Our mission at Rani is to end painful injections for the millions of patients suffering from chronic diseases.

Rani Therapeutics Corporate Presentation

September 2024

Forward-Looking Statements

This presentation and the accompanying oral statements contain forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995 as contained in Section 27A of the Securities Act of 1933 and Section 21E of the Securities Exchange Act. Forward-looking statements are based on information available at the time those statements are made or on management's good faith beliefs and assumptions as of that time with respect to future events, and are subject to risks and uncertainties that could cause actual performance or results to differ materially from those expressed in, or suggested by, the forward-looking statements. In light of these risks and uncertainties, the forward-looking events and circumstances discussed in this presentation and the accompanying oral statements may not occur and actual results could differ materially from those anticipated or implied in the forward-looking statements. These risks and uncertainties include Rani Therapeutics Holdings, Inc.'s ("Rani," "we," "us," or "our") future financial performance, including our expectations regarding our revenues, cost of revenues, operating expenses, and our ability to achieve and maintain future profitability, those risks inherent in the preclinical and clinical development process and the regulatory approval process, the risks and uncertainties in commercialization and gaining market acceptance, the commercial potential of oral biologics, our ability to complete development of the RaniPill® HC or any redesign and conduct additional preclinical and clinical studies of the RaniPill HC or any future design of the RaniPill to accommodate higher target payloads, the risks associated with protecting and defending our patents or other proprietary rights, the risk that our proprietary rights may be insufficient to protect our product candidates, the risk that we will be unable to obtain necessary capital when needed on acceptable terms or at all, our ability to enter into strategic partnerships and to achieve the potential benefits of such partnerships, competition from other products or procedures, our reliance on third-parties to conduct our clinical and non-clinical trials, our reliance on single-source third-party suppliers to manufacture clinical, non-clinical and any future commercial supplies of our product candidates, our ability to continue to scale and optimize our manufacturing processes by expanding our use of automation, our expectations regarding the period during which we qualify as an emerging growth company under the JOBS Act, our expectations regarding customer demand for our product candidates, increased regulatory requirements and other factors that are set forth in our filings with the Securities and Exchange Commission ("SEC"), including under the caption "Risk Factors" in our Annual Report on Form 10-K and our Quarterly Reports on Form 10-Q, and our other public filings made with the SEC and available at www.sec.gov.

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Kate McKinley
Chief Business Officer

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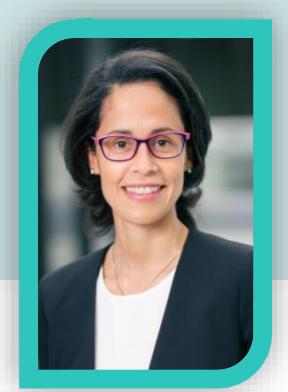
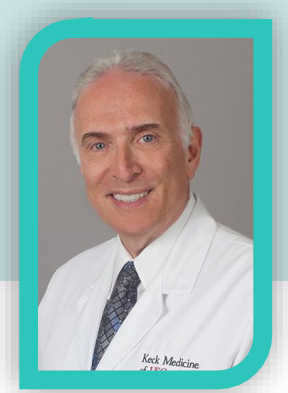
Vice President, Clinical Development



Betsy Gutierrez
Vice President, Quality



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Rani Therapeutics is a public, clinical-stage biotech company developing a platform technology for the oral delivery of biologic drugs.

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Our mission at Rani is to end painful injections for the millions of patients suffering from chronic diseases

Rani Therapeutics
NASDAQ: RANI

Clinical-stage biotech focused on Oral Delivery of **Biologic** Drugs with Bioavailability Comparable to Parenteral Products

TECHNOLOGY:

RaniPill

- 200 µL Capacity (20-40mgs*)
- Liquid Drug Formulation

PIPELINE:

Programs across a variety of high value indications, including obesity, psoriasis, and osteoporosis

DISCOVERY:

Broad applicability across Nanobodies, Hemophilia, Bispecific MABs, Fertility, Genetic Medicine

IP:

472 Granted Patents and Pending Applications, 262 Granted Patents**

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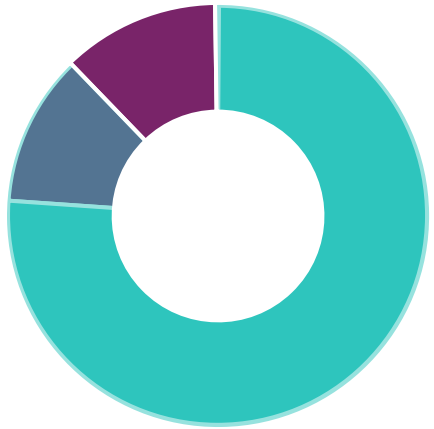
*Dependent on drug concentration
** As of May 4, 2024

Substantial Unmet Need for Oral Administration of Biologics

Patients prefer daily pill over current injection regimen



76% of patients with injection regimen of **every 6 months** [1]

88% of patients with injection regimen of **every 2 weeks** [2]

Inconvenience impacts treatment adherence

38% of patients who self administer injections said they **frequently skip doses** [3]

Therapies could start earlier with an oral alternative

81% of endocrinologists would initiate basal insulin therapy earlier with an oral option [3]

Rani is Developing an Oral Delivery Platform to Address this Unmet Need

Rani's Approach

- Designed to deliver any biologic
- Painless, transenteric injection
- Highly efficient route of delivery
- Bioavailability comparable to a subcutaneous injection

Mucosal cell barrier prevents drug absorption

Chemical Approach

- Only applicable to small peptides
- Highly inefficient delivery
- Poor bioavailability, typically <1%
- High variability

RaniPill Development Progress and Safety

Preclinical

15 Molecules Assessed

antibodies, peptides, and large proteins
delivered with high bioavailability

>7000 Capsules

tested *in vitro & in vivo*

60-Day GLP Study

completed with no clinical findings

Clinical

3 Phase I Studies*

completed

233 RaniPill Capsules

administered to 146 humans

7-Day Repeat Dose Study

completed

* As of 3/1/24; clinical studies with solid-dosage form

Well-Tolerated with No Serious Adverse Events Observed in Clinical Studies Completed to Date

Rani Platform has Demonstrated Tolerability and Favorable Safety Profile

60-Day Repeat Administration

in Awake Canines

- ✓ The RaniPill was well-tolerated
- ✓ No treatment-related adverse events
- ✓ All animals remained clinically healthy throughout the study

3 Completed Phase 1 studies:

- ✓ RaniPill was well-tolerated
- ✓ No serious adverse events

Adverse Events*	All RaniPill-related AEs from Subjects Completing RaniPill Arms of Phase 1 studies (N=131)
Transient Abdominal Pain	2 (2%)
Burping	1 (1%)
Burning Sensation in Stomach	1 (1%)

* Abdominal pain classified as mild. Burping lasted 2 days and was classified as moderate. Burning sensation in stomach perceived 1 hour after capsule administration and lasted for 30 minutes. However, drug levels were not seen for 10 hours after capsule administration indicating that the capsule had not deployed at time of the reported pain which suggests that this AE is not related to the drug or RaniPill deployment. However, presence of the undeployed capsule in the stomach could have causality to the reported pain and thus was included.

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Development Pipeline

	INDICATION(S)	PRE-CLINICAL	PHASE 1	PHASE 2	PHASE 3	NEXT EXPECTED KEY MILESTONE*
CORE PROGRAMS						
RT-114	Obesity	GLP-1/GLP-2**				Initiate Phase 1 in 2025
RT-111	Psoriasis	Ustekinumab***				Advance Clinical Development at Higher Doses
RT-102	Osteoporosis	PTH-OP				Initiate Phase 2
RT-105	Psoriatic Arthritis	Adalimumab***				Initiate Phase 1
RT-110	Hypo-parathyroidism	PTH-Hypo				Initiate Phase 1

* Clinical timelines are subject to potential regulatory agency review delays
** RT-114 is the subject of a worldwide collaboration with ProGen Co, Ltd.
*** Ustekinumab and adalimumab biosimilars are supplied by Celltrion, Inc. Celltrion grants Rani a license and drug supply for each drug.

