JANUARY 2025

Rallybio Corporation

On a mission to deliver groundbreaking therapies that transform the lives of patients with devastating rare diseases

Rallybio

Forward-Looking Statements

This presentation contains forward-looking statements that are based on management's beliefs and assumptions and on information currently available to management. All statements other than statements of historical facts contained in this presentation are forward-looking statements. In some cases, you can identify forward-looking statements by terms such as "may," "will," "should," "expect," "plan," "anticipate," "could," "intend," "target,", "seek," "goal," "project," "contemplate," "believe," "estimate," "predict," "potential" or "continue" or the negative of these terms or other similar expressions, although not all forward-looking statements contain these words. Forward-looking statements include, but are not limited to, statements concerning: the initiation, timing, progress, results, and cost of our research and development programs, and our current and future preclinical and clinical studies, including statements regarding our clinical development plan for RLYB212; the timing of completion of our Phase 2 dose confirmation clinical trial for RLYB212, including the timing of dosing the sentinel participant, the FNAIT natural history study, the PK/PD study for RLYB116, and the period during which the results of the trials will become available; the success, cost and timing of the clinical development of our product candidates; the potential clinical effects and benefits of RLYB212, RLYB116 and REV102; whether the results of the natural history study and the RLYB212 Phase 2 trial will be sufficient to support design and implementation of a Phase 3 registrational study for RLYB212; our ability to more accurately identify the number of pregnant women at higher risk of FNAIT; the timing of publications relating to FNAIT and RLYB212; whether our conclusions from the RLYB116 biomarker work will be consistent with actual clinical results; the timing of achieving milestones in 2025 for our preclinical programs, including the timing of initiation of IND-enabling studies for REV102; our ability to compete with companies currently marketing or engaged in the development of treatments for diseases that our product candidates are designed to target; our estimates of the market opportunity for RLYB212, and the size and growth potential of the markets for RLYB212, RLYB116, and REV102 and any of our current product candidates or other product candidates we may identify and pursue, and our ability to serve those markets; our ability to successfully develop screening tests for FNAIT, and whether such tests will be accepted in routine prenatal guidelines; our ability to retain and recruit key personnel; our expectations regarding government and third-party payor coverage and reimbursement; our estimates of our expenses, ongoing losses, capital requirements and our needs for or ability to obtain additional financing; our ability to successfully identify and implement alternative and acceptable options to further advance our programs; the potential benefits of strategic collaboration agreements, our ability to enter into strategic collaborations or arrangements, including potential business development opportunities and potential licensing partnerships; and our cash runway and our financial performance. The forward-looking statements in this presentation are only predictions and are based largely on management's current expectations and projections about future events and financial trends that we believe may affect our business, financial condition and results of operations. These forward-looking statements speak only as of the date of this presentation and are subject to a number of known and unknown risks, uncertainties and assumptions, including but not limited to, our ability to successfully initiate and conduct our planned clinical studies and complete such clinical studies and obtain results on our expected timelines, or at all, whether our cash resources will be sufficient to fund our operating expenses and capital expenditure requirements and whether we will be successful raising additional capital, competition from other biotechnology and pharmaceutical companies, and those risks and uncertainties described in our filings with the Securities and Exchange Commission (the "SEC"), including under the heading "Risk Factors" in our Form 10-Q for the period ending September 30, 2024, and any subsequent filings with the SEC.

Because forward-looking statements are inherently subject to risks and uncertainties, some of which cannot be predicted or quantified and some of which are beyond our control, you should not rely on these forward-looking statements as guarantees of future events. The events and circumstances reflected in our forward-looking statements may not be achieved or occur and actual future results, levels of activity, performance and events and circumstances could differ materially from those projected in the forward-looking statements. Moreover, we operate in an evolving environment. New risks and uncertainties may emerge from time to time, and it is not possible for management to predict all risks and uncertainties. Except as required by applicable law, we are not obligated to publicly update or revise any forward-looking statements contained herein, whether as a result of any new information, future events, changed circumstances or otherwise.

Innovation and execution throughout 2024 positions Rallybio with key readouts in three programs in 2025, potentially driving meaningful value

Lead program aimed at preventing a devastating rare disease in babies RLYB212 Phase 2 interim data from sentinel participant expected in 3Q 2025

Innovative C5 inhibitor with best-in-class potential for patients RLYB116 clinical PK/PD study on track to initiate in 2Q 2025, data expected in 2H 2025

Potential first- and best-in-class ENPP1 inhibitor for patients with hypophosphatasia REV102 to enter IND-enabling studies in 2025, preclinical data in 2H 2025

Strong financial position $75.1 million in cash and equivalents as of September 30, 2024, providing cash runway into mid-2026

Robust pipeline with significant potential for value creation

Molecule	Approach	Indication	Discovery	Preclinical	Phase 1	Phase 2	Phase 3
RLYB212	Anti-HPA-1a Monoclonal Antibody	Prevention of FNAIT					
RLYB116	C5 Inhibitor Affibody®-ABD Fusion	Diseases of complement dysregulation					
REV102	ENPP1 Inhibitor Small Molecule	Hypophosphatasia (HPP)					Partnership with Recursion
RLYB332	Matriptase-2 Inhibitor Monoclonal Antibody	Diseases of iron overload and severe anemias					
RLYB114	C5 Inhibitor Pegylated Affibody®	Ophthalmological diseases of complement dysregulation					
Undisclosed		Undisclosed metabolic disease					Partnership with AbCellera

FNAIT: Fetal and neonatal alloimmune thrombocytopenia; **HPA-1a:** Human platelet antigen-1a; **C5:** Complement component 5; **ABD:** Albumin-binding domain; **ENPP1:** Ectonucleotide pyrophosphatase/phosphodiesterase 1

RLYB212

Prevention of Fetal and Neonatal Alloimmune Thrombocytopenia

A clear path to preventing a potentially devastating disease of fetuses and newborns

FNAIT is a Potentially Devastating Disease Affecting Babies

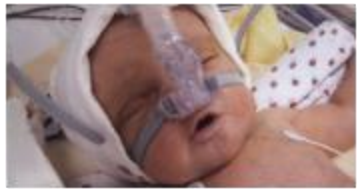
FNAIT is caused by a platelet antigen (HPA-1a) mismatch between fetus and expectant mother

