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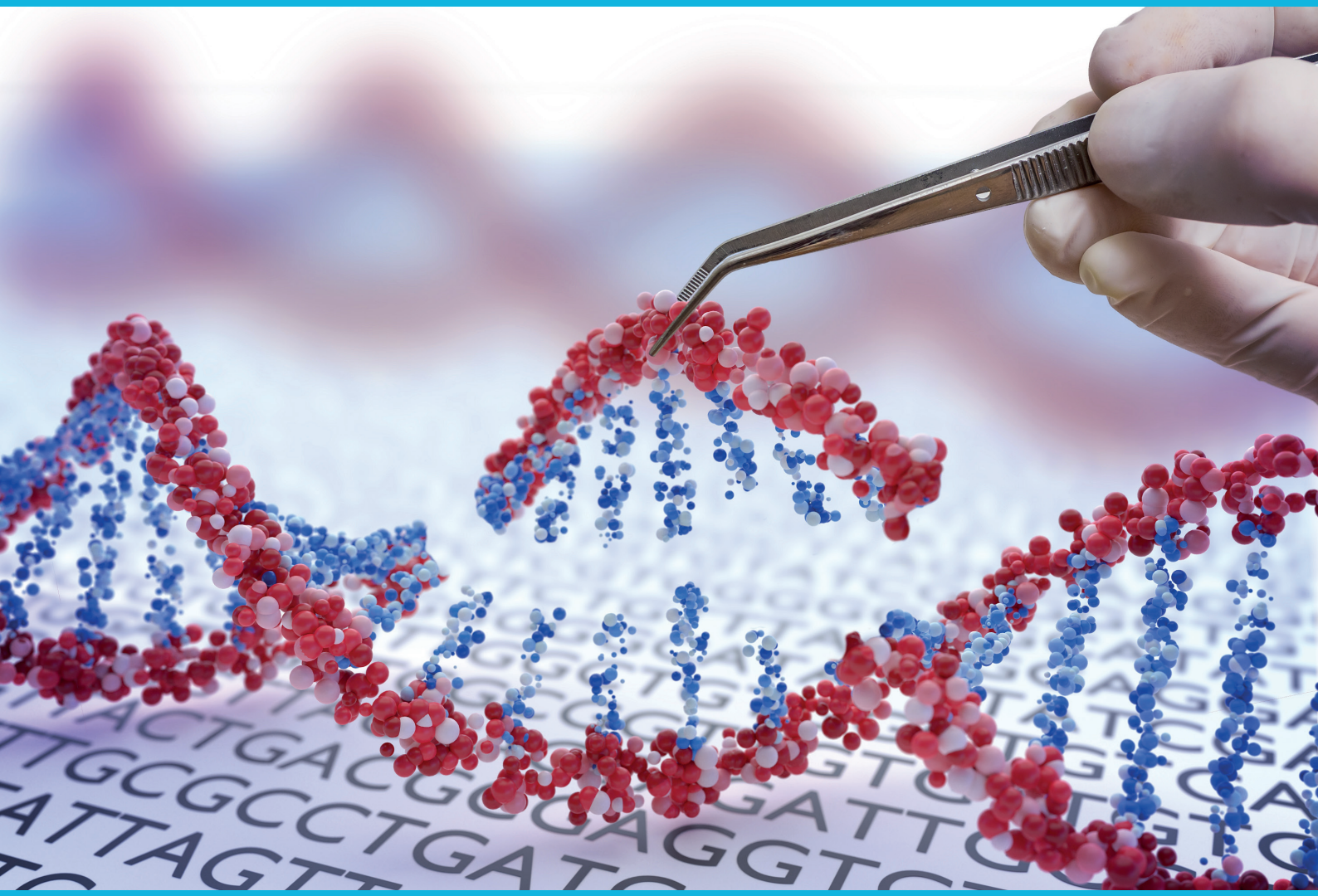

Oxford Nanopore IPO

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Oxford Nanopore, are a provider of rapid COVID-19 tests to the UK's NHS and is working with banks to launch an initial public offering on the London Stock Exchange in the coming weeks, But it is so much more than simply covid testing and the business is so much deeper than a pop-up firm from the Covid pandemic. In this special report we highlight who they are, what they do and how to participate.

The company was valued at $3.2bn in March 2021. The investment firm IP Group, which owns 15% of Oxford Nanopore Technologies, estimated its assets to be worth more than $470mn. Amgen, the sovereign wealth fund GIC, and China Construction Bank International are among the other major investors.

