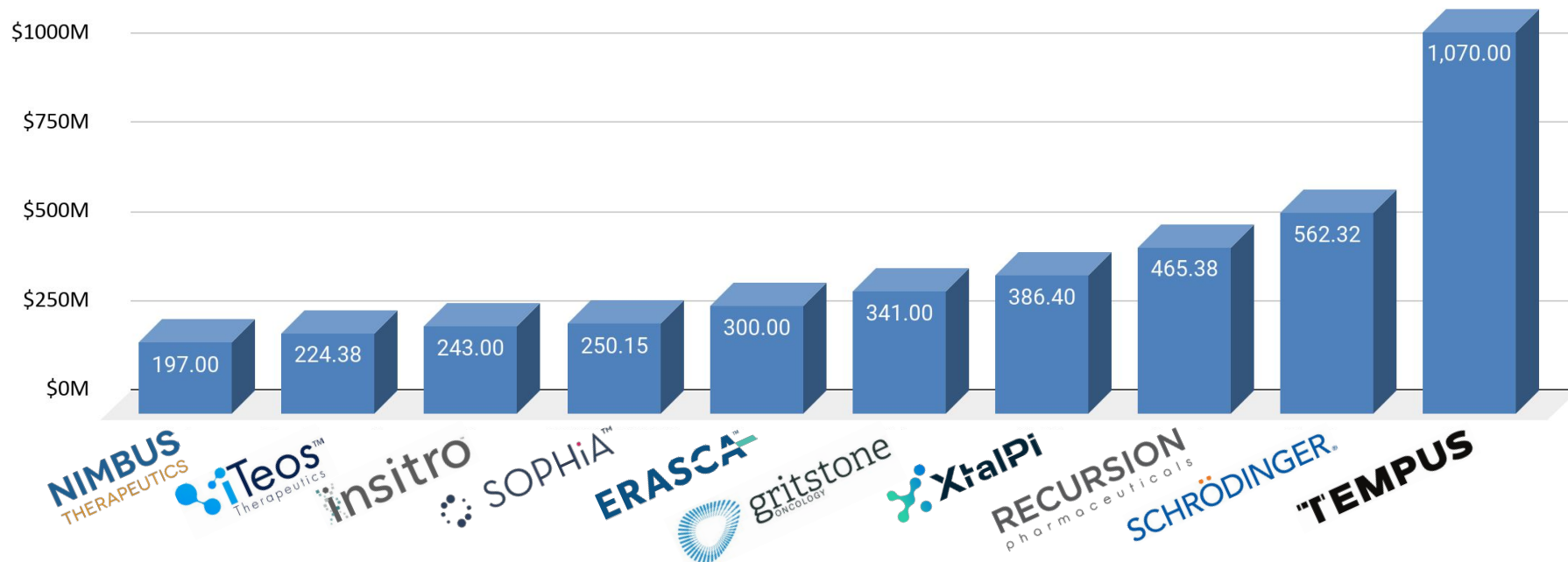
This Investment Digest is based on the 130 page industry report "[AI for Drug Discovery, Biomarker Development and Advanced R&D Landscape Overview 2020](#)", which is a comprehensive overview of the pharmaceutical AI sector, including 240 AI in pharma companies, 600 investors, 90 pharma corporations and 35 R&D centers across the globe. The report also summarizes

Dynamics of Investments in AI in Pharma



There has been a strong increase in the amount of capital invested in AI-driven pharma companies since 2014. During the last 7 years, the annual amount of investments has increased by around 737% and \$1,619M in total. In 2020, the flow of investments increased by almost 30% as compared to the previous year. The majority of the deals fall within the \$1 - 64M range, with a relatively small number of “mega-deals” above the \$100M mark.

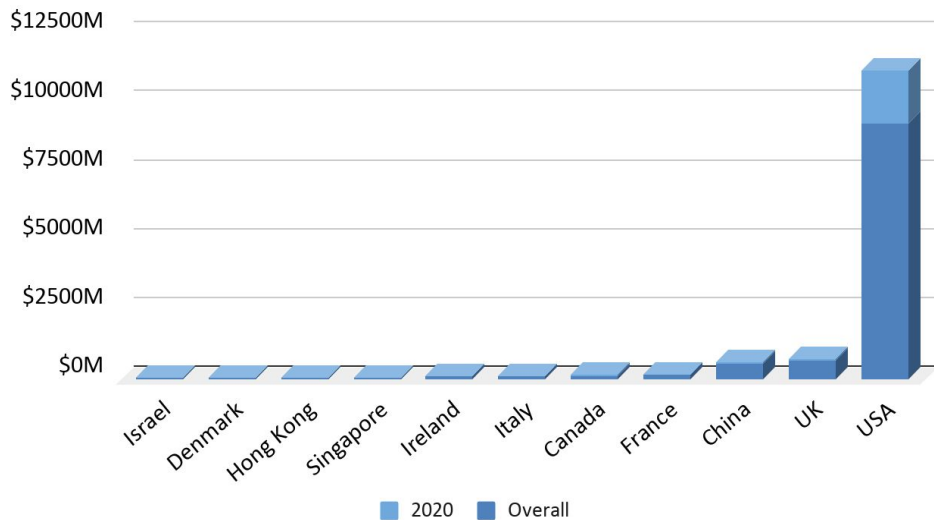
Top-10 AI Companies by Total Investments in 2020



