

Merck Investor Day



FORWARD-LOOKING STATEMENT OF MERCK & Co., Inc., Kenilworth, N.J., USA

These presentations from Merck & Co., Inc., Kenilworth, N.J., USA (the “company”) include “forward-looking statements” within the meaning of the safe harbor provisions of the U.S. Private Securities Litigation Reform Act of 1995. These statements are based upon the current beliefs and expectations of the company’s management and are subject to significant risks and uncertainties. There can be no guarantees with respect to pipeline products that the products will receive the necessary regulatory approvals or that they will prove to be commercially successful. If underlying assumptions prove inaccurate or risks or uncertainties materialize, actual results may differ materially from those set forth in the forward-looking statements. Risks and uncertainties include but are not limited to, general industry conditions and competition; general economic factors, including interest rate and currency exchange rate fluctuations; the impact of pharmaceutical industry regulation and health care legislation in the United States and internationally; global trends toward health care cost containment; technological advances, new products and patents attained by competitors; challenges inherent in new product development, including obtaining regulatory approval; the company’s ability to accurately predict future market conditions; manufacturing difficulties or delays; financial instability of international economies and sovereign risk; dependence on the effectiveness of the company’s patents and other protections for innovative products; and the exposure to litigation, including patent litigation, and/or regulatory actions. The company undertakes no obligation to publicly update any forward-looking statement, whether as a result of new information, future events or otherwise. Additional factors that could cause results to differ materially from those described in the forward-looking statements can be found in the company’s 2018 Annual Report on Form 10-K and the company’s other filings with the Securities and Exchange Commission (SEC) available at the SEC’s internet site (www.sec.gov).

TODAY'S AGENDA

Welcome & Introductions

Ken Frazier, Chairman and Chief Executive Officer

Financial & Value Creation Overview

Rob Davis, Chief Financial Officer and Head of Global Services

Commercial Growth Drivers: KEYTRUDA & Beyond

Frank Clyburn, Chief Commercial Officer

Animal Health Innovation

Rick DeLuca, President, Merck Animal Health

Merck R&D Strategy Overview

Dr. Roger M. Perlmutter, President, Merck Research Laboratories

Pipeline Opportunities

Dr. Roy Baynes, Head of Clinical Development and Chief Medical Officer, and Mike Nally, Chief Marketing Officer

Future of Merck R&D: Panel Discussion

Merck Research Laboratories Leadership: Dr. Dean Li, Dr. Fiona Marshall and Dr. Daria Hazuda

Q&A / Closing Remarks

All

Lunch Break

All

Breakout Sessions

Pipeline Deep Dive

Next Generation Discovery

International Opportunity & China



Additional members of the Merck leadership team to join after Q&A



AFTER MORE THAN 125 YEARS, OUR MISSION REMAINS AS CRITICAL AS EVER

To discover, develop and
provide innovative products
and services that save and
improve lives around the world



Premier science-driven biopharmaceutical company

TODAY'S INDUSTRY LANDSCAPE

CHALLENGES

**Rising cost of
healthcare and R&D**

**Pricing policy uncertainty
and shift to outcome-based
reimbursement in the U.S.**

**Increased molecular
target complexity**

**Intensified generic and
biosimilar competition**

OPPORTUNITIES

**High unmet medical needs
of patients globally**

**Growing and aging
global population**

**New modalities
and technologies
accelerating innovation**

**More efficient and effective
clinical trial design through
advanced data analytics**



EVOLUTION AT MERCK OVER THE LAST 5 YEARS

- ✓ **Revitalized focus on science-driven, integrated approach to R&D**
- ✓ **Solidified leadership across key pillars of growth**
- ✓ **Strengthened operating model to drive execution globally**
- ✓ **Built energized leadership team and deep bench of talent**

Strong momentum for continued growth



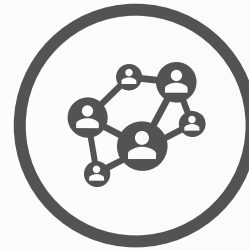
CLEAR STRATEGIC PRIORITIES TO DRIVE CONTINUED LEADERSHIP



**Advance
pipeline for
ongoing scientific
breakthroughs**



**Unlock full
commercial
potential of
portfolio**



**Drive
simplification
and culture
change**



**Deliver
sustainable,
profitable
growth**





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WELL POSITIONED TO DELIVER STRONG SHAREHOLDER RETURNS



**Sustained
long-term
revenue growth**



**Meaningful
operating margin
expansion**

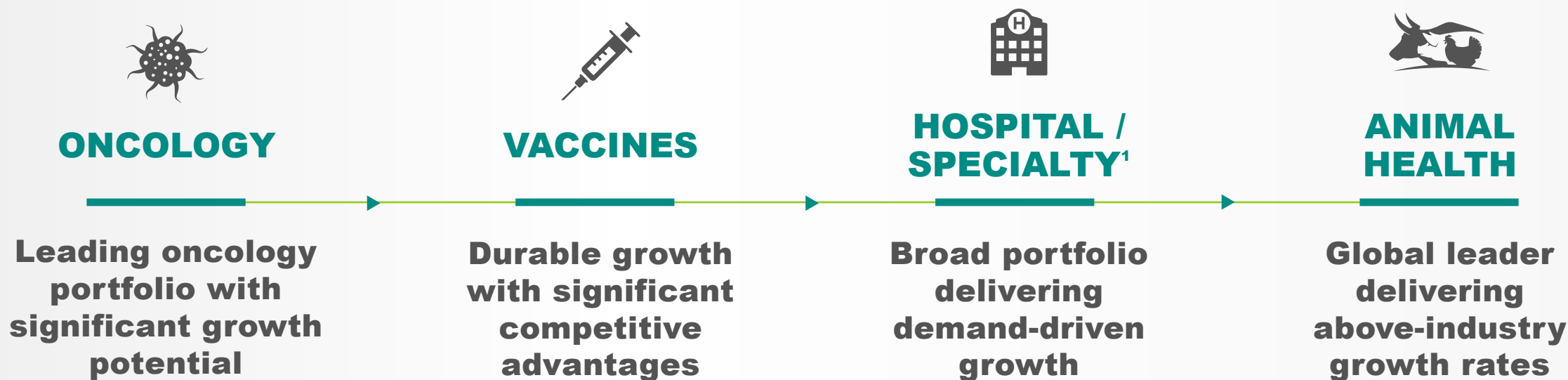


**Balanced and
disciplined capital
allocation**

Investing in the business to innovate for patients globally



GROWING REVENUE DRIVEN BY DEMAND FOR INNOVATION IN THE FACE OF PRICING HEADWINDS



Expect strong revenue growth every year, including 2023 – the year of greatest impact of JANUVIA LOE

¹ Includes specialty products in the pipeline that have not yet launched



FORTIFYING OUR FUTURE AHEAD OF THE CHANGING LANDSCAPE

Becoming a leaner, more efficient, science-driven company to accelerate growth

- Focusing organization and resources on greatest opportunities for growth
- Evolving operating model and culture to be more agile and efficient
- Building optionality for next wave of innovation

Leveraging new digital capabilities and automation

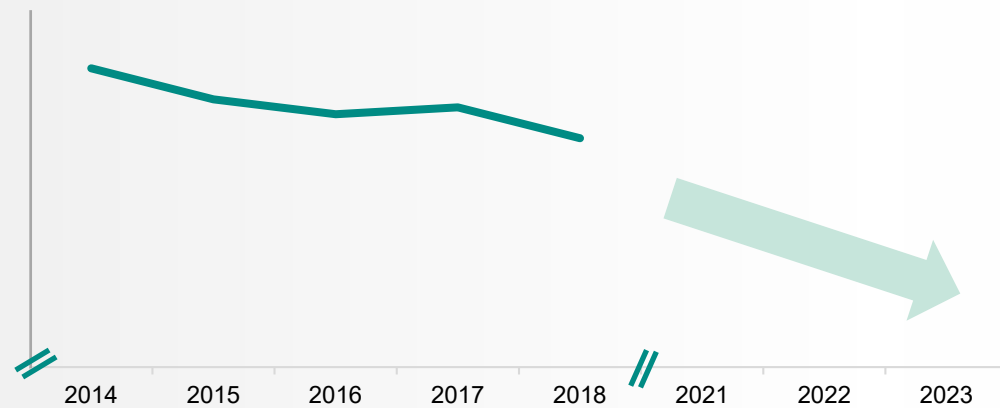
- Better enable innovation
- Expand customer and patient reach
- Enhance supply chain efficiencies
- Simplify back office operations

Creating headroom for innovation and sustainability of our mission

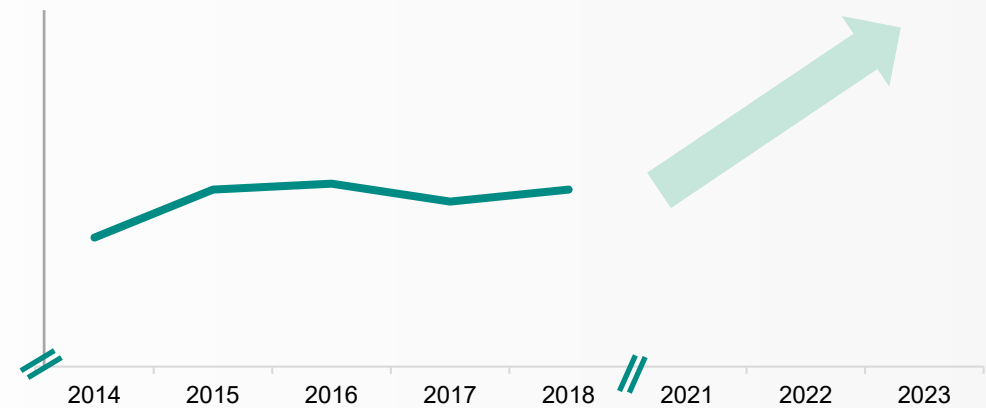


EXPECT MEANINGFUL OPERATING MARGIN EXPANSION & INCREASED ROIC

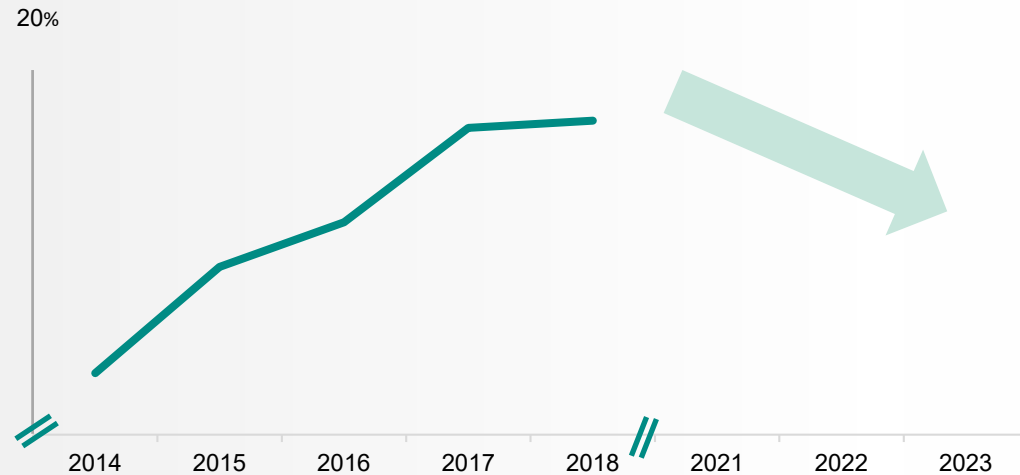
30% **Non-GAAP SG&A as % of sales**



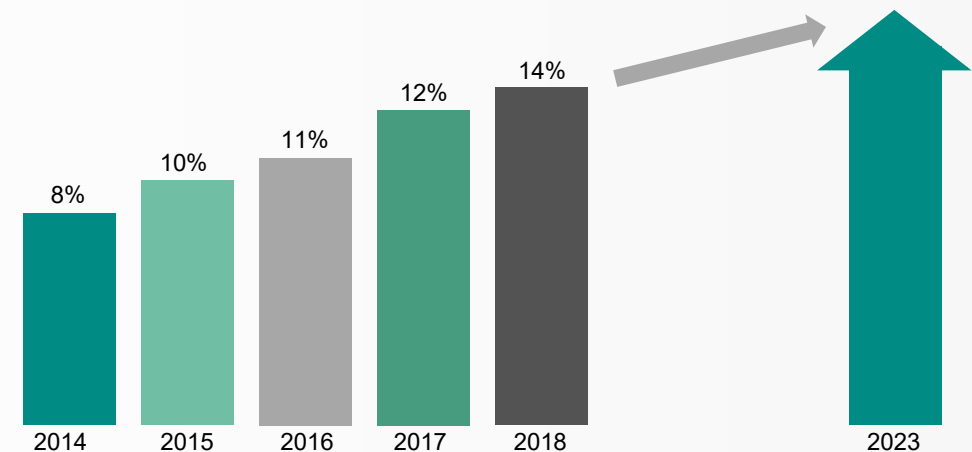
40% **Non-GAAP Operating margin expansion (%)**



Non-GAAP R&D as % of sales



Return on Invested Capital (%)¹



¹Excludes BD & Goodwill



VALUE-CREATING CAPITAL ALLOCATION STRATEGY

Commitments

R&D Investments: Continued investments in internal innovation

CapEx: ~\$16 billion of capital projects through 2022 focused on manufacturing capacity for our growth businesses, R&D discovery buildout and IT infrastructure

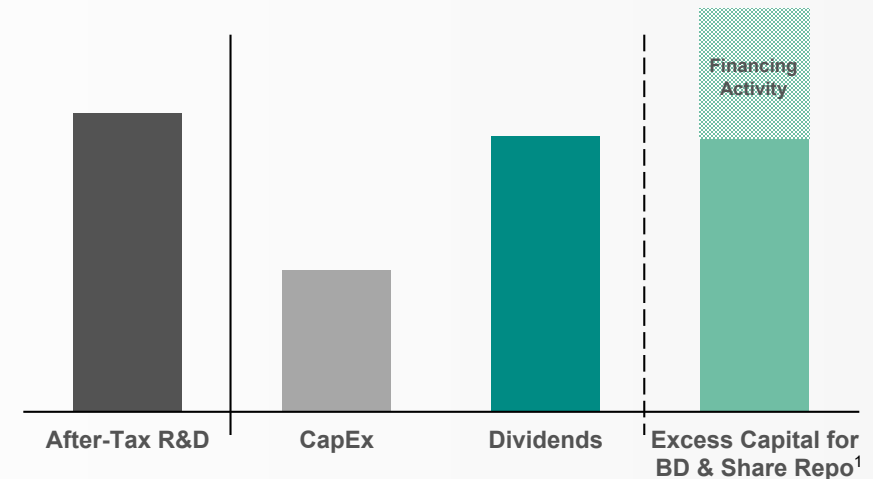
Dividends: Target payout ratio of 47%-50% over time

Discretionary

Business Development: Value-creating, bolt-on acquisitions and strategic collaborations to further enhance portfolio and pipeline

Share Repurchases: Return excess cash to shareholders

Capital allocation priorities over the next 5 years



¹Assumes financing consistent with A1 rating

Expect to generate significant free cash flow over the next 5 years



STRATEGIC BUSINESS DEVELOPMENT FUELING INNOVATION

Bolt-on acquisitions

- Developing portfolio through value-creating acquisitions
- Investments in innovative mechanisms and technologies



¹Peloton expected to close in 3Q 2019

Strategic collaborations and licensing

- Meaningful partnerships across all stages of development
- Working with a broad range of partners from academia to biotech to pharma



Completed ~60 transactions in 2018 spanning acquisitions, licensing, technology deals and clinical collaborations

POSITIONED TO DRIVE SUSTAINABLE GROWTH AND SHAREHOLDER VALUE



Sustained long-term revenue growth including 2023 – the year of greatest impact of JANUVIA LOE



Meaningful operating margin expansion through strong revenue growth driving favorable mix and further leveraged by expense productivity, thoughtful resource allocation and simplification



Value-creating capital allocation strategy to enable growth and return of capital to shareholders



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COMMERCIAL PRIORITIES TO DRIVE FURTHER GLOBAL GROWTH



**Build on leading
position across key
growth pillars**



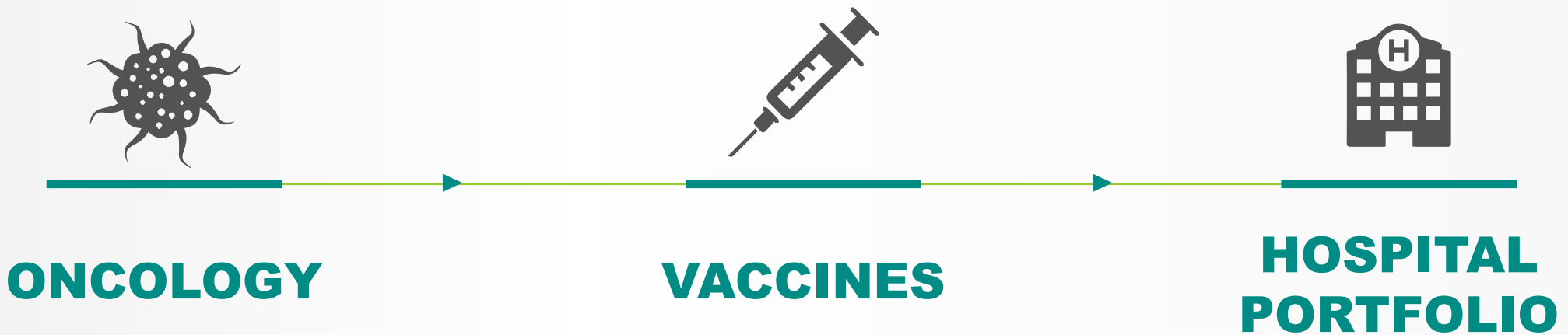
**Capitalize on
global growth
opportunities**



