New SEL-212 Phase 2 Data Presented at PANLAR

April 10, 2018

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Any statements in this presentation about the future expectations, plans and prospects of Selecta Biosciences, Inc. ("the company"), including without limitation, statements regarding the progress of the Phase 1/2 clinical program of SEL-212, the potential of SEL-212 to treat severe gout patients and resolve their debilitating symptoms, the ability of SVP-Rapamycin to induce immune tolerance against pegsiticase or otherwise mitigate immunogenicity, the ability of SEL-212 to improve acute symptoms during a short induction cycle, whether the company participates in an End-of-Phase 2 meeting for SEL-212 in mid-2018 or at all, the ability of SEL-212 to mitigate anti-drug antibodies, enable repeat dosing, achieve better and more sustained serum uric acid control and reduce gout flares, the ability of SEL-212 to be re-administered if severe gout symptoms recur, whether results from patients receiving five monthly combination doses of SEL-212 will expand the three-month SEL-212 clinical activity data across the entire five-month treatment period of the Phase 2 trial, when the company will report further data from the Phase 2 trial, whether the FDA approves the company's plan to provide combination therapy of SEL-212 for the entire treatment period, whether the data from patients receiving five monthly combination doses of SEL-212 will support the company's plans for its Phase 3 trial, whether the patient population for a Phase 3 for SEL-212 has a rapid enrollment potential, when the company will advance to a Phase 3 for SEL-212 (if at all), whether SEL-212 has the potential to address the unmet needs of gout patients, whether SEL-212 holds billion dollar potential, the ability of the company's SVP platform, including SVP-Rapamycin, to mitigate immune response and induce immune tolerance, the potential of the SVP-Rapamycin platform generally, and other statements containing the words "anticipate," "believe," "continue," "could," "estimate," "expect," "hypothesize," "intend," "may," "plan," "potential," "predict," "project," "should," "target," "would," and similar expressions, constitute forward-looking statements within the meaning of The Private Securities Litigation Reform Act of 1995. Actual results may differ materially from those indicated by such forward-looking statements as a result of various important factors, including, but not limited to, the following: the uncertainties inherent in the initiation, completion and cost of clinical trials including their uncertain outcomes, the availability and timing of data from ongoing and future clinical trials and the results of such trials, whether preliminary results from a particular clinical trial will be predictive of the final results of that trial or whether results of early clinical trials will be indicative of the results of later clinical trials, the unproven approach of the company's SVP technology, potential delays in enrollment of patients, undesirable side effects of the company's product candidates, its reliance on third parties to manufacture its product candidates and to conduct its clinical trials, the company's inability to maintain its existing or future collaborations or licenses, its inability to protect its proprietary technology and intellectual property, potential delays in regulatory approvals, the availability of funding sufficient for its foreseeable and unforeseeable operating expenses and capital expenditure requirements, substantial fluctuation in the price of its common stock, a significant portion of the company's total outstanding shares have recently become eligible to be sold into the market, and other important factors discussed in the "Risk Factors" section of the company's Annual Report on Form 10-K filed with the Securities and Exchange Commission, or SEC, on March 15, 2018, and in other filings that the company makes with the SEC. In addition, any forward-looking statements included in this presentation represent the company's views only as of the date of its publication and should not be relied upon as representing its views as of any subsequent date. The company specifically disclaims any obligation to update any forward-looking statements included in this presentation.