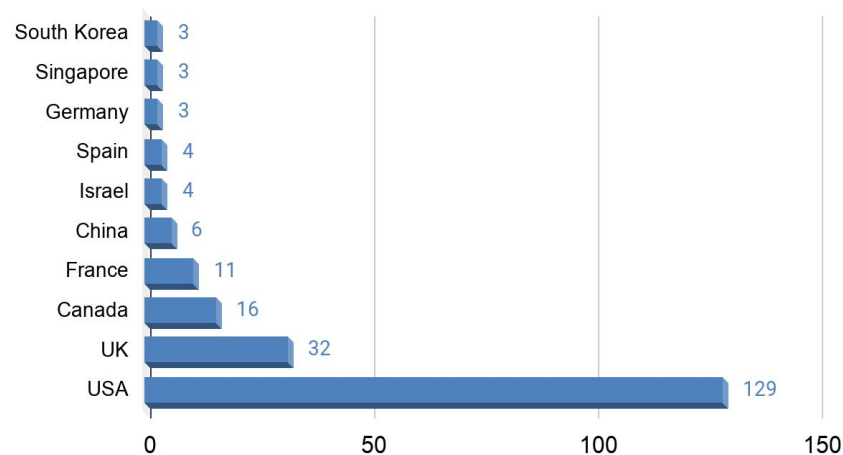
The chart shows the top 10 AI-driven drug discovery companies sorted by total funding raised by the end of 2020. Tempus, a leader in artificial intelligence and precision medicine, is now at the top of the list. With an additional \$550M financing received in December 2020, the total funding raised by the company reached \$1.07B. The investors included Baillie Gifford, Franklin Templeton, NEA, Novo Holdings, and funds and accounts managed by T. Rowe Price.

Top-10 Countries in AI for Drug Discovery Sector in 2020

By total investments



By number of companies



The chart at the right represents the distribution of funding received by companies located in 10 countries with largest investment in AI for Drug Discovery sector by 2020. The USA is an unconditional leader with a total amount of investments of \$11B overall and \$1.9B in 2020. This is approximately 14 times the amount received by the companies from the UK, which is the second-most invested region with total investments of \$714.43M overall and \$56M raised in 2020. This tendency is repeated in the chart at the left, which shows top 10 countries by the number of companies applying AI for drug discovery.

