Innovation to drive sustainable growth in Vaccines

Part 1

Vaccines Investor Event

June 29, 2023

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Forward-looking statements

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Agenda

Vaccines Investor Event, June 29, 2023

2:00-2:10 • Introduction

2:10-3:00 • Expand leadership
- Deliver Best-in-Class RSV franchise
- Win in Influenza

3:00-3:20 • Q&A

3:20-3:40 • Break

3:40-4:30 • New growth areas in vaccines
- Enter multi-billion PCV market
- Establish Best-in-Class meningitis portfolio
- Leverage leading-edge mRNA platform
- New frontiers

4:30-4:40 • Concluding remarks

4:40-5:00 • Q&A

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Introduction

Paul Hudson

Chief Executive Officer

Driving *growth* with strategic choices

Dupixent®

Maximize patient benefits with ambition to achieve >€13bn peak sales across type 2 inflammatory diseases [COPD not included]

€8.3bn
sales in 2022, +43.8% 5 years after launch

Vaccines

Expected mid-to-high single-digit growth[1], through differentiated products, market expansion, launches

6.3%
growth in 2022

Pipeline

Prioritize and accelerate portfolio of potentially transformative therapies

84
projects in clinical development

Dupixent® is a product in collaboration with Regeneron 1. Sales CAGR from 2018 base to 2025

Strategic transformation delivered first set of guidance targets

2020 - 2022

10 consecutive quarters of **growth**

540bps BOI **margin improvement** from 2019 to 2022[1]

€2.7bn **cost savings** re-invested in growth drivers

>25 **value-creating** BD and M&A deals

Accelerating **digitalization**: use of AI and data science at scale

BOI margin 30%

Strong cash flow

EPS growth ~16% growth at CER

Ahead of guidance

1. 2018 proforma BOI margin of 24.6% without equity investment in Regeneron sold in May 2020, excluding IFRS16 impacts.

Powerful business and pipeline *momentum* in 2023

Launches

ALTUVIIIO™

Beyfortus (nirsevimab)

Tzield (teplizumab-mzwv)

Pivotal readouts

DUPIXENT (dupilumab)
Expansion into COPD

tolebrutinib (BTKi)
Relapsing MS

fitusiran
Hemophilia A/B

Early to mid-stage pipeline

27 readouts

in immunology, vaccines, neurology, rare diseases, and oncology

Baring unforeseen events.

Strong *positive* pipeline news flow in H1 2023

Submissions	Dupixent®	CSU	US	*300,000 people with CSU inadequately controlled by antihistamines*
Read-outs	Dupixent®	COPD	Phase 3	*Around 900,000 patients in G7*
	itepekimab (IL-33)	COPD	Phase 3 IA	*Around 1.8m patients in G7*
	amlitelimab (OX40L)	AD	Phase 2b	*Moving in phase 3*
	frexalimab (CD40L)	MS	Phase 2b	*Moving in phase 3*
	SAR'765 (IL-13/TSLP)	Asthma	Phase 1b	*Moving in phase 2b*
	SAR'566 (oral TNFi)	Psoriasis	Phase 1b	*Moving in phase 2b*

Barring unforeseen events. Dupixent is not yet approved neither in CSU nor COPD by any regulatory authority; itepekimab, amlitelimab, frexalimab, SAR'765 and SAR'566 are still under investigation and not yet approved.

Play to Win: Leverage innovation to drive *next growth chapter*

2020-2022

Refocus with decisive actions

Growth through winning assets

Margin expansion

2023-2025

Transformative launches

Agile and efficient resource deployment

Leading R&D productivity

Guidance of BOI margin of

>32%

by 2025

2026-2030

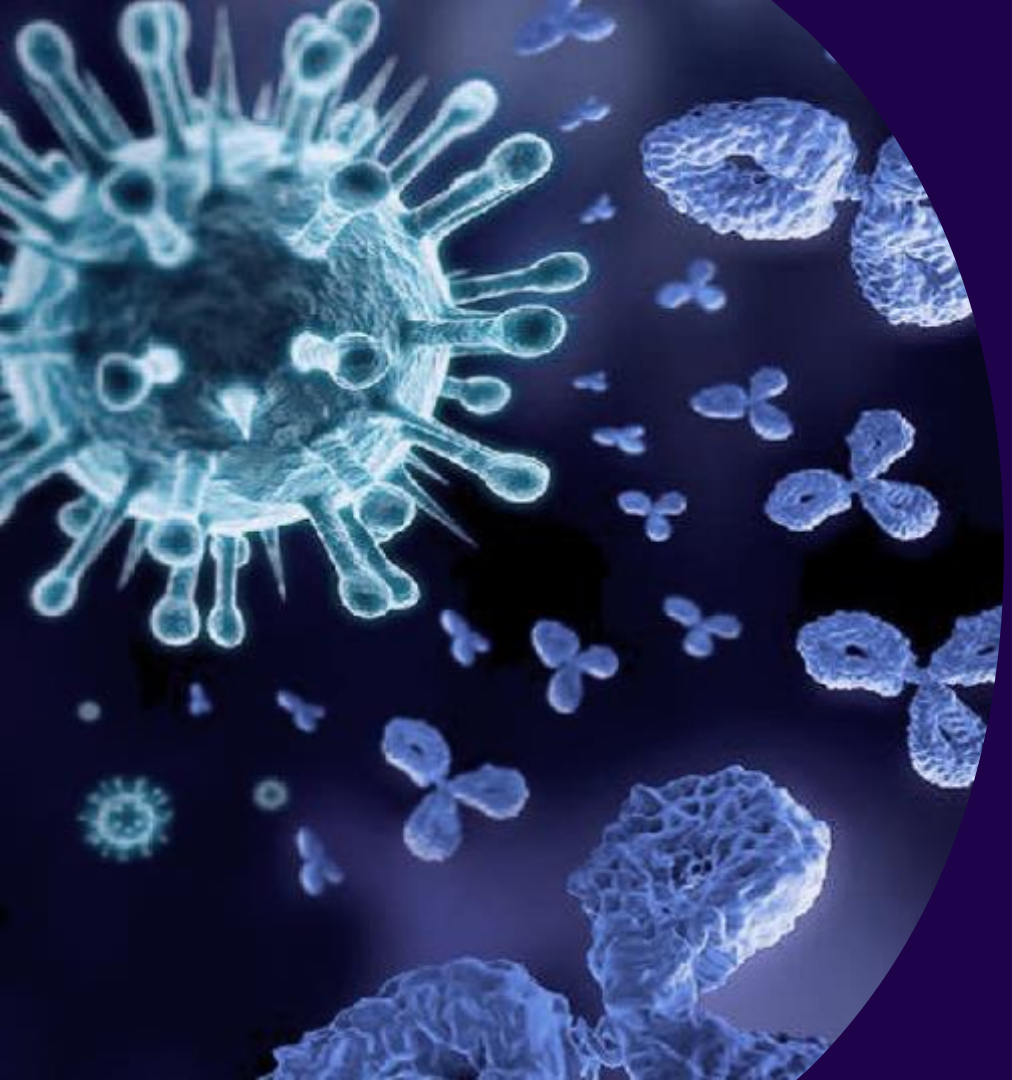
Industry leader in immunology with >€22bn sales by 2030

Doubling vaccines sales by 2030[1]

No meaningful LOE

Ambition to launch 3-5 new products with €2-5bn peak sales potential each

Barring unforeseen events. 1. Sales from 2018.



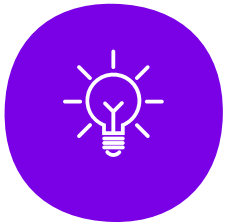
Expand leadership in vaccines

Thomas Triomphe
Head of Vaccines GBU

Jean-François Toussaint
Head of Vaccines R&D

Our ambition in *Vaccines*

Continued strong growth driven by four core franchises: Influenza, Meningitis, PPH & Boosters, RSV



Unlock the potential of mRNA in Vaccines with Next-Generation platform

Build an industry leading pipeline to address unmet needs

More than double Vaccine sales by 2030[1]

1. Vs. 2018, risk adjusted, internal estimate

Execution of *Play To Win* strategy in Vaccines

Focus on growth

+8% Sales growth 2018-2022 CAGR

2 Vaccines reached blockbuster status
- Fluzone HD
- Penta/Hexaxim

Lead with innovation

32 Countries with Beyfortus licenses

6 New phase 1/2 programs over 2022-2023

Accelerate efficiency

+6pts Vaccines profitability from 2018 to 2022

1 Merged Pharma & Vaccines manufacturing & supply, 2 Evolutive Facilities on track for 2025 operation

Reinvent how we work

+90% TBio experts retained across mRNA Center of Excellence 2 years post-acquisition

45% Female senior leaders

R&D transformation has started to deliver strong results

State-of-the-art immunology & antigen design	Innovative antigens designed, including *mRNA-encoded bacterial* vaccine approach High throughput *translational science & proprietary MIMIC®* technology introduced
Selecting the best technology platform for each target	*9 vaccine technologies* employed across the pipeline Leading-edge *mRNA platform* added
Expanding into new infectious diseases	*Chlamydia* final antigens selected *Acne* mechanism of action validated Additional *new research programs* initiated

* Compared to Dec 2021

At least 5 new FiC / BiC programs expected to *enter phase 3* by 2025

2022-2023 progress

3 new products registered

Beyfortus

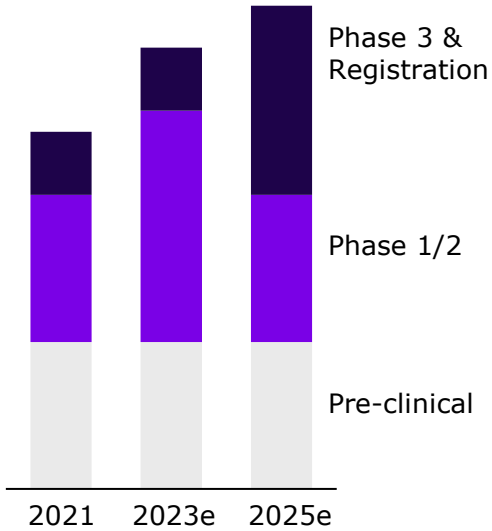
凡尔佳 VaxigripTetra 四价流感病毒裂解疫苗

VidPrevtyn™ COVID-19 vaccine (recombinant, adjuvanted) Beta

6 new phase 1/2 programs

- ✓ mRNA Flu QIV
- ✓ RSV Older Adult
- ✓ RSV OA/PIV/hMPV
- ✓ MenPenta
- ✓ Acne
- ✓ NextGen Flu

Pipeline moving at pace



Recent highlights from our *leading-edge mRNA platform*

AI/ML augmented mRNA Workforce

>600 experts and more than 30 collaborations across all aspects of the platform

Proprietary generative modeling for mRNA and lipid design

Next generation mRNA products

As many as 5 distinct LNPs clinically tested by 2023

4 mRNA enhancement features for next clinical candidate

Rapid deployment across the pipeline

Pivot to modified mRNA and clinical validation in 9 months

7 phase 1/2 launched since 2022

Sanofi Vaccines is built on *strong foundations*

R&D toolbox

9 vaccine technologies employed across the pipeline

Industrial powerhouse

Ability to **deliver at scale**

Extensive medical expertise

Innovative approaches to generate impactful real-world evidence

Commercial strength

Engagement of strong stakeholder networks

We have what it takes to win in protection against preventable diseases

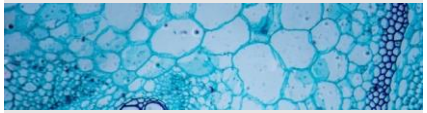
Sanofi *societal commitments* embedded in our business

Affordable access

Ensuring access to medicines for the poorest countries

Yellow Fever vaccine

R&D for unmet needs



Acting for the most vulnerable communities

Planet care

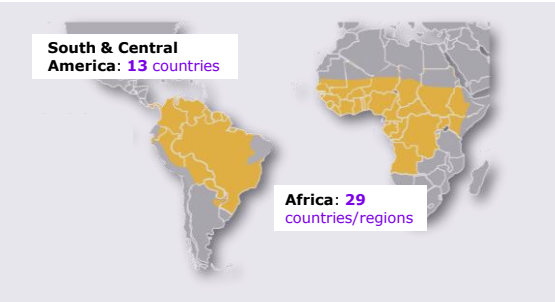
Building sustainability for a healthy planet

Blister-free vaccine

In and beyond the workplace

Building an inclusive workplace

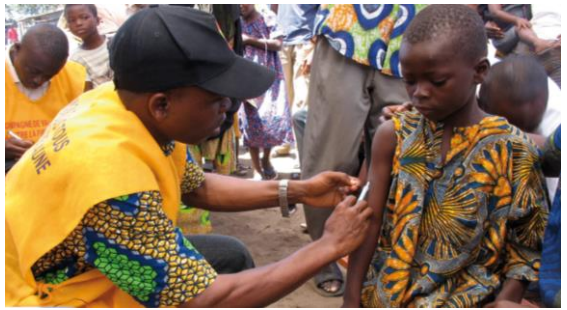
Yellow Fever program with thorough *Global Access Plan*



109,000 severe infections and *51,000 deaths* in 2018 worldwide

>500 million doses distributed worldwide since 1953

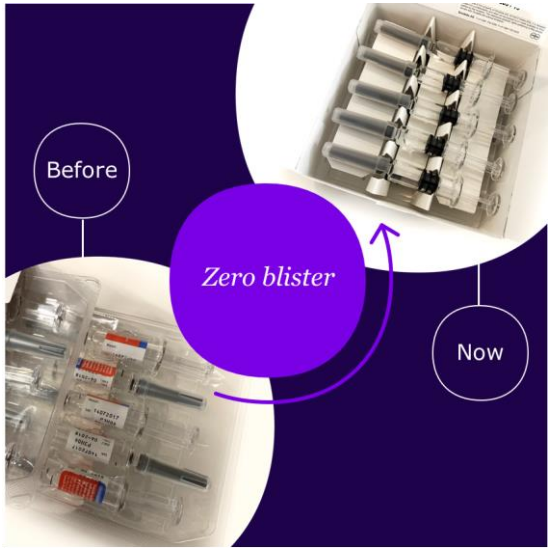
Major partner and supplier of UNICEF, committed to stay ready to respond to outbreaks



Positive phase 2 results of our next generation vaccine

Ambition to manufacture 100% *blister-free packaging* by 2027

- Saving *~330* tons of plastic per year
  Reducing the amount of microplastics in the environment
- Up to *50%* reduction of transported pallets
  Reducing the need for cold chain space and transport by *~1/3rd*
- *30%* reduction in distribution costs
- *40%* of blister-free syringes by end of 2023, *100% by 2027*



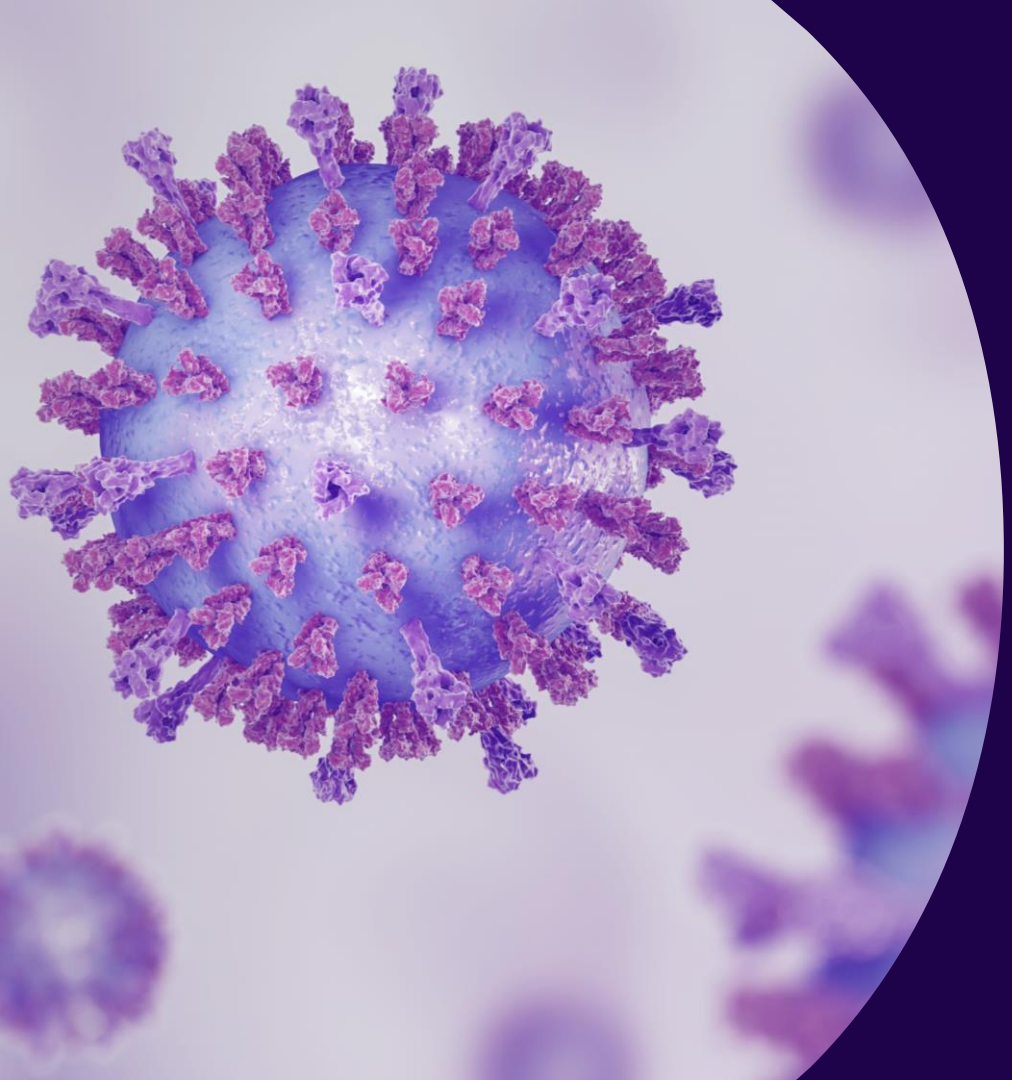
New data from 12 assets featured today

Deepen our leadership in existing franchises

New growth areas

Influenza	*Meningitis Travel & Endemic*	*RSV*	*Pneumo*	*New frontiers*
Fluzone HD **Influenza QIV mRNA** **Next-gen mRNA Flu vaccine**	**MenQuadfi** **MenB** **MenPenta**	**Beyfortus** **RSV toddler** **RSV older adult (OA)**	**PCV21**	**Chlamydia** **Acne**
Fluzone HD pediatric Pandemic Influenza	Next-gen Yellow fever Next-gen rabies	RSV OA respiratory combo		

Data to be shared today



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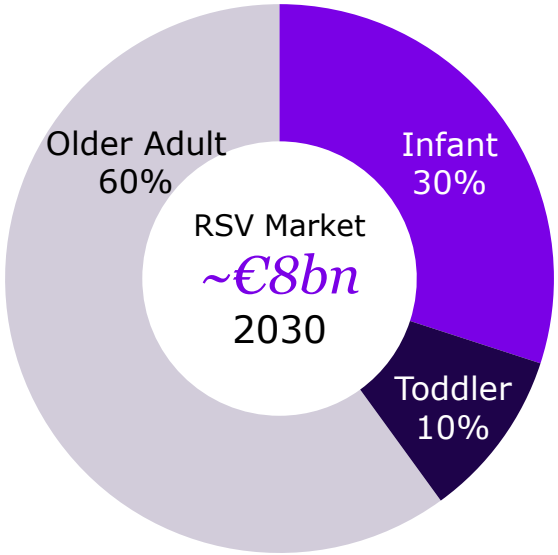
Deliver Best-in-Class RSV franchise

Kimberly Tutwiler
Head of RSV Franchise

Jean-François Toussaint
Head of Vaccines R&D

Ambition to *lead in RSV* across all target populations



Beyfortus
Best-in-Class immunization for All Infant Protection in first season

RSV Toddler
SP0125: First-in-Class vaccine for protection from second season onwards

RSV Older Adult
SP0256: First-in-Class RSV-hMPV-PIV combination

Source: Sanofi internal forecast

U.S. Advisory committee votes *21-0* in favor of nirsevimab

Unanimously voted in favor for 1st season

- Favorable benefit/risk profile for prevention of RSV LRTD in newborns & infants born during or entering 1st season

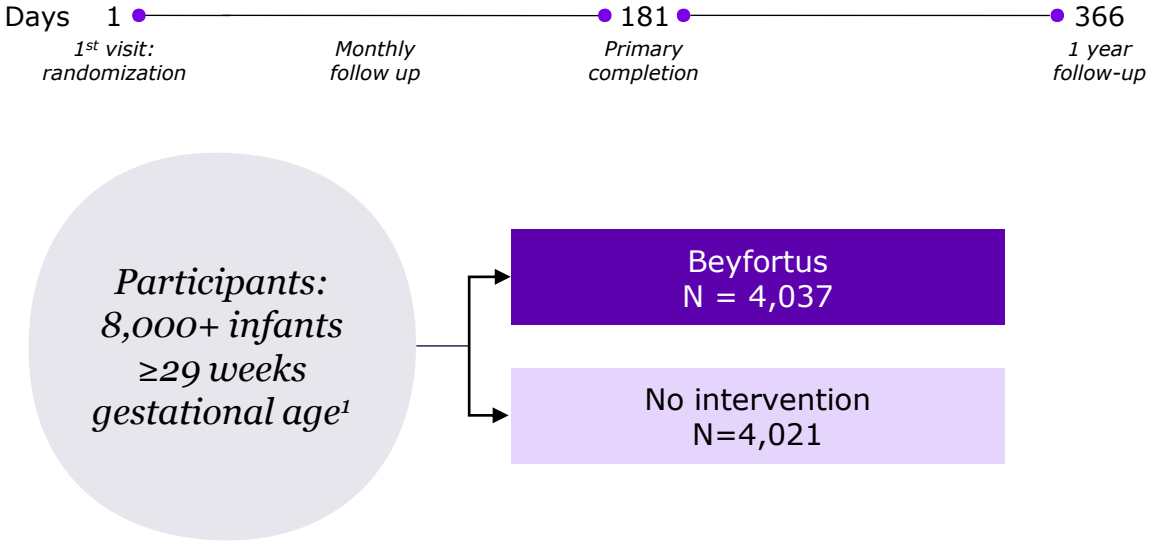
Voted 19-2 in favor for 2nd season

- Favorable benefit/risk profile for prevention of RSV LRTD in children up to 24 months of age who remain vulnerable

ACIP meeting anticipated before the RSV season

HARMONIE STUDY

HARMONIE study confirms pivotal trial data in *real world setting*



Primary endpoint

- Reduction of hospitalization due to RSV Lower-Respiratory-Tract-Infection (LRTI)

Study objectives

- Showcase seamless implementation in real world setting
- Enrich hospitalization data in France, Germany and UK
- Confirm safety profile in large population

SB Drysdale, (2023, May 8–12). A Phase 3 randomized open-label study of nirsevimab (versus no intervention) in preventing hospitalizations due to respiratory syncytial virus (RSV) in infants (HARMONIE) [Oral presentation]. ESPID 2023: Lisbon, Portugal. 1. Not eligible for palivizumab

HARMONIE STUDY

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Excellent safety and tolerability profile confirmed

Adverse Events Category *Adverse Events type*	*Nirsevimab* *(N=4,016) N, (%)*	*No Intervention* *(N=4,020) N, (%)*
Any treatment emergent adverse event (TEAE)	***1,479 (36.8)***	***1,326 (33.0)***
Leading to discontinuation of study	1 (< 0.1)	1 (< 0.1)
Leading to death	0 (0.0)	0 (0.0)
Grade 1 severity	1,171 (29.2)	1,014 (25.2)
Grade 2 severity	462 (11.5)	436 (10.8)
Grade 3 severity	48 (1.2)	46 (1.1)
Unknown	67 (1.7)	56 (1.4)
Any study treatment related TEAE	***86 (2.1)***	***0 (0.0)***
Leading to discontinuation of study	0 (0.0)	0 (0.0)
Leading to death	0 (0.0)	0 (0.0)
Grade 1 severity	68 (1.7)	0 (0.0)
Grade 2 severity	21 (0.5)	0 (0.0)
Grade 3 severity	1 (< 0.1)	0 (0.0)
Unknown	1 (< 0.1)	0 (0.0)
Any serious TEAE	***89 (2.2)***	***67 (1.7)***
Leading to discontinuation of study	1 (< 0.1)	0 (0.0)
Leading to death	0 (0.0)	0 (0.0)

SB Drysdale, (2023, May 8–12). A Phase 3 randomized open-label study of nirsevimab (versus no intervention) in preventing hospitalizations due to respiratory syncytial virus (RSV) in infants (HARMONIE) [Oral presentation]. ESPID 2023: Lisbon, Portugal.