**Successfully
execute new
launches**



CURRENT PILLARS HAVE EXPANSION OPPORTUNITIES AHEAD



Visibility into growth drivers over the next 5 years



ONCOLOGY: DRIVING GLOBAL LEADERSHIP

KEYTRUDA®
(pembrolizumab) Injection 100 mg

**Foundational cancer
treatment**

Lynparza®
olaparib
tablets 150 mg

**Market-leading
PARPi**

LENVIMA®
(lenvatinib) capsules | 10 mg and 4 mg

**Broad-based
TKI**

27
Indications

15
Tumor types
+ MSI-H

>200K
Patients treated

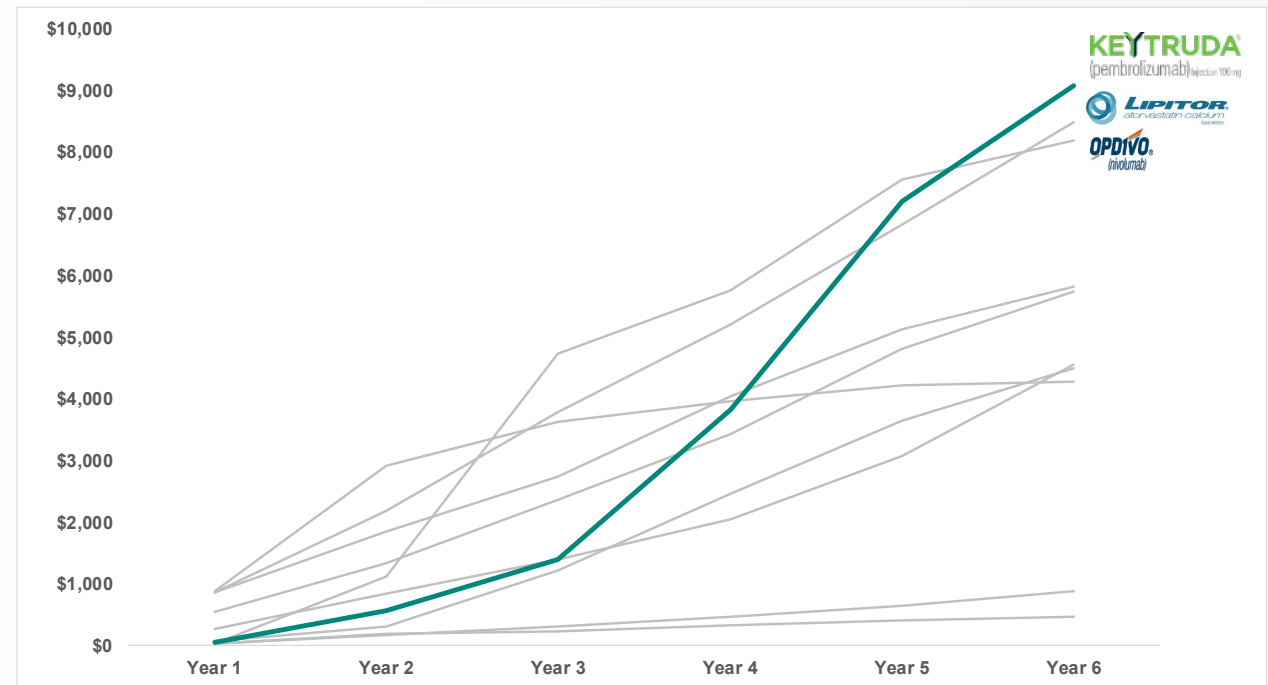
Strong foundation with long runway for growth ahead



KEYTRUDA: SIGNIFICANT GLOBAL GROWTH OPPORTUNITIES

- Building on leadership in lung with additional reimbursement rolling out across Europe and other markets
- Encouraged by early adoption in RCC and adjuvant melanoma launches
- Excited to extend H&N leadership with recent 1L approval
- Indications expected to more than double over next 5 years
 - Earlier lines of therapy, including adjuvant / neoadjuvant
 - New combinations
 - New tumor types

KEYTRUDA is one of the best-selling drugs 6 years after launch



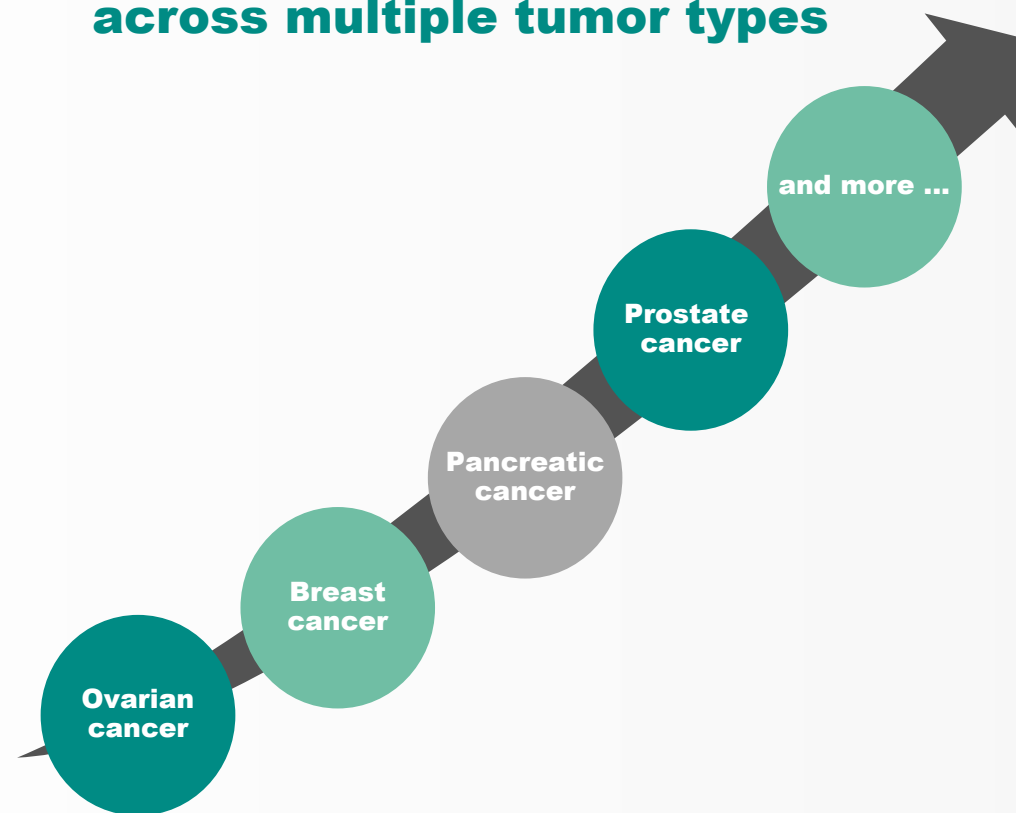
Source: EvaluatePharma; KEYTRUDA Year 6 sales represent 1Q 2019 sales annualized. Sales in \$ billions and not inflation adjusted



LYNPARZA: SET FOR SUSTAINED CLASS LEADERSHIP

- Lynparza has class leadership in the U.S., with ~60% of total PARPi prescriptions
- The only PARPi with 1L maintenance indication in ovarian cancer based on strong results from SOLO-1
- POLO data represents new opportunity in gBRCAm pancreatic cancer patients
- Additional indications with monotherapy and combinations with KEYTRUDA to drive significant growth going forward

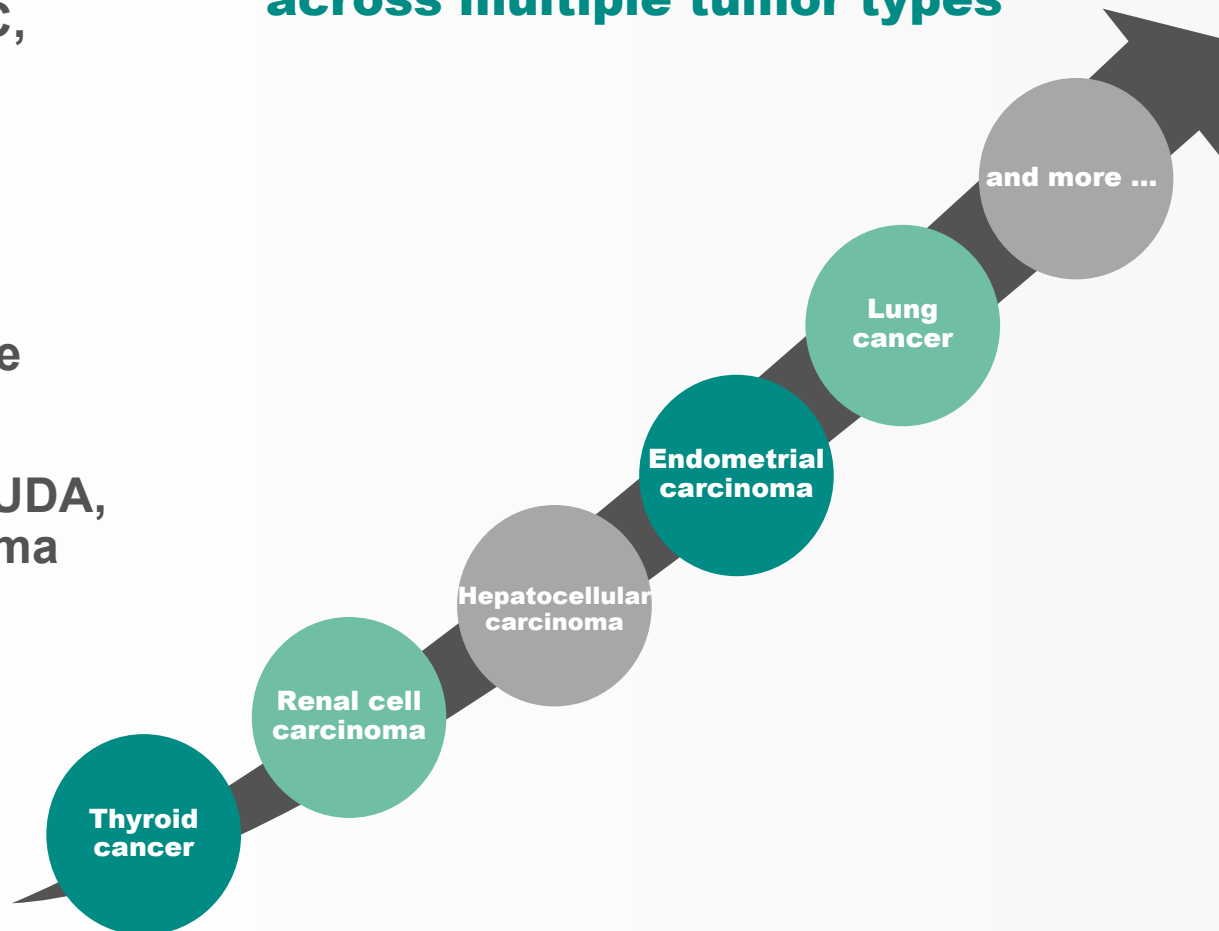
**Growth opportunities
across multiple tumor types**



LENVIMA: ESTABLISHING AS TKI OF CHOICE

- Approved in markets worldwide in RCC, HCC and differentiated thyroid cancer
- Significant opportunity in China given prevalence of HCC in the market
- Strong commercial collaboration sets foundation for execution in many future indications
- 13 studies in combination with KEYTRUDA, including NSCLC, endometrial carcinoma and RCC

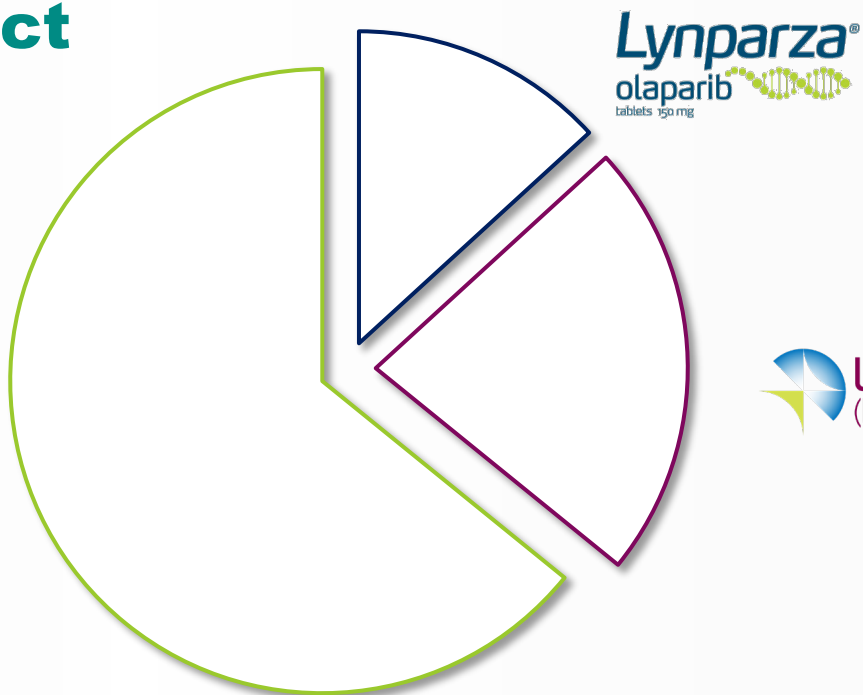
**Growth opportunities
across multiple tumor types**



ONCOLOGY: POTENTIAL FOR >50 ADDITIONAL INDICATIONS OVER NEXT 5 YEARS

Proportion of expected indications by product

KEYTRUDA®
(pembrolizumab) Injection 100 mg

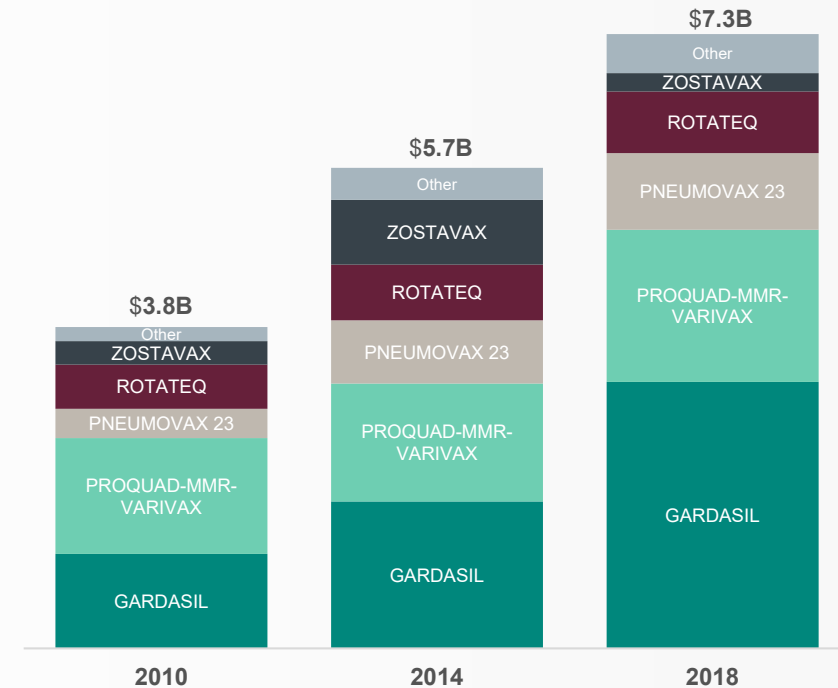


Potential to nearly triple oncology indications by 2023

VACCINES: GROWING GLOBAL BUSINESS WITH NEAR- AND LONG-TERM OPPORTUNITIES

- Significant long-term opportunity for pediatric and adult vaccines growth around the world
- High barriers-to-entry supporting sustained, durable position
- Investing in vaccines manufacturing capacity to increase doses produced globally
- Strong pipeline in pneumococcal disease, respiratory syncytial virus (RSV), cytomegalovirus (CMV), dengue and others

Nearly doubled vaccines revenue since 2010



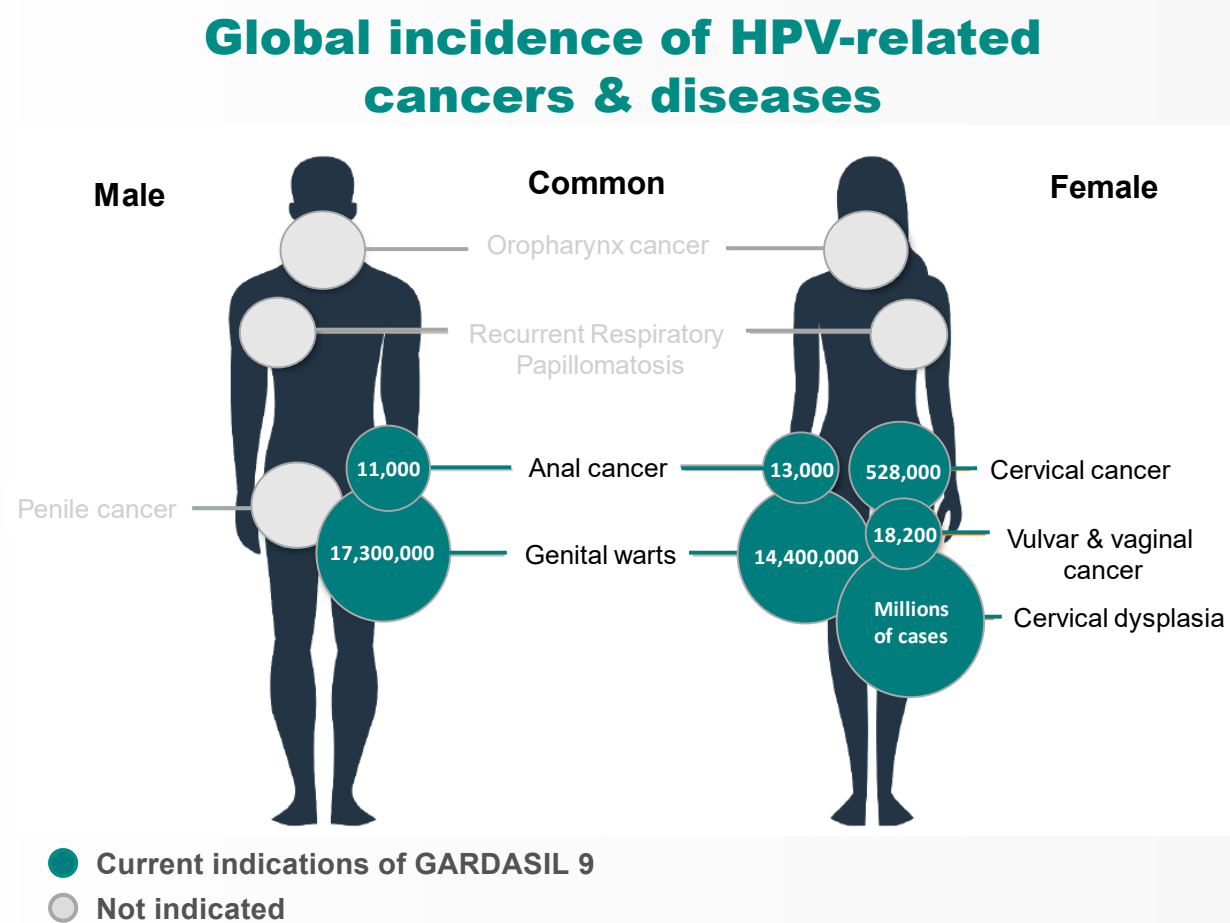
Merck started recording vaccines sales in the 19 European countries previously part of the SPMSD vaccines joint venture starting in January 1, 2017





GARDASIL: POSITIONED FOR RENEWED GROWTH

- Growth driven by global appeals to eliminate cervical cancer
- Reacceleration of growth driven by expansion into new geographies, public and gender-neutral immunization programs and age cohorts
- Fastest pharmaceutical launch in China
- Significant opportunity ahead given only ~3% of the world's eligible population has received an HPV vaccine



