Cautionary statement regarding forward-looking statements

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All expectations and targets regarding future performance should be read together with the “Assumptions related to 2016-2020 outlook” on page 35 of the Group’s third quarter earnings release dated 26 October 2016. Forward-looking statements are subject to assumptions, inherent risks and uncertainties, many of which relate to factors that are beyond the Group’s control or precise estimate. The Group cautions investors that a number of important factors, including those in this document, could cause actual results to differ materially from those expressed or implied in any forward-looking statement. Such factors include, but are not limited to, those discussed under Item 3.D ‘Risk factors’ in the Group’s Annual Report on Form 20-F for 2015. Any forward-looking statements made by or on behalf of the Group speak only as of the date they are made and are based upon the knowledge and information available to the Group on the date of this presentation.
R&D Strategy: Reliable fill & flow with greater novelty and improved return on investment

### Accelerate Discovery output
- Now have 30 DPUs, of which two thirds are from the original 2009 set. Average 20% turnover every 3 year cycle
- 65% of NMEs* in the clinic were either discovered or worked on by the DPUs
- Average of 60-65 publications annually in world class journals across pharma and vaccines

### Focus where science is innovative
- 80% of NMEs*, biologicals and vaccines have potential to be 1st in class
- Competitive advantage through epigenetics, cell & gene technology, adjuvants, self amplifying RNA, inhaled technology, chimp adenovector

### Improve balance internal vs external
- 60% of NMEs* in the clinic are home-grown, 40% partnered or in-licensed
- >1,500 collaborations inclusive of academic, public-private partnerships, biotech and pharma

### Reduce fixed cost and improve ROI
- 20% faster study execution times^﻿
- Pharma R&D headcount reduced from 12,000 to 8,500 since 2008, reduced to two global pharma R&D hubs
- Balance discovery and development R&D spend (pharma split ~40% Discovery; ~60% Development)

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*NMEs: Phase I – III/submitted, per pipeline chart; ^ comparison vs peers based on CMR data.
R&D driving growth and returns to shareholders

Annual sales from 11 new products*

≥£6bn sales achievable as early as 2018

25% of pharmaceutical sales from new pharma products† in Q3 2016

2016 pipeline progress:

- Filed 4 assets for regulatory approval
- Started 5 Phase III studies
- Started 5 Phase II studies

*11 new products defined as: Breo, Anoro, Incruse, Nucala, Tanzeum, Tivicay, Triumeq, Menveo, Bexsero and Shingrix. All expectations and targets regarding future performance should be read together with the “Assumptions related to 2016-2020 outlook” on page 35 of the Group’s third quarter earnings release dated 26 October 2016.

†New products refers to pharma only excluding vaccines
R&D Strategy: focused on 6 therapy areas

- HIV / Infectious Diseases
- Respiratory
- Vaccines
- Immuno–Inflammation
- Oncology
- Rare Diseases
Amongst integrase inhibitors, dolutegravir stands out

Unique product characteristics

- **Rapid and potent antiviral activity**
- **High barrier to resistance**
  - In vitro findings supported by Phase III data
  - Dissociation from mutant IN-DNA complexes slower vs RAL or EVG
- **Long binding to wild type integrase**
  - Dissociation from mutant IN
- **Long half-life; low variability in exposure**
  - DTG (50 mg QD) exposures
  - 19-fold above IC50
  - Long ‘tail’ – drug plasma concentrations up to 216h post dose
- **Drug-Drug interactions (DDIs)**
  - Few clinically significant DDIs,
  - Unboosted
- **Well tolerated**
  - Few discontinuations due to AEs in INI-naive clinical trials

Unprecedented and unmatched clinical trial results in HIV

<table>
<thead>
<tr>
<th>Vs. efavirenz</th>
<th>Vs. raltegravir</th>
<th>Vs. darunavir</th>
<th>Vs. atazanavir</th>
</tr>
</thead>
<tbody>
<tr>
<td>SUPERIOR (naive)</td>
<td>SUPERIOR (experienced)</td>
<td>SUPERIOR (naive)</td>
<td>SUPERIOR (women/naive)</td>
</tr>
</tbody>
</table>

SINGLE, FLAMINGO, SPRING 2, SAILING and ARIA were non-inferiority studies with a pre-specified analysis for superiority. Chart shows primary endpoint outcomes.