HARMONIE STUDY

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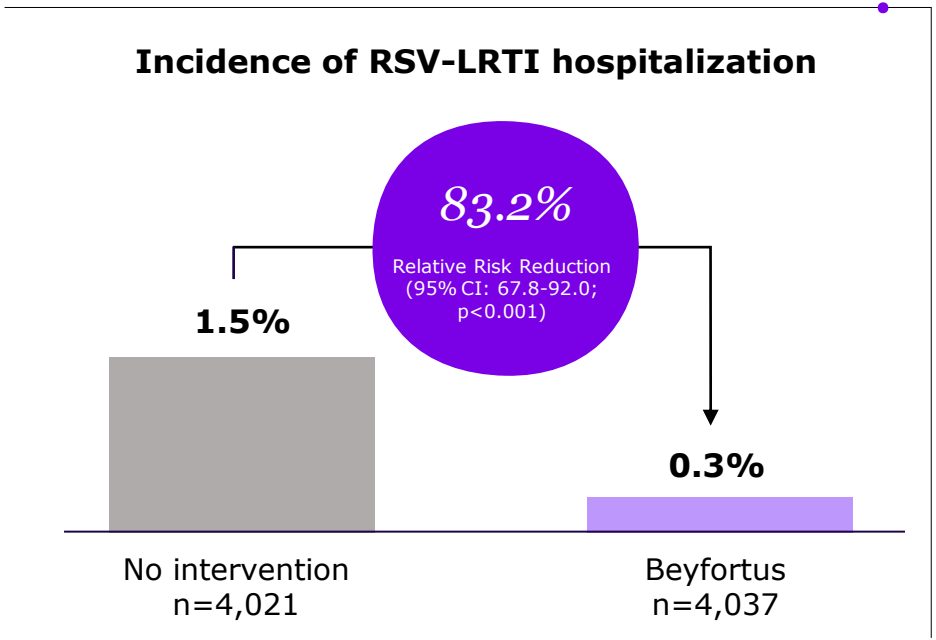
Impressive *83% reduction* of RSV-LRTI hospitalizations confirmed in real world setting



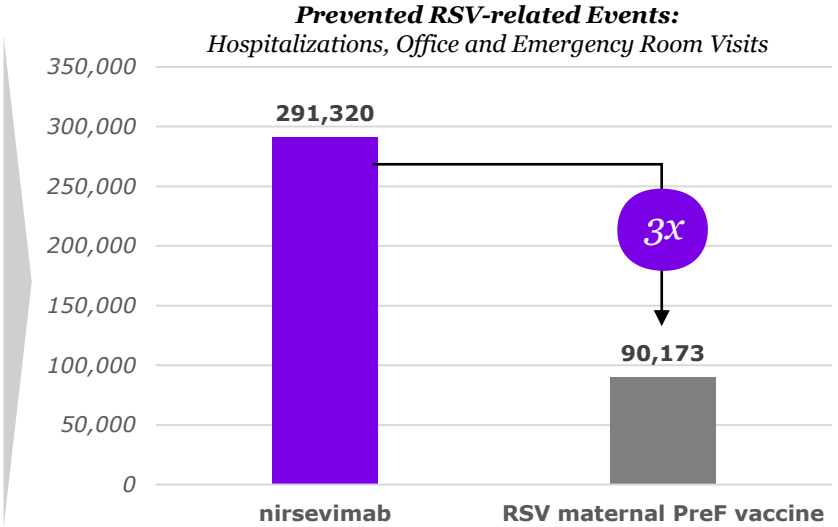
- RSV is the *leading cause* of *hospitalization* in infants
- *Efficacy* of *Beyfortus* has been *consistent* across all studies, and is *maintained for 5 months to cover the duration of the RSV season*

1. SB Drysdale, (2023, May 8–12). A Phase 3 randomized open-label study of nirsevimab (versus no intervention) in preventing hospitalizations due to respiratory syncytial virus (RSV) in infants (HARMONIE) [Oral presentation]. ESPID 2023: Lisbon, Portugal.

Nirsevimab expected to *prevent 3x more RSV events* than maternal vaccine

Modeled impact of nirsevimab and maternal immunization in a U.S. birth cohort for first RSV season

Key input	*nirsevimab* [Modelled with clinical data & assumptions from CDC comparison; not from head-to-head studies]	*Maternal Vaccine*
Efficacy RSV MA-LRTI	79.5%	51.3% *(success criteria not met)*
Reduction** of RSV MA-LRTI **hospitalization	83.2%	69.4%
*% reduction of RSV-related events in babies **born before season***	50.5%	12.7%
*% reduction of RSV-related events in babies **born preterm***	60.6%	4.1%
*Immunization **coverage rate***	80%	50%
NEW *Efficacy **all-cause LRTI hospitalizations***	58%	2.5%[1] *for MA-LRTI all-cause (success criteria not met)*



Source Notes: **Model-** Kieffer A, Beuvelet M, Sardesai A, et al. Expected Impact of Universal Immunization With Nirsevimab Against RSV-Related Outcomes and Costs Among All US Infants in Their First RSV Season: A Static Model. J Infect Dis. 2022;226(Supplement_2):S282-s292. **Inputs**: **Hospitalizations**: CDC New Vaccine Surveillance Network (NVSN) hospitalization rates for children under 2 years of age from December 2016 to September 2020. **Primary care & ER :visits**: Lively JY, Curns AT, Weinberg GA, et al. Respiratory Syncytial Virus-Associated Outpatient Visits Among Children Younger Than 24 Months. J Pediatric Infect Dis Soc. 2019;8(3):284-286. **RSV season:** National Respiratory and Enteric Virus Surveillance System (NREVSS) (2015-2019). **Immunization rates pediatric** CDC National Center for Health Statistics, DTaP https://www.cdc.gov/nchs/fastats/immunize.htm **Immunization Rates Maternal**: CDC FluVaxView Flu, Tdap, Covid Vaccination coverage among pregnant women April 2022 https://www.cdc.gov/flu/fluvaxview/pregnant-women-apr2022.htm . **Efficacy nirsevimab**: Simões EAF, Lancet Child Adolesc Health. 2023 Mar;7(3):180-189. Drysdale S, 41st Annual Meeting of the European Society for Paediatric Infectious Diseases (Lisbon). Griffin MP, et al. N Engl J Med. 2020;383(5):415-425. Hammitt LL, et al. N Engl J Med. 2022;386(9):837-846. Beyfortus. EU Summary of Product Characteristics (SmPC). **Efficacy Maternal RSV preF vaccine**: Kampmann B, Bivalent Prefusion F Vaccine in Pregnancy to Prevent RSV Illness in Infants. N Engl J Med 2023;388:1451-64

1. Included RSV MA LRTI all cause (2.5%) in the absence of data for all cause LRTI hospitalization to compare

Ready to launch Beyfortus in the 2023 season

Stakeholders fully engaged

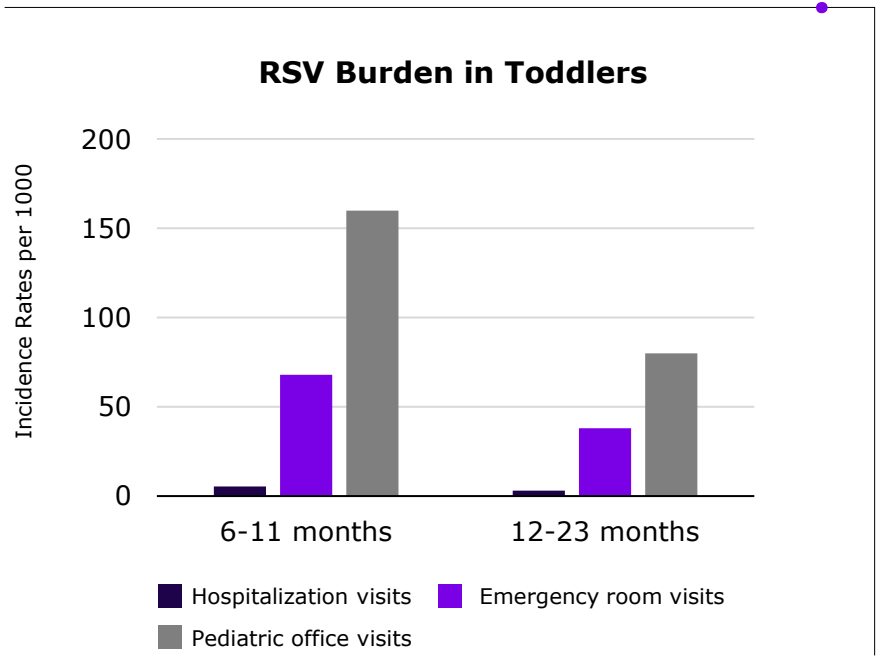
- Licensed in EU, Great Britain, Canada
- Broad population programs expected in Spain and France

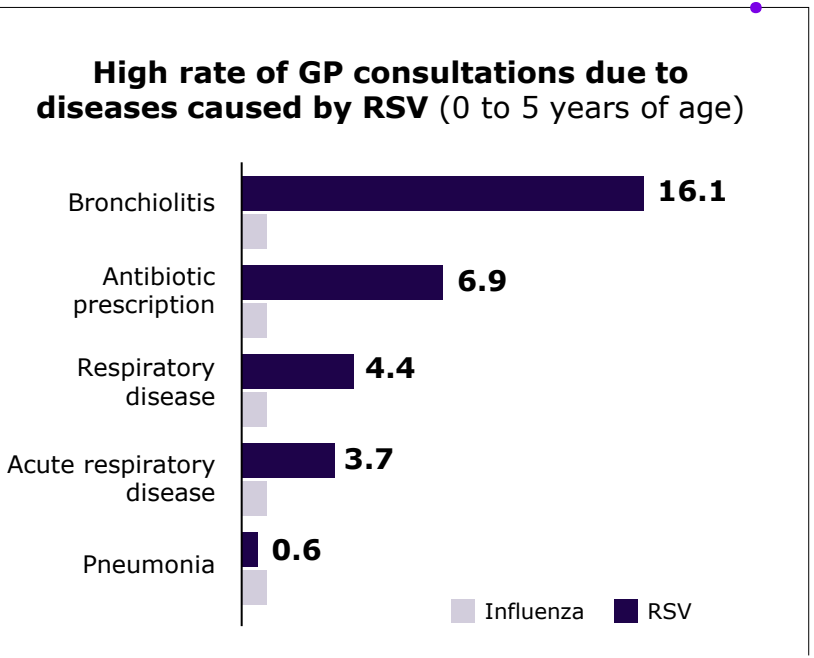
- License, ACIP recommendation and VFC inclusion expected soon
- Contracting and reimbursement underway

- Priority review granted

Production is already underway

RSV in *toddlers*: significant burden in 2nd season and beyond



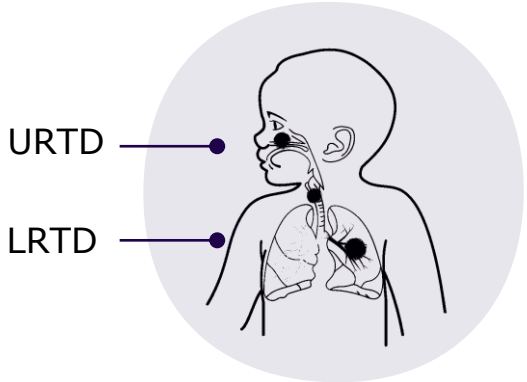


1. Hall CB, et al. Pediatrics. 2013;132(2):e341-e348. 2. Hall CB, et al. N Engl J Med. 2009;360(6):588-598. 2. Taylor S, 2016 Modelling estimates of the burden of respiratory syncytial virus infection in children in the UK | BMJ Open

SP0125 is the *first RSV vaccine* designed to protect all toddlers

Intranasal delivery design for *complete toddler protection*

- RSV inhibition at its *point of entry*
- *Broad protection* against both upper and lower respiratory tract disease



Live attenuated vaccine uniquely designed to *ensure safety* and *maximize immunogenicity*

Beyfortus and *RSV Toddler vaccine* provide *continuous protection*

First RSV Season (October – March)

Beyfortus administered ahead or during first season

Protected for first RSV season

April - September

1st dose of RSV Toddler vaccine

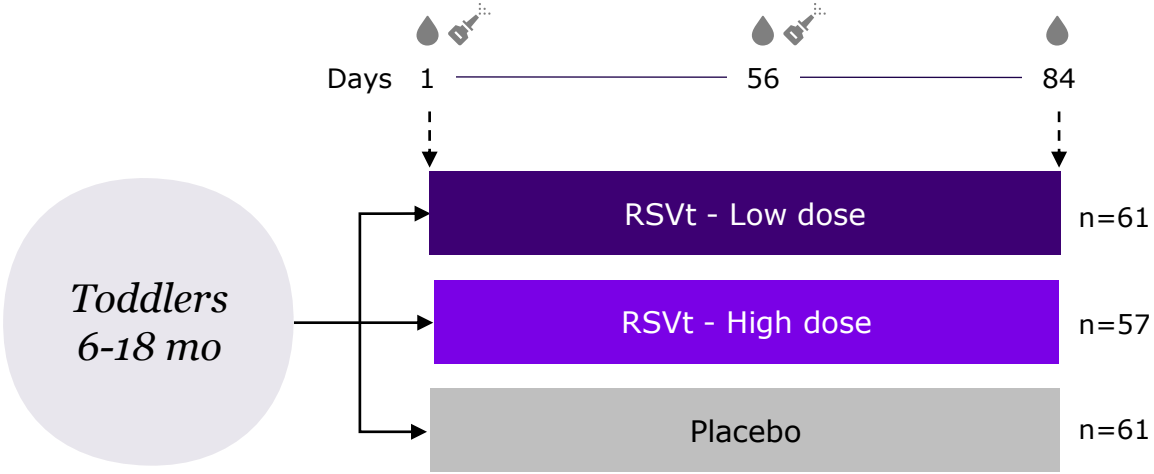
2nd dose of RSV Toddler vaccine

To be given during existing routine visits

Second RSV Season (October – March)

Protected from second RSV season onwards

Live attenuated vaccine (SP0125) *Phase 1/2 design*



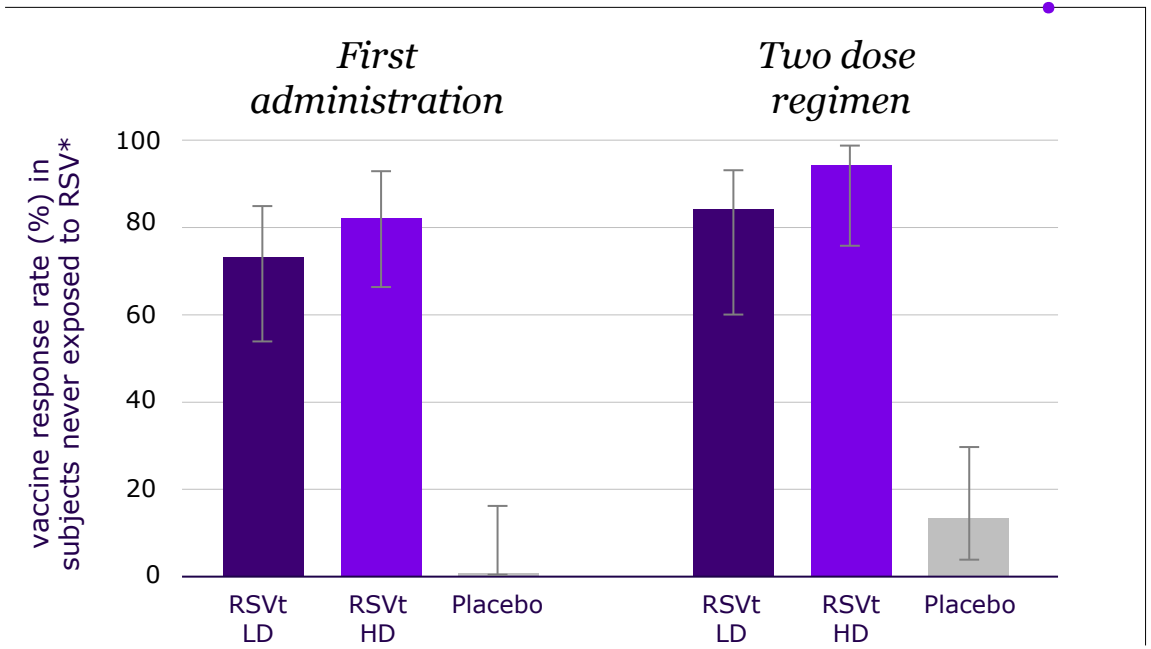
- *Safety*
  Adverse events following vaccination
- *Immunogenicity*
  Neutralizing antibody responses
- *Vaccine response rate*
  Composite endpoint factoring immunogenicity and vaccine virus replication

SP0125 demonstrated safety profile *similar to placebo*

Participants experiencing at least one unsolicited AE within 28 days after vaccination	First administration			Second administration		
	RSVt LD (n=61)	*RSVt HD (n=57)*	*Placebo (n=61)*	*RSVt LD (n=48)*	*RSVt HD (n=48)*	*Placebo (n=54)*
	n (%)	**n (%)**	**n (%)**	**n (%)**	**n (%)**	**n (%)**
Not related to vaccination	37 (60.7)	30 (52.6)	38 (62.3)	22 (45.8)	17 (35.4)	23 (42.6)
Related to vaccination	5 (8.2)	6 (10.5)	4 (6.6)	4 (8.3)	3 (6.3)	2 (3.7)
AE of special interest*	15 (24.6)	8 (14.0)	15 (24.6)	7 (14.6)	5 (10.4)	6 (11.1)
Medically attended AE	28 (45.9)	23 (40.4)	26 (42.6)	19 (39.6)	14 (29.2)	17 (31.5)
AE leading to study discontinuation	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Serious AE	1 (1.6)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Death	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)

* Based on investigator assessment. AE of special interest: acute otitis media, upper and lower respiratory infections.

Strong vaccine response observed with SP0125

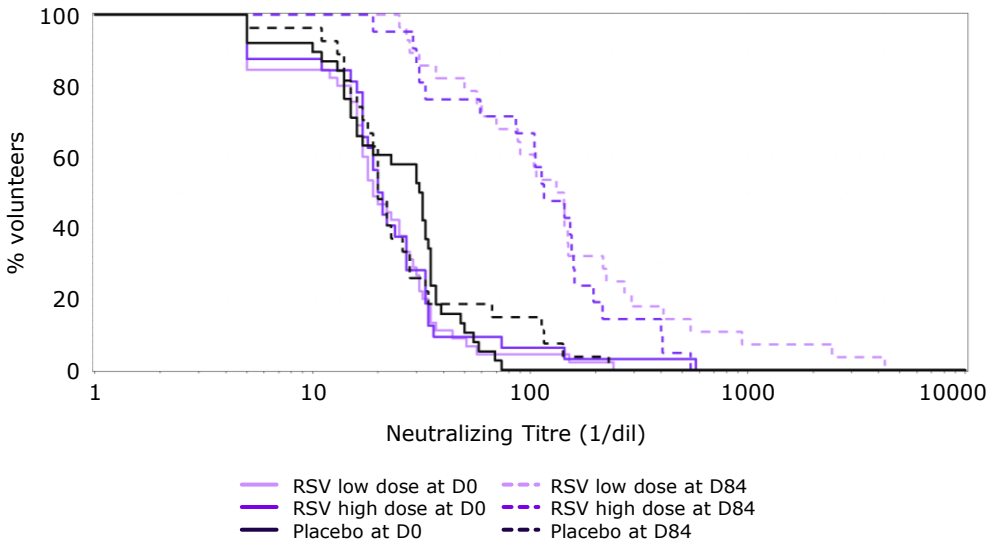


- *Strong (93%) vaccine response* after two administrations of the High dose formulation
- *Marginal difference between* the Low and High dose *formulations*

* Absence of prior exposure to RSV was determined by measuring serum IgA before vaccination

Both formulations induced *a robust immune response*

Serum neutralizing antibody levels



- **Robust neutralizing antibody response** in toddlers not previously exposed to RSV[1]
- **Similar immune response** observed for the Low and High dose formulations
- **Immune response in line with prior studies** that showed reduction of RSV-medically attended disease[2]
- **Move to phase 3** in H1 2024

1. Absence of prior exposure to RSV was determined by measuring serum IgA before vaccination 2. Karron et.al. Am J Respir Crit Care Med Vol 203:5, 2021

RSV Older Adult: addressing important unmet need with the most compelling respiratory combination vaccine

› *Disease burden* from RSV-hMPV-PIV similar to Influenza

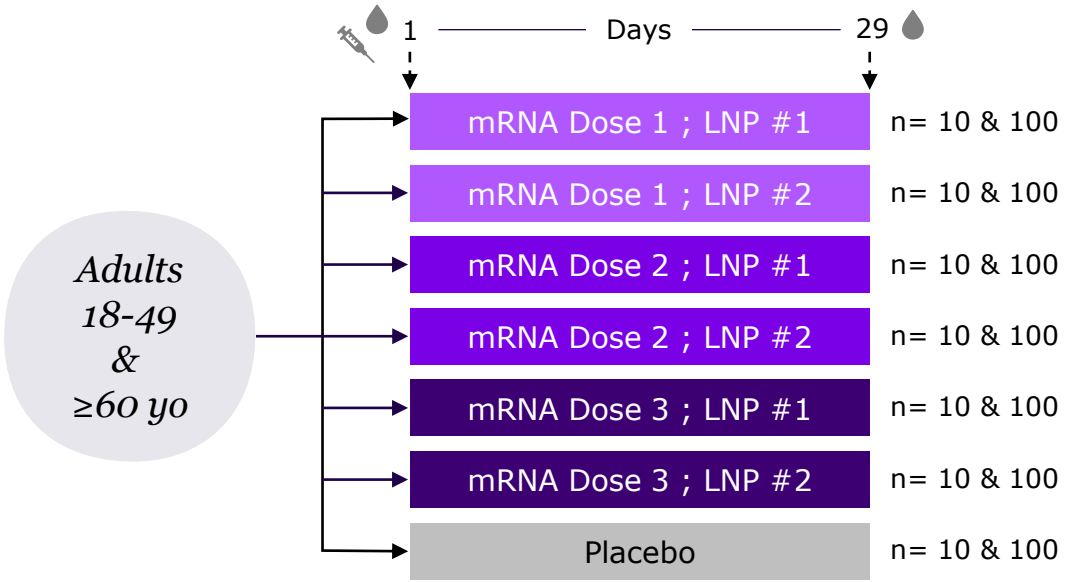
Estimated burden in US >65 population:[1-6]

