Rapid response to biomedical challenges and threats

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Structural information, mainly derived by X-ray crystallography and Cryo-Electron Microscopy, is the quintessential prerequisite for structural-guided drug discovery. However, accurate structural information is only one piece of information necessary to understand the big picture of medical disorders. To provide a rapid response to emerging biomedical challenges and threats like COVID-19, we need to analyze medical data in the context of other in-vitro and in-vivo experimental results. Recent advancements in biochemical, spectroscopical, and bioinformatics methods may revolutionize drug discovery, albeit only when these data are combined and analyzed with effective data management framework like Advanced Information System proposed in 2017. The progress on AIS is too slow, but creating such a system is a Grand Challenge for biomedical sciences. By definition, a Grand Challenge is a challenging and extremely difficult long-term project that is not always appreciated by those looking for immediate returns.

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