

## Intel is Building for Today, and Designing for Tomorrow with AI in Life Sciences

### How Intel AI technologies help organizations model, transport, and optimize data

#### Key AI Use Cases in Life Sciences



Drug discovery



Synthetic biology



Predictive toxicology



Drug repurposing



Label expansion

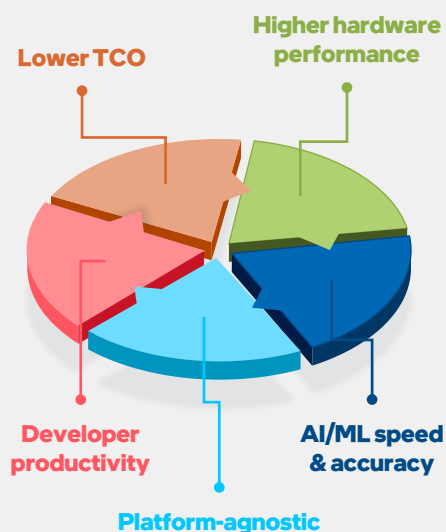


Clinical trial patient stratification



Digital twin

#### Hardware and Software Ecosystem Acceleration Opportunities



### The Opportunity for AI to Transform Healthcare and Life Sciences Scenarios

Applying AI and advanced data analytics systems in life sciences scenarios gives organizations the opportunity to combine historical and real-time data to predict trends, reveal actionable insights, and drive long-term growth. AI provides a path for life sciences organizations to increase efficiency and productivity and an opportunity for significant transformation.

Applying AI to big data in life sciences can help companies in a variety of ways including reshaping business models and streamlining drug manufacturing. For example, everything from cognitive molecule research and clinical trial data flow, to product intelligence can be enhanced. It can also enable life sciences companies to be more tactical in their approach and research with healthcare professionals, patients, and other stakeholders.

### Challenges of Modeling, Training and Optimizing Data

Despite the clear benefits, it is often a complicated process to implement AI technologies at scale. Handling large amounts of data typically requires a team of data scientists to clean and annotate the data and develop the models needed to leverage insights. The main challenges facing the life sciences industry involve the availability of skilled data scientists and the cost of hiring those teams.

The majority of the development life cycle is spent on data preparation and deployment. The element of speed must be addressed before AI can be more accessible and provide lasting value at scale in the life sciences industry<sup>1</sup>. [Intel hardware and software toolkits](#) have been designed considering these needs to enable a faster, more efficient development lifecycle without the need for expert-level skills and experience.

## AI Holds the Power to Revolutionize Life Sciences Solutions

Intel provides a comprehensive portfolio of tools that helps optimize and accelerate data preparation, training, inference, deployment, and scaling. All tools are built with interoperability, flexibility, and extensibility in mind so that developers or any user can build, optimize, and deploy in any setting.

Intel is working with leaders in the ecosystem to revolutionize life sciences, whether it's accelerating drug discovery to speed pharmaceutical development or improving access and affordability. Intel offers ubiquitous computing, connectivity, and edge-to-cloud capabilities to create technologies that enable a customer to use data in more intelligent and effective ways.

No matter the specific life sciences scenario, Intel's toolkit of technologies can unlock the potential of AI tailored to the needs of every organization.

## Intel Cutting Edge Technologies Power Today and Tomorrow's Innovations

### Intel® Project Amber

A multi-cloud, multi-TEE service for third-party attestation.<sup>2</sup> Learn more about our early access program by visiting the [Project Amber Blog](#)<sup>3</sup> or contacting [ProjectAmber@intel.com](mailto:ProjectAmber@intel.com)

### Intel® OneAPI

Intel® oneAPI is an open, cross-architecture programming model that frees developers to use a single code base across multiple architectures. The result is accelerated compute without vendor lock-in that delivers a common developer experience across accelerator architectures – for faster application performance, more productivity, and greater innovation.

### cnvrg.io

With cnvrg.io, AI Developers can manage, build, scale, and automate AI model development from research to production. AI developers are given the freedom to run AI workloads where it is most efficient and cost effective, in half the time.

### Intel® AI Reference Kits

In collaboration with Accenture\*, Intel launched a series of trained [AI reference kits](#) to the open source community to help enterprises innovate and accelerate their digital transformation journey. With these kits, Intel further builds upon the AI application tools it provides to data scientists and developers.

### OpenVINO™

Deploys high-performance inference applications from device to cloud. Optimize, tune, and run comprehensive AI inference using the included optimizer, runtime, and development tools.