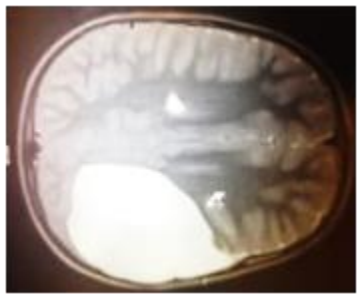
This can lead the mother to develop alloantibodies to the fetal platelet antigen, i.e., alloimmunize

These antibodies cross the placenta into the fetus and destroy platelets, which can lead to thrombocytopenia and life-long neurological disability or loss of the baby

>30K Pregnant Women Estimated to be at Higher Risk of FNAIT Each Year

Women who are HPA-1a negative and HLA-DRB3*01:01 positive, are at ~25-fold higher risk for alloimmunization





RLYB212 is Designed to Prevent FNAIT

RLYB212 is the first potential therapy for the prevention of alloimmunization and FNAIT

RLYB212 is a monoclonal anti-HPA-1a antibody designed to prevent higher risk pregnant women from alloimmunizing, thereby eliminating the risk of FNAIT in the baby

No approved therapy exists for prevention or treatment of FNAIT

FNAIT Prevention Market Opportunity is >$1.6B

Pregnant women at higher risk of FNAIT can be easily identified through inclusion of FNAIT risk screening tests in routine first trimester prenatal testing

High awareness of FNAIT and willingness to screen and treat pregnant women at higher risk of FNAIT amongst US and European Ob/Gyns

FNAIT: Fetal and neonatal alloimmune thrombocytopenia

Rallybio has made significant progress in advancing a first-ever therapeutic to prevent maternal alloimmunization and FNAIT

- Developed RLYB212, a monoclonal HPA-1a antibody, with superior profile to original polyclonal candidate
- Secured exclusive license to APLDQ mouse model of FNAIT to support nonclinical pharmacology and toxicology programs
- Conducted large epi analysis to inform on FNAIT risk in diverse populations, indicating >30,000 pregnancies at risk annually
- Executed collaboration with JNJ on development of complementary therapies
- Ongoing engagement with SMFM Foundation through Corporate Council
- Advancing FNAIT natural history study with >14,000 women screened as of Jan 1, 2025
- Established RLYB212 proof-of-concept in Phase 1b study
- Identified RLYB212 target exposure range in pregnant women and Phase 2 dose regimen
- Completed comprehensive tox program, including repro tox, supporting studies in pregnant women
- Initiated Phase 2 clinical trial

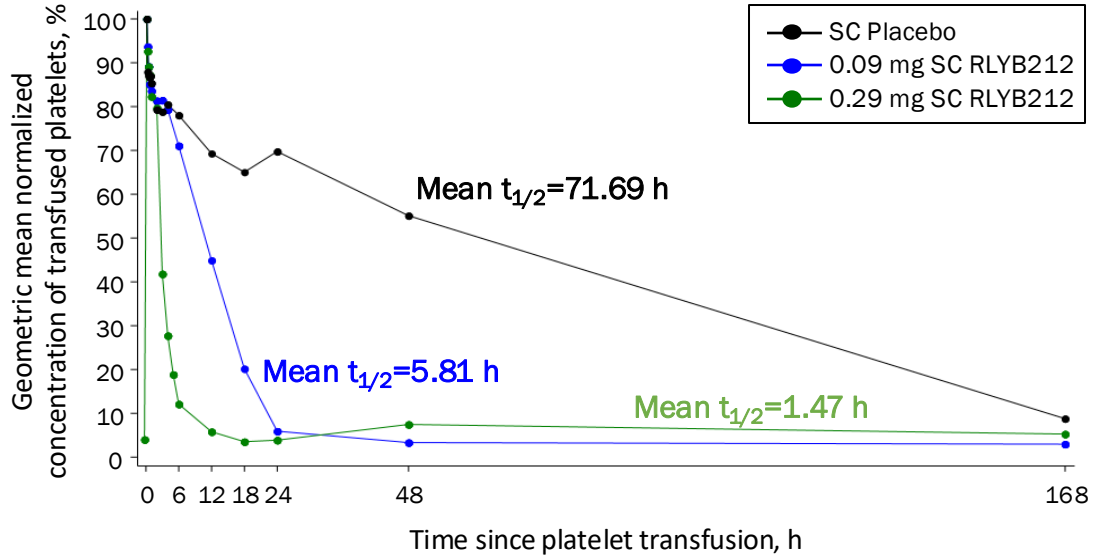
SMFM: Society for Maternal-Fetal Medicine

RLYB212 is designed to prevent alloimmunization by rapidly eliminating mismatched fetal platelets from maternal circulation

PHASE 1b PROOF-OF-CONCEPT STUDY

- Eleven healthy HPA-1a-negative subjects randomized to receive RLYB212 0.09mg (n=4), RLYB212 0.29mg (n=5) or placebo (n=2) administered subcutaneously
- RLYB212 produced dose-dependent, rapid, and complete elimination of transfused HPA-1a positive platelets
- RLYB212 was well-tolerated, with no reports of serious or severe adverse events
- Transfused platelet dose was designed to mirror a catastrophic bleed that could result in alloimmunization in pregnant women

Platelet Elimination Through 7-Days Post-Transfusion



Platelet concentration was normalized at 100% for sample collected 10 minutes after platelet transfusion; SC, subcutaneous; $t_{1/2}$, platelet elimination half-life

RLYB212 demonstrated rapid and dose dependent elimination of HPA-1a positive transfused platelets

Geisen et al., *International Society on Thrombosis and Haemostasis 2023 Congress, June 24-28, 2023. Abstract Presentation #OC 02.1*

Phase 2 dose confirmation trial in pregnant women is underway, with interim data from sentinel participant expected in 3Q 2025

TRIAL DESIGN

- Phase 2 single-arm, open-label trial to assess the pharmacokinetics (PK) and safety of SC administered RLYB212 in pregnant women at higher risk for HPA-1a alloimmunization and FNAIT[1] across sites in Europe
- Dose regimen of 0.12 mg loading dose and 0.06 mg maintenance dose
- Enrollment of 8 total participants in 3 stages: sentinel participant, Cohort 1 (n=3), and Cohort 2 (n=4); each stage will complete prior to initiation of next stage

