

Legal Warning

Cautionary note regarding forward-looking statements: This presentation contains forward-looking statements, including, but not limited to, statements regarding our expectations and projections regarding our future operating results and financial performance, anticipated cost or expense reductions, plans with respect to commercializing our product and product candidates, our translational research program, expectations regarding our manufacturing capabilities, the expected timing of release of additional data for our product candidates, plans to initiate additional studies for product candidates and timing and design of these studies, plans regarding ongoing studies for existing programs, our liquidity position as of the most recent fiscal quarter end, expectations regarding the adequacy of clinical data to support marketing applications and approvals of product candidates, our intent to file, and potential timing and success of, marketing applications and other regulatory approvals, expectations regarding timing of receiving potential approval of product candidates, expectations regarding prevalence of patients, future regulatory interactions, and the value to be generated by our pipeline. Such forward-looking statements involve substantial risks and uncertainties that could cause our clinical development programs, future results, performance or achievements to differ significantly from those expressed or implied by the forward-looking statements. Such risks and uncertainties include, among others, our reliance on our third party partner, Kyowa Kirin Co., Ltd., for the supply of Crysvita, the effects from the COVID-19 pandemic on our clinical trial activities, business and operating results, smaller than anticipated market opportunities for our products and product candidates, manufacturing risks, competition from other therapies or products, uncertainties related to insurance coverage and reimbursement status of our newly approved products, our evolving integrated commercial organization, the uncertainties inherent in the clinical drug development process, such as the regulatory approval process, the timing of our regulatory filings the uncertainties inherent in the clinical drug development process, including the potential for substantial delays and risk that earlier study results may not be predictive of future study results, and other matters that could affect sufficiency of existing cash, cash equivalents and short-term investments to fund operations, the availability or commercial potential of our product and product candidates, and our ability to integrate acquired businesses, which are more fully described in our most recent Form 10-Q or Form 10-K under the caption "Risk Factors" and elsewhere in such reports. Any forward-looking statements made by us reflect our current views with respect to future events or to our future financial performance and involve known and unknown risks, uncertainties, and other factors that may cause our actual results, performance, or achievements to be materially different from any future results, performance, or achievements expressed or implied by these forward-looking statements. Accordingly, our actual results may materially differ from our current expectations, estimates, and projections. Given these uncertainties, you should not place undue reliance on these forward-looking statements.

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Positioned for Significant Value Growth Four Medicines Developed and Approved in 10 Years



Strong Revenue Drivers

- Exceptional Crysvita launch continues
- Growth potential with Dojolvi and Mepsevii

Diverse Portfolio

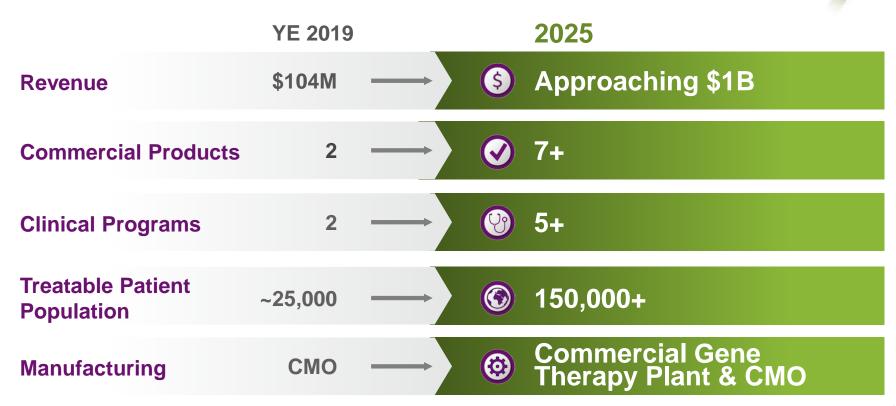
- Broad clinical and preclinical pipeline
- Gene therapy and mRNA platforms

Financial Strength

- \$818M cash and investments at end of 2Q20
- Surpassed \$100M annual revenue in 2019

