

Top-30 Women AI Leaders

in Drug Discovery and Advanced Healthcare



www.ai-pharma.dka.global

Introduction

Over the last several years, pharmaceutical and healthcare organizations have **developed a strong interest** toward applying artificial intelligence (AI) in **various areas**, ranging from medical image analysis and elaboration of electronic health records (EHRs) to more basic research like building disease ontologies, preclinical drug discovery, and clinical trials. The demand for the ML/AI technologies, as well as for ML/AI talent, is **growing in pharmaceutical and healthcare industries** and driving the formation of a new interdisciplinary field – data-driven drug discovery/healthcare.

Consequently, there is a growing number of AI-driven startups and emerging companies offering technology solutions for drug discovery and healthcare. In most cases, AI-driven startups are born within the cradle of academic institutions, where early concepts and prototypes are developed and validated – prior to getting funded by venture capitalists.

Women are playing an increasingly high role in the industry. Around the world, academia and business of AI for drug discovery and personalized medicine are benefiting from opportunities provided by the growth of the number of female executives and scientists.

Another important source of advanced AI expertise for drug discovery and healthcare comes from largest technology corporations (Google, Microsoft, Tencent, etc), which are increasingly focusing on applying their technological resources for tackling health-related challenges, or providing technology platforms on project-based or rent-based conditions for conducting research analytics by life science professionals.

Some of the leading pharmaceutical giants, like GSK, AstraZeneca, and Novartis, are already making steps towards aligning their internal research workflows, hiring ML/AI/Data Science talent, and shaping development strategies to start embracing AI-driven digital transformation at scale (**ref1, ref2 ref3**). However, the pharmaceutical industry at large is still **lagging behind in adopting AI**, compared to more traditional consumer industries – finance, retail etc.

The above three main trends are driving the growth in the AI implementation in pharmaceutical and advanced healthcare research, but the overall success depends strongly on the presence of highly skilled interdisciplinary leaders, able to innovate, organize and guide in this direction.

Introduction

The lack of diversity in the technology sector is a very well documented phenomenon. The field of computer science had long been dominated by men, a trend that, unfortunately, seemed to be worsening. Government figures from the US, for example, reveal that the proportion of women that have received a bachelor's degree in computing has been shrinking over the past thirty years. When it comes to AI, estimates suggest that the ratio of leading female machine learning researchers stands at 12%. But now we can finally observe the reverse trend: with the new wave of development of AI more women are entering the industry. In the case of the intersection of the AI and drug discovery fields it should be noted that even more women are gaining opportunities to participate actively in the industry.

No doubt the industry is suffering from the underrepresentation of women. Higher involvement of female employees and executives could give an additional boost for the whole AI branch. Fortunately, we can observe some progress in the understanding of this problem. New initiatives, projects and organizations are emerging in order to provide cooperation, communication and representation for women in AI.

Despite some progress, the underrepresentation still leads to negative consequences. Anima Anandkumar, a professor at the California Institute of Technology who previously worked on AI at Amazon, says that when research teams are homogenous, the odds of an AI system causing damage to specific groups of people are typically higher. She argues that diverse teams are inherently better equipped to spot issues that could potentially result in negative social outcomes. She also adds that research has demonstrated that diverse teams are more productive.

But women are playing an increasingly higher role in the industry. Around the world, academia and the business of AI for drug discovery and personalized medicine are benefiting from opportunities provided by the growth of the number of female executives and scientists.

The current report summarizes the TOP 30 most innovative and entrepreneurial women AI leaders, who have been contributing largely towards a data-driven transformation of the pharmaceutical and healthcare industries.

The goal of the report

In order to understand how to build efficient interdisciplinary teams able to deliver meaningful milestones on the road to the AI-driven transformation of drug discovery and healthcare organizations, it is crucial to analyze the existing examples of accomplished leaders in this area, their backgrounds, technical skill-sets, strengths, competencies, roles in the organizations, and types of impact they have on the industry in general.

The current report summarizes the TOP 30 most innovative and entrepreneurial women AI leaders, who have been contributing largely towards a data-driven transformation of the pharmaceutical and healthcare industries. It has a goal of providing a “bird’s view” on the global leadership scene in the area of adopting ML/AI-driven methods in drug discovery and healthcare to serve as a benchmark tool for shaping successful talent acquisition strategies.

The goal is also to express and present significant role of women in the development of the industry, describe the opportunities and advantages provided by increasing women's involvement in AI for drug discovery and advanced healthcare and accentuate women`s impact on the transformation of the industry.

AI for Drug Discovery is an emerging industry at the junction of various disciplines. The market is extremely dynamic and we should investigate the trends as quickly as possible. Finding the most significant change makers is the key to understanding and prediction of development of this innovative industry.

Top-30 Women AI Leaders in Drug Discovery and Advanced Healthcare

Report Methodology

The list of 30 artificial intelligence (AI) women leaders in drug discovery and advanced healthcare is based on the assessment of the cumulative impact (CI) that a person contributed to the advancement of the AI technologies in the area of pharmaceutical research (basic biology research, drug discovery and development, drug repurposing etc), and healthcare research (diagnostics, medical data management, therapy prescription etc).

The CI is measured as a total sum of inputs from 3 highly overlapping categories:

Science and Tech Innovators – reflects scientific and technical contributions to the development of AI technology in the context of its application for life science tasks

Business Leaders – reflects entrepreneurship, business leadership and industry ecosystem development contributions to the advancement of AI technology in life sciences

AI Thought Leaders – reflects contribution to the science and technology communication efforts in the area of AI application for life sciences and healthcare (books, conference talks, events, educational initiatives etc)

To be nominated for the TOP 30 Women AI Leaders list, it was set to be a prerequisite for a candidate to have interdisciplinary technical skills and/or business/entrepreneurship/decision-making skills in both of the following areas:

1. AI/ML/Statistics/Data Science/Computer Science
2. Drug Discovery/Drug Development/Drug Trials/Healthcare/Diagnostics

Another prerequisite for the inclusion in the TOP 30 Women AI Leaders list was the availability of outstanding achievement in either AI or Life Sciences **in the context of applying AI for solving Life Science tasks**, including:

- Notable innovation, technological breakthrough, considerable advancement of the tech state-of-the-art
- Notable impact on research (very high level of citations etc)
- Notable organizational or entrepreneurship achievements (founding or C-level leadership of startups or mature companies with a high level of investment/market cap, impactful non-for-profit organizations, or academic institutions)
- Notable thought leadership achievements (impactful books, articles, public activity etc)

Top-30 Women AI Leaders in Drug Discovery and Advanced Healthcare

Report Methodology

The initial large pool of candidates (around 200) for the TOP Women AI Leaders list has been selected from multiple sources including:

Top pharmaceutical and healthcare AI conference program lists

Google Scholar

Databases

Google News and PR-distribution services

Companies websites

And based on the analysis of the descriptive criteria (personal page descriptions, biographies, LinkedIn and Bloomberg pages, public awards, article titles, news and PRs, and other text resources) and formal numerical metrics (number of research citations in Google Scholar, RG score in ResearchGate, number of books/talks and articles, social media activity etc).

The initial pool of around 200 top candidates has been shortlisted down to the top 30 list following an iterative approach, starting with the obvious differentiating parameters (top tech or business achievements or highest number of citations) and gradually specifying additional parameters for the final rating.

The rating calculation model

Is a first-order homogeneous polynomial which calculates a person's assessment variables and their relative impact weights (coefficients). The weights of each variable have been logically designed to underline major contributions and impact (innovations, business achievements, research citations etc) and only augment them with less important, yet valuable, contributions (conference talks, social media activity etc).

Top-30 Women AI Leaders in Drug Discovery and Advanced Healthcare



Alice Zhang,
CEO, Co-founder
at Verge
Genomics



**Anastasia
Georgievskaya,**
CEO at Haut.AI



**Andrea De
Souza,**
Senior Director at
Eli Lilly



Anne E. Carpenter,
Imaging Platform
Director at Broad
Institute



Carole Goble,
Professor at
University of
Manchester



Carol E. Reiley,
Founder, CEO at
Stealth Healthcare
Startup



Daphne Koller,
Founder and CEO
at Insitro



Elena Mustatea,
CEO, Co-founder
at Bold Health



Hayit Greenspan,
Associate
Professor at Tel
Aviv University



Iya Khalil,
Co-founder at
GNS Healthcare



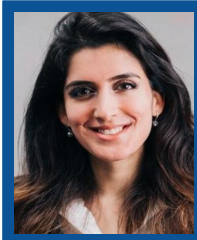
Jackie Hunter,
CEO at
BenevolentBio



Joanna Shields,
CEO at
BenevolentAI



Kristen Fortney,
CEO at BioAge
Labs



Leila Pirhaji,
CEO and
Co-founder at
ReviveMed



Lorena Puica,
CEO and Founder
iamYiam



Maja Pantic,
Professor at Imperial
College London



Maryellen Giger,
Professor at
University of
Chicago



**Maxine
Mackintosh,**
Co-founder at
One HealthTech



Mimi Huizinga,
VP and Head,
Strategic Data and
Digital at Novartis



Noor Shaker,
CEO, Co-founder
at GTN



Nora Khaldi,
CEO and
Co-founder at
Nuriatas



**Olga
Troyanskaya,**
Professor at
Princeton
University



**Polina
Mamoshina,**
Research
Scientist at
Insilico Medicine



Regina Barzilay,
Professor at MIT
EECS, member
MLPDS



**Sharon-Lise
Normand,**
Professor at
Harvard Medical
School



Silvia Chiappa,
Research
Scientist at
Google
(DeepMind)



Suchi Saria,
Director of
Hopkins Machine
Learning at
Johns Hopkins
University



Tina Woods,
CEO, Co-founder
at Collider Health



**Vijetha
Vemulapalli,**
Director - Digital
Health at BERG
Health



Vimla Patel,
Senior Research
Scientist and
Director at New
York Academy of
Medicine

Top-30 Women AI Leaders in Drug Discovery and Advanced Healthcare

1	Alice Zhang
2	Anastasia Georgievskaya
3	Andrea De Souza
4	Anne E. Carpenter
5	Carole Goble
6	Carol E. Reiley
7	Daphne Koller
8	Elena Mustatea
9	Hayit Greenspan
10	Iya Khalil
11	Jackie Hunter
12	Joanna Shields
13	Kristen Fortney
14	Leila Pirhaji
15	Lorena Puica

16	Maja Pantic
17	Maryellen Giger
18	Maxine Mackintosh
19	Mimi Huizinga
20	Noor Shaker
21	Nora Khaldi
22	Olga Troyanskaya
23	Polina Mamoshina
24	Regina Barzilay
25	Sharon-Lise Normand
26	Silvia Chiappa
27	Suchi Saria
28	Tina Woods
29	Vijetha Vemulapalli
30	Vimla Patel

Top-30 Women AI Leaders in Drug Discovery and Advanced Healthcare

Academia

Academia has traditionally been a cradle of innovative thought in the theoretical and practical aspects of machine learning, deep learning and artificial intelligence systems in the context of their application for drug discovery and biomedical research. Participants in this category are characterized by:

- High number of peer-reviewed publications
- High level of citation (high h-index and i10-index, RG score in ResearchGate – if applicable)
- Leadership in a particular area of theoretical or engineering aspect of ML/AI for drug discovery
- Availability of a notable theoretical breakthrough, technical invention, or widely adopted commercial model



Top-30 Women AI Leaders in Drug Discovery and Advanced Healthcare **Academia**

NAME	INSTITUTION	POSITION	COUNTRY	CITY
Anne E. Carpenter	Broad Institute of Harvard and MIT	Imaging Platform Director, Advisor at Recursion Pharmaceuticals	USA	Cambridge
Carole Goble	ELIXIR, University of Manchester	Professor	UK	Manchester
Hayit Greenspan	Tel Aviv University	Associate Professor of Biomedical Engineering	Israel	Tel Aviv
Maja Pantic	Imperial College London	Professor of Affective and Behavioural Computing	UK	London
Maryellen Giger	University of Chicago	Professor, Department of Radiology	USA	Chicago
Olga Troyanskaya	Princeton University	Professor	USA	New York
Regina Barzilay	MIT EECS, member MLPDS	Professor	USA	Cambridge
Sharon-Lise Normand	Harvard Medical School	Professor	USA	Boston
Suchi Saria	Johns Hopkins University	Director of Hopkins Machine Learning and Healthcare Lab	USA	New York
Vimla Patel	New York Academy of Medicine	Senior Research Scientist and Director	USA	New York

Top-30 Women AI Leaders in Drug Discovery and Advanced Healthcare

AI Companies

The interest of pharma and biotech organizations towards ML/AI has been growing over the last several years and it created a substantial demand for advanced AI-driven solutions for drug discovery and healthcare. As a consequence, the number of new companies (startups) offering such solutions is steadily growing.