	RSV	hMPV	PIV	Combo	Influenza[7]
Hospitalisations (proportion of vaccinated flu burden)	177K	100K	90K	367K	280K
Deaths (proportion of vaccinated flu burden)	14K	8K	7K	29K	30K

› Limited antigenic drift of RSV, hMPV and PIV *removes need for annual vaccination*[8]

1. Widmer et al., 2012; 2. Russell et al., 2019 (62% of RSV); 3. Colosia et al., 2017; 4. Using RSV rate from Colosia 2017 as proxi. 5. https://www.cdc.gov/rsv/research/us-surveillance.html 6.Compilated data from CDC, 9 seasons from 2010-2011 to 2018-2019 https://www.cdc.gov/flu/about/burden/index.html 7. Burden in already vaccinated pop 8. Assuming vaccine durability >1 year

SP0256 *Phase 1/2* trial design of mono vaccine in older adults



› *Safety*

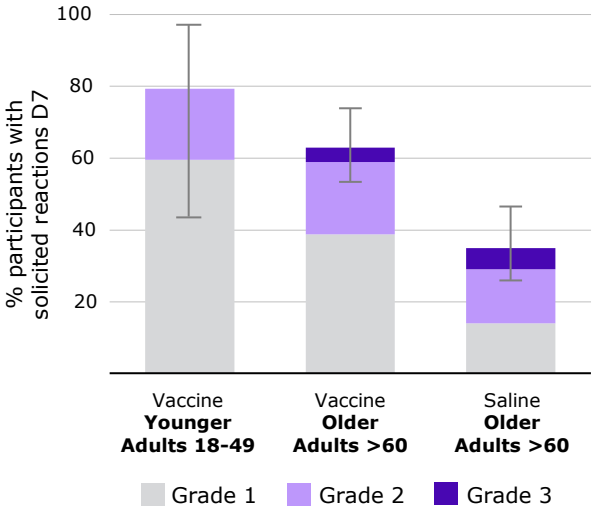
Adverse events following vaccination

› *Immunogenicity*

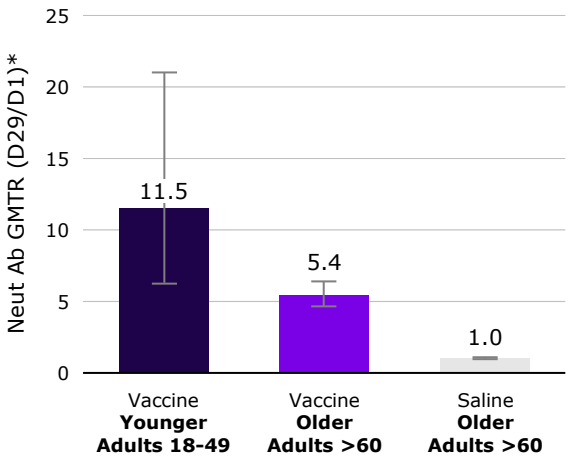
Serum neutralizing antibody response measured by plaque reduction neutralization assay

Positive phase 1/2 results support SP0256 as the backbone for the combo respiratory vaccine

Reactogenicity (selected formulation)



Boosted RSV-A Neutralizing Antibodies (selected formulation)

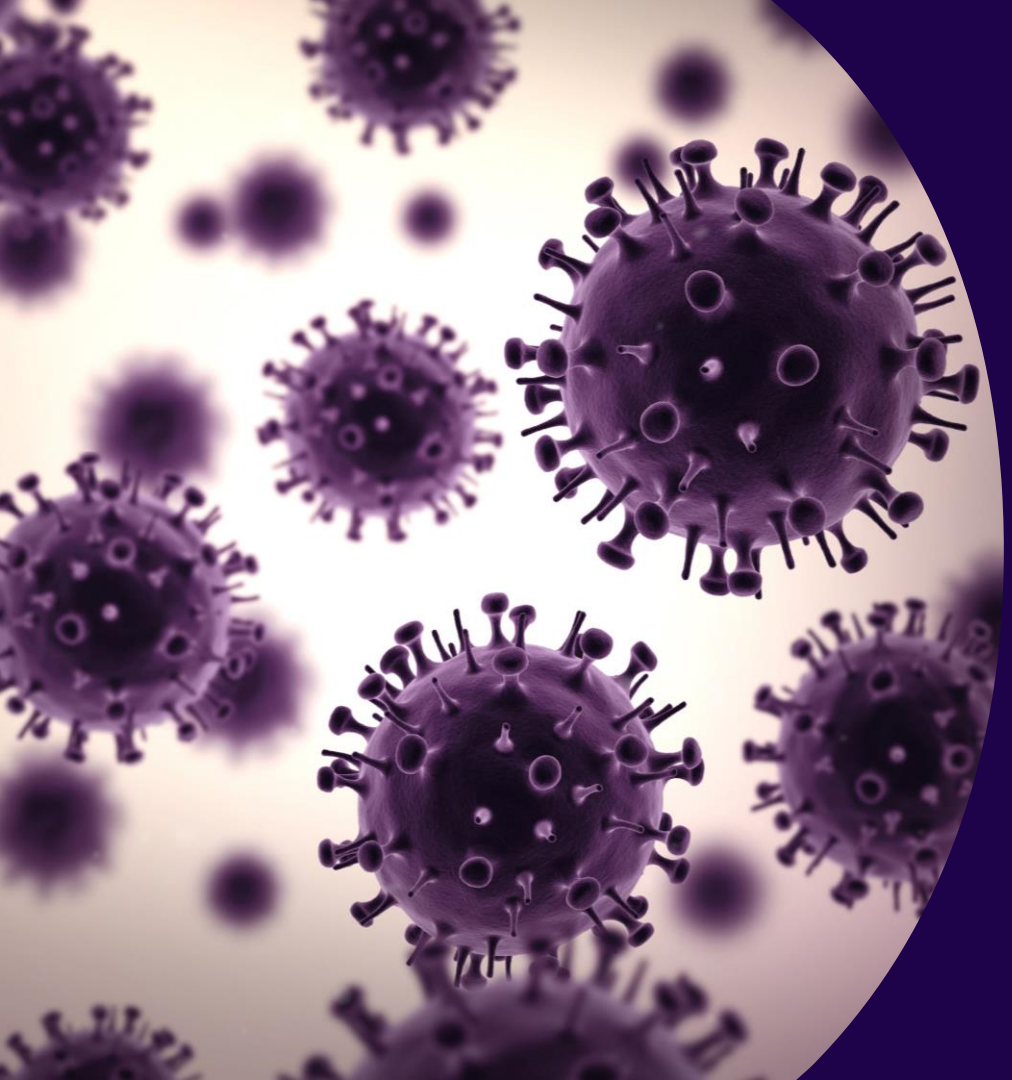


- mRNA RSV OA vaccine was *well tolerated*
- mRNA RSV OA vaccine *significantly boosted* RSV *neutralizing antibody responses*

*RSV-A neutralizing antibodies Geometric Mean Titer ratio (D29 vs baseline D1

Only Sanofi has the potential to offer *Best-in-Class protection* for all targeted ages

Beyfortus	SP0125	SP0256
PROFILE		
Best-in-Class for All Infant Protection in first season	*First-in-Class* vaccine for *second season* onwards	*First-in-Class* with *RSV-hMPV-PIV mRNA* combination
NEXT STEPS		
Ready for launch	Phase 3 start in H1 2024 *Target submission in 2026*	Phase 2b RSV & Phase 1/2 combo start in 2023 *Target submission for combo in 2026+*



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Win in Influenza

Bill Averbeck
Head of Influenza Franchise

Saranya Sridhar
Head of Translational Medicine

Sanofi is the *global leader in Influenza vaccines*

Pioneered the transition to quadrivalent flu vaccines

Worldwide market leader with €3bn sales in 2022

Established Protection Beyond Flu as the new standard of care

Pursuing the next chapter in flu with mRNA technology

Leading with innovation rooted in *Protection Beyond Flu*

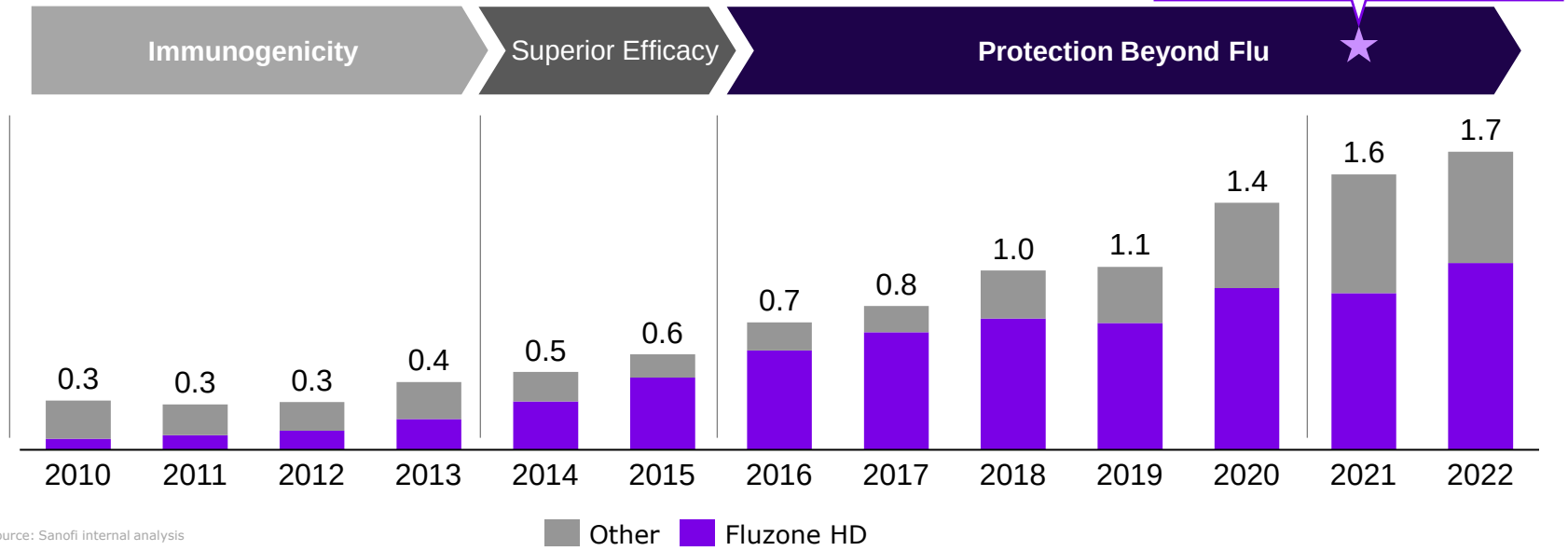
Three attributes imperative for winning in seasonal flu

Protection Beyond Flu	Demonstrated efficacy in hospitalization and infection reduction through high quality / consistent data – not just immunogenicity
Safety & tolerability	Excellent tolerability profile
Administration	Fully liquid formulation, pre-filled syringe Shelf life covering duration of flu season at refrigerator temperature (2-8°C)

It takes *Protection Beyond Flu* to win

Fluzone HD share of U.S. 65+ years old flu market value, $bn

Fluzone HD and Flublok in **CDC preferential recommendation** for 65+



Source: Sanofi internal analysis

Fluzone High-Dose/Efluelda *set the bar high* in 60/65+

Outstanding results confirmed in most recent randomized real-world studies

	DANFLU-1[1]	**DANFLU-2**[2]
Objective	Impact of QIV HD vs SD on pneumonia and influenza (P&I) and other hospitalizations	Impact of QIV HD vs SD on P&I and other hospitalizations
Design	Randomized real-world study 12k subjects 65-79	Randomized real-world study Target 208k subjects 65+
Outcome / next steps	**64.4% reduction in P&I hospitalization** Presented at ESC 2022, accepted in *NEJM Evidence*	19k randomized to date Started in 22/23 season

Driving global expansion

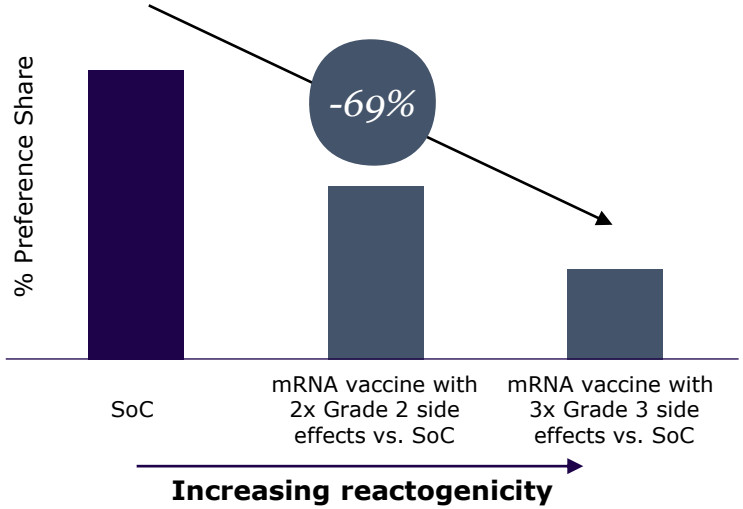
Recommendations or preferential reimbursement in

10+ key markets

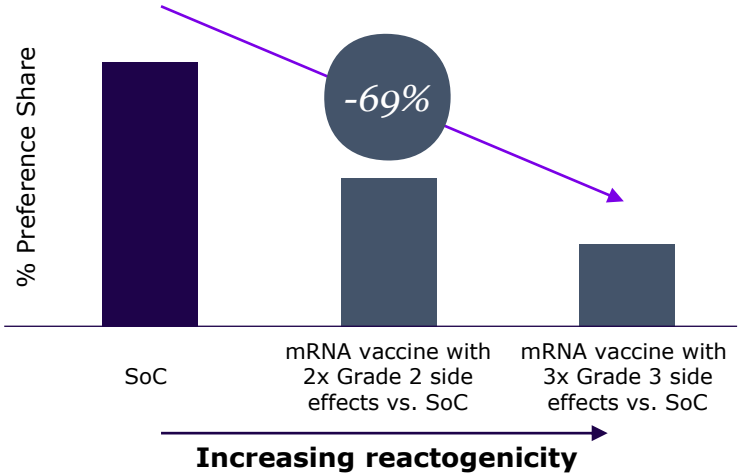
1. Johansen ND, et al. NEJM Evidence. 2023. 2. Clinicaltrials.gov: NCT05517174.

HCPs and consumers are unlikely to use vaccines with *3x severe side effect burden* compared to Standard Dose

HCPs



Consumers



Source: Based on quantitative and qualitative conjoint analysis market research. Q4 2022. US, UK, DE, & AU. Quantitative: 2180 consumers, 501 HCPs. Qualitative: 72 consumers, 94 HCPs.

HCPs do not accept *administration hurdles* for flu vaccines

Flu vaccination networks set up to *maximize access*; unfit to manage ultra-cold chains and short shelf life

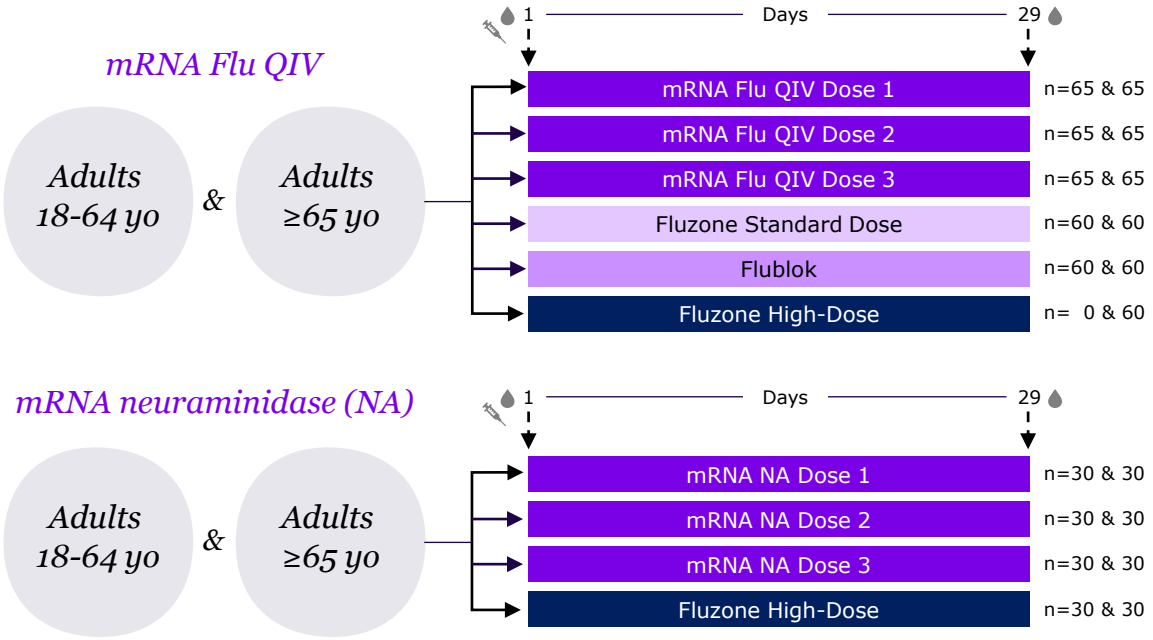
Lack of refrigerator-stable, full-season product could decrease HCP uptake/use by

-37%

Source: Based on quantitative and qualitative conjoint analysis market research. Q4 2022. U.S., UK, Germany and Australia. Quantitative: 2180 consumers, 501 HCPs. Qualitative: 72 consumers, 94 HCPs.

Comprehensive *mRNA flu vaccine* program

SP0273



Phase 1/2 study

Flu QIV (modified mRNA)

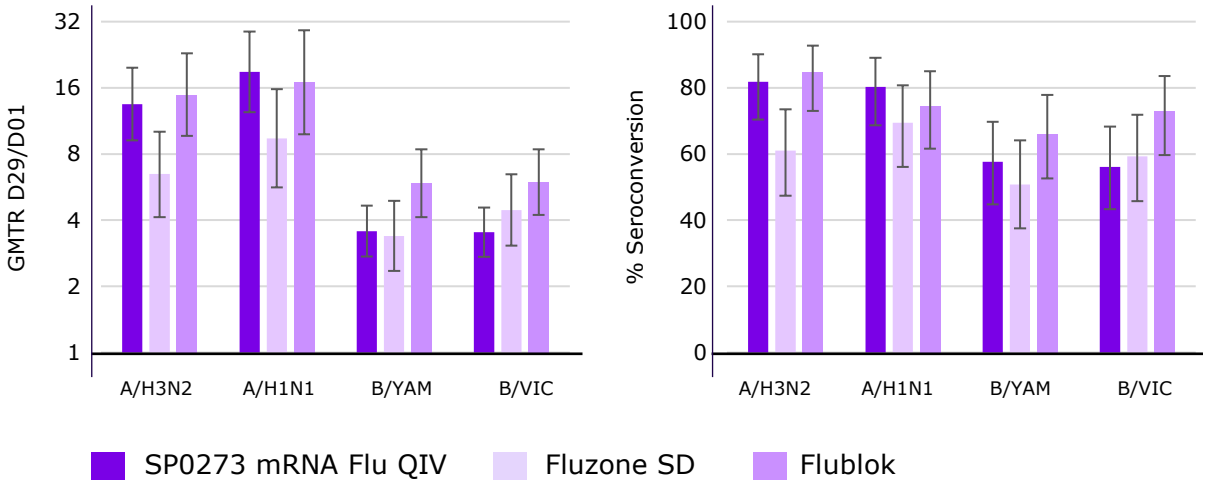
- Safety and immunogenicity with 3 different LNPs

Neuraminidase (unmodified mRNA and LNP#1)

- Pilot study to test neuraminidase immunogenicity

Strong immune responses against A strains

Hemagglutination inhibition titers in 18-64 years old



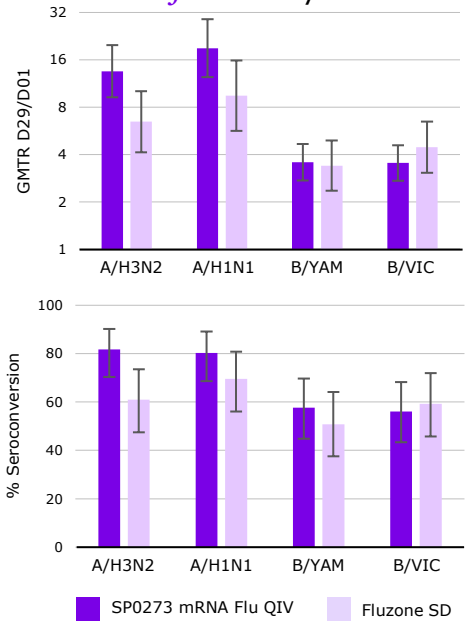
SP0273 results

- Immune response for A strains comparable to SoC
- Immune responses for B strains trend lower than SoC

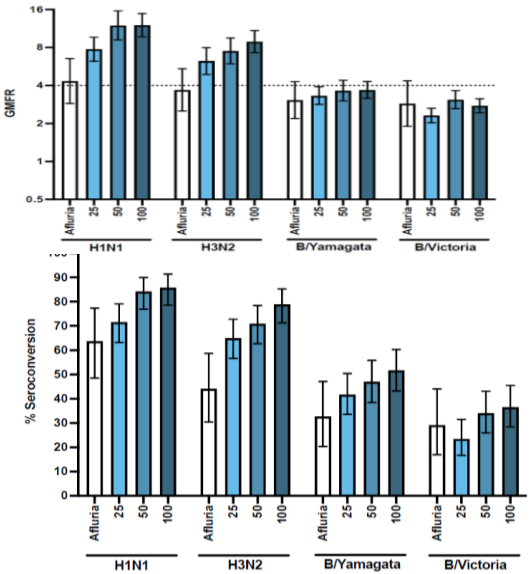
Immune response in line with other mRNA flu vaccine program

Hemagglutination inhibition titers

Sanofi 18-64 years



Competitor data[1] >18years



1. Moderna Third Annual Vaccines Day March 24th, 2022. Phase 2, Age group 18 y and older. DISCLAIMER: data from separate studies should be interpreted with care.

