Oxford NANOPORE Technologies

Capital Markets Day **2023**

19 October 2023

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Vision and growth strategy

Dr Gordon Sanghera

Our vision

To enable the analysis of anything, by anyone, anywhere

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Creating value through a new generation of sensing technology & unique commercial strategy

Single molecule sensing platform

Starting with DNA/RNA and building towards tomorrows multi-omics world

Sustainable agile innovation

Delivering new products, continuous performance upgrades, and intellectual property creation

Substantial market opportunity

$6.2[1] billion, growing existing opportunity for sequencing in 2022 with potential >$150bn in future clinical and applied markets

Growing user community

Customers in >120 countries doing ground-breaking science

Scaled operations

In-house manufacturing and global distribution

Our people

Experienced, driven leadership enabled by a highly ambitious and talented global team expanded to >1,200

[1] Source: DeciBio.

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Oxford Nanopore today in numbers

£162.2m
Last 12-month LSRT revenue

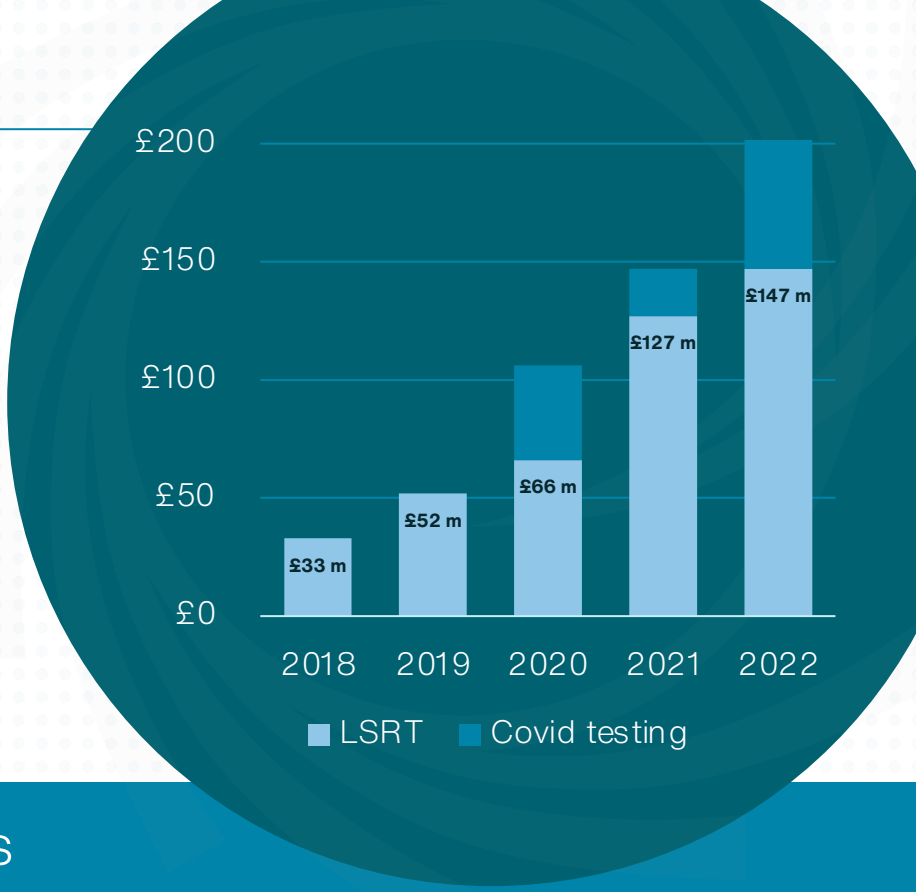
46%
4YR LSRT revenue CAGR[1]

75%
Revenue accounted for by consumables[1]

57.6%
LSRT gross margin +14.7pts since FY20

> 2,500
Patents and patent applications

> 8,800
Publications from ONT users



>7,300 active, direct customers

LTM= Last 12 months to 30 June 2023
1 2018 to 2022
All numbers at 30 June 2023 unless stated otherwise

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Medium to long-term targets

Medium term (FY26) Financial Guidance

>30%	Underlying LSRT revenue growth
10-20%	of LSRT revenue from clinical and applied industrial markets
>65%	LSRT gross margin

Adjusted EBITDA breakeven by the end of 2026

Disruptive innovation

- Sample to answer products including TurBOT and TraxION
- Key products moved to regulated and applied markets
- Protein sensing and small molecule applications
- Path to productise voltage sensing

Commercial operations

- Expand geographical footprint directly or through channel partners
- Establish regional centers of excellence to better engage with our broad user base
- Upgrade all digital platforms to offer best in class customer experience
- Scale our global operations to meet growing demand

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Our journey

1 Channel

Axopatch

1 Nanopore channel
~1 experiment per person per week

Foundational years
2005 - 2009

Foundational IP & licences

- Oxford
- Harvard
- UCSC
- Texas A&M
- Umass

512 Channels

MinION

512 channels per
flow cell

Transformational years
2010 - 2014

Technology beginnings

- Strand sequencing
- PhiX
- E-coli
- AGBT 2012 unveiling
- ASHG Boston 2013 live demo

MinION Access Program (MAP)

128,400 Channels

PromethION P48

2675 channels per
flow cell

Commercialisation years
2015 onwards

Platform evolution

- VIB licence for Csgg
- Move to neural network algorithms
- Output on MinION from 500 mb to 50 Gb
- Direct RNA launch

Product

- MinION commercial launch 2015
- GridION commercial launch 2017
- R9 launch 2017
- PromethION Beta 2018-2019
- Flongle Early Access 2019

Company milestones

- US expansion
- Japan establishment
- China establishment

Anyone | anywhere | range

Maturing and innovation

Performance, Low cost,
disposable flow cells

Public years
2021 onwards

Platform evolution

- R10 nanopore
- Q20+ Simplex Chemistry
- Q30+ Duplex
- Outputs over 100 Gb / PromethION flow cell
- Big ML steps on accuracy

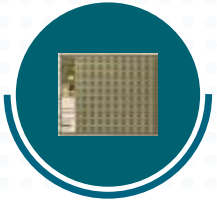
Product

- P24 and P48
- A series compute

Company milestones

- IPO
- Doubling of commercial team

Intellectual property
34 licence agreements



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Future

-

Future

Voltage chip

- 10,000 – 100,000 channels
- Potential for 1 hour genomes

Other analytes
Potential for protein, metabolites

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DNA and RNA: the source code of all living things

What is it?
What is in it?

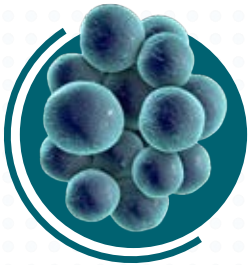
Is it changing?
Responding?

Is it healthy or diseased?

What is the disease?

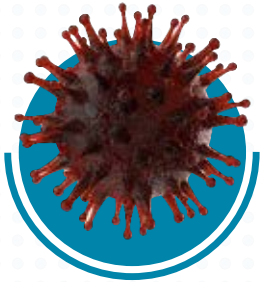
Is it harmful?

How does it vary from others?



Metagenome

Mixed species

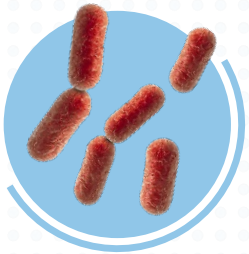


Virus

Eg Influenza A

8 segments of RNA

~13.5Kb



Bacteria

Eg E.coli

4.6Mb

(4.6 million base pairs)

Mammal

Eg cow

3Gb x 2

(3 billion base pairs x 2)

Human

3Gb x 2

Crop

Eg wheat

17Gb x 6

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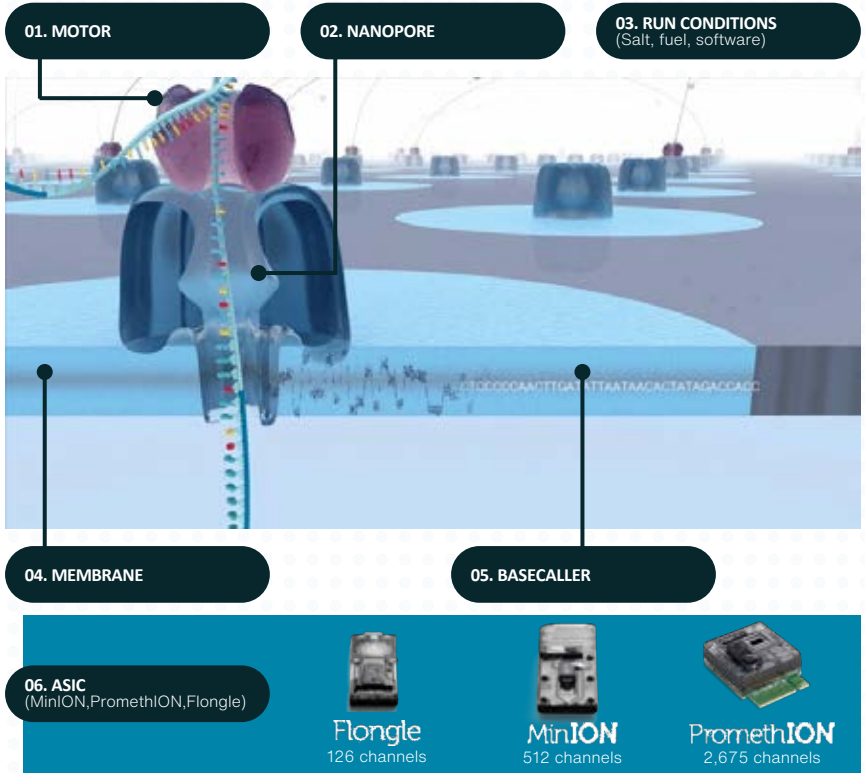
Nanopore sequencing: a highly differentiated platform

6 key components



Deliver 6 key features

- Direct /native DNA/RNA sequencing
- Sequence any length fragment from short to ultra-long
- Real-time data generation
- Scalable formats from small hand-held to ultra-high output devices
- Cost effective. No capital requirements
- Plug-and-play easy to use solutions

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Benefits of the platform create new standards and expectations

Richer Insights

"34% of all disease-causing variation is made up of variants that are larger than a single base-pair substitution"

Evan Eichler, New England Journal of Medicine, 2019

Faster time to result

"The entire workflow...can be performed in less than a working day. This is something unique to nanopore sequencing"

Martignano et al. 2020

Accessible & affordable

"In the one test, we can search for every known disease-causing repeat expansion sequence... with Nanopore, the device is the size of a stapler, and costs around $1000, compared with hundreds of thousands needed for other sequencing technologies"

Ira Deveson, et al. 2022

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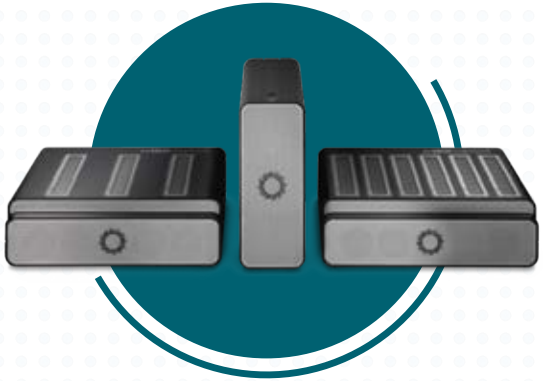
Our fully scaled platform

From small handheld to flexible high-capacity systems **all highly affordable**

MinION	PromethION P2 solo
From $1,000	From $10,455

GridION	PromethION P2(i)
From $49,955	From $59,995



PromethION P24	PromethION P48
From $225,000	From $310,000

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Unique commercial model drives rapid uptake, supported by lean infrastructure

Seed the market with affordable starter packs

- With sequencers from only $1,000, Nanopore sell to users who don't perform sequencing today

Expand the market with self-service MinION and P2 Solo userbase

- Over 80% of orders are placed without interaction from the sales and support teams
- Users learn to use devices through online resources or booking a lab call

Take market share with classic "B2B approach

- GridION and PromethION P2(i), P24 and P48 are sold and supported by a field-based sales and support team
- Taking market share through unique features and benefits

Our flow cells are our sequencers

Most of the "sequencing hardware" is in the consumable flow cell enabling:

- Simple, affordable sequencing devices
- Rapid platform iterations deployed in consumable upgrades
- Higher margins with 75% of revenue generated by consumable sales

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Our customers

S1	S2	S3
“genomic explorers”	**“expanding everyday sequencing”**	**“larger accounts”**

Commercial resources to fit customer types

Under **$25,000**	**$25,000 – $250,000**	Over **$250,000**
4YR REVENUE CAGR: 25%	4YR REVENUE CAGR : 39%	4YR REVENUE CAGR : 62%

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Strong track record of value creation since IPO

Financial performance

32%	2YR LSRT revenue CAGR (H1 21-H1 23)
57.6%	LSRT gross margin (+650bps HY21-HY23)
>1,000	New customers (since FY21)
£485m	Maintained strong balance sheet

Disruptive innovation

- Product launches including P2i and P2 Solo
- Q20+ chemistry launch
- Dorado for accelerated basecalling
- Short Fragment Mode

Commercial operations

- Doubled global commercial team
- Key, senior hires to drive growth in key markets and S3 customer group
- Established trading in Singapore, Japan, Australia, Italy, and Canada
- 12 new strategic collaborations, including bioMerieux and Mayo

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Accelerating commercial execution for LSRT

AMERICAS

- Delivered 72% underlying growth in H1 23 reflecting increased demand for our technology
- New distribution hub improving product delivery times
- Investment in Canada resource and local entity to better support growing user base
- US customer excellence centre planned to support rapid growth

EMEA[1]

- Delivered 57% underlying growth in H1 23 as we see increased demand for our technology
- New Customer excellence centre planned in Dubai to support rapid growth in the Middle East
- Investment in improved routes to India as technology adoption grows
- Increased support in African region with commercial team expansion

APAC

- Delivered 23% underlying growth in H1 23 as we see increased demand for our technology
- New distribution hub in Singapore to better serve the region
- New distribution hub in Australia to serve large local user base

INVESTMENT IN UNDERLYING SYSTEMS AND DIGITAL PLATFORM TO TRANSFORM CUSTOMER EXPERIENCE

[1]Includes India

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Scaling our manufacturing operations

Meeting increasing demand whilst focusing on product robustness and reproducibility

EXCELLENCE IN CONSUMABLE FLOW CELL MANUFACTURING

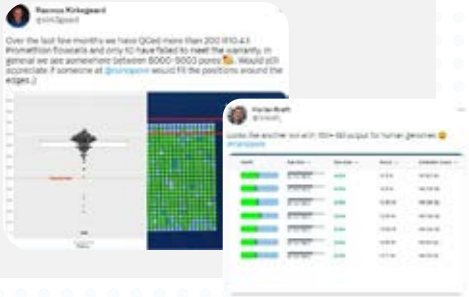
Innovation

Continue to innovate manufacturing methods

Coupled with continuous improvements to existing processes

Reproducibility

Focus on customer performance delivering in field improvements in output and robustness



SCALING LIBRARY PREPARATION MANUFACTURING

Scale-up

New capabilities and automation established to scale library preparation production

Quality

Expanding QC capabilities across flow cells, reagents and devices with path towards regulatory markets

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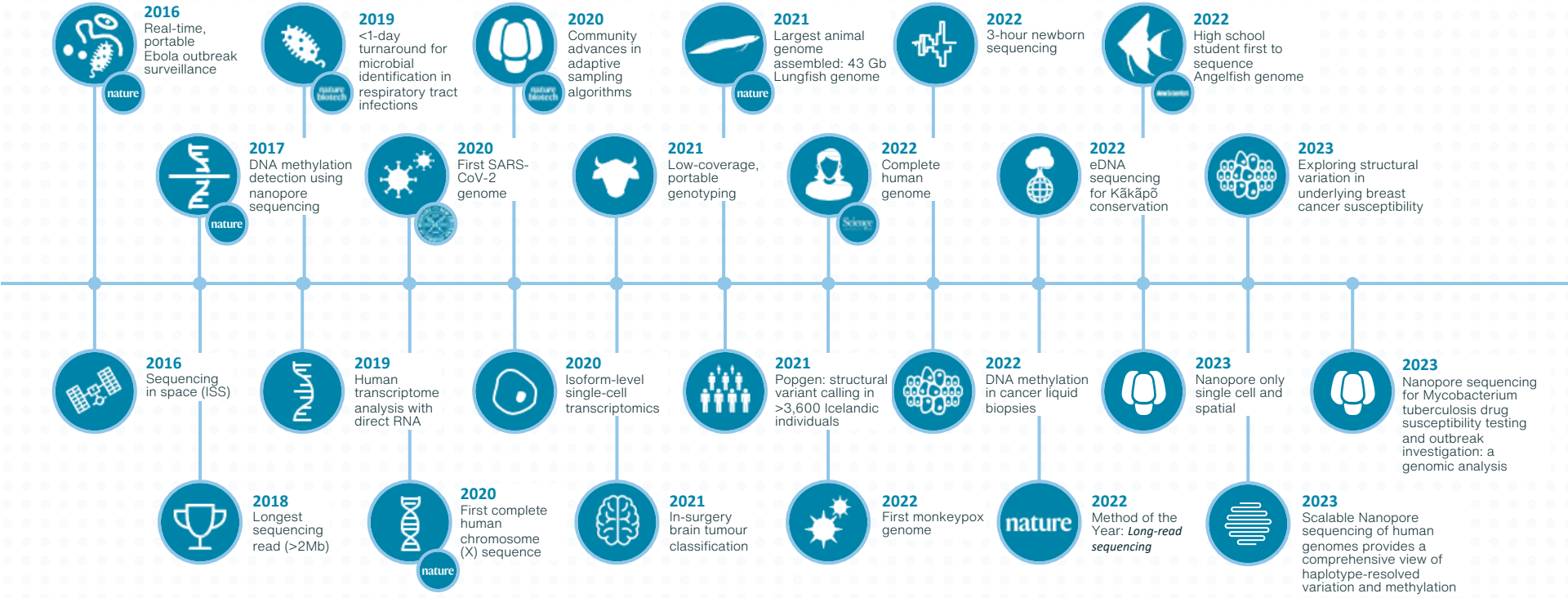
Key publications drive customer adoption



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Core focus areas to drive revenues

Priority research applications

Human

High Throughput WGS at Scale from High-N-to-PopGen

Cancer

Cancer Research & Immuno-Oncology Applications

Infectious

Viral, Microbial, Infectious & Synthetic Genomes

Technology Applications

- Single Cell
- Methylation
- Emerging

Industry Sectors

- BioPharma
- Clinical Labs
- AgBio

Commercial Channels

- Direct
- Distributors
- CSPs
- Core Labs

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Substantial and growing market opportunity: DNA/RNA sequencing

$6.2 billion[1] in 2022, expected CAGR 2022-25 ~15%[1]

Substantial opportunity to penetrate, reshape and expand

RESEARCH
Biomedical research
Non-human research

CLINICAL & APPLIED
Clinical research,
Clinical labs, Industrial

DIAGNOSTIC & APPLIED INDUSTRIAL
More regulated

Foundation for

$3.1bn in 2022[1]

Majority of customers today

$3.1bn in 2022[1]

Rapidly emerging: huge potential for growth

Life Science Research Tools LSRT

Clinical Diagnostics and Applied

Oxford Nanopore is uniquely positioned to unlock long term future potential clinical and applied market opportunities

>$150 billion in 2032

Clinical opportunities
Eg. Human genetics, cancer, infectious disease

Applied Industrial
Eg. Agriculture, food, bioprocessing, environment

[1]Source:DeciBio. Sequencing consumables and devices. Excludes services

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Substantial and growing market opportunity: DNA/RNA sequencing

Substantial opportunity to penetrate, reshape and expand

Oxford Nanopore is uniquely positioned to unlock long term future potential clinical and applied market opportunities

>$150 billion in 2032

Clinical opportunities
Eg. Human genetics, cancer, infectious disease

Applied Industrial
Eg. Agriculture, food, bioprocessing, environment

Oncology	Human genetics	Infectious disease
>$100 billion TAM	**$18 billion TAM**	**$8 billion TAM**

Vet and Agriculture	Biopharma QC	Food and environment
>$15 billion TAM	**>$4 billion TAM**	**>$11 billion TAM**

[1]Source:DeciBio. Sequencing consumables and devices. Excludes services

In the same way computing evolved...

