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• 2018 Highlights and Introduction
• Who we are and what we do
• 2018 Financial Results
• Building Capability
• Outlook
2018 Highlights and Introduction

Terry Pizzie, CEO
2018 Highlights

Financial

- Revenues of £58.7m, +68%* (like-for-like revenues +16%)
- Gross Margins of 67.3% (FY17*: 61.1%)
- Adjusted EBITDA £0.7m, a positive movement of £3.7m
- Cash resources of £26.7m** at 31 December 2018, with positive operating cash inflow of £1.5m
- Exceptional non-cash impairment of In Vivo business of £32.1m
- Review led to a change in revenue recognition of licence contracts leading to a restatement of FY17 revenue from £36.5m to £35.0m

Operational / Strategic

- Implementation of investments to focus on core markets with highest growth potential
- Integration of Dharmacon completed, returning to high single digit growth
- Strong commercial team realising solid growth in BioProduction and Molecular Diagnostics
- Exclusive partnership with Rutgers University signed for base editing
- Partnership with Celyad signed for use of Horizon IP in next generation CAR-T therapeutic developments
- Leadership team and commercial structures strengthened

*FY17 comparatives and growth numbers are presented or calculated after restatement for prior year adjustment
**Includes £1.7m of cash received in error associated with the acquisition of Dharmacon. This was returned in 2019.
Who we are and what we do

Terry Pizzie, CEO
Who we are, what we do

The ‘go-to’ cell engineering experts

• World leader in gene editing and gene modulation technologies
  • HQ in Cambridge, UK with offices in USA and Japan
  • 12-year track record, unrivalled experience & know-how
  • Completed >7,000 gene edits, targeting >3,000 genes in more than 70 cell lines
  • 94% success rate of delivering requested alteration in requested cell line
  • >480 CRISPR screens completed and ongoing (FY17:c350)

• Driving next wave of precision medicine
  • Precise, unique suite of DNA editing tools and functional genomics platform
  • Products and services enable researchers to alter genes or modulate their function
  • Our ability to design and engineer a cell’s DNA to mimic a patient’s DNA creates valuable insights into the genetic drivers of disease, its diagnosis and ultimately treatment

• Enabling the global life science community
  • Customers include leading research institutions and biopharma companies
  • Unique commercial team provides global market access
Who we are, what we do

Market opportunity for gene editing

• Major opportunity, growing rapidly
  • Global market growth from $1.4bn in 2018 to $4.4bn by 2023\(^1\)
  • Global market will exceed US$7.5bn by 2024\(^2\)

\(^1\) Source: BCC Research March 2019
\(^2\) Source: MarketWatch February 2019

• Broad market – we focus on human health

• Key drivers - rising prevalence of cancer and increasing demand for personalised medicine

• Horizon’s addressable market ca. $2.5bn in 2019
Customer intimacy leads to a virtuous circle of commercial innovation and growth

Our business model

Market Context
The challenge for healthcare
- Aging population
- Increased prevalence of disease
- Rising cost of drug development
- Demand for targeted therapies

Our science
Our core capability
- Gene editing & manipulation
- Influence cell mechanisms to enable genetic drivers of disease to be recreated in the form of human cells

Solutions for customers
Our applied expertise and insights
- Tools and services that advance the understanding of genetic drivers of disease, its diagnosis and ultimately its treatment

- Better fundamental research
- Reduce costs and time of drug development
- Rescue of drug programmes
- Drug manufacture
- Better diagnostics

Innovation and new product development

Who we are, what we do
Influencing the path to protein

Why proteins?
- Critical for function and structure
- Implicated in disease
- Therapeutic targets
- Used as biotherapeutic drugs