AI for Drug Discovery, Biomarker Development and Advanced R&D Landscape / 2020

AI Companies - 240
Investors - 600
Corporations - 90

End-to-end Drug Development

AI Companies

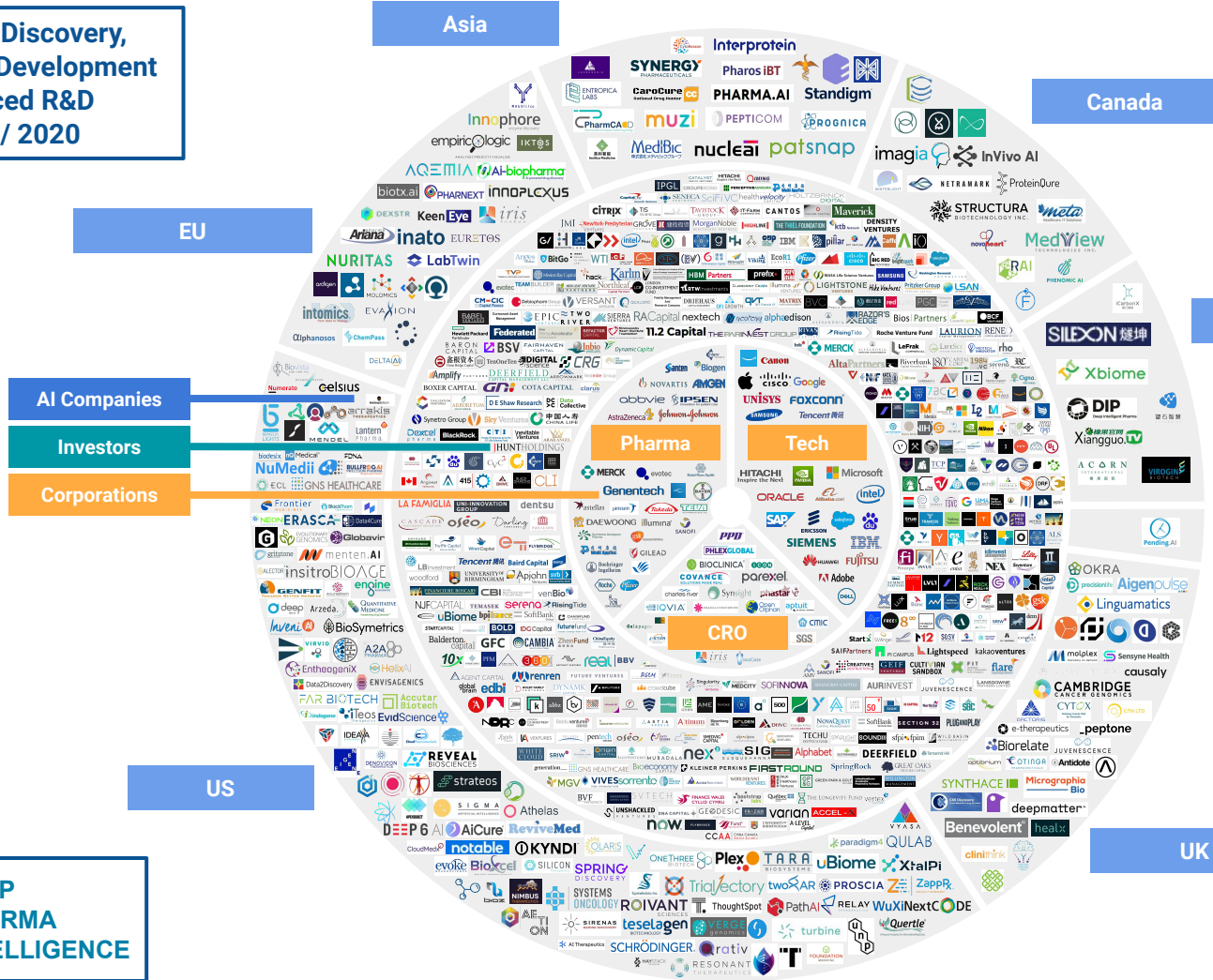
Investors

Corporations



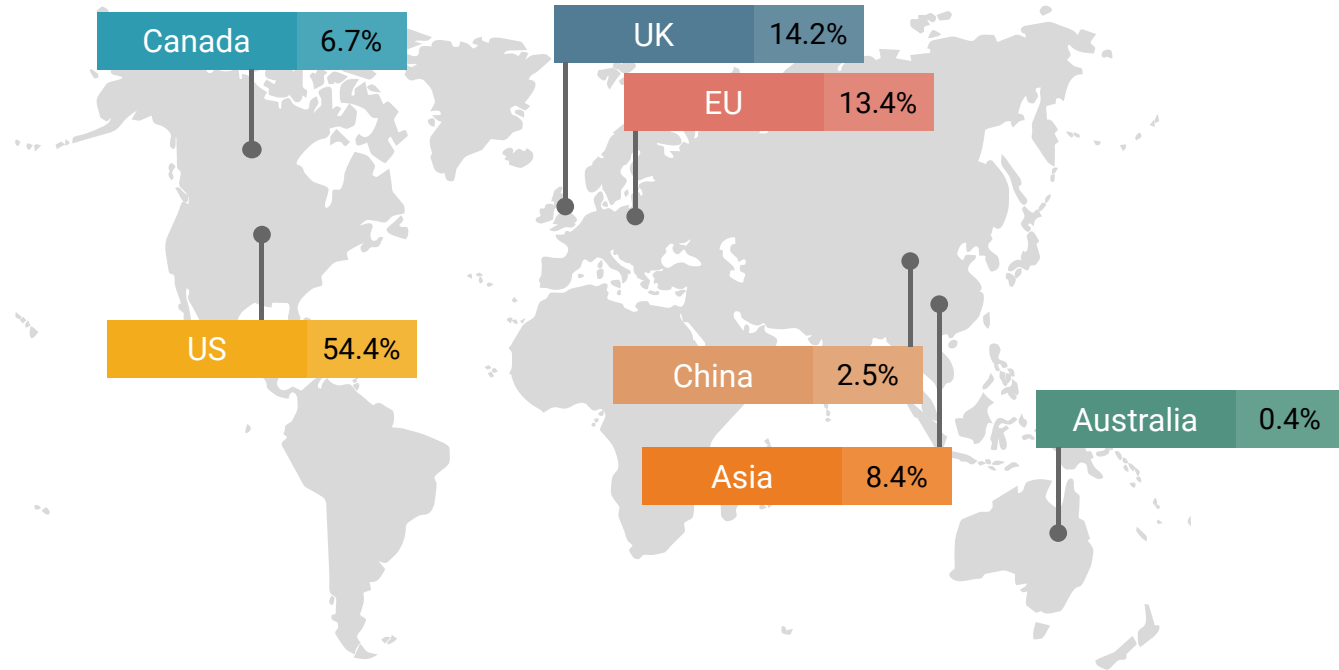
AI for Drug Discovery, Biomarker Development and Advanced R&D Landscape / 2020

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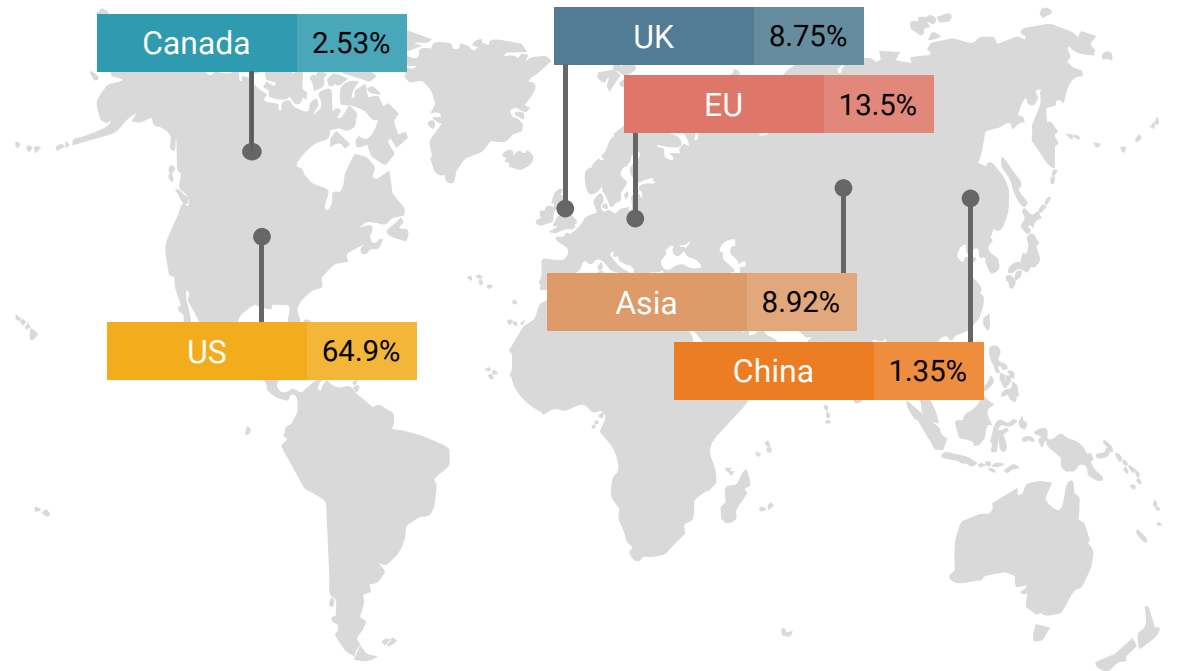
DEEP
PHARMA
INTELLIGENCE