### intel GETi

Enables any user to intuitively and rapidly develop AI models by diminishing model development complexity and harnessing greater collaboration between teams. Most importantly, the Intel® GETi™ platform unlocks faster time-to-value for digitalization initiatives with AI.

### Intel Hardware Product Family

Offers hardware solutions that include dGPU Flex and Max series for training and inferences, CPU for inference, Intel® Deep Learning Boost, Intel® Software Guard Extension on Intel® Xeon processors, and Habana® Gaudi2® for deep learning.

### Intel® Open Federated Learning

Designed with privacy and security in mind, Intel® Open Federated Learning uses secure homomorphic encryption options to run AI/ML on sensitive data. Enabling organizations to collaboratively train models without sharing sensitive information.

intel.  
AI

## Leverage Intel's Partner Ecosystem to Revolutionize Deep Learning and AI Modeling Life Sciences Workflows

What was once too complex, too time consuming, and too difficult to staff is now within every organization's reach.

With Intel's toolkit of AI technologies, AI model training is made simpler by analyzing large or small data sets, leveraging active learning, implementing intuitive UX, and offering built-in collaboration.

By harnessing these tools to create robust AI systems, health and life sciences can increase efficiency by reducing costs, identify patterns across data sets, and ultimately generate insights that produce better patient outcomes and accelerate scientific discovery.

### Wistron

Bringing AI-enabled digital pathology to hospitals with Intel® OpenVINO™ Model Server.<sup>4</sup>

### KFBIO

Detecting Cervical Cancer with improved inference performance by 8.4x utilizing the Intel® Distribution of OpenVINO™ Toolkit and Intel® Xeon® Scalable Processors.<sup>5</sup>

### JelloX

Equipped with high-quality scanners and servers, along with the Intel® NUC to connect to additional devices, the solution provides practitioners with a scalable, user-friendly, AI-enabled imaging and digital pathology platform.<sup>6</sup>

## Sources

1. International Data Corporation, [The Data Dilemma and Its Impact on AI in Healthcare and Life Sciences](#), 2021
2. Intel, [Intel Introduces Project Amber for Cloud-to-Edge and On-Premises Trust Assurance](#), 2022
3. Intel, [Intel Introduces Project Amber for Cloud-to-Edge and On-Premises...](#), 2022
4. Intel, [Bringing AI-Enabled Digital Pathology to Hospitals: 5G-Enabled Camera](#), 2021
5. Intel, [KFBIO Accelerates Tuberculosis Detection with AI](#), 2022
6. Intel, [JelloX MetaLite Digital Pathology Partner Brief](#), 2022

## Learn More

Find more information by contacting [health.lifesciences@intel.com](mailto:health.lifesciences@intel.com) or through the links below:

- [Intel® Healthcare and Life Sciences Home Page](#)
- [Intel® oneAPI Toolkits: A New Era of Heterogeneous Computing Article](#)
- [Artificial Intelligence in Health and Life Sciences Homepage](#)
- [Intel® GeTi™ Industries Homepage](#)
- [AI & Machine Learning Developer Zone Homepage](#)
- [Intel® AI Reference Kits](#)
- [Intel® Distribution of OpenVINO™ Toolkit Product Page](#)
- [Cnvr.io Website](#)

## Notices & Disclaimers

Code names are used by Intel to identify products, technologies, or services that are in development and not publicly available. These are not "commercial" names and not intended to function as trademarks.

Intel is committed to respecting human rights and avoiding complicity in human rights abuses.

See Intel's [Global Human Rights Principles](#). Intel® products and software are intended only to be used in applications that do not cause or contribute to a violation of an internationally recognized human right.

Intel technologies may require enabled hardware, software or service activation. No product or component can be absolutely secure. Your costs and results may vary. Intel does not control or audit third-party data. You should consult other sources to evaluate accuracy. Code names are used by Intel to identify products, technologies, or services that are in development and not publicly available. These are not "commercial" names and not intended to function as trademarks.

You may not use or facilitate the use of this document in connection with any infringement or other legal analysis concerning Intel products described herein. You agree to grant Intel a non-exclusive, royalty-free license to any patent claim thereafter drafted which includes subject matter disclosed herein.

All product plans and roadmaps are subject to change without notice.

© Intel Corporation. Intel, the Intel logo, and other Intel marks are trademarks of Intel Corporation or its subsidiaries. Other names and brands may be claimed as the property of others.