Who we are, what we do
## Who we are, what we do

### Supporting customers from research to therapy

<table>
<thead>
<tr>
<th>ACADEMIC RESEARCH</th>
<th>DIAGNOSTIC TEST DEVELOPERS</th>
<th>PHARMA / BIOTECH DRUG DISCOVERY &amp; DEVELOPMENT</th>
<th>PHARMA / BIOTECH BIOPRODUCTION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gene Modulation</strong></td>
<td><strong>Gene Editing</strong></td>
<td><strong>Gene Modulation</strong></td>
<td><strong>Gene Editing</strong></td>
</tr>
<tr>
<td>Ca. US$130m*</td>
<td>Ca. US$80m*</td>
<td>Ca. US$2,200m*</td>
<td>Ca. US$60m*</td>
</tr>
<tr>
<td>Cells used to investigate biological pathways</td>
<td>Cells engineered to provide renewable, reproducible reference material</td>
<td>Cells used to investigate biological pathways and mechanisms of drug action</td>
<td>Engineered CHO** Cell Lines used to produce biological drugs</td>
</tr>
<tr>
<td>Products</td>
<td>Products &amp; Services</td>
<td>Products &amp; Services</td>
<td>Products</td>
</tr>
<tr>
<td>Share knowledge in peer-reviewed publications</td>
<td>Enable safe, accurate, profitable diagnostics</td>
<td>Fast, efficient development of high value drugs</td>
<td>Cost-efficient production of protein therapeutics</td>
</tr>
</tbody>
</table>

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*Market and segment estimates prepared using market research reports and internal estimates based upon customer/market insight

**CHO cells: Chinese Hamster Ovary cells used to produce therapeutic proteins
2018 Financial Results

Financial highlights – FY2018

Revenue
- £58.7m revenue (£60.5m at constant currency\(^1\))
- 68% growth, driven by products
- Like-for-like growth of 16% in legacy Horizon business

Gross margin
- 67.3% gross margin
- Strong contribution from applied products
- Full period effect of Dharmacon

Cash
- Well funded business
- Higher margins, cost discipline and debtor collection
- Cash available for investment

Adjusted EBITDA\(^2\)
- Improvement of £3.7m over prior year
- Improved quality of earnings
- Strong order book for 2019

---

1 – Applying prior period’s actual exchange rates to this period’s results
2 – Earnings before interest tax and amortisation, adjusted for exceptional costs, site closure and other costs
3 – FY17 comparatives and growth numbers are presented or calculated after restatement for prior year adjustment
4 – Includes £1.7m of cash received in error associated with the acquisition of Dharmacon. This was returned in 2019.
Financial highlights

<table>
<thead>
<tr>
<th></th>
<th>Growth</th>
<th>FY17*</th>
<th>FY18</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue</td>
<td>148%</td>
<td>£12.6m</td>
<td>£31.3m</td>
</tr>
<tr>
<td>Revenue CC</td>
<td>158%</td>
<td>£12.6m</td>
<td>£32.5m</td>
</tr>
<tr>
<td>GM%</td>
<td>59%</td>
<td>64%</td>
<td></td>
</tr>
</tbody>
</table>

Business highlights

- Full year impact of Dharmacon in 2018
- Growth driven by gains in RNAi and CRISPR reagents including CRISPR libraries
- Dharmacon portfolio returned to growth
- Organic revenue expected to grow now sales team fully integrated and trained
- Investment to increase capacity of cell line engineering platform and reduce COGs
- Upgrade of web platform underway

* FY17 comparatives and growth numbers are presented or calculated after restatement for prior year adjustment
Bioproduction
- FY17 revenue restated by £1.6m following review of contracts
- Strong performance in the second half of 2018 as customer budgets second-half weighted
- Two new commercial licences in excess of £1m signed

Molecular diagnostics
- Robust performance in the period showing increasing revenue
- New reference standards launched supporting growth into 2019

*FY17 comparatives and growth numbers are presented or calculated after restatement for prior year adjustment
**Business highlights**