PRIMARY OBJECTIVE

To assess the PK and safety of RLYB212

SECONDARY OBJECTIVES

To assess pregnancy outcomes, neonatal outcomes, and occurrence of emergent HPA-1a alloimmunization

Seeking RLYB212 maternal exposure that can be maintained within the target therapeutic range (~3 – 10ng/mL) throughout pregnancy and no maternal alloimmunization

[1]Higher risk for alloimmunization and FNAIT defined as HPA-1a-negative, HLA-DRB3*01:01-positive pregnant women bearing an HPA-1a-positive fetus, with no existing alloimmunization. Trial details: 2024-512651-20/NCT06435845

Ongoing natural history study has screened >14,000 pregnant women as of Jan 1, 2025

STUDY DESIGN

- Prospective, non-interventional, multinational natural history study across sites in US and Europe[1]
- Screening pregnant women who present for Gestation Week 10 to 14 prenatal visit for higher risk for HPA-1a alloimmunization and FNAIT[2]

OBJECTIVES

- Provide historical alloimmunization rate to serve as control dataset for planned single-arm Phase 3 registrational trial
- Obtain prevalence estimates of the FNAIT at-risk population, including racial and ethnic groups under-represented in published studies
- Establish operational scaffold for RLYB212 interventional studies, including implementation of lab tests to screen for higher FNAIT risk

Interim natural history study data is expected to be presented in mid-2025

[1]Targeting 20,000 – 30,000 pregnant women to be screened; [2]Higher risk for alloimmunization and FNAIT defined as HPA-1a-negative, HLA-DRB3*01:01-positive pregnant women bearing an HPA-1a-positive fetus with no existing alloimmunization

Screening tests to identify at-risk pregnant women can be integrated into routine prenatal care

Screening tests are already commercially available

FIRST TRIMESTER
Routine Blood Tests[1]

- ☑ Blood Type
- ☑ Rh Factor
- ☑ CBC: H&H, MCV
- ☑ Platelet Count
- ☑ Hepatitis B
- ☑ Blood Glucose
- ☑ Syphilis, STDs, HIV
- ☑ Genetic & Infectious Diseases
- ☑ PAPP-A, hCG
- ☑ Down Syndrome, Trisomy 18
- ☐ Maternal HPA-1 typing

SCREENING PROCESS

- Low volume sample added to standard maternal blood typing panel
- Analyzed at reference labs and hospitals on existing equipment

If **HPA-1a negative**
(~2%[2] of pregnancies)

Additional testing to evaluate **HLA-DRB3*01:01 status**. If positive, referral to specialist as high-risk pregnancy[3]

[1] Summarized from ACOG Guidelines for Perinatal Care; [2] Estimate is based on a ~2% incidence of HPA-1a negative status
[3] For pregnancies identified at higher FNAIT risk, physicians may conduct additional follow-up testing, e.g., maternal anti-HPA-1a antibody status, fetal HPA-1a genotype

Inclusion of screening in prenatal guidelines will facilitate identification of at-risk pregnant women who can benefit from RLYB212

Criteria for Guideline Evaluations	Action Plan
Prevalence & Impact Data	Natural History Study, Genomic Database Analysis
Preventive Therapeutic	Phase 2 and Phase 3 Clinical Trial Data
Validated Screen Test	Screen Test Readiness
Cost Effectiveness Data	HEOR Data Generation

RLYB212 represents a $1.6B+ market opportunity

Drivers of Commercial Opportunity

Unmet Medical Need

- >30,000 pregnant women at higher risk of potentially devastating outcomes annually, including ICH in ~1/10 FNAIT affected pregnancies
- HCPs and payers understand limitations of current approaches and value prophylactic approach

Existing Care is Resource Intensive

- Lifetime medical costs for Cerebral Palsy estimated to be $921,000
- Extended and costly NICU stays
- IVIg treatment costs for alloimmunized pregnant women range from $100k-$300k in US (per pregnancy)

Readily Identifiable Population

- Screening tests already commercially available and reimbursed
- Payers, HCPs, and pregnant women are highly motivated to deliver healthy babies

Broad and Rapid Utilization

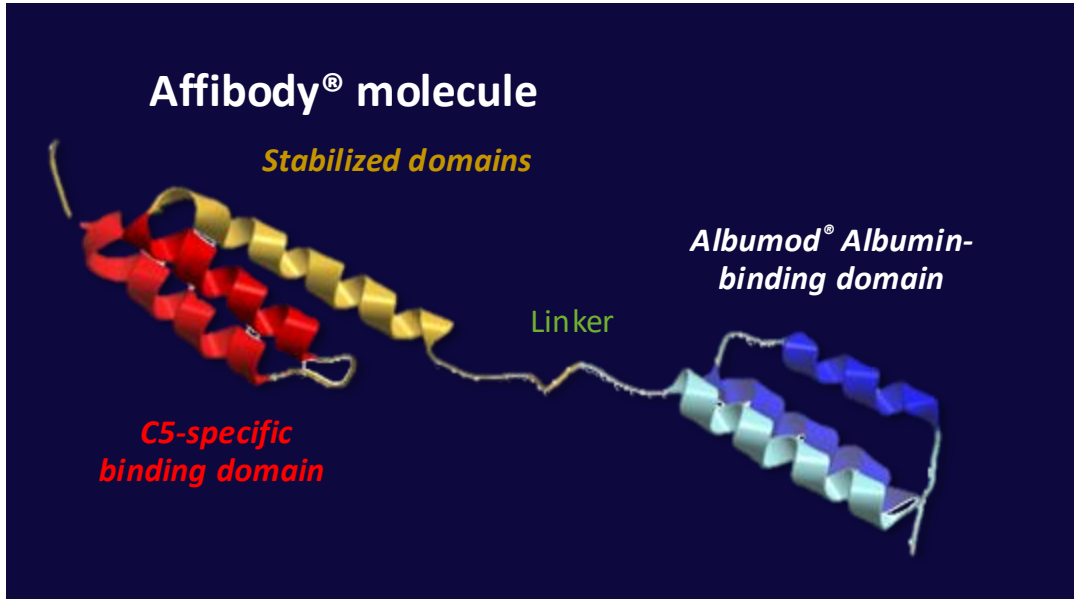
- Guideline adoption will drive rapid and complete adoption of screening and treatment
- Engagement with SMFM, a key guideline body in the US, is underway to begin to position RLYB212 for inclusion in guidelines

