20 year anniversary of the mapping of the human genome: What does the future hold?

The coalescence of bioinformatics and computational biology around algorithms has… given rise to new institutional forms and new markets for biomedicine. Statistically powered "data-driven biology" has configured an emerging medical-industrial complex that promises personalized and "precision" forms of diagnosis and treatment. Algorithmic pipelines that compare an individual's genotype to reference data generate a range of predictions about future health and risk. Direct-to-consumer genomics companies such as 23andMe now promise us healthier, happier, and longer ways of living via algorithms.

This presents substantial challenges for privacy, data ownership, and algorithmic bias that must be addressed if genomics is to avoid becoming a handmaiden of "surveillance capitalism". Many tech companies have begun to look toward using machine learning to combine more and more biological data with other forms of personal data—where we go, what we buy, whom we associate with, what we like.

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The hopes for genomics have long been tempered by fears that the genome could reveal too much about ourselves, exposing us to new forms of discrimination, social division, or control. Algorithmic biology is depicting and predicting our bodies with growing accuracy, but it is also drawing biomedicine more closely into the orbits of corporate tech giants that are aggregating and attempting to monetize data.

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