SEL-212 Phase 2 Overview and Summary of New Data Presented at PANLAR

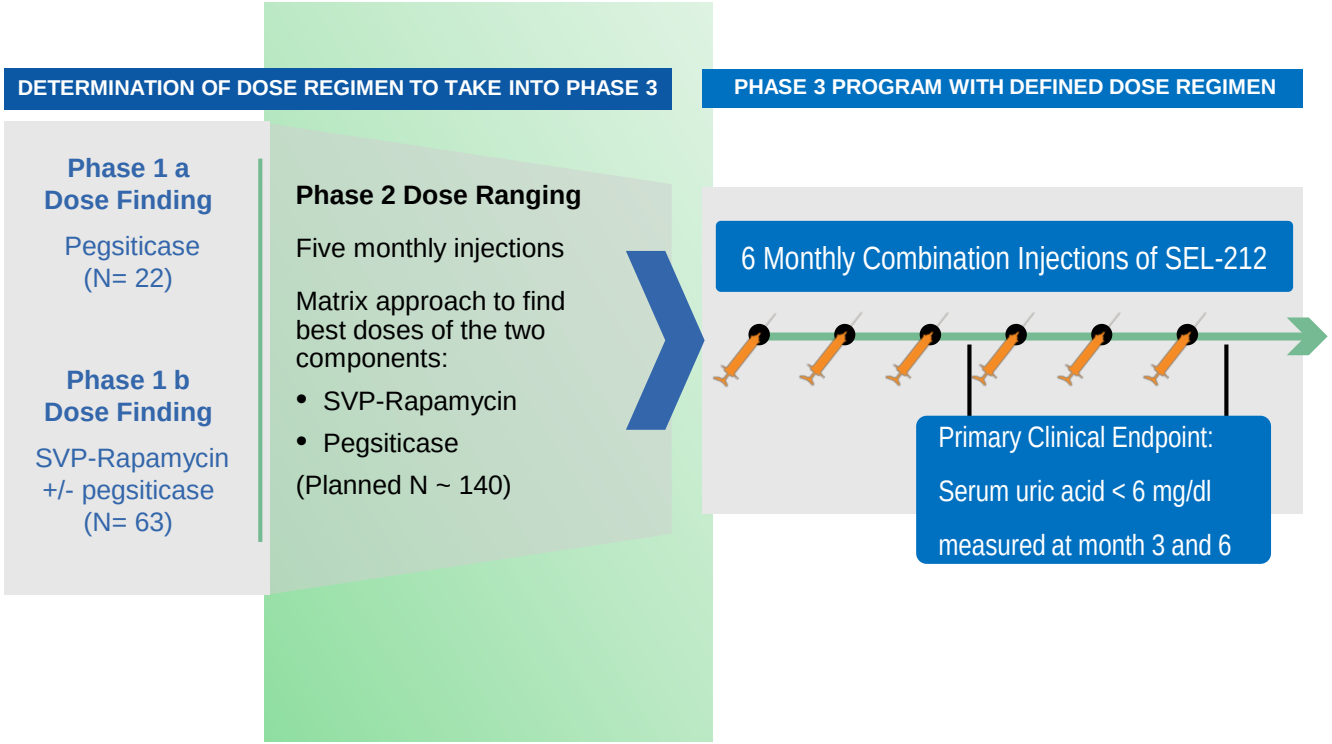
Phase 2 Trial Overview for new data presented at PANLAR

- **Enrollment Criteria:** Patients with symptomatic gout and serum uric acid (sUA) >6 mg/dl
- **Primary/Secondary Endpoints:**
  - Safety, tolerability and pharmacokinetics of multiple doses of SEL-212 (SVP-Rapamycin + pegsiticase) and pegsiticase alone
  - Control of sUA levels
  - Reduction in anti-drug antibody (ADA) levels
- **Dosing (Cohort 10,11,12):** SEL-212 every 28 days for three doses (months 0, 1 and 2) followed by two doses of pegsiticase alone (months 3 and 4)

Summary of new data presented at PANLAR

- **3-month data show SEL-212 product profile provides:**
  - **Mitigation of ADAs enabling repeat dosing and sustained serum uric acid control:** ~74% of patients with sUA <6 mg/dl
  - **Low flare rate in the first month :** 37% for new SEL-212 Cohorts; 26% for all SEL-212 Cohorts in the trial
  - **Less frequent dosing:** Monthly compared to weekly/bi-weekly dosing for FDA-approved uricase
- **4-month data, of evaluable patients dosed at month 3 with pegsiticase alone, provide evidence for the ability of the SVP platform to induce immune tolerance in a clinical setting with a highly immunogenic enzyme**