Participants in this category are, primarily, founders or top leaders of some of the most active and impacting emerging AI companies working in life sciences. They are characterized by the following specific qualities:

- Outstanding business leadership in the area of introducing AI for drug discovery/biotech/healthcare
- High level of interdisciplinary expertise in both hi-tech and life sciences
- Publicly active position, thought leadership activity

Top-30 Women AI Leaders in Drug Discovery and Advanced Healthcare AI Companies

NAME	COMPANY	POSITION	COUNTRY	CITY
Alice Zhang	Verge Genomics	CEO, Co-founder	USA	San Francisco
Anastasia Georgievskaya	Haut.AI	CEO	Estonia	Tallinn
Daphne Koller	Insitro	Founder and CEO	USA	San Francisco
Elena Mustatea	Bold Health	CEO, Co-founder	UK	London
Jackie Hunter	BenevolentBio	CEO	UK	Stevenage
Joanna Shields	BenevolentAI	CEO	UK	London
Iya Khalil	GNS Healthcare	Co-founder	USA	Boston
Kristen Fortney	BioAge Labs	CEO	USA	San Francisco
Leila Pirhaji	ReviveMed	CEO, Co-founder	USA	Boston
Lorena Puica	iamYiam	CEO, Founder	UK	London
Noor Shaker	GTN	CEO, Co-founder	UK	London
Nora Khaldi	Nuritas	CEO, Co-founder	Ireland	Dublin
Polina Mamoshina	Insilico Medicine	Research Scientist	UK	Oxford
Vijetha Vemulapalli	BERG Health	Director - Digital Health	USA	Boston

Top-30 Women AI Leaders in Drug Discovery and Advanced Healthcare

Pharma and Tech Corporations

While there is a surge of life science startups, emerging biotechs and AI-focused vendors, large pharmaceutical corporations remain the key driver of the pharmaceutical industry and innovative drugs market. It is the success (or failure) in adopting the ML/AI technologies by pharma corporations, that will largely shape the dynamics of the progress in the area of pharmaceutical AI. Largest technology corporations, on the other hand, have developed the strongest capabilities in the ML/AI tech, and required infrastructures, available on the planet. Leaders in this category include top pharmaceutical and tech executives, who embraced the importance of shaping a data-driven strategy with AI and have immense decision-making influence on this process in their organizations.

Top Women AI-leaders in this category are typically from deeply technological backgrounds (Computer Science, Artificial Intelligence, Data Science, Engineering, Statistics/Math), with some acquired level of expertise in life sciences.

The typical features of participants in this list include:

- Executive role, or leading research role in largest pharmaceutical and tech companies
- Strong background in digital technologies, cheminformatics/bioinformatics
- Strong technology leadership ability
- Knowledge of ML/AI (either career major, or as an additional training)

Top-30 Women AI Leaders in Drug Discovery and Advanced Healthcare Pharma and Tech Corporations

NAME	COMPANY	POSITION	COUNTRY	CITY
Andrea De Souza	Eli Lilly	Senior Director	USA	New York
Carol Reiley	Stealth Healthcare Startup	Founder, CEO	USA	Mountain View
Mimi Huizinga	Novartis	VP and Head, Strategic Data and Digital	USA	Nashville
Silvia Chiappa	Google (DeepMind)	Research Scientist	UK	London

Top-30 Women AI Leaders in Drug Discovery and Advanced Healthcare

Social Enterprise

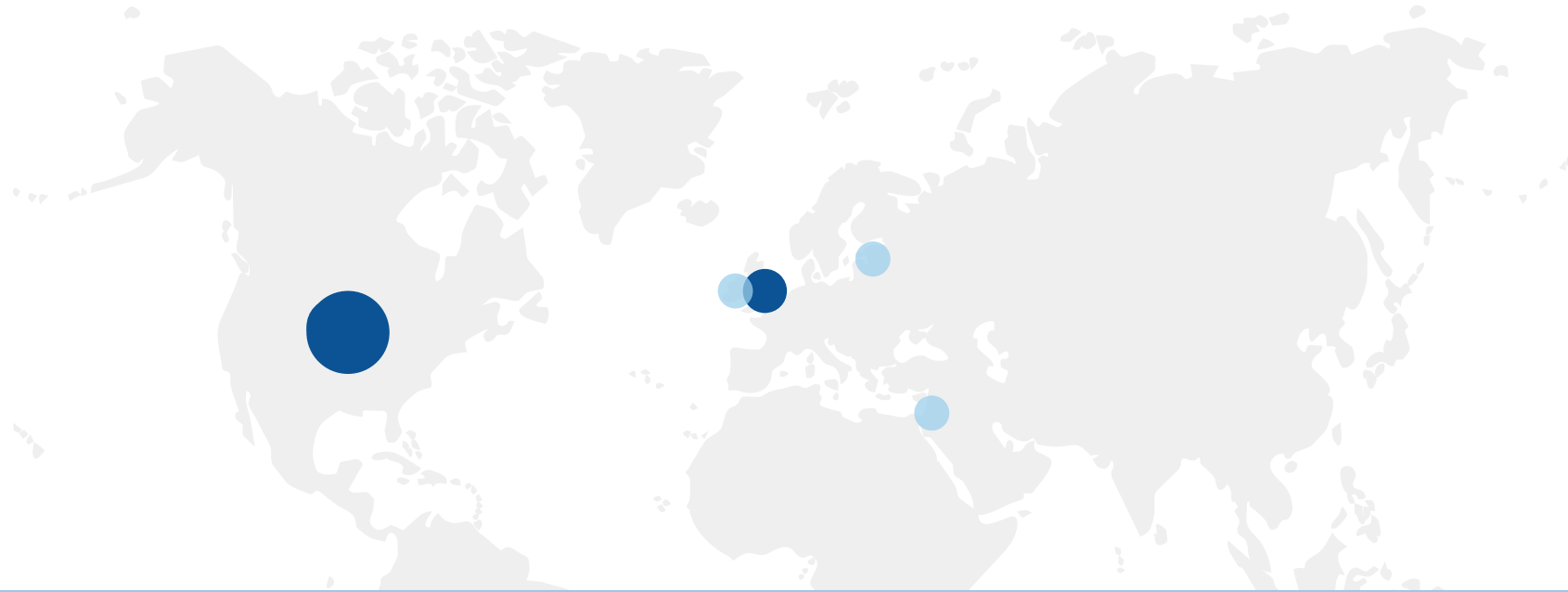
This category summarizes top women AI leaders from various organizations, helping advance this technology in pharmaceutical research or healthcare. Specific features include:

- Leadership research or business roles in the organization
- Substantial technical expertise in either AI/ML or life sciences (with mandatory acquired minor expertise in the other of the two subjects)
- Notable leadership or research contributions to the advancement of AI in pharmaceutical industry or healthcare

Top-30 Women AI Leaders in Drug Discovery and Advanced Healthcare Others

NAME	COMPANY	POSITION	COUNTRY	CITY
Maxine Mackintosh	One HealthTech	Co-Founder	UK	London
Tina Woods	Collider Health	CEO, Co-founder	UK	London

Top-30 Women AI Experts in Drug Discovery Distribution by Countries



USA



UK



Estonia



Israel



Ireland

This diagram illustrates location of the top women AI leaders in pharma and healthcare across the globe. USA and Great Britain remain home for the largest number of top women experts. However, it should be noted that China has a potential to substantially alter this statistics in the coming years due to reverse migration of top women AI experts from the USA.

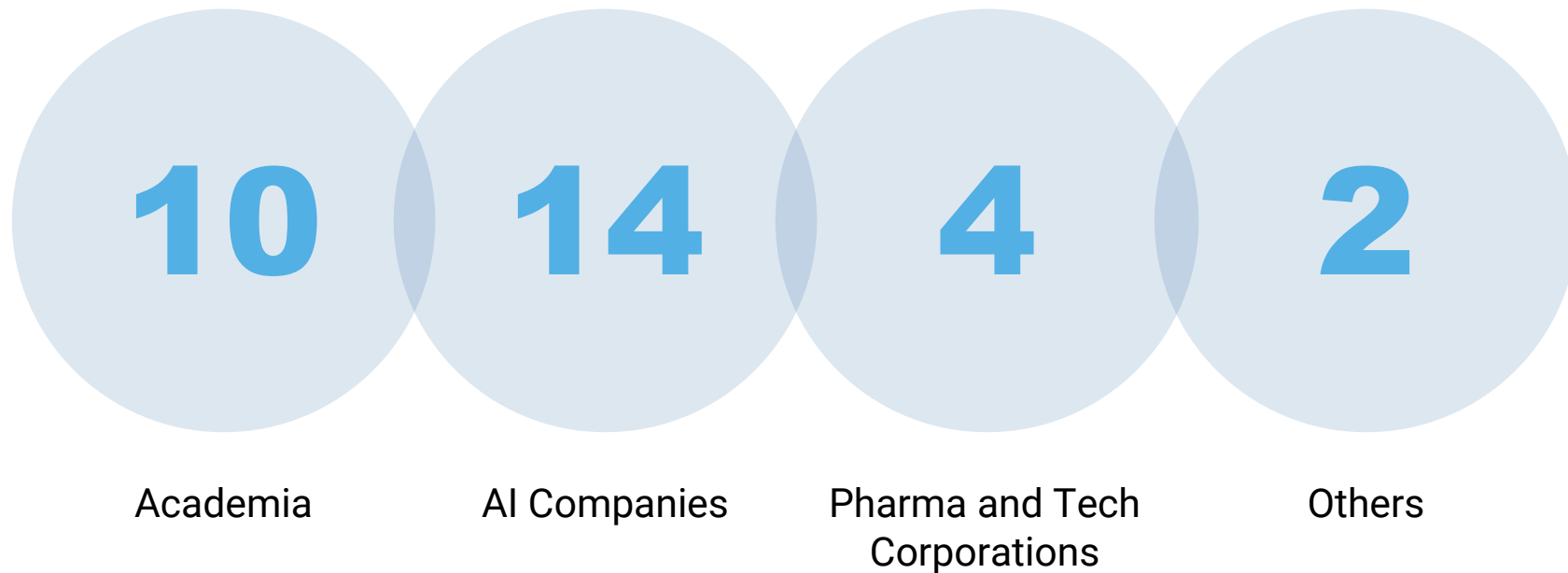
Top-30 Women AI Experts in Drug Discovery Distribution by City



8	London
4	Boston
4	New York
3	San Francisco
2	Cambridge
1	Nashville
1	Oxford
1	Stevenage
1	Dublin
1	Chicago
1	Manchester
1	Mountain View
1	Tel Aviv
1	Tallinn

This map shows that most of the top women AI experts in pharma and healthcare reside in American and European cities, with Boston, New York, London and San Francisco being among the most attractive cities for this kind of experts.

Top-30 Women AI Experts in Drug Discovery Distribution by Organization Type



Academia has traditionally been home to most of the top research minds in the area of pharmaceutical and healthcare AI, which is in accordance with the current statistics. A major part of top women AI experts also involved in entrepreneurship and run their own AI companies. The remaining list of top experts is distributed between pharma corporations, technology corporations, and non-profit projects.

Top-30 Women AI Experts in Drug Discovery Distribution by Role in the Organization

Scientific

40%

Business

60%

Top 30 Women AI leaders list includes experts who have multifold types of contributions towards advancing AI in pharma and healthcare. Research vs business/entrepreneurship roles are distributed as 4 : 6.

We can observe that top women leaders are quite equally engaged in both types of activities, but business roles are a little bit more common.