RLYB116

C5 Inhibitor for Treatment of Complement-Mediated Diseases

RLYB116 is a novel, differentiated inhibitor of C5 designed to treat patients with complement-mediated diseases

- C5 is a proven therapeutic target with the potential to address a broad range of complement-mediated diseases
- RLYB116 is designed to meet patient preference for a once-weekly, small volume, subcutaneous therapeutic that is self-administered via autoinjector
- Phase 1 SAD/MAD data demonstrated ability to achieve clinically meaningful C5 inhibition
- RLYB116 can address significant unmet patient need in PNH, APS, and gMG, with a peak commercial opportunity of ~$6B in these three indications alone



Rallybio expects to initiate a confirmatory clinical PK/PD study in 2Q 2025

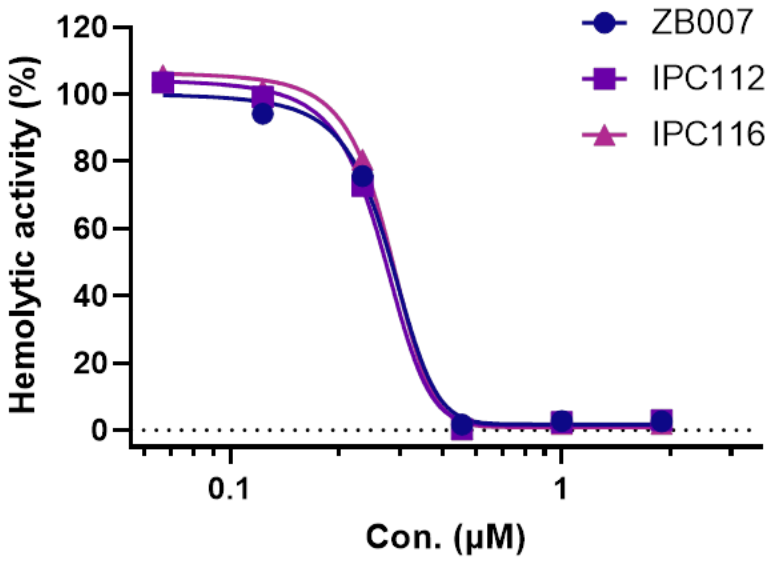
PNH = Paroxysmal Nocturnal Hemoglobinuria; APS = Antiphospholipid Syndrome; gMG = Generalized Myasthenia Gravis

Preclinical data demonstrates that RLYB116 has comparable potency to ravulizumab

RLYB116 demonstrates a similar IC50 relative to ravulizumab in a hemolytic assay measuring classical complement pathway activity

IC50 = half-maximal inhibitory concentration

Hemolytic Assay: RLYB116 vs. Ravulizumab (ZB007)



Concentration is normalized for number of C5 binding sites

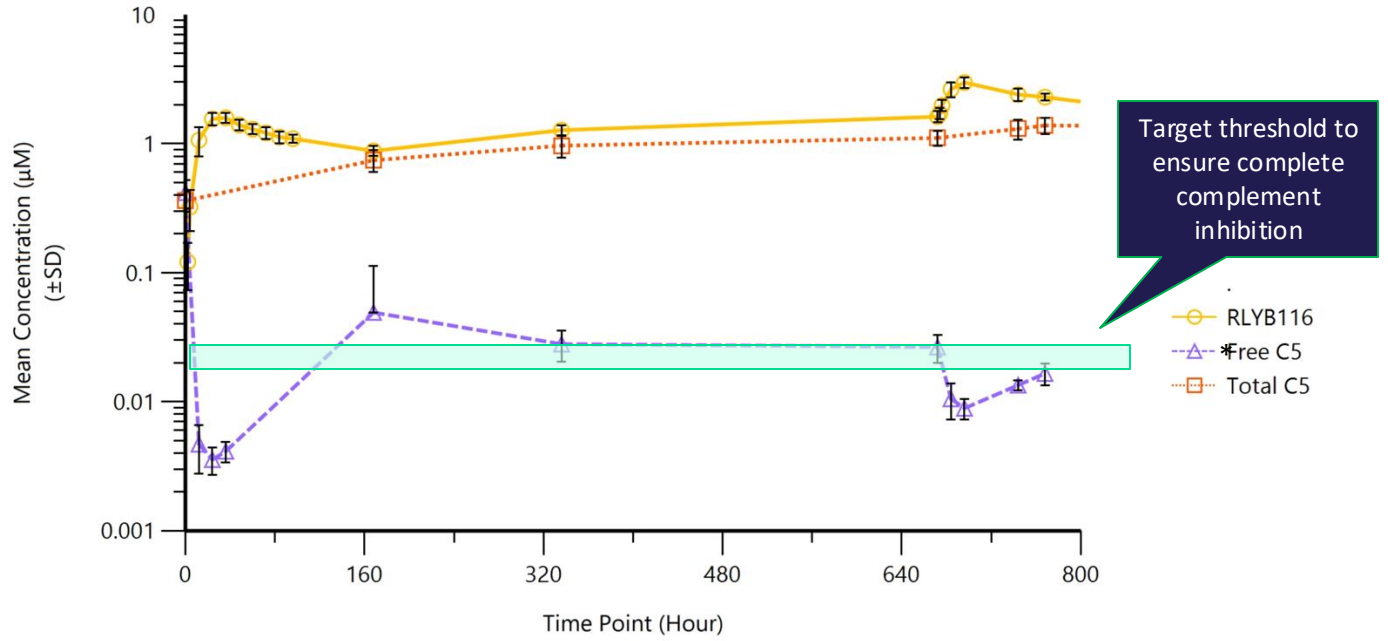
Rallybio data on file; RLYB112 is a precursor molecule to RLYB116