- 2018 includes £1.6m of leveraged R&D revenue
- Services proved challenging in a number of areas
  - In vivo – dedicated commercial team in place from H2 2018
  - Cell Line Engineering – difficult to access academic market due to cost. Process improvement and automation to support cost reduction with similar margins
- CRISPR screening – expected uptake in sales in 2019 supported by doubling of order book

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**Financial highlights**

<table>
<thead>
<tr>
<th></th>
<th>FY17*</th>
<th>FY18</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue</td>
<td>-9%</td>
<td>£13.7m</td>
</tr>
<tr>
<td>Revenue CC</td>
<td>-7%</td>
<td>£13.7m</td>
</tr>
<tr>
<td>GM%</td>
<td>54%</td>
<td>60%</td>
</tr>
</tbody>
</table>

**Revenue £m**

- 2017: Reported
- 2018: CC

*FY17 comparatives and growth numbers are presented or calculated after restatement for prior year adjustment*
2018 Financial Results

Adjusted EBITDA bridge 2017 to 2018

- Full year impact of Dharmacon positively contributed to margin growth, providing a stable financial platform for the Group as a whole
- Dharmacon facility brought additional R&D, Sales and Marketing, IT, Operations, Finance, HR and other support functions
- Legacy revenue growth positively impacted overall growth in gross margin
- Legacy margin improvement helped to grow overall margins, driven by Applied Research and Leveraged R&D.

- Increases in overall Opex due to
  - Investments in expanding the commercial team including into ASPAC
  - Expansion of scientific workforce to support customer projects, R&D and new product developments
  - Corporate cost increases include additional IT, finance and legal support
## Robust balance sheet

<table>
<thead>
<tr>
<th></th>
<th>2018 £'000</th>
<th>2017 £'000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goodwill</td>
<td>51,750</td>
<td>73,831</td>
</tr>
<tr>
<td>Other intangible assets</td>
<td>45,644</td>
<td>52,742</td>
</tr>
<tr>
<td>Property, plant and equipment</td>
<td>11,680</td>
<td>13,059</td>
</tr>
<tr>
<td>Investments</td>
<td>2,960</td>
<td>1,859</td>
</tr>
<tr>
<td>Other</td>
<td>433</td>
<td>433</td>
</tr>
<tr>
<td><strong>Non current assets</strong></td>
<td><strong>112,467</strong></td>
<td><strong>141,924</strong></td>
</tr>
<tr>
<td>Inventories</td>
<td>2,541</td>
<td>2,573</td>
</tr>
<tr>
<td>Trade and other receivables</td>
<td>19,071</td>
<td>17,684</td>
</tr>
<tr>
<td>Corporation tax receivable</td>
<td>3,053</td>
<td>1,344</td>
</tr>
<tr>
<td>Cash and cash equivalents</td>
<td>26,740</td>
<td>28,084</td>
</tr>
<tr>
<td><strong>Current assets</strong></td>
<td><strong>51,405</strong></td>
<td><strong>49,685</strong></td>
</tr>
<tr>
<td><strong>Total assets</strong></td>
<td><strong>163,872</strong></td>
<td><strong>191,609</strong></td>
</tr>
<tr>
<td>Total current liabilities</td>
<td>(13,912)</td>
<td>(11,325)</td>
</tr>
<tr>
<td><strong>Net current assets</strong></td>
<td><strong>37,493</strong></td>
<td><strong>38,360</strong></td>
</tr>
<tr>
<td>Non-current liabilities</td>
<td>(6,648)</td>
<td>(10,456)</td>
</tr>
<tr>
<td><strong>Net assets</strong></td>
<td><strong>143,313</strong></td>
<td><strong>169,828</strong></td>
</tr>
<tr>
<td>Total equity</td>
<td><strong>143,313</strong></td>
<td><strong>169,828</strong></td>
</tr>
</tbody>
</table>

### Comment

- Goodwill, intangible assets and PPE reduced largely due to the non cash impairment of £32.1m of the In Vivo cash generating unit
  - Prudent revision of In Vivo growth forecasts down from 27.7% to <10%
  - In Vivo business contributed ca. 8% of revenue in FY18
- Cash balance of £26.7m* available to support investments in 2019
- Small reduction in net current assets largely driven by cash movement
- Reduction in non-current liabilities driven by recognition of deferred tax asset

*Includes £1.7m of cash received in error associated with the acquisition of Dharmacon. This was returned in 2019.