Distributed, real time networks have enabled
a profound shift in information and insights

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... acquiring biological information is also shifting from mainframe to distributed

DNA sequencing technology can now be
real-time, accessible and high performance, in small formats

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We draw on a broad universe of potential partners and collaborators

- Oncology
- Human Genetics
- Infectious Disease
- Vet & Ag
- Biopharma QC
- Food & Env

Nanopore Research Community

Large Companies

Announced Partnerships in Clinical & Applied Industrial

- bioMérieux
- Mayo Clinic
- NHS Guy's and St Thomas' NHS Foundation Trust
- PathoQuest
- Asuragen bioTechne
- 4bases
- Clear Labs
- omixon
- GENDX
- Cyclomics
- DGENSEE
- Digena


BEST
HOSPITALS
U.S.News
A WORLD REPORT
RANKINGS


BIOMÉRIEUX

Key takeaways

01

Large market opportunity; early in penetration of $150bn market opportunity

02

Disruptive technology platform underpinned by robust innovation pipeline

03

Proven track record of value creation and outperformance

04

Experienced, global team and operational infrastructure built to scale

05

Financial targets reflect focus on sustaining high-growth while driving margins and returns

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Innovation fuels growth

Rosemary Sinclair Dokos

Rosemary Sinclair Dokos

- 10 years' experience at Oxford Nanopore in the senior leadership team, connecting innovation with operations and commercialisation.
- Previous experience in Product Management, Sales, Marketing, and Business Development for large global life science distribution leader serving all industry segments.
- Passion for combining science and technology with customers' needs, commercialisation strategies and shaping the company for its next phases of growth.
- Rosemary currently leads the Product Management, Marketing, Regulated Product Development, and Digital Microfluidics development groups

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Tenacious and tenured innovation team

Clive Brown
CTIPO

Rosemary Sinclair Dokos
SVP Product Management & Marketing

Lakmal Jayasinghe
SVP R&D Biologics

James Clarke
Head of Genome Foundry

Stuart Reid
VP Development

Dan Turner
SVP Applications

Ant Jones
VP Platform & Engineering

David Page
VP Machine Learning

Chris Seymour
VP Software & Advance Platforms

Graham Hall
VP Sequencing development

Roger Pettett
VP Informatics

David Stoddart
VP Sample Technology

Carolyn Tregidgo
VP Applied product development

Sissel Juul
VP Genomic Applications

Martyn Andrews
VP Intellectual Property

445 employees

Platform, Engineering, Pore, Enzyme, Chemistry, Software, Machine Learning/AI, Product Integration, Sample Technologies, Automation, Product Management

Work in close collaboration with:

- Academic partners driving novel breakthroughs in nanopore science
- Industry leaders in electronics, compute and novel algorithms
- Developer community as new products are launched
- Customers as we deploy their feedback into product roadmap

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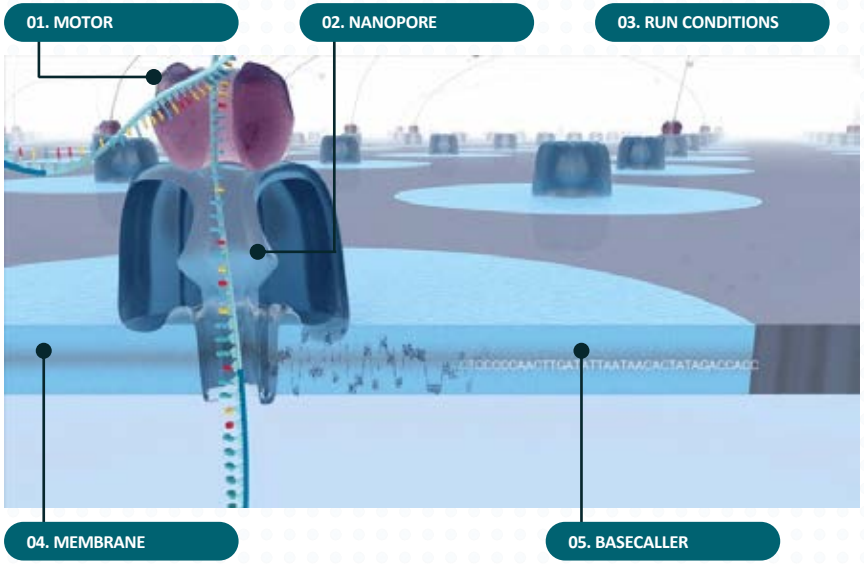
Creating our highly differentiated platform

Innovating on 6 key components

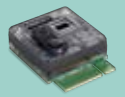
(Salt, fuel, software)



06. ASIC


Flongle
126 channels


MinION
512 channels


PromethION
2,675 channels

Building a strong licence & IP position

01 Active research collaborations

02 Active internal R&D

03 Collaboration with customers & industrial partners

- ONT-assigned & in-licensed published pending applications: **754**
- ONT-assigned & in-licensed granted patents currently in force: **2,079**
- ONT-assigned & in-licensed published pending apps & granted patents with initial filing date between 2016-2022: **1,081**
- ONT-assigned & in-licensed patents granted between 2016-2022: **1,655**

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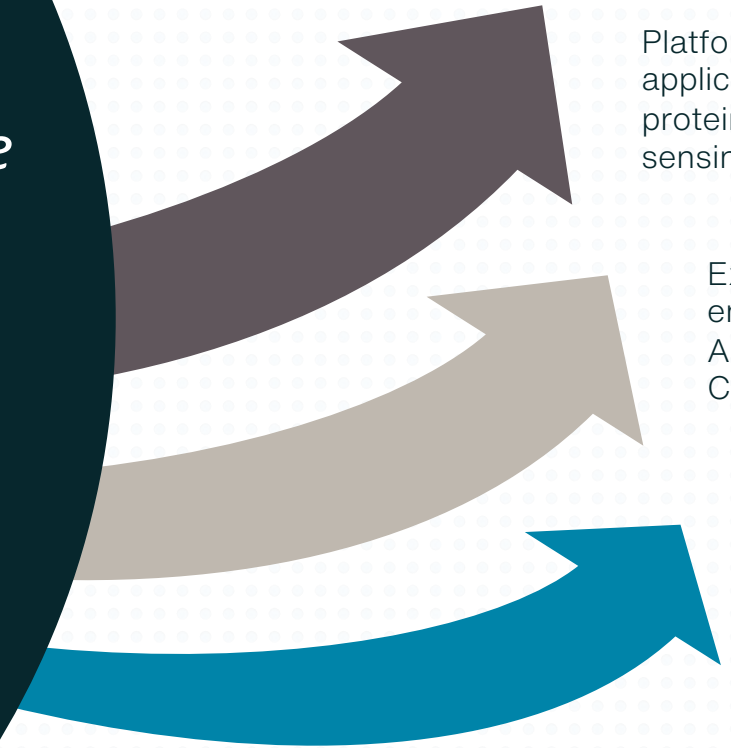
Innovation fuels growth

If you think adventure is dangerous, try routine; it is lethal”

Paulo Coelho



Platform deployed in new applications such as protein and small molecule sensing

Existing Technology entering new markets e.g. Applied, Clinical, Consumer

Existing Technology expanding and taking share in current market

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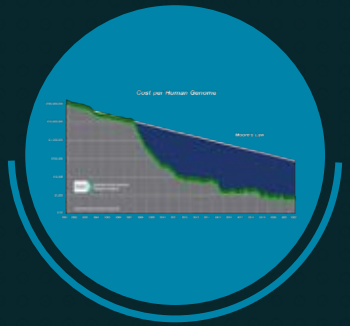
We’re at the cusp of the genomics revolution

1869 – 1975
DNA discovery to sequencing

From Friedrich Miescher, Crick, Watson, Franklin to Sanger Sequencing.

1990 – 2003
First *draft* human genome assembly

A multicounty and $ multibillion collaboration to sequence the first human genome.



2007 – 2017
Scaling genomics

The journey from $1billion to under $1,000 for a human genome.

2023
The era of true whole genomes begins

With nanopore scaling these complete genomes to between $345 - $690.

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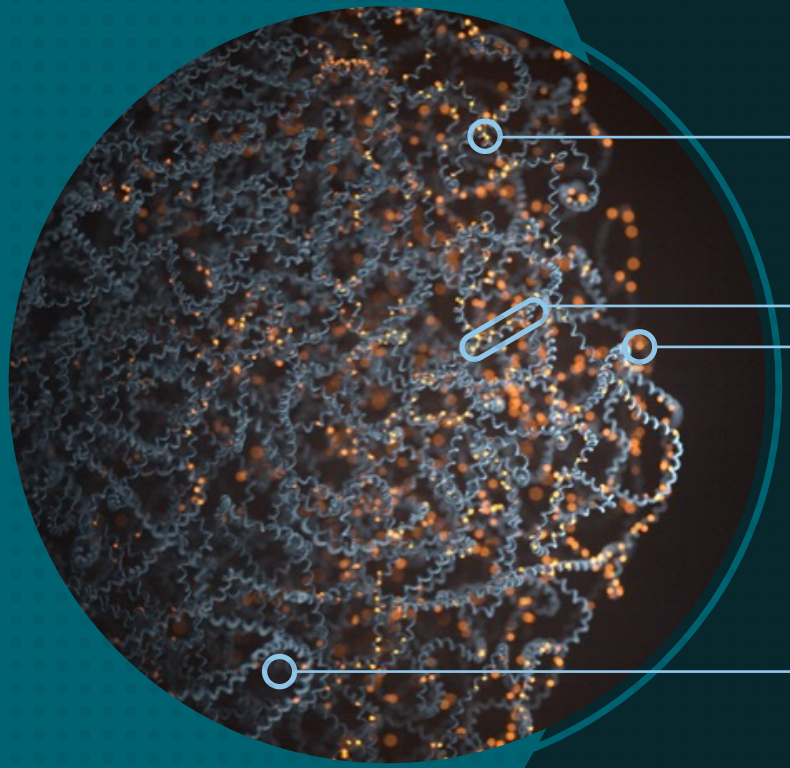
We can finally uncover all areas of the genome



Small variants

SNPs and INDELs well characterised by existing technology. E.g. Sickle cell disease and cystic fibrosis

Larger, more complex variants

Structural variants including Copy Number Variants, Repeats, Expansions only fully visible with the advent of long reads. E.g. alzheimer's, parkinsons

Epigenetics

Methylation, highly involved in complex disease e.g. cancer, is only partially visible through modified chemistries or algorithmic interpretations is now unlocked with native nanopore sensing

Dark genome

Medically important areas of the genome that have only recently been uncovered and only visible through native DNA or RNA sequencing

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And what we're missing matters

34% of all disease-causing variation is made up of variants that are larger than a single base-pair substitution"

Evan E. Eichler, July 2019,
N Engl J Med 2019;381:64-74.,
DOI: 10.1056/NEJMra1809315

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Today's paradigm: Sequencing has a high barrier to entry

- Devices alone can cost up to $1M*
- Costly annual services contracts covering support and necessary routine device servicing
- Large consumable commitments to achieve competitive prices per genome
- High-end lab and advanced expertise to run devices

*Novaseq: $985K | NovaSeq x: $1.25M

High throughput sequencing centres operating large programmes to deliver low-cost genomes at scale

Medium size users operate sequencing routinely by batching samples to achieve cost efficiencies

Other biologists send their samples to cores or service provider and wait for their results

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How does Oxford Nanopore deploy Disruptive Innovation?

Enabling Technology

An invention or innovation that makes a product more affordable and accessible to a wider population.

Innovative Business Model

A business model that targets non consumers (new customers who previously did not buy products or services in a given market).

Coherent Value Network

A network in which suppliers, partners, distributors, and customers are each better off when the disruptive technology prospers.

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Structure of the session

01

Driving growth in existing markets:

Our platform

02

Driving growth in existing markets:

Our performance

03

Driving growth in existing markets:

Our products

04

Driving growth in new markets:

Roadmap to applied

05

Driving growth in new areas:

Beyond DNA/RNA Sequencing

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Why are customers choosing Oxford Nanopore today?

Our platform

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Key features and benefits

Features of nanopore sequencing

- Sequence any length fragment from short to ultra-long
- Direct /native DNA/RNA sequencing
- Real-time data generation
- Scalable formats from small hand-held to ultra-high output devices
- Cost effective. No capital requirements
- Plug-and-play easy to use solutions

Benefits

- Richer insights: Highly accurate genomic data captures more types of genetic variation
- **Faster results** from near-sample, real time workflows that don't require batching
- **Accessible and affordable**, with scalability that enables more use cases

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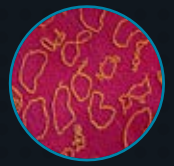
Richer insights: Sequence any fragment length

DNA

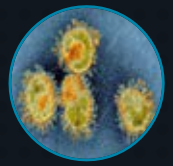
From cell free to ultra-long DNA

Cell free DNA

Amplicon material



Plasmid / BAC / AAV



Viral genomes

Bacterial genomes

Genes & Chromosomes

Animal genomes

Plant genomes

Biology comes in all shapes and sizes.

Our platform can sequence any fragment length, from 20 bases to over 4 million bases.

This was enabled by a software setting users select at the start of a run

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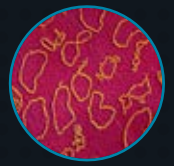
Richer insights: Sequence any fragment length

DNA

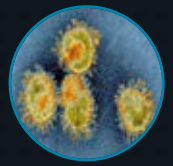
From cell free to ultra-long DNA

Cell free DNA

Amplicon material



Plasmid / BAC / AAV



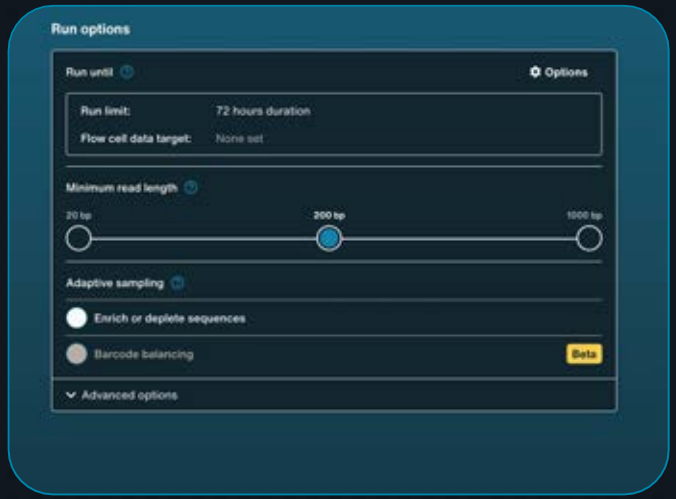
Viral genomes

Bacterial genomes

Genes & Chromosomes

Animal genomes

Plant genomes



Oxford NANOPORE Technologies

Richer insights: Sequence the native DNA

DNA

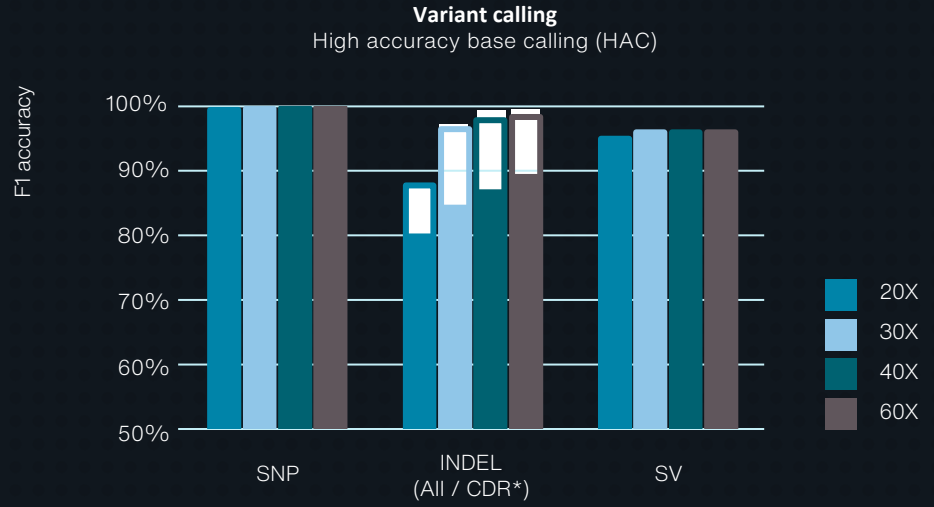
Simplex

More Biology from every read

- SNVs and INDELs
- **Structural Variation**
  - Copy Number Variants
  - Repeat Expansions
  - Large Insertions and deletions
  - Inversions
  - Duplications
- **Full Methylation & modifications** (5mC, 5hmC, 6mA, 4mC*, all context)
- Phasing
- Assembly

* Coming soon

With high performance variant detection



'Using a single PromethION Flow Cell, we can detect SNPs with F1-score better than…short-read sequencing'

Kolmogorov et al., 2023

Oxford NANOPORE Technologies

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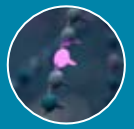
- Assembly

* Coming soon

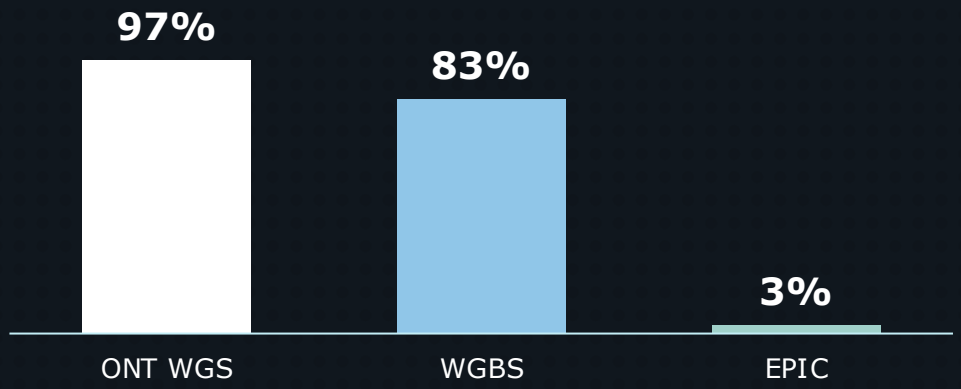
Highly accurate and comprehensive technique for base modifications


5mC
>99.5%


5hmC
>96%


Other modifications available

% High confidence CpGs



Oxford NANOPORE Technologies

Richer insights: Sequence the native DNA

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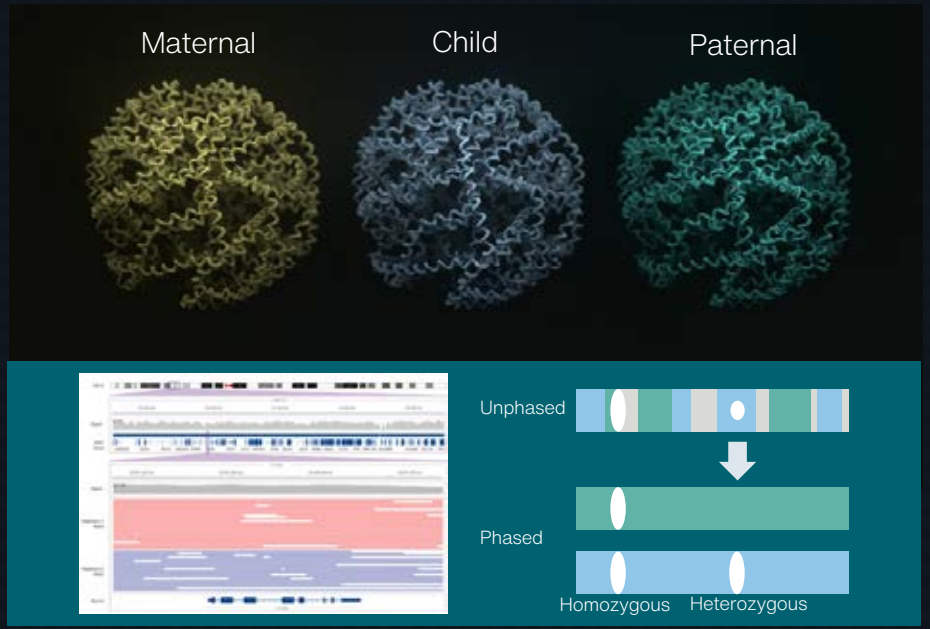
- **Full Methylation & modifications**
  (5mC, 5hmC, 6mA, 4mC*, all context)
- Phasing
- Assembly

* Coming soon

Phasing variants to better understand gene origin and function.



Oxford NANOPORE Technologies

Richer insights: Sequence the native DNA

DNA

Duplex

More Biology from every read

- SNVs and INDELs
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  - Duplications
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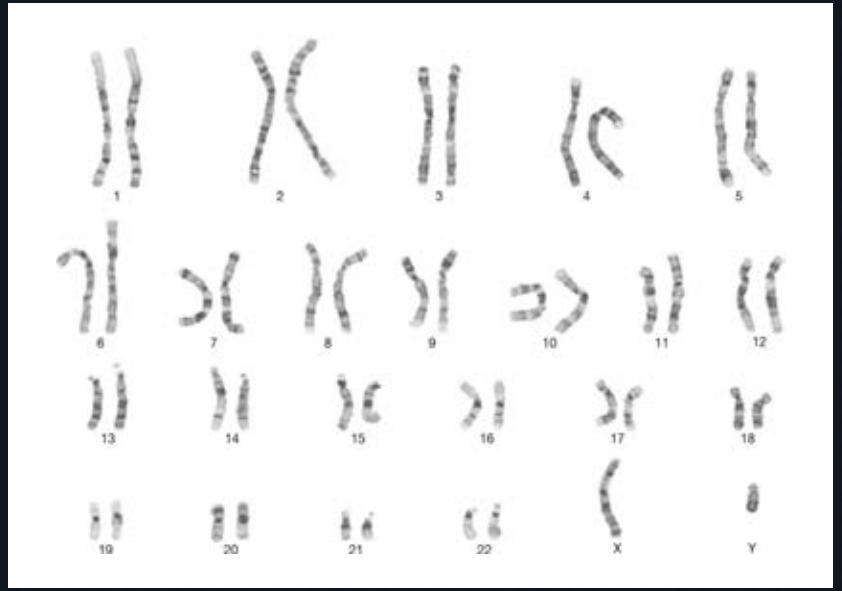
  (5mC, 5hmC, 6mA, 4mC*, all context)
- Phasing
- Assembly

* Coming soon

What is a “T2T” Assembly? Chromosomes under a microscope:



Oxford NANOPORE Technologies

Richer insights: Sequence the native DNA

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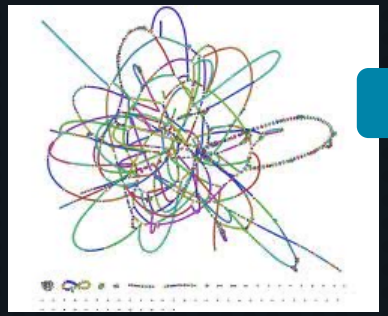
- **Full Methylation & modifications**
  (5mC, 5hmC, 6mA, 4mC*, all context)
- Phasing
- Assembly

* Coming soon

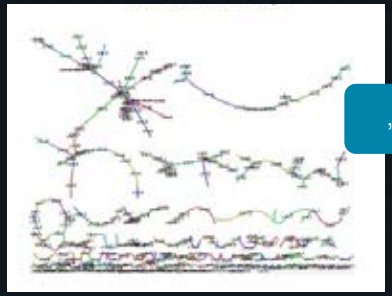
What technology has been able to deliver

DNA

Duplex



Short reads



Medium length,
”high accuracy “reads

Oxford NANOPORE Technologies

Richer insights: Sequence the native DNA

DNA

Duplex

More Biology from every read

SNVs and INDELs

Structural Variation

- Copy Number Variants
- Repeat Expansions
- Large Insertions and deletions
- Inversions
- Duplications

Full Methylation & modifications

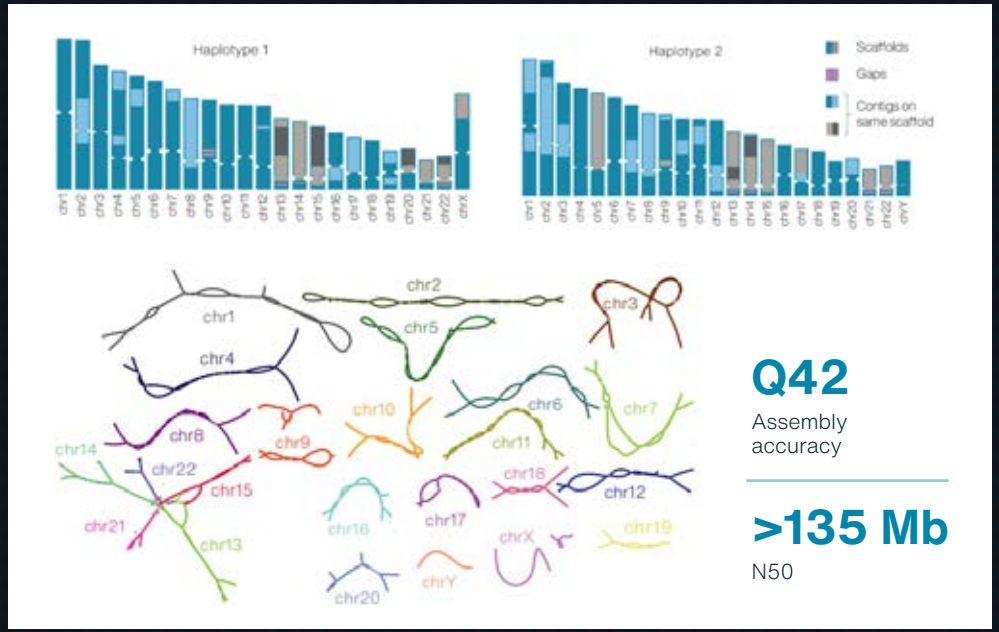
(5mC, 5hmC, 6mA, 4mC*, all context)