SEL-212 Clinical Development Plan

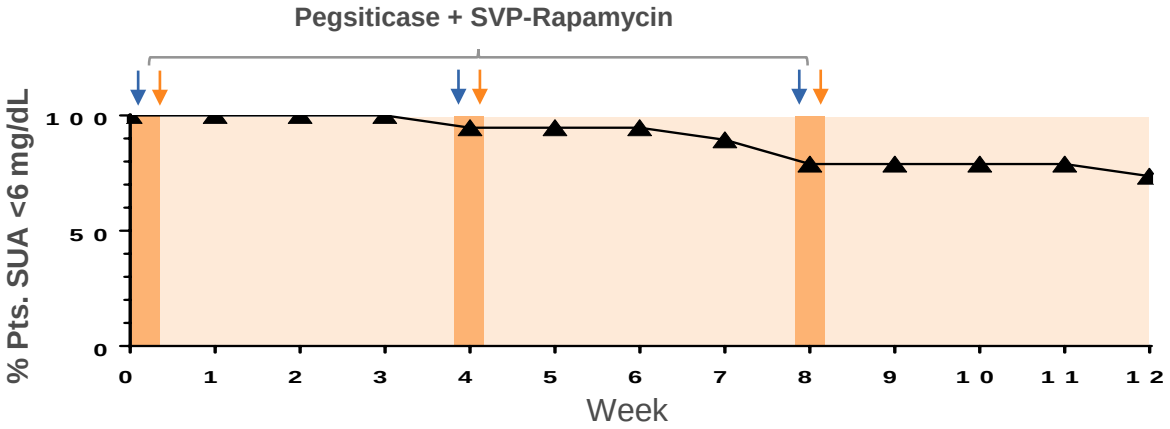


New Phase 2 Data at 3 Months Show 74% of Patients With Control of SUA <6 mg/dl

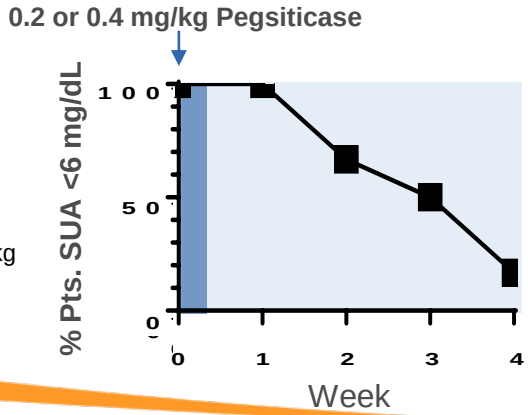
SEL-212

Pegsiticase
0.2 or 0.4 mg/kg

SVP-Rapamycin
0.125 or 0.15 mg/kg



74%; (14/19)