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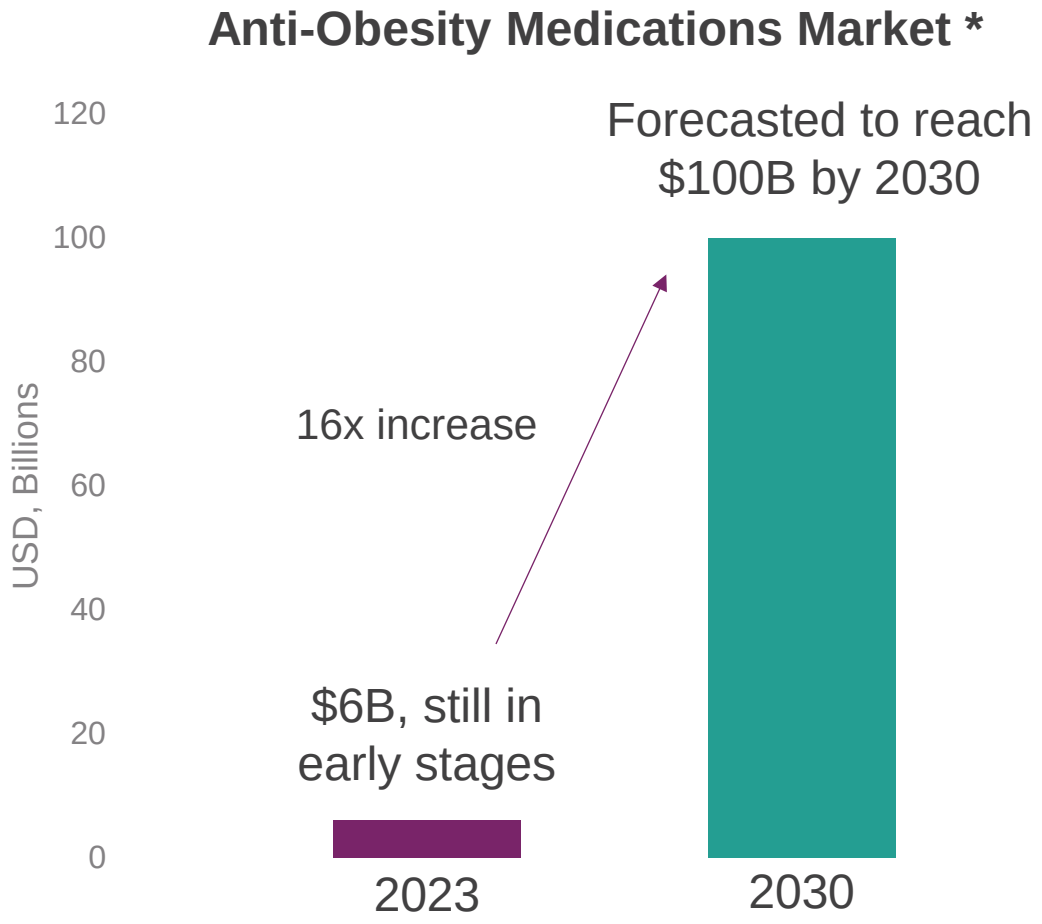
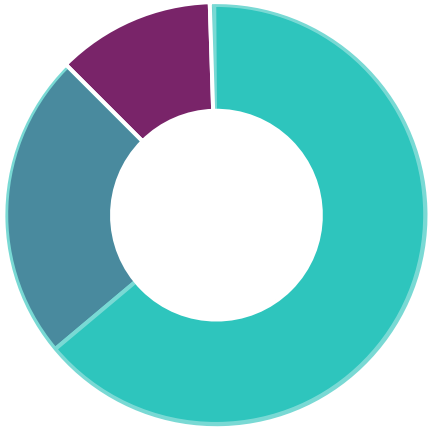
RT-114: Oral GLP-1/GLP2

Obesity is a Fast-Growing Market; Potential for Oral Options to Play an Important Role



Across various therapeutic areas, patients prefer daily pill over current injection regimen **



64%-88% of patients with injection regimens of daily to every 6 months

** Why the anti-obesity drug market could grow to $100 billion by 2030*, Goldman Sachs published 30 Oct 2023

** Data aggregated from two third-party surveys commissioned by Rani of U.S. patients (in 2017 for Humira and basal insulin and 2021 for other products). Patients surveyed (n=1,689) were aged 18 years or older and presently used one of Prolia, Humira, basal insulin, Stelara, Cosentyx, Entyvio, Simponi, or Evenity as an injectable biologic to treat a condition.

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RaniPill Delivery Technology May Solve for the Shortcomings of Current Orals in Development

Low Bioavailability	High API Cost & Supply Chain Issues	Restrictive Administration Requirements	Inconvenient Dosing Regimen	Tolerability Risk
Oral chemistry-based formulations demonstrate ***bioavailability as low as <1%*** [4]	*Extremely high doses to reach therapeutic effectiveness* ▪ Novo's Oral semaglutide **350mg** per week vs Wegovy **2.4 mg** injectable dose (145x higher dose) [5] ▪ Novo's Oral amycretin and Viking's oral GLP-1/GIP may require **280-350 mg of API/week** to compete [6]	*Restrictive pre-treatment requirements can impact efficacy and patient adherence* ▪ Rybelsus (oral semaglutide) patients instructed to take drug **in fasted state** as it may increase absorption [7] ▪ Rybelsus clinical success rate 67% [8]	*BID or daily dosing often required to reach therapeutic serum concentrations*	*Twice-daily Danuglipron (small molecule)* ***discontinued*** *due to* ***tolerability issues*** *and* ***discontinuation rates*** [9]

RaniPill **Potential Advantages**

✓ Significantly better bioavailability than other oral biologic technologies	✓ Significantly less API amount and cost needed than current orals in development	✓ No evidence of food effect so may avoid restrictive administration requirements	✓ Can dose infrequently compared to other orals (weekly or monthly)	✓ Can dose more frequently than SC to limit tolerability issues

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Rani's Strategic Vision in the 50 / 50 Partnership with ProGen

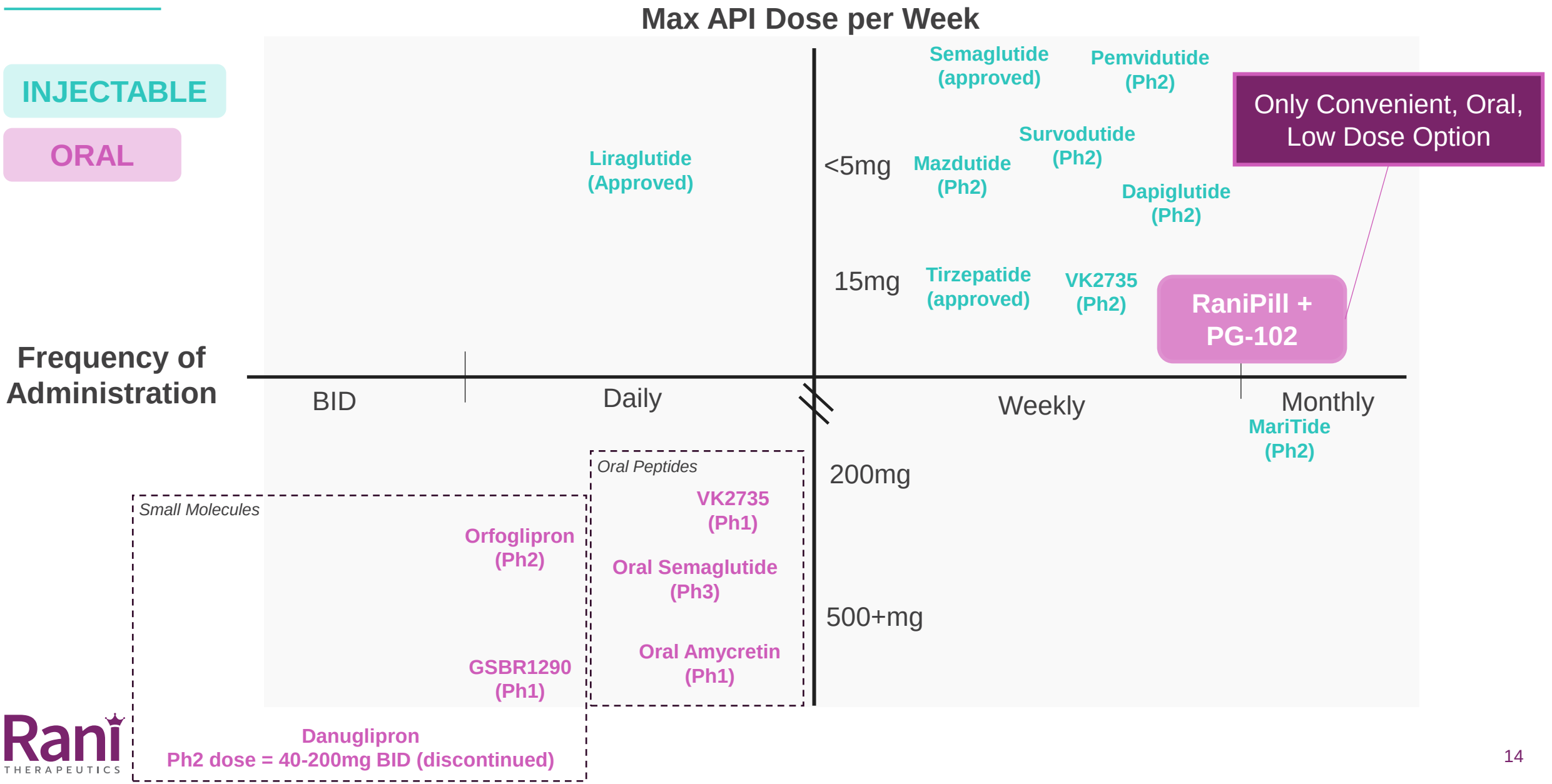
Rani THERAPEUTICS | RaniPill + ProGen | PG-102 *GLP-1/GLP-2*