Positive headline results from dolutegravir + rilpivirine two drug regimen Phase III study, supports filing in 2017

Innovative pipeline addressing unmet patient needs

**Long-acting treatment regimens**
- cabotegravir + rilpivirine: PhIII underway

**Dolutegravir-based regimens**
- Tivicay and Triumeq

**Legacy ARV drug portfolio**
- abacavir/lamivudine, maraviroc & others

**Search for remission and cure**

**Prevention**
- cabotegravir long-acting: PhIII underway

**New MOA**
- Attachment inhibitor
- Maturation inhibitors
- Allosteric integrase inhibitors*
- Inhibitor of multiple targets*

**Dolutegravir 2-drug regimens**
- dolutegravir + rilpivirine: PhIII positive readout supports filing in 2017
- dolutegravir + lamivudine: PhIII ongoing

*Denotes preclinical asset
Ongoing studies: DTG+3TC GEMINI studies started Aug 2016; CAB+RPV ATLAS and FLAIR studies started Nov 2016; CAB monotherapy HPTN083 study started Dec 2016
Portfolio of once-a-day, easy-to-use Ellipta inhalers

Strong commercial performance; closed triple filed

Closed triple:
-Filed in US and EU for COPD in Q4 2016
  -10 month review expected in US
-FULFIL data demonstrated superiority vs Symbicort in lung function presented at ERS Sept 2016
-IMPACT COPD exacerbation data expected H2 2017
-Started Phase III for asthma Q4 2016
Nucala launch off to a strong start

Additional data and indications expected to drive further growth

Pipeline update:

- COSMOS study† on positive long term safety and efficacy of Nucala presented at AAAAI
- JACI publication˄ showing hospitalisations and ER visits halved with Nucala
- MUSCA study showing QoL and lung function to be presented at AAAAI, March 2017
- Phase III COPD data expected 2017
- In development for:
  - Eosinophilic granulomatosis with polyangiitis (EGPA)
  - Atopic dermatitis
  - Hyper eosinophilic syndrome (HES)
  - Nasal polyposis

Launched in US, Europe, Japan

US J code available Jan 2017

*Source: GSK company results
†Long-term Efficacy and Safety of Mepolizumab in Patients With Severe Eosinophilic Asthma: A Multi-center, Open-label, Phase IIib Study Njira Lugogo, MD; Christian Domingo, MD; Pascal Chanez, MD, PhD; Richard Leigh, MBChB; Martyn J. Gilson, MSc; Robert G.Price, MSc; Steven W. Yancey, MSc; and Hector G. Ortega, MD. Clinical Therapeutics/Volume 38, Number 9, 2016
**Mepolizumab data in eosinophilic lung disease (EGPA)**

Phase III data supports 2017 filing

### Co-primary endpoints

<table>
<thead>
<tr>
<th></th>
<th>Mepolizumab</th>
<th>Placebo</th>
<th>(p) value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Accrued duration of remission</strong></td>
<td>19/68 (28%)</td>
<td>2/68 (3%)</td>
<td>(&lt;0.001)</td>
</tr>
<tr>
<td><strong>Remission at wk 36 and 48</strong></td>
<td>22/68 (32%)</td>
<td>2/68 (3%)</td>
<td>(&lt;0.001)</td>
</tr>
</tbody>
</table>

### Secondary endpoints

<table>
<thead>
<tr>
<th></th>
<th>Mepolizumab</th>
<th>Placebo</th>
<th>(p) value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Average OCS dose during last 4 wks ≤ 4mg/day</strong></td>
<td>30/68 (44%)</td>
<td>5/68 (7%)</td>
<td>(&lt;0.001)</td>
</tr>
<tr>
<td><strong>Remission within first 24 wks and maintained to study end</strong></td>
<td>13/68 (19%)</td>
<td>1/68 (1%)</td>
<td>(=0.007)</td>
</tr>
<tr>
<td><strong>Time to first EGPA relapse</strong></td>
<td>Hazard ratio = 0.32; 95% CI: (0.21, 0.50)</td>
<td></td>
<td>(&lt;0.001)</td>
</tr>
</tbody>
</table>

Full results from the study, including data from the secondary endpoints, will be submitted for presentation at an upcoming scientific congress and for publication in a peer-reviewed journal.