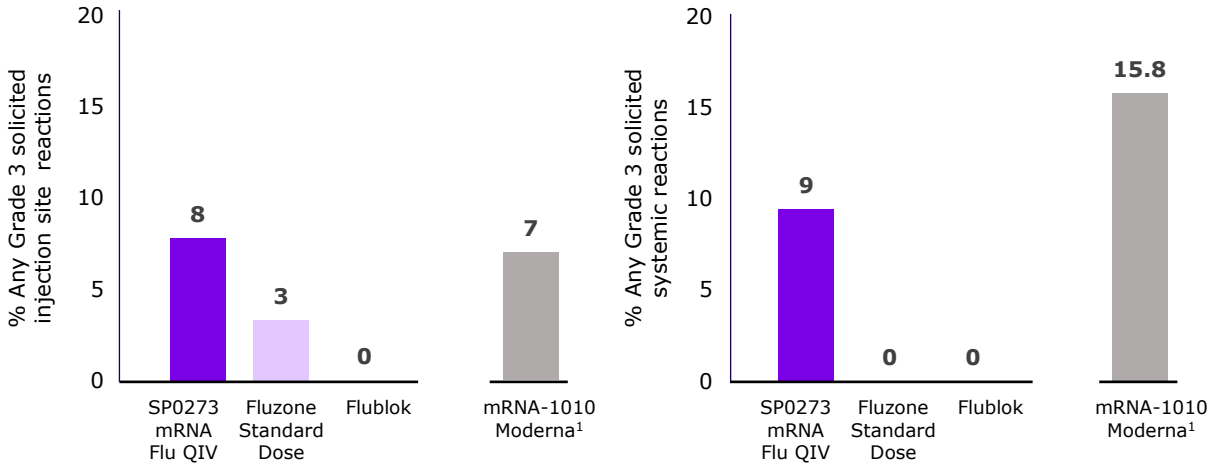
mRNA flu QIV results

In both mRNA trials:

- A strain results similar to comparator
- Low B response is a class effect across mRNA platforms

SP0273 *reactogenicity* compares favorably to other mRNA trial

Reactogenicity in 18-64 years



SP0273 results

- Reactogenicity higher compared to current licensed flu vaccines
- Systemic reactions lower than in a comparator mRNA vaccine in a different trial[1]

1. Data collected by Moderna in 18-49 years volunteers in a separate phase 2 trial. Moderna Third Annual Vaccines Day March 24th, 2022. DISCLAIMER: data from separate studies should be interpreted with care.

Ambition to match our Standard of Care in influenza with *Sanofi's next-generation mRNA vaccine*

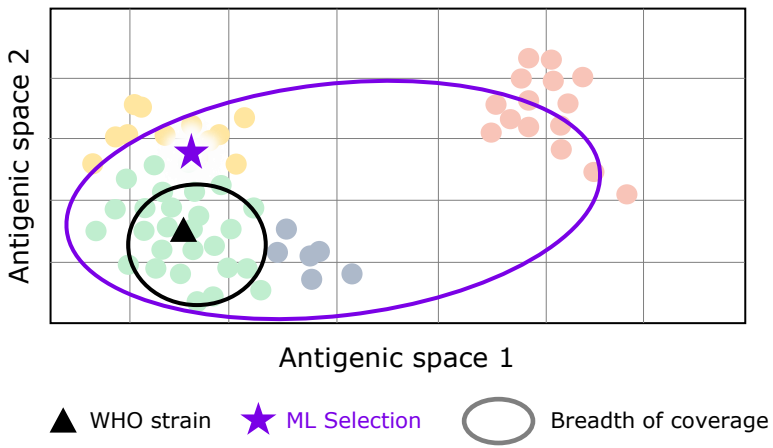
Machine learning	Utilize advanced computational techniques to optimize strain selection
Antigen composition	Focus on neuraminidase to improve vaccine effectiveness

Protection Beyond Flu is the centerpiece of clinical efforts

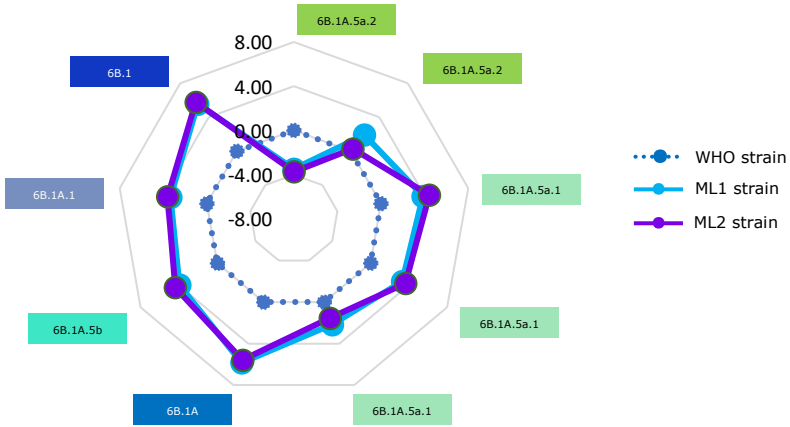
Potential to *improve coverage with Machine Learning*

Proof of concept achieved for H3 & H1 strains

ML model robustly selects strains with *greater breadth*[1]



ML-strains cover broader *H1 Seasonal Influenza Space* vs WHO strain[2]

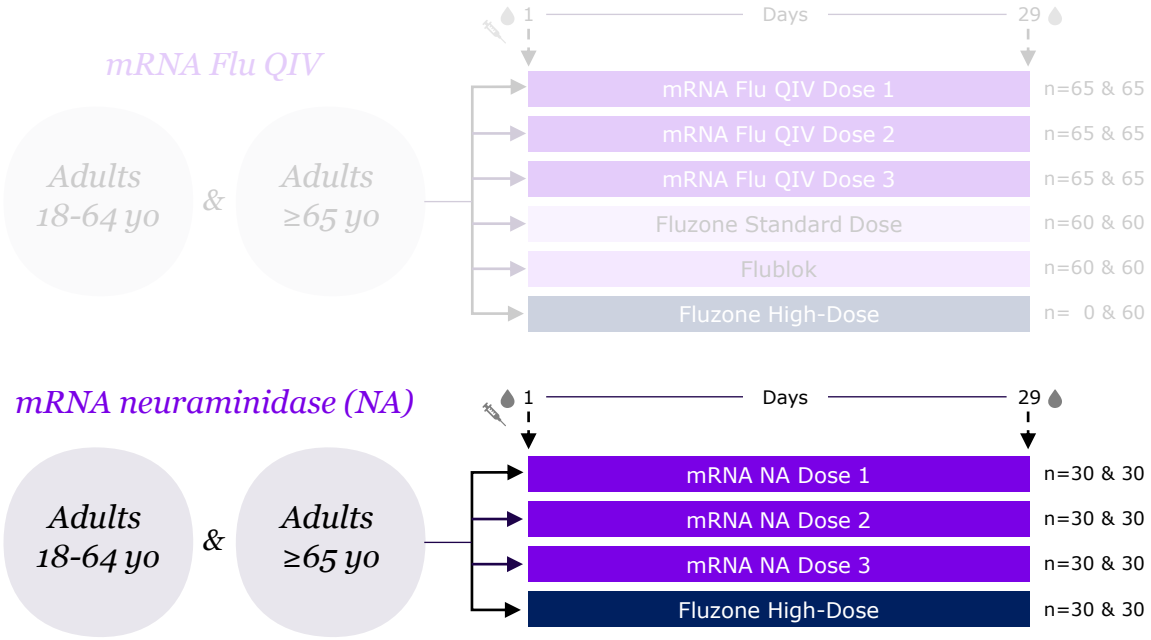


ML offers meaningful advances in strain selection process *as demonstrated now also for H1 strains*

1. Theoretical representation for illustrative purposes 2. Log2 fold change of mNT titers compared to WHO strain. Color boxes represent different H1 sequence clades from Nexstrain

Comprehensive *mRNA flu vaccine* program

SP0273



Phase 1/2 study

Flu QIV (modified mRNA)

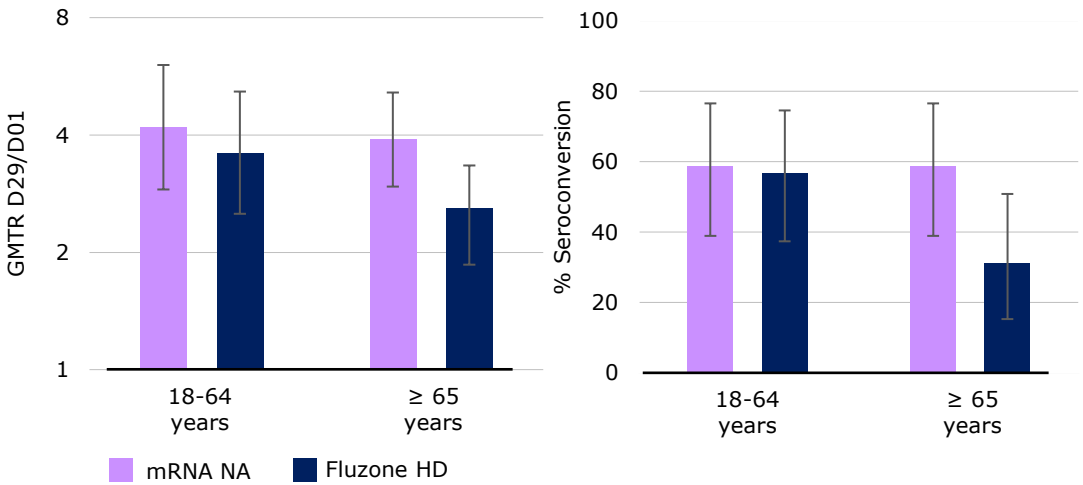
- Safety and immunogenicity with 3 different LNPs

Neuraminidase (unmodified mRNA and LNP#1)

- Pilot study to test neuraminidase immunogenicity

mRNA neuraminidase immunogenicity *as strong as Fluzone HD*

Neuraminidase inhibition titers (N2)



mRNA neuraminidase results

- Immune responses comparable to Fluzone HD
- *NB: Fluzone HD has 2.5 to 3 times higher NA concentrations than SD vaccines and sets the bar for future vaccines*[1]
- Good tolerability and safety, comparable to Fluzone HD[2]

1. Gao Z, Robinson K, Skowronski DM, De Serres G, Withers SG. Vaccine. 2020 Jan 22;38(4):715-718. doi: 10.1016/j.vaccine.2019.11.041 2. Data on file

Offering *superior* flu protection for key age groups at risk

Vaxigrip Tetra / Fluzone SD

Flublok / Supemtek

Fluzone HD / Efluelda

PBF SoC

SP0273 Next-generation mRNA flu

Enhance B strain immune response, improve immunogenicity, upgrade antigen design & optimize strain selection via machine learning

Acceptable tolerability and thermostability

Q&A session Part 1

Thomas Triomphe

Head of Vaccines GBU

Jean-François Toussaint

Head of Vaccines R&D

Kimberly Tutwiler

Head of RSV Franchise

Bill Averbeck

Head of Influenza Franchise

Saranya Sridhar

Head of Translational Medicine

Innovation to drive sustainable growth in Vaccines

Part 2

Vaccines Investor Event

June 29, 2023

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Agenda

Vaccines Investor Event, June 29, 2023

2:00-2:10 • Introduction

2:10-3:00 • Expand leadership
- Deliver Best-in-Class RSV franchise
- Win in Influenza

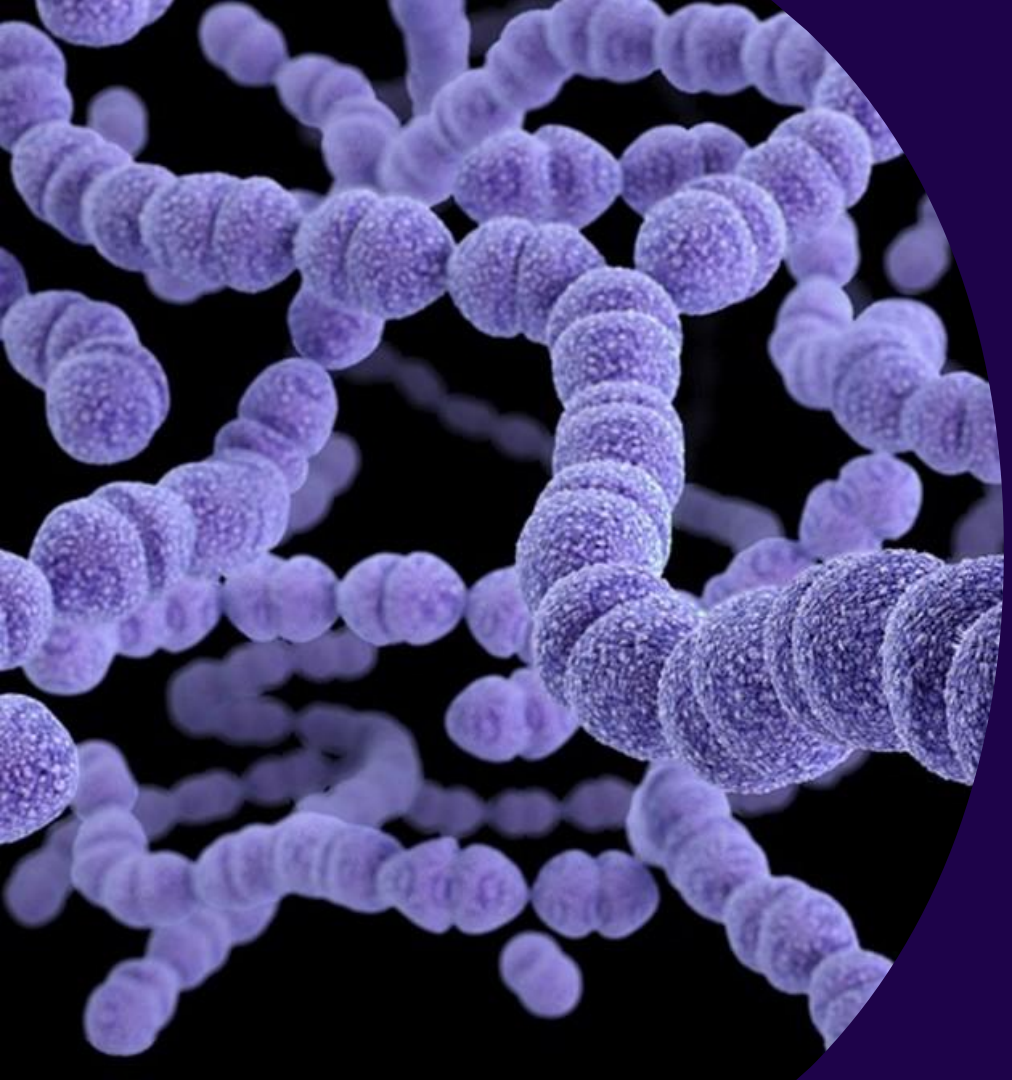
3:00-3:20 • Q&A

3:20-3:40 • Break

3:40-4:30 • New growth areas in vaccines
- Enter multi-billion PCV market
- Establish Best-in-Class meningitis portfolio
- Leverage leading-edge mRNA platform
- New frontiers

4:30-4:40 • Concluding remarks

4:40-5:00 • Q&A



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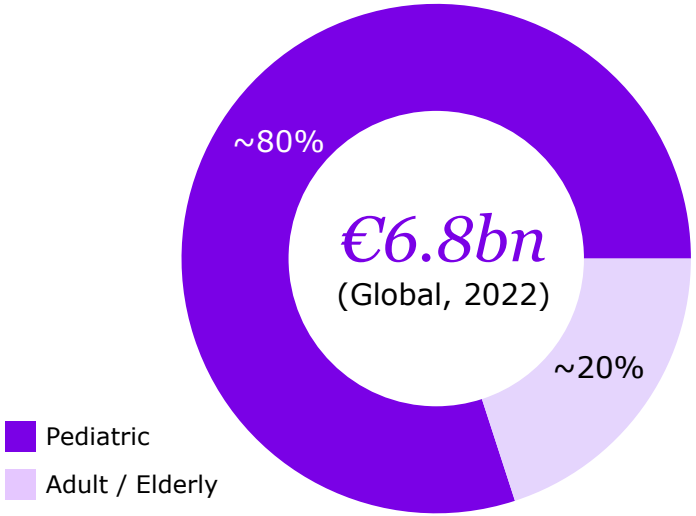
Enter multi-billion PCV market

Thomas Grenier
Head of Franchise & Product Strategy

Jean-François Toussaint
Head of Vaccines R&D

Drive growth with PCV21 in *attractive pediatric market*

Large pneumococcal vaccine market



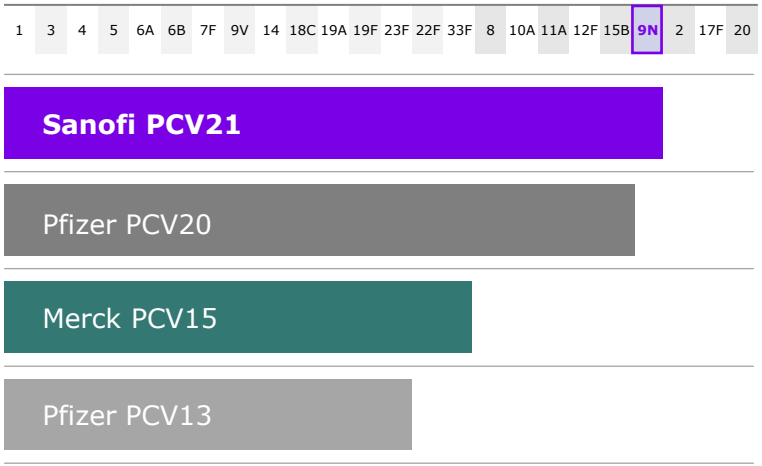
PCV21: growth driver with strong portfolio fit

- **Focus on pediatric development**
- **First-in-Class PCV20+** in pediatric population
- **Synergy** with Sanofi pediatric vaccine portfolio
- Strong collaboration with **SK Bioscience**

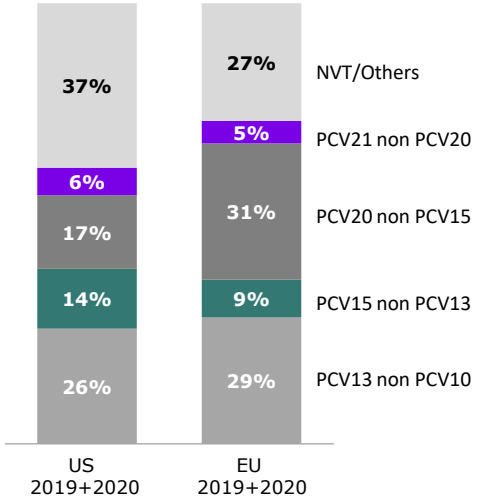
Source: Pfizer, GSK, Merck 2022 Annual Reports; Sanofi estimates

First PCV21 pediatric vaccine extends protection against disease

Serotype composition per vaccine



IPD incremental coverage rate in all ages[1]



Significant residual burden in U.S. pediatrics < 5 years[2]

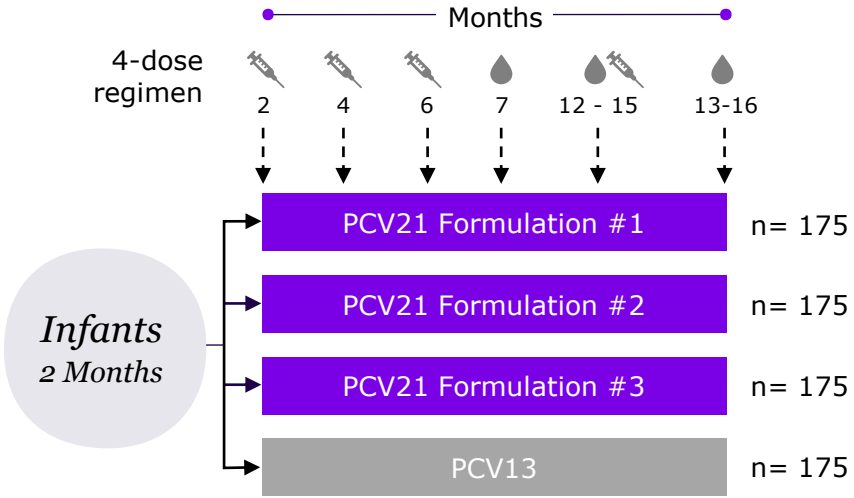
- ~1,500 cases IPD
- 1.5m Acute Otitis Media cases
- 270k cases of pneumonia

9N serotype provides ~5-7% pts gain in IPD coverage across all ages[1,3]

NVT: Non-vaccine type NT: Non-typable IPD: Invasive pneumococcal disease
1. All age groups – US ABC data and ECDC Surveillance Atlas 2. Internal model 3. Tiley KS, J Infect Dis 2022; Plainvert C, Infect Dis Now 2022; Ekinci E, Front in Pediatr 2021.