Drug-agnostic oral delivery platform for biologics	Long-acting Fc fusion platform for multivalent agonists
Differentiated oral delivery mechanism, with bioavailability comparable to SubQ injection	Differentiated anti-obesity mechanism, with preclinical data showing improved body composition compared with Tirzepatide
Clinically demonstrated equivalent PD to SubQ delivery of GLP-1 through Rani route of administration – at the same dose	Clinically demonstrated favorable safety and differential PK profiles
Versatile delivery platform with broad applicability to address significant opportunities across large market indications in immunology, endocrinology, and beyond	Versatile metabolic benefits with broad applicability to address significant opportunities across broad market indications including T2D, MAFLD/MASH and CVD

Deal Rationale:

- ✓ Targeting optimized delivery + optimized therapeutic
- ✓ Differentiated oral, low dose, convenient once-weekly GLP-1 / GLP-2 agonist, with potential to preserve lean mass & improve nutrient absorption
- ✓ Validating preclinical and clinical data

Clear Opportunity in Obesity Landscape for RT-114[10]



RT-111: Oral Ustekinumab Biosimilar

Advantages of RaniPill Technology in Psoriasis

Other Oral Options

- Less Efficacious than Biologics
  - Otezla, JAK Inhibitors
- Additional Safety Concerns
  - JAK Inhibitors
- Inconvenient Dosing
  - BID Dosing
    - Otezla, JNJ-2113 (testing daily and BID)

Injectables

- Inconvenient & Painful to Administer
- Dosing Regimen not Maximizing Clinical Efficacy
- Higher AE Profile
- Significant Penalty for Lapses in Patient Adherence

RaniPill Targets

- Efficacy Comparable to Injectable Biologics
- More Convenient than Other Oral Options
- Potentially Safer Product
- More Forgiving of Lapses in Patient Adherence

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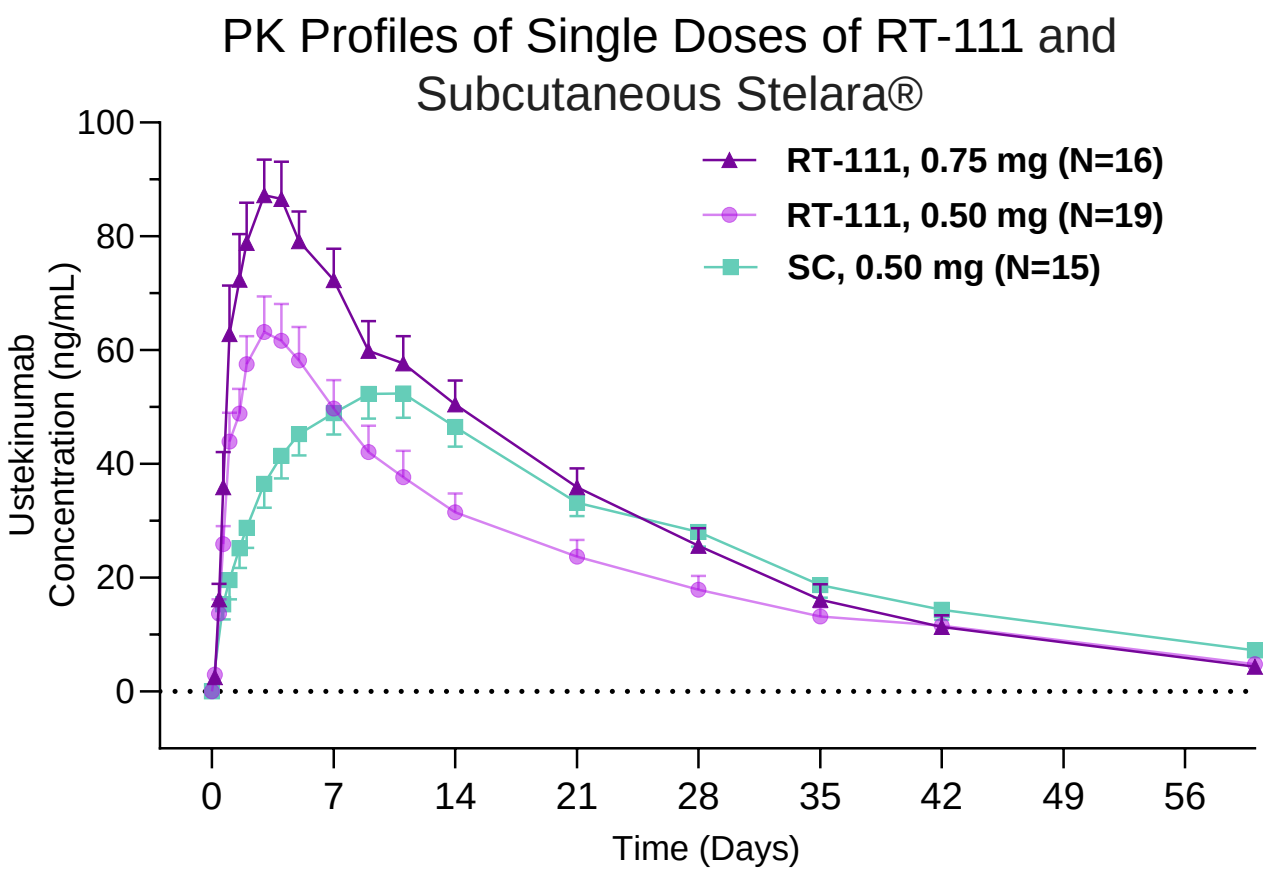
RT-111 (Oral Ustekinumab Biosimilar for Psoriasis) Phase 1 Data



Pharmacokinetic Parameters

Group	C_{max} (ng/mL)	T_{max} (days)	AUC_{0-t} (day.ng/mL)
SC 0.5mg (N=15)	56 ± 4	10 ± 0.8	1,566 ± 130
RT-111 0.5mg (N=19)	67 ± 7	3.1 ± 0.2	1,315 ± 150
RT-111 0.75mg (N=16)	92 ± 8	3.3 ± 0.2	1,814 ± 165

84% Estimated Bioavailability Relative to SC

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Data shown are Mean ± SE, Estimated bioavailability based on 0.5mg dose.