RLYB116 demonstrated significant inhibition of terminal complement in Phase 1 MAD

PHASE 1 MAD STUDY RESULTS

- RLYB116 administered subcutaneously as a 1 ml 100mg Q1W dose resulted in measured free C5 reductions >99% at 24 hours and sustained reductions >93% at Day 29
- Generally well-tolerated with no serious or severe adverse events

Cohort 1: 100mg Q1W PK/PD to Day 29



Further complement biomarker analysis indicates that RLYB116 dosed at 100mg Q1W resulted in sustained inhibition of terminal complement

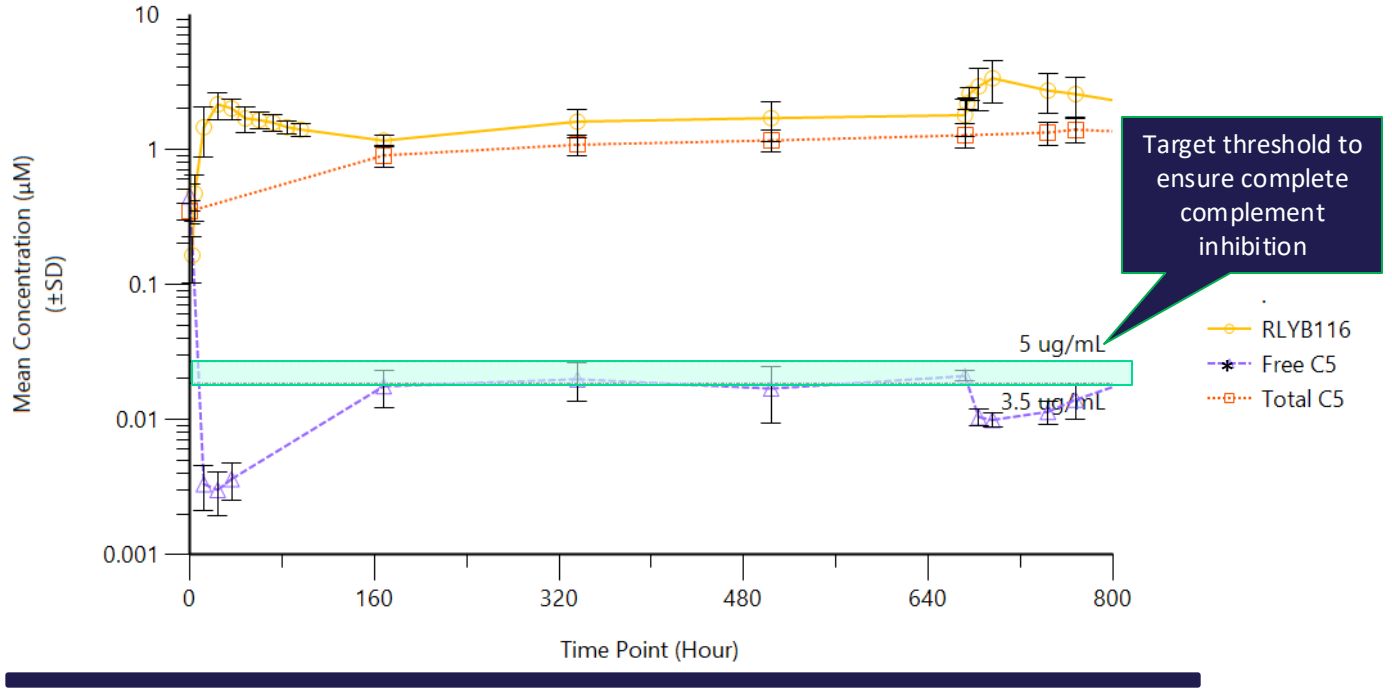
Source: RLYB116 IPC2001

Higher once-weekly doses of RLYB116 further suppressed complement activity

PHASE 1 MAD STUDY RESULTS

- Further suppressed terminal complement inhibition
- Increasing doses of RLYB116 resulted in a higher ratio of RLYB116 to total C5
- While no severe adverse events (AEs) were observed, mild-to-moderate toleration AEs, mostly GI in nature, were seen at and above doses of 150mg
- No apparent impact of ADA formation on pharmacokinetics (PK), pharmacodynamics (PD), or safety

Cohort 3: 150mg →125mg Q1W PK/PD to Day 29



Modifying the manufacturing process has removed residual impurities and is expected to improve RLYB116 tolerability at higher doses

Source: RLYB116 IPC2001

Confirmatory clinical PK/PD study to evaluate higher doses of RLYB116 to drive further terminal complement inhibition

STUDY DESIGN

Single-blind multiple ascending dose study evaluating a 4-week treatment duration, 3:1 assignment to RLYB116 or placebo, 8 participants in each of 2 cohorts, and a 10-week follow-up period

PRIMARY OBJECTIVE

To evaluate the safety and tolerability of RLYB116 in healthy participants following multiple dose administration

SECONDARY OBJECTIVE

To characterize the pharmacodynamics (free C5, total C5, hemolytic activity), immunogenicity, pharmacokinetic properties of RLYB116 following multiple administration

Data in 2H 2025 is expected to show improved tolerability as well as complete and sustained inhibition of hemolysis and free C5 (free C5 levels below RLYB116 assay target threshold)

Patient preference for a QW autoinjector strongly supports a significant commercial opportunity in PNH and gMG

PNH Survey Findings (n=72)

Ranking by patients with PNH[1]	% Ranking Regimen 1st Choice
1 SC Autoinjector (QW) *<10 seconds per injection*	64%
2 SC Self-infusion (2x a wk.) *~1 hour per infusion*	15%
3 IV Infusion (Q8W) *0.5 – 3.3 hrs. per infusion*	13%
4 Oral Pill (2x a day)[2]	8%
5 IV Infusion (Q2W) *~35 minutes per infusion*	0%

"Self-administering auto-injector once a week is like the best possible treatment for any sort of disease."
– patient with PNH

gMG Survey Findings (n=76)