Phasing

Assembly

* Coming soon

The T2T era: Fully phased, Chromosome level assemblies on nanopore only



Q42

Assembly accuracy

>135 Mb

N50

Oxford NANOPORE Technologies

Key features and benefits

Features of nanopore sequencing

- Sequence any length fragment from short to ultra-long
- Direct /native DNA/RNA sequencing
- Real-time data generation
- Scalable formats from small hand-held to ultra-high output devices
- Cost effective. No capital requirements
- Plug-and-play easy to use solutions

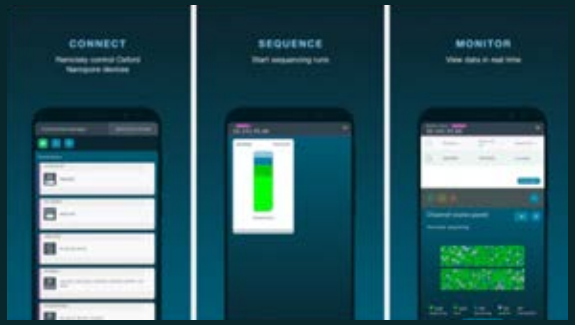
Benefits

- Richer insights: Highly accurate genomic data captures more types of genetic variation
- **Faster results** from near-sample, real time workflows that don't require batching
- **Accessible and affordable**, with scalability that enables more use cases

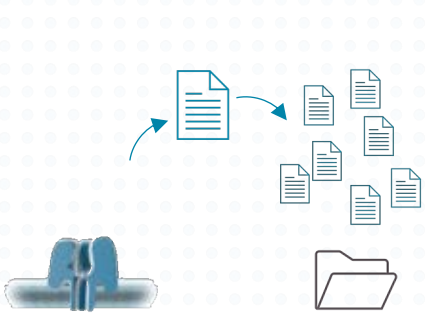
Oxford NANOPORE Technologies

Real-time data generation: Faster Results

Track your run live



Analyse reads as they're generated



EPI2ME

DNA/RNA is sequenced by a nanopore

Each strand is written to a file and placed in a folder

User selects analysis pipeline desired

Data is analysed in real time

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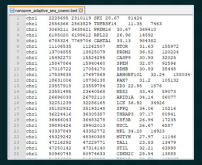
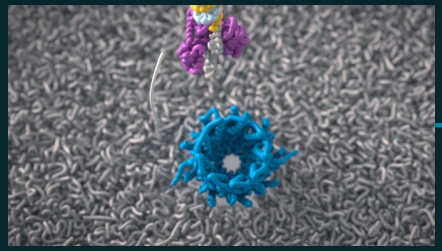
Real-time data generation: Enabling Adaptive Sampling



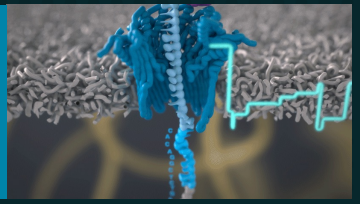
Upload reference file to MinKNOW™



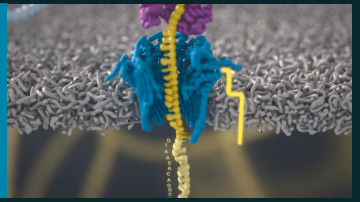
Strand approaches nanopore and sequencing starts

Real-time basecalling and alignment

Not region of interest? Strand rejected



Region of interest? Strand allowed to continue sequencing



- Sample prep free enrichment
- Simply upload a target region reference into MinKNOW and start sequencing
- Retain SV and methylation
- Apply multiplexing to reduce price per sample yet retain high value information

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Scalable formats

From small hand-held

To high and ultra-high output devices

Distributed Sequencers

Benchtop Sequencers

High Throughput Sequencers

Oxford NANOPORE Technologies

Cost effective. No capital requirements

Flongle

Price per Gb **$67.5 - $22.5**

Output per flow cell (Gb) **1** **2** **3[1]**

MinION

Price per Gb **$45 - $10**

Output per flow cell (Gb) **20** **30** **50[1]**

PromethION

Price per Gb **$9 - $2**

Output per flow cell (Gb) **100** **200** **300[1]**

Personal Sequencers

MinION	P2 solo
Access from $1,000	Access from $10,455
~ $45 - 10 Gb[2]	~ $9 - 2/ Gb[3]
Typical output: 20 - 30 Gb	Typical output: 200–400Gb
Human genomes / year: N/A	Human genomes / year: ~ 208[4]

Scale-up Sequencers

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Human genomes / year: N/A	Human genomes / year: ~ 208[4]

High Throughput Sequencers

P24	P48
Access from $225,000	Access from $310,000
~ $9 - 2/ Gb[3]	~ $9 - 2/ Gb[3]
Typical output: 2.4 – 4.8 Tb	Typical output: 4.8 – 9.6 Tb
Human genomes / year: ~2,496 – 4,992[4]	Human genomes / year: ~4,992 – 9,994[4]

1: Chemistry in development
2: MinION $900 list price at 20 Gb to $500 bulk price delivering 50 Gb
3: PromethION $900 list price at 100 Gb to $600 bulk price delivering 300 Gb
4: 2 runs per week, 52 weeks per year

NANOPORE Technologies

Cost effective. No capital requirements

Computing on laptop or onboard

Highly accelerated ML/AI algorithms with latest software release

MinION: Apple M1 max or M2 max
Real-time Q20 basecalling of 1 MinION flow cell

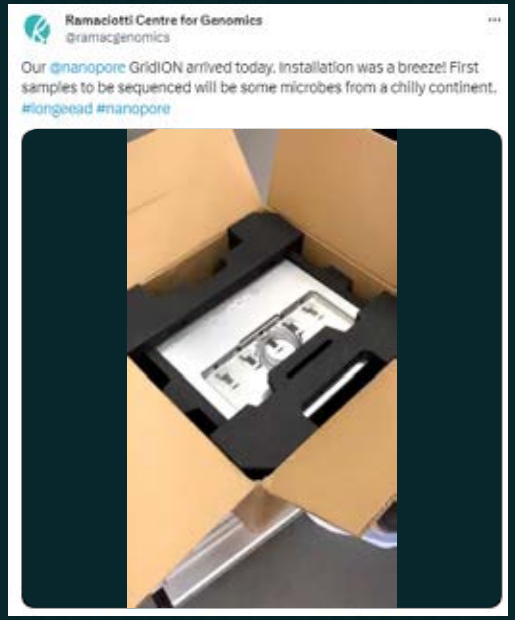
GridION: GV100
Real-time Q20 basecalling of 5 MinION flow cells

PromethION : A Series
Real-time Q20 basecalling of 36 PromethION flow cells...
and more coming soon

Oxford NANOPORE Technologies

Plug and play, easy to use solutions

Easy, quick device set up



Assisted online or in person training

Next-gen on board troubleshooting in development

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Key features and benefits

Features of nanopore sequencing

- Sequence any length fragment from short to ultra-long
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Richer insights: Highly accurate genomic data captures more types of genetic variation

Faster results from near-sample, real time workflows that don't require batching

Accessible and affordable, with scalability that enables more use cases

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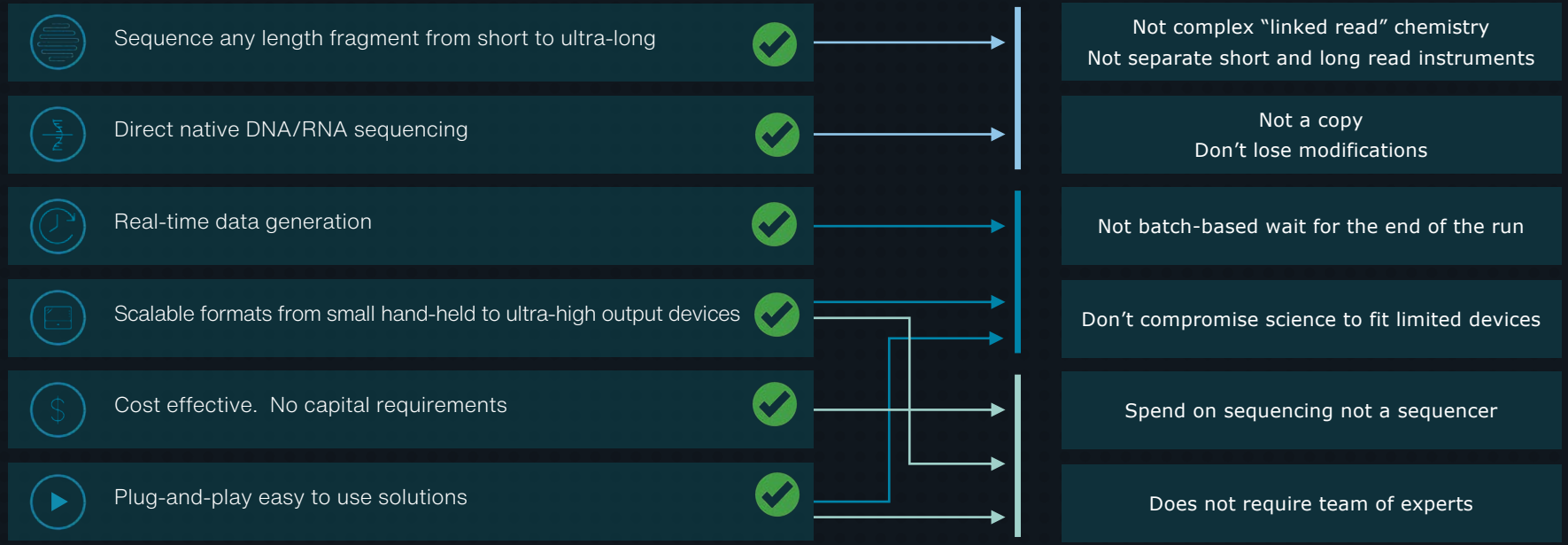
Key features and benefits

Features of nanopore sequencing vs other technologies



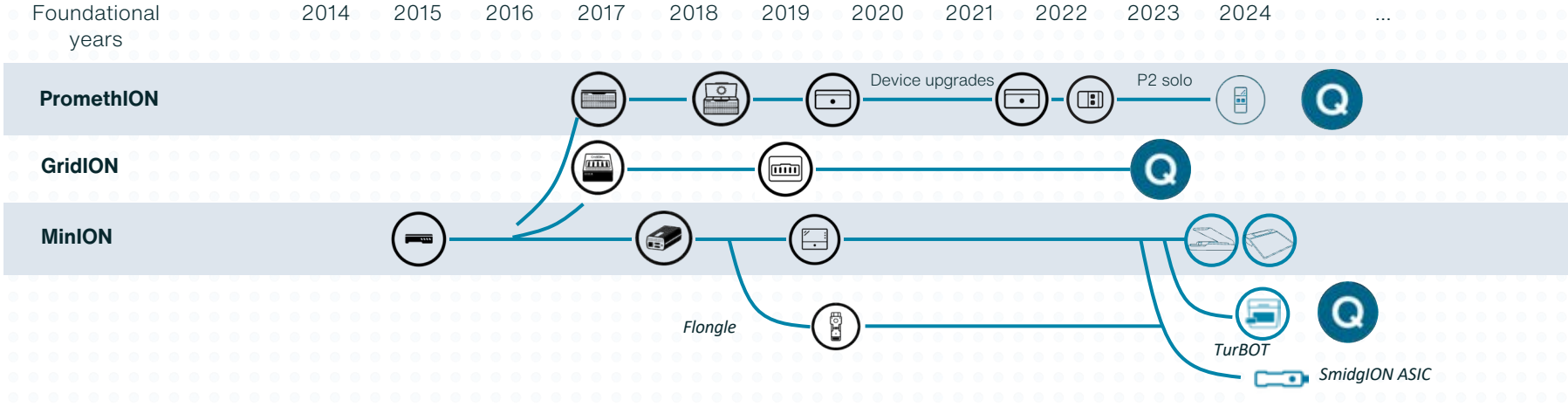
Oxford NANOPORE Technologies

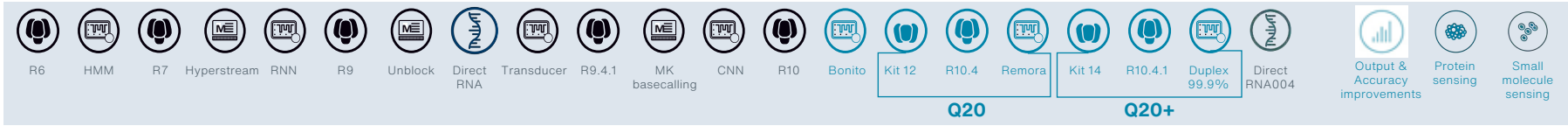
Why are customers choosing Oxford Nanopore today?

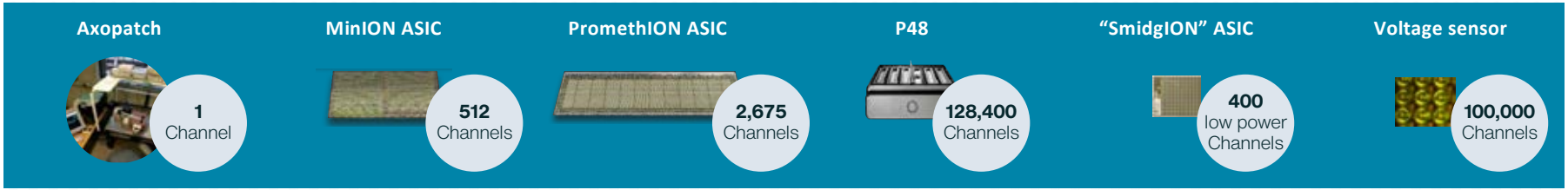
Our performance

Oxford NANOPORE Technologies

Track record of delivering new and improved products

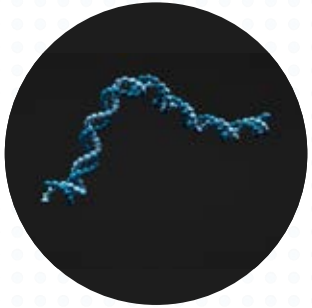




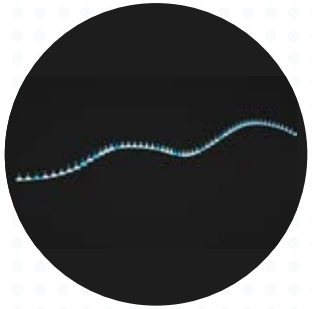


Oxford NANOPORE Technologies

Track record of driving *accuracy* enhancements



DUPLEX 99.9%+



SIMPLEX: 99%+

Oxford NANOPORE Technologies

Track record of driving *accuracy* enhancements

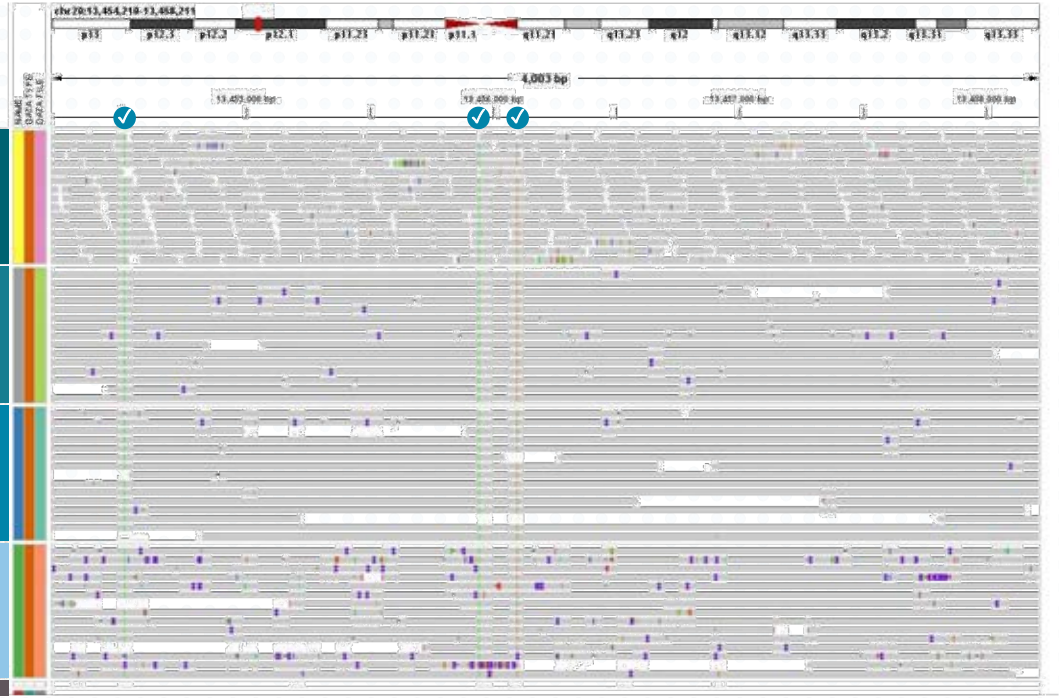
Creating a highly competitive platform

SBS

Other long reads

Duplex
R10, Kit14

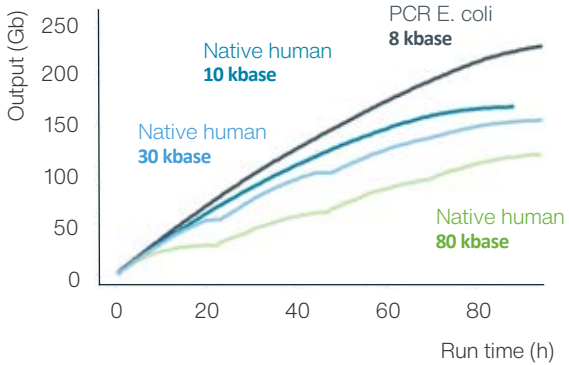
Simplex
R10, Kit14



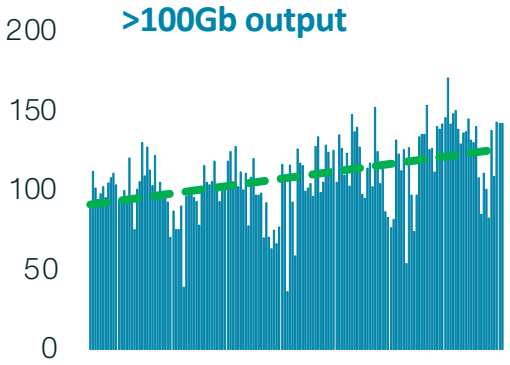
Oxford NANOPORE Technologies

Track record of driving *output* enhancements: Simplex

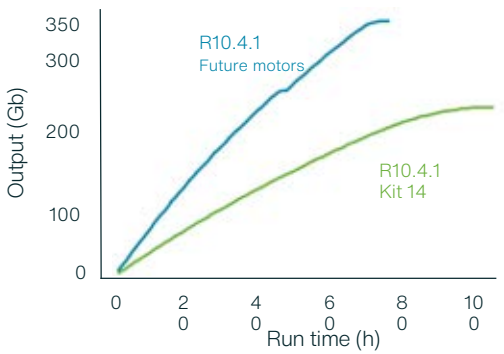
Performance in house today



Performance in field today



Performance in the pipeline



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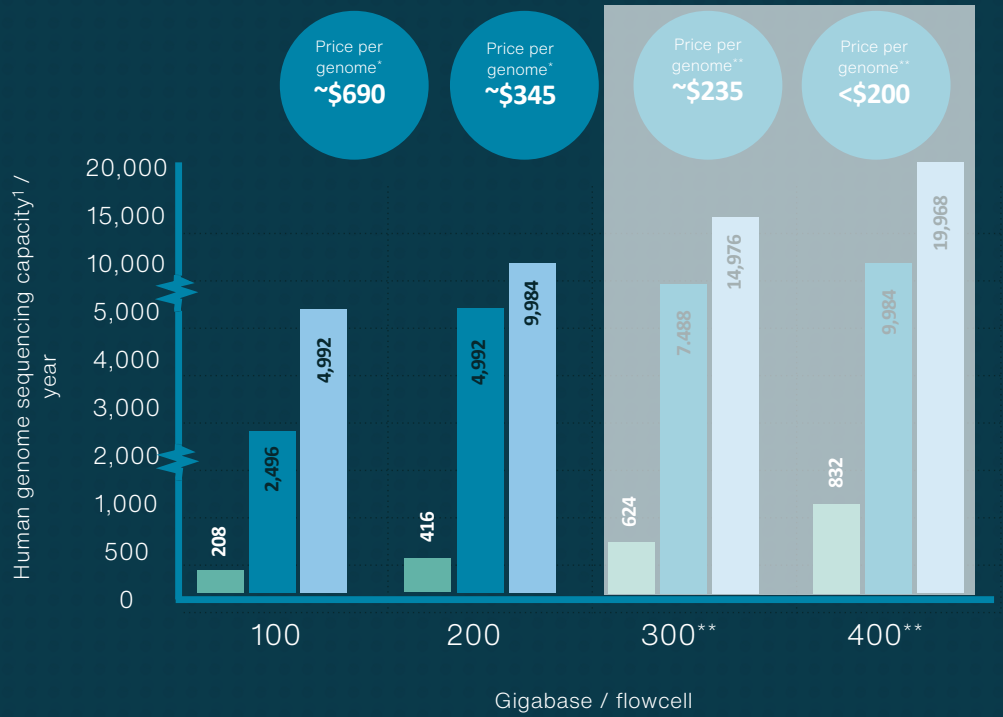
Driving down cost per genome with every step change

PromethION

P2

P24

P48



*Assumes 30x WHG
**Future chemistries (assume 30x WHG)
Enzyme speed and blocking are two key drivers of output, both highly active R&D programmes

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The approach to human genomes

Value at every depth of coverage

Ultra-Long + Duplex Telomere-to-Telomere assembly

~Ultra-long+ Duplex flow cells

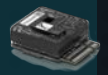
60X **Assembly**

Simplex: ~2 flow cells per genome

30-40X **Standard WGS**

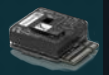
Simplex: ~1 genomes / flow cell

15-20X Low pass WGS



Simplex: ~2 genomes / flow cell

1 - 10X Genotyping



Simplex: ~4 genomes / flow cell

1. DNA Extraction | ~ 1.5 hours |
2. Size selection | ~ 2 hours | Optional for nanopore
3. Library preparation | ~ 1 hour | nanopore is fastest
4. Load flow cell | ~ 4 mins each | ~ 1 hour for full P24
6. Sequence | ~ 72 hours full run | Data streams for analysis
7. Basecall | In real time
8. Store processed files | Industry standard sizes
   Store raw data for later re-analysis | Optional

Human WGS protocol with Kit 14 on nanopore community here

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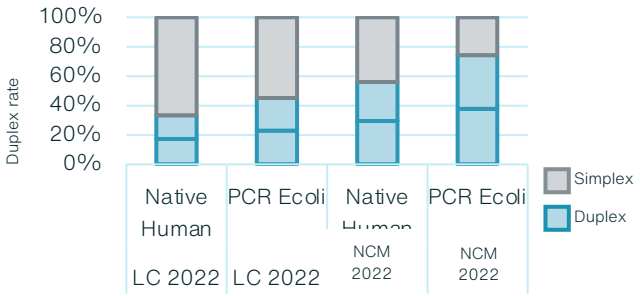
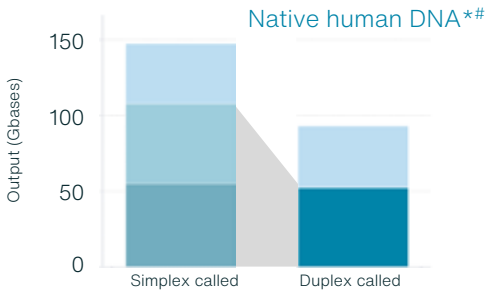
Track record of driving performance enhancements: Duplex Output

Increasing Duplex Efficiency



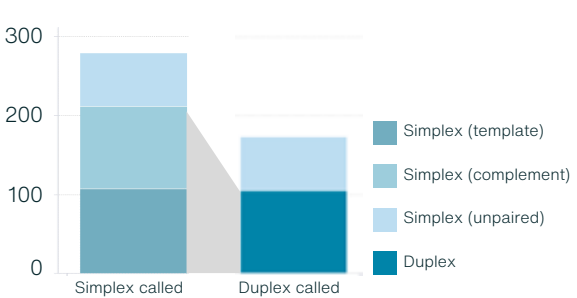
Performance in house today

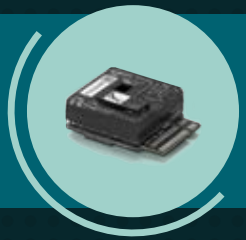
>50Gb Duplex output
+40 Gb Simplex output



Performance in the pipeline

>100Gb Duplex output
+50 Gb Simplex output





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Why are customers choosing Oxford Nanopore today?