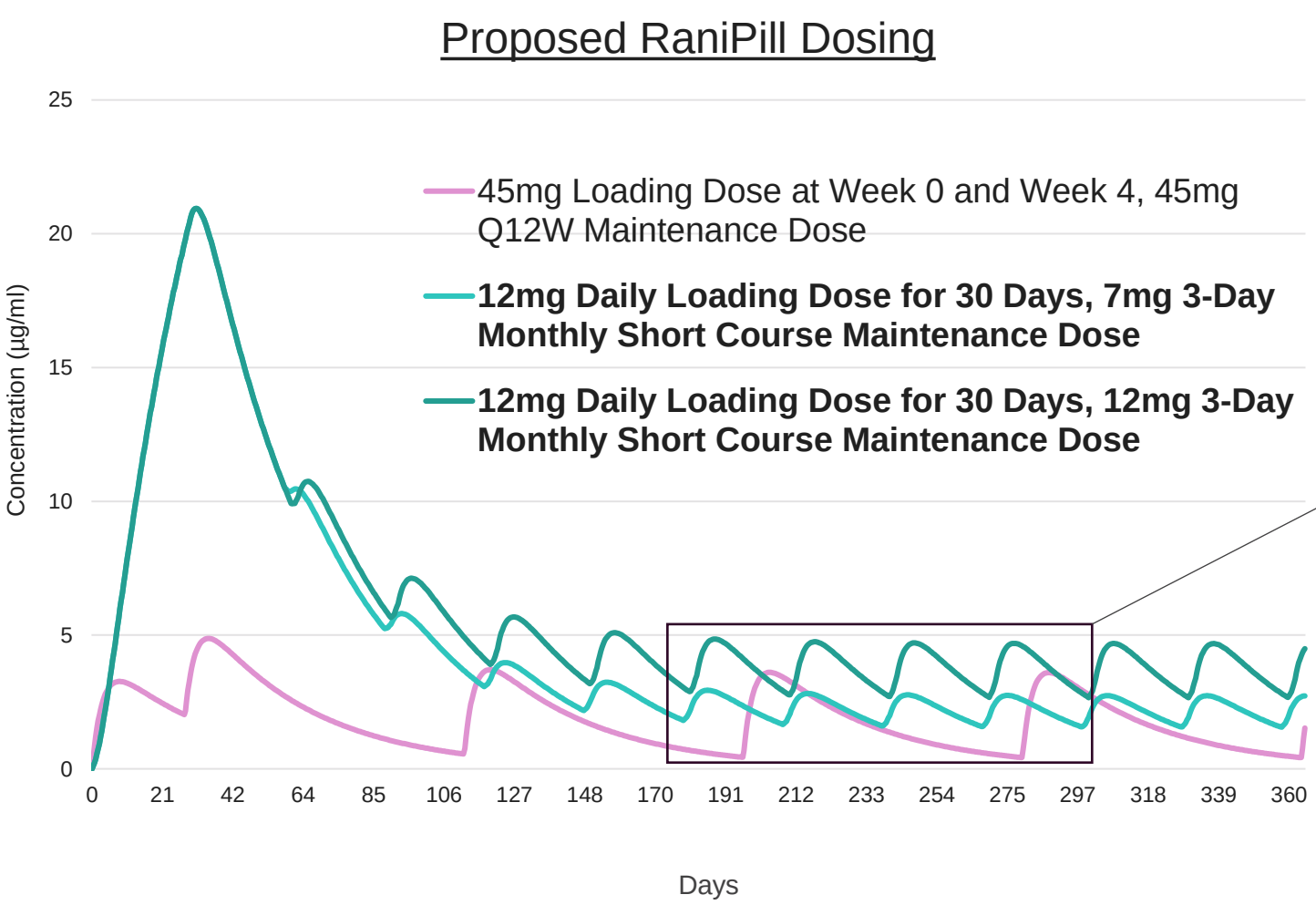
Historical Data Shows Potential Opportunity to Improve Efficacy and Safety with Higher Loading Doses

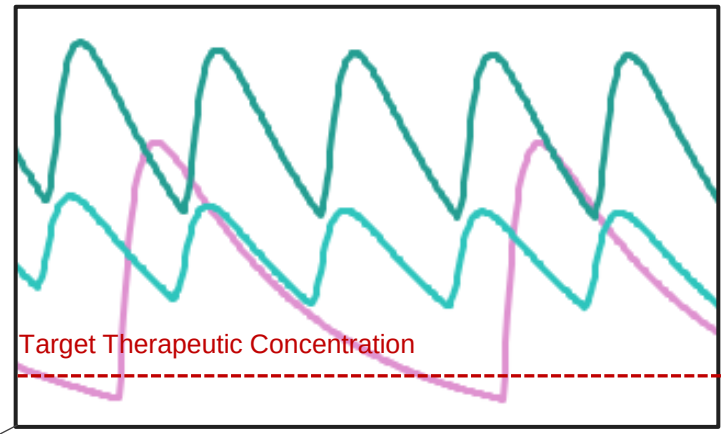
Ustekinumab Efficacy at 12 Weeks*

Dose Groups	One 45mg dose	One 90mg dose	Four weekly 45mg dose	Four weekly 90mg dose
75 PASI Score	52%	59%	67%	**81%**
90 PASI Score	23%	30%	44%	**52%**
Patients with at least 1 AE	90%	81%	78%	68%

* Data from third party study - N Engl J Med 2007; 356:580-592 DOI: 10.1056/NEJMoa062382, February 8, 2008. Safety data at 20 weeks.

Oral Dosing with the RaniPill Could Enable Higher Loading Doses and Tighter Banding of Therapeutic Concentrations





RaniPill may enable increased frequency of dosing which translates to:

- Lower peak-to-trough variability
- Tighter banding of therapeutic concentrations

Simulation based on ustekinumab published data (see Table 10 of BLA Number 125,261/ Supplement 150 of Janssen Biotech, Inc. submitted to FDA on September 30, 2019).

Target Dosing for RT-111: RaniPill + Ustekinumab

Loading Phase

DAILY

30-days of 7-12mg Daily Dosing

- Potential for better early-onset clinical efficacy

Maintenance Phase

MONTHLY

7-12mg 3-day Monthly Short Course

–*Total of 36 pills per year per patient*

- Potential for tighter banding of therapeutic concentration levels

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RT-102: Oral PTH

RT-102 Market opportunity

Oral PTH (1-34) for Treatment of Osteoporosis

Current anabolic (bone forming) therapies require daily or monthly injections

- **Significant opportunity for an oral parathyroid hormone option for patients with osteoporosis**
- **RaniPill could enable oral administration with flexible dosing**

1.5 million fractures in the US related to osteoporosis yet fewer than 20% of women receive treatment for osteoporosis – even after breaking a bone [12]

- **Potential to grow market with earlier intervention with an oral option**
- **Oral option addresses injection aversion**

Global PTH market expected to grow to $2.51B in 2026 at CAGR of 4% [13], with Forteo (teriparatide) earning $613M in revenue in 2022 [14]

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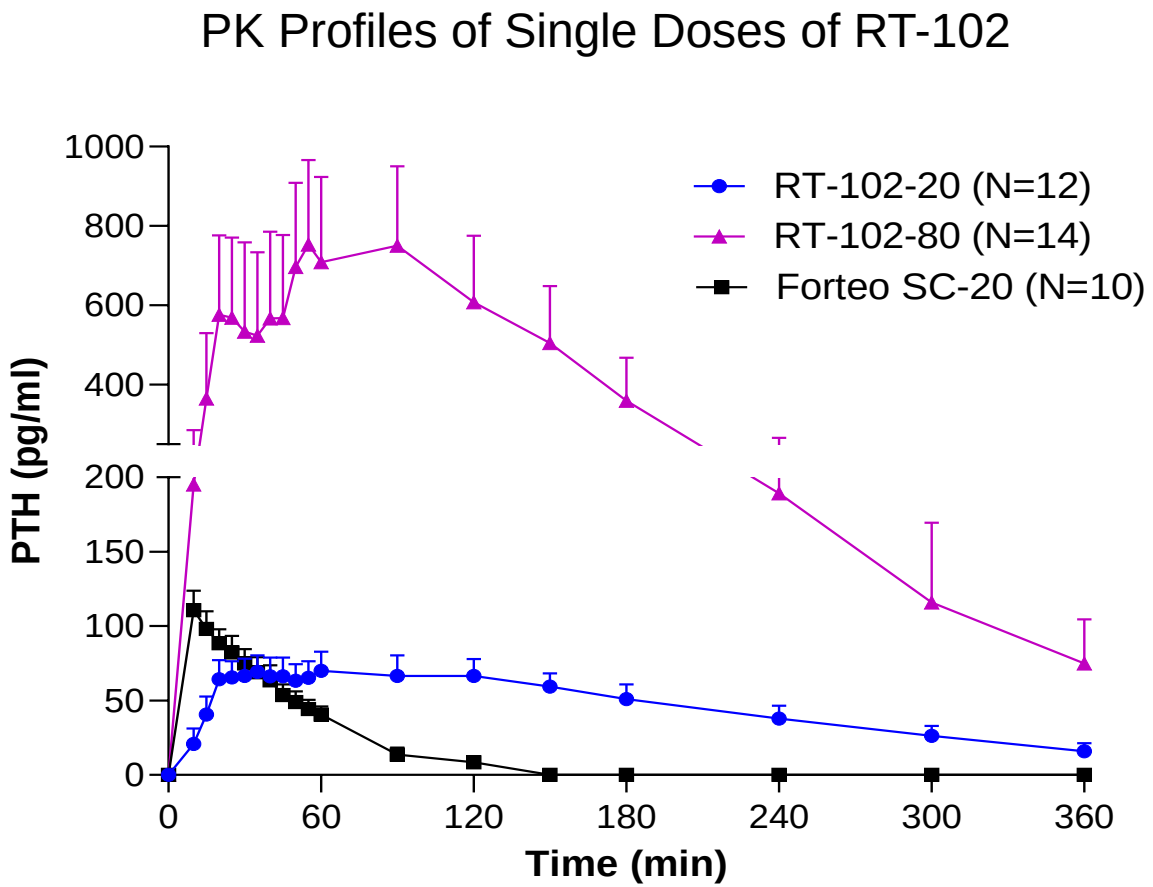
RT-102 (Oral PTH 1-34 for Osteoporosis): Phase I Data