Top-30 Women AI Experts in Drug Discovery Distribution by Primary Activity

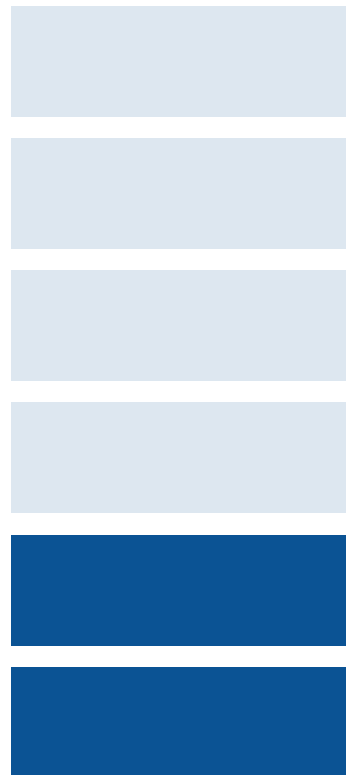
Business Role

56%



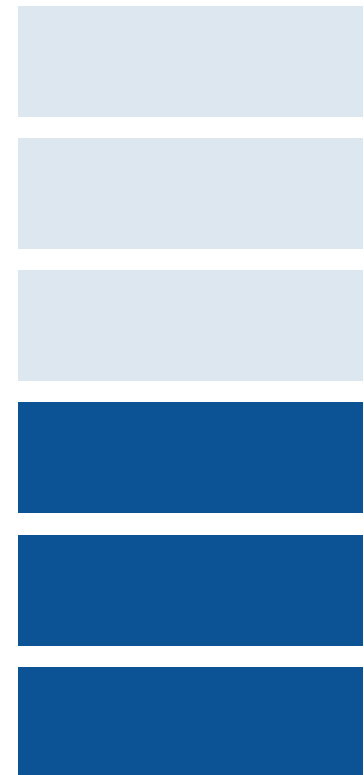
Life Sciences
Research/Technology

17%

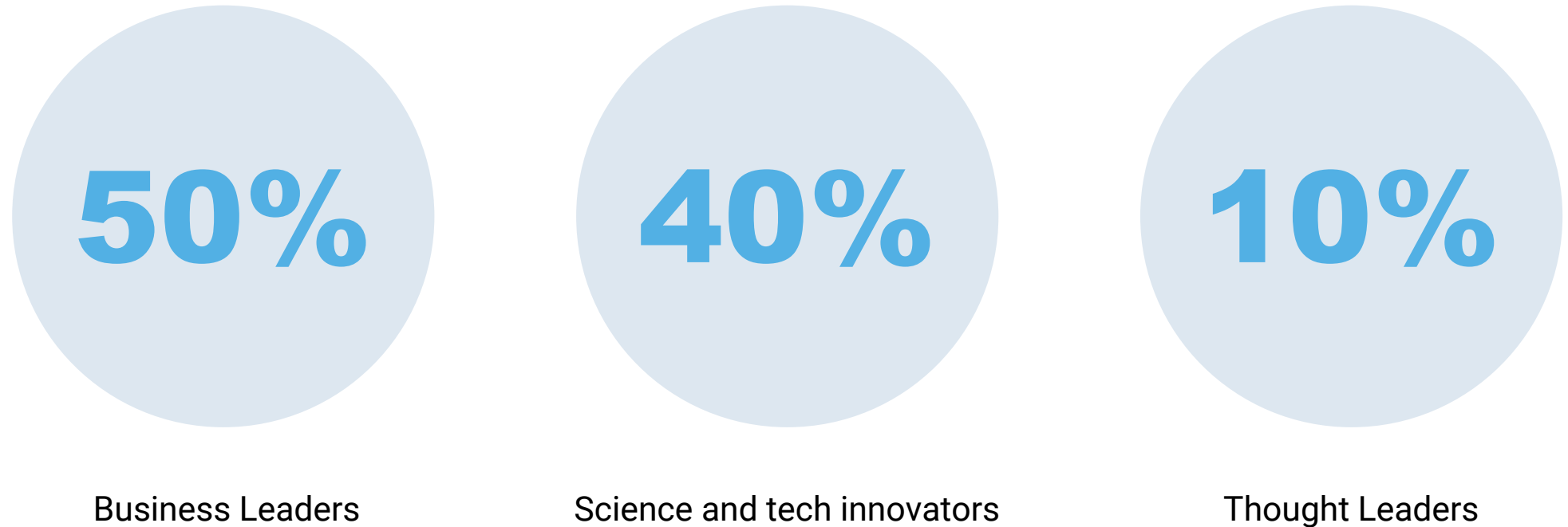


AI Research/Technology

27%



Top-30 Women AI Experts in Drug Discovery Distribution by the Impact on the Industry



This diagram characterizes the types of impact that top women AI leaders are making on the industry to advance ML/AI technologies in pharma or healthcare. The majority of effort is spent on innovation and research, as well as business leadership, while only 10% of the effort is dedicated to thought leadership.

The existing challenge of hiring top ML/AI talent in pharmaceutical setting

It comes as no surprise that talent acquisition and team building seem to be among the most challenging parts in the whole strategy of AI adoption by pharmaceutical companies and drug discovery organizations. All the complications, in this case, stem from the fact that drug discovery and healthcare are complex areas of knowledge that require years of theoretical training and practical experience to understand how to model them in the ML/AI-driven fashion. In other words, it is not possible to efficiently apply ML/AI skills for these kinds of tasks without a certain level of domain expertise in understanding data semantics, proper features and general ontologies. This is, indeed, very different from “traditional” AI tasks, like the image processing, where the object of modeling is easily understandable without deep expertise (images are simply matrices of pixels with color attributes). In contrast, to comprehend datasets from, say, gene expression studies in the context of identifying novel biological modulators, or genetic polymorphism in the context of studying various types of pathogenesis in species, requires deep knowledge in biology, genetics, etc.

At the same time, the ML/AI in itself is a complex multidisciplinary domain of knowledge, requiring strong foundations in Statistics and Probability Theory, Calculus and Linear Algebra, Data Analytics and specialized topics like Graph Theory, advanced programming skills, and hands-on experience in developing, training and deploying ML models in distributed environments (clouds).