Our Products

LSRT core commercial values

- Accessible technology & low capital
- Pricing is transparent
- Upgrades included
- Community feedback into product development

Oxford NANOPORE Technologies

Delivering a complete product portfolio

Sample preparation kits

Sequencing devices & consumables

Analysis software

Oxford NANOPORE Technologies

Sample preparation kits

Broad range enabling a broad application space

Ligation kits dedicated to best performance.
Prep time ~ 60 mins | Input ~ 1ug

Rapid kits dedicated to speed and ease of use.
Prep time ~ 10 mins | Input ~ 100ng

PCR range dedicated to low input samples
Prep time ~ 15 mins + PCR | Input ~ 1-5ng

cDNA range dedicated to “classic RNASeq” methods
Prep time ~ 3.5 Hrs + PCR | Input ~ 200ng total RNA

Direct RNA range dedicated to novel RNA methods
Prep time ~ 1.5 Hrs | Input ~ 50 ng poly(A)+ RNA

Oxford NANOPORE Technologies

Automation ready

96 samples

From 3.5 hrs
Automated 96 library preparation inc. QC & normalization with just a few minutes of hands-on time

~90 min
96 flow cells loading inc. priming

192
Genomes/week generated in real-time

From 1
Liquid handler

4
PromethION™ 24

Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
96 libraries			96 libraries			
	Sequencing on 4 PromethION 24			Sequencing on 4 PromethION 24		
	Simplex Q20+ data with methylation			Simplex Q20+ data with methylation		

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Devices available through starter pack models

Personal Sequencers

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Typical output: 20 - 30 Gb	Typical output: 200–400Gb
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High Throughput Sequencers

P24	P48
Access from $225,000	Access from $310,000
~ $9 - 2/ Gb[2]	~ $9 - 2/ Gb[2]
Typical output: 2.4 – 4.8 Tb	Typical output: 4.8 – 9.6 Tb
Human genomes / year: ~2,496 – 4,992[3]	Human genomes / year: ~ 4,992 – 9,994[3]

1: MinION $900 list price at 20 Gb to $500 bulk price delivering 50 Gb
2: PromethION $900 list price at 100 Gb to $600 bulk price delivering 300 Gb
3: 2 runs per week, 52 weeks per year

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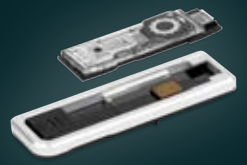
Flow cells

	Price per flow cell	Pack Size	Pack price
Flongle	$67.5	12	$810
MinION	$900	1	$900
	$790	12	$9,480
	$500	48	$24,000
PromethION 48	$900	4	$3,600 NEW
	$820	32	26,240 NEW
	$785	96	$75,360 NEW
	$745	192	$143,040
	$680	512	$348,160
	$630	1,024	$645,120
	$600	2,880	$1,728,000

Priced to enable science at any scale



Run small experiments for under $100 with Flongle

Power through small genomes or targeted applications with MinION

Human genomes for under $1,000 on a P2 Solo

Higher output chemistries in development
** $785 plus $99.83 for library preparation is $884.93

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Secondary data analysis

EPI2ME

"Open-source" analysis pipelines become packaged for ease of use

	GitHub	EPI2ME solutions
Location	User defined (laptop, cluster or cloud)	**Local, distributed or in the cloud**
Timing	Post-run	**Post-run** or real time
Configurability	User defined	**Pre-configured**
Reporting	User built	**Detailed output**, shareable reports
Operating systems	User defined	Windows, Mac, Linux
Expertise needed	●●●	●○○

Intuitive interface
Pre-configured workflows

Sharable reports
Standard output files

Run locally or in the cloud
Post-run or real-time

Command-line access
Easy integration

Oxford NANOPORE Technologies

What's next for our approach to product offering?

Sample to answer

Oxford NANOPORE Technologies

Delivering a complete product portfolio

Sample preparation kits

Sequencing devices & consumables

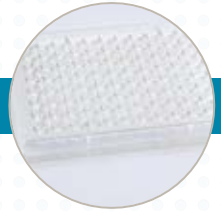
Analysis software

NEW

Sample to answer

Expand

Assay Bundles



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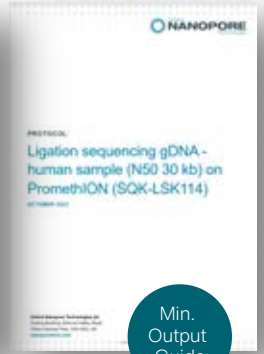
Sample to answer

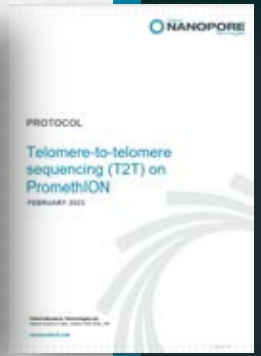
End-to-end workflows

Combining sample with informatics to deliver complete workflows

Protocol Library
over 86 step-by-step protocols

Analysis pipelines
over 15 data analysis pipelines supported and growing





Oxford NANOPORE Technologies

Sample to answer

TurBOT

Benchtop device capable of sample extraction, library prep, sequencing, and data analysis

Register your interest
register.nanoporetech.com/TurBOT

Fully hands off nanopore sequencing

Extract, prepare, sequence, analyse all-in-one benchtop device

Flexibility to meet your needs

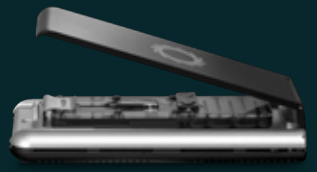
MinION™ or PromethION™ 2 Solo on board

Scalable and intuitive

Multiplex up to 48 samples with pre-programmed, sample-to-answer workflows

Simple data analysis

Onboard compute and EPI2ME™ analysis workflows



Oxford NANOPORE Technologies

Sample to answer

TraxION

Hand-held device capable of sample extraction, library prep, sequencing, and data analysis

Register your interest
register.nanoporetech.com/TurBOT

Fully hands off nanopore sequencing

Extract, prepare, sequence, analyse all-in-one small device

Integrated with “SmidgION” ASIC

For low power, rapid sequencing insights

Affordable and accessible

Bring AMR detection and other complex applications to where it’s most needed

Plug-and-play

Plug in and drive with a compute that includes EPI2ME™ analysis workflows

Photo credits:
SACIDS Foundation for One Health

Oxford NANOPORE Technologies

Assay bundles

Model well tested with Midnight sequencing during pandemic

Sold as price per “tests” in store

- Kit 1 with primers and polymerase
- Kit 2 with library preparation reagents
- Correct number of flow cells for supplied reactions
- Onboard COVID analysis pipeline

Towards 3rd party integrations

EPI2ME

Going from variant detection to interpretation

NOW

Sequence

NOW

Variant detection

NEW

Interpretation

FUTURE

EHR Integrations

Third party integrations are being constructed ready for imminent beta testing programme

Will initiate Oxford Nanopores Analysis software subscription for applied markets (research continues to be served as part of product bundles)

Subscription models being trialed initially

Oxford NANOPORE Technologies

Preparing our products to enter new markets

The benefits of Oxford Nanopore are clear

Richer insights

Highly accurate genomic data captures all types of genetic variation [for truly whole genomes]

Faster results from near-sample, real time workflows that don't require batching

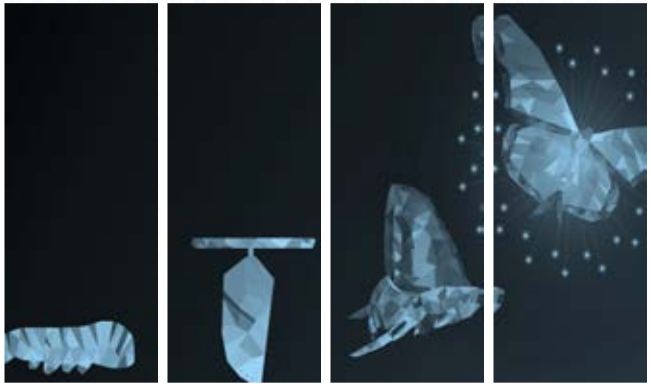
Accessible and affordable, with scalability that enables more use cases

Oxford NANOPORE Technologies

We continue to innovate in LSRT, and lock down in applied

From rapid innovation to rapid, applied insights

Life Science Research Products



1 Developer

2 Early Access

3 Released

4 Fully Released

Q-Line

- Q Feature frozen product
- Q Software & consumable version support for at least 12 - 18 months
- Q Clearly defined, visible product update pathway and implementation support
- Q ISO9001 with clear pathway to increase to 13485 by no later than 2026
- Q PromethION Q currently in development

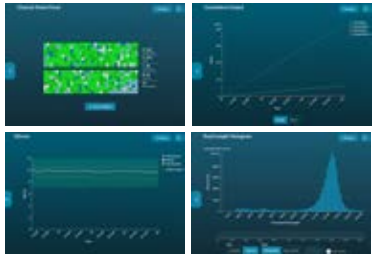
Applied market and partner products

- A Locked for specific application
- A Software & consumable version support for 24 months +
- A Heavily developed with partner assays in mind
- A CE-IVD ready

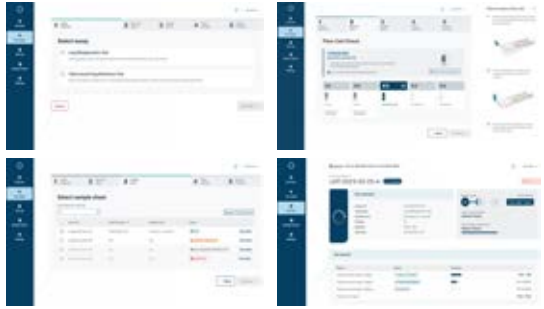
Oxford NANOPORE Technologies

Our building blocks are in place

MinKNOW “expert” mode



MinKNOW “workflow” mode



EPI2ME

Broad range of sample prep chemistries

Scalable sequencers

Software:
Preparing to go from “expert” to “workflow” mode

Fully integrated analysis

Sample to answer products

Partnering in active development to accelerate high impact applications

Oxford NANOPORE Technologies

Expanding the application of our platform for future revenue

Beyond DNA and RNA Sequencing

Oxford NANOPORE Technologies

...We continue to innovate

In development

MinION Mk 1D + iPAD

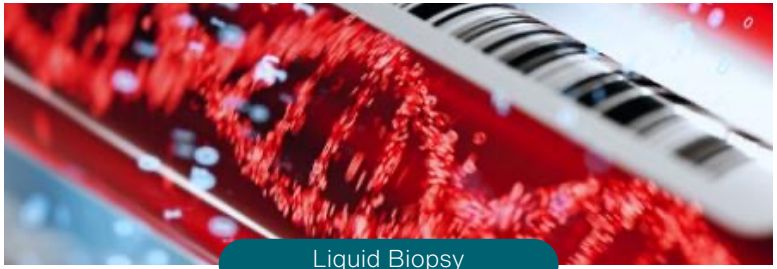
Project TurBOT

TraxION

New ASIC devices

Voltage sensing

Protein sequencing



Liquid Biopsy

Oxford NANOPORE Technologies

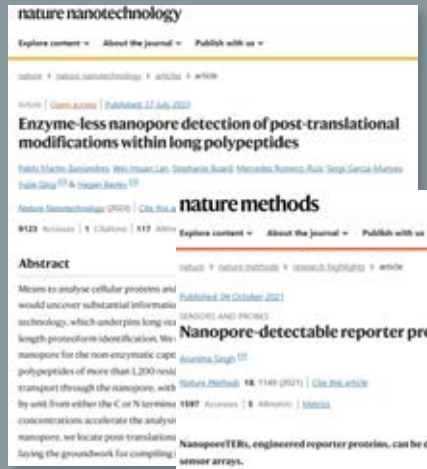
Clear demonstration that our platform has a lot more to give

National Library of Medicine

Detection of Single Peptide with Only One Amino Acid Modification via Electronic Fingerprinting Using Reengineered Durable Channel of Phi29 DNA Packaging Motor

Associated Data

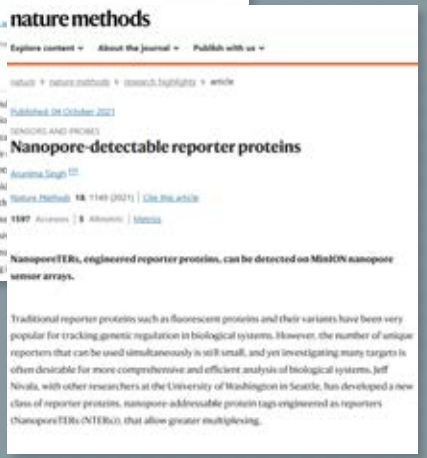
Abstract



nature nanotechnology

Enzyme-less nanopore detection of post-translational modifications within long polypeptides

Abstract

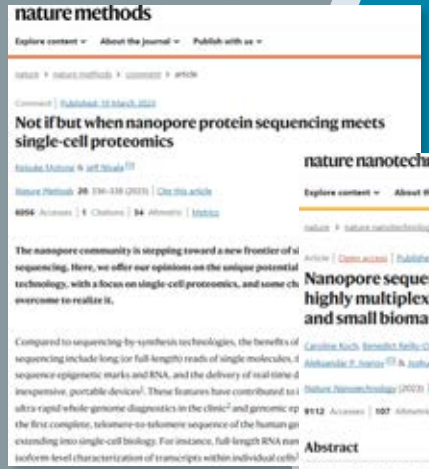


nature methods

Nanopore-detectable reporter proteins

NanoporeTERs, engineered reporter proteins, can be detected on MinION nanopore sensor arrays.

Traditional reporter proteins such as fluorescent proteins and their variants have been very popular for tracking genetic regulation in biological systems. However, the number of unique reporters that can be used simultaneously is still small, and yet investigating many targets is often desirable for more comprehensive and efficient analysis of biological systems. Jeff Nivala, with other researchers at the University of Washington in Seattle, has developed a new class of reporter proteins, nanopore-addressable protein tags engineered as reporters (NanoporeTERs (NTERs)), that allow greater multiplexing.



nature methods

Not if but when nanopore protein sequencing meets single-cell proteomics

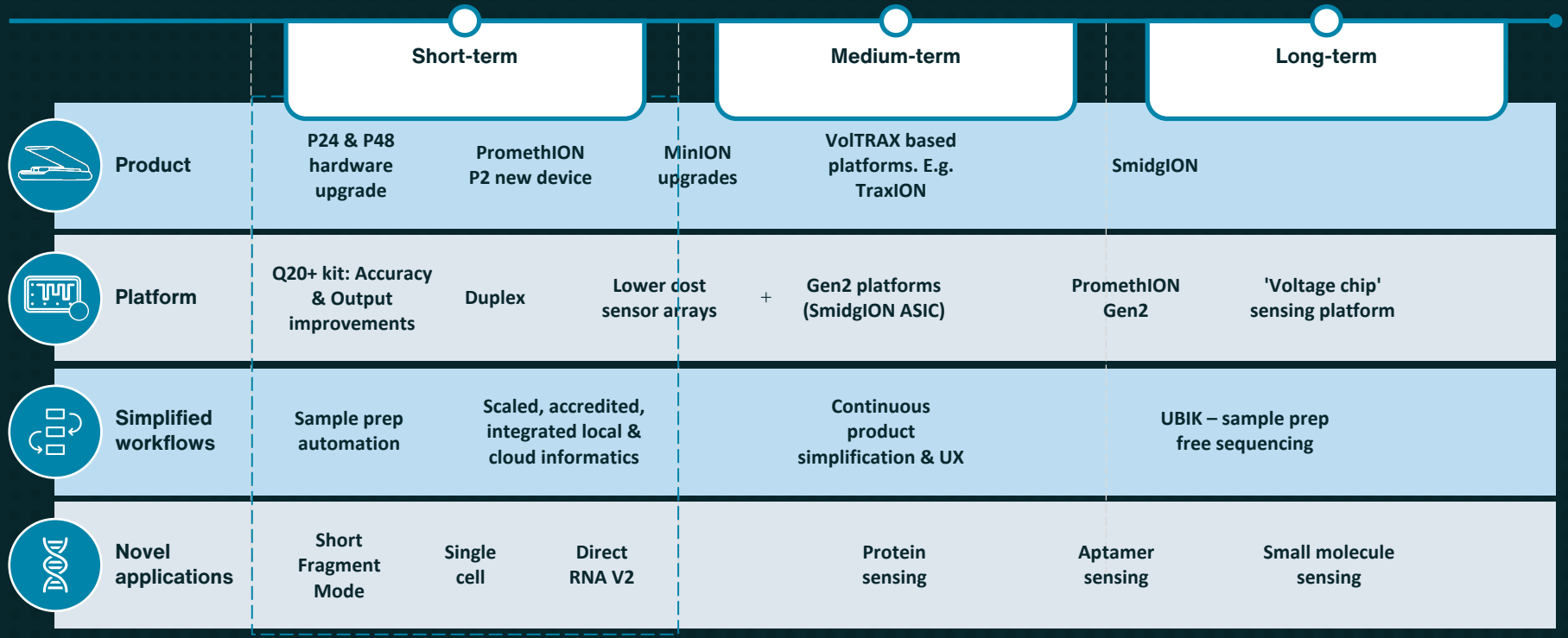
nature nanotechnology

Nanopore sequencing of DNA-barcoded probes for highly multiplexed detection of microRNA, proteins and small biomarkers

Abstract

Innovation does not stop

...path to anything, anyone, anywhere



This chart pipeline targets and is subject to change

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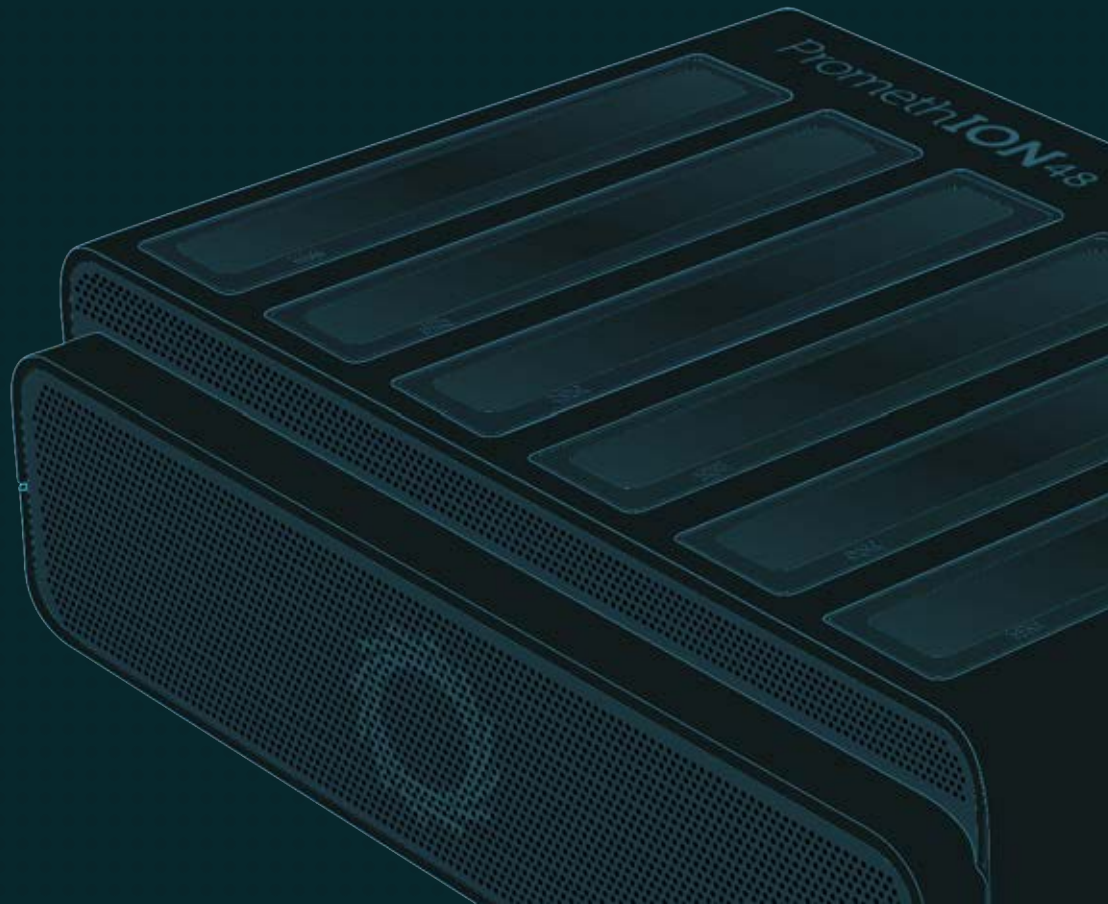
Commercial Strategy and Operations