Frank Clyburn



HOSPITAL PORTFOLIO: OPTIMIZED BY GLOBAL STRENGTH AND SCALE

bridion[®]
(sugammadex) Injection
100 mg/mL*
*equivalent to 108.8 mg/mL sugammadex sodium

BRIDION poised for continued growth worldwide as number of surgeries that use a reversal agent increases

ZERBAXA[®]
ceftolozane and tazobactam
for injection (1.5 g)

Sizable HAB/VAB pneumonia indication represents new opportunity for ZERBAXA growth

ZINPLAVA[™]
(bezlotoxumab) Injection
25 mg/mL

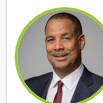
PREVYMIS[™]
(letermovir)
240 mg, 480 mg tablets
Injection 20 mg/mL

Leading portfolio of antibiotics and antifungals, including novel products

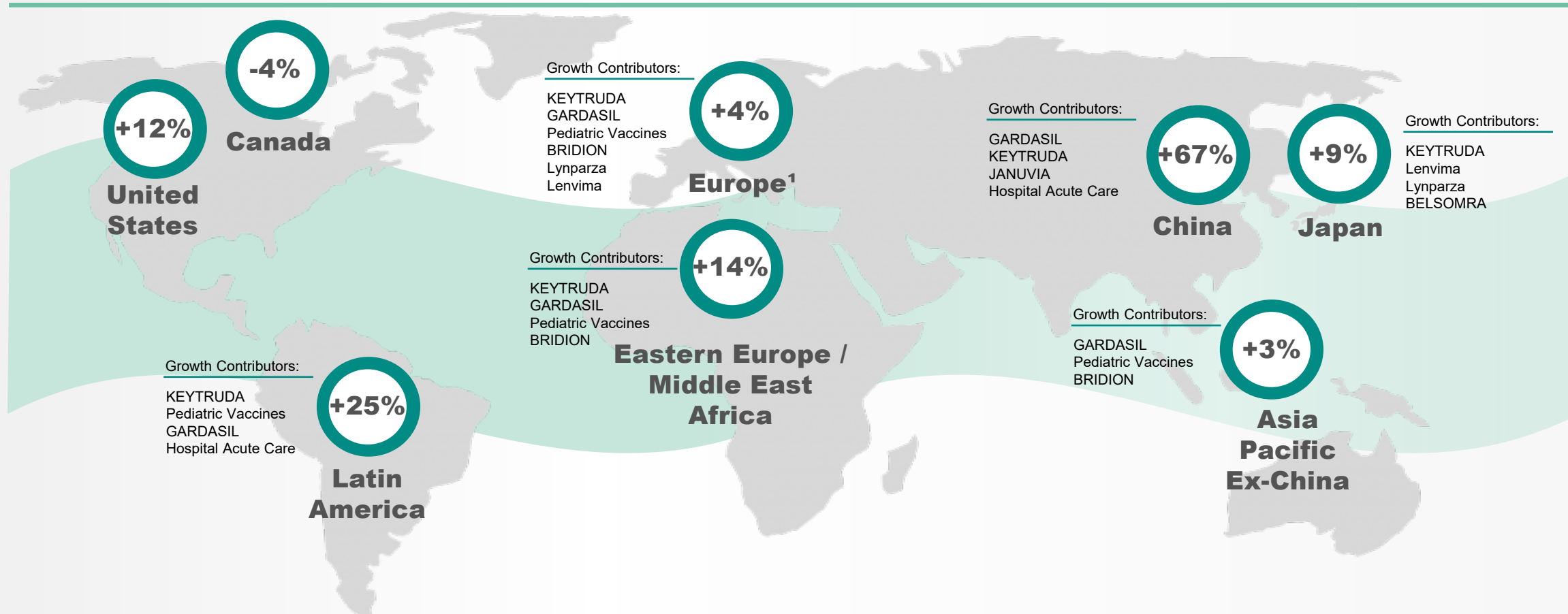
Pifeltro[™]
doravirine
100 mg tablets

Delstrigo[™]
doravirine/lamivudine/
tenofovir disoproxil fumarate
100 mg/300 mg/300 mg tablets

Recent launches build on our HIV legacy and further position us to bring next generation treatments to market

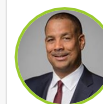


INNOVATIVE PORTFOLIO AND WAVE OF INDICATIONS DRIVING GLOBAL GROWTH



Human health sales outside of the U.S. grew 12% in 1Q 2019

All growth rates exclude the impact of exchange and represent 1Q 2019 vs. 1Q 2018. Growth contributors represent select growth drivers across pillars of growth.
¹ Europe primarily represents all European Union countries and the European Union accession markets



CHINA BECOMING NEW PILLAR OF GROWTH



Pivoting portfolio
to innovation



Reaching more patients &
expanding customer base

KEYTRUDA
(pembrolizumab) injection 100mg
tablets 50mg

Lynparza
olaparib
tablets 50mg

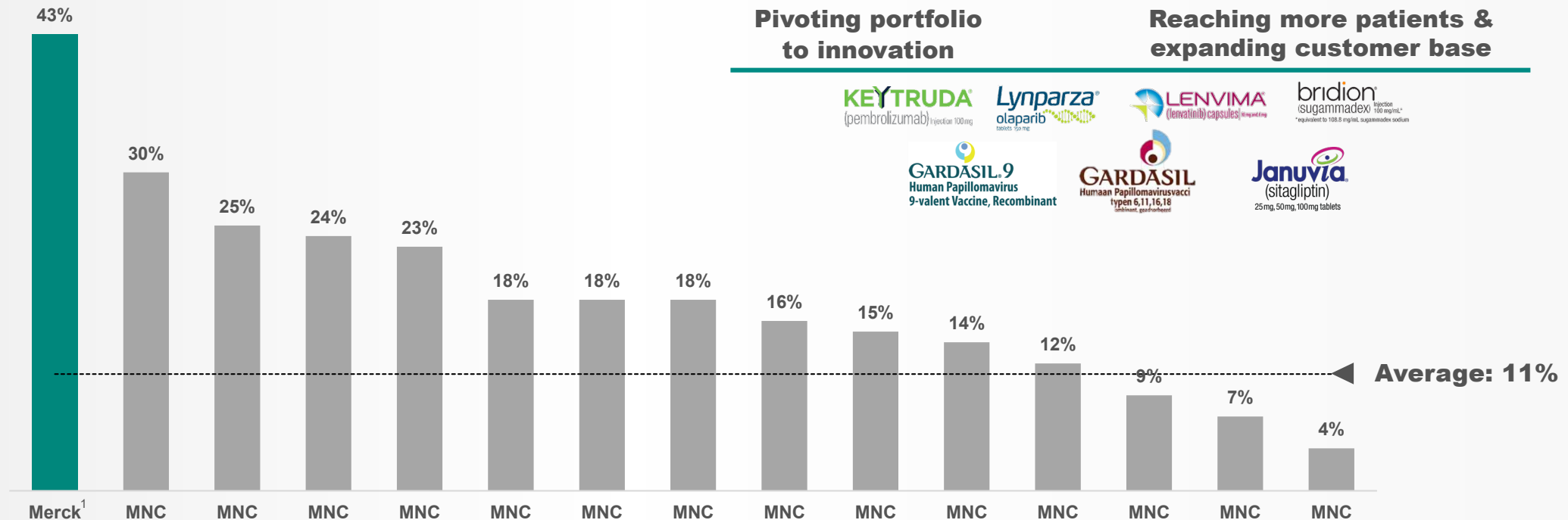
LENVIMA
(lenvatinib) capsules
suspension

bridion
(sugammadex) injection
100 mg/mL
*equivalent to 108.8 mg/mL sugammadex sodium

GARDASIL.9
Human Papillomavirus
9-valent Vaccine, Recombinant

GARDASIL
Human Papillomavirus vac-
cine 6,11,16,18
adjuvanted, Gardasil

Januvia
(sitagliptin)
25mg, 50mg, 100mg tablets



¹Only includes Human Health portion of business

Fastest growing multinational pharmaceutical company



CONFIDENT IN GROWTH OPPORTUNITIES AND ABILITY TO EXECUTE



**Innovative portfolio
with significant
demand-driven
growth**



**Significant
international
opportunities,
notably in China**



**World-class
commercial teams
executing in a
changing environment**

Commercial foundation for sustained global growth



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MERCK ANIMAL HEALTH IS A MARKET LEADER



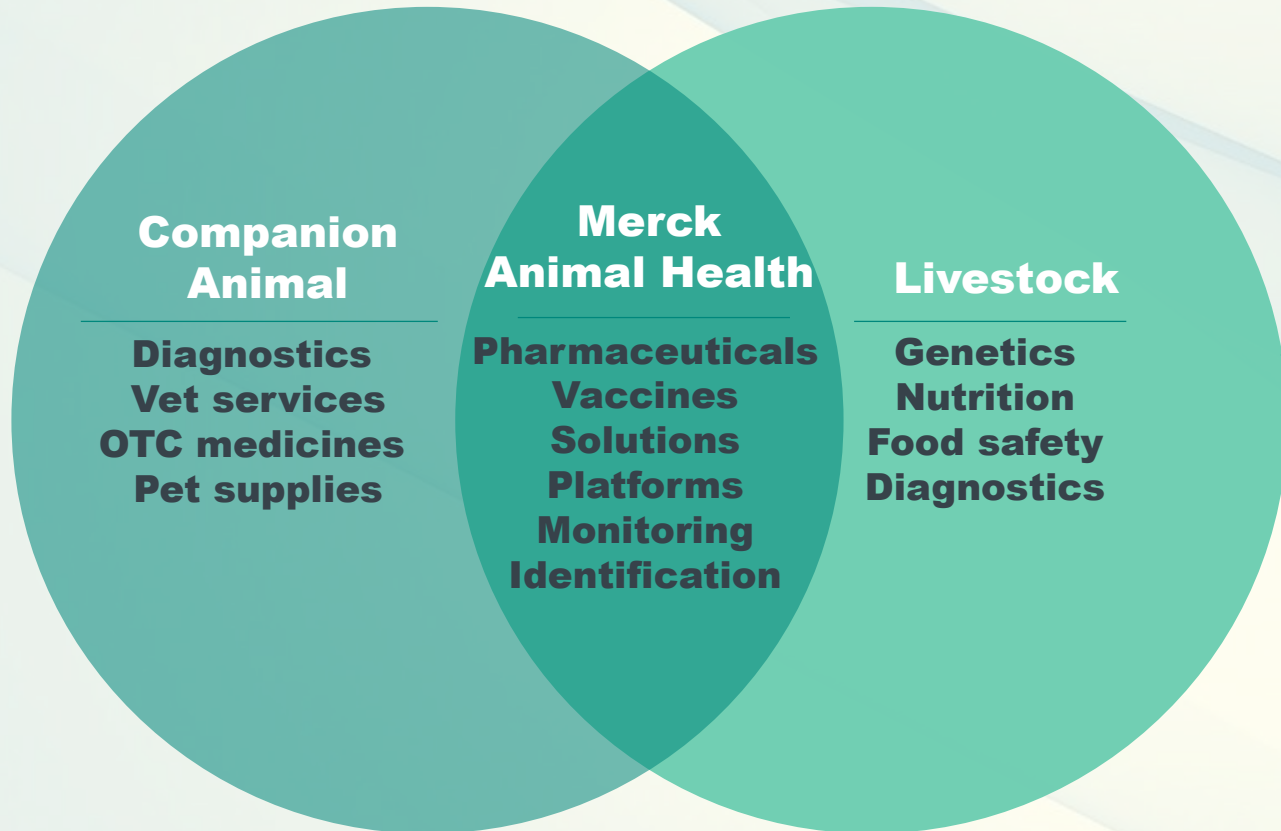
- **Global scale**
- **Revenue growth above market**
- **Strong profit contribution**
- **Innovative new product solutions**
- **Technologies that drive customer value**
- **Merck synergies**



STRONG LONG-TERM METRICS FOR THE ANIMAL HEALTH INDUSTRY

At the core of a **\$34+ billion** industry

CAGR mid-single digits¹



Predictable and sustainable growth drivers



Population growth



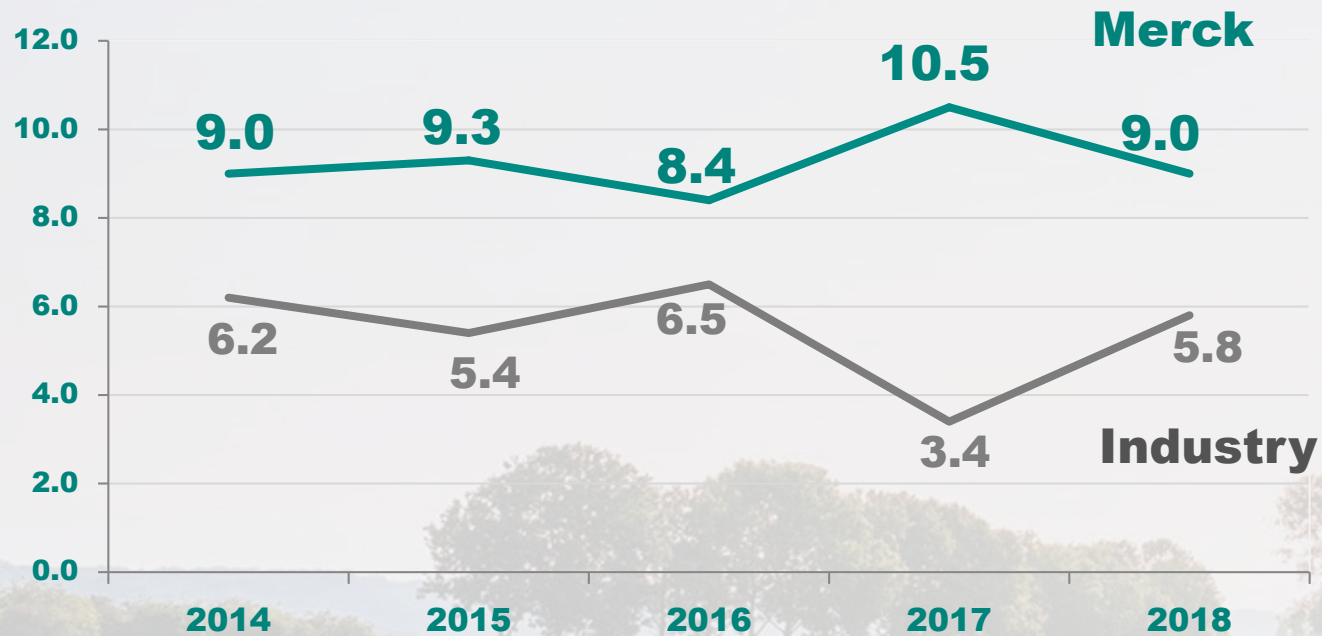
Rising middle class



Increasing urbanization

¹ Forward-Looking Projection

ANNUAL NET SALES GROWTH (%)



**MERCK ANIMAL
HEALTH:**
**OUTPERFORMING
THE INDUSTRY**

MERCK ANIMAL HEALTH

Global leader in pharmaceuticals, vaccines, health management solutions and emerging digital technology