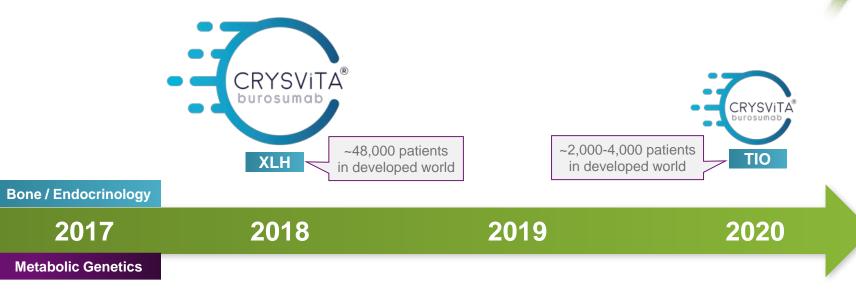


Building an Exceptional Rare Disease Company





Four Approvals in Three Years, Two in June 2020







Ultragenyx in 2025: Potential for ~10x revenue growth in 5 years

~\$1B Revenue **Revenue Growth Driven by Broad Portfolio** Current commercial products provide substantial, growing revenue foundation Pipeline assets further accelerate growth trajectory (GSDIa, OTC, Wilson, Angelman) Mepsevii 2020 2025

Strong Crysvita Performance and Solid Financial Base Drive Future Growth

1H20 Revenue			
Crysvita in Ultragenyx Territories North America Profit Share LatAm Product Sales	\$61.2M 57.0M 4.2M		
Total Company Revenue ¹	\$98.0M		

^{1:} Includes Crysvita in EU territory, Mepsevii, Dojolvi, and beginning in 2Q20 revenue from agreement with Daiichi Sankyo

2020 Crysvita Revenue Guidance²

Crysvita in Ultragenyx Territories
Adjusted YoY Growth³

\$125M to \$140M 58% to 77%

- 2: Crysvita Revenue guidance is for Ultragenyx regions, which excludes non-cash royalty revenue in EU
- 3: Excludes EU royalty revenue in 2019 and non-cash EU royalty revenue in 2020

Strong Capital Position Supported by Financial Discipline and New Partnerships

- Cash balance⁴ as of 2Q20: \$817.5 million
- 20%+ reduction in net cash burn⁵ in 2020
- Cash runway into at least mid-2023⁶



^{4:} Cash, cash equivalents, and available-for-sale investments as of June 30, 2020

^{5:} Net cash used in operations plus capital expenditures

^{6:} Based on current business, excluding potential GeneTx option exercise

Diverse Clinical Pipeline Across Metabolic Indications Additional >15 Preclinical Programs



^{*} Crysvita is approved in the U.S., Canada, EU, and Brazil





^{*} Mepsevii is approved in the U.S., EU, and Brazil

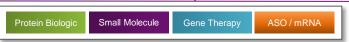
^{*} Doiolvi is approved in the U.S.

^{**} Ultragenyx has an option to acquire GTX-102 from GeneTx

Two Commercial Approvals in June 2020, Additional Clinical Milestones in 2H20

			1H20	2H20 ¹
Crysvita Anti-FGF23 MAb	TIO	U.S. FDA Approval (June 18)	~	
Dojolvi Substrate Replacement	LC-FAOD	U.S. FDA Approval (June 30)	~	
DTX301 AAV8 Gene Therapy	отс	Cohort 3 Data	~	
		End of Phase 2 Meeting Cohort 4 (Prophylactic Steroid) Data		
DTX401 AAV8 Gene Therapy	GSDIa	Cohort 3 (Confirmatory) Data	✓	
		End of Phase 2 Meeting Phase 3 Initiation		Early 2021
GTX-102 ² ASO	Angelman	IND Submission	~	
	Syndrome	Phase 1 Initiation	✓	
UX701 Gene Therapy	Wilson Disease	IND Submission		
Partnership	GT Manufacturing Technology	Daiichi Sankyo Partnership Announced	~	

^{1:} Barring potential delays due to COVID-19



^{2:} Ultragenyx has an option to acquire GeneTx (GTX-102)

Two Products Approved by U.S. FDA in June 2020



- Approved by FDA on June 30, 2020 for the treatment of pediatric and adult patients with molecularly confirmed LC-FAOD
- Potential revenue expected to be modest in 2020 and will build over time
- ~2,000 − 3,500 patients in the U.S.



