

Artificial Intelligence will not be humans' last invention.

Peter Grandsard, Amgen, Thousand Oaks, CA

Discovery and development of human therapeutics is a very complex, decades-long process with many iterative workflows where inputs and outputs need to be carefully orchestrated in locations across the world. From research to commercialization of a single therapeutic, thousands of decisions must be made with great urgency. As decisions are data-driven, the assays and analyses generating the required information must demonstrate increasingly high-throughput with great-sensitivity and be highly accurate & predictive. Growing socio-economic pressures on the biopharmaceutical industry as well as our *emerging* true understanding of human biology/health drive the increasing urgency. A company like Amgen therefore invests in the application of established detection technologies (such as surface plasmon resonance spectroscopy or mass spectrometry) and in the development & implementation of newer technologies (such as graphene-based electronic sensors or cryoEM) for the characterization of molecules and molecular interactions. Furthermore, we believe that relevant novel detection technologies can complement and be made more powerful by in-silico information generating methodologies e.g., first-principle-based predictive modeling and artificial intelligence (AI). After a few newer detection technologies in drug discovery & development are reviewed, the presentation will focus on why Amgen believes it needs to employ both analytical & computational/AI approaches to enhance decision-making. A small set of use cases will be presented.

Short Biography

Peter Grandsard is currently an Executive Director of Research at Amgen responsible for the characterization of pre-clinical-stage therapeutic candidates. Since joining Amgen in 1996, he has had a variety of roles and responsibilities. Trained as a chemical engineer (BE/ME) and as an analytical chemist (Ph.D.), he started as a scientist designing and implementing new laboratory automation and instrumentation, in what was then a new group named R&AT (Research & Automation Technologies). Later he led that team of engineers, physicists, biologists, and chemists, to increase therapeutics discovery and development efficiency, or to enable new activities. In 2008, Peter started leading another diverse organization (DAS, Discovery Attribute Sciences) whose task it is to analyze and purify therapeutic candidates and reagents, in order to understand their structures, their physical-chemical attributes, and their protein target binding properties.