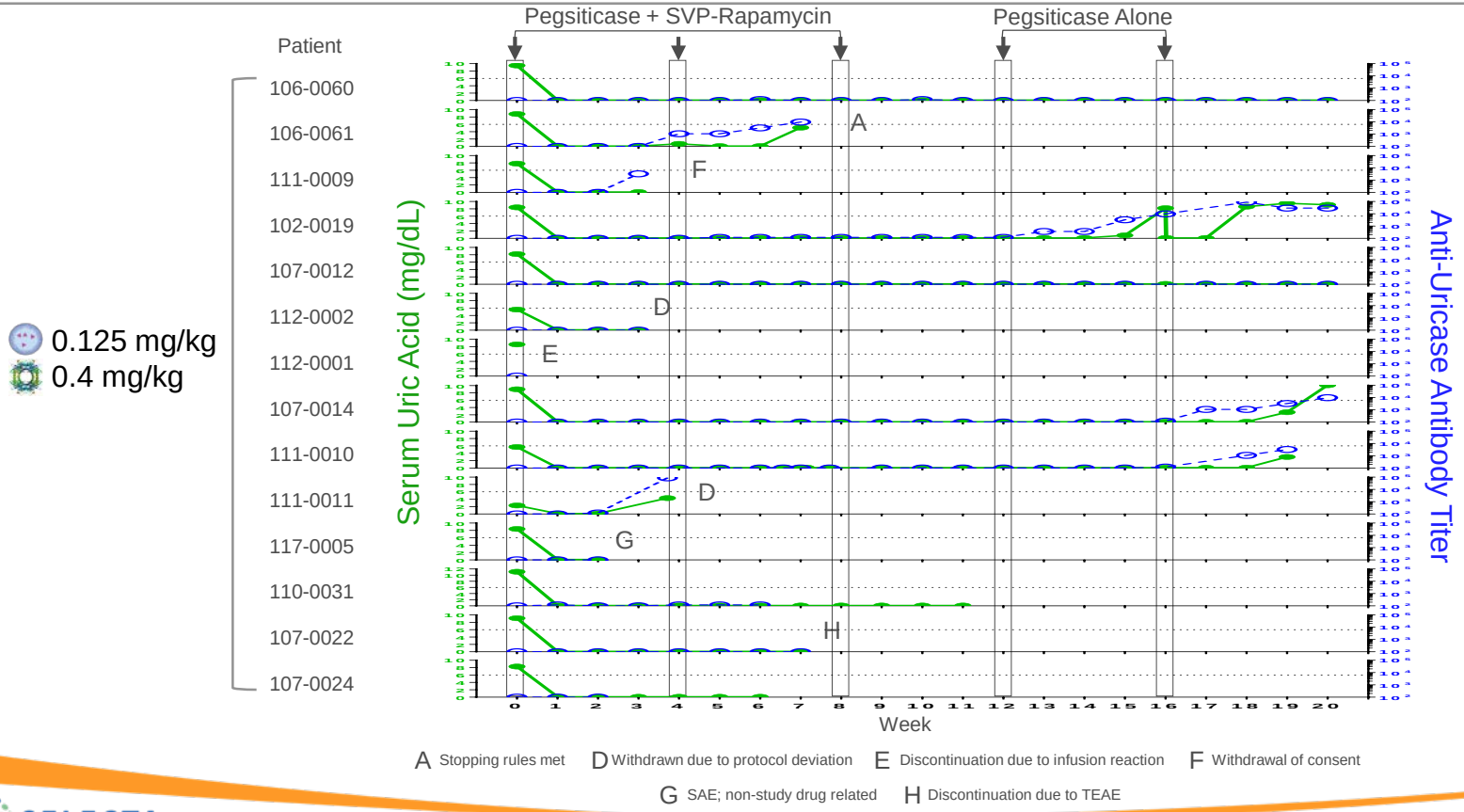


17% (1/6)

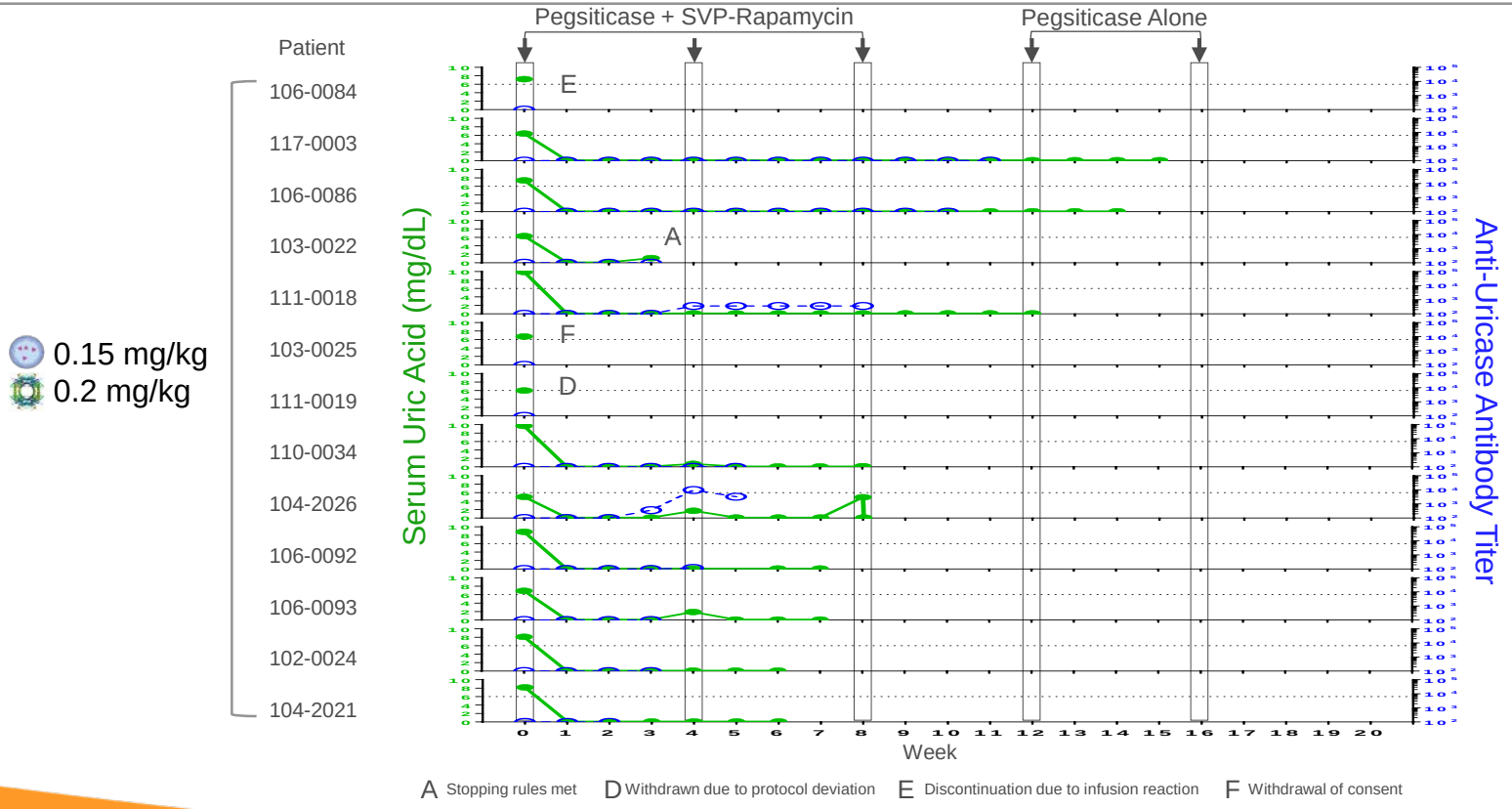
Patients evaluable at 12 weeks who received a full first dose and completed treatment cycle 1