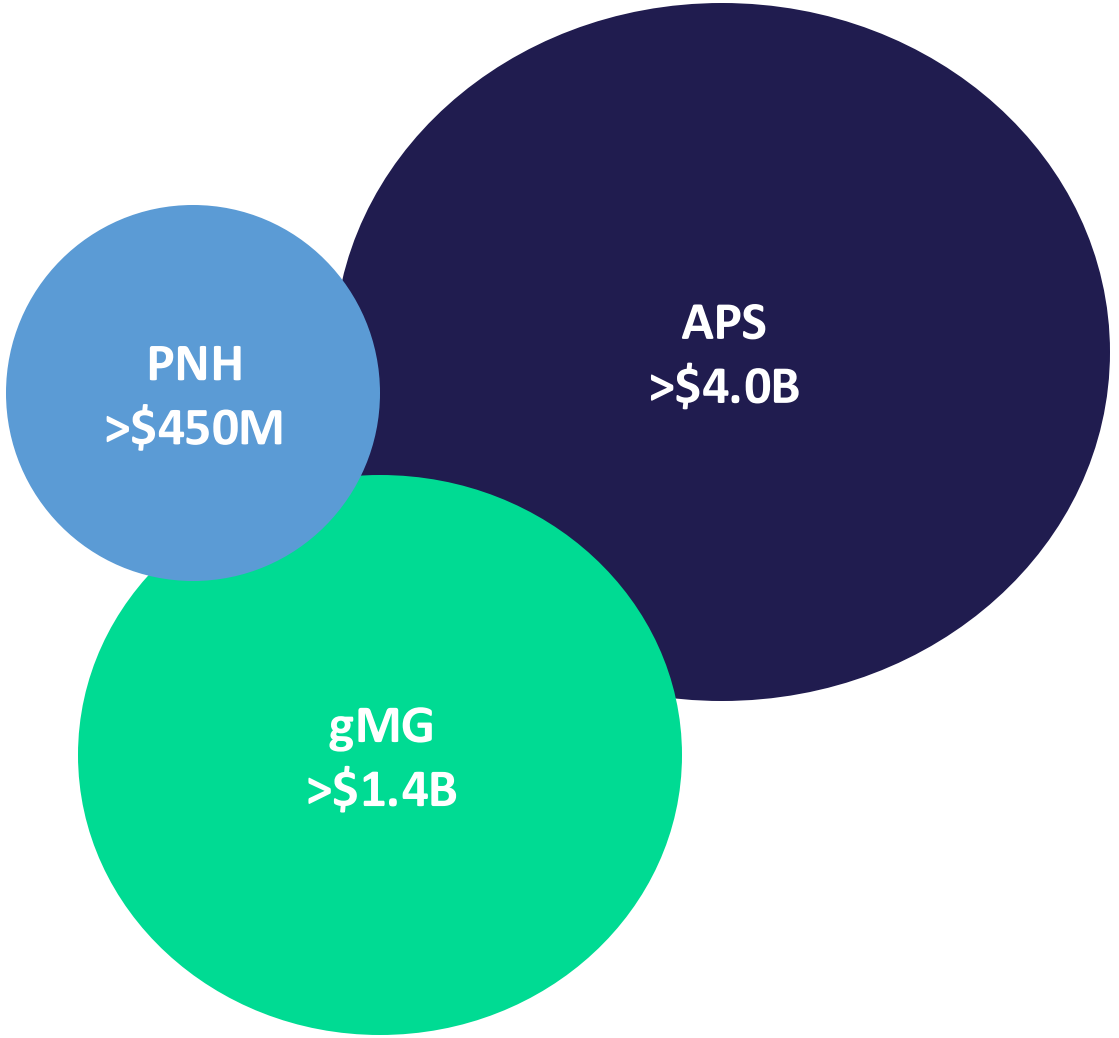
Ranking by patients with gMG[1]	% Ranking Regimen 1st Choice
1 SC Autoinjector (QW) *<10 seconds per injection*	74%
2 IV Infusion (Q8W) *0.5 – 3.3 hrs. per infusion*	20%
3 IV Infusion (Cycles of QW) *~1 hour per infusion*	4%
4 IV Infusion (Q2W) *~35 minutes per infusion*	2%

"IV infusions every 8 weeks sounds scary to me because of how strong the dose would have to be."
– patient with gMG

Source: Quantitative Online Patient Survey; Bluestar Analysis 2023. [1] Assuming equal efficacy and tolerability across all dosing regimens.
[2] Oral pill regimen was displayed as an option in the survey for patients with PNH but not for patients with gMG, in alignment with corresponding late-stage competitive landscapes.

RLYB116 represents a ~$6B market opportunity

- Patient demand for a once-weekly, small volume, self-administered, subcutaneously injected C5 inhibitor positions RLYB116 as a potentially best-in-class treatment option for patients with PNH and gMG
- RLYB116 has blockbuster potential in APS, given a lack of effective treatment options for patients who are refractory to anticoagulants



PNH = Paroxysmal Nocturnal Hemoglobinuria; APS = Antiphospholipid Syndrome; gMG = Generalized Myasthenia Gravis

REV102

ENPP1 Inhibitor for Treatment of Hypophosphatasia

HPP is a rare, potentially life-threatening genetic disease with significant unmet need

Hypophosphatasia (HPP) is caused by mutations in the *ALPL* gene encoding tissue non-specific alkaline phosphatase (TNSALP)

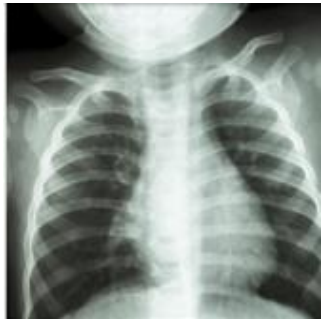
Mutations lead to diminished activity of the TNSALP enzyme and accumulation of inorganic pyrophosphate (PPi), an inhibitor of bone mineralization

HPP can present with a broad spectrum of symptoms and severity, ranging from the severe perinatal/infantile-onset form to the less severe juvenile-onset form

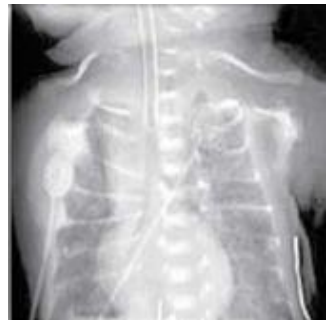
The estimated incidence of severe HPP is between 1/100,000 and 1/300,000, and the estimated prevalence for less severe forms is ~1/2,430