Pharmacokinetic Parameters

Group	C_{max} (pg/mL)	T_{max} (minutes)	AUC (pg*h/mL)	Bioavailability
Forteo SC 20µg	128 ± 64	13	126 ± 91	--
RT-102 20µg	98 ± 35.5	68	343 ± 123	~300%
RT-102 80µg	971 ± 826	60	2600 ± 2410	~400%

Safety & Tolerability:

- ✓ RT-102 was well-tolerated
- ✓ Completed 7-day repeat dosing
- ✓ No serious adverse events

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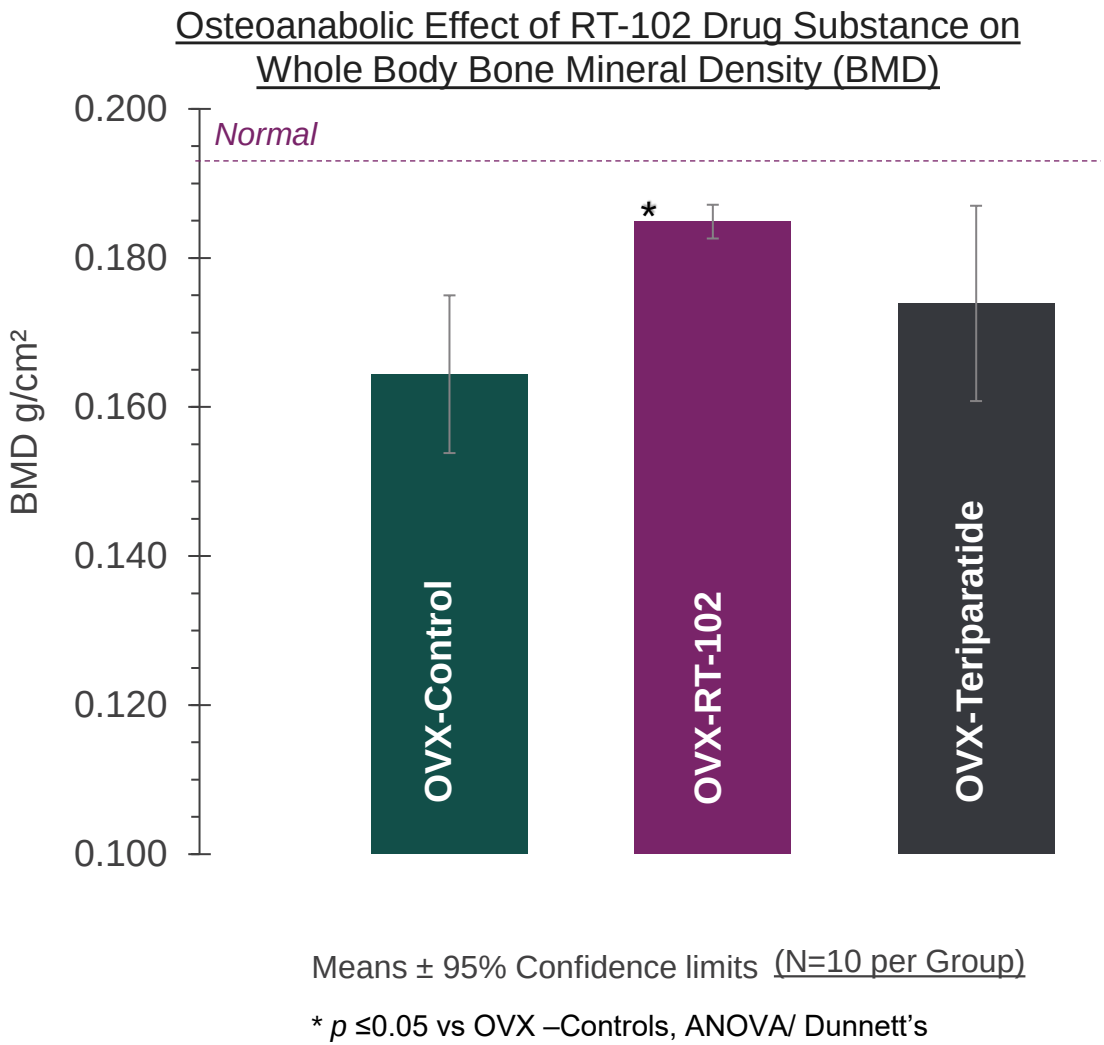
RT-102: Demonstrated Osteoanabolic Effect in Preclinical PD Study



Intraperitoneal Delivery of Teriparatide (to mimic RaniPill delivery) for 6 weeks Increased BMD in Ovariectomized Rats Comparable to SC Teriparatide Injections

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Anticipated Upcoming Milestones & Progress

- Initiate Phase 1 clinical trial with RT-114 in 2025
- Advance clinical development of RT-111 at higher doses
- Initiate Phase 2 clinical trial with RT-102
- Evaluate platform further in strategic areas of focus