Richard Compton



Richard Compton

Senior Vice President of Sales
& Commercial Operations

Sales and Commercial leader with a track record of scaling up in genomics

- BSc. in Biochemistry from the University of Birmingham
- BIOVIA Dassault Systèmes - VP & GM EMEA (2000 to 2012)
- Illumina – VP & GM EMEA (2012 to 2016)
- Oxford Nanopore – (2016 – Present)

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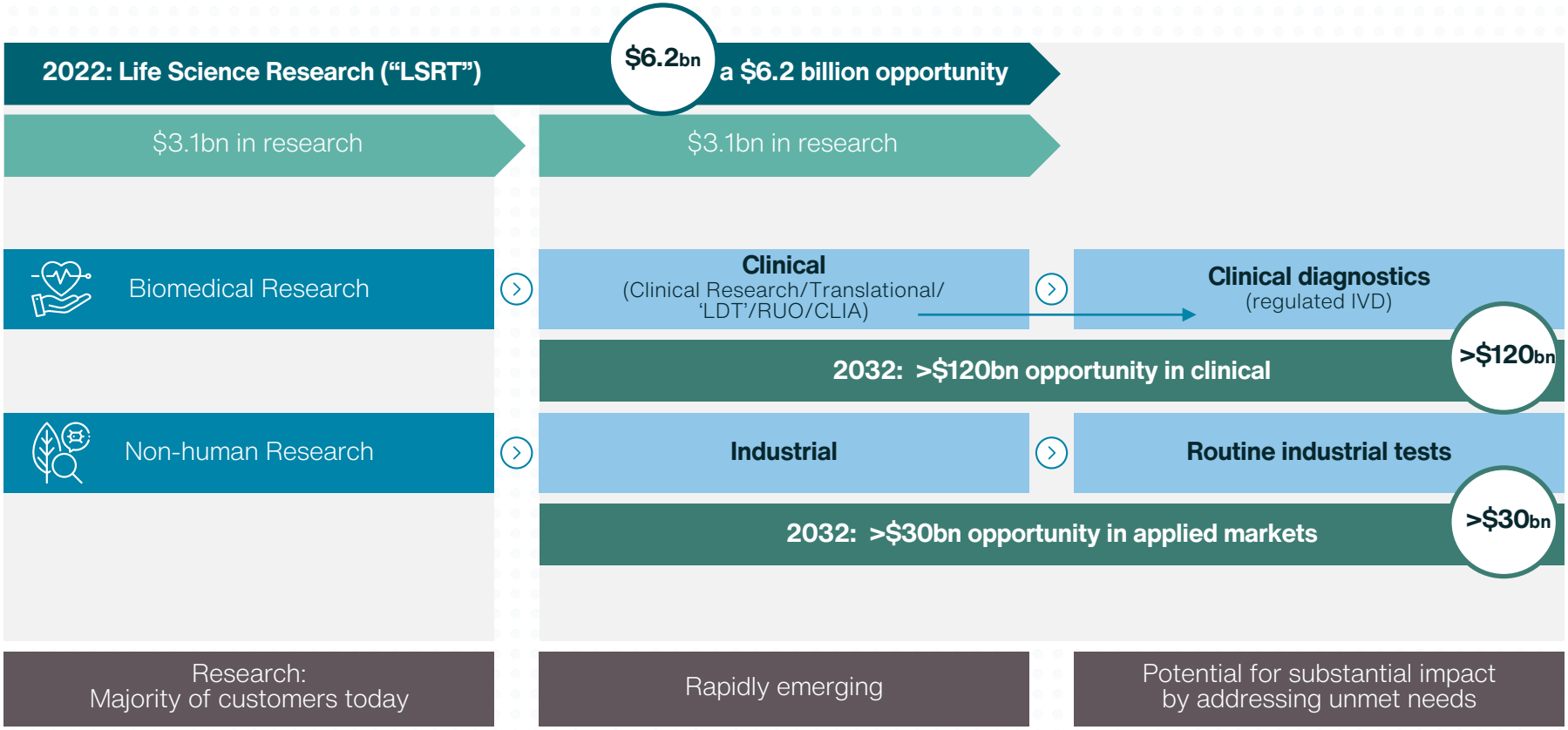
Substantial market opportunity



Building sequencing use cases from research to clinical and applied

Foundation for →

Foundation for →

Biomedical Research

- Human genetics
- Broader disease research, eg neuro, immunology
- Cancer research
- Basic research

Clinical
(Clinical Research/Translational/ 'LDT'/RUO/CLIA)

Clinical diagnostics
(regulated IVD)

- Rare and undiagnosed genetic disorders
- Complex genetic diseases
- Cancer characterisation
- Infectious disease

Non-human Research

- Pathogen surveillance
- Antimicrobial resistance
- Synthetic biology
- Plant genetics
- Biodiversity

Industrial

Routine industrial tests

- Food safety
- Adventitious agent testing
- Analytical development
- Environmental
- Agricultural

Research: Majority of customers today	Rapidly emerging	Potential for substantial impact by addressing unmet needs

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Range of scientific customers apply to each part of the market

These customers are linked within a broader community of genomics research

Biomedical Research

Non-human Research

Research customers include:

- University/academic research labs
- Non-profit institutes and charity
- Biopharma/life science companies
- Government labs
- Industrial researchers
- Public health research labs

Clinical
(Clinical Research/Translational/ 'LDT'/RUO/CLIA)

Industrial

Customers include:

Clinical

- Clinical laboratories (eg hospital, commercial)
- Translational Researchers working to implement genomics workflows into healthcare practice
- Public health labs
- Biopharma

Industrial

- Method development labs
- Life science, biopharma, food, ag

Clinical diagnostics
(regulated eg IVD)

Routine industrial tests

- Broad potential healthcare and industrial customer base

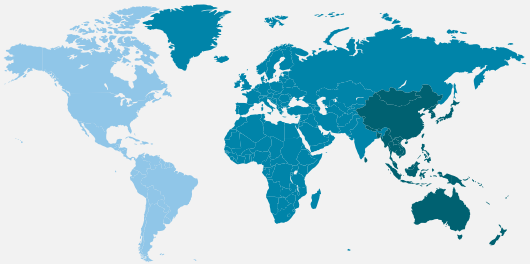
Research: Majority of customers today	Rapidly emerging	Potential for substantial impact by addressing unmet needs

Oxford NANOPORE Technologies

Oxford Nanopore has developed specific go-to-market strategies

Biomedical Research	**Clinical** (Clinical Research/Translational/ 'LDT'/RUO/CLIA)	**Clinical diagnostics** (regulated eg IVD)
Non-human Research	**Industrial**	**Routine industrial tests**

Research customers: Direct sales & marketing & support, + channel partners



1. Americas
2. EMEA & India
3. APAC

Specialist commercial teams or sold by partner

Typically Commercialised by partner

Research: Majority of customers today	Rapidly emerging	Potential for substantial impact by addressing unmet needs

Oxford NANOPORE Technologies

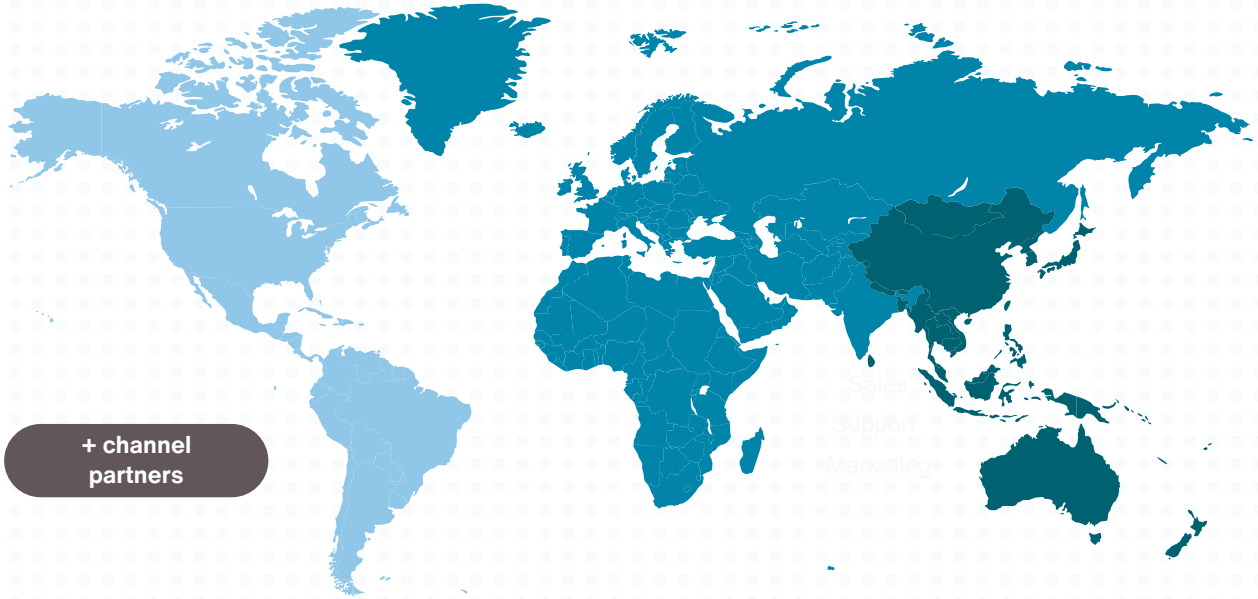
Global LSRT commercial team has been developed and regionalised

Maximise regional opportunities with coherent, locally adapted strategies

1. Americas
Sales | Support | Marketing

2. EMEA & India
Sales | Support | Marketing

3. APAC
Sales | Support | Marketing



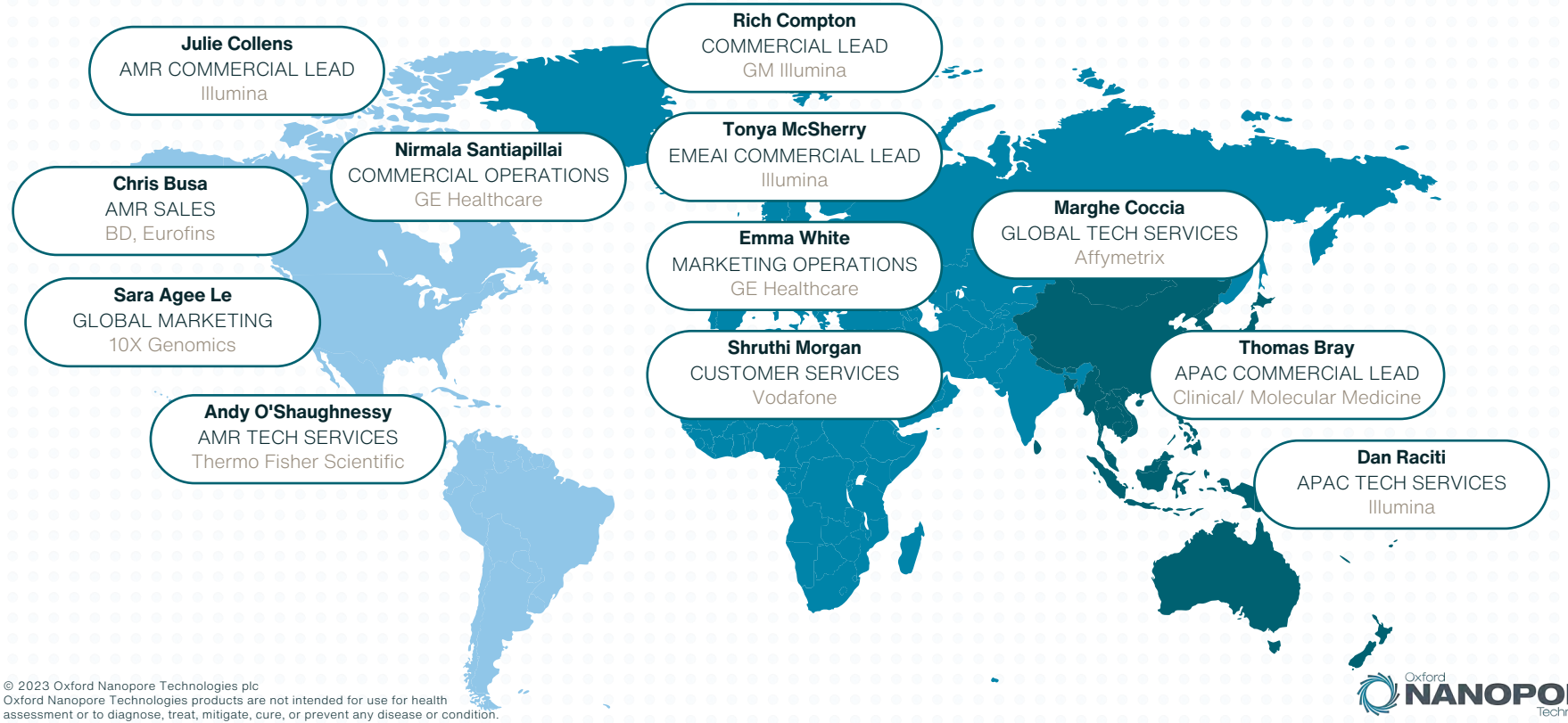
+ channel partners

Commercial team has doubled since IPO

End 2020: 147
➔ HY 2023: 346

Includes commercial functions such as:
Sales and Marketing
Support (application, customer support, technical)
logistics

LSRT Commercial leadership team includes senior experience from across life science tools and diagnostics



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Commercial operations: Highly differentiated commercial model drives broad usage

S1	S2	S3
"genomic explorers"	"expanding everyday sequencing"	"larger accounts"

- - - - - - - - - - Commercial resources to fit customer types - - - - - - - - - -

Light touch:

- Digital marketing, ecommerce
- Community based technical and customer support is typical
- Ultra-accessible products eg $1000 MinION starter pack

Supported and empowered:

- Choice of remote or in-field technical and application support
- Digital marketing, ecommerce enables self serve

Strategic account management

- Dedicated programme or account management teams to develop opportunities and support long term delivery
- Application specialists collaborate to optimize worksflows

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Setting a higher standard and expectations in genomics
Unique combination of benefits meets unmet customer needs in genomics

Features of nanopore sequencing

- Sequence any length fragment from short to ultra-long
- Direct /native DNA/RNA sequencing
- Real-time data generation
- Scalable formats from small hand-held to ultra-high output devices
- Cost effective. No capital requirements
- Plug-and-play easy to use solutions

Benefits

- Richer insights: Highly accurate genomic data captures more types of genetic variation
- **Faster results** from near-sample, real time workflows that don't require batching
- **Accessible and affordable**, with scalability that enables more use cases

S1 Example: from garage to industry, a tale of plasmid sequencing

Rapid turnaround becomes market expectations for plasmid sequencing

- Rapid turnaround becomes market expectation for plasmid sequencing, a common need particularly for gene therapy.
- Oxford Nanopore offers rapid turnaround, high performance technology, making plasmids a potentially substantial market opportunity

Faster results from near-sample, real time workflows that don't require batching

Accessible and affordable, with scalability that enables more use cases

Go to market model

- **Accessible: MinION starter pack $1,000**
- **Buy online, community support**
- **Entry point, tool to explore broad applications**

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S2 Example: Ophthalmic infections and cancer at West Coast USA Hospital

Opthalmic cancer West Coast hospital switches to Nanopore sequencing

- Following eye surgery, 1 in every 1,000 procedures results in Endophthalmitis- an infection inside the eyeball.
- This effects approximately 20,000 people per year, with 4,000 cases in the USA.
- The current method to determine the cause of infection is Bacterial Culture, taking 2-5 days, costing $200, and missing important information
- This hospital switched to nanopore from traditional sequencing, and is also now exploring eye cancer applications

Richer insights: Highly accurate genomic data captures more types of genetic variation

Faster results from near-sample, real time workflows that don't require batching – for best value

Accessible and affordable, with scalability that enables more use cases

Go to market model

- **Accessible: easy to start exploring with nanopore**
- **Some commercial/support interaction supported update and the switch**

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S3: Spanning fundamental research to national programmes

- NIH Center for Alzheimer's and Related Dementias (CARD)
- Generating a new genetic resource for Alzheimer's and related dementias from thousands of human brain samples – already delivering results

Using a single flow cell with the latest version of Oxford Nanopore's 'Q20+ chemistry', the NIH team stated, "*we can detect SNPs with F1-score better than ...short read sequencing...further, we can discover structural variants with F1-scores comparable to state-of-the-art methods involving [alternative long read sequencing] and trio information (but at lower cost and greater throughput)*"

Richer insights: Highly accurate genomic data captures more types of genetic variation

More variant characterisation, including methylation, for complete telomere-to-telomere genomes or larger sample number projects

Accessible and affordable, with scalability that enables more use cases

Whole human genomes from $345, with pathway to lower cost.

Go to market model

- **Accessible: easy to start exploring with nanopore**
- **More commercial and support resources to optimise customer use**

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NIH Center for Alzheimer's and Related Dementias https://www.biorxiv.org/content/10.1101/2023.01.12.523790v2

S3: “PopGen” is evolving into national genomics strategies

Oxford Nanopore suited to all stages of evolving large-scale strategies. S3 includes a variety of larger programmes

1	2	3
Create population reference genomes (now T2T)	**Understanding of population variation**	**Integration into public health practice**
Genome Institute of Singapore GIS	United Arab Emirates U.AE	Genomics England
T2T human genomes are now possible using only nanopore, having previously been assembled with a mixture of technologies.	Nanopore provides cost effective approach to comprehensive & scalable WGS	Richer data, on-demand and affordable Near the sample

Oxford NANOPORE Technologies

The evolution of larger programmes into national genomics strategies: UK as an example

Oxford Nanopore is uniquely positioned for translational programmes that prepare for national genomics strategies: **The UK as an example but applications translate to all markets**

NIHR Bioresource: 22,000 WGS cohort
Research study to further explore human health and mechanism of disease in both rare & precision psychiatry

Exeter NHS Genomics Laboratory: Rapid WGS
Aimed to deliver rapid whole genome sequencing within 24 hours for national rare disease service

Genomics England: Rare Disease 2.0
Sequencing up to 7,500 participants previously undiagnosed & diagnosed to improve health outcomes & pipelines

Guys & St Thomas Hospital: ICU Pathogen ID
Aimed to improve infectious disease outcomes & act as a pathogen 'early warning' surveillance system, expanding across UK network

Genomics England: Cancer 2.0
Aimed to return improved cancer outcomes in rapid turnaround time, starting at Royal Marsden Hospital & Leeds

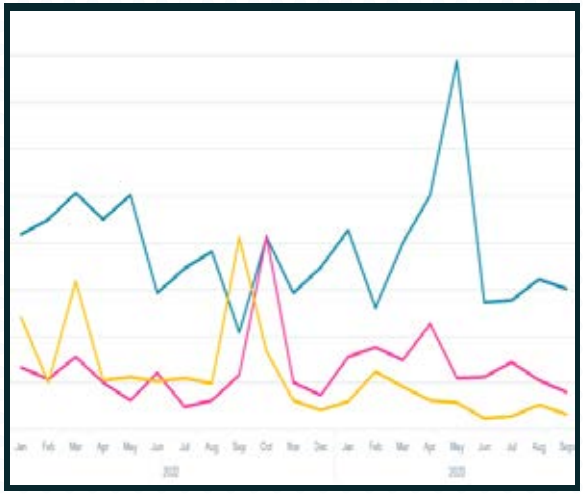
Oxford NANOPORE Technologies

A cutting-edge global marketing engine to engage customers worldwide

Pioneering and high impact community events showcase customer breakthroughs

Bold new campaign to turn on curiosity and bring new life to brand

What You're Missing Matters!



Best in class social media share of voice and strong digital marketing
(shown: Twitter engagement '22-23)

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Evolving/transforming our customer experience: intent to be best in class

Foundation of continuous improvement of product and applications

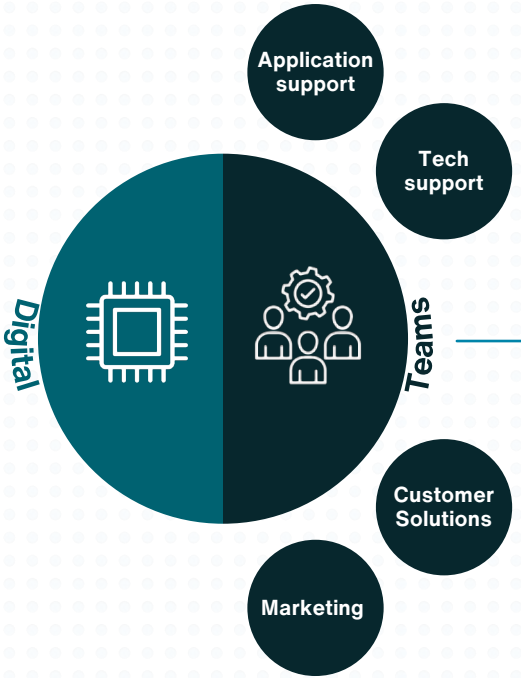
Optimise
Optimised outcomes to drive expansion

Ongoing use
Easy installation and successful continued usage

Arrive
Visibility of shipments, successful delivery

Order
Straightforward ordering of the right supplies

Understand
Information on product and applications



Goals:
Outstanding, frictionless customer journey
Greater efficiency

Strategies

Human
Regional hubs in EMEAI, ~AMR, APAC: logistics, applications/technical support and customer service

Digital
- MinKNOW and Epi2me Software UX improvement
- Investment in B2B processes and systems

Oxford NANOPORE Technologies

Our commercial strategy: reshape, access and expand the LSRT market by enabling new or improved uses of genomic data

Innovation:

New features

High performance

Provide new, better scientific insights

Community drives:

New uses

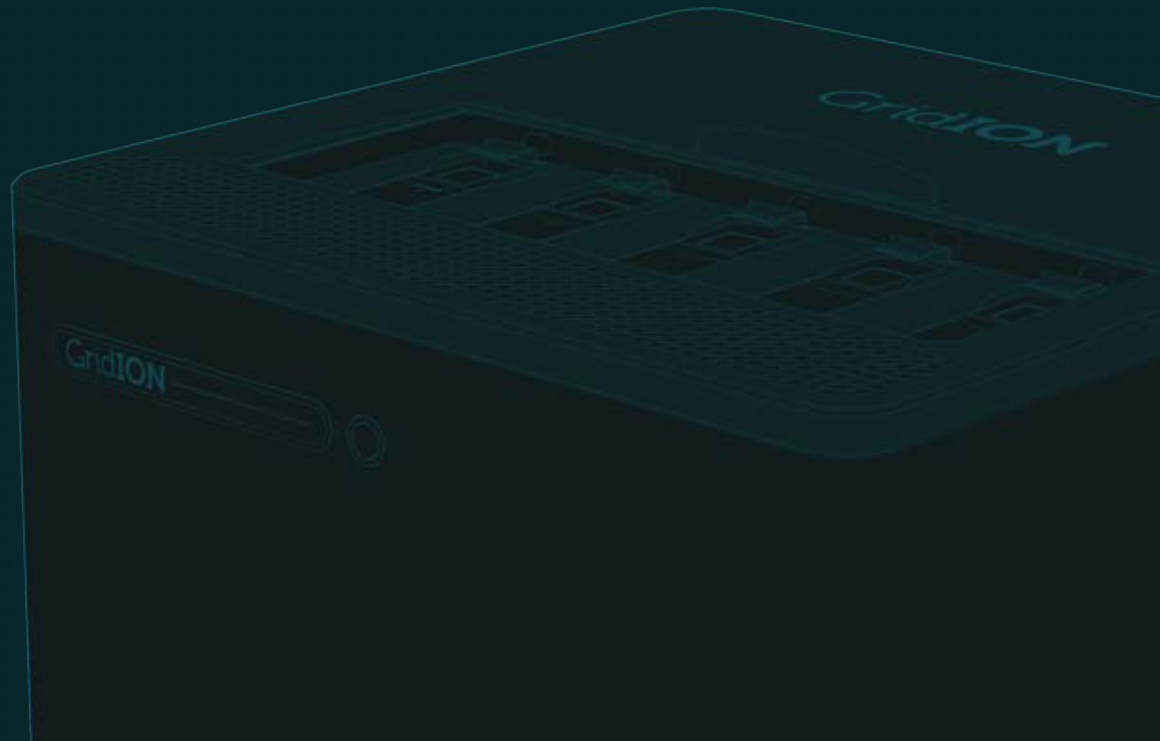
Changing customer expectations: reshape market

