Life Sciences
SUPERMIND

The Future of Scientific Research and Development

Accelerate the Pace of Scientific Discovery

The Life Science ecosystem should embrace diverse global communities, traditional academic and industrial partners, and open science communities to accelerate innovation.

By investing in open-source software tools like Electronic Lab Notebooks (ELN), Laboratory Information Management Systems (LIMS), and other cloud-based, AI-enabled infrastructure, we could accelerate research through democratization of advanced software capabilities and enhancing collaborative research. A complementary tactic includes promoting diversity in the research community by reducing economic and technical barriers to access. This can also be accomplished by developing and establishing digital infrastructure like open-source libraries, institutional repositories, and online journal platforms.

Additionally, commercial technologies at the end of product life cycles should be brought back into the public domain to enrich and preserve knowledge for humanity, while enabling their use as fuel for the imagination of next-generation technologists.

We can further accelerate the translation of innovation by enhancing the biotech startup ecosystem through the development of flexible incubator lab spaces. Similar spaces could also be focused on smart, global synchronous and asynchronous collaboration to enable ideation as well as rapid response for fast customization and localization. Ideation can also be fueled by more platforms of collective intelligence, in particular for knowledge-sharing and collaboration.

Reimagine Talent Development and Deployment in the Life Sciences

The future of Life Science R&D is dependent upon having a creative and engaged community of innovators, from a pipeline of new talent to activating creatives from other disciplines.

Scientific career paths should be restructured to support scientists of a variety of experiences and talent levels, not only principal investigators. Students at all levels should be incentivized to collaborate and work in diverse teams across academia and industry. Former scientists who have left labs and accumulated a wealth of knowledge could still help drive discovery; these non-practicing researchers could be harnessed in other impactful and contributing roles.

Additionally, structures should be adjusted to evaluate and reward contributions to science from talented individuals across sectors.

Build Novel Organizational Structures and the Bio Lab of the Future

Life Science R&D should explore numerous types of organizational structures to accelerate innovation.

Distributed autonomous organizations (DAOs), built on blockchain technology, could enable new types of organizations that run without leadership or hierarchy and instead use a shared system of governance and consensus managed by smart contracts. A "DAO of Life Science" could be used to distill existing models of science while streamlining legacy structures that may no longer be optimal.

Life Science companies should invest in critical infrastructure to enable discoveries born from the recent unprecedented funding in emergent biotech. These companies should become "Biotech Foundries," continuing to invest in development, manufacturing and fill finish capabilities to enable the next generation of cell and gene therapies.

Clearly Define and Prioritize the Right Problems to Solve

Humanity faces unprecedented global problems that could be solved or aided by the life sciences, from preventing the next pandemic to protecting the environment and addressing global hunger and poverty.

Well-defined problems and having large-scale agreement amongst stakeholders can lead to recruitment of the appropriate experts and support their energized cooperation.

Diversity of thought, inclusivity, effective recruitment and involvement of experts, and transparent communications should be leveraged to help address worldwide crisis interventions through focused problem selection and analytical decision-making.

Identifying the vectors, indicators, and early warning signs of human and ecological impact is critical to empower eventual solutions. A future-oriented scientific community requires new tools, metrologies, or AI-capabilities to search for these unknowns.

MilliporeSigma

MIT CENTER FOR COLLECTIVE INTELLIGENCE

community biotechnology