Thank You
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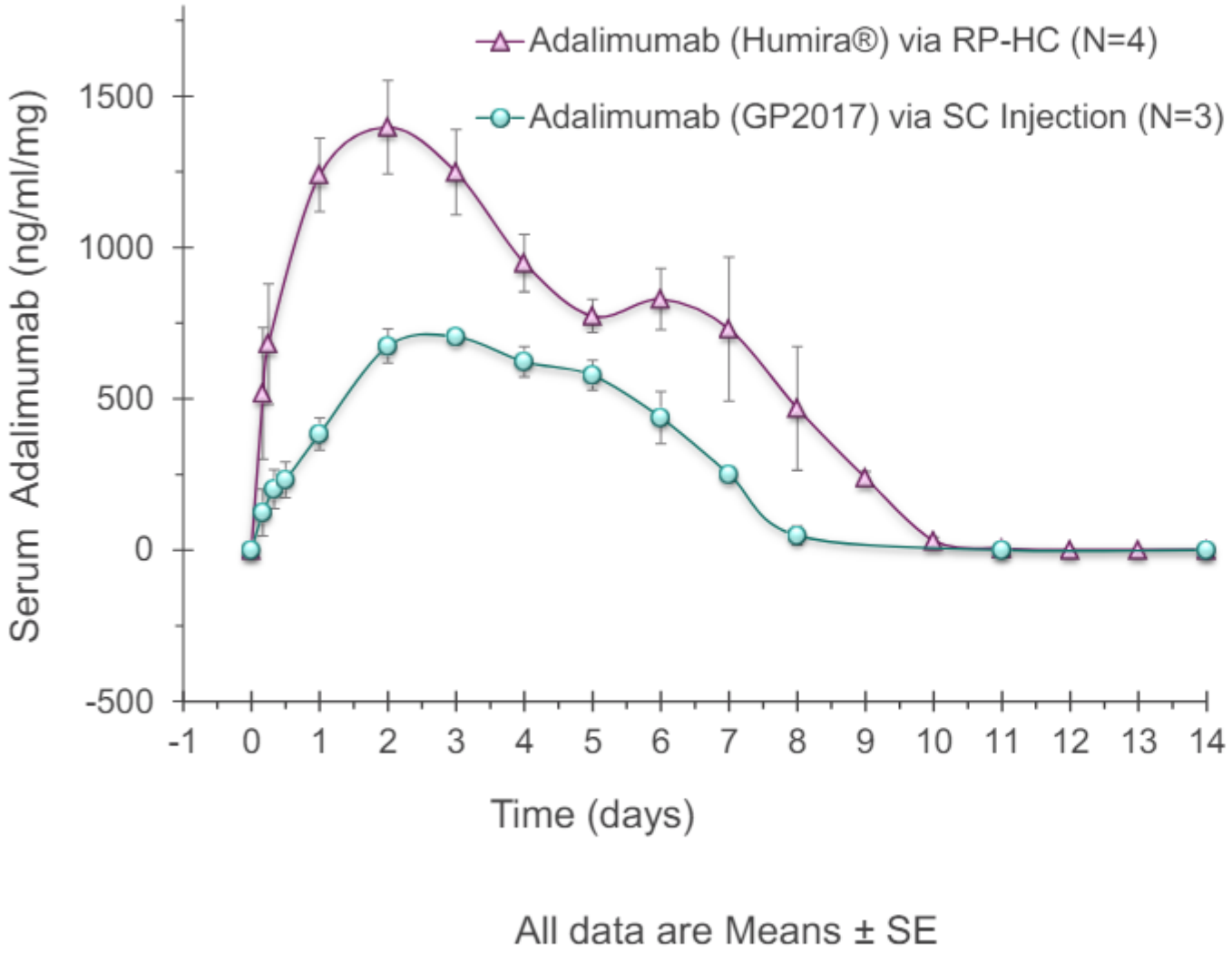
Appendix

Other Programs:
RT-105 Oral Adalimumab
RT-110 Oral Long-Acting PTH

PK of Adalimumab via RaniPill HC vs via SC Injection (Dose Normalized)



Higher Estimated Bioavailability via the RaniPill HC relative to SC Injection Route

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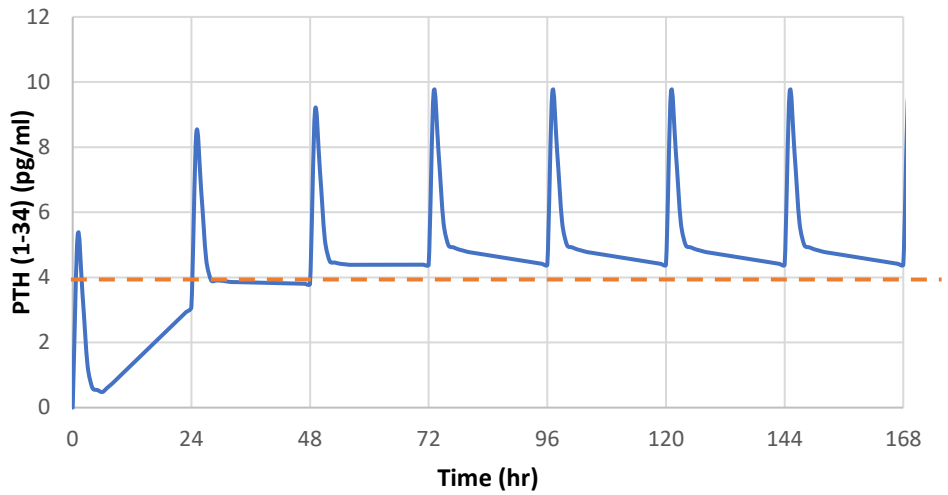
RT-110 (Oral Long-Acting PTH for Hypoparathyroidism)

Rani Long-Acting PTH Formulation Repeat Dose Simulation Based on Early PK



Physiological PTH (1-34) = 4-26 pg/ml

Long-acting formulation extends PTH serum concentrations up to 72 hours

Daily dosing simulation shows that preclinical data generated with RT-110 can achieve steady-state within the defined therapeutic window for hypoparathyroidism patients

Hypoparathyroidism Market Opportunity:

- Significant unmet medical need
- Conventional therapy aimed at short-term symptom management with large doses of oral calcium and active vitamin D as first-line therapy option
- Market forecast to reach $2.64B by 2030 [15]
- All other long-acting PTH formulations currently under development are daily injections

RT-110 Could Be a Significantly Differentiated Product in This Therapeutic Landscape

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Discovery Programs

Obesity Preclinical Data & Strategy

Demonstrated Equivalent PD to SC through Rani Route of Administration – *At Same Dose*

Objective

- To evaluate the PK-PD profiles of Triagonist (a unimolecular incretin agonist for GLP-1, GIP and Glucagon receptors) in Beagle dogs delivered SC or via endoscopically guided transenteric injection (to mimic the Rani route of administration)

Subjects

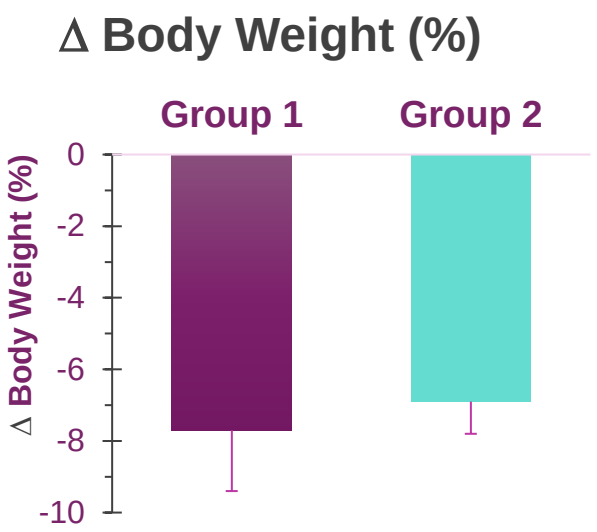
- Beagles, adult male, 11 - 13 kg, Total N=10

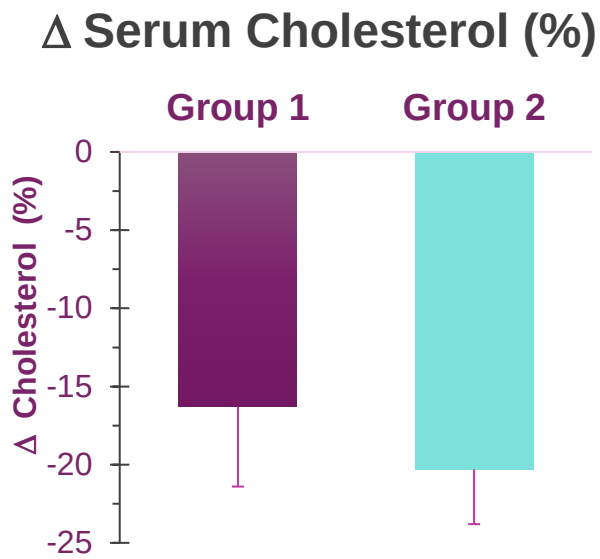
Test Groups

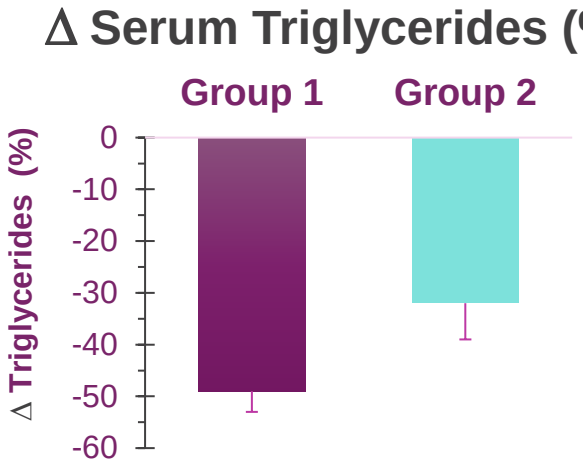
- Group 1 Transenteric (N=5): Triagonist, 0.12mg/kg (0.05ml/kg) injected via endoscopic access
- Group 2 SC (N=5): Triagonist, 0.12mg/kg (0.04ml/kg) injected subcutaneously