PCV21 (SP0202) Phase 2 designed to enable *pivotal program*

Study design



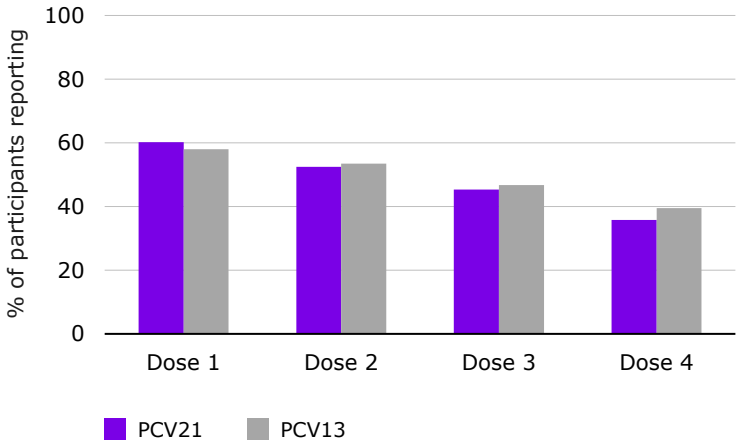
- *Safety*
- *Immunogenicity*
  - Post-dose 3 IgG geometric mean concentration and seroresponse
  - Post-dose 4 IgG geometric mean concentration

  => Standard evaluation criteria for pivotal trials and registration
- *Select formulation for pivotal program*

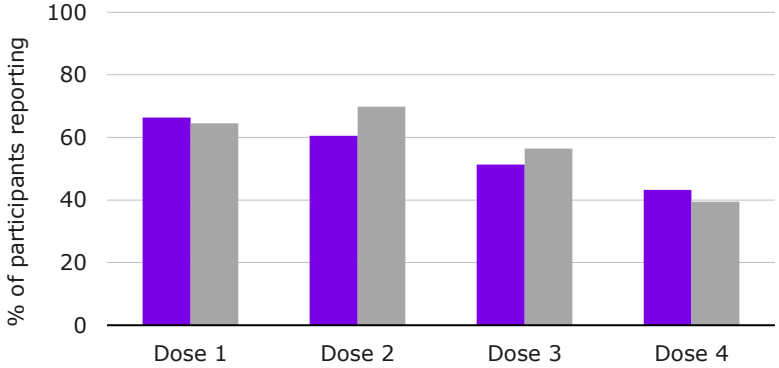
PCV21 (SP0202) *well-tolerated* in pediatric population

Safety profile comparable with PCV13 across all 4 doses

Solicited injection site reactions



Solicited systemic reactions

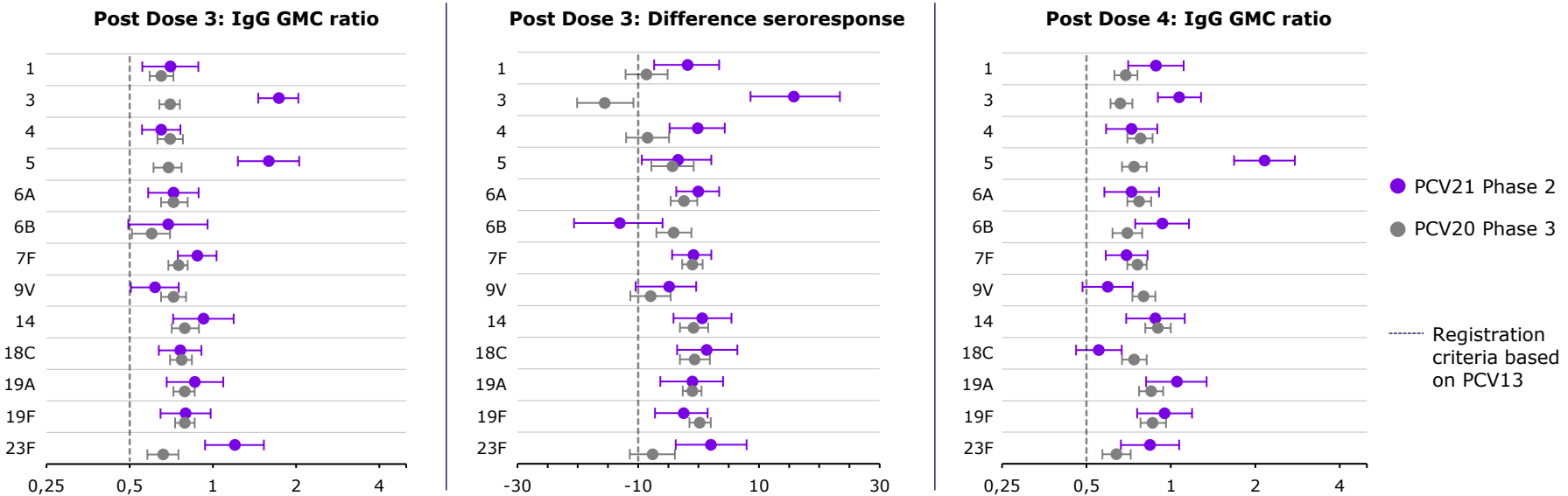


PCV21 selected formulation for next phase PCV21_Phase II [NCT04398706]

Favorable PCV21 immune responses when compared to PCV20

Serotypes shared by PCV13, PCV20 and PCV21

IgG GMC ratio and difference % seroresponse vs PCV13

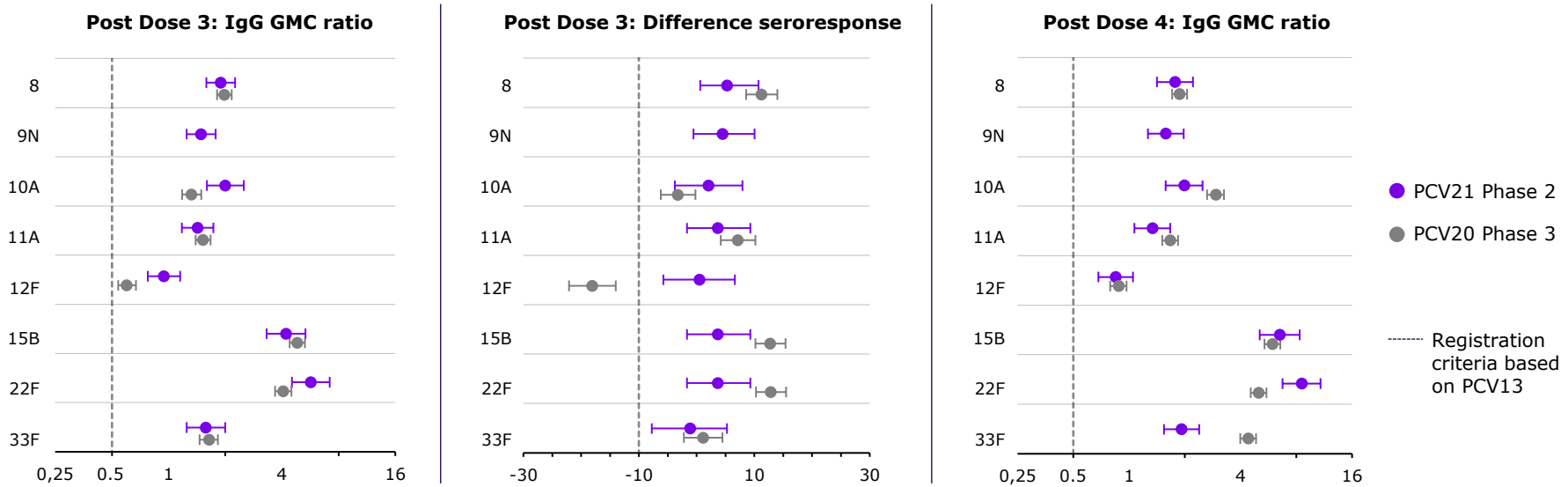


PCV21_Phase II [NCT04398706] Seroresponse: IgG concentration ≥0.35 µg/mL for all serotypes
PCV20_Phase III [NCT04382326] Seroresponse: IgG concentration ≥0.35 µg/mL for all serotypes except ≥ 0.23 µg/mL, ≥0.10 µg/mL and ≥ 0.12 µg/mL for serotypes 5, 6B and 19A respectively
PCV21 selected formulation for next phase
DISCLAIMER: data from separate studies should be interpreted with care.

Favorable PCV21 immune responses when compared to PCV20

Serotypes shared with PCV20 or unique to PCV21

IgG GMC ratio and difference % seroresponse vs lowest in PCV13 group



PCV21_Phase II [NCT04398706] Seroresponse: IgG concentration ≥0.35 µg/mL for all serotypes
PCV20_Phase III [NCT04382326] Seroresponse: IgG concentration ≥0.35 µg/mL for all serotypes except ≥ 0.23 µg/mL, ≥0.10 µg/mL and ≥ 0.12 µg/mL for serotypes 5, 6B and 19A respectively
Note: difference (% and GMC ratio) vs lowest serotype in PCV 13
PCV21 selected formulation for next phase DISCLAIMER: data from separate studies should be interpreted with care.

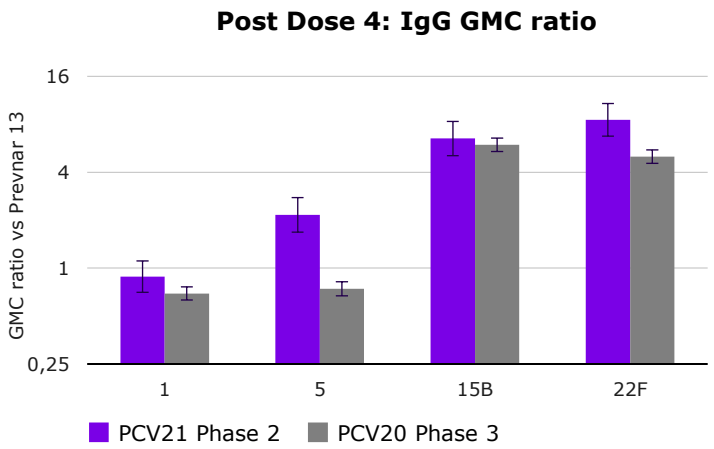
Innovative carrier to *break serotype composition ceiling*

Introducing new carrier for 4 serotypes to improve performance

	1	3	4	5	6A	6B	7F	9V	14	18C	19A	19F	23F	8	**9N**	10A	11A	12F	15B	22F	33F
PCV13																					
PCV21																					

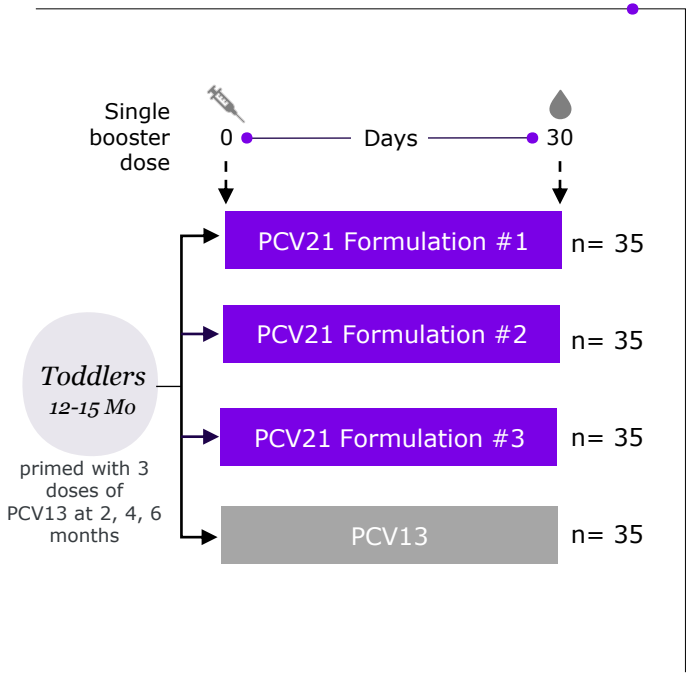
Carrier protein TT Carrier protein CRM_{197}

Robust performance of the 4 serotypes conjugated to TT

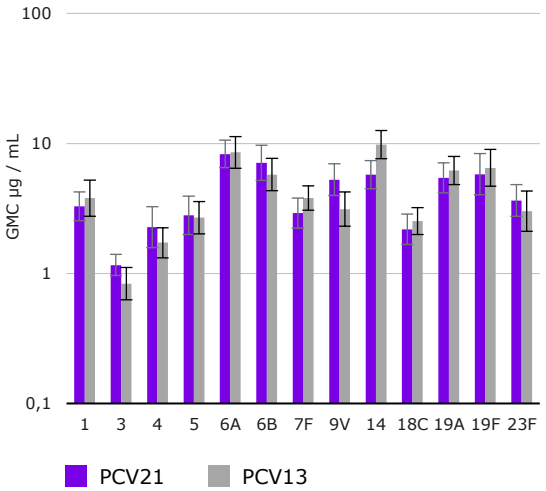


PCV21_Phase II _ [NCT04398706] Seroresponse: IgG concentration ≥0.35 µg/mL for all serotypes
PCV20_Phase III_ [NCT04382326] Seroresponse: IgG concentration ≥0.35 µg/mL for all serotypes except ≥ 0.23 µg/mL, ≥0.10 µg/mL and ≥ 0.12 µg/mL for serotypes 5, 6B and 19A respectively
Note: for serotypes 15B and 22F, difference (% and GMC ratio) vs lowest serotype in Prevnar 13
DISCLAIMER: data from separate studies should be interpreted with care.

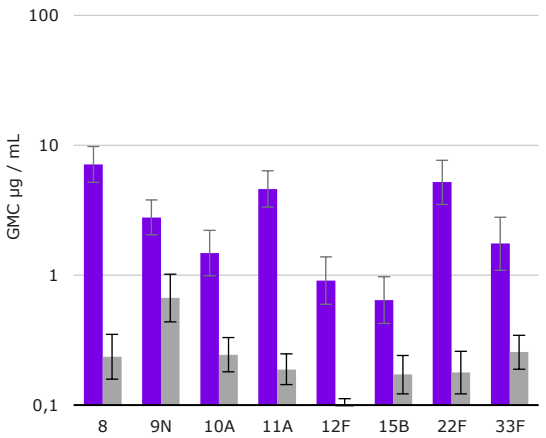
Phase 2 interchangeability data support *PCV21 as booster*



Boosting effect is comparable to PCV13 for common serotypes

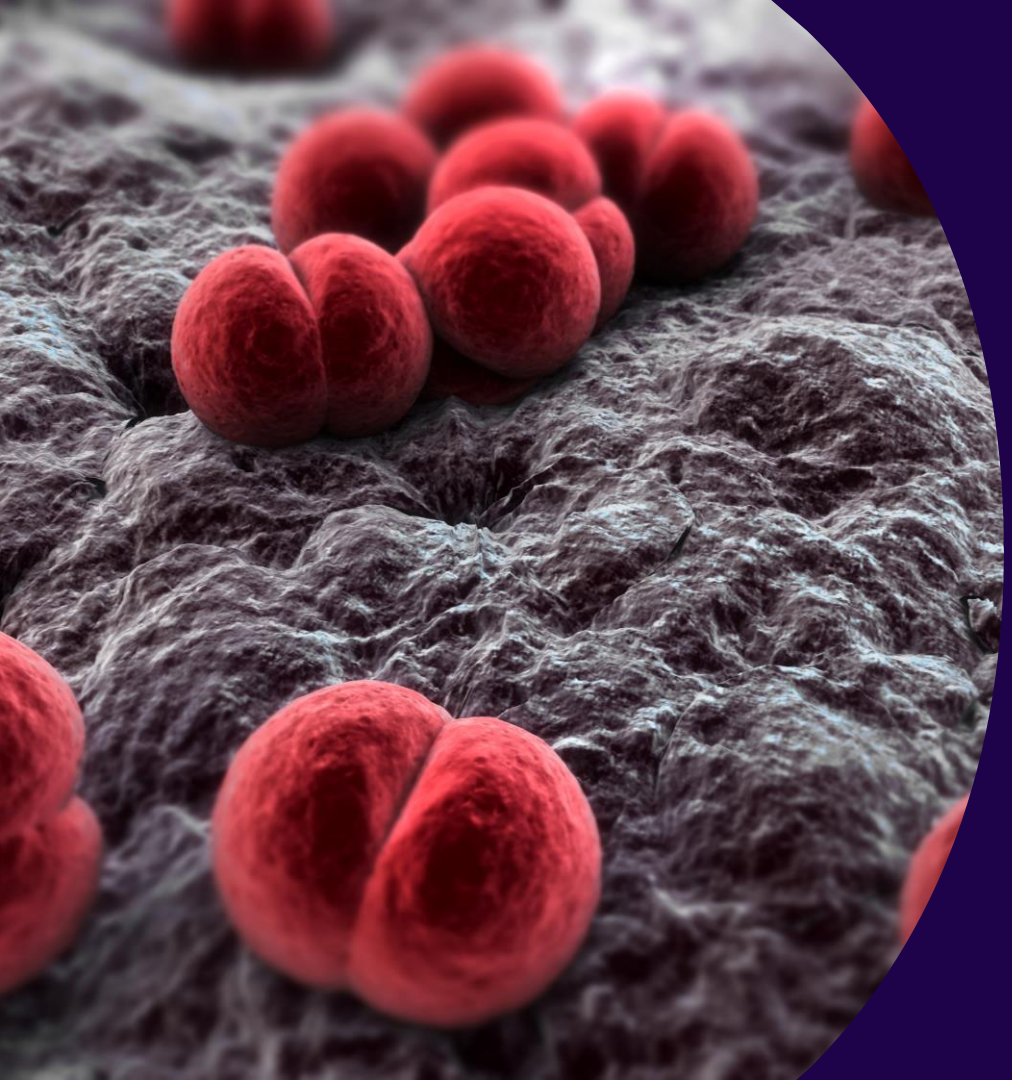


Robust immune response for the additional serotypes



Ambitious program with *first pediatric PCV20+ vaccine*; clear blockbuster potential

- *Phase 3 starts* in H1 2024
  Expected submission in 2027
- Initiating development of
  next generation PCV21+ vaccines



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Establish Best-in-Class meningitis portfolio

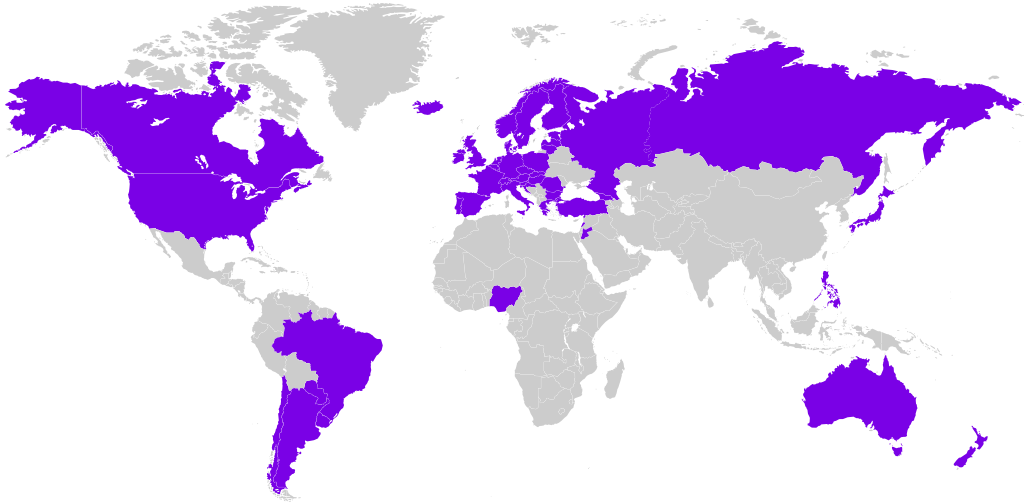
Thomas Grenier

Head of Franchise & Product Strategy

Saranya Sridhar

Head of Translational Medicine

Consolidate *MenQuadfi market leadership*



International roll-out ongoing

- MenQuadfi registered in **53 countries** and expanding
- WHO pre-qualified

› *Best-in-Class MenACWY profile*

- Novel serogroup-specific design, unique chemical and structural features
- Higher serogroup C responses
- Fully-liquid presentation
- Broad age-indication
- Up to 7 years persistence in different age groups

› Leadership in the U.S. with *>60% MS*

source: Sanofi DDD CDC & others

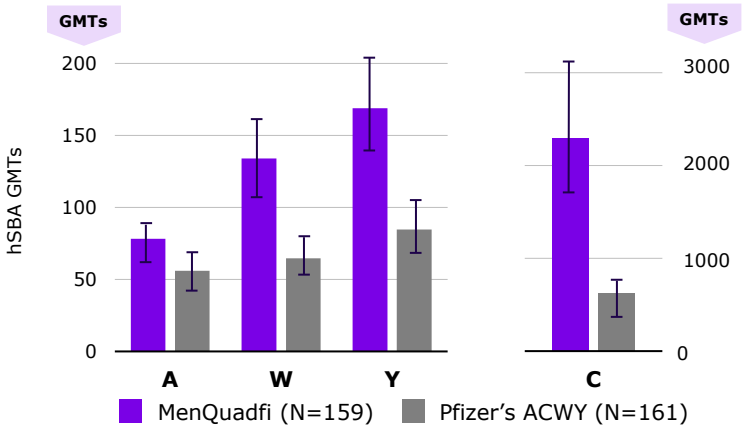
New clinical evidence reinforces *MenQuadfi's Best-in-Class* profile

Immune response vs. competition

Adolescents (10-17 years)

Higher or comparable immune response vs. Pfizer's ACWY in adolescents

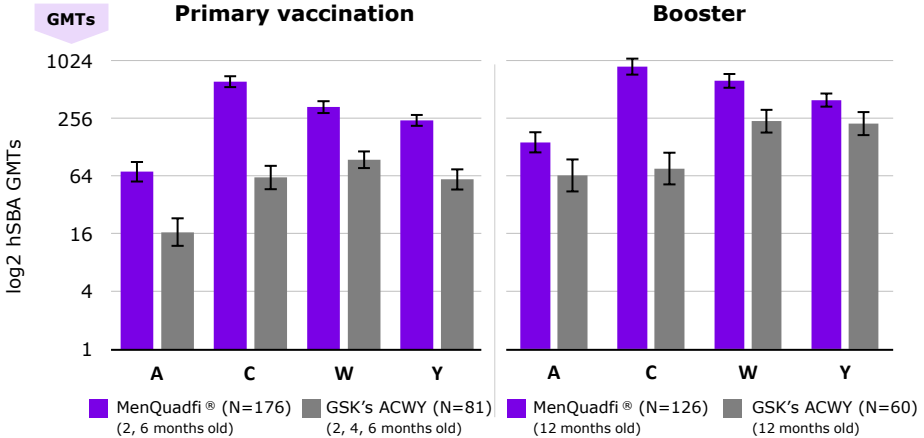
Comparison of hSBA GMT responses 30 days after vaccination[1]



Infants & Toddlers (2-12 months)

Higher immune response with 3 doses of MenQuadfi vs. 4 doses of GSK's ACWY

Comparison of hSBA GMT responses 30 days after vaccination[2]



1. Sanofi data on file (MEQ71)

2: Sanofi data on file (MET33)

MenQuadfi *first and only ready-to-use syringe*

- *~80% preference* by U.S. HCPs[1] when ready-to-use syringe option is available
- *Unique presentation competitive advantage:* no other ACWY syringe available
- *U.S. FDA submission in July 2023*, available early 2024

Source: Sanofi data on file

MenQuadfi addresses current recommendation for *quadrivalent MenACWY* immunization in most markets

Complex and various routine recommendations[1] due to different IMD incidence by serogroup, age, geography

	Infants	Toddlers	Adolescents
U.S.			MenACWY (11&16 yrs)
France	MenB (3 mo) MenC+B (5 mo)	MenC+B (12 mo)	
Germany		MenC (12/23 mo)	
Italy	MenB (3,4,6 mo)	MenACWY (13-15mo)	MenACWY (12/18 yrs)
Spain	MenC (4 mo)	MenC (12 mo)	MenACWY (12 yrs)
UK	MenB (2,4 mo)	MenC+B (12 mo)	MenACWY (13/15 yrs)
Australia		MenACWY (12 mo)	MenACWY (14-16 yo)
Saudi Arabia	MenACWY (9 mo)	MenACWY (12 mo)	MenACWY (18 yrs)

- **MenQuadfi** currently has the **most complete product profile**
- **Immunization programs expected to evolve over time, including serogroup B adoption**
  - Many countries still transitioning from C to ACWY
  - Pace of ACWY switch to pentavalent highly dependent on schedule compatibility, cost effectiveness and impact on public budget

1. Published routine vaccination policies 2. In the U.S., MenB vaccination for 16- to 23-year-old people is a shared clinical decision

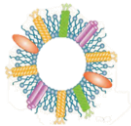
Novel MenB formulation (SP0230) to provide *optimal protection*

MenB antigen formulation


Non-Lipidated fHBP A


Non-Lipidated fHBP B


NadA


Outer Membrane Vesicle

- **4 major antigens** used to cover broad diversity and variable strain expression

Phase 1/2 clinical study design

Adolescents
10-17 yo
Adults
18-55 yo

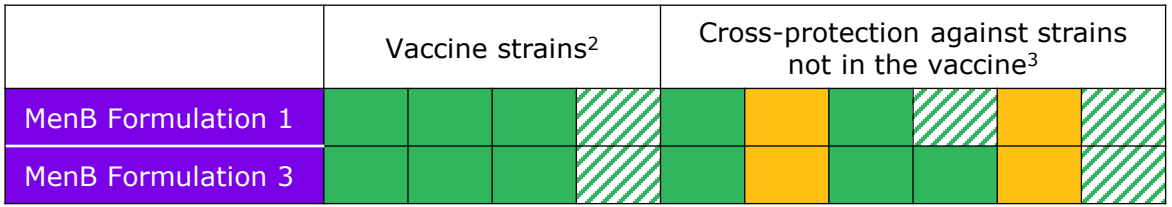
Days: 1 – 31 – 61

MenB Formulation #1	n=72
MenB Formulation #2	n=72
MenB Formulation #3	n=72
MenB Formulation #4	n=72
MenB Formulation #5	n=72
MenB Formulation #6	n=72
Bexsero (MenB GSK)	n=72
Trumenba (MenB Pfizer)	n=72