Tumor-Induced Osteomalacia Indication

- Approved by FDA on June 18, 2020 for patients with TIO where the tumor cannot be surgically removed
- Second indication for Crysvita following approval for XLH in 2018
- ~500 1,000 patients in the U.S.

Launches leverage existing commercial infrastructure with minor incremental expense



Dojolvi: First FDA-Approved Therapy for the Treatment of LC-FAOD



Oral Liquid

- Indication: Treatment of pediatric and adult patients with molecularly confirmed LC-FAOD
- Key symptoms/prognosis:
 - Hypoglycemia, muscle rupture, heart failure
 - Mortality of >50%¹; a cause of SIDS (newborn screened in U.S.)
- Treating physicians: Metabolic geneticists, across 160 centers in the U.S.
- **U.S. prevalence:** ~2,000 − 3,500
- Regulatory Submissions: Canada, Brazil, EU discussions on going





Crysvita for Tumor Induced Osteomalacia (TIO)



- First approved therapy in the U.S. for patients with TIO who cannot undergo surgical removal of tumors
- Second FDA-approved indication for Crysvita, also approved for XLH
- Key symptoms:
 - Muscle weakness, fatigue, bone pain, fractures
- **U.S. prevalence:** ~500 − 1,000

Baseline

Week 144

Bone scan of a 52-year old man with TIO shows decreased uptake over 144 weeks of burosumab treatment

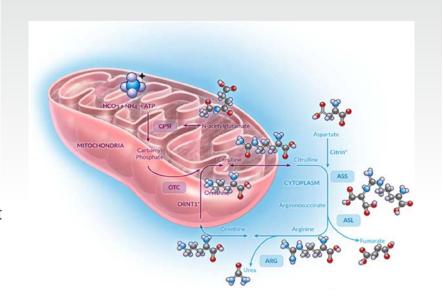




Gene Therapy Programs and Platform

DTX301: AAV8 for OTC Deficiency AAV8 gene therapy for stable expression of OTC

- OTC Deficiency: X-linked urea cycle disorder, genetic defect in ammonia detoxification
- Key symptoms/prognosis: Acute hyperammonemic episodes, adverse cognitive & neurological effects, hospitalizations, death
- Treatment limited: Liver transplantation only curative, ammonia scavengers, protein restricted diet
- WW prevalence: ~10,000, 80% late-onset





DTX301: Six of Nine Patients Responding Now Including all 3 Patients in Cohort 3

Cohort 3: Responses from all three patients

- Patient 7: Complete responder (off NH3 scavenger drugs and diet)
- Patient 8: Responder (discontinued of one of two ammonia scavengers and modified diet)
- Patient 9: Confirmed Responder (confirmed at week 24, not yet tapered medication or diet)

Cohorts 1 and 2: Long-term follow-up of complete responders

- Ureagenesis greater than 100% for 2 years and 1.5 years, respectively
- Restricted protein diet and alternate pathway drugs discontinued for more than one year
- Ammonia maintained within normal parameters throughout the long-term follow-up period
- Excellent clinical condition with no significant adverse events, hospitalizations, or events related to urea cycle disorders



DTX301: Responses Observed in All Dose Cohorts and Three Responders at Cohort 3 Dose