Protocol

- All animals were dosed after an overnight fast
- Over 2 weeks, fasted body weights were taken, and blood samples were serially collected for tracking serum drug concentrations and various PD & safety biomarkers







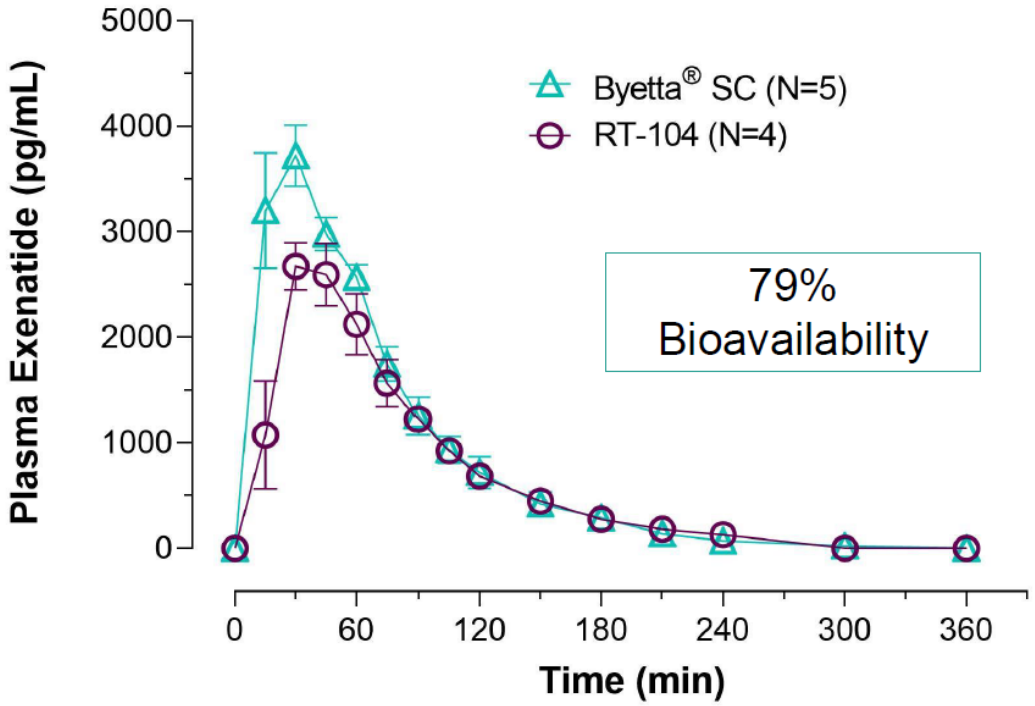
Group 1: Endoscopic
Group 2: SC

All data are Means ± SE

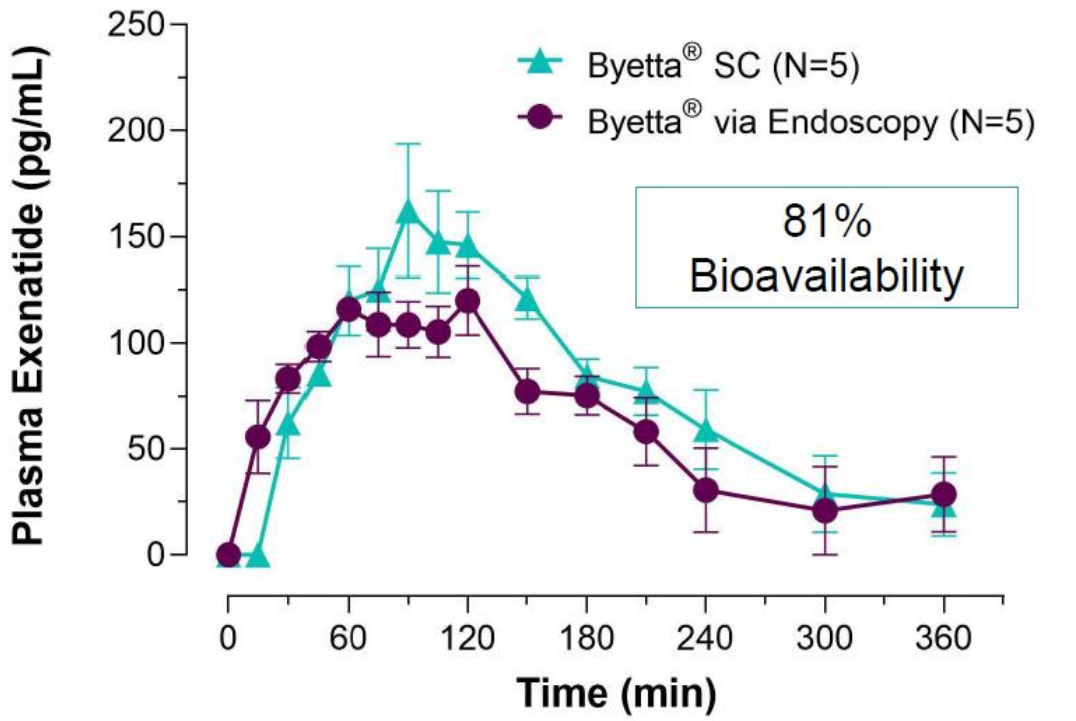
Data from preclinical study conducted by Rani using third party triagonist molecule

Rani Has Demonstrated High Bioavailability of the GLP-1 Agonist Exenatide In Preclinical and Clinical Studies

Canine PK Data



Human PK Data



- Presented as a late-breaking abstract at the American Diabetes Association Conference 2023

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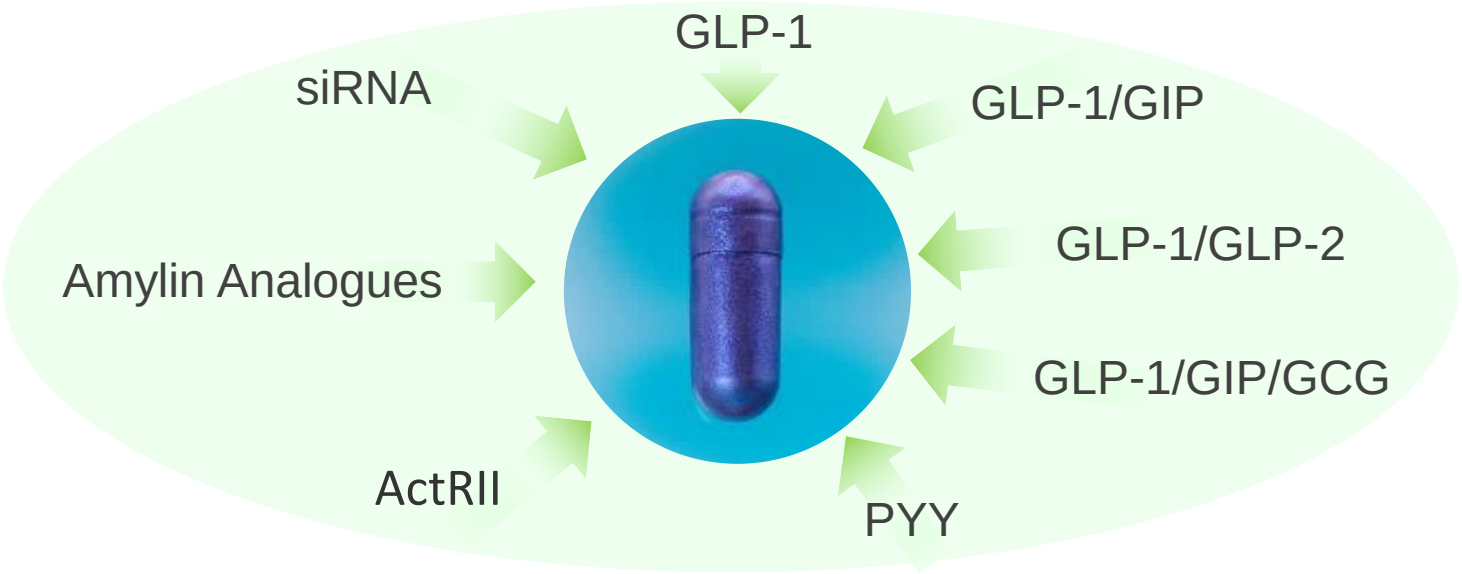
Strategy for RaniPill to Differentiate from Current and Next-Generation Therapies