Tailored commercial approaches optimise value

Oxford NANOPORE Technologies

Clinical & Diagnostics

Dr Emma Stanton

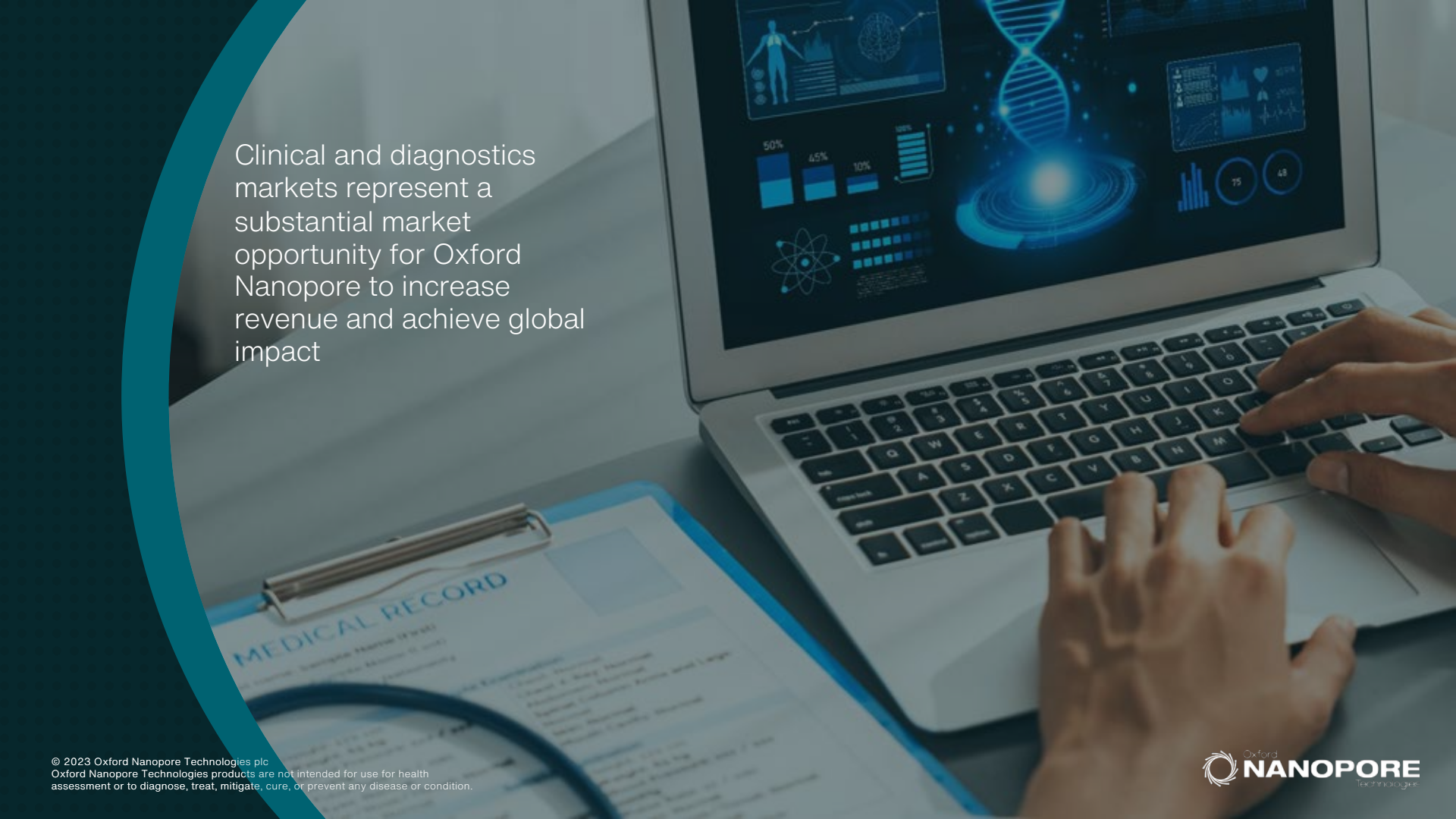


Dr Emma Stanton

BM MBA MRCPsych

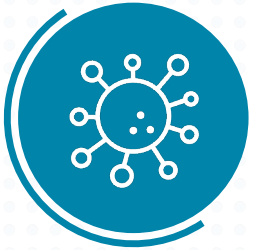
- NHS Clinician (2000–2014)
- MBA (Imperial, 2009)
- Roles in British government
  (DHSC Test & Trace 2020, Clinical Adviser to
  Chief Medical Officer for England 2008-2010)
- P & L experience
  (CEO Four Eyes Insight 2018-2020, Chief Partnership
  Officer North East USA, Beacon 2017-2018)
- US Payer experience
  (Beacon Health Options, Boston USA 2011-2018)
- Commonwealth Fund Harkness Fellow in Healthcare
  Policy & Practice, Harvard University (2010-2011)

Oxford NANOPORE Technologies



Clinical and diagnostics markets represent a substantial market opportunity for Oxford Nanopore to increase revenue and achieve global impact

Substantial market opportunity: clinical and diagnostic markets >$120 billion in 2032



Oncology

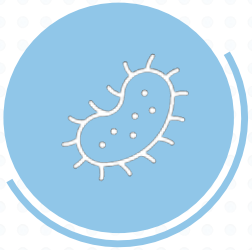
>$100 billion TAM

- Screening (inc MCED)
- Therapy selection
- Staging
- Diagnosis
- Monitoring

Human genetics

$18 billion TAM

- Pre-natal diagnostics
- HLA non-transplant & transplant
- Thalassaemia
- Newborn screening
- Critical care
- Pre-implantation genetic diagnosis



Infectious disease

$8 billion TAM

- Respiratory
- Sepsis
- Tuberculosis
- HIV
- Hepatitis C
- Prosthetic joint infections
- Hospital acquired infections

TAM model captures all testing requiring or likely to require a molecular measurement irrespective of dominant method today

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Customer Drivers: addressing unmet customer needs in clinical applications

Oncology

Cancer is identified too late; rapid, information-rich, near-patient insights promise improvement in care whether tumour sequencing or liquid biopsy.

Early detection is key feature of many national cancer strategies

Richer insights: Highly accurate genomic data captures more types of genetic variation

Faster results from near-sample, real-time workflows that don't require batching

Accessible and affordable, to deploy in centralized and decentralized networks

Customer Drivers:
addressing unmet customer needs in clinical applications

Human genetics

Patients with genetic disease typically experience a long diagnostic odyssey. Richer insights than traditional short reads, delivered rapidly and near the patient, promise improved care for more people

Richer insights: Highly accurate genomic data captures more types of genetic variation

Faster results from near-sample, real-time workflows that don't require batching

Accessible and affordable, to deploy in centralized and decentralized networks

Customer Drivers: addressing unmet customer needs in clinical applications

Infectious disease

Antimicrobial resistance is rising and emerging infections threaten public health.

Rapid, distributed insights offer new standards of care and pandemic preparedness at national and international levels

Richer insights: Highly accurate genomic data captures more types of genetic variation

Faster results from near-sample, real-time workflows that don't require batching

Accessible and affordable, to deploy in centralized and decentralized networks

Clinical & Diagnostics

Products to enable future clinical and diagnostic markets

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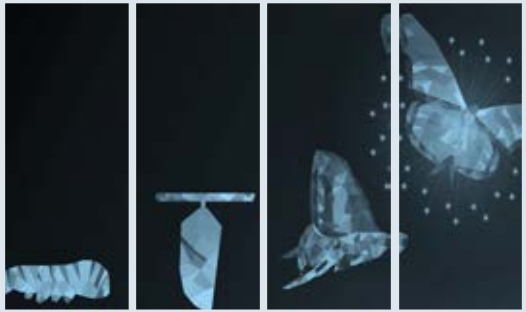
Diagnostic testing requires regulation

Light

LSRT for RUO:

Research Use Only



More

LDT:

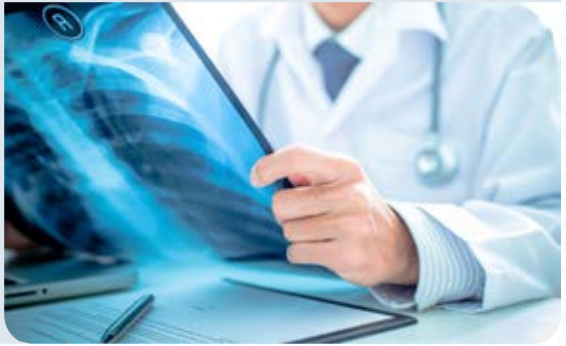
Lab Developed Test

The lab validates its own test

IVD:

Registered in vitro diagnostic devices

This involves a prescribed and documented approach for regulatory approval e.g CE or FDA approval



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Oxford Nanopore

Go to market clinical strategy

We are at the beginning of our transformational journey

DISCOVERY SCIENCE

Breakthrough research

TRANSLATION TO HUMANS

Forging new ground in clinical research

Cancer 2.0

Using nanopore to characterise SVs & methylation signatures for improved diagnosis and care in NHS

Ultra-rapid WGS

Improved critical care outcomes with rapid WGS In less than 8 hours with 12% high diagnostic yields

TRANSLATION TO PATIENTS

Move to specialist centres

Liquid biopsy for MRD monitoring

Characterisation cfDNA methylomes of cancer patients for potential longitudinal monitoring

TRANSLATION INTO PRACTICE

Deploy in most hospitals

Intraoperative DNA methylation

Classification of brain tumours with methylation to improve neurosurgical strategy decisions

TRANSLATION TO COMMUNITY

Next generation of healthcare

Go to market: Clinical strategy

1. Clinical collaborations

2. Clinical specialist sales teams

3. End-to-end diagnostic solutions

4. Commercial partnerships with diagnostics companies that bring commercial presence/market access and expertise

ENABLER: Platform and accreditation

bsi. ISO 13485 Medical Devices Quality Management

MD 750209

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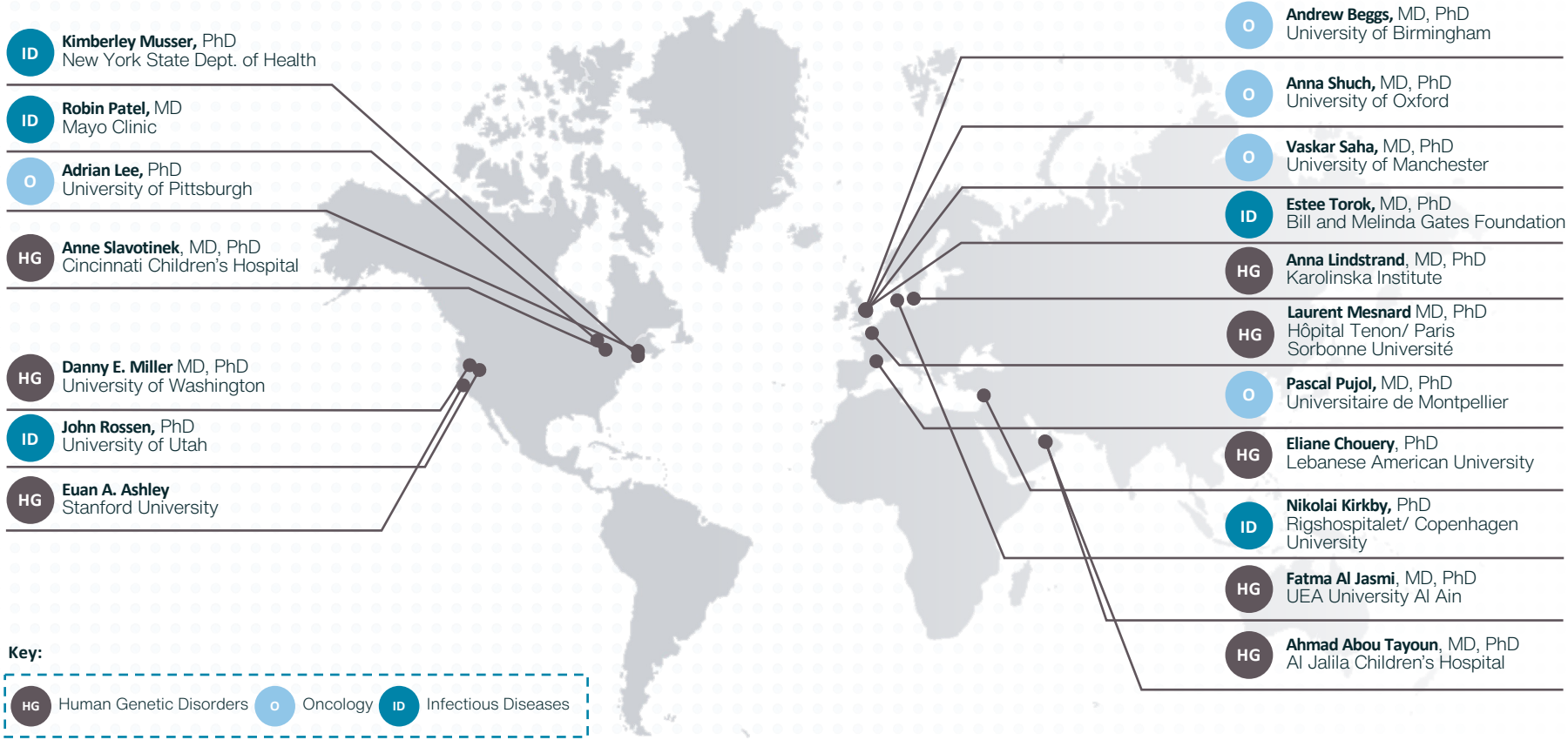
We have engaged with clinical academics globally on our clinical applications



ID **Kimberley Musser,** PhD
New York State Dept. of Health

ID **Robin Patel,** MD
Mayo Clinic

O **Adrian Lee,** PhD
University of Pittsburgh

HG **Anne Slavotinek**, MD, PhD
Cincinnati Children's Hospital

HG **Danny E. Miller** MD, PhD
University of Washington

ID **John Rossen,** PhD
University of Utah

HG **Euan A. Ashley**
Stanford University

O **Andrew Beggs,** MD, PhD
University of Birmingham

O **Anna Shuch,** MD, PhD
University of Oxford

O **Vaskar Saha,** MD, PhD
University of Manchester

ID **Estee Torok,** MD, PhD
Bill and Melinda Gates Foundation

HG **Anna Lindstrand**, MD, PhD
Karolinska Institute

HG **Laurent Mesnard** MD, PhD
Hôpital Tenon/ Paris
Sorbonne Université

O **Pascal Pujol,** MD, PhD
Universitaire de Montpellier

HG **Eliane Chouery**, PhD
Lebanese American University

ID **Nikolai Kirkby,** PhD
Rigshospitalet/ Copenhagen
University

HG **Fatma Al Jasmi**, MD, PhD
UEA University Al Ain

HG **Ahmad Abou Tayoun**, MD, PhD
Al Jalila Children's Hospital

Key:

HG Human Genetic Disorders O Oncology ID Infectious Diseases

Oxford NANOPORE Technologies

1 Collaborating with world-leading clinical organisations

Programmes aiming to deliver:

BIOMÉRIEUX

Epidemiology

Validation of Nanopore data on EPISEQ CS

Tuberculosis

Identification and characterisation of Drug Resistance

Clinical Pathogen ID

IVD reflex test for pathogen ID from normally sterile sites using a targeted 16S/ITS approach

Cancer

Improved decision making around certain types of cancer including breast cancer

MAYO CLINIC

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3

TB-DR will be OND's 1st IVD providing drug resistance profiling direct from sputum in < 5hours

Drug-resistant TB accounts for about

1 in 3

deaths from antimicrobial resistance

Tuberculosis – Drug Resistance (TB-DR)

DIAGNOSTICS

- 1.6 million people died from TB in 2022 (this is a treatable disease).
- The incidence of drug resistance worldwide has increased at least 10-fold in the past decade.
- Presently, there are no WHO-recommended rapid diagnostics (WRDs) that can detect resistance to all TB drugs in a single test.
- WHO rapid communication (July 2023) supports the use of tNGS to detect drug resistant TB and acknowledges OND as one of the solutions.
- TB-DR will expand global access to drug resistance testing and evolve to identify new resistance-conferring mutations to the latest drug regimens.

TAM (by 2032) ~ $1.2bn

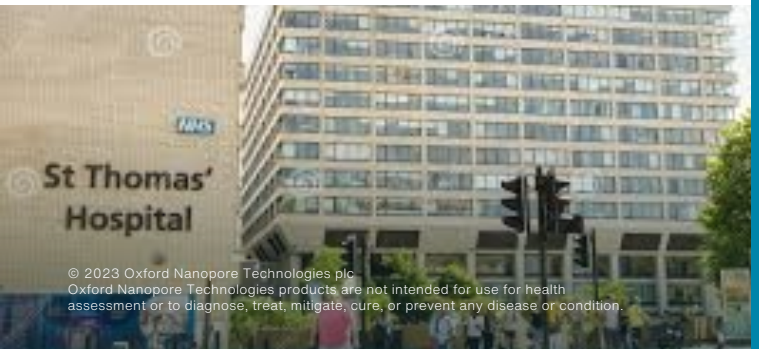
3

"Each day costs about £2,500, depending on the complexity of the patient. For my sickest patients, it could be £10,000,"

Professor Ian Abbs

CEO, Guys & St Thomas NHS Foundation Trust

NHS
Guy's and St Thomas'
NHS Foundation Trust



Respiratory metagenomics

Oxford Nanopore DIAGNOSTICS

- Evaluation performed on >500 samples with 250 samples as part of a pilot service at Guys & St Thomas NHS Foundation Trust over 3 winters
- Average laboratory time to first sequence report: 6.7hrs
  - Sensitivity: 93%
  - Specificity: 95%
- 45% informed antimicrobial prescribing changes
- 20% escalation: mostly SAME day / 25% de-escalation: mostly NEXT day
- 5% results informed infection control interventions or identified novel emerging hypervirulent organisms

TAM (by 2032) ~ $2.8bn

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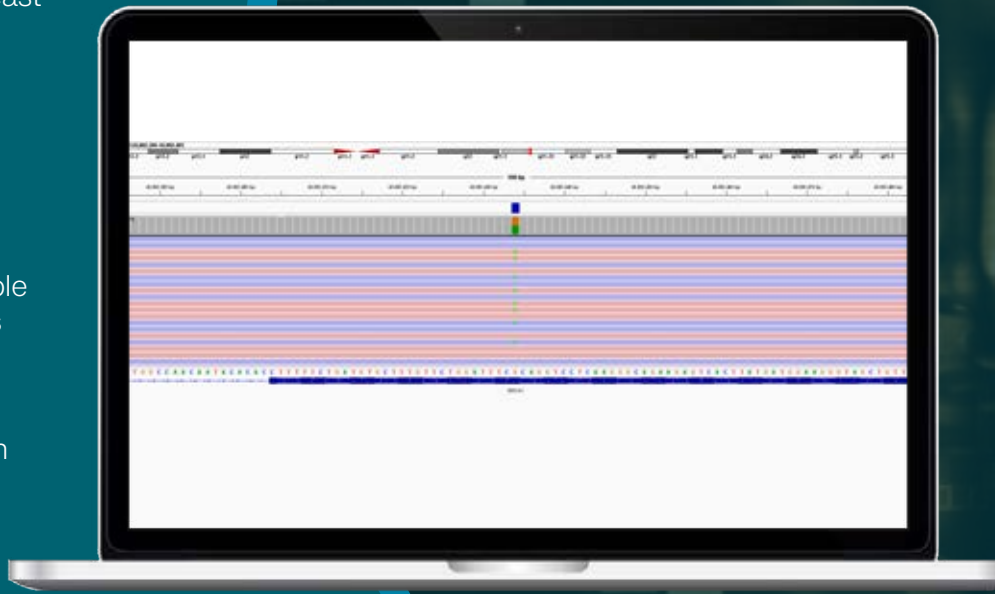
4 4bases – BRCA Panel partnership

- Assay identifies mutations in BRCA1 and BRCA2 genes
- Used for screening patients who have predisposition to breast and ovarian cancer and for treatment eligibility for PARP inhibitors
- 4bases BRCA panel combined with ONT sequencer can produce sample to answer in <1 day
- Assay can be decentralized, cost effective and highly flexible with the ability to debatch samples. Preliminary data shows concordance with existing ILMN based approach.
- 4bases have started to commercialize the BRCA panel with ONT consumables in Italy and Switzerland

Hereditary testing TAM (by 2030) $12.7 bn

Unique, market ready solution for decentralized, same day BRCA1/2 testing.



4

NanoTYPE is the first method enabling high-resolution HLA typing in under six hours

Omixon — NanoTYPE for HLA Typing

- Omixon is a global transplantation diagnostics company that we have partnered with
- They have developed a new product called NanoTYPE™ that uses nanopore sequencing to match donor organs to recipients
- NanoTYPE™ targets the HLA locus; one of the most complex regions in the human genome where recent improvements in our technology have enabled accurate results
- Omixon HLA solution has now been purchased from Omixon and used in 53 sites (~90% new customers) as a RUO product

TAM (by 2032) ~ $680m

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Key takeaways

01

Oxford Nanopore has a substantial opportunity in clinical and diagnostic markets

02

With a target addressable market of >$100 billion (by 2032), oncology is the biggest clinical market opportunity for nanopore sequencing

03

We will deliver on this opportunity through commercial partnerships and clinical collaborations

04

We are on a regulatory path to be successful in clinical and applied markets including RUO, CLIA and CE-IVD

05

We already have a dedicated clinical commercial sales team in place to take advantage of clinical research opportunities now

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Applied Industrial Markets

Dr Louisa Ludbrook

Louisa Ludbrook

PhD, MBA

- B.BioMedSci and PhD Biochemistry (Monash) EMBA, Saïd Business School (University of Oxford)
- Roche Diagnostics Australia
  454, NimbleGen, RT-QPCR

  Source BioScience, Horizon Discovery (now Revvity)
  NGS, arrays, gene edited cell line products
- 7 years at Oxford Nanopore in commercial leadership, having led both Global Sales and Market Development teams.
- Present: heads the Applied Industrial Markets team

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$1 TRILLION

in economic impact

Direct economic impact from non-healthcare markets such as Agricultural, Food, and consumer products and services 2030-2040[1].