Cohort / Dose (GC/kg)	Patient # (Gender) / Follow-Up Duration	% Change in Ureagenesis (baseline → after treatment, % normal¹)	% Change in Ammonia Levels (baseline → after treatment, umol/L)	Alternate Pathway Medication and Diet Status	Response Status
Cohort 1 (2x10 ¹² dose)	1 (Male) 130 Weeks	+53% (67% → 102%)	Normal levels maintained	Off medications Liberalized diet	Complete responder ³
	2 (Female) 104 Weeks	+6% (52% → 55%)	92% decrease (146 → 11)	No change	No response
	3 (Male) 104 Weeks	+81% (48% → 87%)	Normal levels maintained	No change	No response
Cohort 2 (6x10 ¹² dose)	4 (Male) 78 Weeks	+79% (66%⁴ → 118%)	Normal levels maintained	Off medications Liberalized diet	Complete responder ³
	5 (Female) 78 Weeks	-38% (19% → 12%)	Normal levels maintained	No change	No response
	6 (Female) 78 Weeks	+218% (20% → 64%)	80% decrease (156 → 31 [Week 78])	Tapering medication Liberalizing diet	Responder
Cohort 3 (1x10 ¹³ dose)	7 (Female) 52 Weeks	+79% (24% → 44%)	Normal levels maintained	Off medications Liberalized diet	Complete responder ³
	8 (Female) 36 Weeks	?%² (66% → 25%)	90% decrease (184 → 19 [Week 24])	Increased protein intake and discontinuation of one of two ammonia scavengers	Responder (consistent ammonia reduction; clinical benefit noted)
	9 (Male) 24 Weeks	+188% (25%⁴ → 73%)	Normal levels maintained	No change yet	Responder (confirmed) (still on steroids)

¹ Normal rate of ureagenesis = 300 umol*kg/hr. 2 Aberrant high baseline ureagenesis values inconsistent with patient clinical severity making ureagenesis not interpretable.

³ Complete responder = biochemical effect sustained after discontinuation of alternate pathway medications and diet liberalization. ⁴ Baseline ureagenesis based on screening value.

DTX301: Safety Profile

- No infusion-related or serious adverse events (AEs) have been reported to date
- All reported AEs were grade 1-2
- Six patients (two in Cohort 1, one in Cohort 2, and three in Cohort 3)
 experienced mild, asymptomatic ALT increases consistent with those seen in other AAV gene transfer clinical trials
 - ALT increases were managed and resolved with a protocol-specified, reactive, tapering regimen of oral corticosteroids administered in the outpatient setting



DTX301: Next Steps

- Enrolling three additional patients in prophylactic steroid cohort at 1e13 dose
 - Dosing in this cohort is currently on hold due to COVID-19
- Planning for Phase 3 study and continuing FDA discussions
 - Ammonia expected to be a primary endpoint based on FDA feedback

Prophylactic steroid cohort (1e13 dose) update around the end of 2020¹

1: Barring potential delays due to COVID 19



DTX401: AAV8 for Glycogen Storage Disease Type Ia

- GSDIa: Defect in liver's ability to release glucose to the circulation due to G6Pase deficiency
- Key symptoms/prognosis
 - Severe life-threatening hypoglycemia
 - Significant morbidity and mortality
 - Long-term liver and renal disease
 - Impaired growth and delayed puberty
 - Severe long-term complications (70-80% patients)
- Treatment: Diet and cornstarch only
 - Keeps patients alive but not normal
 - Only curative approach is liver transplantation

• WW prevalence: 6,000

Patient 3 Cornstarch when Travelling



"I don't think people can understand how fast the blood sugars fall. And the stress that these families have, knowing that if you oversleep or you miss your alarm clock, your child can die or have a seizure."

-David Weinstein, Director-Glycogen Storage Disease Program, Connecticut Children's Medical Center



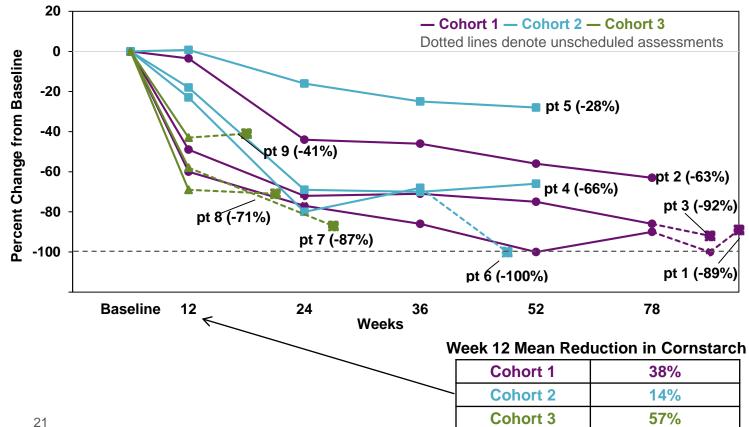
DTX401: Treatment Protocol Changes

Lessons learned from earlier cohorts prompted the following changes to the protocol prior to dosing of patients in Cohort 3 (6x10¹² GC/kg):