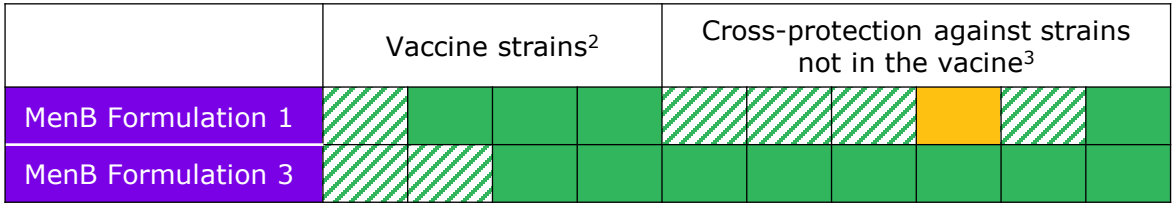
fHBP A: factor-H binding protein subfamily A; fHBP B: factor-H binding protein subfamily B; NadA: Neisserial adhesin A

MenB *strong phase 1/2 results* demonstrate competitiveness and support move to next phase

hSBA seroresponse rate[1] – Sanofi MenB vs Bexsero[2]



hSBA seroresponse rate[1] – Sanofi MenB vs Trumenba



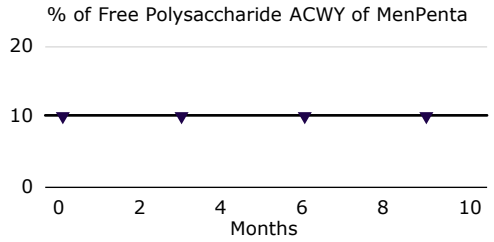
Higher point estimates (>+15%) similar (+/- 15%) Lower (<15%)

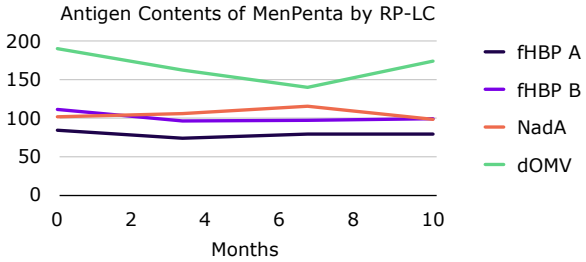
- Sanofi formulations were well tolerated
- All antigens are immunogenic
- Breadth of protection reaching expected level

1. hSBA seroresponse - % of participants with ≥ 4-fold rise of antibody titer from baseline 2. Tested strains exhibiting one of the Sanofi vaccine antigen 3. Tested strains exhibiting different antigens from the Sanofi vaccine

Strong preclinical data support advancement of MenPenta program in *ready-to-use syringe to phase 1/2 in H2 2023*

Liquid MenPenta stability data give high confidence in PFS formulation





No immune interference between MenPenta components (rabbit model)

% of responders demonstrating a 4-fold increase between D0 and D42 in a serum bactericidal assay

		Vaccines		
		MenB	**MenPenta**	**MenQuadfi**
B Vaccine strains	**1**	100 ⟷	85	0
	2	100 ⟷	100	0
	3	100 ⟷	100	0
	4	100 ⟷	100	0
A, C, W, Y vaccine strains	**A**	100	100 ⟷	85
	C	85	100 ⟷	100
	W	0	100 ⟷	100
	Y	0	100 ⟷	100

- No immune interference between MenB and MenQuadfi antigens
- Good stability of the fully-liquid formulation
- Advancing MenPenta liquid formulation to **phase 1/2 in H2 2023**

Source: Sanofi data on file

Comprehensive and *competitive meningococcal portfolio* provides *new source of growth*

- *MenQuadfi Best-in-Class* MenACWY vaccine
- *MenB* formulation demonstrates strong potential for cross-protection across B strains
- Advancing *MenPenta* development in ready-to-use syringe with expected U.S. submission in 2027

sanofi

Leverage leading-edge mRNA platform

Jean-François Toussaint
Head of Vaccines R&D

Frank DeRosa
Head of Research for mRNA CoE

Built *a leading-edge mRNA platform* in just 18 months

Execution

- 7 mRNA Phase 1/2 clinical trials: *Flu, RSV, platform, 3 LNPs screened*
- *>600 dedicated employees,* of which >250 new recruits
- Extensive external network of academia, industry and government partnerships

Innovation

- Innovative *antigen, mRNA and LNP* designs across viral and bacterial targets
- *Highly competitive LNP selected* for improved immunogenicity and better tolerability
- Developed *high-throughput translational science model* with proprietary MIMIC® system to predict clinical outcomes

Accelerated learnings from holistic data integration leveraging *AI/ML models*

Antigen design

- Rationally designed for high immunogenicity and stability

mRNA design

mRNA design space (Coding and non-coding Sequences)

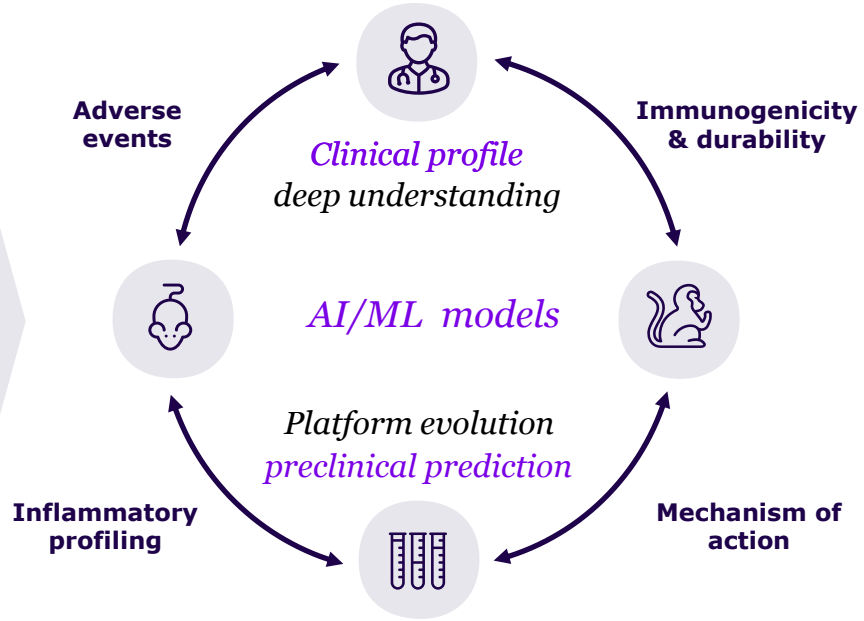
- 5 generative and active learning ML models
- Multi features optimization

LNP Optimization

- Predictive and generative models developed

Translational models

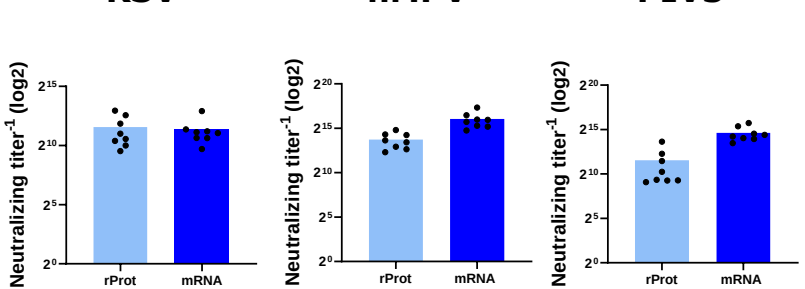
- 1st version of predictive modeling for reactogenic signatures



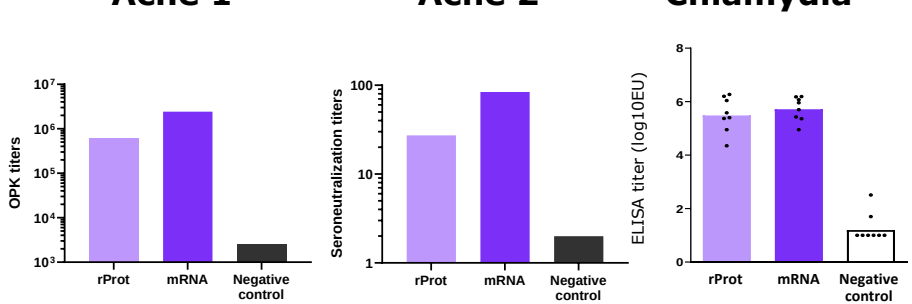
Platform now includes *both viral and bacterial protein* targets

Robust preclinical antibodies titers across many target antigens (viral & bacterial)

Viral



Bacterial



Source: Data on file. rProt = recombinant Protein

Leverage *leading-edge mRNA platform for* Best-in-Class / First-in-Class mRNA vaccines and therapeutics

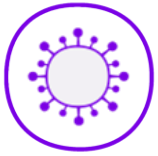
Potency

Reactogenicity

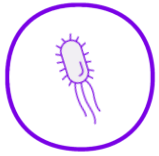
Target
balanced efficacy and tolerability

Thermostability

Generate
enhanced HCP and patient experience



Viral Targets



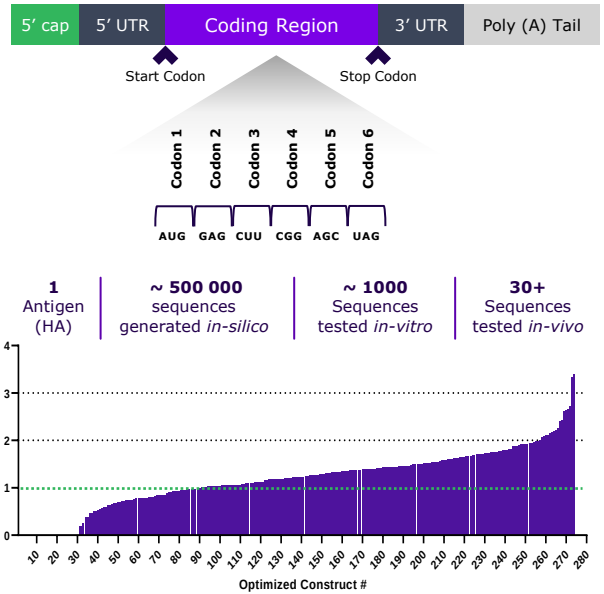
Bacterial Targets

Utilize
broad spectrum of applications

sanofi

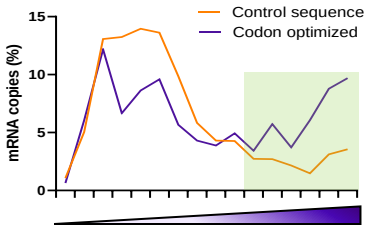
Our new platform enables *improved mRNA performance*

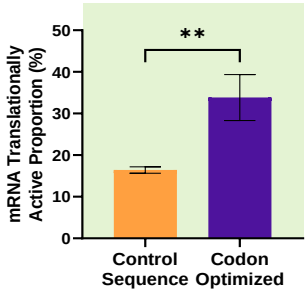
mRNA Sequence Optimization Process



Source: Data on file

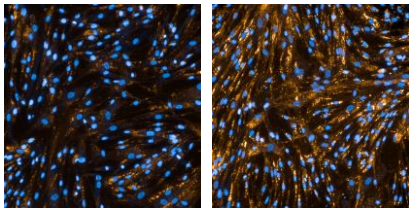
Increased Translation Efficiency (Polysome Profiling)



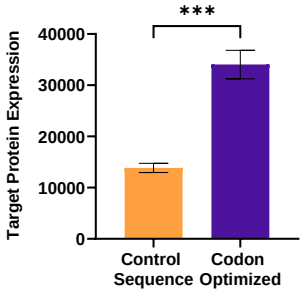


** p < 0.01

Increased Protein Expression (Immunofluorescence)

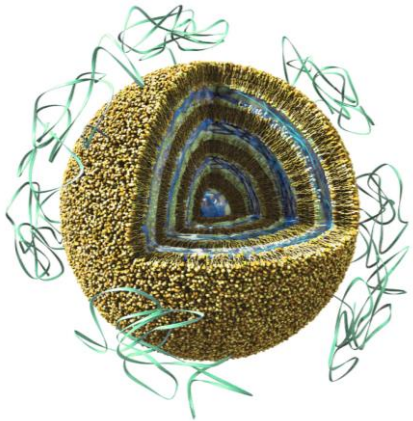


Control Sequence Codon Optimized



*** p < 0.001

All four LNP components leave significant room for optimization



Ionizable lipid

The *ionizable lipid* wraps around the mRNA and helps transport and release it to the targeted cell

Helper lipid

The *helper lipid* helps create the lipid membrane of the LNP, and it allows for the LNP to easily fuse to the mRNA's target cell and endosomal membrane

Cholesterol

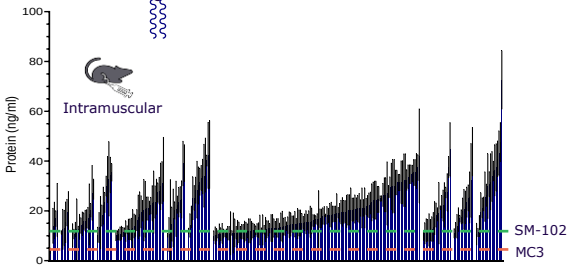
Cholesterol enhances the stability of the LNP and ensures it is sturdy and rigid. This assists with the introduction of the mRNA into the cells

PEGylated lipid

Polyethylene glycol, or a *PEG lipid*, is what helps maintain the overall physical nanostructure of the LNP and protects the mRNA nanoparticles from the body's natural clearance mechanisms

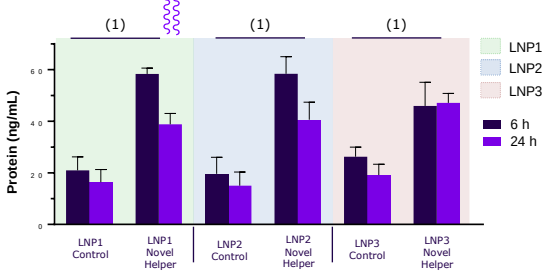
Sanofi novel science supports *improved LNP* and *better potency*

Ionizable Lipid



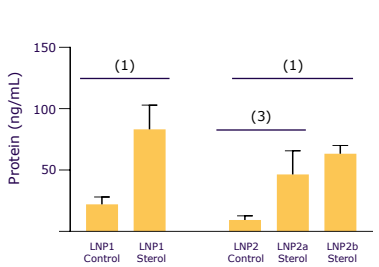
Extensive ionizable libraries developed for improved potency for multiple routes of administration

Helper Lipid



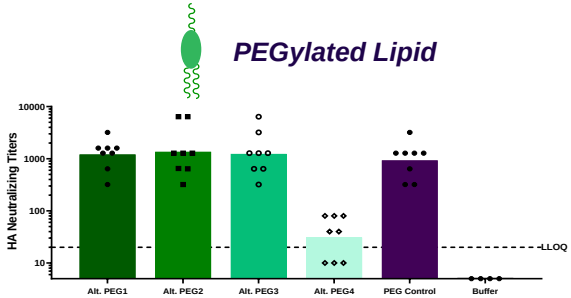
Novel helper lipids demonstrating significant improvements in potency (~2-3x)

Sterol



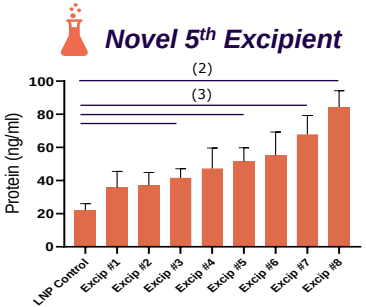
Novel sterols demonstrating significant improvements in potency (~3-4x)

PEGylated Lipid



Novel PEG alternatives maintaining performance in vivo

Novel 5th Excipient



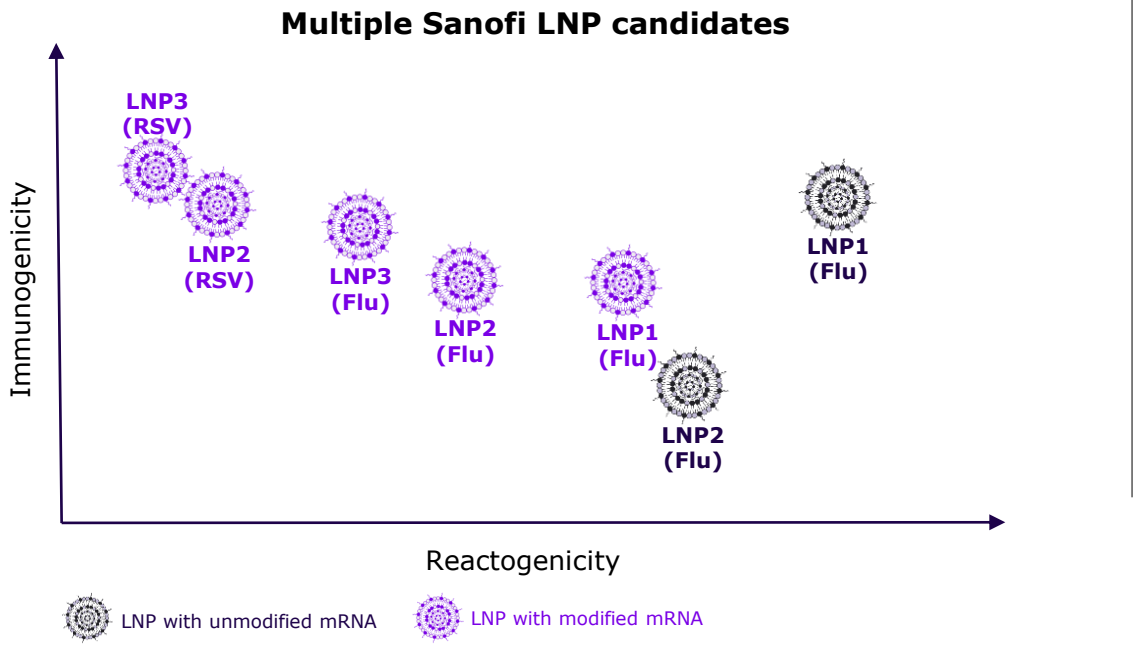
Significant potency boost with excipient (~4x)

(1) $p < 0.0001$
(2) $P < 0.001$
(3) $P < 0.01$

Fast learnings from *diverse clinical trials* with mRNA and LNP

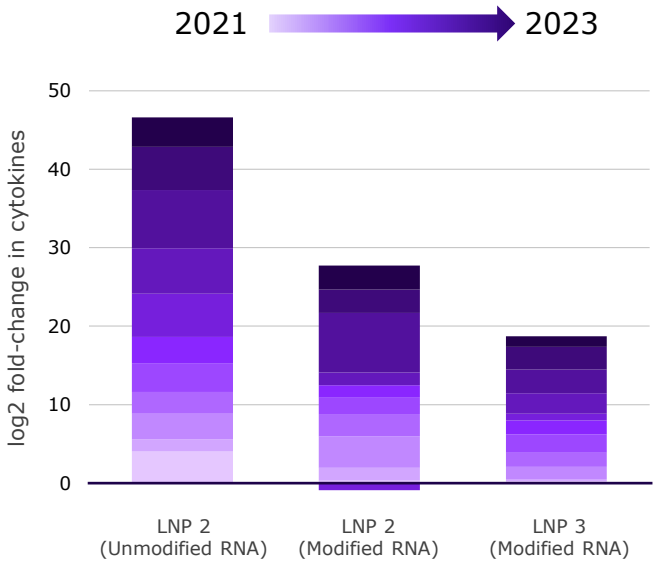
Clinical trials

- Unmodified vs modified
- Mono- vs multi-valent
- Multiple targets
- Multiple LNPs (4+)

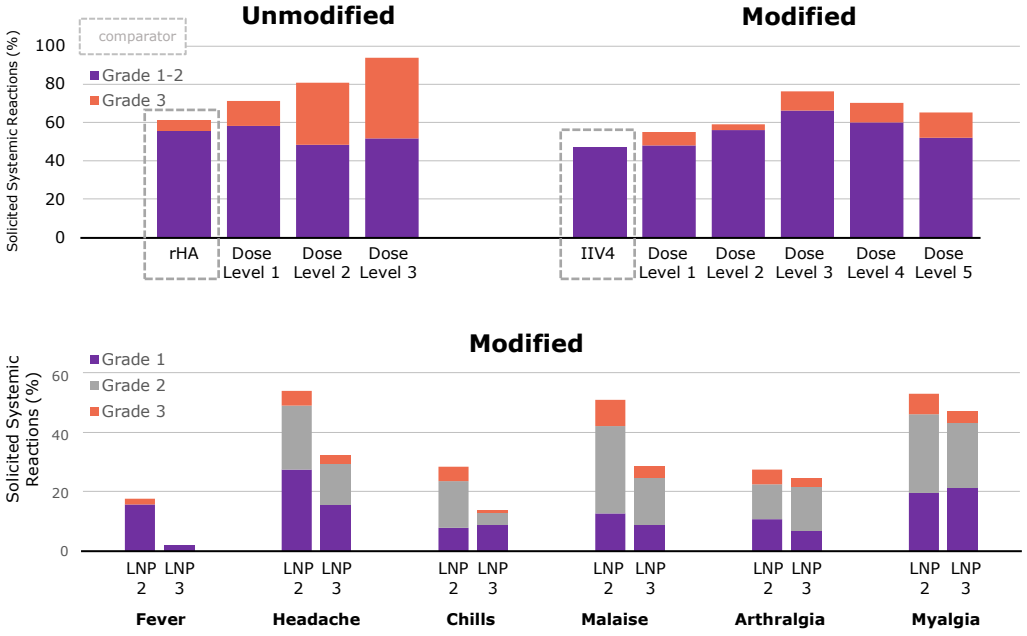


Sanofi's proprietary MIMIC® system to *increase efficiency of mRNA screening*

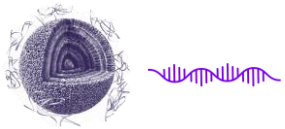
Preclinical MIMIC Prediction



Clinical Outcomes



Significant progress toward improved thermostability



Monovalent LNP

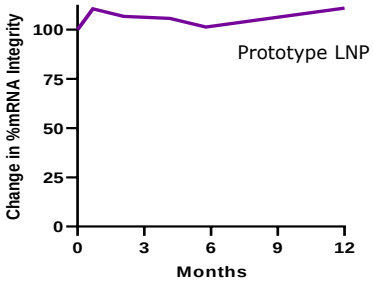
Multivalent LNP

Scale-up

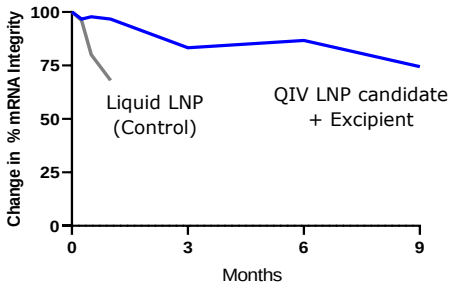
Industrial environment

Increasing complexity

Prototype LNP demonstrating
12-months+ stability as 2-8°C **liquid**



QIV LNP demonstrating
~9 months stability as 2-8°C **liquid**



Next step:

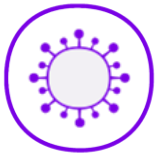
Achieve large scale batches

Our *leading-edge mRNA platform* is poised to break grounds in vaccine innovation

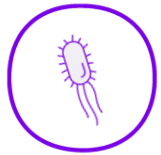
Potency

Reactogenicity

Thermostability



Viral Targets

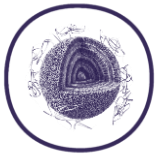


Bacterial Targets

Competitive platform in just 18 months with 7 clinical trials…

…to cross new frontiers

mRNA Optimization



LNP Optimization

Novel Antigen Design

…innovating across technology… and biology

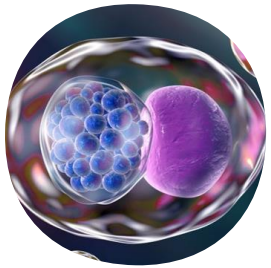
sanofi

New frontiers

Dr William Geisler, MD, MPH
Professor of Medicine and Epidemiology, University of Alabama at Birmingham