Pegsiticase
0.2 or 0.4 mg/kg

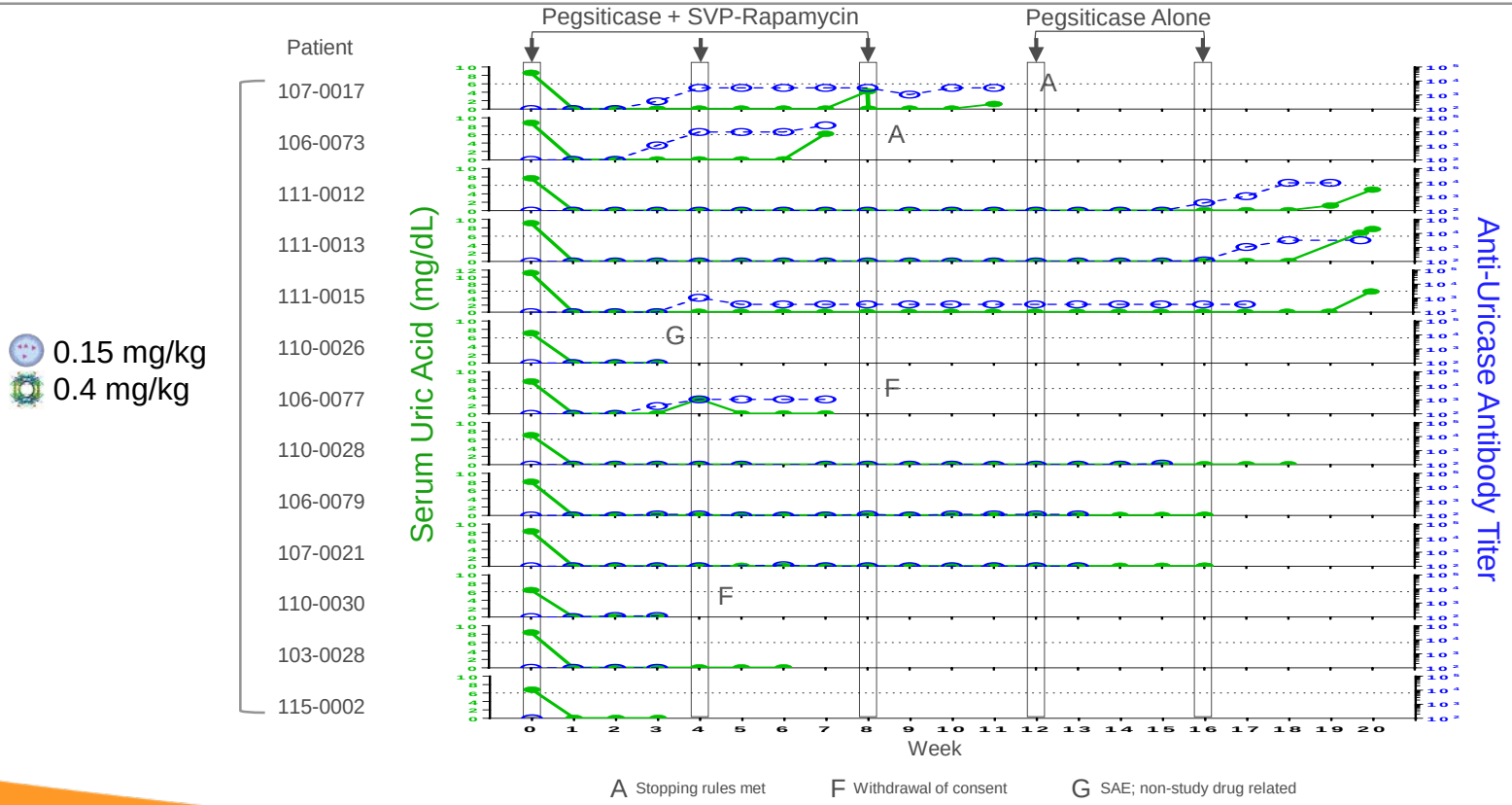
Patients Dosed With 0.125 mg/kg of SVP-Rapamycin + 0.4 mg/kg of Pegsiticase