Since the beginning of the COVID-19 pandemic, scientists in more than 85 countries have used the company's technologies to track new mutations in the coronavirus. The company's MinIO device, which costs only $1,000, enables specialists to work without the assistance of large laboratories. Oxford Nanopore Technologies also created a COVID-19 test that produces results in under an hour.

According to Grand View Research, the DNA sequencing market was valued at $ 4.7 billion in 2019 and is expected to grow to $11.2 billion by 2027.

Company History

In June 1989, Professor David Deamer was driving when it occurred to him that a protein channel might be incorporated into the membrane of a liposome, and that the resulting channel might accommodate individual nucleotides - the small components of DNA. For two years, this idea lay undiscussed until a discussion in 1991 with Professor Dan Branton visiting from Harvard University.

- 1991- a decision was made to pursue research into the concept of nanopore sensing.
- 1992- it was agreed that Harvard would be the lead institution for intellectual property.
- 1993- First experiments were performed at NIST.
- 1994-5- with support from an NSF SGER grant, research continued at UC Santa Cruz, NIH and Harvard.
- 1996- The concept of nanopore sequencing was then described in a publication by Branton, Deamer in PNAS.
- 1997- Professor Mark Akeson joined the project. Key patents were soon filed by the group at Harvard University;
- 1998- US Patent 5,795,782, "Characterization of Individual Polymer Molecules Based on Monomer-Interface Interactions" was granted.
- 2001- Professor Hagan Bayley's lab in Oxford described a working nanopore sensor in the journal Nature Nanotechnology: "The binding of single-stranded DNA (ssDNA) molecules to the tethered DNA strand causes changes in the ionic current flowing through a nanopore. Based on DNA duplex lifetimes, the DNA-nanopores are able to discriminate between individual DNA strands up to 30 nucleotides in length differing by a single base substitution."

This chain of events then led to Oxford Nanopore being founded in 2005 to develop a disruptive, electronic, single-molecule sensing system based on nanopore science.

The first product, MinION, was introduced into early access in 2014 and made commercially available in 2015.

The scaled-up GridION was commercially launched in 2017 and PromethION in 2018, with the largest device, the PromethION 48, first shipped in 2019.

Flongle, the adapter for MinION/GridION for rapid, cheaper, smaller tests was launched in 2019.

The Company has a rich development pipeline that includes solutions to enable any user, anywhere, including the mobile-phone-compatible SmidgION and low cost, portable sample prep Ubik.

The Company now has more than 1,400 patents and patent applications across 200 patent families, with hundreds generated by internal R&D, and complemented with key in-licenced IP from collaborators. Find out more about the intellectual property portfolio here.

Funding Run

- 2005- Seed funding was obtained in two rounds, from IP Group.
- June 2006- the company raised £7.75m
- March 2008- the company raised a further £10m.
- January 2009- the Company announced an $18m (£11.9m) and a separate £2.1m investment
- February 2010- Oxford Nanopore raised £17.4m from existing investors and new, undisclosed US-based investors.
- April 2011- the Company raised £25m from existing and new institutional and independent investors based in the UK and US.
- May 2012- the Company raised £31.4m ($50.8m), the majority of which was from existing investors.
- October 2013- Oxford Nanopore raised £40m from new and existing investors in the US and Europe.
- August 2014- Oxford Nanopore raised £35m from new and existing investors in the US and Europe.
- July 2015- Oxford Nanopore raised £70m from new and existing investors in the US and Europe.
- December 2016- Oxford Nanopore raised £100m from new and existing investors worldwide.
- March 2018- Oxford Nanopore raised £100m ($140m) from global investors
- 2020- Oxford Nanopore announced that it had raised £29m + £49.4m +£84.4m in new capital in three tranches
- May 2021- Oxford Nanopore noted that it had raised £195m + £7m in new capital

The Technology

Oxford Nanopore has developed a new generation of DNA/RNA sequencing technology. It is the only sequencing technology that offers real-time analysis (for rapid insights), in fully scalable formats from pocket to population scale, that can analyse native DNA or RNA and sequence any length of fragment to achieve short to ultra-long read lengths.

Products

Flongle - A small format unit that address the need for on-demand, rapid, smaller tests or experiments, and can be used in labs or in the field.

MinION - The pocket-sized MinION is a powerful and portable sequencing device that can deliver high volumes of long read sequence data.