FY17 comparatives and growth numbers are presented or calculated after restatement for prior year adjustment.
## Cash flow

### 2018 Financial Results

<table>
<thead>
<tr>
<th>Description</th>
<th>2018 £'000</th>
<th>2017 £'000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net cash inflow/(outflow) from operating activities</td>
<td>1,519</td>
<td>(13,871)</td>
</tr>
<tr>
<td>Net interest received / (paid)</td>
<td>79</td>
<td>(621)</td>
</tr>
<tr>
<td>Acquisition of investment in joint venture</td>
<td>(1,400)</td>
<td>-</td>
</tr>
<tr>
<td>Acquisition of subsidiaries net of cash</td>
<td>-</td>
<td>(37,519)</td>
</tr>
<tr>
<td>Purchases of property, plant and equipment and intangibles</td>
<td>(3,559)</td>
<td>(4,063)</td>
</tr>
<tr>
<td><strong>Net cash used in investing activities</strong></td>
<td>(4,880)</td>
<td>(42,203)</td>
</tr>
<tr>
<td>Net cash from financing activities</td>
<td>1,433</td>
<td>77,572</td>
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<tr>
<td><strong>Net (decrease)/increase in cash and cash equivalents</strong></td>
<td>(1,928)</td>
<td>21,498</td>
</tr>
<tr>
<td>Cash and cash equivalents at beginning of year</td>
<td>28,084</td>
<td>6,071</td>
</tr>
<tr>
<td>Effect of exchange rate changes</td>
<td>584</td>
<td>515</td>
</tr>
<tr>
<td><strong>Net (decrease)/increase in cash and cash equivalents</strong></td>
<td>(1,928)</td>
<td>21,498</td>
</tr>
<tr>
<td>Cash and cash equivalents at end of year</td>
<td>26,740</td>
<td>28,084</td>
</tr>
</tbody>
</table>

### Comment

- Positive operating cash flow achieved through benefit of improved revenue, margin and cost control and better working capital performance
- Investments includes £1.4m investment in Avvinity JV, patents, software and computer equipment
- Financing activities proceeds received from issue of new shares on exercise of options

FY17 comparatives and growth numbers are presented or calculated after restatement for prior year adjustment.
Track record of growing revenue and margin

- Strong growth rates in revenue and margin demonstrated in recent years
  - Revenue – 43% CAGR* (14% CAGR excl. Dharmacon acquisition)
  - Gross Margin – 59% CAGR* (29% CAGR excl. Dharmacon acquisition)

- Investing for Growth strategy will support continued growth in revenue and margins

* CAGR based on the period 2015-2018

FY17 comparatives and growth numbers are presented or calculated after restatement for prior year adjustment
Building Capability

Investing for Growth

Terry Pizzie, CEO
Building capability - Investing for Growth

‘Investing for Growth’ goals

Cell solutions
- The ‘go-to’ provider of IP rich cell engineering solutions
- Commercially focused innovation; solutions that improve, change or help understand the cell
- Targeted organic and inorganic investments to build capability and market access

Leadership
- ‘Cross the chasm’; converting early insights to market leadership position
- World class commercial operations
- An employer of choice; attracting and retaining the best talent

Repeatability
- A highly scalable business based on visible and predictable revenues
- Reputation for delivery on promise to customers, being the partner of choice
- Operational efficiency through automation and digitization
Investment to support sustainable growth