Modality agnostic

- Potential to deliver single, dual, triagonists orally



Rani Plans to take a Portfolio Approach
With Internal Programs and External Partnerships

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Obesity Market Potential Opportunity

	Wegovy	Mounjaro	Retatrutide	Oral Semaglutide	Orfoglipron	Danuglipron	Potential RaniPill Opportunity
Administration	SC	SC	SC	Oral	Oral	Oral	Oral
Frequency	Weekly	Weekly	Weekly	Daily	Daily	Twice Daily	Weekly
Target	GLP-1	Dual Agonist	Triagonist	GLP-1	GLP-1, small molecule	GLP-1, small molecule	Single, Dual and Triagonist
Dosing	2.4mg weekly	15mg weekly	12mg weekly	**50mg daily**	45mg daily	120mg twice daily	Comparable to SC
Mean Body Weight Loss	15%	21%	24%	15%	15%	NA	Targeting Comparability to SC
Discontinuation	7%	7%	6-16%	6%	**10-17%**	**34%**	Targeting Similar to SC

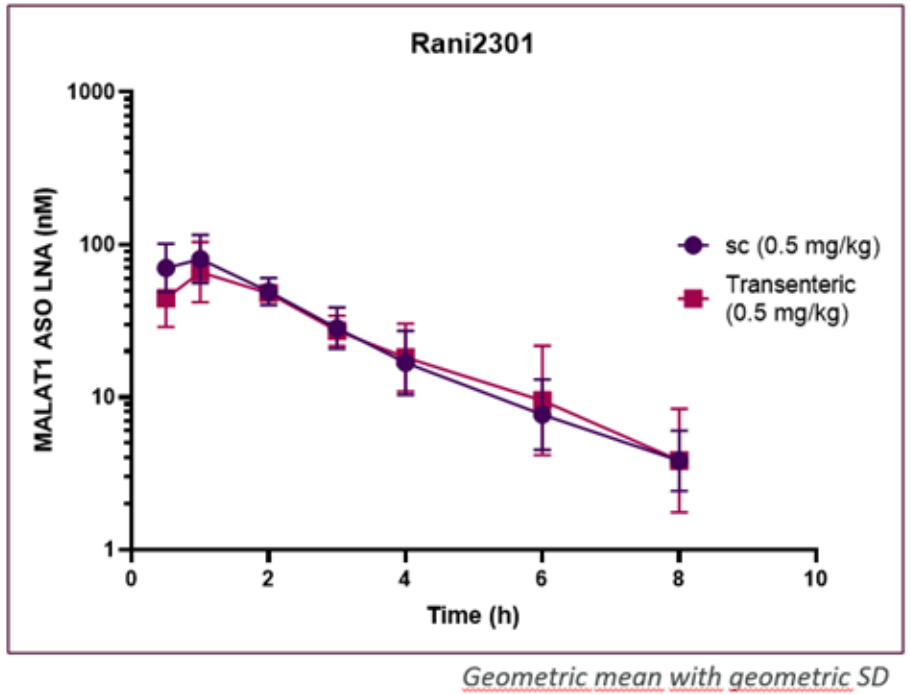
SC = subcutaneous

Significant Potential Opportunity to Capture Portion of Obesity Market Based on Competitive Landscape [11]

Additional Discovery Programs

Oligonucleotides: Preliminary Research with ASO

ASO Administered VIA Endoscopic Injection that Mimics RaniPill Route of Administration



Geometric mean with geometric SD

- PK profiles for Rani route of administration and SC administration were comparable

Key Drivers:

- Emerging area of drug development that offers a promising alternative to therapies targeting downstream processes
- Chemistry attempts at oral delivery have had mixed results in terms of bioavailability

Rani Strategy:

- Provide a safe and efficacious way to deliver ASOs orally
- Some prior oral administration attempts have shown five-fold increase in liver concentration.[16] Rani could potentially couple this with serum bioavailability equivalent to SC injection

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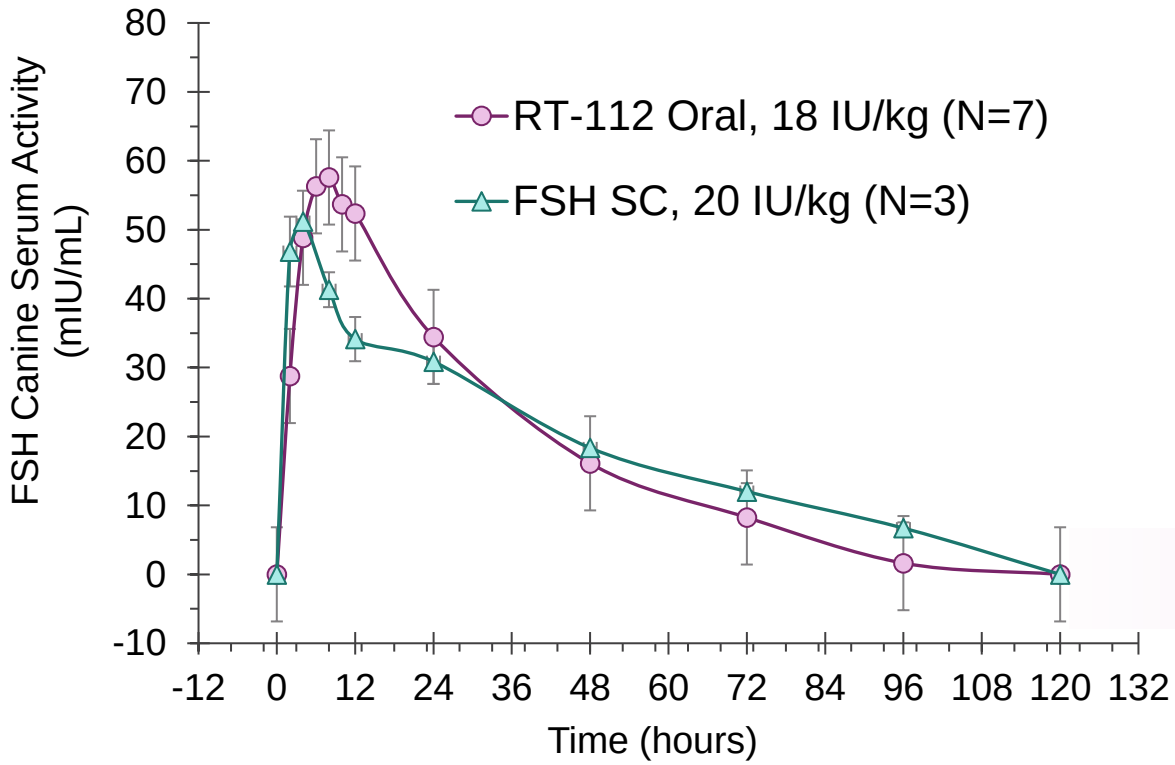
Fertility: FSH Preclinical Study

FSH delivered via the RaniPill Yielded Bioavailability Comparable to SC Injection



Key Drivers:

- Market Poised for significant growth:
  - IVF services estimated at $3B market and projected to grow at a 10% rate through 2024 [17]
  - Between 2009 and 2016, number of women in the US who froze their eggs rose by more than 1,000% [18]
- Cash pay for high-cost treatment
- 7–14-day treatment
- Burdensome and difficult to administer injections

Rani Strategy:

- Provide oral option to expand market opportunity even further with minimal manufacturing burden

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Additional Safety Data

Safety and Tolerability of RaniPill Drug Delivery Platform Following 60 Consecutive Days of Daily Administration in Preclinical GLP Study

Study Overview

Naïve Beagle dogs (N=36) were administered:

- **RaniPill:** RT-100 (RaniPill containing Mannitol-filled needle (N=24))
  - Subgroup (N=12) was tracked for additional 14 days post completion of study
- **Mock-RP:** Control (capsule filled with potato starch (N=12))

Key Safety Checks:

✓ Weekly radiographs to ascertain safe passage/excretion of device remnants

✓ All subjects underwent comprehensive gross and histopathologic examinations with emphasis on GI tissue to assess safety of the RaniPill

- The RaniPill was well-tolerated with no treatment-related adverse events
- All animals remained clinically healthy throughout the study

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