240 AI Companies: Regional Proportion




The US is still firmly in the lead in terms of its proportion of AI for Drug Discovery companies. Interestingly, Asia currently has the fifth-lowest proportion of AI for Drug Discovery companies. However, Asia-Pacific region has begun to aggressively increase its activity in the space in terms of investments into foreign companies (largely US-based companies), and we expect to see an increase in the number of AI for Drug Discovery Companies located in the Asia-Pacific region generally, and in China particularly.

600 Investors: Regional Proportion



The United States continues to lead the rest of the world in terms of artificial intelligence for companies and funds that invest in Drug Discovery. This is reasonable, given that more than a half of the world's AI for Drug Discovery companies have their headquarters in USA. Comparing with previous periods of 2020, we can observe significant growth of the number of investors in the USA and EU. Thus, together with UK these regions are leaders by the number of investors in AI in Drug Discovery companies.

Top-50 AI for Drug Discovery Investors

 **Alexandria Real Estate Equities**
Pasadena, California, US

 **Intel Capital**
Santa Clara, California, US

 **Refactor Capital**
Burlingame, California, US

Other

 **Sequoia Capital**
Menlo Park, California, US

 **Andreessen Horowitz**
Menlo Park, California, US

 **Felicis Ventures**
Menlo Park, California, US


 **Khosla Ventures**
Menlo Park, California, US

Menlo Park

California

Palo Alto

 **StartX**
Palo Alto, California, US

 **AME Cloud Ventures**
Palo Alto, California, US

 **Vertex Ventures**
Palo Alto, California, US

Mountain View

 **Y Combinator**
Mountain View, California, US


 **GV**
Mountain View, California, US


 **BVC**
San Francisco, California, US

 **Founders Fund**
San Francisco, California, US


 **Foresite Capital**
San Francisco, California, US

 **500 Startups**
San Francisco, California, US

 **Alexandria Venture**
San Francisco, California, US

 **Obvious Ventures**
San Francisco, California, US

 **Data Collective DCVC**
San Francisco, California, US

 **Mubadala Capital | Ventures US**
San Francisco, California, US

San Francisco



United States

Illinois

 **OS Fund**
Park Ridge, Illinois, US

 **ARCH Venture Partners**
Chicago, Illinois, US

 **Perceptive Advisors**
New York, New York, US


 **IA Ventures**
New York, New York, US

 **Two Sigma Ventures**
New York, New York, US

 **Casdin Capital**
New York, New York, US

New York


Other States


 **Bill & Melinda Gates Foundation**
Seattle, Washington, US

 **Lili Ventures**
Indianapolis, Indiana, US

 **SOSV**
Princeton, New Jersey, US

 **Celgene**
Summit, New Jersey, US


 **National Institutes of Health**
Bethesda, Maryland, US

 **Johnson & Johnson Innovation**
New Brunswick, New Jersey, US



Canada

 **Inovia Capital**
Montréal, Quebec, Canada

 **Creative Destruction Lab**
Toronto, Ontario, Canada



Belgium

 **EASME - EU Executive Agency for SMEs**
Brussels, Brussels Hoofdstedelijk Gewest, Belgium



China

 **Tencent Holdings**
Shenzhen, China

Beijing

 **ZhenFund**
Beijing, China

 **Baidu Ventures**
Beijing, China

Shanghai

 **WuXi AppTec**
Shanghai, China

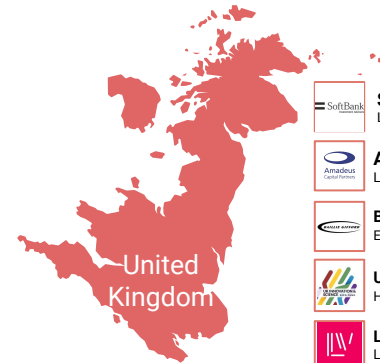
 **Lilly Asia Ventures**
Shanghai, China

 **Qiming Venture Partners**
Shanghai, China




Switzerland

 **nextech**
Zürich, Zurich, Switzerland




United Kingdom


 **SoftBank Vision Fund**
London, England, United Kingdom


 **Amadeus Capital Partners**
London, England, United Kingdom


 **Baillie Gifford**
Edinburgh, Edinburgh, United Kingdom


 **UK Innovation & Science Seed Fund**
Harwell, Oxfordshire, United Kingdom

 **Luminous Ventures**
London, England, United Kingdom

 **Atlas Venture**
Cambridge, Massachusetts, US

 **General Catalyst**
Cambridge, Massachusetts, US

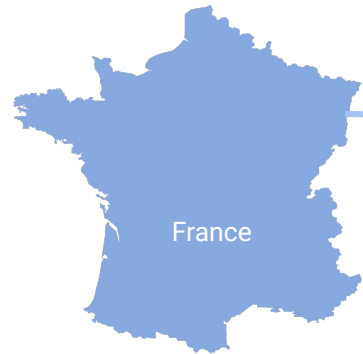
 **SR One**
Cambridge, Massachusetts, US