1. McKinsey Global Institute, 'The Bio Revolution' report (2020)

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Substantial market opportunity: Applied industrial markets >$30 billion in 2032

Vet and Agriculture

>$15 billion TAM

- Livestock Veterinary
- Companion Animal
- Breeding
- Crop pathogen protection

Biopharma QC

>$4 billion TAM

- Cell Line Authentication & Characterization
- Vector and construct characterization and QC
- Biomanufacturing Safety Testing

Food and environment

>$11 billion TAM

- Food Safety Testing
- Food Authenticity Testing
- Food Spoilage
- Wastewater testing
- eDNA biodiversity assessment

TAM model captures all testing requiring or likely to require a molecular measurement irrespective of dominant method today.

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Is it safe to eat?

Was it sourced from where I expected?

Does it contain what it says on the label?

Are there any impurities that could impact safety?

How fast can my new drug be brought to market?

A combination of factors will open larger TAM in Applied Industry

now

- Deployability
- Test Method Simplification
- Regulatory climate
- Market Dynamics

>$30Bn

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Drivers: addressing unmet customer needs

Veterinary and Agriculture

Example test: PRRS virus detection in distributed veterinary diagnostic labs

Richer insights: Highly accurate genomic data captures more types of genetic variation

Faster results from near-sample, real time workflows that don't require batching

Accessible and affordable, to deploy in centralized and decentralized networks

Drivers: addressing unmet customer needs

Food and Environment

Example test: Quickest time to result *Salmonella* serotyping test

Richer insights: Highly accurate genomic data captures more types of genetic variation

Faster results from near-sample, real time workflows that don't require batching

Accessible and affordable, to deploy in centralized and decentralized networks

Drivers: addressing unmet customer needs

Biopharma testing

Example test: unambiguous viral Adventitious Agent safety testing for use in GMP environments

Richer insights: Highly accurate genomic data captures more types of genetic variation

Faster results from near-sample, real time workflows that don't require batching

Accessible and affordable, to deploy in centralized and decentralized networks

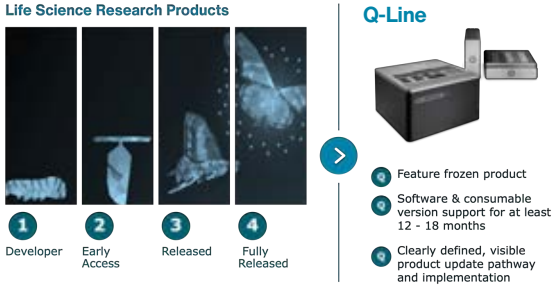
Developing the capabilities to support partners in the Applied Industrial setting

SYSTEM CAPABILITIES

device - software - integration - automation

REGULATORY ROADMAP

underpinning Industry product offerings



STRUCTURED PARTNERING

Value-based approach

Partner

Oxford Nanopore

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Biopharma QC testing

Deep Dive

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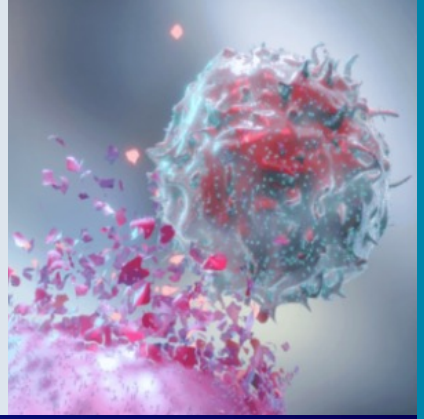
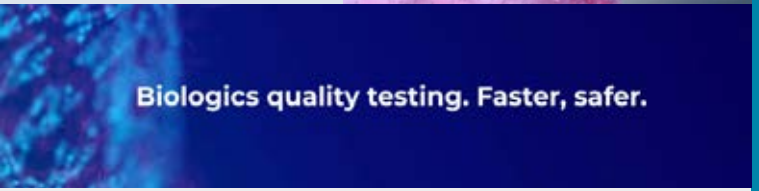
The ISA test, available from October 2023, is the first nanopore sequencing-based commercial test service launched by PathoQuest.





Example 1:
PathoQuest — Integration Site Analysis (ISA)

PathoQuest

- PathoQuest is a leading CRO offering sequencing based GMP and non-GMP testing services to the biopharma industry.
- PathoQuest has launched an Integration Site Analysis (ISA) test using nanopore sequencing offering a better alternative to existing methods.
- The ISA test offers improved characterization of gene integration into cell lines relevant for mAb or cell therapy production, reducing downstream risk.
- Non-GMP ISA test is now available and GMP validated ISA test expected to be launched in early 2024.

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A ***direct*** RNA Identity and Integrity test is in development, first in class for mRNA vaccine QC

Example 2:

BASE - mRNA Vaccine QC Identity and Integrity test

BASE

- mRNA vaccines or therapeutics undergo rigorous safety and quality testing using multiple methods which take up to 50% of the production time[2]
- Oxford Nanopore's direct RNA sequencing technology is unique
- WHO recommends direct RNA sequencing for mRNA vaccine identity test
- BASE are an industry partnered mRNA Facility with expertise in pre-clinical vaccine manufacture
- Oxford nanopore and BASE will develop a first in class direct RNA Identity and Integrity test for industry use, reducing test complexity and TATs
- We have a select pipeline of industry evaluators of the mRNA Identity and Integrity test

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2. Weise, E and Weintraub, K (2021) Race to the Vaccine, USA Today

One accessible, data-rich platform that suits the lifecycle of industrial development

Biopharma QC

Food & Environment

Veterinary & Agriculture

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Key takeaways

01

>$30Bn TAM for Applied Industrial testing in 2032

02

Platforms offering sequencing in a centralized **and** decentralized setting will provide partner's c ompetitive advantage

03

We have a regulatory Roadmap to support the requirements of regulated testing settings

04

We have first partnerships and a structured pipeline prioritising value capture

05

Oxford Nanopore offer one accessible, data-rich platform that can suit a business' lifecycle of industrial development.

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Partnership Strategy

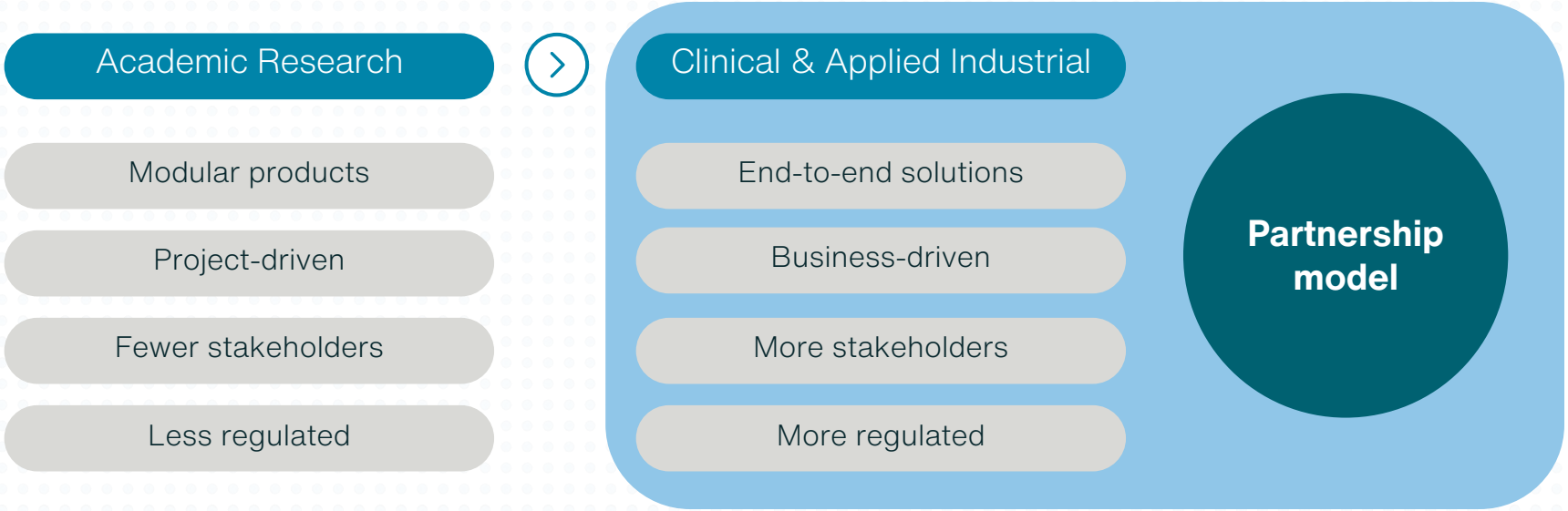
John Schoellerman

John Schoellerman

SVP Corporate & Business Development

- Hambrecht & Quist
  Tech & Healthcare Banking
  (1996 – 1998 & 1999 – 2000)
- Tech & Diagnostics Startups
  (2000 – 2004)
- J.P. Morgan
  Healthcare Investment Banking
  (2005 – 2014)
- Lazard
  Healthcare Investment Banking – Head of Medtech
  (2014 – 2019)

Clinical & applied industrial markets require new capabilities



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Partnering to deliver end-to-end solutions

Oxford Nanopore | **Partner**

Lab

Devices & Software

Flow Cells

Reagent Kits

Data

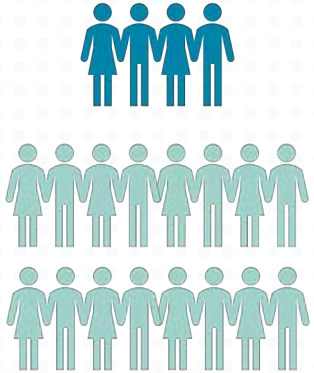
Cloud or Local Software Environment

Interpretation & Reporting

Commercial

Service & Support

Sales & Marketing



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We draw on a broad universe of potential partners and collaborators

- Oncology
- Human Genetics
- Infectious Disease
- Vet & Ag
- Biopharma QC
- Food & Env

Nanopore Research Community

Large Companies

Announced Partnerships in Clinical & Applied Industrial

bioMérieux
Mayo Clinic
NHS Guy's and St Thomas' NHS Foundation Trust
PathoQuest
Asuragen bioTechne
4bases
Clear Labs
omixon
GENDX
Cyclomics
DGENSEE
Digena

Our partnering business model is geared to scalability & value sharing

Our Investments

1. Application development support
2. Workflow compatibility
3. Long term supply
4. On-market service & support

Our Returns

1. Share of partner revenue
2. Ongoing sale of consumables via partner or directly

Measurable IRR per programme

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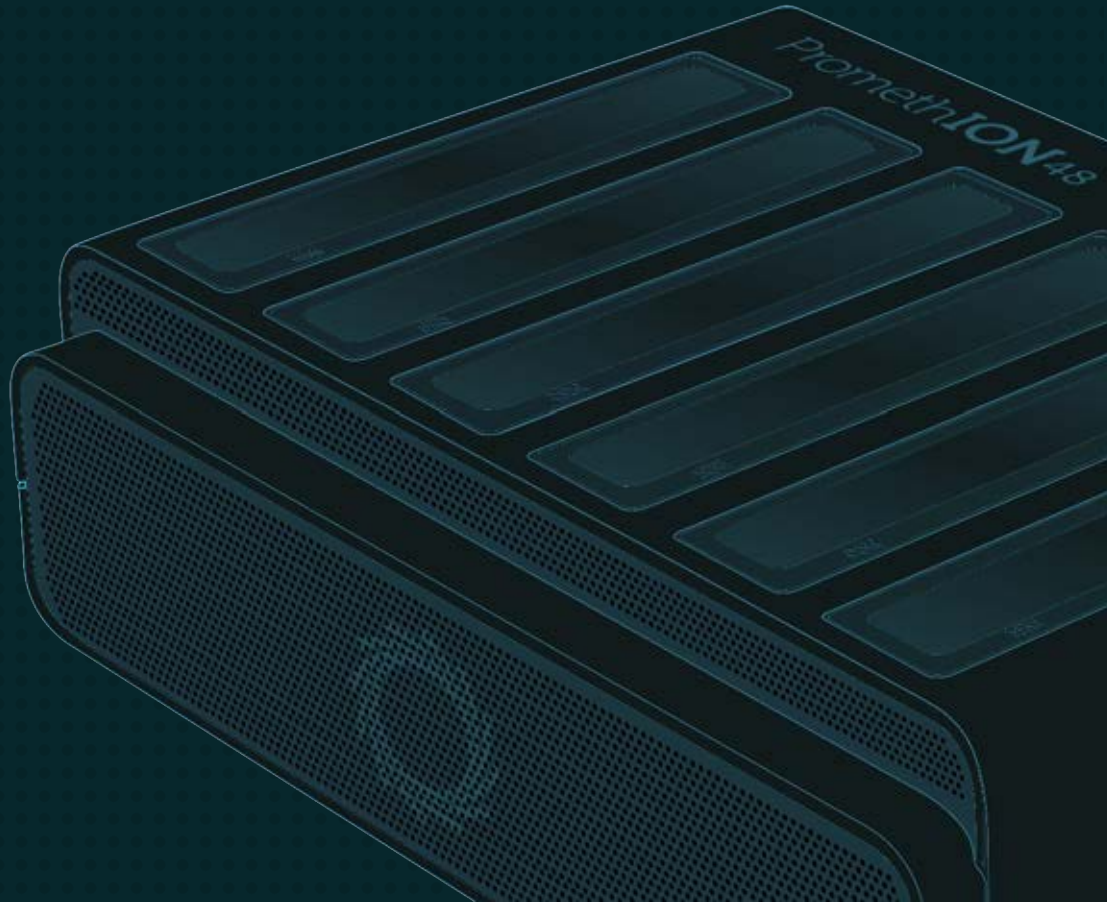
Manufacturing and operations

Tim Cowper, CFO



Tim Cowper

- 10 years' experience at Oxford Nanopore in leadership roles, having led both Commercial Operations and Finance teams
- Responsible for setting up operations and finance infrastructure across the company, including leading on operations for our first product launch – the MinION Access Programme – in 2015.
- Previous roles include Senior Finance roles at Celltech Group, Vernalis plc and, in addition has led a number of start-ups.
- Chartered Accountant, Ernst and Young

Oxford NANOPORE Technologies

Built for scale: infrastructure in place to support long term growth

Oxford Science Park **Oxfordshire, UK** ~100,000 sq ft	**Harwell Campus** **Oxfordshire, UK** ~61,000 sq ft	**Abingdon Business Park** **Oxfordshire, UK** ~57,000 sq ft	**Strategic manufacturing partners** USA, East Asia, UK, Europe
R&D, Engineering and Technology Transfer - Corp HQ - Wet and dry labs - Technical workshops and labs - ISO7 cleanroom	**Manufacturing consumables (flow cells and kits)** - ISO 4 & ISO 7 cleanrooms - Wet and dry labs - Technical labs - Packing	**Distribution and Logistics** - Warehousing - Temperature controlled storage - Scope for expansion of technical labs	**Devices** - Electronics and metal work **Consumables** - Electronics: ASIC - Kits: biologics and chemicals

ISO 9001, 22301, 27001, 13485 certified
Robust manufacturing and supplier network built to support growth and business continuity

Oxford NANOPORE Technologies

Experienced operations and manufacturing team

Rhod Davies
VP OPERATIONS
25 years' experience

Jerry Bryar
VP MANUFACTURING
40+ years' experience

Howard Orman
VP, QUALITY & REGULATORY
30+ years' experience

Cameron Knight
VP TECHNOLOGY TRANSFER
12+ years' experience

Alison Forrow
SENIOR DIRECTOR OF QUALITY ASSURANCE
35+ years' experience

Alvaro Correia
VP GLOBAL SUPPLY CHAIN
25+ years' experience

Simon Hedditch
SENIOR DIRECTOR OF REGULATORY AFFAIRS
30+ years' experience

Will Craddock
SENIOR DIRECTOR OF PRODUCTION ENGINEERING
20+ years' experience

280 employees

Technology Transfer, Production Engineering, Manufacturing, Quality & Supply Chain

Work in close collaboration with:

- R&D team on new product development
- Finance team to drive efficiency and margins
- Commercial teams to enhance customer experience

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Key focus areas to drive productivity, quality and resilience

Efficiency » **Enhanced quality and yield**

Automation » **Greater output, quality and resilience**

Continuous Improvement » **Improved productivity**

Deliver best-in class capabilities to manufacture high quality, products at scale

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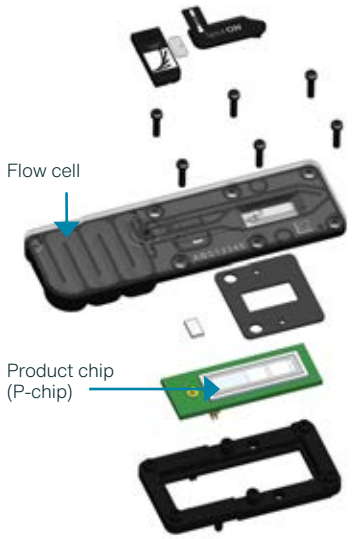
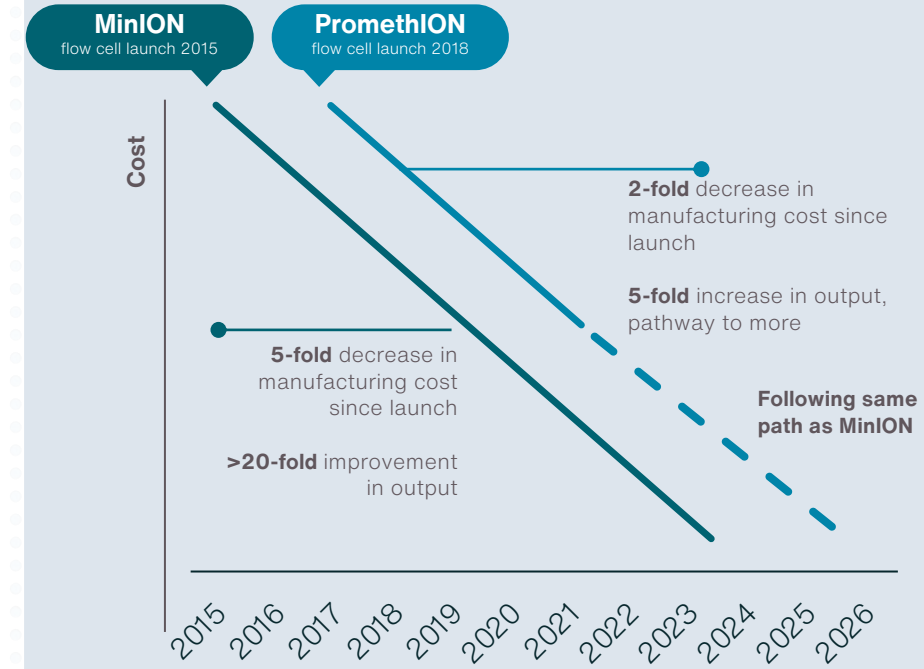
Efficiency: Proven track record of optimising production to reduce cost of goods

Basic components



Consumables



Not to scale, illustration only

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Automation example: flow cell assembly before and after

Manual assembly
Team of 4

Automated assembly
Team of 2

Double throughput

50% less manual operation

50% less footprint

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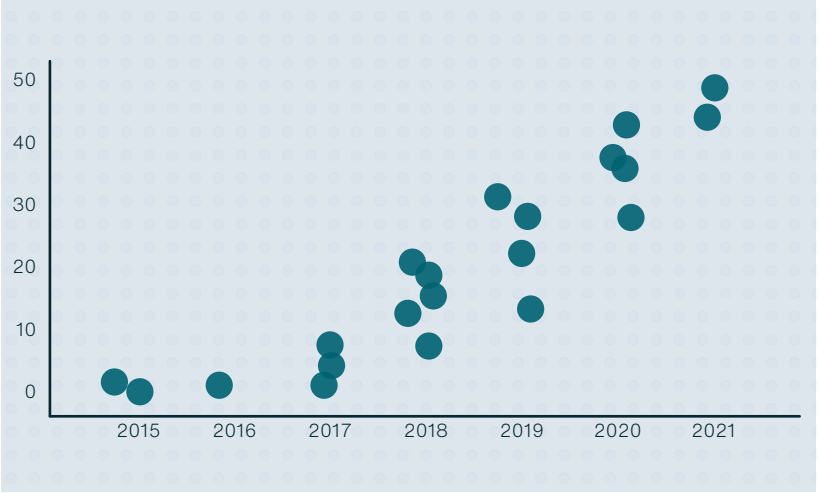
Driving quality and productivity through continuous improvement

Example: output per flow cell

Significant improvement in output in flow cell, reducing cost per Gb to our customers

At the same time reducing cost to manufacture 5-fold



Commitment to improving environmental performance of products

13.7
tonnes
Reduction in plastic use in 2022

79%
of packaging from recycled materials in 2022

59%
of flow cells returned after use in 2022, a 19% increase YoY

Oxford NANOPORE Technologies

Key focus areas to drive productivity, quality and resilience

Efficiency » **Enhanced quality and yield**

Automation » **Greater output, quality and resilience**

Continuous Improvement » **Improved productivity**

Deliver best-in class capabilities to manufacture high quality, products at scale

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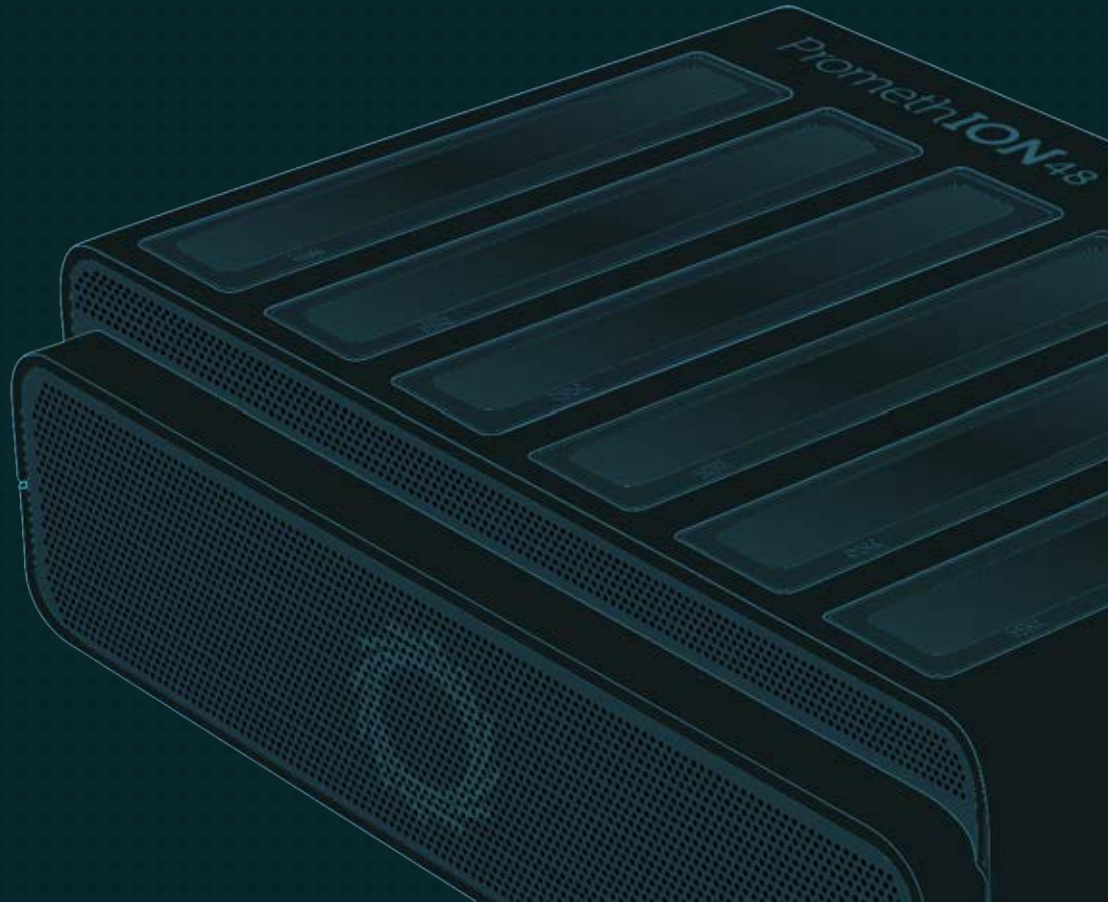
Delivering strong, consistent results

Tim Cowper, CFO



Financial snapshot

£162.2m
LSRT revenue LTM

>7,300
Active customers LTM[1]

>640
New customers LTM

>8,000
devices run LTM

~75%
LSRT revenue from consumables

£485m
Cash, cash equivalents and liquid investments

All numbers at 30 June 2023 unless stated otherwise
LTM = Last twelve months, as at 30 June 2023.
1 Net increase in active, direct customers between 30 June 2022 and 30 June 2023. Active customers are defined as customers that have been active over a 12-month period.