- Reduced cornstarch dose at the start of the controlled fasting challenge (decreased from 35 grams to 5 grams)
- Use of continuous glucose monitoring (CGM)
- Implementation of an 'optimized' reactive steroid regimen



Substantial Reduction in Cornstarch Requirements for All Patients More Rapid Reductions in Cohort 3 by 12 Weeks





DTX401: Summary of Data

Dose Cohort 3

- More rapid reductions in cornstarch requirements
- CGM confirms early transgene expression and allows for timely and more accurate cornstarch reduction
- 'Optimized' reactive steroid regimen more effectively mitigated ALT elevations

All Cohorts

- All patients (n=9) have shown an improved response in time to hypoglycemia and decreased cornstarch requirements
- Consistent and acceptable safety profile across all patients



DTX401: Next Steps

- Collecting longer-term data from confirmatory Cohort 3
- Planning for Phase 3 study and continuing FDA discussions
 - Cornstarch requirements, time to hypoglycemia during fasting challenge, number of hypoglycemic events through CGM data, all important in evaluating glucose control

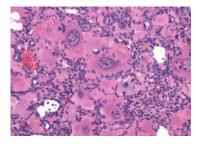
Longer-term Cohort 3 data expected in second half of 2020¹

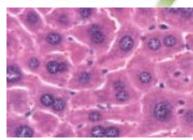
1: Barring potential delays due to COVID 19



UX701 for Wilson Disease Second clinical program to utilize HeLa manufacturing system

- Wilson Disease: Causes copper to accumulate in liver, brain and other vital organs
- Key symptoms/prognosis: Liver failure, neurological deterioration, death
- Standard of Care: Chelation therapy and dietary restriction
 - Many patients still experience liver and neurological deterioration
- WW prevalence: >50,000
- IND planned by end of 2020

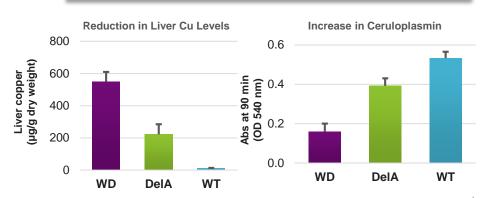




Untreated KO Mice

1x10¹¹ GC Treated Mice

Reduced liver copper accumulation leading to improved liver pathology in preclinical models





Gene Therapy Manufacturing Platforms: Optimized for Scalability and Efficiency

HeLa PCL enables reproducible and consistent commercial-scale manufacturing at lower COGS





HemA in the clinic and planned for Wilson



GSDIa and OTC will transition to in-house manufacturing facility in early commercial stages

HEK293 Suspension/Transfection





OTC and GSDIa in the clinic; GSDIa will transition to HeLa



Gene Therapy Manufacturing Platform: Strategic Partnership with Daiichi Sankyo





- \$125M cash and \$75M via equity investment
- Additional \$25M in milestones upon completion of tech transfer
- Option to co-develop and co-commercialize Daiichi Sankyo's rare disease programs in this partnership
- Retained the right to use manufacturing technology for current and future indications, including additional partnering



- Non-exclusive license to gene therapy manufacturing patents and know-how
 - Covers both HeLa PCL and HEK293 transient transfection platforms
- Excluded from developing for OTC, GSDIa, Wilson, and certain other indications
- Ultragenyx to provide strategic consultation on gene therapy and rare diseases



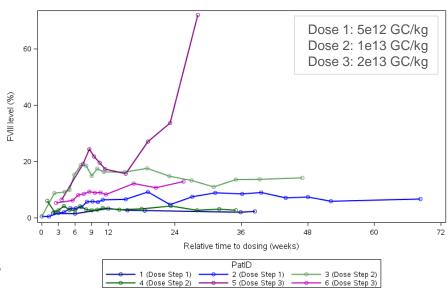
Positive, Clinically Effective HemA Data from the HeLa Platform Out-licensed program to Bayer validates Ultragenyx HeLa system