 **Third Rock Ventures**
Boston, Massachusetts, US

 **F-Prime Capital**
Cambridge, Massachusetts, US

 **RA Capital Management**
Boston, Massachusetts, US

AI in Pharma Publicly Traded Companies



France

Loos



GenFit (GNFT)
Loos, Nord-Pas-de-Calais,
France



Pharnext (ALPHA.PA)
Issy-les-moulineaux,
Ile-de-France, France

Issy-les-moulineaux



United States

Massachusetts



Relay Therapeutics (RLAY)
Cambridge, Massachusetts, US

New York



Schrodinger (SDGR)
New York, New York, US

Colorado



Biodesix (BDSX)
Broomfield, Colorado, US

Texas



Lantern Pharma (LTRN)
Dallas, Texas, US

California



Berkeley Lights (BLI)
Emeryville, California, US



Gritstone Oncology (GRTS)
Emeryville, California, US

London



Cotinga Pharmaceuticals (COTQF)
London, England, UK

Manchester

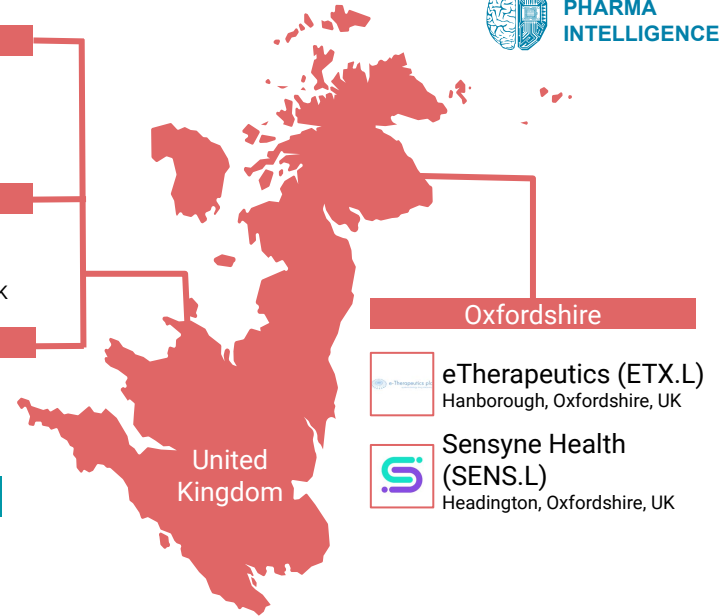


C4X discovery (C4XD.L)
Manchester, Manchester, UK

Glasgow



DeepMatter Group (DMTR.L)
Glasgow, Glasgow City, UK



United Kingdom

Oxfordshire



eTherapeutics (ETX.L)
Hanborough, Oxfordshire, UK



Sensyne Health (SENS.L)
Headington, Oxfordshire, UK

Hong-Kong

Regent Pacific Group
Hong-Kong



Acquired

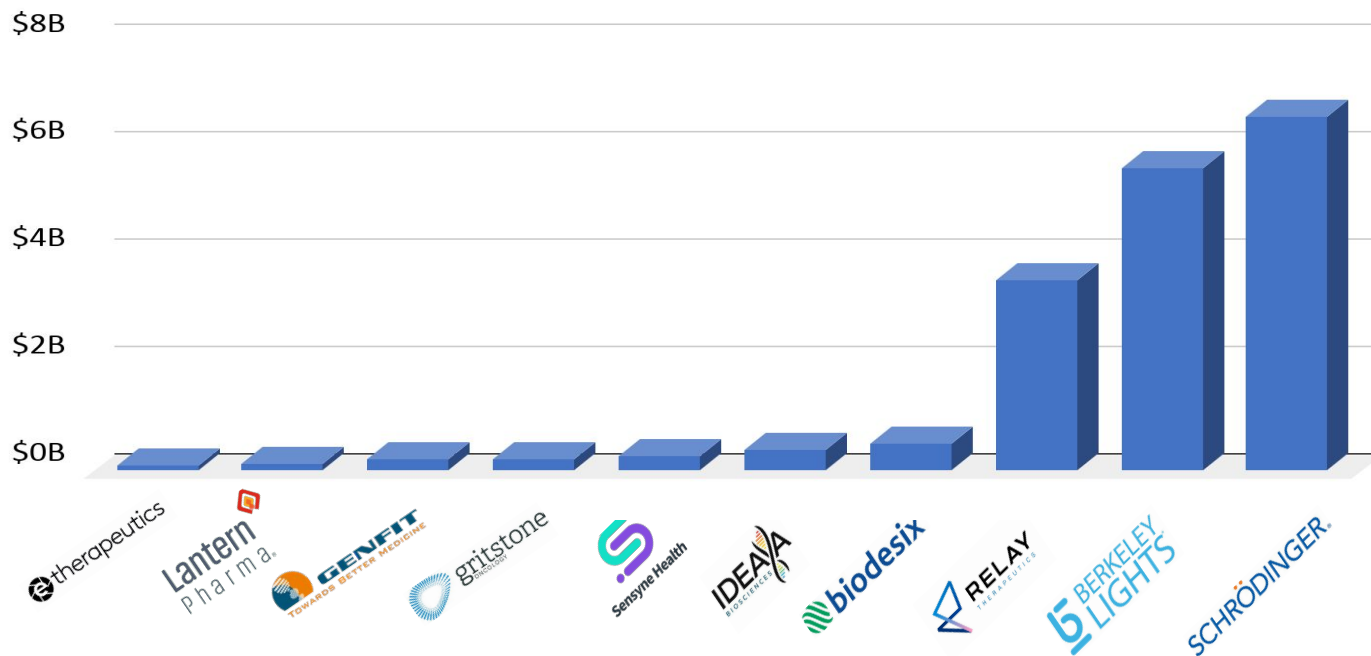


Deep Longevity
Acquired by \$4M



China

Top-10 AI-Driven Publicly Traded Pharma Companies by Market Capitalization in 2020