Despite the availability of an approved therapy, significant unmet patient need exists across a broad spectrum of patients

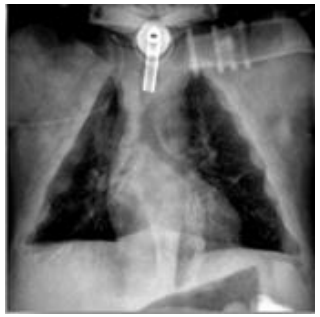
Normal Infant X-ray



PATIENT 1: 12 days old



PATIENT 2: 33 months old



Mornet E. et al., Annals of Human Genetics (2011) 75,439-45

Source: https://rarediseases.org/rare-diseases/hypophosphatasia/

REV102 – A potential first- and best-in-class ENPP1 inhibitor for patients with HPP

REV102 is an orally available small molecule inhibitor of ENPP1 for the treatment of patients with HPP

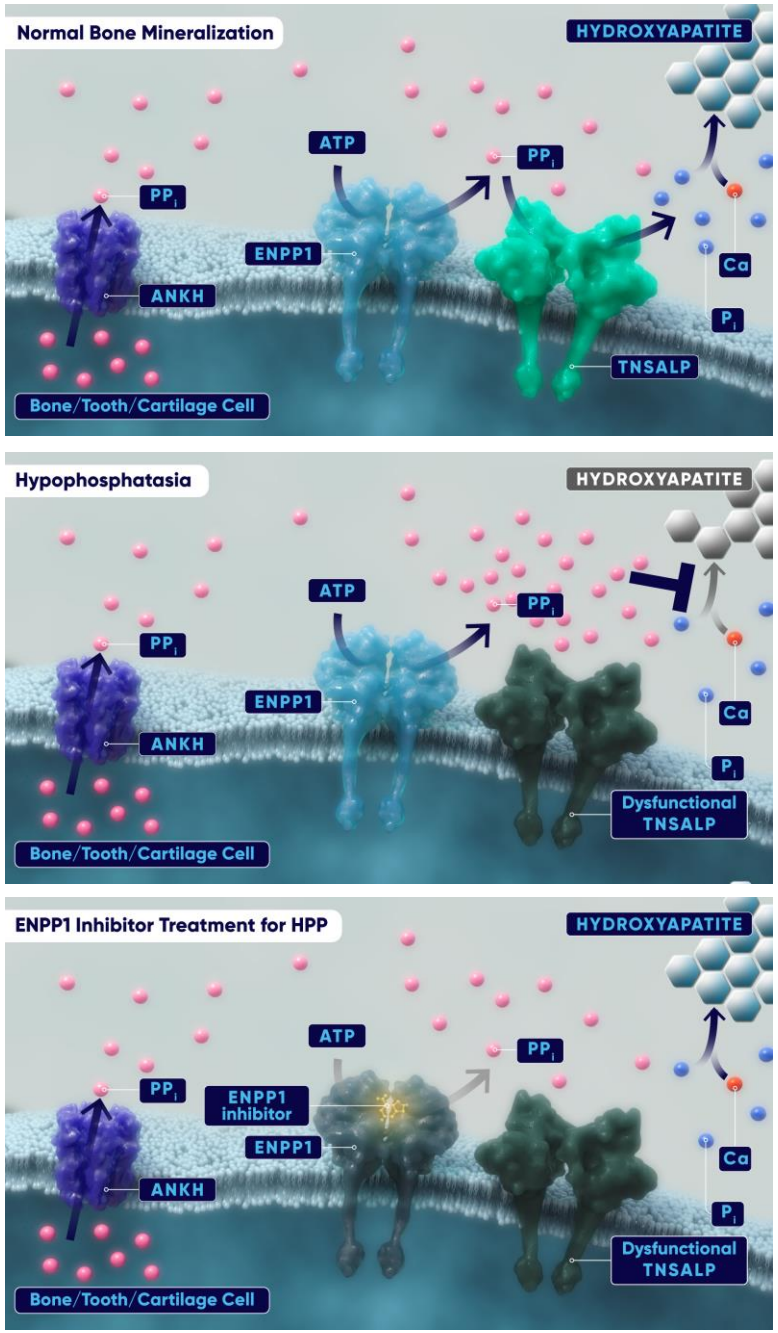
ENPP1 is the major source of extracellular inorganic pyrophosphate (PPi), which regulates bone mineralization

Through controlled inhibition of ENPP1, we aim to reduce PPi and improve mineralization, restoring normal bone formation

Strong scientific rationale and a novel approach with clear differentiation from SOC

Designed to be a safe, tolerable, and accessible option for juvenile- and adult-onset HPP patients as either monotherapy or add-on therapy to ERT

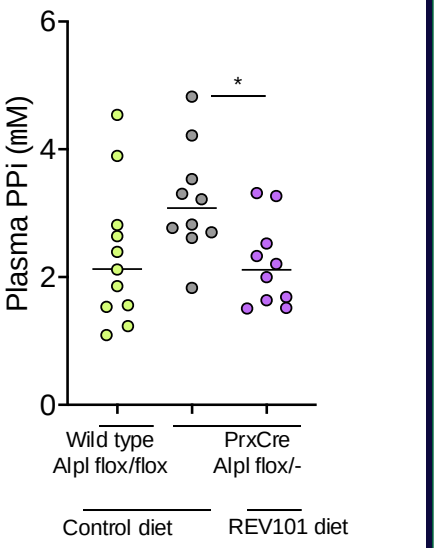
REV102 represents a potential blockbuster commercial opportunity



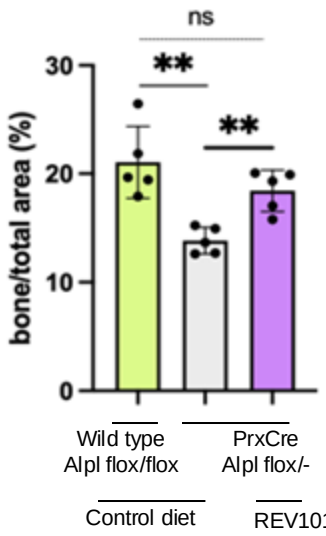
REV102 was discovered through a joint venture with Recursion Pharmaceuticals