- Positive data from first three dose cohorts
- Data from six patients, two at each dose
- Clinically meaningful Factor VIII levels in one patient in Cohort 1 and all patients at higher doses
 - No spontaneous bleeds in Cohort 3 after reaching full expression and discontinuing prophylaxis
- Favorable safety results
 - ALT/AST elevations observed in one patient in Cohort 2 and both in Cohort 3
 - Managed with tapering course of corticosteroids
- Dose escalation ongoing

Factor VIII Expression Levels

(Chromogenic assay; % normal)







GTX-102 Program for Angelman Syndrome

Partnership to develop GeneTx's antisense oligonucleotide (ASO)

GTX-102 for Angelman Syndrome ASO to activate paternal expression of missing enzyme

- Angelman Syndrome: Neurogenetic disorder caused by loss of expression of UBE3A gene
- Key symptoms/prognosis: Lack of speech, cognitive impairment, motor dysfunction, seizures, sleep disorder
 - Not neurodegenerative, potential for reversal of symptoms
- No approved treatments
- WW prevalence: ~60,000
- Partnership: Ultragenyx has option to acquire GeneTx after Phase 1/2 completion
- Phase 1/2 Study: First in human, intrathecal intrapatient dose escalating, open-label study
 - Initial data anticipated first half of 2021







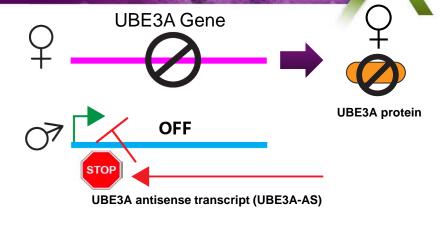




GTX-102 for Angelman ASO designed to activate the paternal gene

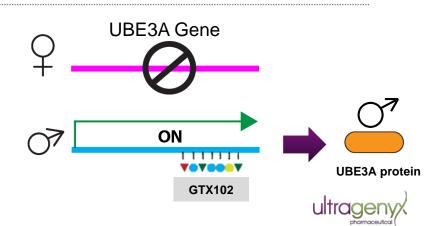
Before Tx with GTX-102

- Deletion or mutation preventing maternal gene expression
- Loss of expression of UBE3A gene
- Father's copy silent (not expressed)



Post Tx with GTX-102

ASO activates the normally silenced paternal UBE3A gene to make UBE3A protein from the father's copy of the gene

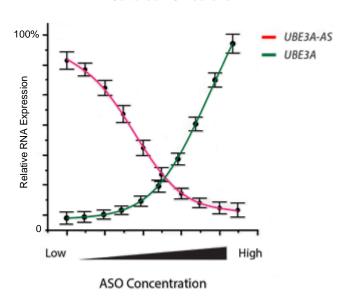


Preclinical Proof of Concept: Specific ASO Discovered with Potent Impact on Releasing Paternal Gene Expression

Human Neuronal Stem Cells

UBE3A-AS knockdown by nearly 100% in human AS neurons after treatment with GTX-102 in vitro. Direct correlation with UBE3A RNA supporting robust reactivation of the paternal UBE3A gene.

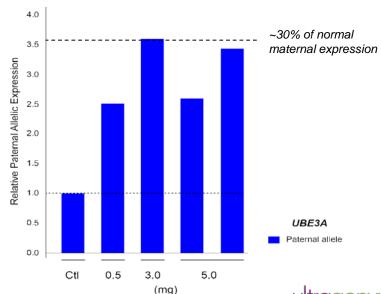
Relative Expression of RNA after GTX-102 Exposure in Cultured AS Neurons



Non-Human Primates

Single-dose of GTX-102 in wild type monkeys demonstrates substantially increased paternal UBE3A gene expression in key brain region. Additional NHP data show broad brain distribution of antisense knockdown.

