

Skills and thought processes that clinicians and experimentalists need to bridge into informatics



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Modern biological, chemical, and clinical information systems now store thousands, millions, or billions of measurements, and we are faced with the challenge of processing and interpreting these measurements in the ultimate aim of producing translational and clinical value. Programmers and data scientists who consider their job finished when the graph calculations are complete can be difficult to approach and discuss with; how can we bridge out to them to create a win-win situation, especially when we don't understand the underlying theory of their computational approaches? In this presentation, I will draw from two decades of experiences in molecular and clinical informatics to present a range of fundamental knowledge and philosophies that are critical for the harmonious collaboration between clinicians and experimentalists on one hand and informaticians on the other hand. Topics to be addressed include practical aspects of statistics, how to enter the data processing and informatics worlds, what is statistical pattern recognition (mistakenly called "machine learning" and now even more mistakenly called "AI"), being fooled by seemingly impressive AI performance numbers, and the beauty in small data.