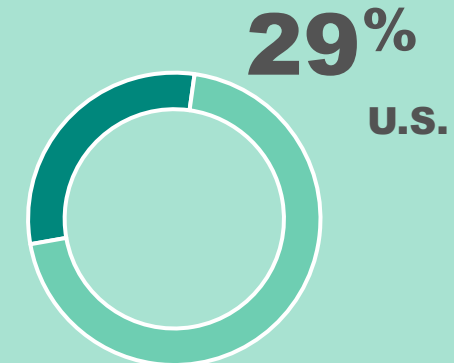


2018 Sales

38% Companion Animal



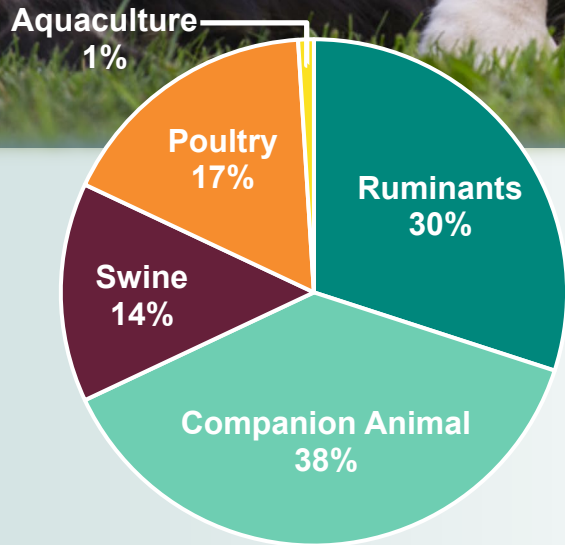
62% Livestock



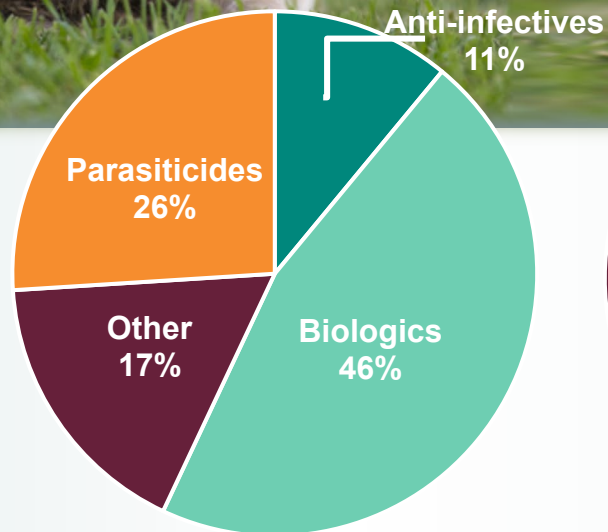
71% International

OUR DIVERSE PORTFOLIO PROVIDES STRENGTH

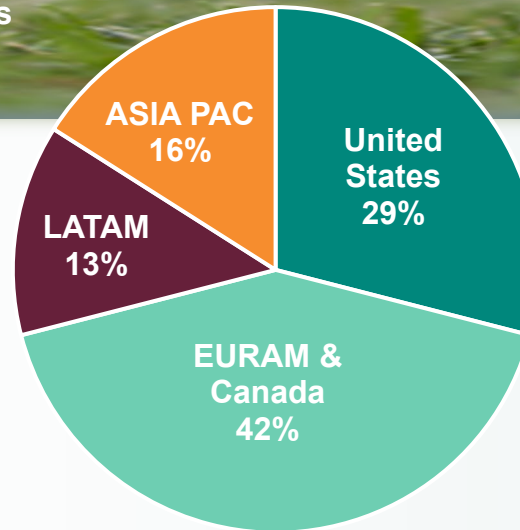
2018 RESULTS



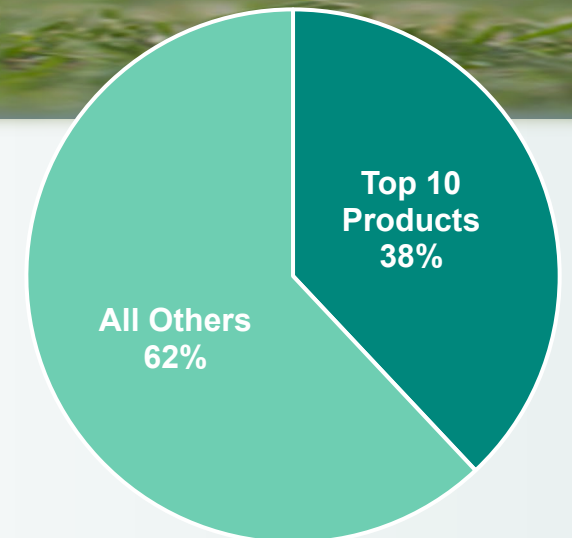
**Revenue by
species**



**Revenue by
therapeutic area**



**Revenue by
geography**



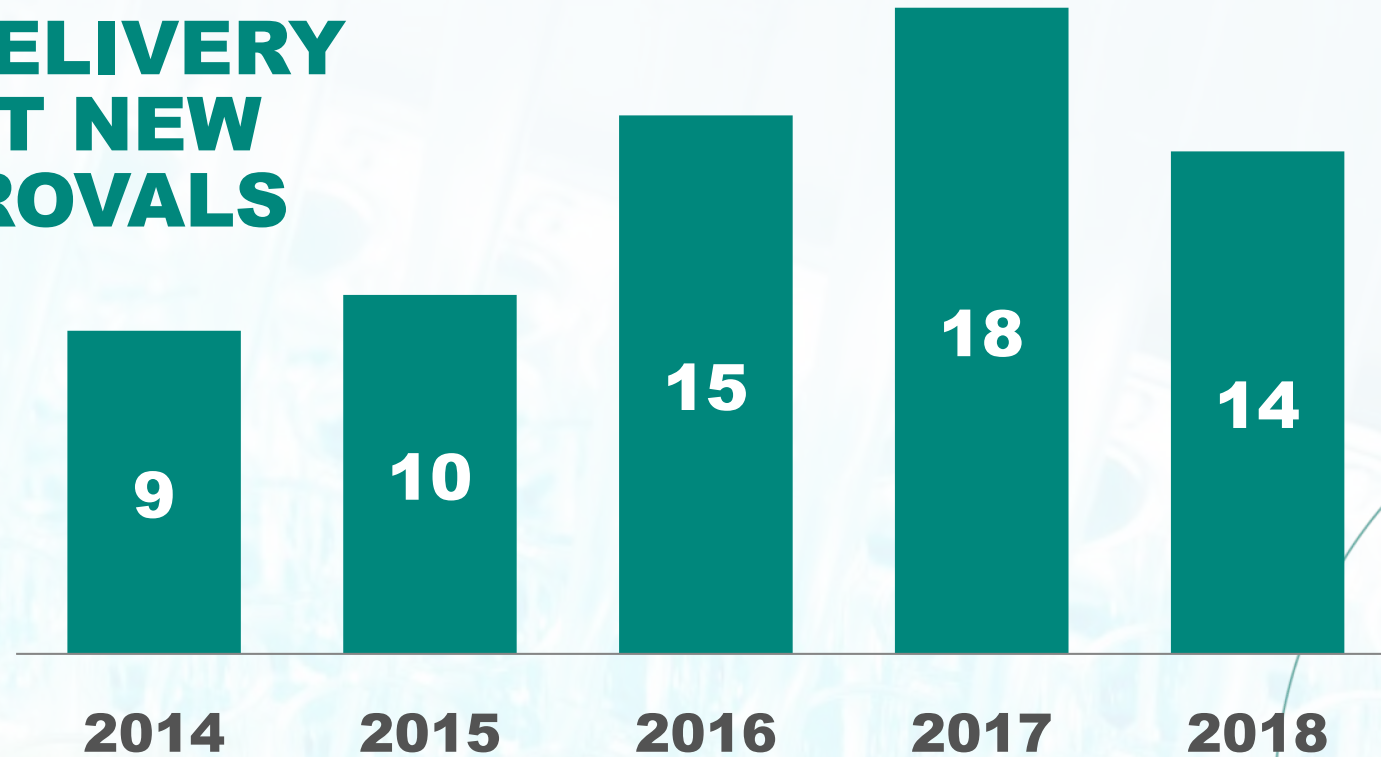
**Revenue by
product line**

DEDICATED ANIMAL HEALTH R&D NETWORK



Over 66 Approvals in 5 Years

**MERCK ANIMAL HEALTH:
CONSISTENT DELIVERY
OF SIGNIFICANT NEW
PRODUCT APPROVALS**



>150 Geo-expansion licenses annually

OUR INNOVATION PATHWAYS

In-house Discovery and Technology

- Biologics
- Recombinant vaccines, RP technology
- Emerging diseases
- Delivery technologies

Merck Research Laboratories

- Monoclonal antibodies
- Oncology
- Diabetes, atopy, osteoarthritis
- Shared vaccine technologies

External Partnerships/Business Development

- Parasiticides
- Internal medicine
- Devices

Strategic Advantages

Best-in-class

First-in-class

Vaccine leadership

Delivery technologies

Compound libraries

Diagnostic labs

Nobivac
Proteção essencial para laços essenciais

innovax
ND-IBD

Panacur® AquaSol™

BANAMINE®
(flunixin meglumine)

BRAVECTO®
(FLURALANER)

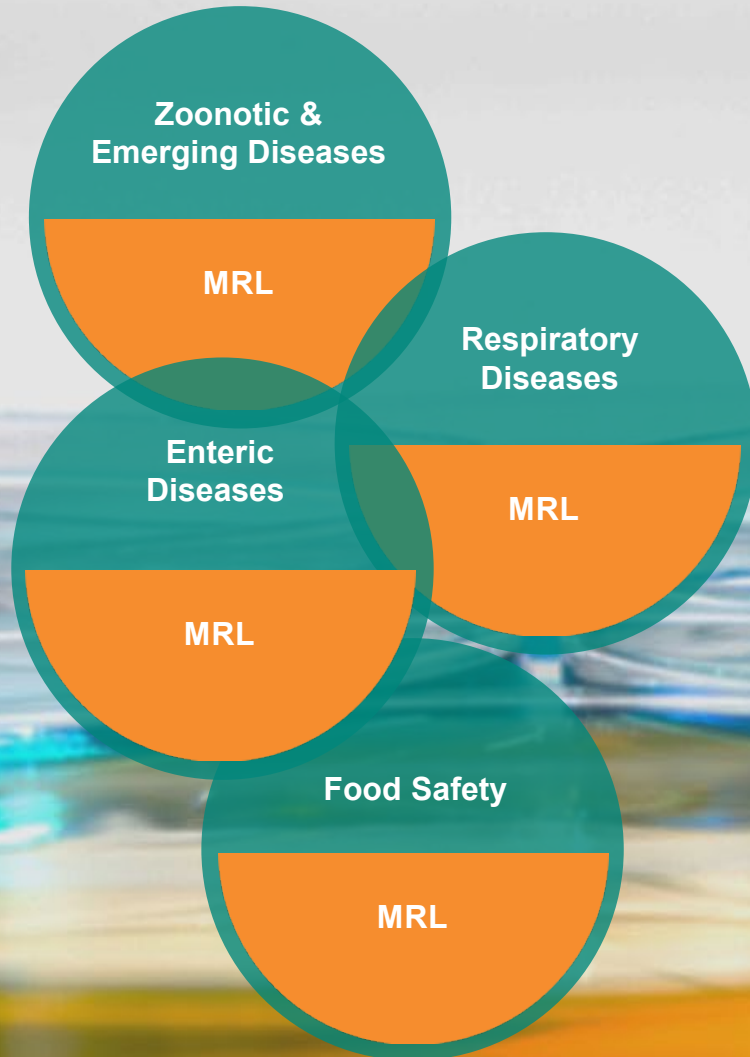
Exzolt®

IDAL^{3G}

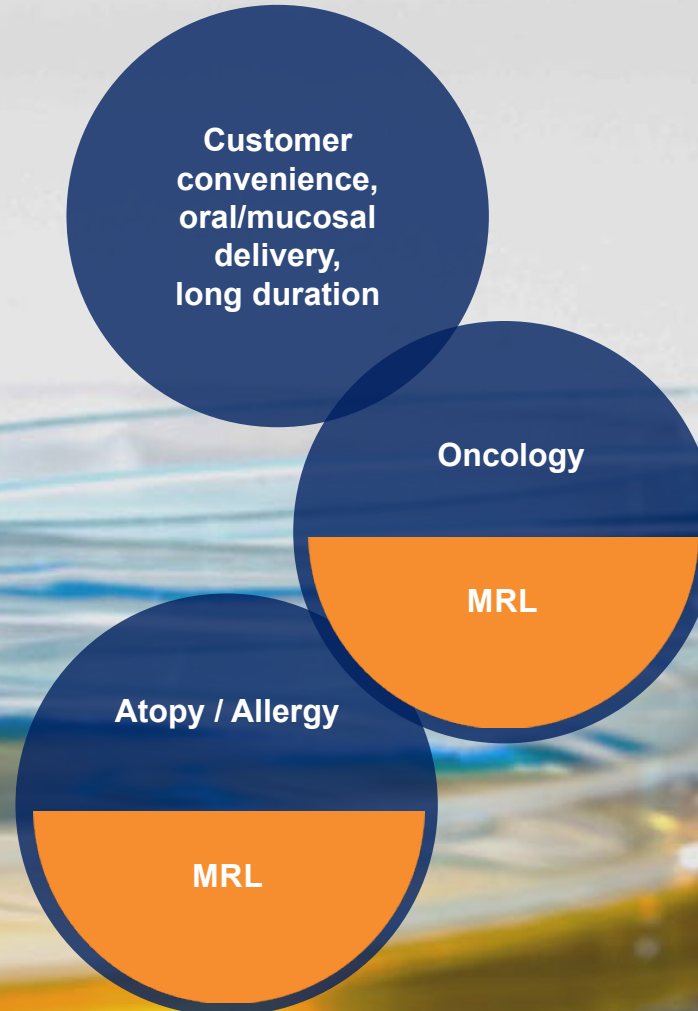
MERCK ANIMAL HEALTH R&D AREAS OF FOCUS: ACROSS SPECIES

 MRL Collaborations

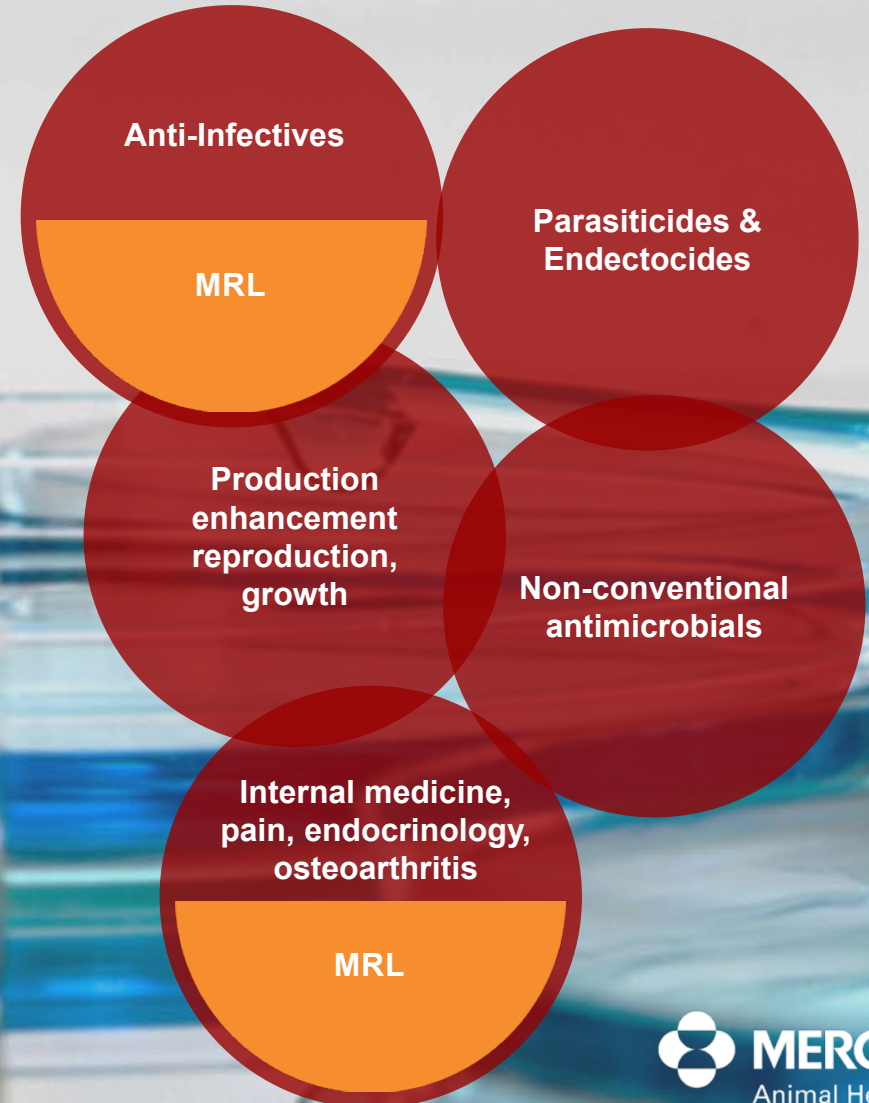
VACCINES



BIOPHARMACEUTICALS



PHARMACEUTICALS



COMPLEMENTARY BUSINESS DEVELOPMENT

Geo-expansion: vaccines, pharmaceuticals
High-growth markets



*Zhejiang Zhengli
Antoo Biotech Co*





INVESTING IN HIGH-GROWTH ANIMAL HEALTH OPPORTUNITIES

Trends Driving Technology Adoption

- Productivity
- Wellness
- Traceability
- Safety
- Automation

Customer Value

PRODUCTS

+

CONVENIENCE

+

PREDICTIVE SOLUTIONS

Vaccines &
Pharmaceuticals



Innovative
Delivery Solutions



Technology & Data
Animal Health Ventures

Antelliq



Market Opportunities

INVESTING IN DIGITALLY-ENABLED CUSTOMER SOLUTIONS

Antelliq

>500 million animals tagged per year

>100 million pets monitored

>1,100 aqua monitoring stations worldwide



MERCK ANIMAL
HEALTH VENTURES



Whisper®
Veterinary Stethoscope

Non-invasive tool that confirms bovine respiratory disease and gauges its severity in eight seconds



FALCON
Clear view. Clearer direction.

Sea lice counter





MERCK ANIMAL HEALTH: OUR COMPETITIVE ADVANTAGE

- ✓ **Broad global portfolio and presence**
- ✓ **Innovative products and solutions**
- ✓ **R&D excellence and access to MRL expertise**
- ✓ **High-quality manufacturing and supply**
- ✓ **Investment in digital technology to drive customer productivity**
- ✓ **Track record of execution**



THE SCIENCE OF HEALTHIER ANIMALS®



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BROAD ONCOLOGY STRATEGY TO IMPROVE OUTCOMES FOR CANCER PATIENTS GLOBALLY



Broadly explore combinations to reach more patients



Advance pipeline and pursue strategic collaborations and acquisitions to expand portfolio



Identify patients most likely to benefit using biomarkers

KEYTRUDA[®]
(pembrolizumab) Injection 100 mg

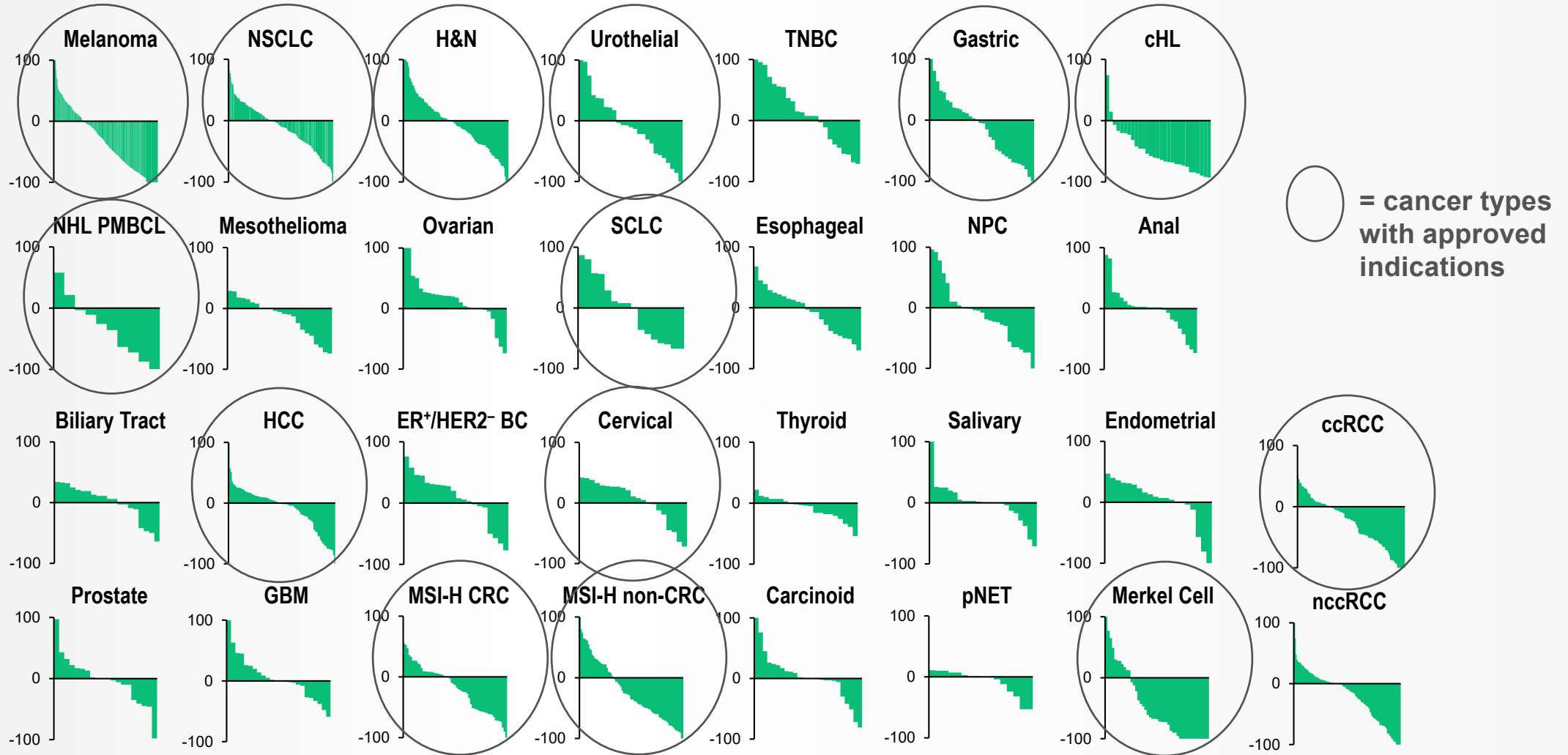
Establish KEYTRUDA as foundational treatment across most tumor types and stages of disease