In addition to the above-mentioned technical and research “hard” skills, a number of “soft” skills are usually needed to complement the portrait of an “ideal candidate” for leadership roles in adopting AI in pharmaceutical organizations. They include leadership, project/product management experience, executive experience, or experience running industrial-grade projects.

This unique set of requirements explains the substantial scarcity of highly skilled talent in this area, and at the same time, it materializes in the high “price tags” associated with specialists of this kind, which leads us to predict that AI specialists with substantial domain expertise in Life Sciences will become some of the most highly paid employees in the world within several years.

Furthermore, pharma organizations will be attempting to solve the need for “dual” expertise in ML/AI and Life Sciences by creating highly interdisciplinary teams bringing together experts from ML/AI and Life Sciences and making them communicate and collaborate closely. Yet, even this scenario requires a leader, or a group of leaders, with strong foundations in both areas to create an integral vision of a project and make sure both “camps” collaborate efficiently.

Women in Deep Tech

According to the data from the World Economic Forum (WEF), 78% of professionals in AI are male. Women are not only less involved in the industry, but they are less likely to hold senior positions. The problem correlates with more general gender inequality issue, namely, known underrepresentation of women in STEM (science, technology, engineering, math) jobs. These two problems need to be resolved simultaneously since they have predominantly the same roots. But according to Element AI even less share of AI developers is presented by women (12%).

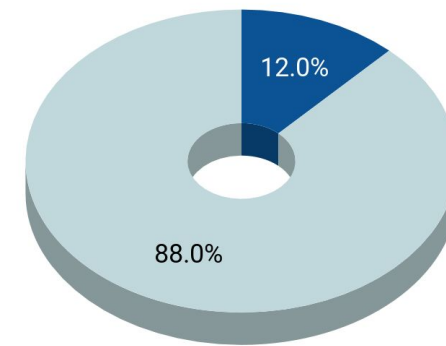
No doubt the industry is suffering from the underrepresentation of women. Higher involvement of female employees and executives could give an additional boost for the whole AI branch.

According to Saadia Zahidi, a member of the World Economic Forum's managing board, the AI industry can improve the condition through "effective training, reskilling, and upskilling interventions and tangible job transition pathways."

Fortunately, we can observe some progress in the understanding of this problem. New initiatives, projects and organizations are emerging in order to provide cooperation, communication and representation for women in AI. Some of such initiatives include Women in AI Dinners (discussions & networking around the progress and application of artificial intelligence) organized by RE•WORK; Women in AI nonprofit organization working towards gender-inclusive AI that benefits global society; Young Women Leaders in AI projects etc.

We all need to promote gender equality in the industry, supporting an emerging trend of increasing involvement of women in AI and deep tech. Narrowing and closing of the gender gap will benefit us all. However, it is still a long way to go.