REV101, an early lead ENPP1 inhibitor, normalizes PPi and improves bone mineralization in a mouse model of adult HPP

Plasma PPi



Vertebrae Mineralization (Von Kossa Staining)



Efficacy study evaluating REV101 in late-onset HPP model

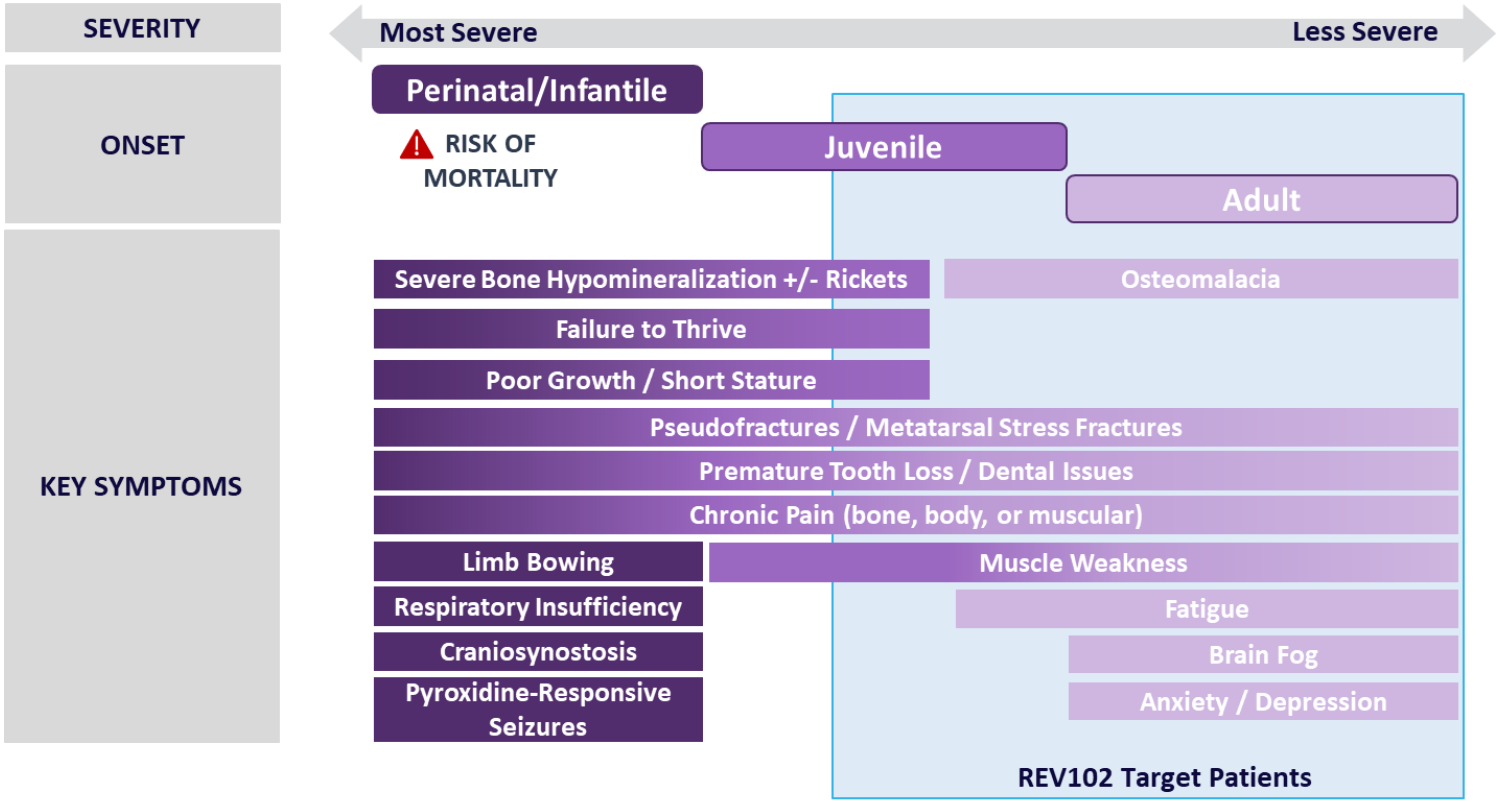
- Animal model: *Prx1-Cre+;Alpl $^{-/fl}$*
- Dosing in powder diet for 100 days (PD25-PD125)
- Well-tolerated
- Significant PPi reduction and improved bone mineralization

REV102 was discovered through a joint venture with Recursion Pharmaceuticals

REV102 has the potential to address significant unmet need for patients with HPP

- Low treatment burden
- Improved tolerability
- No anti-drug or neutralizing antibodies
- Favorable patient access, particularly for adults

REV102 represents a potential blockbuster market opportunity



IND-enabling studies are on-track to start in 2025 to support the initiation of a Phase 1 study in 2026

2025 Milestones

2024 was a year of execution, positioning Rallybio for meaningful value creation in 2025

PILLARS OF OUR SUCCESS

- Lead programs aimed at addressing devastating rare diseases
- Proven innovators in rare disease R&D
- Strong financial position
- Evaluating non-dilutive strategies to further advance pipeline assets

UPCOMING MILESTONES

Program	Milestone	Timing
RLYB212	Phase 2 Trial: Initiate Dosing of Sentinel Participant	2Q 2025
RLYB116	Initiate Confirmatory Clinical PK/PD Study	2Q 2025
RLYB212	Interim FNAIT Natural History Study Data	Mid-2025
RLYB212	Phase 2 Trial: Interim Safety and PK Data in Sentinel Participant	3Q 2025
RLYB116	Clinical PK/PD Study >> Cohort 1 Data	3Q 2025
RLYB212	Phase 2 Trial: Completion of Pregnancy >> Safety and PK Data in Sentinel Participant	4Q 2025
RLYB116	Clinical PK/PD Study >> Cohort 2 Data	4Q 2025
REV102	REV102 Data in Preclinical Model of Later-Onset HPP	2H 2025
REV102	Initiate IND-Enabling Studies	2025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