

The Artificial Intelligence in Translational Medicine and Biomedical Research, How Future Can be Shaped?!!

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The new era of translational medicine is facing a special and unique transition as the Artificial Intelligence (AI) and Machine Learning (ML) advance. The latest findings in many laboratories around the globe are promising and paved the way toward extraordinary innovative development in the field of medicine and medical research.

In medical research, gradual and consistent advancement, from rudimentary origins, were initial key steps toward medical discoveries and innovation. However, with the AI inclusion into these research approaches, the traditional translational medicine is pacing up. Creating a great hope for filling many sophisticated gaps in knowledge that has been a challenge by the traditional methodology. Such advancements in AI and its involvement in biomedicine and healthcare are forging the framework for a flourishing and visionary translational medicine and biomedical research.

Lately, following the discoveries made by a collaborative team of scientists from the University of Vermont and Tufts University (The xenobots), enormous research and investigation started to glance in the field. Attempts toward drug discovery, wound recoveries and self-proliferating stem cells were made. Most recently, scientists at Tufts University and Harvard University's Wyss Institute have designed and created living small robots from cells of human trachea. In an *in vitro* world, these created cells could induce tissue damage recovery.

The AI based medical diagnosis is also a revolutionary step toward proper diagnosis and consequently, medical intervention. The AI and ML are becoming so intelligent to an extent not to only diagnose the disease but also predict disease prognosis in future. The narrow AI (WatsonX) that was introduced by the IBM company can play a major role in assisting clinical decisions and image analysis. The challenge that faced the globe after the COVID-19 outbreak with multiple false negativity and false positivity outcomes in the diagnose necessitated the support of the AI in this field.

Additionally, the Neuralink that is introduced by Neuralink Corp. is taking a historical step after gaining the approval from FDA to start human trials. Such dramatical change in the brain interface using AI can be a solution for many diseases that human couldn't treat. Restoring brain activity and autonomy through integration of an AI to human nervous system is a mind-boggling promise that AI can give to medicine and medical science.

Finally, these new approaches and advancement in AI and ML are prone to proper design and supervision, as well as, performing randomized clinical trials prior to the use in real-life medical interventions. Nonetheless, research and experimentations for AI inclusion in medicine are still an ongoing process, yet the opportunities are realistic that AI can be of great benefit in supporting medicine and biomedical research, specifically, where there is gap in knowledge and inability of human capacity to resolve them. There is no doubt that AI will be a significant party of the healthcare system in the future and a core medical support.