Building the capability - Investing for Growth

Ca. £5m investment over 18 months

Operational investments in people, processes and systems to sustainably grow

People and Process

Industrialization of gene editing and cell handling to increase productivity and capacity

Automation

Management of scientific and business date to institutionalize processes and knowledge

Data

eCommerce platform evolution to enhance conversion and for further product aggregation

Digitization

Scientific leadership for continued focus on incremental and disruptive technical innovations

Innovation

Broaden market penetration and increase cross-selling

- Operational investments in people, processes and systems to sustainably grow
- Industrialization of gene editing and cell handling to increase productivity and capacity
- Management of scientific and business date to institutionalize processes and knowledge
- eCommerce platform evolution to enhance conversion and for further product aggregation
- Scientific leadership for continued focus on incremental and disruptive technical innovations

Investing for Growth
Organisational development

• Business Unit structure introduced January 2019 to provide greater focus and customer targeting
  • Research Reagents
  • Bioproduction
  • Diagnostics
  • Screening
  • In-Vivo

• Dedicated Business Unit Managers and associated Product Managers

• Ownership for understanding market dynamics and developing strategies, products and services to maximise our competitive position

• Future reporting will be structured around these Business Units
Building capability - Investing for Growth

Global sales team in place

December 2017

<table>
<thead>
<tr>
<th>Horizon</th>
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<tbody>
<tr>
<td>EU Field</td>
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<tr>
<td>US Field</td>
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<tr>
<td>APAC</td>
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<td>Key Account</td>
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<td><strong>Total</strong></td>
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<table>
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<tr>
<td>US Field</td>
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<td>APAC</td>
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<tr>
<td><strong>Total</strong></td>
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</table>

**January 2018**

<table>
<thead>
<tr>
<th>Field Sales</th>
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</thead>
<tbody>
<tr>
<td>EU</td>
<td>9</td>
</tr>
<tr>
<td>US East</td>
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</tr>
<tr>
<td>US West</td>
<td>5</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>32</strong></td>
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</table>

<table>
<thead>
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<th>Key Account Sales</th>
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<tbody>
<tr>
<td>KAP</td>
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<tr>
<td>In-Vivo</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>32</strong></td>
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<table>
<thead>
<tr>
<th>APAC Sales</th>
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<td></td>
<td>4</td>
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<tr>
<td><strong>Total</strong></td>
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<table>
<thead>
<tr>
<th>Cross Training</th>
<th></th>
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<tbody>
<tr>
<td></td>
<td></td>
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</table>

**December 2018**

<table>
<thead>
<tr>
<th>Field Sales</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>EU</td>
<td>10</td>
</tr>
<tr>
<td>US East</td>
<td>8</td>
</tr>
<tr>
<td>US West</td>
<td>7</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>44</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Key Account Sales</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>KAP</td>
<td>7</td>
</tr>
<tr>
<td>In-Vivo</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>44</strong></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>APAC Sales</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>9</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>44</strong></td>
</tr>
</tbody>
</table>

**Cross Training**

* Global field organisation of 50 includes Field Application Specialists
Matching sales approach to the opportunity

• Commercial team achieves both scale and focus by being able to serve customers through direct field, distribution and digital channels.
Maintaining Scientific Leadership

Terry Pizzie, CEO
Celyad licenses Horizon’s shRNA platform for next generation allogeneic CAR-T cells

Celyad (NASDAQ: CYAD) is developing CAR-T cell-based therapies
- October 2018, announced exclusive option & licence agreement
- Provides access to Horizon’s high performance, SMARTvector-based shRNA technology
- shRNA platform designed to deliver efficient target knockdown with high specificity
- Celyad plans to submit an IND for CYAD-02 in H12020