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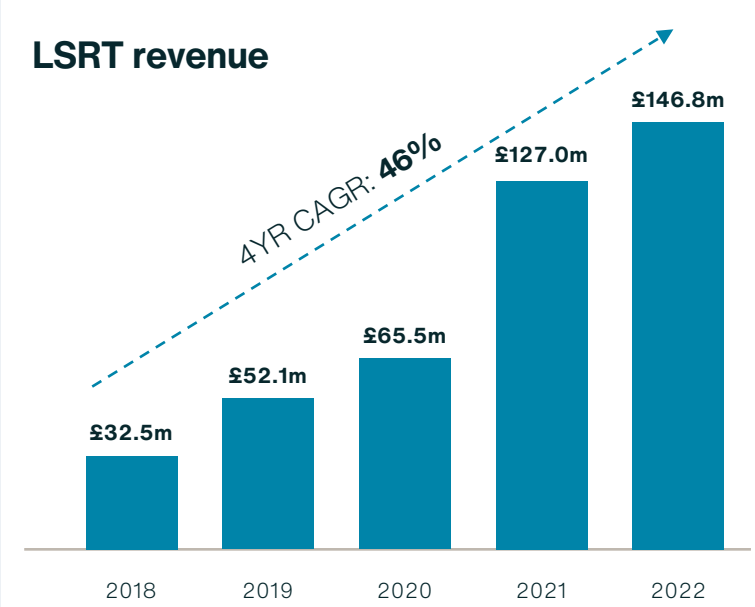
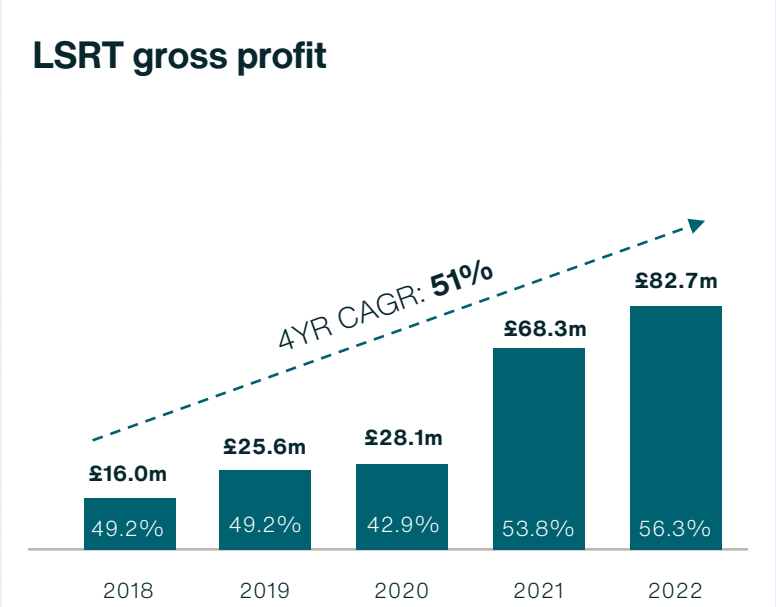
Proven track record of strong revenue and margin growth



Strong LSRT revenue growth driven by innovation, including new product launches and platform upgrades, resulting in expansion of the customer base and increased utilisation



Strong LSRT gross margin expansion driven by manufacturing innovations and efficiency, while lowering the cost of sequencing for customers

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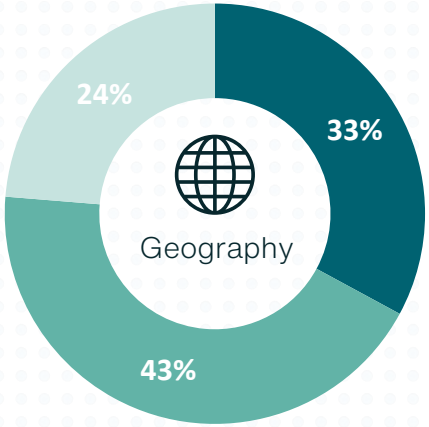
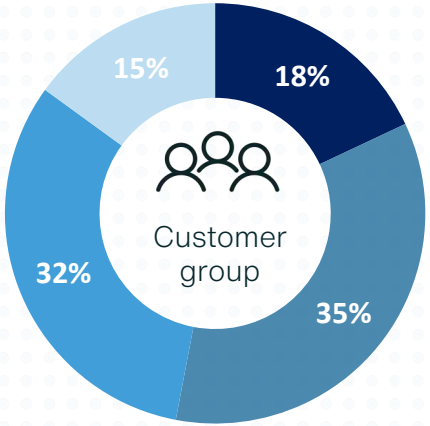
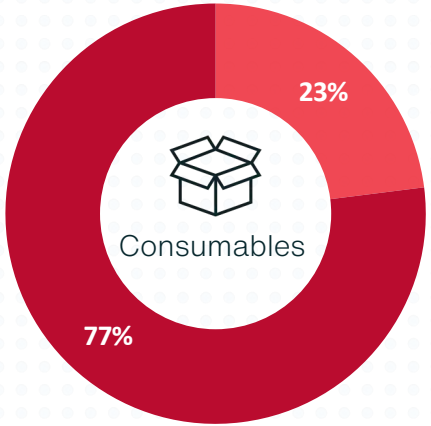
Delivering strong growth across the business







4YR CAGR (2018-2022)	
AMR	+43%
EMEAI	+51%
APAC	+41%

4YR CAGR (2018-2022)	
S1	+25%
S2	+39%
S3	+62%
Indirect	+110%

4YR CAGR (2018-2022)	
Devices & services	+42%
Consumables	+47%

Graphs show the breakdown of LSRT revenue for FY 2022

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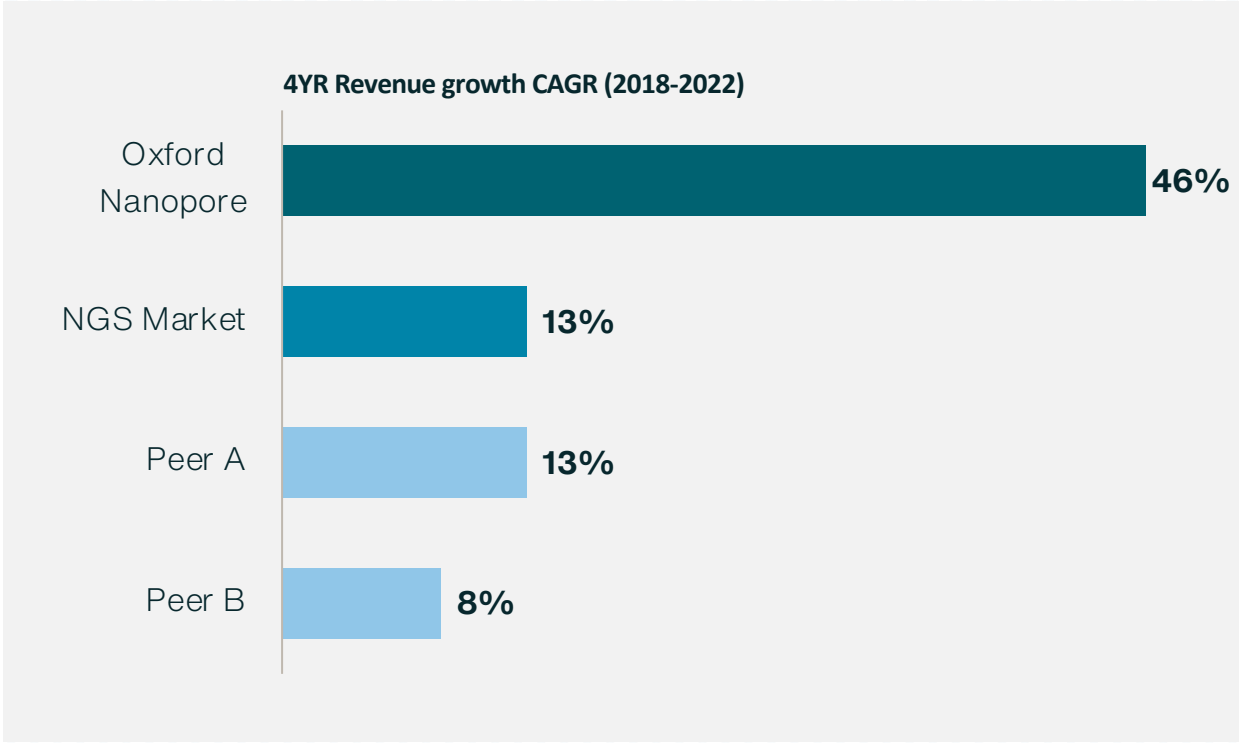
Proven track record of outperformance



source: DeciBio and publicly available financial reports from peers

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Pathway to adjusted EBITDA breakeven by the end of 2026

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Sustaining high-growth whilst driving margins and returns

01

Revenue growth

- Maintain >30% underlying constant currency revenue growth rates to FY26
- Drive utilisation and new customer acquisition fuelled by innovation
- Drive revenue from clinical and industrial applied markets to 10-20% of LSRT revenue by 2026

02

Margin Expansion

- Broad margin expansion opportunities driven by manufacturing innovation
- On track to reach >65% gross margin by FY26

03

Disciplined OpEx

- Disciplined operating expenses in-line with adjusted EBITDA breakeven target
- Reduce OpEx to <15% CAGR between FY23 and FY26
- Investing in growth to drive sustainable value creation

Underlying LSRT revenue excludes revenue from the Emirati Genome Program and COVID sequencing

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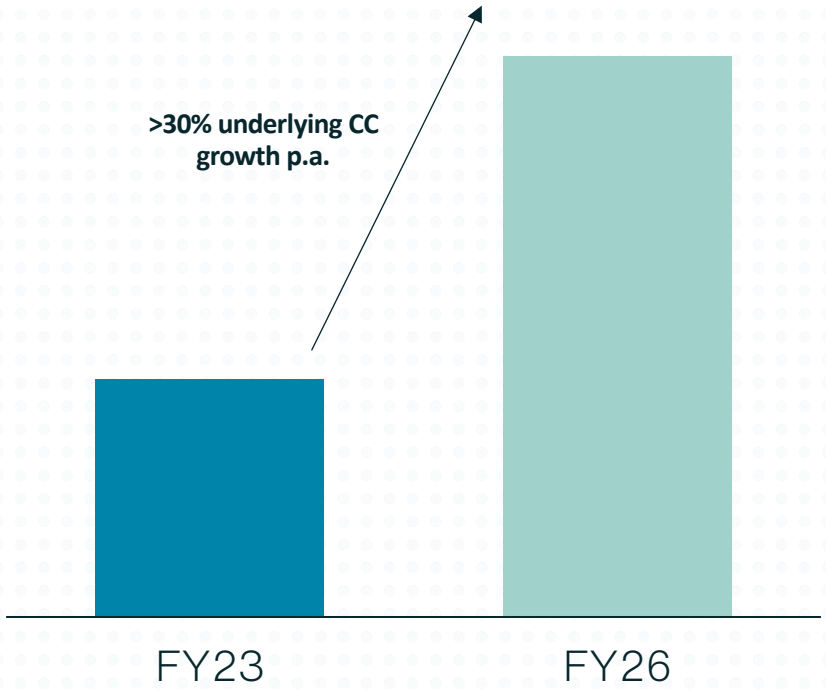
Key medium-term revenue drivers

- Expanding, underpenetrated market opportunity coupled with unique features and benefits of Oxford Nanopore technology underpin growth
- Robust innovation pipeline with frequent platform upgrades and product launches
- Increased penetration of LSRT clinical and applied industrial markets; expected to contribute 10-20% of LSRT revenue by FY26
- New customer acquisition and increased utilisation in S2 and S3 customer groups will be a key driver of growth



Underlying LSRT revenue excludes revenue from the Emirati Genome Program and COVID sequencing
CC = constant currency

Sustaining high-growth whilst driving margins and returns

01

Revenue Growth

- Maintain >30% underlying constant currency revenue growth rates to FY26
- Drive consumables utilisation and new customer acquisition fuelled by innovation
- Drive revenue from clinical and industrial applied markets to 10-20% of revenue by 2026

02

Margin Expansion

- Broad margin expansion opportunities driven by manufacturing innovation
- On track to reach >65% gross margin by FY26

03

Disciplined OpEx

- Disciplined operating expenses in-line with adjusted EBITDA breakeven target
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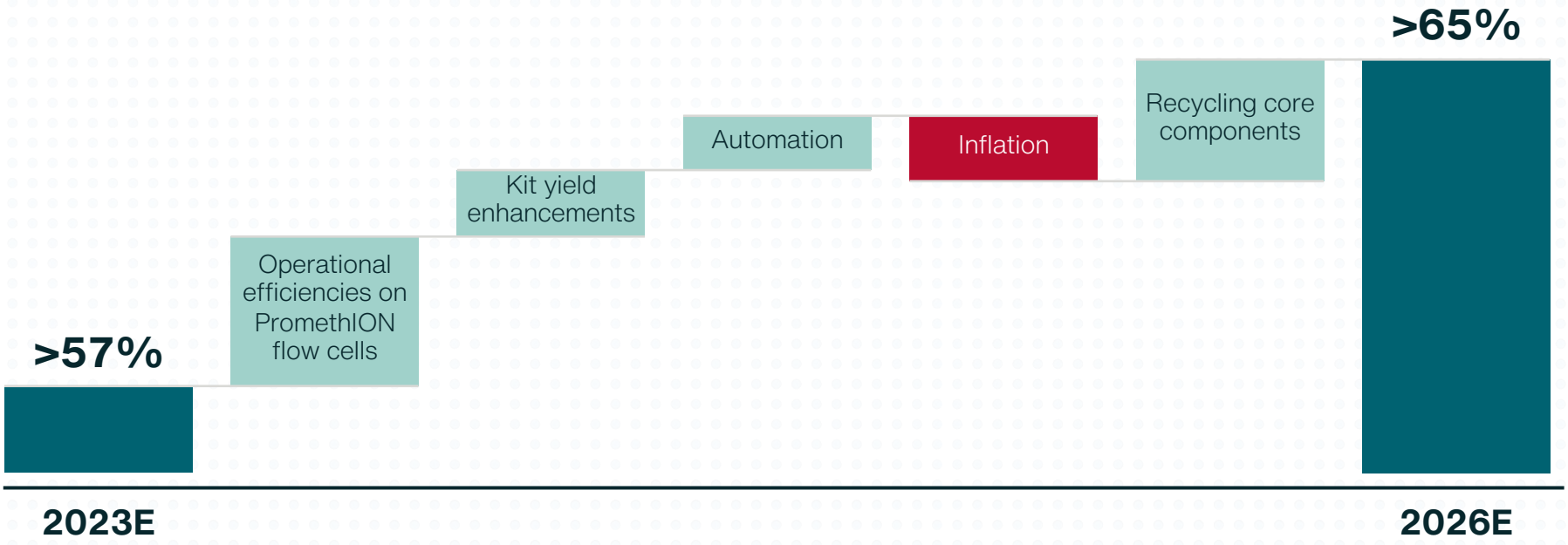
Broad margin expansion opportunities



For illustrative purposes only; boxes not to scale

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Sustaining high-growth whilst driving margins and returns

01

Revenue Growth

- Maintain >30% underlying constant currency revenue growth rates to FY26
- Drive consumables usage among existing customers and new customer acquisition fuelled by innovation
- Drive revenue from clinical and industrial applied markets to 10-20% of LSRT revenue by 2026

02

Margin Expansion

- Broad margin expansion opportunities driven by manufacturing innovation
- On track to >65% by FY 2026

03

Disciplined OpEx

- Disciplined operating expenses in-line with adjusted EBITDA breakeven target
- Reduce OpEx to <15% CAGR between FY23 and FY26
- Investing in high-growth markets to drive sustainable value creation

Underlying LSRT revenue excludes revenue from the Emirati Genome Program and COVID sequencing

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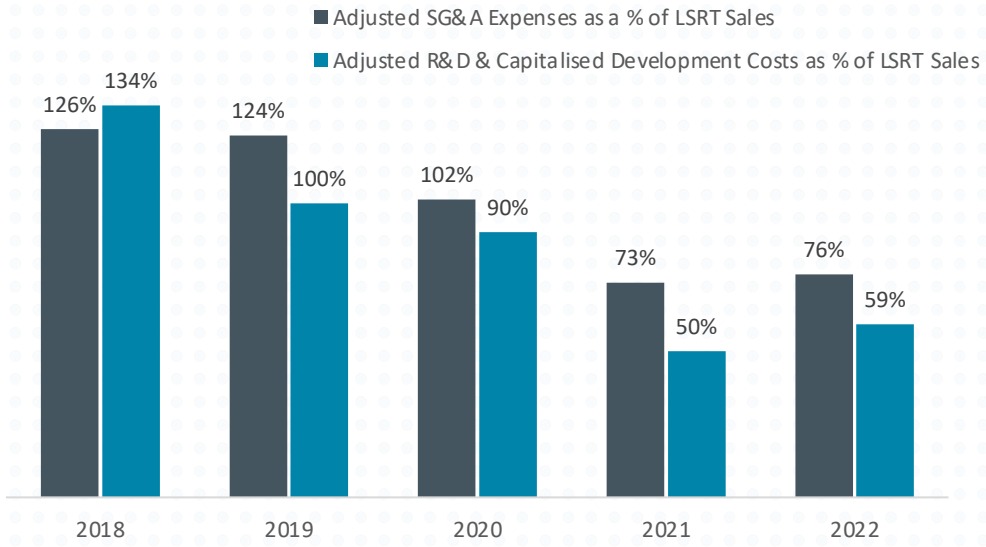
Invested in scaling the business to drive long-term, sustainable growth



	2018	2019	2020	2021	2022
S,G&A Headcount [1]	109	155	186	280	393
R&D Headcount [1]	201	214	235	291	380

Annual Adjusted Operating Expenses as a % of LSRT sales will reduce from 2024

1 Average FTE

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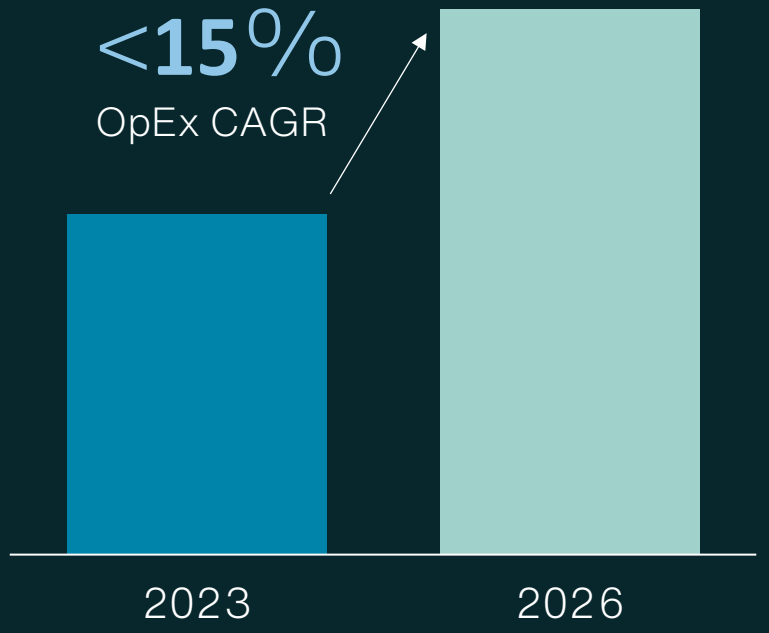
Disciplined expense management; focus on high-growth segments

Research & Development

- Advance innovation roadmap and maintain sustainable IP protection
- Late-stage platform development for clinical and applied industrial markets
- Infrastructure largely in place; disciplined growth in headcount

Sales and Marketing

- Focus on adding resource in high-growth markets
- Leveraging channel partners to access smaller markets
- Infrastructure largely in place; disciplined growth in headcount



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On track to medium term IPO targets

Grow underlying LSRT revenue by >30% per annum

10-20% from LSRT clinical and applied industrial in 2026

Improve LSRT gross margin to > 65% by FY26

Achieve adjusted EBITDA breakeven by end of 2026

Key takeaways

01

Proven track record of delivery high revenue growth, driven by investment in innovation and commercial resource

02

Significant opportunities in large, growing, and underpenetrated markets and unique technology underpin medium term targets

03

Manufacturing innovation and efficiency driving margin expansion and support >65% medium term target

04

Disciplined operating expenses; investments focused on growing market share and unlocking new sequencing applications in clinical and applied industrial markets

Oxford NANOPORE Technologies

Thank you

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