The chart presents the top-10 AI-driven drug discovery public companies sorted by market capitalization by the January of 2021. Schrodinger and Berkeley Lights are the leaders of the ranking. These companies got the highest capitalization of all after the successful closing of the IPOs and fast growth of the stocks: 178% and 34%, respectively. Another leader of this graph, Relay Therapeutics, also announced the closing of the IPO in 2020 and raised \$400M. But, after steady growth in November, Relay Therapeutics lost 13% of the capitalization before the end of the year.

Pharma AI Deals Structure 2020

AI Companies				Pharma Corporations	Pharma Corporations	AI Companies			
Exscientia	Atomwise	turbine	CYCLICA	BAYER		SYSTEMS ONCOLOGY	RECURSION PHARMACEUTICALS	SCHRÖDINGER.	5 CLONE LIGHTS
saama	5 CLONE LIGHTS	XtalPi	Biovista	Pfizer		Atomwise	CytoReason	Insilico Medicine 英科智能	
	BERG	Alibaba Group	Tencent 腾讯	AstraZeneca		Benevolent ^{AI}		ProteinQure	
FOUNDATION MEDICINE®	RECURSION PHARMACEUTICALS	Insilico Medicine 英科智能	WAVE	Takeda	gsk	Excscientia	CloudPharmaceuticals	Insilico Medicine 英科智能	CytoReason
BioSymetrics	RESONANT	DATAVANT		janssen	NOVARTIS	Biovista	Benevolent ^{AI}	A2A PHARMA	DYNO THERAPEUTICS
ReverieLabs	Genialis	Excscientia		Roche	Boehringer Ingelheim	Insilico Medicine 英科智能	BERG	NANNA THERAPEUTICS	
Atomwise	IKTOS	CYCLICA		MERCK	SANOFI	Researchably	Excscientia	BERG	
sirenas	Concerto HealthAI			Bristol-Myers Squibb	abbvie	WuXi AppTec	Atomwise		
5 CLONE LIGHTS	e-therapeutics			novo nordisk	AMGEN	GeneTech	GNS HEALTHCARE		
	turbine			Johnson & Johnson	Celgene	Excscientia			
				evotec	astellas	Biovista			
	CYCLICA			GAUM BIOSCIENCES	IVA	SCHRÖDINGER.			
	Genialis			OncXerna	ImmunoPrecise	EVQLV			
	CYCLICA			YUHAN	almirall	IKTOS			
	Atomwise			HANSON PHARMA	GC	Atomwise			

Overview of Proprietary Analytics by Pharma Division of **Deep Pharma Analytics**

Deep Pharma Intelligence (DPI) is a strategic partner to the leading Life Science organizations, investment institutions (VC funds, investment banks), and governments across the globe – in matters related to investments, strategic positioning, and policy development in the areas of pharmaceutical and biotech research, and healthcare tech.

While Deep Pharma Intelligence is regularly producing open industry reports covering high-growth sectors in the Life Sciences, including artificial intelligence (AI), digital health, and new therapies, some of the more in-depth research is only available to our clients and strategic partners under the “Proprietary Analytics” category.

Our range of proprietary services includes custom consulting projects, based on the specific customer needs, as well as a collection of pre-produced “ready-to-use” proprietary reports, produced by our research team, covering general trends and specific action ideas and strategy insights related to the most promising investment prospects (e.g. new technologies, biotech startups), M&A prospects (e.g. pipeline development targets), and strategic growth ideas (trends profiling, industry overviews etc).

Services:

- Investment landscape profiling, identifying investment ideas in the biotech/healthcare tech space.
- Preliminary due-diligence (business, science and technology, intellectual property (IP) profiling, freedom of operation assessment, legal assessment etc).
- Comprehensive due-diligence (deep business, science and technology assessment, IP and legal assessment, growth potential assessment etc).
- Infringement analysis of technology (i.g. If you plan to partner or invest in a data-analytics biotechs, or AI-development vendors, it is essential to understand their technological assets, both in terms of innovation potential and in terms of legal protection and non-infringement risk management).
- SWOT analysis of companies and technological sectors, competitive profiling.
- Industry profiling and growth strategy development for top-tier companies and governments.

Overview of Proprietary Analytics by Pharma Division of **Deep Pharma Analytics**

Proprietary Reports

There are a few 40+ page reports delivering practical answers to these specific questions in order to optimize the short and long-term strategies of biopharma corporations and other institutions related to the industry, with a newly updated edition being released each quarter, incrementally increasing the precision, practicality and actionability of its technological and financial analysis.