GridION – The benchtop GridION Mk1 can run up to five MinION Flow Cells at a time, on-demand, for larger genomics projects.Flexible, Run up to five independently addressable Flongle or MinION Flow Cells.

PromethION - Is the largest format for nanopore sequencing, designed to offer on-demand use of up to 48 Flow Cells – capable of delivering more than 10 Tb of sequence data in a full run, and is now being used in population-scale sequencing projects. On-demand sequencing, Run up to 48 independently addressable, high-capacity PromethION Flow Cells. Ultra-high throughput, generate terabases of data — streamed in real time for immediate analysis.

Applications

Nanopore sequencing offers advantages in all areas of research. The firms offering includes DNA sequencing, as well as RNA and gene expression analysis and future technology for analysing proteins.

Research Areas - Microbiology, Microbiome, Environmental, Plant, Animal, Infectious disease, Infectious disease, Human genomics, Clinical research, Cancer, Transcriptome, Populations genomics

Investigations - Structural variation Structural variation, SNVs and phasing, Gene expression, Identification, Splice variation, Assembly, Fusion transcripts, Chromatin conformation, Epigenetics, Single cell

Techniques - Whole genome, Targeted, Whole transcriptome, Metagenomics

Who needs DNA/RNA information?

Scientific Research

Genome Science - What is the structure and function of the human genome?

Human Genetics - How does variation between individuals influence their characteristics, disease risk or response to medication?

Clinical Research - How can we use sequence data to personalise medicine? How can we integrate sequence data into clinical decision making? How does a person's genome influence how they may respond to a disease or an infection?

Cancer Research - What are the genetic changes that are causing this cancer, and the mechanism of those changes in broader cell pathways? Can knowledge of these changes influence choices on treatment? Can new therapeutics be developed as a result of this knowledge?

Plants / Crops - What are the differences between these tomato crops? How can we breed better varieties, that are more productive, long lasting or taste better? How can we apply this knowledge to a variety of plants from cereals to flowers?

Pathogens / Microbiology - What is this virus/bacteria/fungus? What makes it pathogenic? Is it resistant to antimicrobial drugs? How could we use this information to prevent or treat the disease that it causes?

Environmental - How is the microbial composition of this ocean/glacier/lake changing? What is this species? Is it endangered? What can we understand about the biodiversity within this area?

Transcriptomics - How do different conditions impact which genes we use and when? What does this mean for human health?

Epidemiology - What is this pathogen? How is it changing? How is it being transmitted? At March 2021, approximately a quarter of the COVID-19 sequences in the GISAID platform were sequenced on a nanopore device.

Population-scale genomics - What can we learn about the characteristics and diversity of genomes of a specific population of people, and how can we apply this to improve the health of those people?

Applied Markets

Industry - Is this food/water safe to sell/consume? Do we need to shut down our production line to clean it? Can we optimise production of our livestock, fish or seafood? Can we optimise biopharma biological production? Can I perform real time surveillance of the organisms in this environment?

Healthcare - Oxford Nanopore's technology is currently being used in multiple external clinical research laboratories, for example to characterise infectious disease samples, to investigate tissue typing in advance of transplants, and to provide insights into reproductive health. Nanopore technology is also highly suited to the development of diagnostic assays as evidenced by LamPORE COVID-19, a rapid, low-cost, and highly scalable diagnostic test for SARS-CoV-2*. Find out more. A broad range of clinical areas may potentially benefit from rapid genomic insights: What disease does this person have? What is the optimal treatment pathway for this person?

Education - School and university students: Can I use sequencing as a fundamental tool to understand biology, data analysis, experimental design, and become a citizen scientist of the future?

Security - Is there a harmful pathogen here? What is the origin of the pathogen? Is this environment safe? What is this species? Is it being shipped illegally?

How to Participate

Initially trading will begin in a conditional period giving institutions the opportunity to fill orders. Conditional trading takes place for a few days between the official IPO date and full LSE listing. Shares can be traded during this period and held indefinitely thanks to trading moving seamlessly from conditional to full trading. Shares are bought and sold in the normal fashion during this period, but trading tends to be limited to larger investors due to the involvement of the underlying shares.

CFD traders can benefit from being able to take part in this window trading an instrument based on the underlying price and needing a deposit of only 20% of the trade value whilst benefiting from any potential gains (or losses) being magnified via the leverage involved.

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