Sally Mossman
Head of Vaccine Research Portfolio Strategy

Innovation to address unmet needs in *infectious diseases*

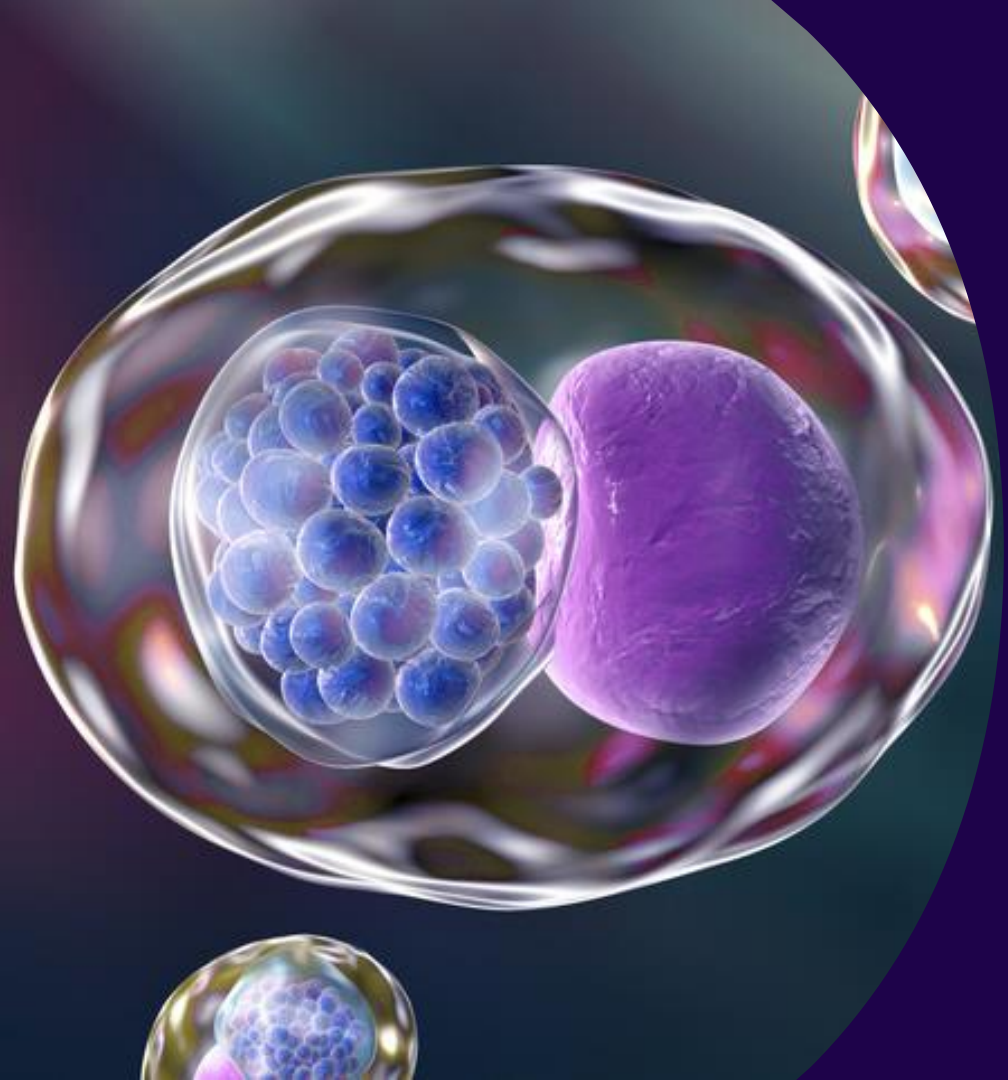


Chlamydia

- Dr William Geisler on the burden of chlamydia disease
- Positive data enable selection of final vaccine candidate

Acne

- Key preclinical data support clinical evaluation of therapeutic vaccine candidate
- GMP production to enable clinical evaluation ongoing



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Chlamydia

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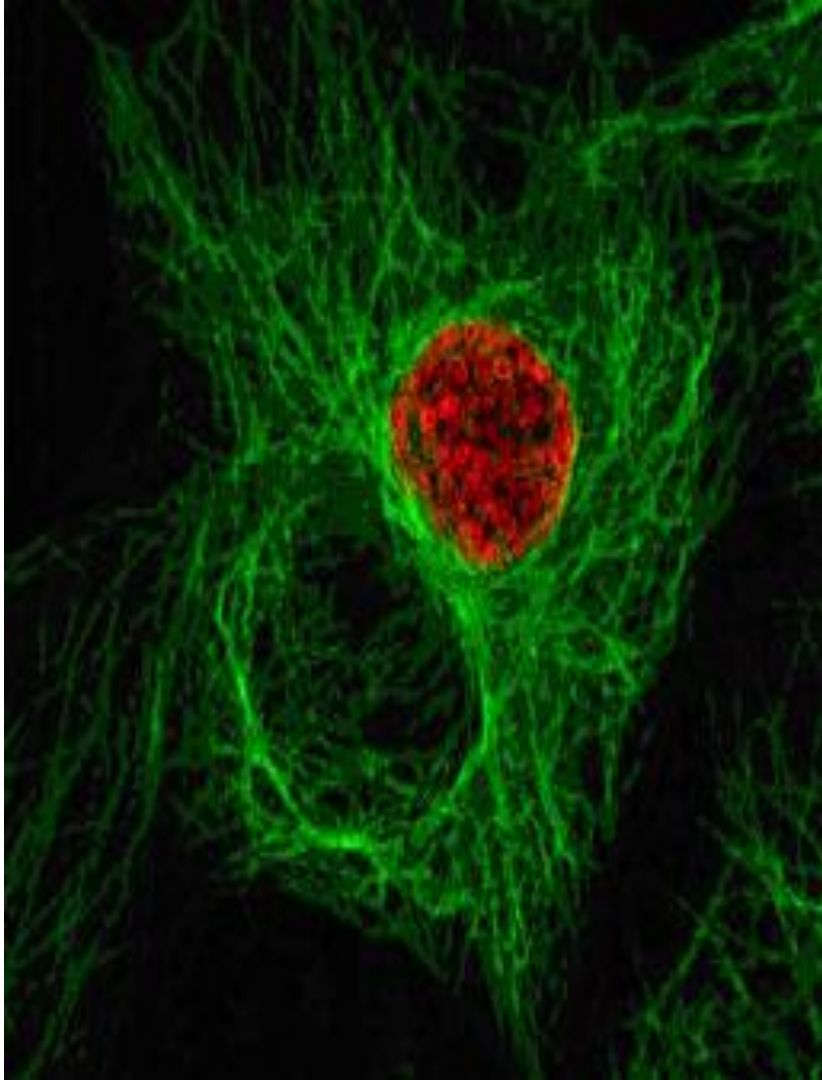
Dr William Geisler, MD, MPH

Professor of Medicine and Epidemiology,

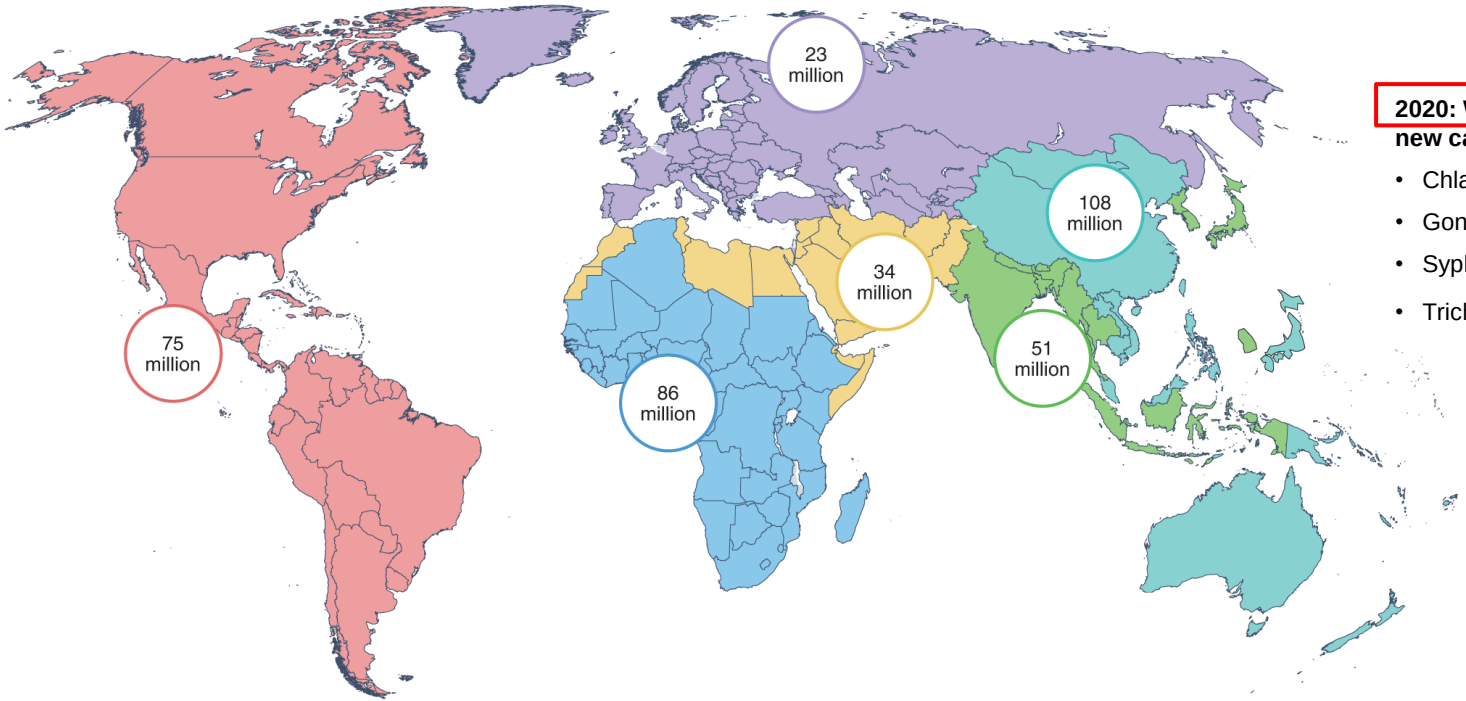
University of Alabama at Birmingham

Chlamydia Burden and Need for a Vaccine



Chlamydia is the most common bacterial STI worldwide (~129 million new cases annually)

These numbers represent incident cases of chlamydia, gonorrhea, trichomoniasis and syphilis in 2016.

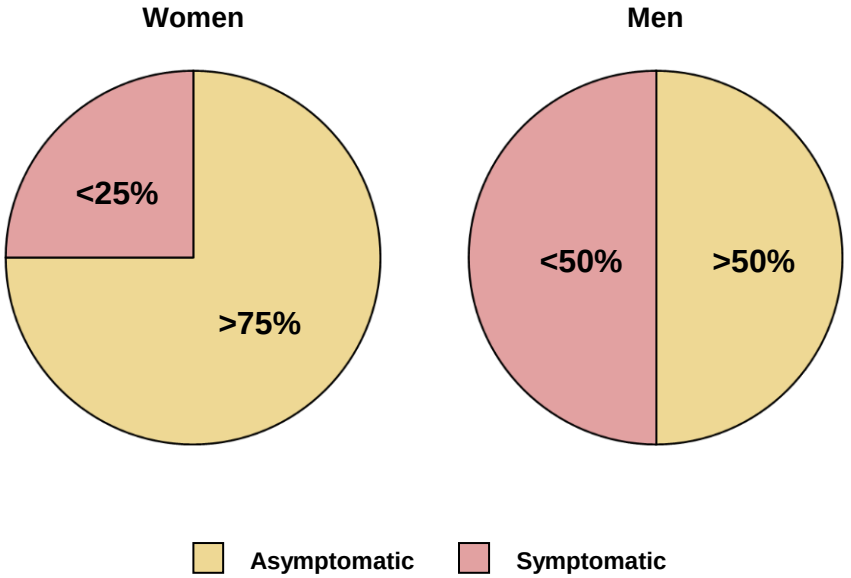


2020: WHO estimated 377 million new cases of four STIs

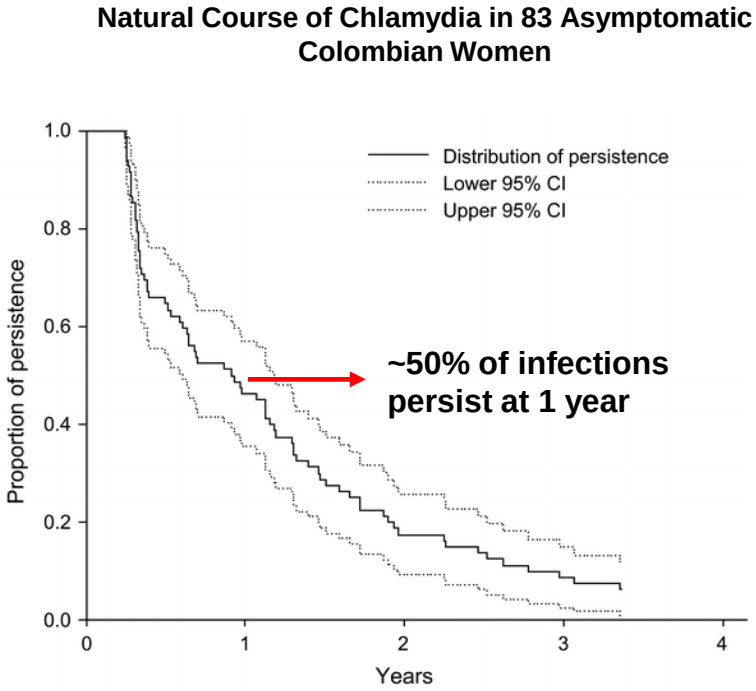
- Chlamydia: 129 million new cases
- Gonorrhea: 82 million new cases
- Syphilis: 7.1 million new cases
- Trichomoniasis: 156 million new cases

Van Gerwen, et al. Nat Microbiol. 2022

Chlamydia is a chronic infection and most infected persons do not have symptoms or signs of infection



Farley et al. Prev Med. 2003



Molano et al. J Infect Dis. 2005

Chlamydia has important health consequences, and the burden of morbidity is greater in women

Causes upper genital tract inflammation in 10%-15% of women (PID),[1,2] which may be complicated by:

- Infertility (up to 18%)[1]
- Chronic pelvic pain (up to 33%)[3]
- Ectopic pregnancy (3-fold risk)[4]

Associated with adverse pregnancy outcomes[4]

- Miscarriage, stillbirth, premature birth, and low birth weight (1.5-5-fold risk)
- Infection in newborns (eye and lung infection)

Increases risk for HIV acquisition (1.5-2-fold)[5-6]

1. Haggerty, et al. J Infect Dis. 2010 2. Oakeshott, et al. BMJ. 2010 3. Ness, et al. Am J Obstet Gynecol. 2002 4. Tang, et al. Sex Transm Infect. 2020 5. Barker, et al. Sex Transm Dis. 2022 6. Malekinejad, et al. Sex Transm Dis. 2022

Chlamydia control programs provide a comprehensive approach to preventing and treating chlamydia

Chlamydia Prevention Measures

- Abstinence
- Sexual health education
- Barrier methods (e.g., condoms)
- NO VACCINE AVAILABLE

Chlamydia Testing (with highly accurate NAAT)

- Routine screening in young women, MSM, and other women and men at risk
- Diagnostic testing with symptoms/signs

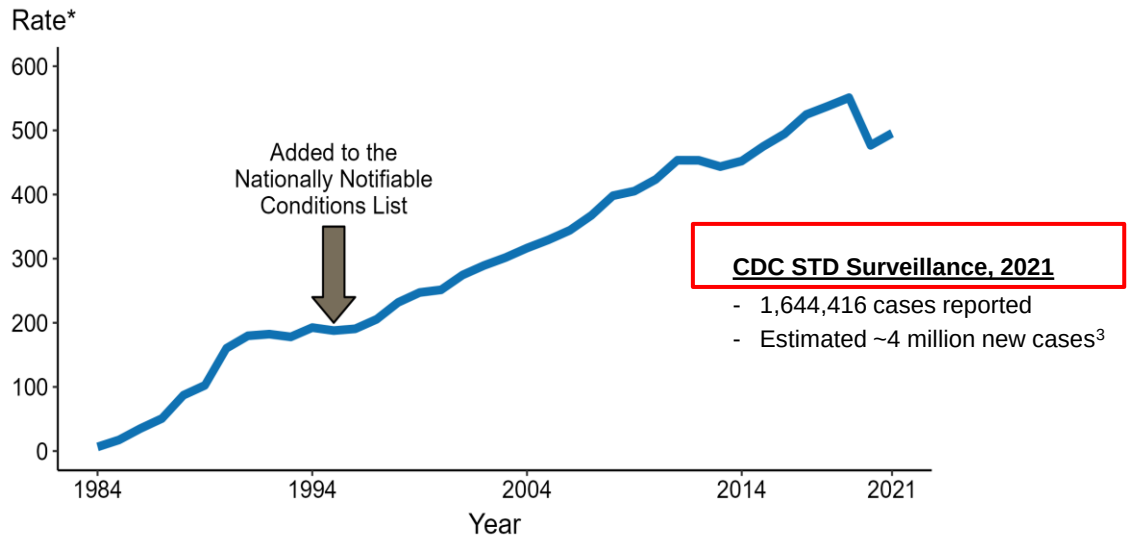
Chlamydia Treatment

- Treatment of patient and partner(s)
- Doxycycline x 7d or azithromycin x 1 effective
- No antibiotic resistance concerns

Control programs have been ineffective in decreasing chlamydia rates, justifying need for a preventative vaccine

Rates of Reported Chlamydia Cases, U.S., 1984–2021*

(Per 100,000)*



CDC STD Surveillance, 2021

- 1,644,416 cases reported
- Estimated ~4 million new cases[3]

- **Many chlamydia cases go undetected and untreated**
- **Natural infection does not elicit long-lived protective immunity in most**
  - Reinfection occurs in up to 20% within one year[1]
- **Treatment early in course of infection may impair immunity[2]**

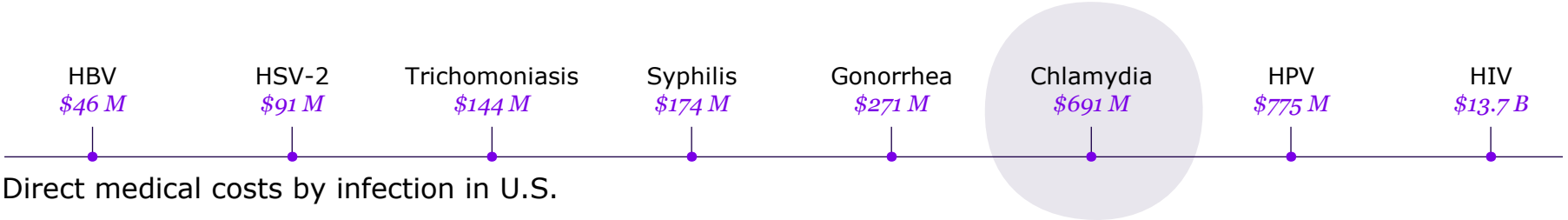
1. Hosenfeld, et al. Sex Transm Dis. 2009 2. Brunham and Rekart. Sex Transm Dis. 2008 3. Kreisel, et al. Sex Transm Dis. 2021

Thank you

wgeisler@uabmc.edu

Significant direct medical costs in STI attributed to chlamydia

Chlamydia next to HPV in terms of costs in STIs



Direct medical costs by infection in U.S.

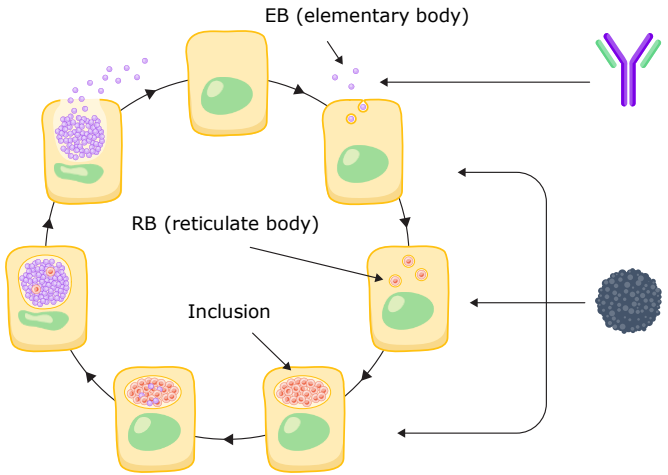
Queensland government in Australia fully recognizes the burden of disease in chlamydia

Supporting our vaccine development through the Translational Science Hub in Queensland

Source: CDC's *Sexually Transmitted Disease Surveillance, 2021, sexually Transmitted Disease Surveillance, 2021*, accessed May 10

Chlamydia biology requires *sophisticated vaccine design*

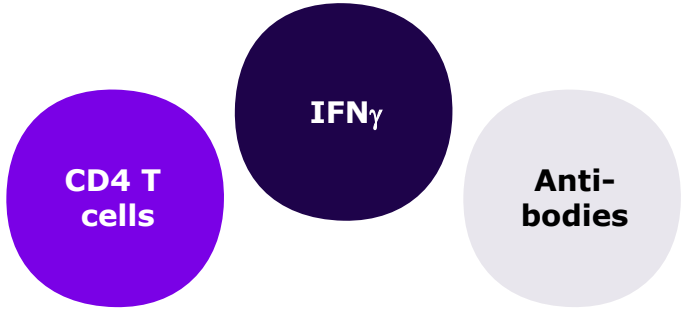
Chlamydia trachomatis (CT) is a bacterium that lives inside human cells



Antibodies may contribute to protection

IFN-γ producing **CD4+T cells** are the primary mediators of protection

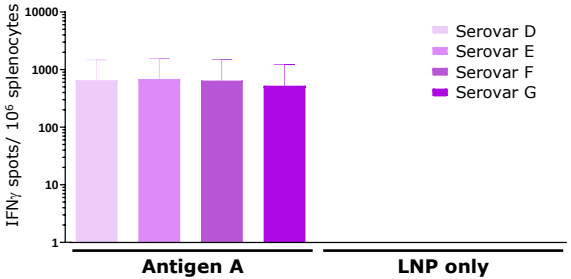
Targeted immune profile



- **Antibodies and CD4 T cell** responses
- **Recognition of multiple chlamydia serovars (serotypes)**
- **Broad population coverage** (HLA: Human Lymphocyte Antigen)

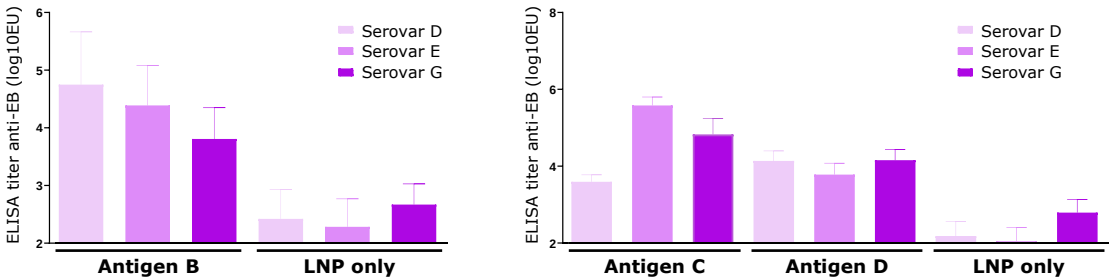
Innovative multi-antigen vaccine candidate *achieves targeted immune profile, moving to phase 1/2 in 2024*