WOMEN ARE A SMALL MINORITY IN MACHINE-LEARNING RESEARCH



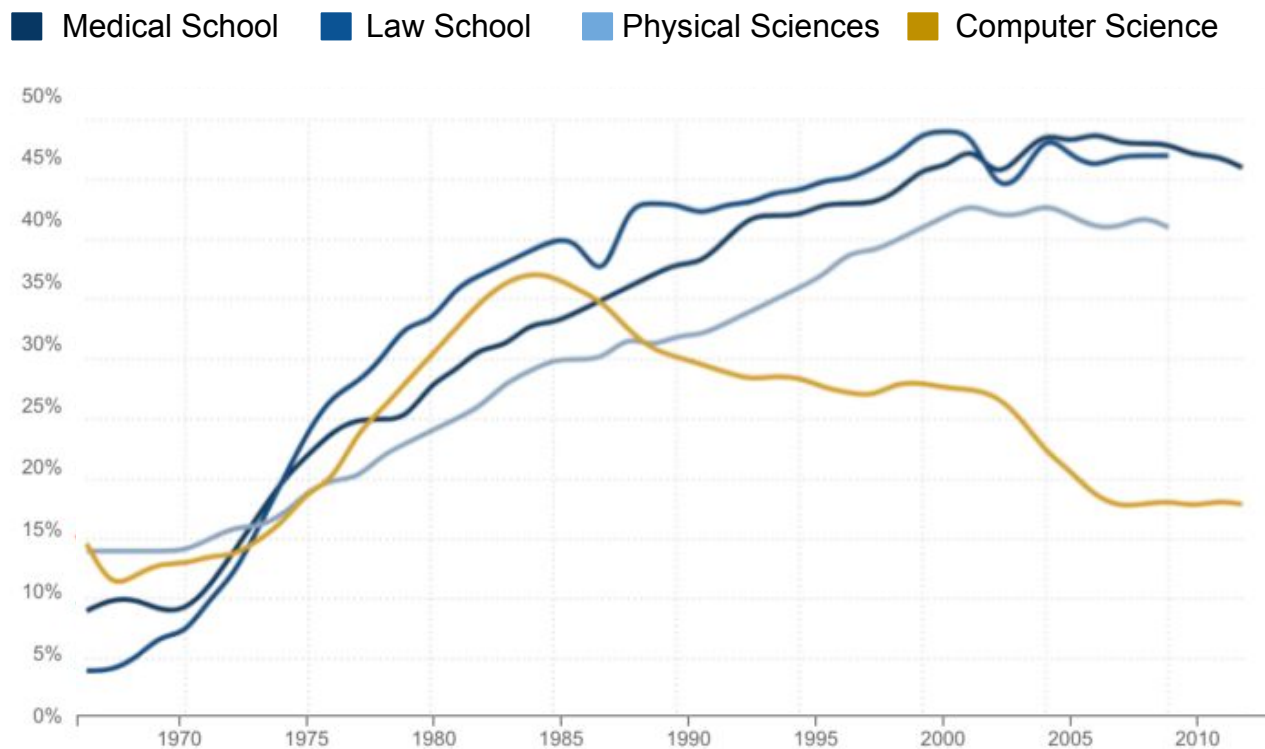
● Women ● Men

Source: Element AI

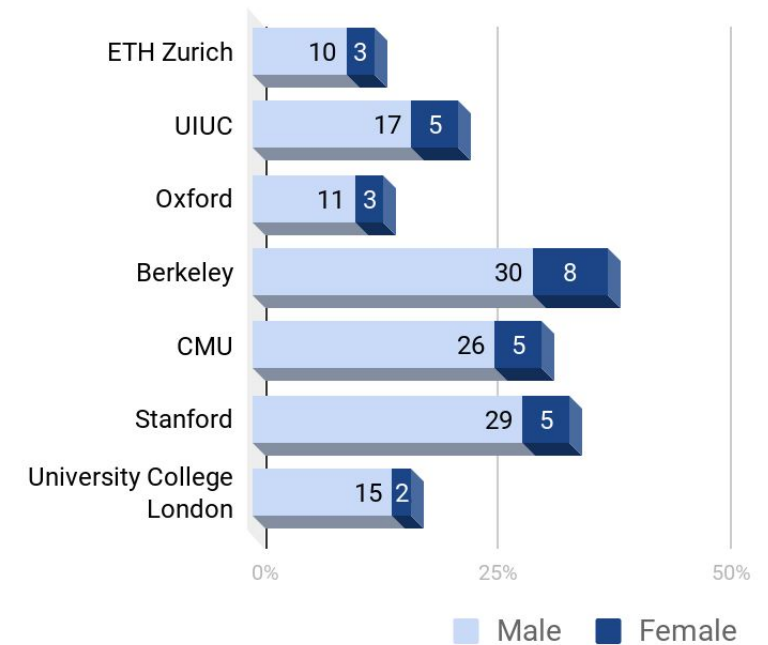
Women in Deep Tech

In the long run, the share of women in computer sciences declined. Now we can observe sorrowful consequences of this trend in deep tech industry. But the opportunity is to use the current AI boom to engage more women. The growth of involvement of women in physics, presented on the graph, is an example of positive shifts that we need to implement in AI sector.

% OF WOMEN MAJORS, BY FIELD



AI PROFESSORS BY GENDER



Source: National Science Foundation, American Bar Association, American Association of Medical Colleges
Credits: Quoctrung Bui/NPR

Source: aiindex.org

Key report observations

Where do TOP-30 Women AI leaders reside?

It might come as no surprise that the USA and UK still remain home for the largest number of top women AI experts in pharmaceutical and healthcare R&D sectors with 57% and 33% of list TOP 30 list participants residing there, respectively (see Distribution by Countries). Being major innovation hubs, London, Boston, San Francisco and New York are topping the list of cities with the largest numbers of TOP 30 Women AI leaders working there.

Particular attention should be given to China. While formally it has no participants from the TOP 30 Women AI leaders list, the real potential of this country in data-driven pharmaceutical and healthcare research is among the biggest. The currently underrepresented position of China is explained by a relatively recent explosion of the AI talent in this country, while the list of TOP 30 Women AI leaders has an emphasis of the historical achievements (USA and UK historically were home to many pioneering advances in the field) and currently recognized leadership positions (rather, than potential for the future). Secondly, all Chinese experts working in Western offices of Chinese companies and residing in the USA or UK were associated with those countries to increase their score.

We predict, that this statistics may substantially change over the coming years in favor of China, firstly – due to a strong government support for AI-driven healthcare and pharma initiatives, secondly – due to relatively lower bureaucratic and regulatory barriers for “controversial” research, and thirdly – due to an emerging trend for a “reverse migration” of Chinese top experts from Western countries back to China.

Key report observations

Where do TOP-30 Women AI leaders work?

It was found that the majority of the TOP 30 list participants work in academia and as entrepreneurs (33% and 43% correspondingly), which is predictable – academia has traditionally been a cradle of the innovative thought not only **in drug discovery**, but also in the theoretical and practical aspects of ML/DL/AI in the context of the application for drug discovery and biomedical research, whereas innovative business is a traditional tool for the implementation of scientific results. The impact of women AI leaders in the category of academia is usually characterized by:

- High number of peer-reviewed publications
- High level of citation (high h-index and i10-index, RG score in ResearchGate – if applicable)
- Pioneering roles in a particular area of theoretical or engineering aspect of ML/AI for drug discovery
- Availability of a notable theoretical breakthrough, technical invention, or widely adopted commercial model

Founders and top research executives of the AI-driven drug discovery startups constitute an even larger group of women leaders in the TOP 30 list. The abundance of emerging companies in this area is a consequence of increasing demand for AI-driven solutions from the side of pharmaceutical companies. Those women AI leaders who advance the industry through their entrepreneurial ambitions are usually characterized by the following set of demonstrated abilities:

- Outstanding business leadership in the area of introducing AI for drug discovery/biotech/healthcare
- High level of interdisciplinary expertise in both hi-tech and life sciences to realize an integral vision of their projects
- Publicly active position, thought leadership activity

Key report observations

17% of the Women AI-leaders in the TOP 30 list work in the largest pharmaceutical and tech companies, which reflects a somewhat slow change in the perception of “big pharma” regarding ML/AI-related opportunities. However, we expect a substantial expansion of this category in the nearest time – as pharma becomes more striving for AI-talent and leadership. Leaders in this category include top pharmaceutical and tech executives, who possess substantial influence on the fate of adopting ML/AI-driven strategy in their organizations and already made practical steps towards this vision. Typical features of the participants in this group include:

- C-level executive role, or leading research role in some of the largest pharmaceutical and tech companies
- Strong background in digital technologies, cheminformatics/bioinformatics
- Strong technology leadership ability
- Knowledge of ML/AI (either career major, or as an additional training)

The rest of the women leaders in the TOP 30 list are from companies in various uncategorized industries and non-profit organizations.

Particular attention should be given to technology corporations as these companies have already developed the strongest capabilities in the ML/AI available on the planet, with best-in-class IT-infrastructures. Now they are increasingly attempting to shift their focus to healthcare, drug discovery and even basic pharmaceutical research, hoping to leverage the unmatched AI expertise in a “foreign”, but very promising for the market. At this moment, technology giants are not able to enter the medicines R&D market on a meaningful scale, but things are changing rapidly. We expect that large technology corporations might, at some point in time, substantially increase the competitive pressure on the currently dominating pharma and biotech organizations. In this case, the ML/AI technologies serve as a sort of “democratizing” factor, allowing a non-pharma corporation enter pharmaceutical R&D market.