¹Peloton acquisition expected to close in 3Q 2019



KEYTRUDA: BROAD ACTIVITY IN >25 CANCER TYPES

Change from baseline in tumor size (%)

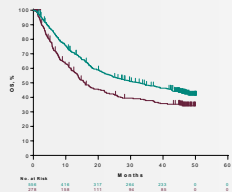


Dr. Roy Baynes

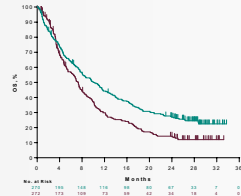


KEYTRUDA: REPEATED OVERALL SURVIVAL BENEFITS IN MONOTHERAPY AND IN COMBINATION

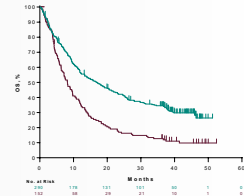
Ipi-Naïve Melanoma,
Any PD-L1
KEYNOTE-006
Pembro vs Ipi



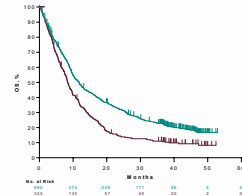
2L Bladder, Any PD-L1
KEYNOTE-045
Pembro vs Chemo



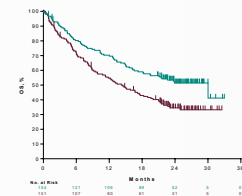
2L+ NSCLC, TPS ≥50%
KEYNOTE-010
Pembro vs Docetaxel



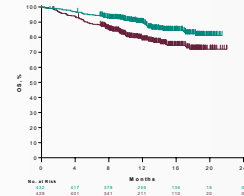
2L+ NSCLC, TPS ≥1%
KEYNOTE-010
Pembro vs Docetaxel



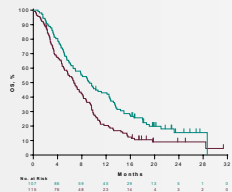
1L NSCLC, TPS ≥50%
KEYNOTE-024
Pembro vs Chemo



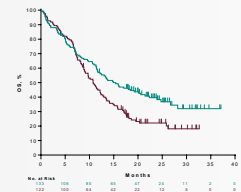
1L RCC, Any PD-L1
KEYNOTE-426
Pembro + Axitinib vs
Sunitinib



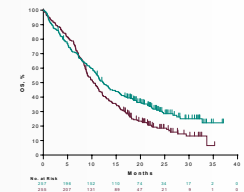
1L Esophageal,
CPS ≥10
KEYNOTE-181
Pembro vs Chemo



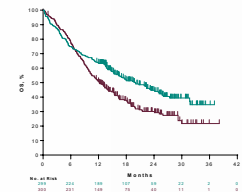
1L HNSCC, CPS ≥20
KEYNOTE-048
Pembro vs
EXTREME



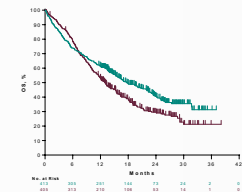
1L HNSCC, CPS ≥1
KEYNOTE-048
Pembro vs
EXTREME



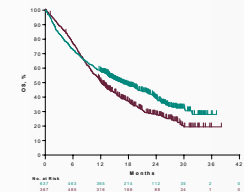
1L NSCLC, TPS ≥50%
KEYNOTE-042
Pembro vs Chemo



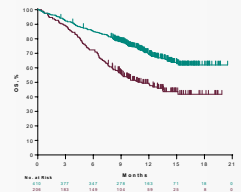
1L NSCLC, TPS ≥20%
KEYNOTE-042
Pembro vs Chemo



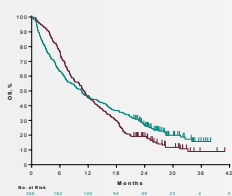
1L NSCLC, TPS ≥1%
KEYNOTE-042
Pembro vs Chemo



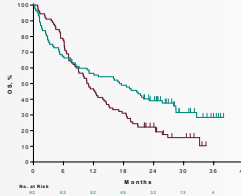
1L NSQ NSCLC, Any PD-L1
KEYNOTE-189
Pembro + Pem/Platinum vs
Placebo + Pem/Platinum



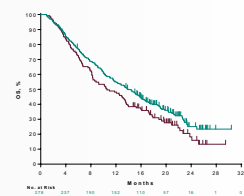
1L Gastric, CPS ≥1
KEYNOTE-062
Pembro vs Chemo



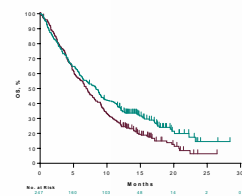
1L Gastric, CPS ≥10
KEYNOTE-062
Pembro vs Chemo



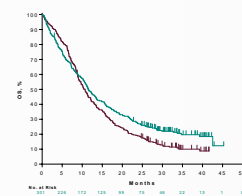
2L HCC, Any PD-L1
KEYNOTE-240
Pembro vs Placebo



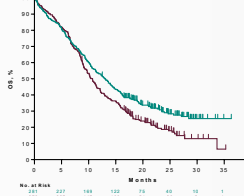
2L+ HNSCC, Any PD-L1
KEYNOTE-040
Pembro vs SOC



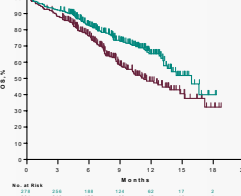
1L HNSCC, Any PD-L1
KEYNOTE-048
Pembro vs EXTREME



1L HNSCC, CPS ≥1
KEYNOTE-048
Pembro + Platinum vs
EXTREME



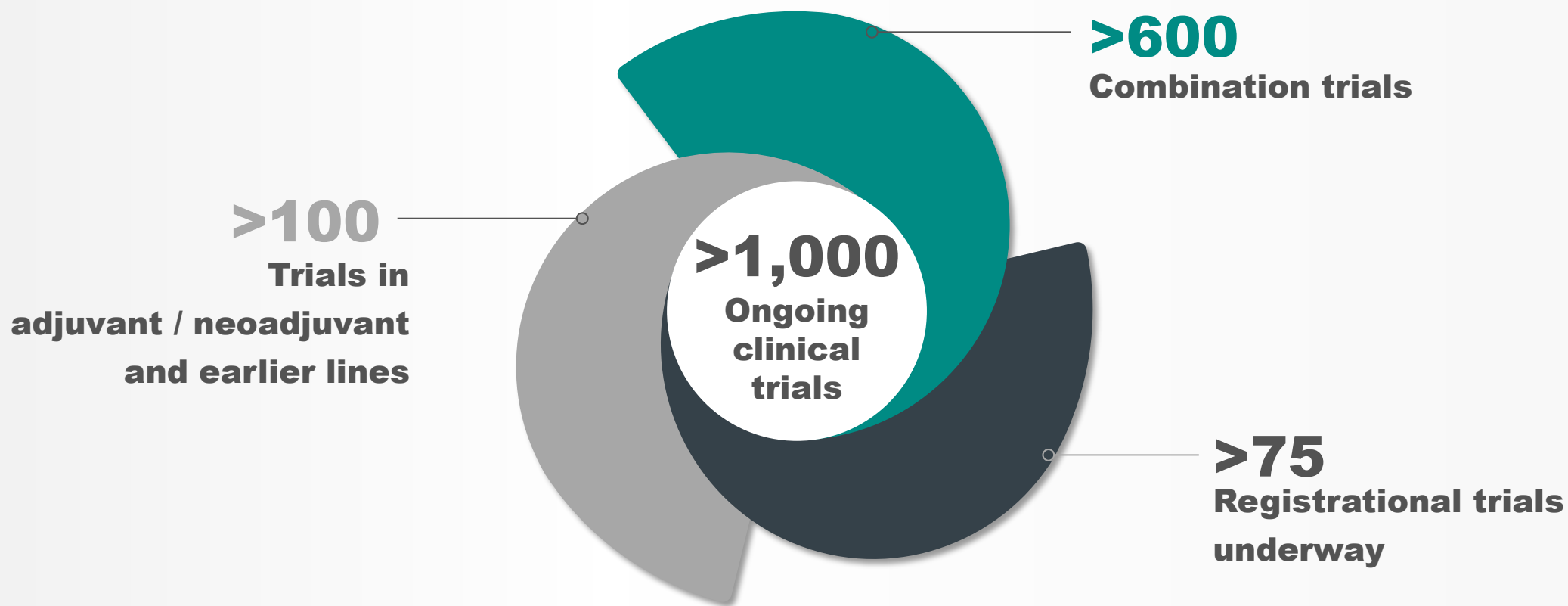
1L SQ NSCLC, Any PD-L1
KEYNOTE-407
Pembro + Carboplatin/Taxane vs
Placebo + Carboplatin/Taxane



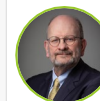
Dr. Roy Baynes



KEYTRUDA: STILL IN EARLY INNINGS OF DEVELOPMENT



Continuing to build a wall of data



KEYTRUDA: ROBUST I-O PROGRAM IN ADJUVANT / NEOADJUVANT AND EARLIER LINES OF THERAPY

2018

Adjuvant Melanoma (KN-054)
APPROVED

2021

NSCLC Adjuvant (KN-091)
HNSCC Adjuvant /
Neoadjuvant (KN-689)

2023

Gastric & Esophageal Adjuvant
/ Neoadjuvant (KN-585)
HNSCC Locally Advanced
(KN-412)

2025

Adjuvant / Neoadjuvant MIBC (KN-866)
Adjuvant / Neoadjuvant MIBC (KN-905)
HCC Adjuvant (KN-937)
NSCLC Stage I/IIa (KN-867)

2019

TNBC Neoadjuvant /
Adjuvant (KN-522)
cSCC Locally Advanced
(KN-629)

2022

Adjuvant Melanoma (KN-716)
RCC Adjuvant (KN-564)
2L NMIBC (KN-057)
MIBC Locally Advanced
(KN-676)

2024

NSCLC Neoadjuvant (KN-671)

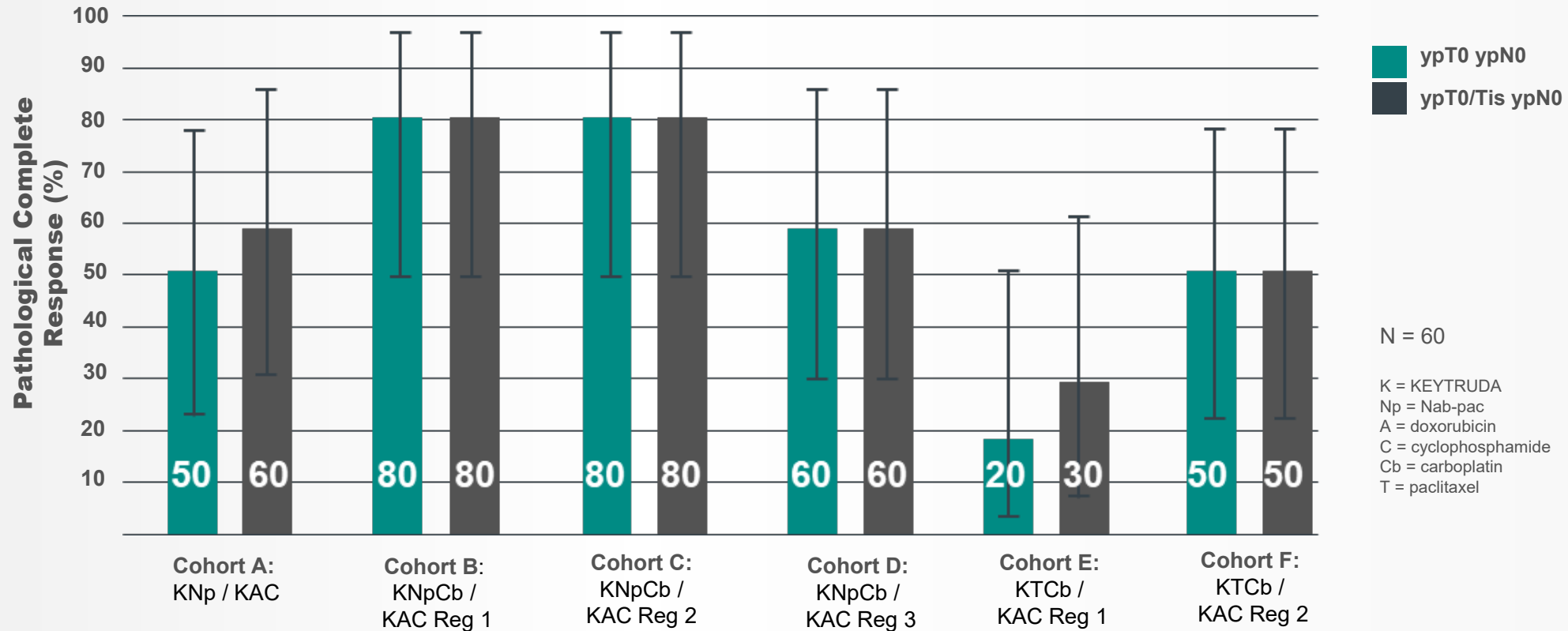
2026+

TNBC Adjuvant (KN-242)
cSCC Locally Advanced (KN-630)
ER+ / HER2- Breast Cancer
Adjuvant / Neoadjuvant (KN-756)

Many registrational trials with readouts over the coming years



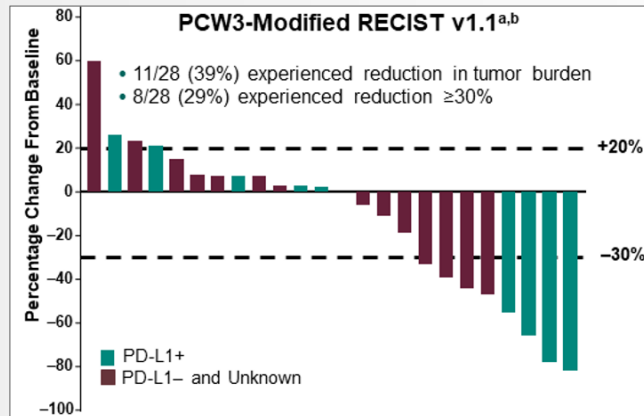
KEYTRUDA: EARLY EVIDENCE IN BREAST CANCER; 10 ONGOING TRIALS



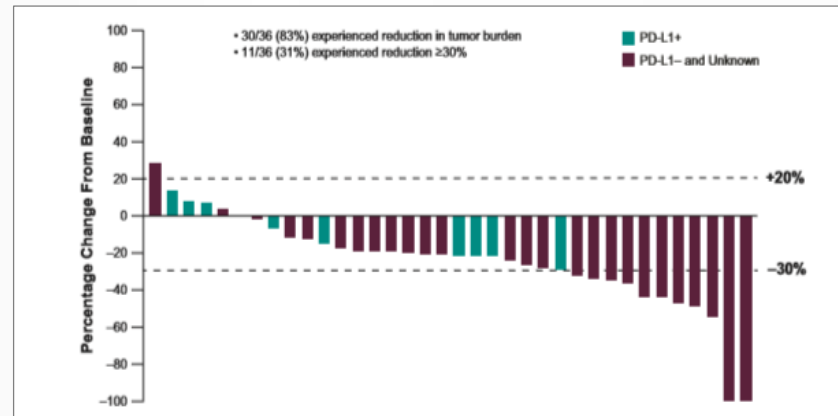
Encouraging results from KEYNOTE-173 show promise in adjuvant / neoadjuvant settings

KEYTRUDA: EARLY STAGE PROSTATE CANCER DATA INFORM PHASE 3 DEVELOPMENT PROGRAM

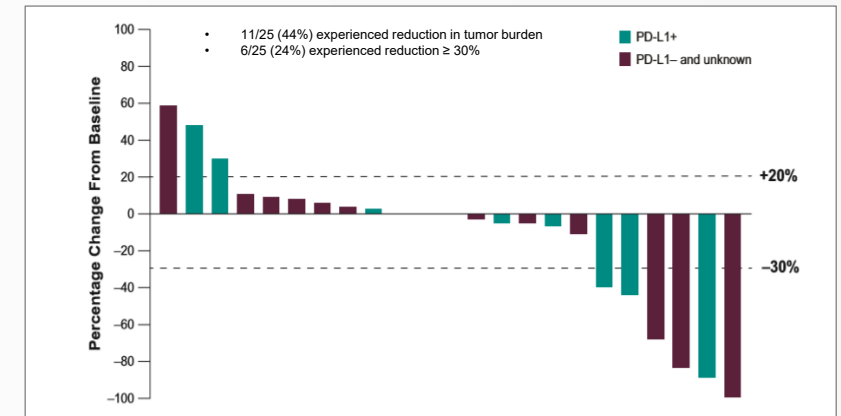
KEYNOTE-365 Cohort A KEYTRUDA+Lynparza



KEYNOTE-365 Cohort B KEYTRUDA+Docetaxel



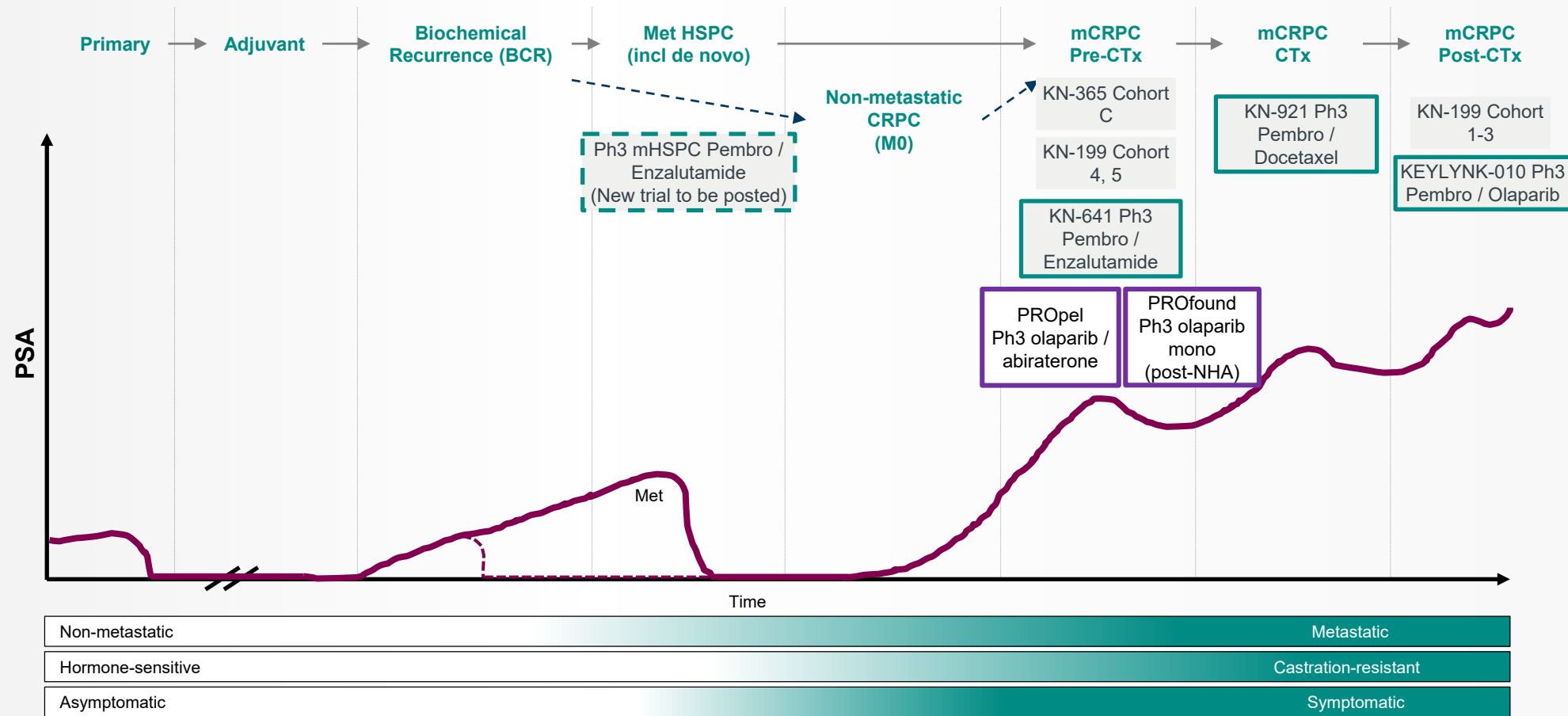
KEYNOTE-365 Cohort C KEYTRUDA+Enzalutamide