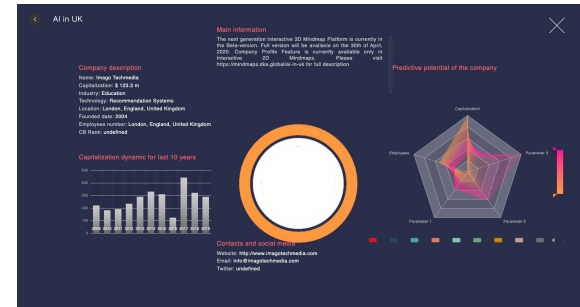
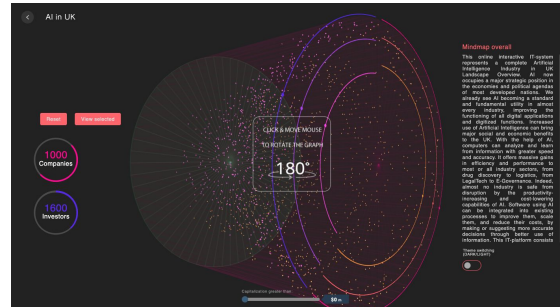
Our reports are supported by our rapidly developing data mining engine, data visualization platform and analytics dashboards.

The value our reports can deliver:

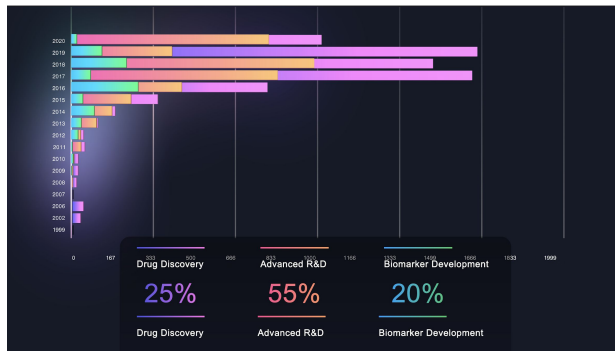
- Deep analysis of the deal-making prospects in the biotech and healthcare tech space, identification of top mini-trends and larger tendencies in innovations and technology adoption (e.g. AI, blockchain, eHealth tech, longevity biomarkers, new therapeutics and therapies etc.);
- Tangible forecasts on the 3-5 years horizon, providing an overview of future scenarios of the development of various technologies in the pharma industry;
- Practical guides for adopting various technological solutions and best practises, vendor profiling and contract research strategy building;
- Analysis of key market players in the emerging and high-growth areas of the pharmaceutical and biotech industries.

The parties who gain early access to these reports will have deep expertise on how their strategic agendas can be optimized in order to leverage novel research, new technologies, and emerging market opportunities, and stay competitive in a rapidly-changing technological environment, and taking into account shifting global priorities and trends.

Deep Pharma Intelligence: Upcoming Projects and Analytical Tools




3D Visualisation Prototypes



Deep Pharma Intelligence Big Data Analytics Dashboard

Deep Pharma Intelligence: Upcoming Projects and Analytical Tools




DEEP PHARMA INTELLIGENCE

Deep Pharma Intelligence Big Data Analytics Dashboard

Landscape Analytics

- Mindmap (Sectors)
- Mindmap (Sub-Sectors)
- Mindmap (Regions)