The pivotal phase III study, MEA115921, was a randomised, double-blind study with the purpose to investigate the efficacy and safety of mepolizumab 300mg (administered subcutaneously every 4 weeks) compared with placebo over a 52-week study treatment period in 136 patients with relapsing or refractory EGPA receiving standard of care therapy including background corticosteroid therapy with or without immunosuppressive therapy.
Next generation respiratory medicines

**Subdivision of severe asthma patients**

- Phenotypically distinct patients: anti-IL33r – PhIIa start 2017
- Extended pharmacology: anti-IL5 mAb – PhIII start 2018

**Disease modification in COPD**

- Inhaled PI3Kδ inhibitor – PhIIb start 2017
- mepolizumab – file 2017
- danirixin – PhIIb start 2017

**Potential in additional disease areas**

- IPF: Inhaled αvβ6 inhibitor – PhIIa start 2018
- ALI: TNFR1 antagonist dAb – PhII data 2017

IPF = idiopathic pulmonary fibrosis; ALI = acute lung injury
Pipeline progression in two promising new mechanisms of action

**Oral danirixin**

Real-time data demonstrate improvement of symptoms with danirixin in symptomatic COPD (frequent exacerbators)

![Graph showing improvement in symptoms with danirixin](image)

Trend for reduction in COPD exacerbations requiring health care resource utilisation (HCRU) with danirixin*:

![Graph showing trend in exacerbations](image)

*Interim PhII data in symptomatic COPD

**Inhaled PI3Kδ inhibitor**

Directionality of neutrophil migration is aberrant in COPD patients and corrected by PI3K inhibition - *in vitro*

![Diagram showing change in sFlow at FRC after 28 days](image)

Individual patient treated with GSK2269557 on top of SoC

Individual patient treated with placebo on top of SoC

Sapey et al, AJRCCM 2011; 183: 1176 Burrowes et al. Interface Focus 2013;3:20120057 (Fluidda)
Deep pipeline in Immuno-Inflammation

GSK Pipeline

Targeted Biologicals
- Benlysta
- sirukumab
- Anti-GM-CSF
- Anti-IL-7
- Anti-CCL20
- Anti-OSM
- Anti-LAG3

Targeted Small Molecules
- RIP1
- I-BET

Targeting Resistant Disease
- RIP1
- I-BET
- Anti-IL-7
- Anti-CCL20
- Anti-LAG3
- Anti-OSM

Early Intervention & Remission Induction
- Anti-GM-CSF
- RIP1
- Anti-CCL20
- Anti-LAG3
Benlysta: extensive ongoing development

The only medicine approved to treat SLE in over 50 years

- Only medicine to treat SLE* to have succeeded in PhIII
  - Three other medicines have recently failed
- 4th consecutive positive pivotal study
  - Improvement in time to first severe flare
  - Trend for reduction in corticosteroid use
  - Further filings Japan (Dec 2016); China (2017)
- Multiple ongoing studies, including subgroups in SLE, lupus nephritis, long-term remission pre-treatment with rituximab and other indications

Real world studies reinforce effectiveness through strong patient response

- ≥ 80% improvement
- 50–79% improvement
- 20–49% improvement
- < 20% improvement
- No improvement
- Worse

Sub-cutaneous formulation filed in US & EU Sept 2016

Real world studies observed an overall clinical improvement of at least 20% in 78% of patients


*SLE = systemic lupus erythematosus
Activated macrophages abundantly expressed in early RA synovial tissue

Reduction in macrophage infiltration correlates with improvement in disease activity scores\(^1,2\)

Important in macrophage production and infiltration in the tissues

Macrophage related markers may facilitate a precision medicine approach

Potential to target a number of immuno-inflammatory diseases

**GSK’165: potential first in class anti-GM-CSF**

*Granulocyte-macrophage colony stimulating factor (GM-CSF) for RA and hand OA*

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**Further studies for hand osteoarthritis underway,**

Phase II data expected H2 2017
GSK’772: oral anti-inflammatory RIP-1 kinase inhibitor with potential for psoriasis, RA and ulcerative colitis

Phlla readouts 2017/18:
- Psoriasis
- RA

Kinome plot

ATP = adenosine triphosphate
Multiple pipeline opportunities in oncology

**Immuno-Oncology**
- **OX-40 Agonist**: PD1 combination start Q3’16
- **TLR-4 Agonist**: Ph I start by Q1’17
- **BCMA ADC**: Clinical POC Q4’16; Phase 1 ORR ~67% in multiple myeloma
- **NY-ESO-1 TCR-Ts**: 50% ORR in sarcoma; study start in NSCLC, others
- **ICOS Agonist**: Ph I start Q2’16

**Epigenetics**
- **EZH2 Inhibitor**: MTD 2016
- **PRMT5 Inhibitor**: Ph I start Q2’16
- **LSD1 Inhibitor**: RP2D in SCLC 2016
- **BET Inhibitor**: Combo study start & single agent efficacy data across indications 2017

GSK has an option on the NY-ESO-1 programme through clinical proof of concept and, if exercised, would assume full responsibility for the programme.