BROADEST PROSTATE CANCER PROGRAM WITH MULTIPLE PH 3 TRIALS ADDRESSING 40% OF PATIENTS



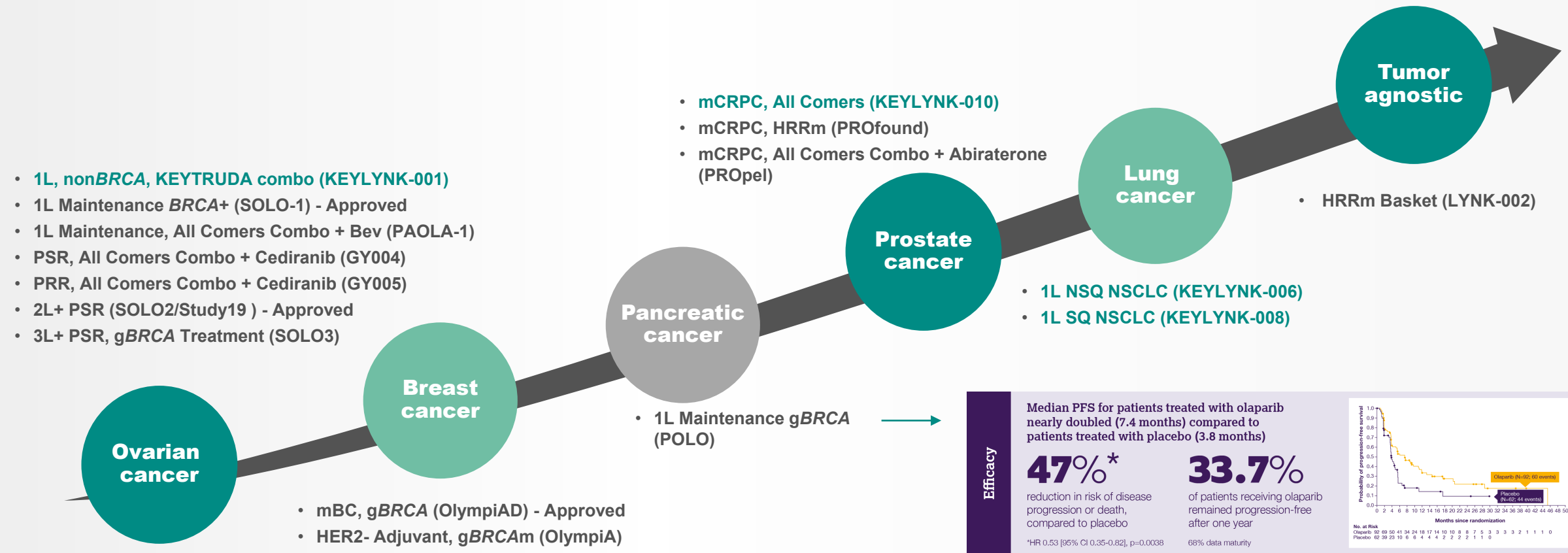
Dr. Roy Baynes



ADT = androgen deprivation therapy; BCR = biochemical recurrence; CRPC = castration-resistant prostate cancer; EBRT = external beam radiation therapy; HSPC = hormone-sensitive prostate cancer; PCa = prostate cancer; RP = radical prostatectomy.
*CI indicates estimated ARCHES approval as of 4Q 2019

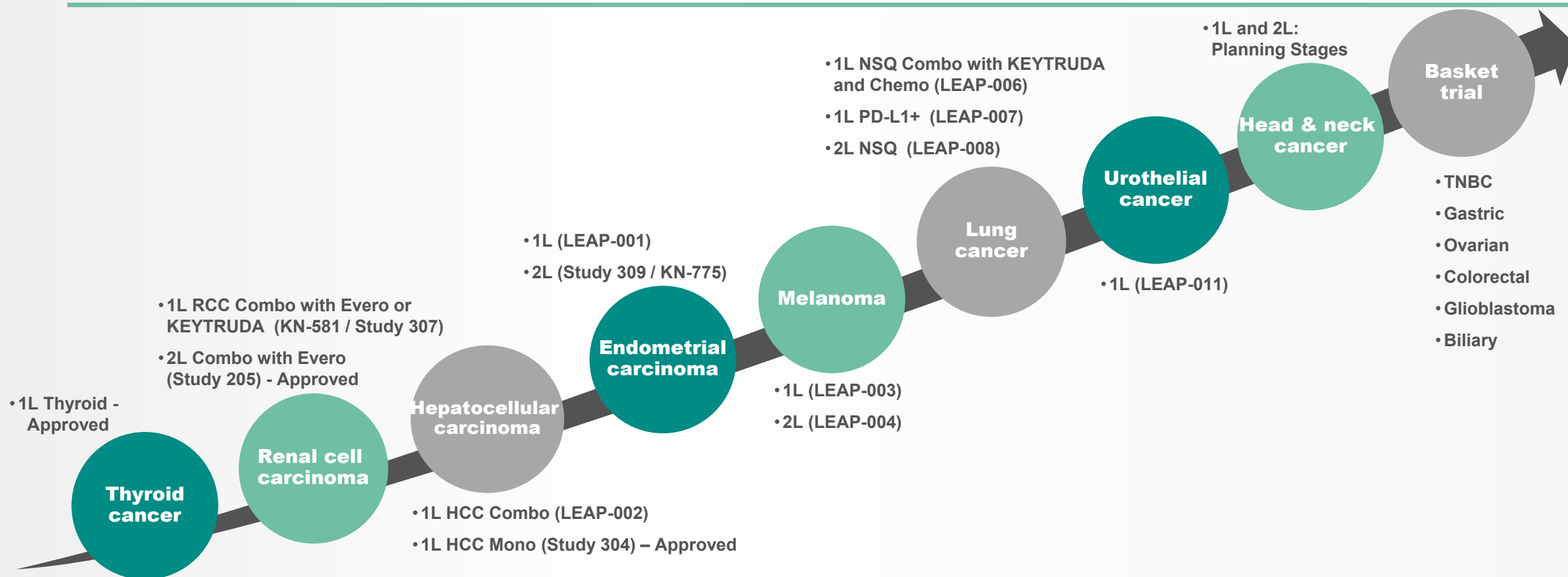
 = KEYTRUDA combo trials
 = Lynparza trials

LYNPARZA: SHOWING EFFICACY BEYOND WOMEN'S CANCERS



Demonstrating potential in prostate cancer, pancreatic cancer and more

LENVIMA: POTENTIAL ACROSS BROAD RANGE OF TUMOR TYPES

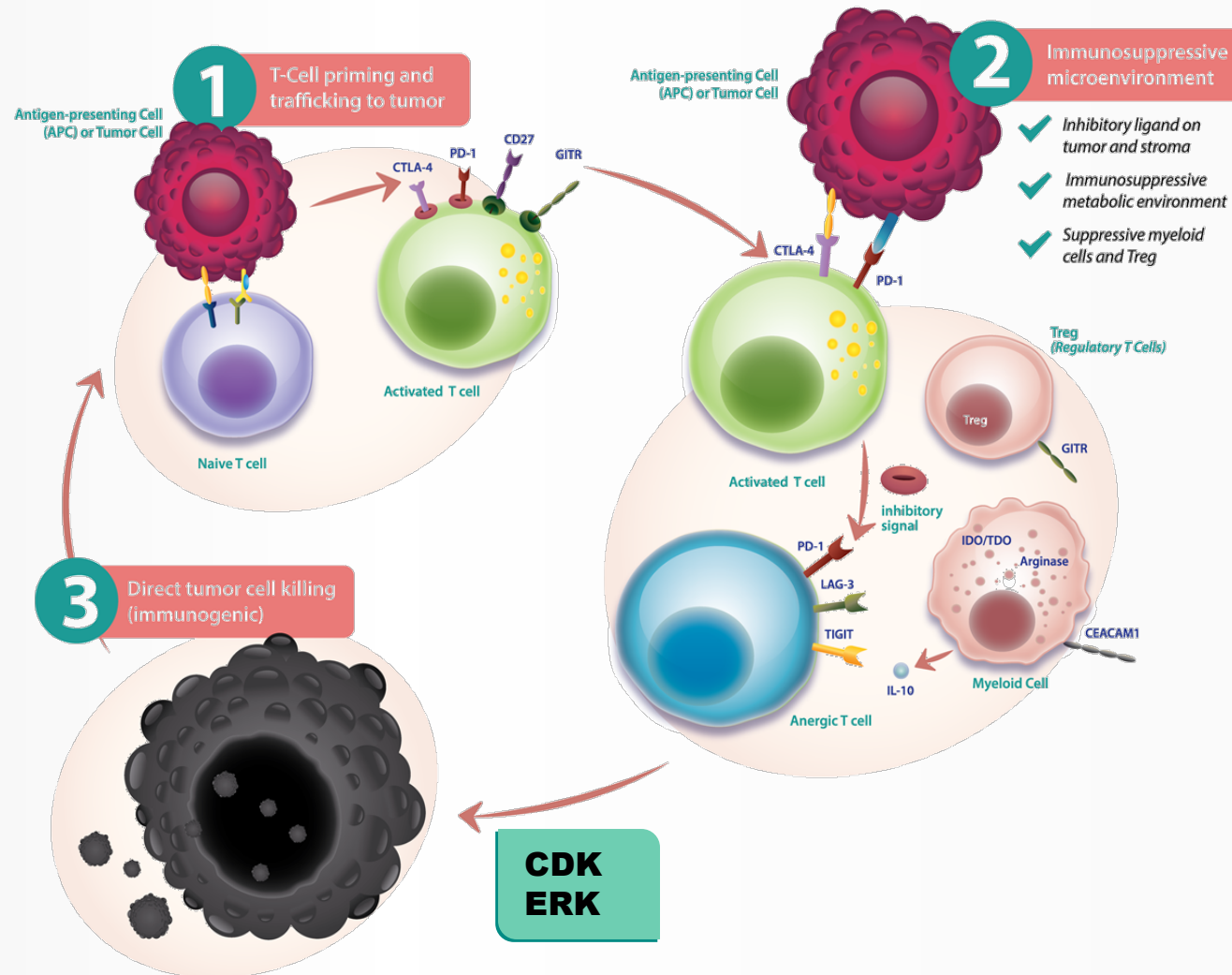


13 trials studying KEYTRUDA in combination with Lenvima spanning >13 tumor types



EXTENSIVE ONCOLOGY PIPELINE COVERING ALL ASPECTS OF THE TUMOR ENVIRONMENT

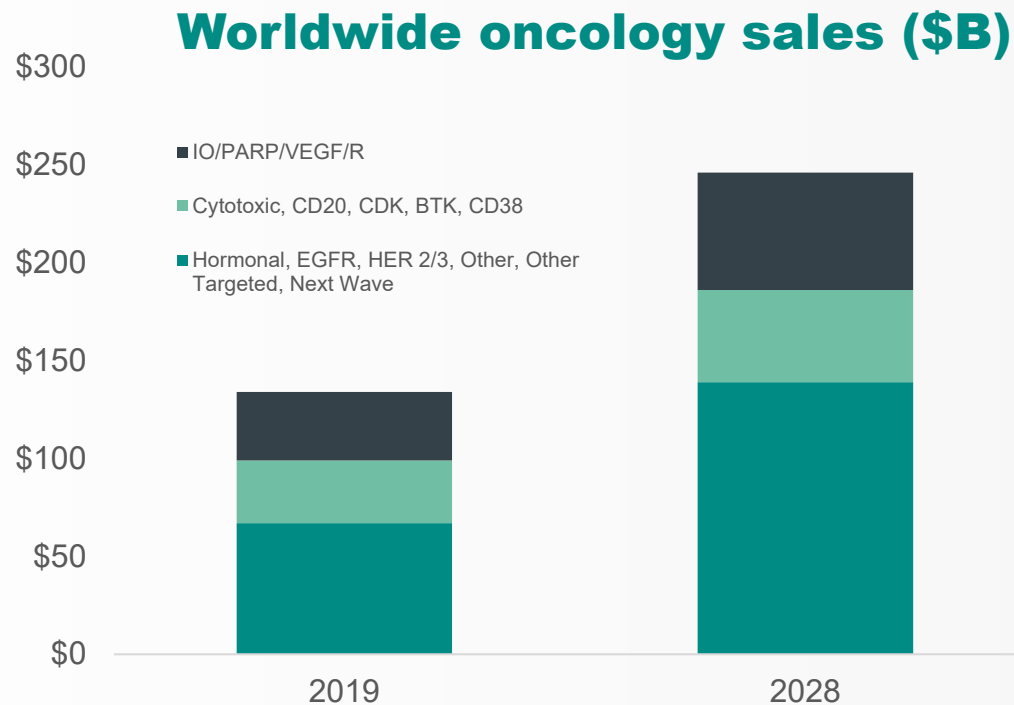
CD27
CTLA4
CVA21
Other cancer vaccines and viruses
PCVs
RIG-I
STING



CCR5
CXCR2
GITR
IDO/TDO
ILT3
ILT4
IL10
LAG-3
PD-1
PD-1/LAG-3 bi-specific
Pi3K-delta
TGFβ
TIGIT
TLR4

ESTABLISHING LEADERSHIP IN GROWING ONCOLOGY MARKET

- Largest I-O clinical development program in the industry
- Sizable long-term opportunity in new tumor types, including TNBC and prostate cancer
- Broad combination program with Lynparza, Lenvima and others
- Significant long-term opportunities in adjuvant / neoadjuvant settings

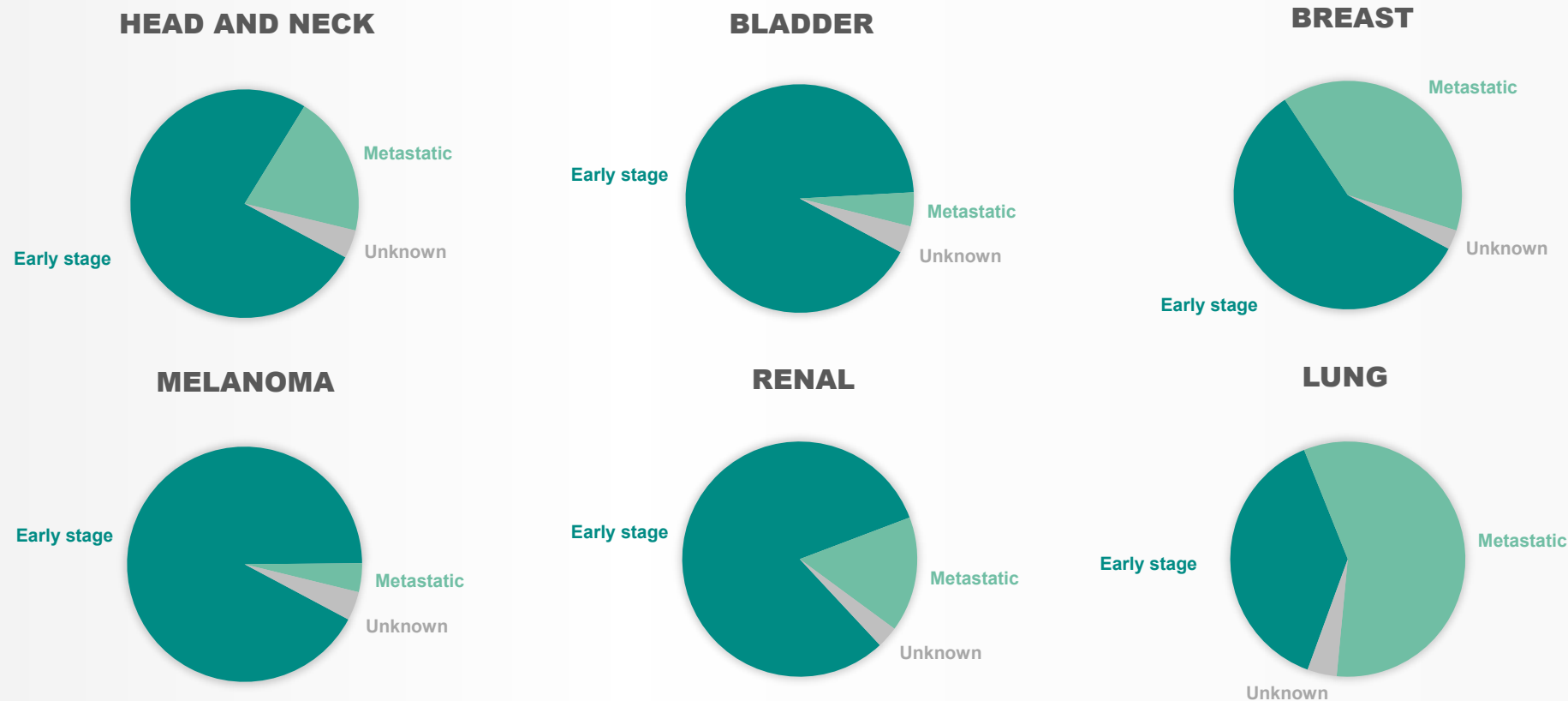


Source: EvaluatePharma

Well positioned to grow faster than the market



EARLY STAGE – INCLUDING ADJUVANT / NEOADJUVANT – REPRESENTS SIGNIFICANT PORTION OF CANCER PREVALENCE



18 registrational trials across these tumor types and more, representing meaningful growth opportunity