AI in Pharma Industry Landscape




View More

Dashboard Parameters

COMPANIES	INVESTORS	R&D DEALS
286	733	117
FUNDING ROUNDS	PARAMETERS	DATA POINTS
592	4192	43000+

View More

Industry Growth Dynamics



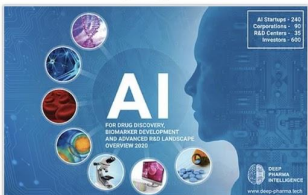
View More

- Investment Digest
- Funding Rounds
- Deals

Industry Developments


- Matching Tool
- Downloadable Materials
- FAQ

Industry Report 2020



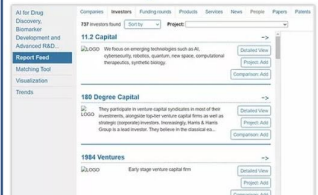
View More

Proprietary Analytics



View More

Industry Database



View More

AI in Drug Discovery

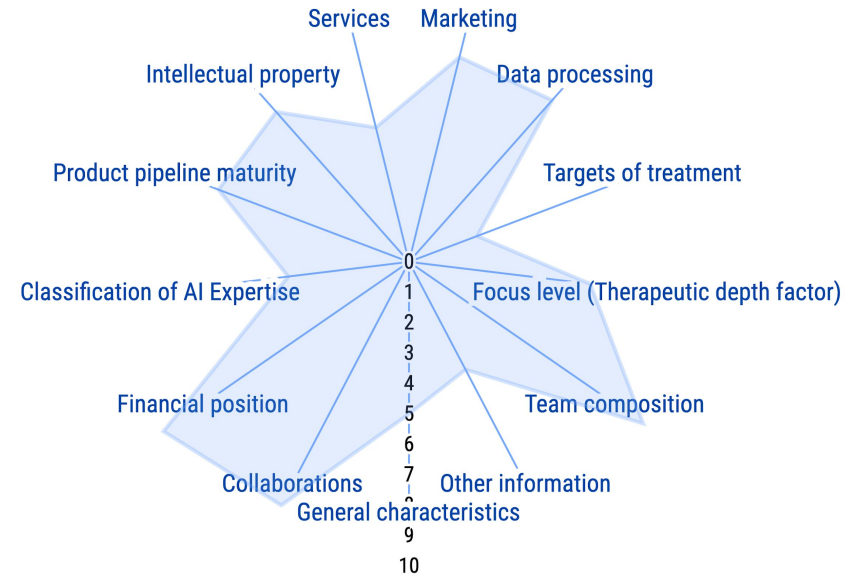
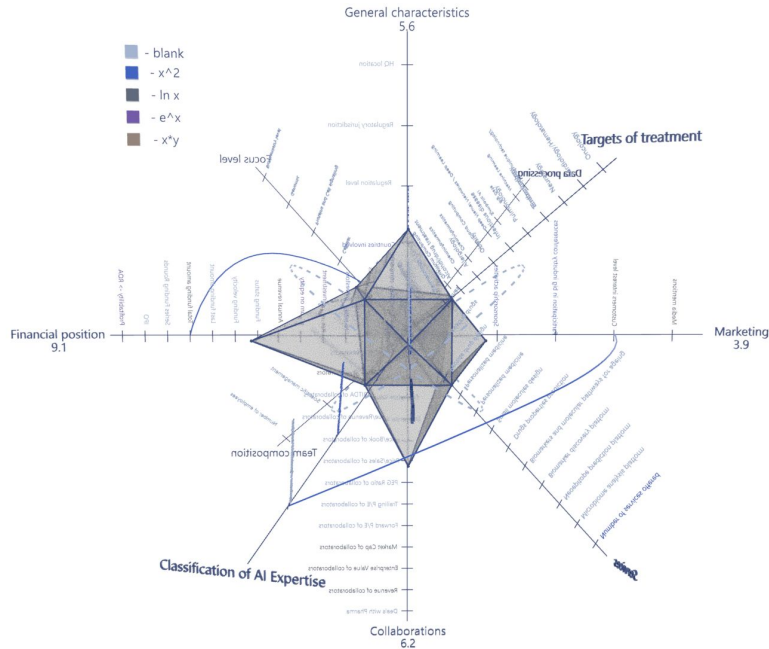
- Business Trends
- Investment Trends
- Technology Trends
- Current Challenges

Deep Pharma Intelligence Big Data Analytics Dashboard

Multiparametric Assessment Analysis (Using Big Data Analytics Platform)

Deep Pharma Intelligence offers state-of-the-art interactive online AI-based **SWOT analysis system** covering 240 companies in the industry.

The product allows to conduct initial data-driven due diligence of the companies **instantly, automatically, and holistically** by comparing multiple parameters for each company combined in the 12 vectors of business development. The results of the analysis are represented in easily perceived form of 2-dimensional and 3-dimensional radar charts.



Deep Pharma Intelligence: Platform Features

Deep Pharma Intelligence

All database | Admin area | Workzone | BiopharmaTrend

7400+ biotech companies, vendors, CROs, and more

AI Companies (Drug Discovery)

Companies Investors Funding Rounds Collaborators Countries Papers

Report Feed Matching Tool Visualization

Top 20 sorted by Funding

Project: -- select project --

Number of Companies vs Year

Cumulative number of companies

Number of Companies

Chart Parameters

Main category: -- select category --

Secondary category: -- select category --

Filters

Region: -- select category --

Country: -- select category --

Show filters in frame

Type of chart: on development

Build Chart

API URL: https://dpx.biopharmatrend.com/api/aas/

AI Companies (Drug Discovery)

Search company title

Report Feed Matching Tool Visualization

Insilico Medicine

Insilico Medicine, an artificial intelligence company headquartered in Rockville, MD, pioneered the applications of the generative adversarial networks (GANs), reinforcement learning, transfer learning and meta-learning for generation of novel molecular structures for the diseases with known and unknown targets, and unlike the other companies in the field, is developing the end-to-end pipeline covering every step of drug discovery, clinical trials analysis and digital medicine. Insilico Medicine is pursuing internal drug discovery programs in cancer, dermatological diseases, fibrosis, Parkinson's Disease, Alzheimer's Disease, A.S., diabetes, sarcopenia, and aging. Through a partnership with Life Extension, the company launched a range of nutraceutical products, which were compounded using the advanced bioinformatics techniques and deep learning approaches. It also provides a range of consumer-facing applications including Young AI.

Founded 2014	Funding \$51.300 M	Status Private company
Website http://www.insilico.com	Patents 7	Research papers 75

Insilico Medicine's Investors

Insilico Medicine's Competitors

Investors into Insilico Medicine's Competitors

AI Companies (Drug Discovery)

Companies Investors Funding Rounds Collaborators Countries Papers

Report Feed Matching Tool Visualization

Diagram Builder

Chart Parameters

Main category: -- select category --

Secondary category: -- select category --

Filters

Region: -- select category --

Country: -- select category --

Show filters in frame

Type of chart: on development

Build Chart

API URL

Frame snippet

7400+ biotech companies, vendors, CROs, and more

AI for Drug Discovery, Biomarker Development and Advanced R&D Landscape Overview 2020

266 companies found

AZA Pharmaceuticals

Classification of AI Expertise

Team composition

Data processing

Targets of treatment

Focus level (Therapeutic depth factor)

Services

Product pipeline maturity

Marketing

Financial position

Product Output (products offered to the market)

Collaborations

Other information

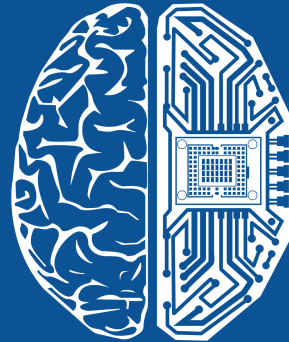
Year Founded

Total Funding

Business State

Region

Country



Link to Full Report:

<http://analytics.dkv.global/deep-pharma/AI-for-Drug-Discovery-2020.pdf>

E-mail: info@deep-pharma.tech

Website: deep-pharma.tech

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