Key report observations

The women AI leaders in this category typically possess deep technological backgrounds (Computer Science, Artificial Intelligence, Data Science, Engineering, Statistics/Math), with some acquired level of expertise in life sciences. They are characterized by:

- Top research or business leadership position at large technology corporations
- Involvement in the application of ML/AI technologies for solving pharmaceutical/healthcare tasks, leading life science-oriented projects

What kind of roles do the TOP 30 Women AI leaders have?

The TOP 30 Women AI leaders list includes experts who have various types of contributions towards advancing AI in pharma and healthcare. 40% of all participants are primarily involved in research-related activities, and even more (60%) are directly involved in entrepreneurship and executive management (including research leadership) (see [Distribution by Role in the Organization](#)).

Going in more details, 56% are focusing primarily on a general business/management aspect, 27% are more involved in dealing with ML/AI research/technology aspect (both science and business), and 17% are more involved with Life Science side of things (both science and business) – see [Distribution by Primary Activity](#).

All the participants of the TOP 30 Women AI Leaders list have an enormous impact on the advancement of ML/AI innovations in the pharmaceutical industry and healthcare, which is illustratively divided into the three main types (see [Distribution by the Impact on the Industry](#)).

Key report observations

AI Science and Tech Innovators

40%

of the participants have directly contributed to scientific innovations and advancing technology.

AI Thought Leaders

7%

contributed largely as thought leaders in the field, shaping the ideas and opportunities in easy-to-understand messages for a wider audience of non-tech experts and decision-makers (investors, budgeting organizations, CEOs etc).

AI Business Leaders

53%

are distinguished for their input in building novel companies, establishing non-profit organizations, and facilitating multidisciplinary industrial collaborations.

Concluding the review of the TOP 30 list, it becomes obvious that successful women AI-leaders in pharmaceutical/healthcare fields originate from a variety of quite different backgrounds and fields of specialization, and they have a wide range of possible roles to play in the projects, ranging from purely scientific ones to entrepreneurship and general management. It suggests that any successful AI talent acquisition strategy, aimed at an organization-wide AI adoption, has to include a wide range of different roles and departments, and not be limited to only hiring highly-specific staff to augment R&D or IT departments.

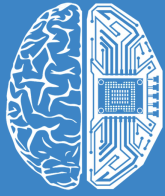
The coming race for AI talent

Considering a rapidly increasing realization that AI-based technologies are a transformative opportunity for the pharmaceutical organizations, it is easy to predict the coming frantic race for the AI talent, especially, with experience in Life Sciences – demand for this type of expertise will be growing **to far outpace supply for years to come.**

An additional constraint in the AI talent acquisition strategy will be conditioned by the growing external competition for the available talent – as large technology giants, like Google, Microsoft, Tencent, and Amazon are increasingly focusing on the Life Sciences and healthcare. Hence, pharmaceutical giants will be competing for the available talent not only with closest pharma competitors, but also with a growing pool of pharmaceutical AI-startups, and increasingly – with global technology corporations.

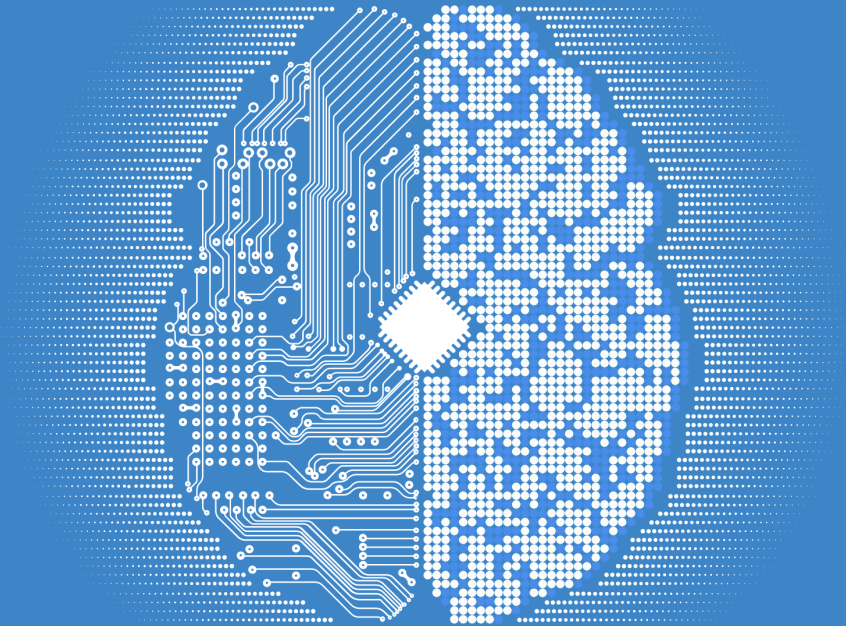
To gain momentum and set themselves for long-term AI-driven growth, pharmaceutical corporations will have to focus on the most efficient talent acquisition strategies:

1. **Focus on collaboration with academia:** Closer and more flexible types of collaboration with academia, since academic institutions are not only a cradle of innovation in the AI but also the main source of scientific talent. Engaging with talented PhD-level specialists early in their career is a crucial aspect to set them for work in the pharmaceutical industry, rather than letting them drift away towards careers in technology corporations. This strategy should be wisely balanced to avoid a **“brain drain” from academia** – a harmful phenomenon, with far-reaching negative implications for both science and educational process.
2. **M&A Strategy:** Setting focus on the merger and acquisition (M&A) activity is an important component of AI-talent acquisition work. The growing wave of AI-driven drug discovery and healthcare startups is yielding highly skilled teams with a strong understanding in both ML/AI and Life Sciences. We anticipate that the most successful startups in this area will soon become lucrative targets for M&A by pharmaceutical and technology corporations.
3. **Increasing intrapreneurship culture:** Creating intrapreneurship programs and business incubators will have to become an important element of an AI-talent acquisition strategy by pharmaceutical corporations. Companies like Google are well-known for outstanding conditions for internal innovators and intrapreneurs. Pharmaceutical companies, being notoriously conservative, will have to embrace more agile strategies regarding internal innovation and intrapreneurship.



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