ADDRESSING TUMOR TYPES WITH HIGHEST INCIDENCE, INCLUDING BREAST AND PROSTATE

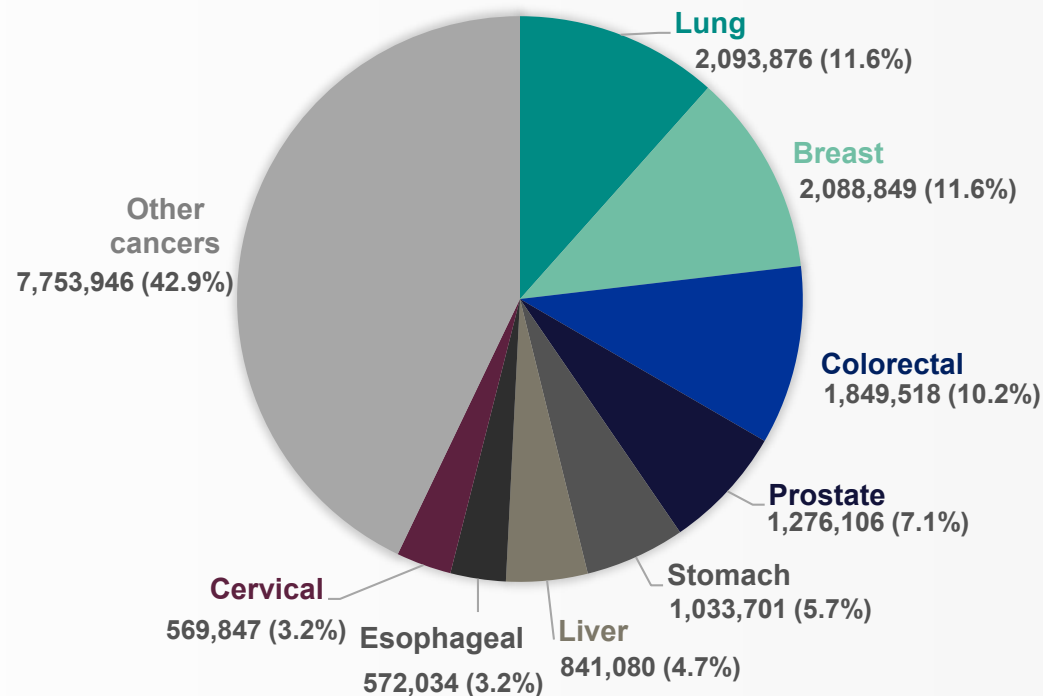
Breast cancer market expected to grow to \$38B by 2028¹

- TNBC represents 10-15% and ER+/HER2- represents ~65% of all breast cancers
- Program addresses different stages of disease and lines of therapy

Prostate cancer market expected to grow to \$15B by 2028¹

- mCRPC represents 20% and mHSPC represents 20% of all prostate cancers
- Broadest I-O development program addressing all stages of mCRPC and moving into mHSPC

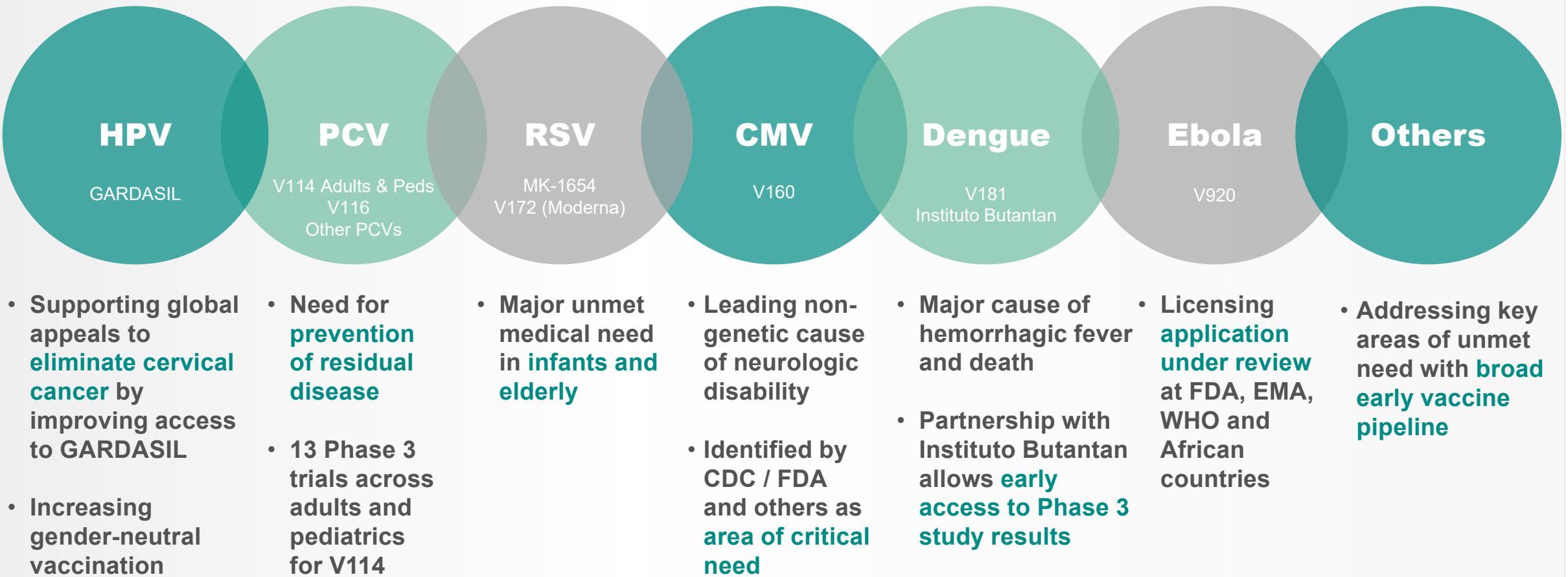
Global incidence of top tumor types



EXTENSIVE VACCINES PIPELINE TARGETING DISEASES WITH SIGNIFICANT UNMET NEED



Dr. Roy Baynes

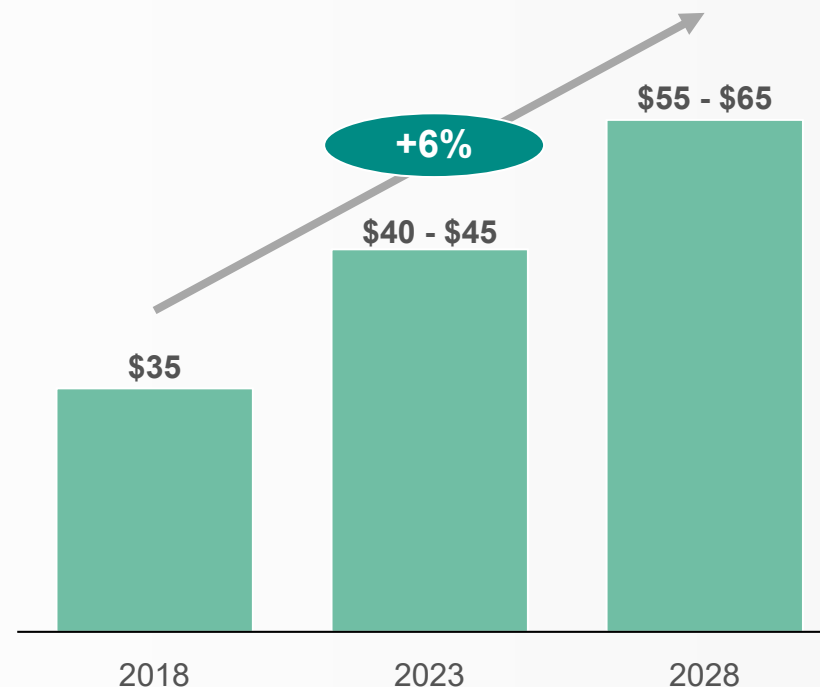


GROWING GLOBAL DEMAND FOR VACCINES PROVIDES SUSTAINABLE MARKET OPPORTUNITY

Growth over the next decade driven by:

- **Increasing Coverage:** Driving penetration of inline products in high income markets (U.S./EU)
- **Globalization:** Expanding markets and increasing penetration for inline and future pipeline products
- **Innovation:** Launching pipeline products

Global vaccine sales (\$B)¹



¹Source: Evaluate Pharma, IMS, Company reports, DCVM projections



UNIQUE PNEUMOCOCCAL PORTFOLIO TARGETING PROTECTION IN ADULTS AND CHILDREN

PNEUMOVAX 23	V114	V116	OTHER PCVs
Foundation of adult prevention Unique combination of serotype coverage and cost effectiveness	Advancing protection across pediatric and adult populations Expanded serotype coverage to potentially address the highest burden of pneumococcal disease  Awarded Breakthrough Therapy Designation in Pediatric and Adult Populations	Targeted approach to adult prevention Focus on potential to broaden protection in adult population	Aiming for broadest protection for pediatric population Potential to establish long-term leadership in pediatric market

FOUNDATION

NEXT-GENERATION PNEUMOCOCCAL PIPELINE



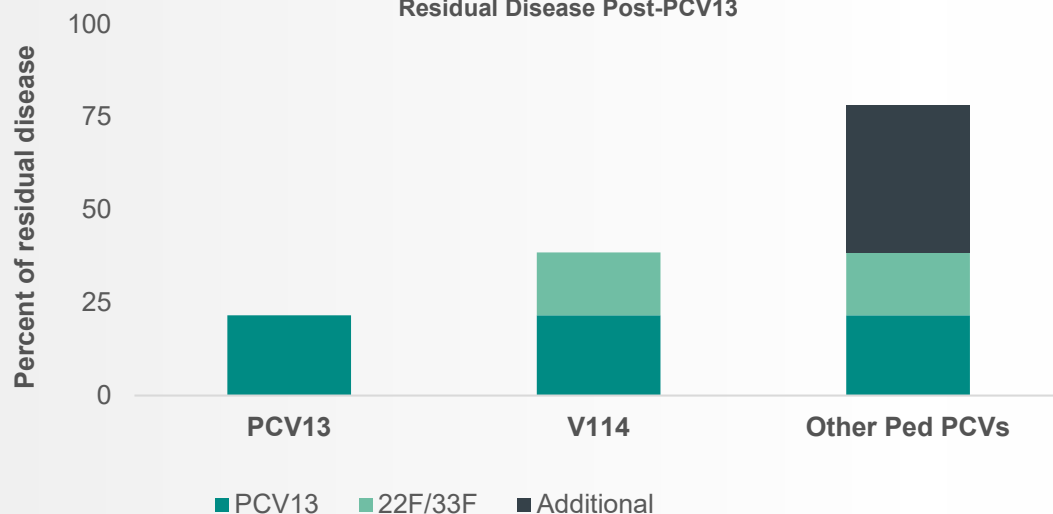
PNEUMOCOCCAL MARKET EXPECTED TO REMAIN LARGE WITH SIGNIFICANT ADDITIONAL OPPORTUNITY



PEDIATRICS

- Represent two-thirds of market
- Even with vaccine progress, still close to 500,000 deaths annually in children <5 years old around the world

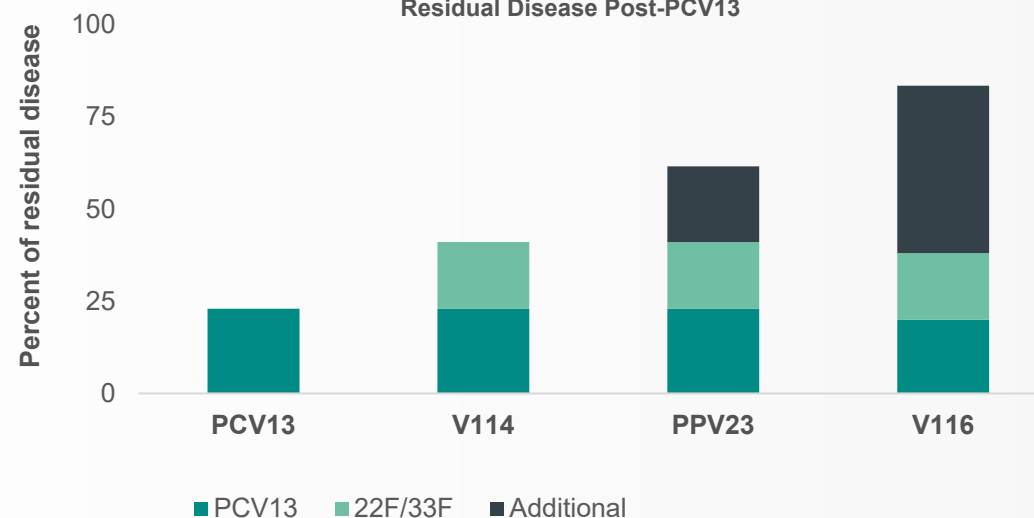
Children <5, % IPD Coverage
Residual Disease Post-PCV13



ADULTS

- Significant remaining opportunity driven by aging population, limited National Immunization Programs and low vaccination rates (~400,000 hospitalization per year in the U.S.)

Adults ≥65, % IPD Coverage
Residual Disease Post-PCV13



MULTIPLE PROGRAMS TARGETING A MARKET OF OVER \$10B GLOBALLY



- Most common respiratory pathogen in infants with >50,000 hospitalizations each year in the U.S. alone and >3 million hospitalizations globally
- RSV infection occurs in up to 10% of adults 65 and over in the U.S. each year, resulting in >175,000 hospitalizations
- Total RSV market estimated to be >\$5 billion



- #1 non-genetic cause of hearing loss in infants in the U.S.
- 0.3 - 2.0% global prevalence of congenital cytomegalovirus
- >\$3 billion market size expected globally
- V160 has potential to be first in class



- 400 million dengue infections annually with 4 billion patients at risk worldwide
- >\$3 billion market size across travel and endemic segments
- V181 data suggests potential for all 4 dengue serotypes to be covered by 1 dose



30 YEARS OF HIV INNOVATION CONTINUES

1980s

1983
HIV is discovered

1989
Role of protease
published –
AZT launches

1990s

1996


1998


2000s

2000
ACHAP¹
Partnership with
Botswana and Bill
and Melinda Gates
Foundation

2007

raltegravir

2010s

2017

raltegravir

2018

doravirine

doravirine/lamivudine/
tenofovir disoproxil fumarate

2020+

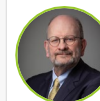
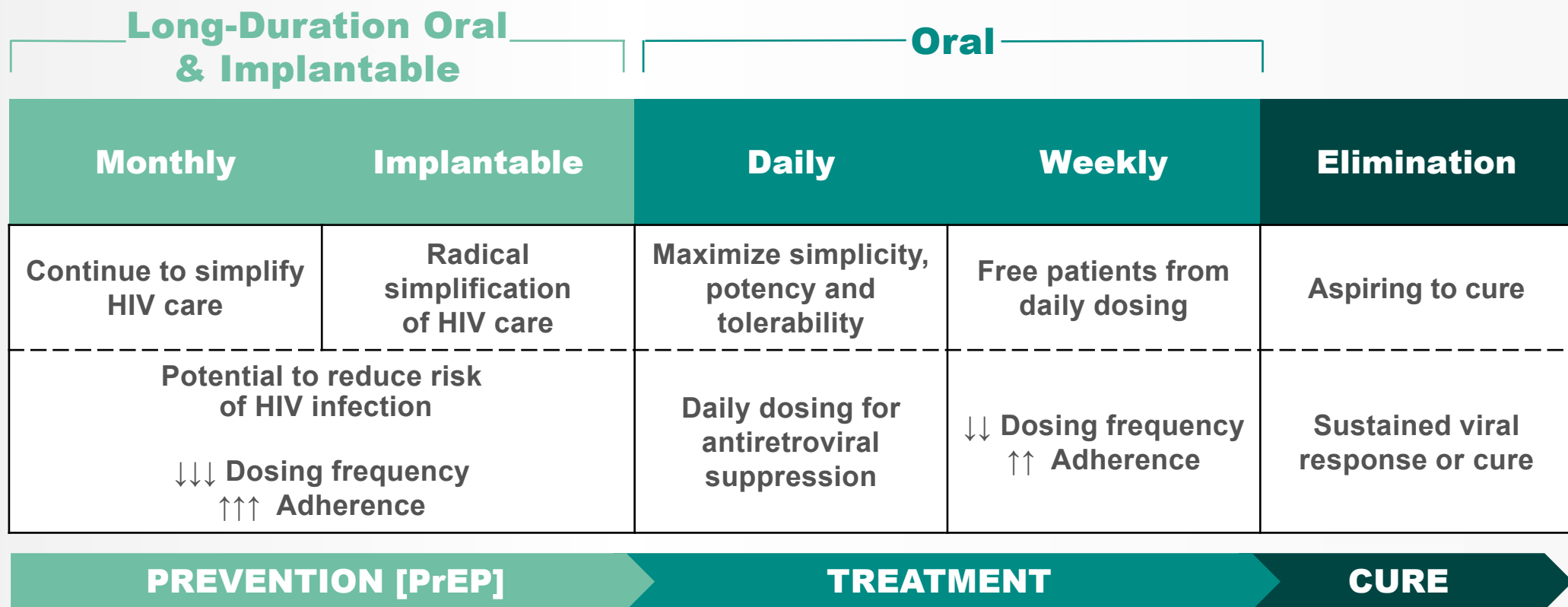
CONTINUING TO INNOVATE