Broad cross-serovar T cell responses



Spleen cells secreting Interferon-gamma in mice immunized with mRNA encoding Antigen A, or empty LNP control

Cross-serovar antibodies recognizing native elementary bodies



Elementary body (EB) binding antibodies in sera from mice immunized with mRNA encoding Antigen B, C, D or empty LNP control

Serovar equates to serotype terminology in chlamydia field

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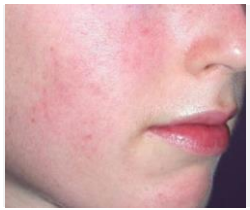
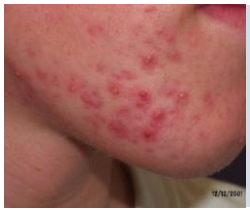
Acne

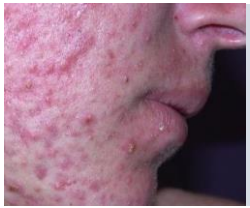
Acne is chronic inflammatory skin disease and the *8th most common medical condition globally*



Mild acne



Moderate acne



Severe acne

High burden of disease

- Chronic nature of condition
- Psycho-social impact on patients
- Contribution to antimicrobial resistance
- Economic impact of treatment
- Unmet needs with current treatments

Incidence and prevalence significant and increasing

- **8.6 million** prevalent cases in U.S.
- **18.3 million** prevalent cases in EU

Source: IHME/GBD 2019 estimates. Available at https://vizhub.healthdata.org/gbd-compare/
Chen H. et al. **Magnitude and temporal trend of acne vulgaris burden in 204 countries and territories from 1990 to 2019: an analysis from the Global Burden of Disease Study 2019**
Layton A. M. et al. **Reviewing the global burden of acne: how could we improve care to reduce the burden?**

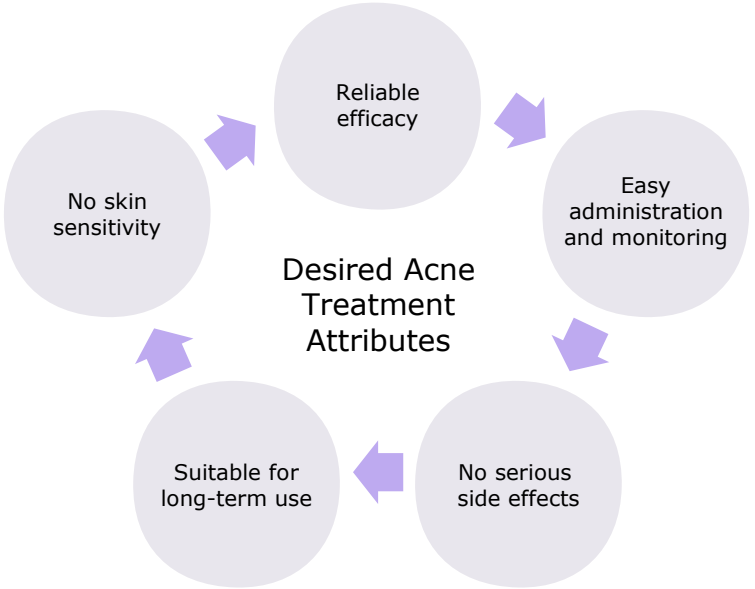
Recent market research points to *gaps in treatment landscape* driving a significant need for novel approaches

*"Isotretinoin has the efficacy, but it's complicated and has risks – **none of the options we have give us everything we need in one treatment**"*

– Dermatologist, Germany

*"Acne is **very hard on patients** because it is a disease that everyone can see;...I don't take it lightly because I know it can have **psychological and social ramifications**"*

– Dermatologist, US



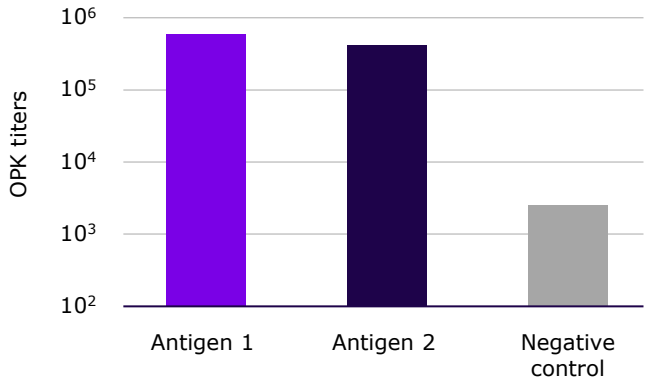
Need for improvement vs standard of care on all dimensions

Sanofi internal HCP market research, 1Q23

Our *ambitious approach* in the acne immunotherapeutic space

- Targeted intervention designed to *restore a healthy skin microbiome*
- Leveraging antigens from Origimm acquisition, enhanced with additional antigen
- Critical functional assays developed and running
- Synergy between Sanofi Vaccines and Pharma Immunology Franchise
- *Full speed development of mRNA-based candidate*

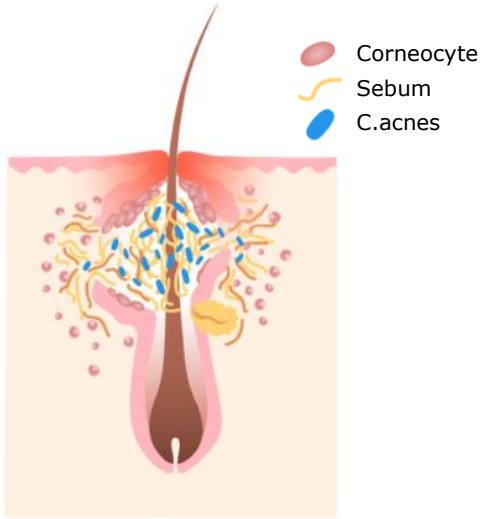
Recombinant protein antigens obtained through Origimm acquisition validated with strong proof of mechanism data

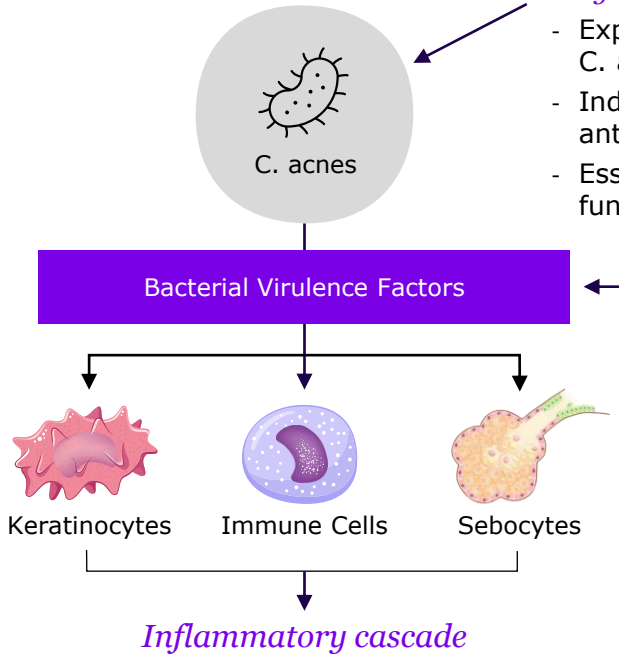


OPK: opsonophagocytic killing of C. acnes bacteria

Therapeutic vaccine addressing *multiple pathogenic mechanisms*

Acne vulgarum: skin dysbiosis driven by outgrowth of pathogenic Cutibacterium acnes





Origimm Antigens

- Expressed on surface of pathogenic C. acnes strains
- Induce opsonophagocytic killing antibodies to reduce bacterial burden
- Essential adhesin and iron uptake functionality

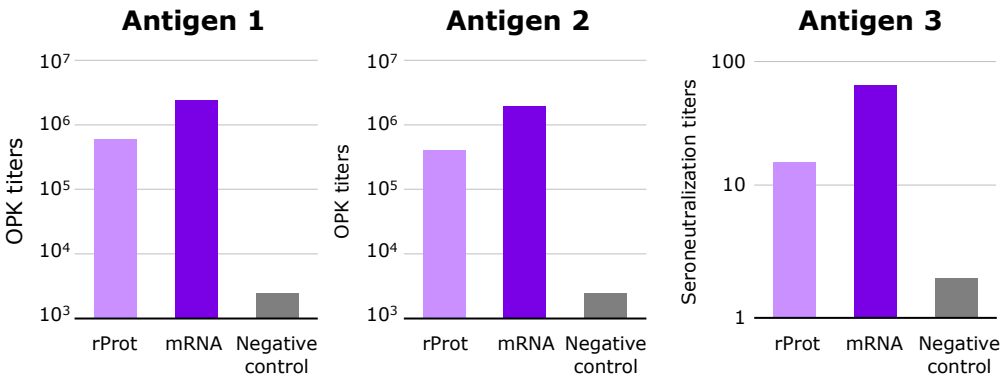
Additional Vaccine Antigen

- Based on key bacterial virulence factor
- Induces antibodies that neutralize the virulence factor, interrupting the inflammatory cascade that drives disease

Pharmaceutics 2019, 11(10), 490; https://doi.org/10.3390/pharmaceutics11100490 Targeted Topical Delivery of Retinoids in the Management of Acne Vulgaris: Current Formulations and Novel Delivery Systems by Gemma Latter

Positive pre-clinical data support move to phase 1/2 in 2023

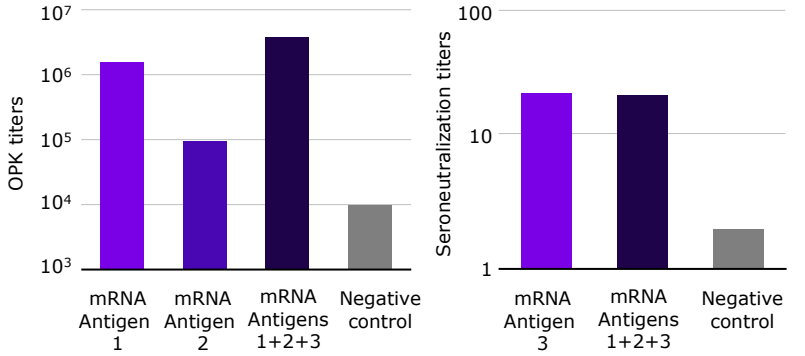
mRNA expression of bacterial antigens induces functional immune responses at least equivalent to recombinant proteins



OPK: opsonophagocytic killing

Neutralization of inflammatory factor

No interference in induced responses with combination of all three mRNAs



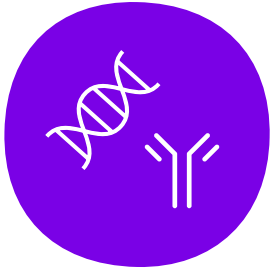
OPK: opsonophagocytic killing

Neutralization of inflammatory factor

Moving at pace to unlock new areas in infectious disease

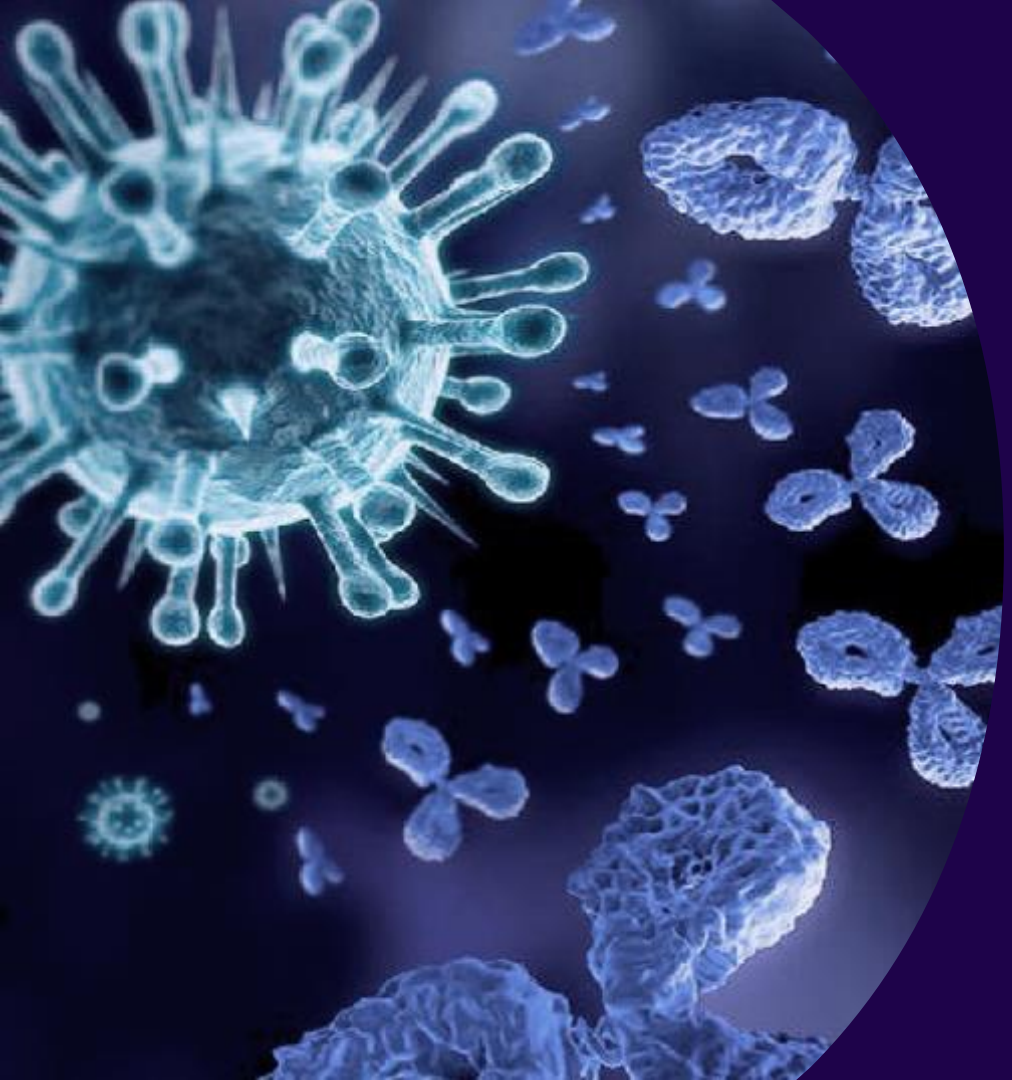
Expanding to
new disease areas

Addressing
unmet needs



Leveraging the right
technological solutions

Therapeutic or prophylactic
Association of infectious agents with chronic diseases
Microbiome



Conclusion

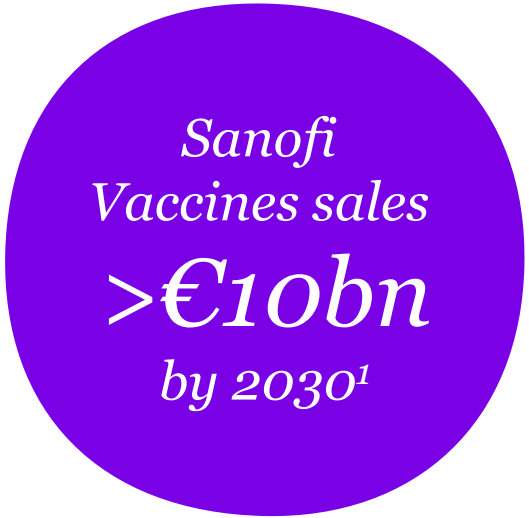
Thomas Triomphe
Head of Vaccines GBU

Sanofi drives *innovation* with BiC/FiC vaccines pipeline

3	New products approved since Vaccines Investor Event in December 2021
mRNA	Leading-edge mRNA platform to lift our influenza standard of care and deliver innovation to address unmet needs
6	New vaccine candidates expected in phase 1/2 trial in 2022/23
At least 5	First-in-Class / Best-in-Class vaccine candidates expected in phase 3 by 2025 across diverse preventative and therapeutic areas

On a clear path to generate *>€10bn sales by 2030*

- Launch Beyfortus blockbuster and build BiC *RSV franchise*
- Continue to win in *Influenza*
- Enter *Pneumococcal market* with PCV blockbuster candidate
- Sustain growth of *established business*
- Introduce our *new mRNA vaccines* to market



1. At 2023 rate

Q&A session Part 2

Thomas Triomphe
Head of Vaccines GBU

Thomas Grenier
Head of Vaccines F&PS

Jean-François Toussaint
Head of Vaccines R&D

Saranya Sridhar
Head of Translational Medicine

Frank DeRosa
Head of Research for mRNA CoE

Dr William Geisler, MD, MPH
Professor of Medicine & Epidemiology
University of Alabama at Birmingham

Sally Mossman
Head of Vaccine Research Portfolio Strategy

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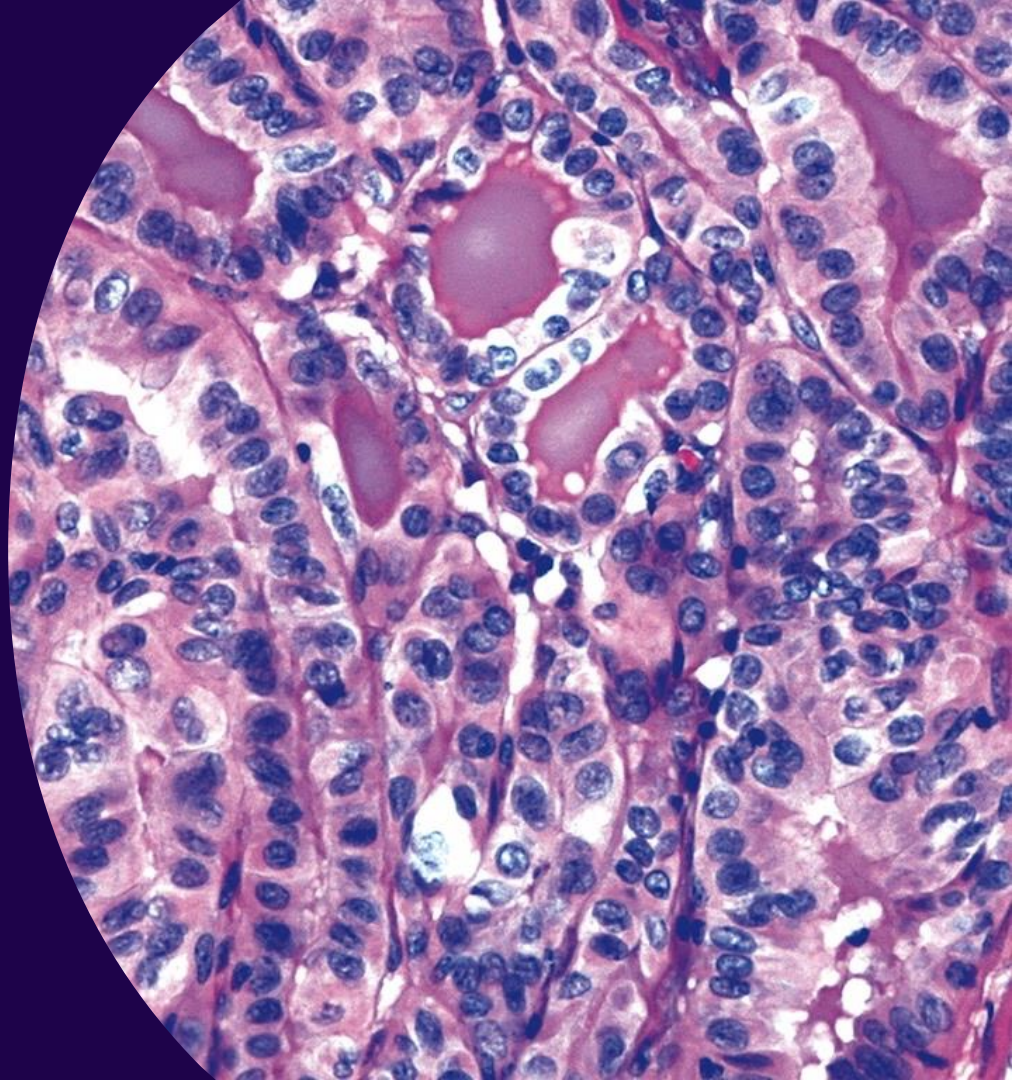
Appendices



Collaborations

Name	Developed in collaboration with...
Beyfortus®	AstraZeneca
Dupixent® itepekimab (IL-33)	Regeneron
frexalimab	ImmuNext
VidPrevtyn® Beta	GSK and with funding from Biomedical Advanced Research and Development Authority (BARDA)
SP0202	SK Bioscience

Abbreviations

ACIP	Advisory Committee on Immunization Practices
AE	Adverse Event
AI	Artificial Intelligence
BTK	Bruton's Tyrosine Kinase
CD	Cluster of Differentiation
CDC	Centers for Disease Control and Prevention
COPD	Chronic Obstructive Pulmonary Disease
CT	Chlamydia Trachomatis
dOMV	detoxified Outer Membrane Vesicles
EB	Elementary Body
ELISA	Enzyme-Linked Immunosorbent Assay
ESPID	European Society for Paediatric Infectious Diseases
FDA	Food and Drug Administration
fHBP	factor-H Binding Protein
GMC	Geometric Mean Concentration
GMP	Good Manufacturing Practice
GMT	Geometric Mean Titers
GP	General Practitioner or Glycoprotein
HA	Hemagglutinin
HBV	Hepatitis B Virus
HCP	Healthcare Professionals
HD	High Dose
HIV	Human Immunodeficiency Virus
HLA	Human Lymphocyte Antigen
hMPV	Human Metapneumovirus
HPV	Human Papillomavirus
HSBA	Human Serum Bactericidal Activity
HSV-2	Herpes Simplex Virus type 2
IFN	Interferon
IgA	Immunoglobulin A
IgG	Immunoglobulin G
IL-13	Interleukin 13
IMD	Invasive Meningococcal Disease
IPD	Invasive Pneumococcal Disease
LNP	Lipid Nanoparticle
LRTD	Lower Respiratory Tract Disease
LRTI	Lower Respiratory Tract Infection
MA-LRTI	Medically Attended LRTI
ML	Machine Learning
mNT	micro Neutralization Test
MoA	Mode of Action
mRNA	messenger RNA
MS	Multiple Sclerosis
NA	Neuraminidase
NadA	Neisserial adhesin A
NT	Non-typable
NVT	Non-vaccine type
OA	Older Adults
OPK	Opsonophagocytic killing
P&I	Pneumonia and Influenza
PBF	Protection Beyond Flu
PCV	Pneumococcal Conjugate Vaccine
PEG	PEGylated
PFS	Pre-filled Syringe
PIV	Parainfluenza Virus
QIV	Quadrivalent Influenza Vaccine
RP-LC	Reversed Phase Liquid Chromatography
rProt	recombinant Protein
RSV	Respiratory Syncytial Virus
SD	Standard Dose
SoC	Standard of Care
STI	Sexually Transmitted Infection
TEAE	Treatment Emergent Adverse Event
TNFI	Tumor Necrosis Factor Inhibitor
TSLP	Thymic Stromal Lymphopoietin
TT	Tetanus Toxoid
URTD	Upper Respiratory Tract Disease
UTR	Untranslated Region
VFC	Vaccines for Children
WHO	World Health Organization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