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# The Evolution of Sequencing Technology

As the basic forms of life began to evolve on earth, so too did a means to carry the essential information required for the replication and reproduction of these increasingly complex organisms. DNA, besides acting as this blueprint, can also provide us with information about our phylogeny, ancestry, environment, susceptibility to disease, and–some claim–our character and possibly our fate. It is no wonder that we as humans find the process and challenge of decoding our genetic information such an irresistible endeavor.

The first serious attempt to decode the human genome was the Human Genome Sequencing Project, started in 1990. Although it had its initial detractors, this effort turned out to be one of the most successful collaborative ventures in scientific research to date. While cooperation and hard work undoubtedly played a critical role, the core engine that drove this project was a string of engineering breakthroughs that allowed for the collection and collation of data at an unprecedented rate. Today, the capacity of those approaches is being far surpassed by technologies that cut sequencing times and costs by several orders of magnitude. Superior detection methods, massive multiplexing, and much-reduced sample size can yield complete microbial genomes in a day and human genomes in only weeks.

It is the scientific foundation that has enabled this extraordinarily rapid progress that we are attempting to capture in this poster. As our knowledge of DNA–both chemical and functional–has grown, so have sequencing technologies evolved and improved, each discovery building upon the previous as we proceed along the uncoiling DNA strand. This poster provides a snapshot of the current state of the art, as well as giving the reader a broad–and necessarily abbreviated–overview of the development of sequencing technologies over the last century and a half. If the speed of advancement in this area continues apace, even some of the more formidable challenges, such as single strand sequencing and the $1,000 genome, might be overcome–not just in our lifetimes, but within the foreseeable future.

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