MK-8591: Investigational
NRTTI for the treatment
and prevention of HIV

Many additional
mechanisms in early
development



MK-8591: UNIQUE PHARMACOLOGY ENABLING POTENTIAL LONG DURATION THERAPY



HIV REMAINS A PARAMOUNT WORLDWIDE HEALTH THREAT

36.9M

**Number
of people
living
with HIV**

1.8M

**People
newly
infected
with HIV
in 2017**

940K

**AIDS-
related
deaths in
2017**



MK-8591: UNIQUE ATTRIBUTES ALIGN WELL WITH UNMET NEED

MK-8591

**Simple,
efficacious
regimens that
support
lifelong
therapy with
high QoL**

HIV UNMET NEED

**Extended coverage for
missed doses (forgiveness)**

Pill fatigue

Reduced toxicity

**Easy, effective
options for PrEP**



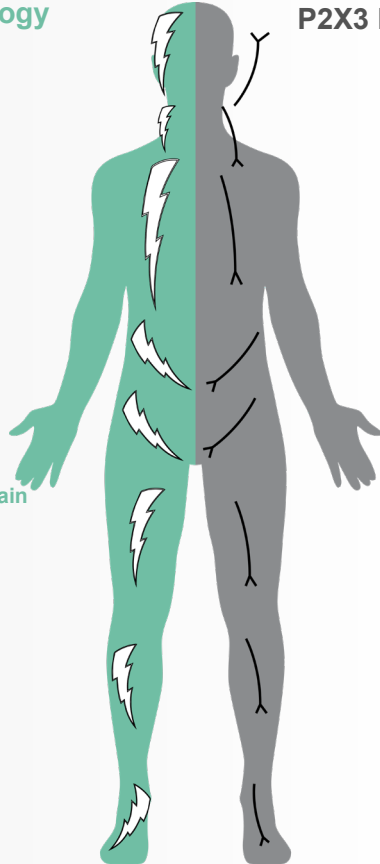
GEFAPIXANT (MK-7264): EXPLORING ROLE OF P2X3 PATHWAY IN DISORDERS OF SENSORY PATHOLOGY



Sensory Pathology

- Headache/migraine
- Hypertension
- Pathologic cough
- Bronchoconstriction
- Breathlessness
- Sleep apnea
- IBS-C/D
- Urinary urgency
- Bladder/pelvic pain
- Endometrial-related pain
- Neuropathic pain
- Muscle pain
- Itch

Pathologies currently being explored



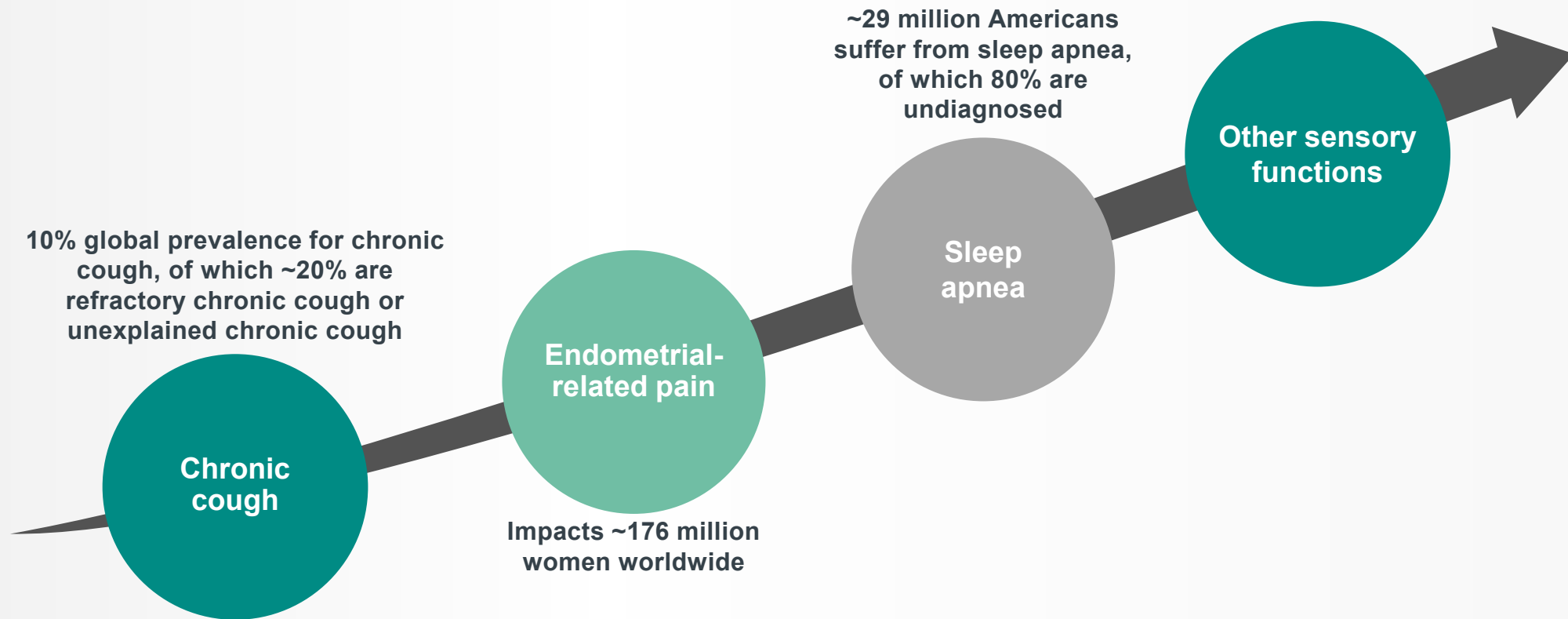
P2X3 Blockade

Blocking P2X3 receptors restores normal sensory function

Development focused on the role of P2X3 receptor mediated signaling in:

- Unexplained or refractory chronic cough
- Visceral pain syndromes
- Altered sympathetic function

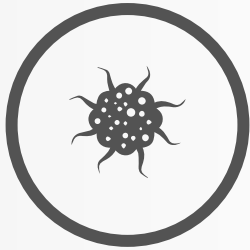
GEFAPIXANT (MK-7264): OPPORTUNITY FOR BROAD APPLICABILITY



Potential pipeline in a product



DIVERSE PIPELINE WITH STRONG GROWTH POTENTIAL THROUGH NEXT DECADE



ONCOLOGY

Broadest I-O program with strong pipeline of oncology products to drive long-term leadership



VACCINES

Durable business with extensive portfolio, and pipeline and global growth opportunity



HOSPITAL / SPECIALTY

Innovative pipeline targeting areas of significant unmet need



Welcome & Introductions

Ken Frazier, Chairman and Chief Executive Officer

Financial & Value Creation Overview

Rob Davis, Chief Financial Officer and Head of Global Services

Commercial Growth Drivers: KEYTRUDA & Beyond

Frank Clyburn, Chief Commercial Officer

Animal Health Innovation

Rick DeLuca, President, Merck Animal Health

Merck R&D Strategy Overview

Dr. Roger M. Perlmutter, President, Merck Research Laboratories

Pipeline Opportunities

Dr. Roy Baynes, Head of Clinical Development and Chief Medical Officer, and Mike Nally, Chief Marketing Officer

Future of Merck R&D: Panel Discussion

Merck Research Laboratories Leadership: Dr. Dean Li, Dr. Fiona Marshall and Dr. Daria Hazuda

Q&A / Closing Remarks

All

Lunch Break

All

Breakout Sessions

Pipeline Deep Dive

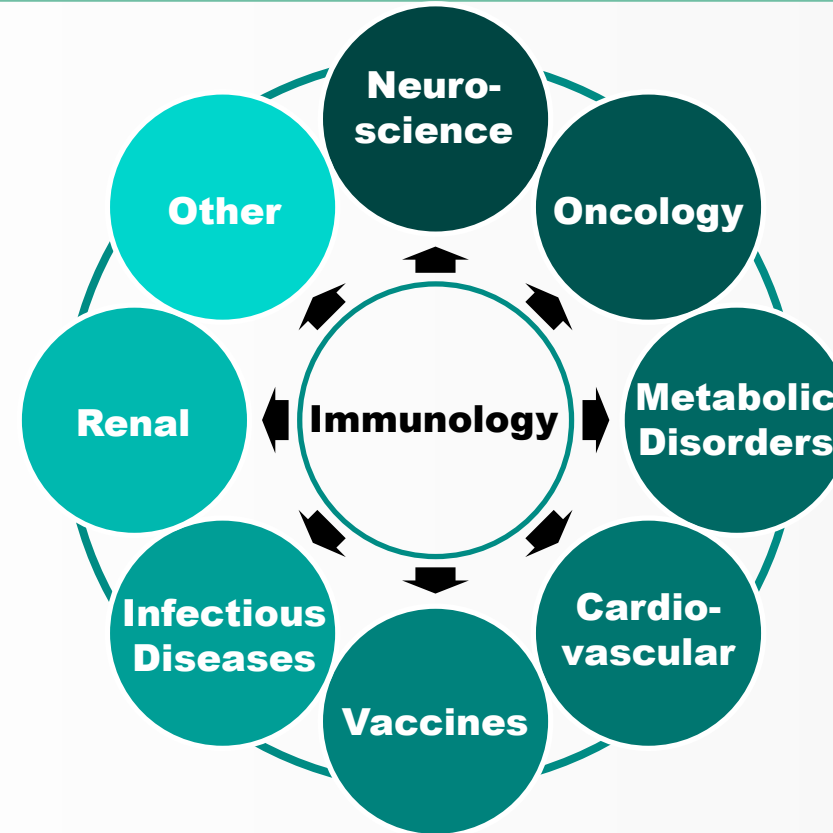
Next Generation Discovery

International Opportunity & China



EMBEDDING IMMUNOBIOLOGY ACROSS DISCOVERY EFFORTS

- Immunology is linked to most disease states
- Unlocking new opportunities to address unmet needs in areas previously “undruggable”
- Increased understanding of biology and importance of the immune system
- Leveraging experience from immuno-oncology — KEYTRUDA and GARDASIL — across discovery efforts

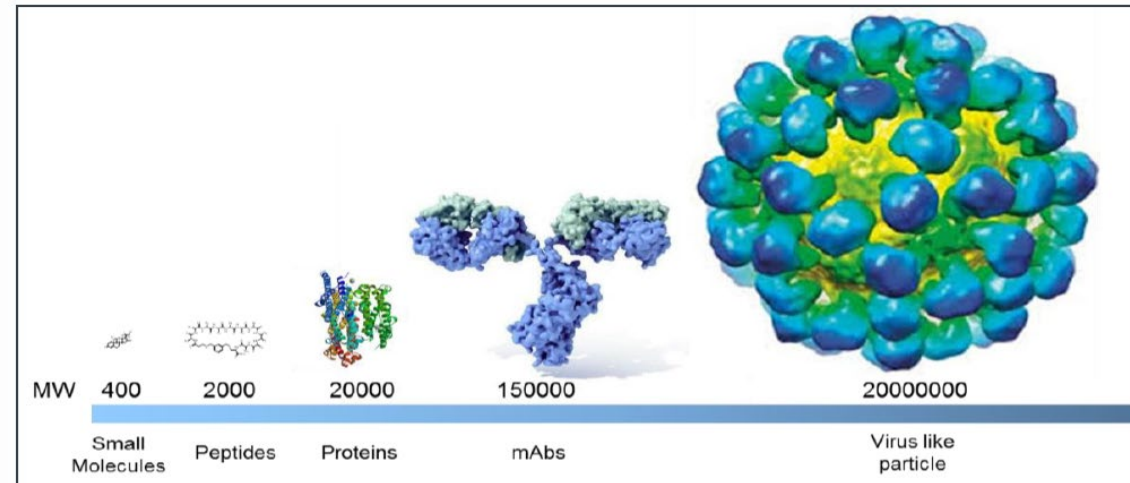


Immunology is the common thread across disease areas



DELIVERING OUR MISSION ACROSS MODALITIES

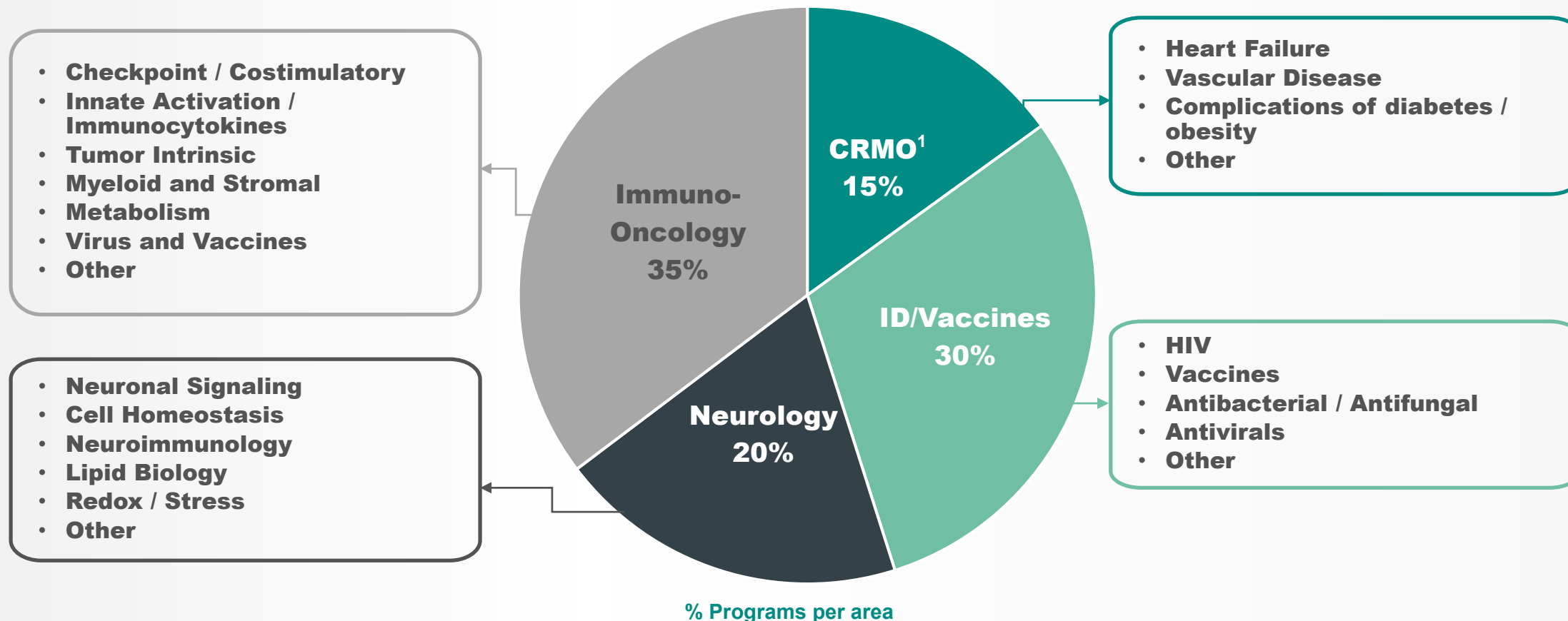
- **Working across a number of modalities, which allows us to address new and complex biology**
- **Complexity of biological targets is increasing**
- **Therapeutic modalities expand the druggable universe**
- **Choice of modality defines addressable biology and impacts success of the drug**



Modality-agnostic approach to research



OVER 150 DISCOVERY & EARLY DEVELOPMENT PROGRAMS ACROSS BROAD SET OF DISEASE AREAS

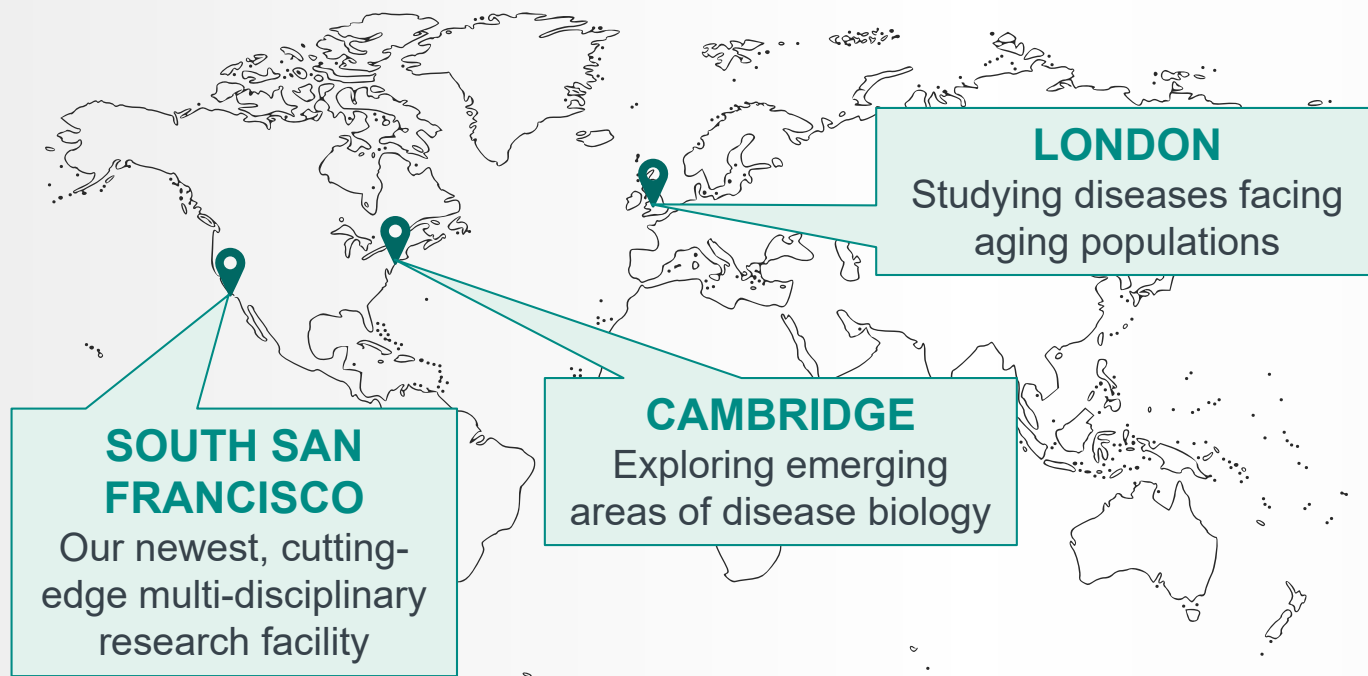


Therapeutic-agnostic approach

¹ CRMO – Cardiovascular, Renal, Metabolic, Other



NEW DISCOVERY HUBS



- **Unleashing the power of Merck Research Labs**
- **Demonstrating keen scientific experience and insight**
- **Maximizing the ecosystems of the key scientific and technology innovation hub cities**
- **Exploring science beyond the boundaries of therapeutic areas**

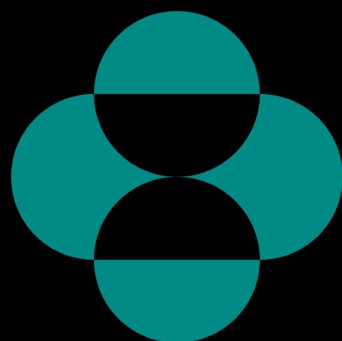
Reinvigorated discovery network



MERCK'S DISCOVERY STRATEGY

- **Human biology** drives our approach to discovery
- **Understanding of immuno-oncology** provides new insights into the role of immunology across every other therapeutic area
- **Accessing biology** through whatever modality necessary
- **Broad and diversified emerging pipeline** of unique molecular entities
- **New cutting-edge discovery centers and new talent** drive our research

**Translating breakthroughs in fundamental biomedical research
into meaningful new therapeutics and vaccines**



MERCK

INVENTING FOR LIFE