MTD = max. tolerated dose, POC = proof of concept, RP2D = recommended Phase II dose.
GSK’916: Anti-BCMA-ADC, potential first-in-class next generation therapy for multiple myeloma

- Cell Maturation Antigen
- Antibody Drug Conjugate (ADC) with MMAF (auristatin derivative)
- High-expression target in multiple myeloma
- Immunogenic cell death inducer
- Excellent Phase I efficacy in tough to treat population: ~67% at >Phase II dose

Safety observations:
Thrombocytopenia, transient
Corneal toxicity: dry eye, blurry vision, reversible

MMAF = Monomethyl auristatin F; ASH: American Society of Hematology.
*30 patients have been enrolled and included in the denominator of Part 1; only 25 response are shown in the graph as some patients did not have response assessment (missing), or did not have data entered at the time of data cut.
Building capabilities in diseases with clear unmet need

**Cell and Gene Therapy**

Strimvelis for ADA SCID – first approved ex-vivo stem cell gene therapy

Pipeline of diseases and approaches:
- MLD
- WAS
- Beta thalassaemia**
- NY ESO
- Next gen CAR-T
- TCR

**Preliminary data from ongoing study in beta thalassaemia**
- All patients severe genotype, β0/β+ (Cod39 / IVS1-110)
- Patients of this genotype make virtually no endogenous beta-globin and require frequent transfusions
- Reduction in beta-globin transfusions of 96%, 70% and 77% observed at data cut off (Nov 2016)

**Beta-globin transfusion requirement**

*Yearly ml/kg for each patient*

<table>
<thead>
<tr>
<th>Patient</th>
<th>Pre ICF</th>
<th>From 3 months post GT</th>
</tr>
</thead>
<tbody>
<tr>
<td>001</td>
<td>242</td>
<td>10</td>
</tr>
<tr>
<td>003</td>
<td>274</td>
<td>81</td>
</tr>
<tr>
<td>004</td>
<td>191</td>
<td>43</td>
</tr>
</tbody>
</table>

Based on follow up of 1.1 year (patient 001), 6 months (patient 003) and 9 months (patient 004). ICF = Informed Consent Form. GT = gene therapy

**GSK has an exclusive option to in-license the Beta-Thal program from the Hospital San Raffaele (OSR) and the Telethon Foundation (Telethon); Data provided with consent of OSR/Telethon.**
**Intense period of R&D activity with multiple milestones**

### Important clinical readouts by end 2018 inc:
- **Between 20-30 assets inc oncology & immuno-inflammation.**
  - Mepolizumab: Phase III for EGPA (Q4 16)
  - Phase III for COPD
  - Phase III for HES and nasal polyps

- **Closed triple:**
  - Phase III COPD exacerbations
  - Phase III asthma

- **Dolutegravir:**
  - Phase III dual combo with rilpivirine (Q4 16)
  - Phase III dual combo with lamivudine

- **Attachment inhibitor in HIV Phase III**
- **MLD (Metachromatic leukodystrophy)**
- **Shingrix:** immunocompromised and revaccination

### Expected Phase III starts by end 2018 include:
- Daprodustat for anemia (started Q4 16)
- Cabotegravir + rilpivirine in HIV treatment (started Q4 16)
- Closed triple for asthma (started Q4 16)
- Cabotegravir for prophylaxis in HIV (started Q4 16)
- Long-acting anti-IL5 for severe asthma
- Anti-GM-CSF in early/established RA and hand OA
- NY ESO-1 in sarcoma
- OX40 in a solid tumour

### Expected filings by end 2018 include:
- Dolutegravir + rilpivirine for HIV treatment
- Dolutegravir + lamivudine for HIV treatment
- Mepolizumab for EGPA, HES and nasal polyps
- Closed triple exacerbation indication
- Closed triple for asthma
- ‘728 (TTR) for FAP
- MLD (Metachromatic leukodystrophy)

### Expected approvals in 2017:
- Shingrix
- Closed triple for COPD
- Benlysta SC
- Sirukumab for RA