Current status and expectations

- Celyad’s autologous NKG2D CAR T cell therapy is in Phase I/II testing for haematological and solid tumours
- CYAD-02 uses shRNA knockdown to reduce expression of NKG2D ligands preventing fratricide
- CYAD-02 has increased CAR-T expansion and tumour killing over CYAD-01 in a mouse model of acute myelogenous leukaemia
- Horizon continues to develop the SMARTvector as a key technology to develop non-gene edited allogeneic CAR-T cells

Dr. Christian Homsy, former CEO of Celyad
"We are excited to have the opportunity to leverage Horizon’s shRNA platform to further advance our pioneering approach to non-gene edited allogeneic CAR-T cells. Celyad is committed to rapidly advancing its allogeneic program based on highly promising preclinical data which will be presented at SITC. These data provide proof of concept for our shRNA based non-gene-edited allogeneic approach.”
Maintaining scientific leadership

Base editing

Partnership to develop next generation gene editing technology

- Strategic partnership with Rutgers of New Jersey to develop and commercialise Base editing
- Base editing has the potential to provide more accurate gene editing and fewer unintended genomic changes than other methodologies.
- Could help to target many diseases that to date have no treatment
- Horizon has option to license the technology for use in all therapeutic applications
- Horizon to fund research at Rutgers and conduct own POC studies
- Announced January 2019, no financial terms disclosed

Current status and expectations

- Technology transfer to Horizon underway and initial experiments demonstrate successful base editing of both an extrachromosomal and endogenous site
- With the potential of c98% reduction in off-target effects compared to CRISPR, the commercial opportunity for Horizon could be significant

Dr. Shengkan ‘Victor’ Jin of Rutgers University stated: “The cytidine deaminase version of the technology alone could potentially be used for developing ex vivo therapeutics….as well as in vivo therapeutics for inherited genetic diseases. The potential is enormous. In addition to the ‘simple’ diseases caused by a single genetic alteration event, the therapeutic strategy, in principle, could also be useful for treating diseases where permanently targeting a disease-related gene is beneficial.”

Dr. David Kimball, Interim Senior Vice President for Research and Economic Development at Rutgers University, added: “Gene editing technology has truly revolutionized how scientists think about their search for better options and outcomes in the treatment of disease. We look forward to advancing the shared goals of further developing this novel base editing platform and improving human health through this collaboration with Horizon.”
CRISPR screening is emerging as an important high-growth opportunity for Horizon.

1. **CRISPR library & selected cell model**
2. **Genetically modulated cell pool**
3. **Treatment or Assay Start**
4. **NGS and Hit Scoring Analysis**

- **Select target genes - design & manufacture library**
  - Month 1-2
- **Each cell is knocked out for a single gene**
  - Month 3
- **Cells treated with drug candidates**
  - Month 4-5
- **Deep sequencing used to identify hits**
  - Month 6-8

For more information on our CRISPR screening webinar: [https://edge.media-server.com/m6/p/xv7uwm2q](https://edge.media-server.com/m6/p/xv7uwm2q)
Maintaining scientific leadership

**CRISPR screening**

Application across entire spectrum of drug discovery

- Target Identification
- Lead optimisation
- **In vivo** analysis
- ADME Tox
- Patient Stratification
- Pre-clinical Analysis
- Manufacture

**Target ID & Validation**

- De-orphaning phenotypic screens
- Enhancer screening
- Drug repurposing

**In vivo screening**

- Biological Discovery
- MOA Screening

**Genome-wide drug resistance screening**

- Bio-manufacture screening

Application across entire spectrum of drug discovery
• Major, rapidly growing market opportunity
• Our commercial excellence, scientific innovation and industry know-how remain key differentiators
• Investing for Growth strategy will see Horizon shift from a scientifically-led life sciences company to a fully commercial tools company
• Horizon is increasingly well positioned to capitalise on its market-leading position.
• Robust balance sheet and strong order book for 2019
• Expect FY2019 revenues to be in-line with current market expectations and to maintain positive EBITDA development
• Confident in our growth prospects
Any questions?