Relative Increase of Paternal UBE3A Expression in Motor Cortex after Single Dose of GTX-102



Building a Diversified Commercial Rare Disease Company



2010 - 2019

- \$100M revenue in 2019
- 2 approved products
- 9 clinical programs
- 34 clinical studies
- 14+ preclinical programs



2020



DOTOL

TRIHEPTAN Oral Liquid

Crysvita TIO and Dojolvi approved in June

Pipeline Development

Mepsevii

injection

(vestronidase alfa-vibk)

- OTC and GSDIa data
- Angelman and Wilson Disease INDs



2021 - 2025+

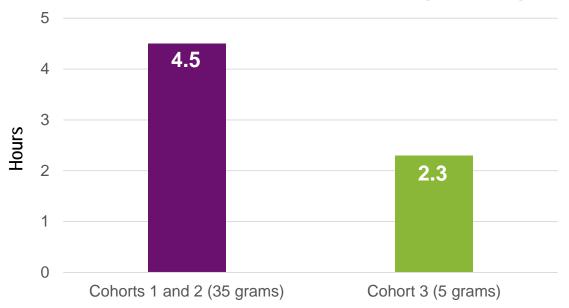
- 10x revenue growth by 2025, approaching \$1B revenue
- 7+ approved products
- 6+ programs with pivotal data
- GMP gene therapy manufacturing plant
- Robust pipeline





DTX401: Cohort 3 Baseline Time to Hypoglycemia 48% Less Than Baseline of Prior Cohorts

Mean duration of baseline controlled fasting challenge, hours



 Reduced cornstarch dose at the start of the controlled fasting challenge in Cohort 3 avoided hyperinsulinemic responses observed in Cohorts 1 and 2



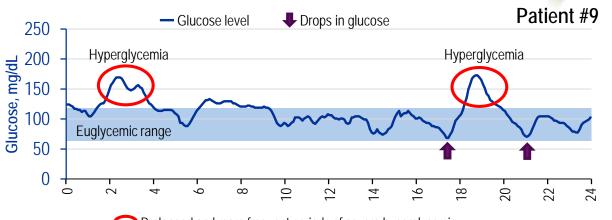
DTX401: Early Transgene Expression Revealed by CGM

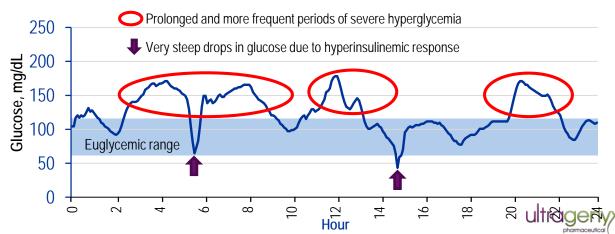
Day -3 Prior to DTX401 Dose

 Periods of hyperglycemia followed by drops in glucose

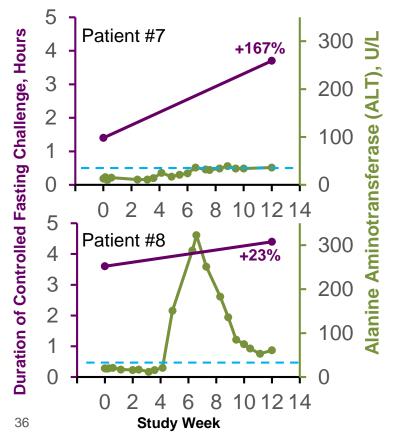
Day +4 After DTX401 Dose

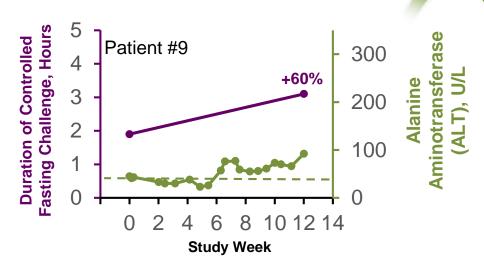
 As transgene expression begins post-DTX401 dose, prolonged periods of severe hyperglycemia are followed by hyperinsulinemic responses resulting in severe drops in glucose





DTX401: All Patients in Cohort 3 Experienced Increased Time To Hypoglycemia





- All three patients received an optimized reactive steroid regimen at approximately week 4
- Patient 8 had an asymptomatic and transient rise in ALT

