Future opportunities and challenges in genomic medicine

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Genetics has long served as a vanguard for the integration of large-scale data science into biomedical research. Over the past two decades, the discipline has progressed along two intertwined trajectories. On one front, **quantitative genetics is transitioning from research to clinical application**, offering the potential to refine diagnostic precision, personalize therapeutic strategies, and anticipate treatment outcomes at the point of care. Concurrently, **genetic architectures are increasingly embedded within systems biology and multimodal analytical frameworks**, acting as scaffolds for the integration of high-dimensional biological data across diverse modalities. This presentation will explore the transformative potential and inherent complexities of genetics in the era of big health data and 'omics-driven scientific investigation, and will set the stage for subsequent discussions that delve deeper into emerging methodologies, translational opportunities, and the evolving landscape of precision medicine.