Female ALT Upper Limit of Normal, 33 U/L

– – Male ALT Upper Limit of Normal, 40 U/L



Key Licenses & Intellectual Property

Product	License	US Intellectual Property Rights/Royalties
CRYSVITA® (XLH, TIO)	KKC	 Anti-FGF23 antibodies and use for treatment of XLH and TIO (2022-2032)¹ Q2W dosing for treatment of FGF23-associated hypophosphatemic disorders (2035) See discussion of KKC license and collaboration in annual report for royalty summary
MEPSEVII® (MPS 7)	St. Louis University (Know-How)	Low single-digit royalty until expiration of orphan drug exclusivity
	N/A (IP Owned by Ultragenyx)	 Recombinant human GUS (rhGUS) and use for treatment of MPS7 (2035)
Dojolvi™ (LC-FAOD)	Baylor Research Institute (BRI)	 Compositions comprising triheptanoin (2020-2029)¹ Use of triheptanoin for treatment of LC-FAOD (2020) Mid single-digit royalty
DTX301 (OTC Deficiency)	Sub-License from REGENXBIO of UPENN IP	 AAV8 Capsid (2022-2024) Recombinant vectors comprising codon-optimized OTC gene (2035) Low to mid single-digit royalty
DTX401 (GSDIa)	Sub-License from REGENXBIO of UPENN IP	 AAV8 Capsid (2022-2024) Low to mid single-digit royalty
	NIH (Non-Exclusive)	 Recombinant vectors comprising codon-optimized G6Pase gene (2034) Low single-digit royalty
DTX201 (Hemophilia A)	Sub-License from REGENXBIO of UPENN IP	 Hu37 Capsid (2024) Recombinant vectors comprising codon-optimized Factor VIII gene (Pending; 2037) Low to mid single-digit royalty

Revenue to Ultragenyx Maintained After Transition from Profit Share to Royalty in U.S.





Year 5
Revenue sustained through profit share transition

Year 10+

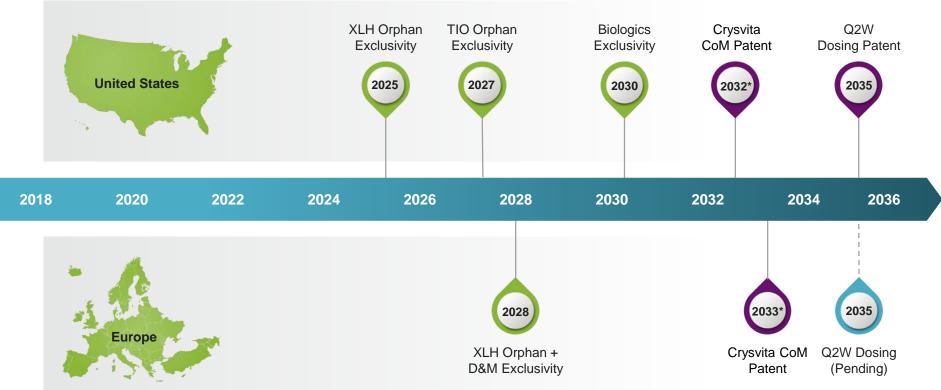
	U.S. AND CANADA	LATIN AMERICA	EUROPE
Commercialization	 KKC books sales 50/50 profit share for 5 years then tiered revenue share Shared commercial activities over time 	Ultragenyx commercializes and books sales	KKC commercializes and books sales
Royalties	After 5 years, tiered revenue share in mid to high 20% range to Ultragenyx after profit share period	Low single-digit royalty to KKC	Up to 10% non-cash revenue ¹ to Ultragenyx after Royalty Pharma transaction
Commercial supply	KKC supplies: 35% of net sales through 2022, 30% thereafter	KKC supplies: 35% of net sales through 2022, 30% thereafter	NA

^{1:} Beginning January 1, 2020, the company no longer receives cash payments from the EU territory royalty until the respective threshold amount is met pursuant to the Royalty Pharma transaction. The company remains, however, contractually entitled to the royalties from KKC and will continue recognizing the Crysvita EU territory royalties in total revenues as "non-cash revenue" since the associated cash proceeds will be remitted to Royalty Pharma.



Crysvita® Exclusivity Summary







Mepsevii® Exclusivity Summary



injection, for intravenous use



Dojolvi™ Exclusivity Summary