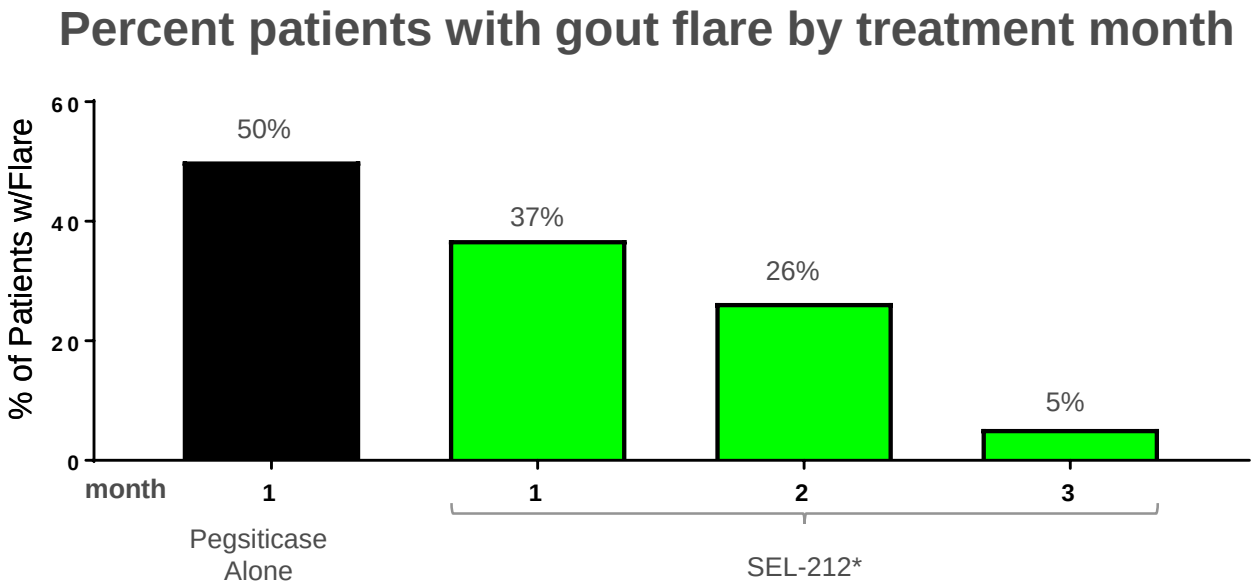
Patients Dosed With 0.15 mg/kg of SVP-Rapamycin + 0.2 mg/kg of Pegsiticase



Patients Dosed With 0.15 mg/kg of SVP-Rapamycin + 0.4 mg/kg of Pegsiticase

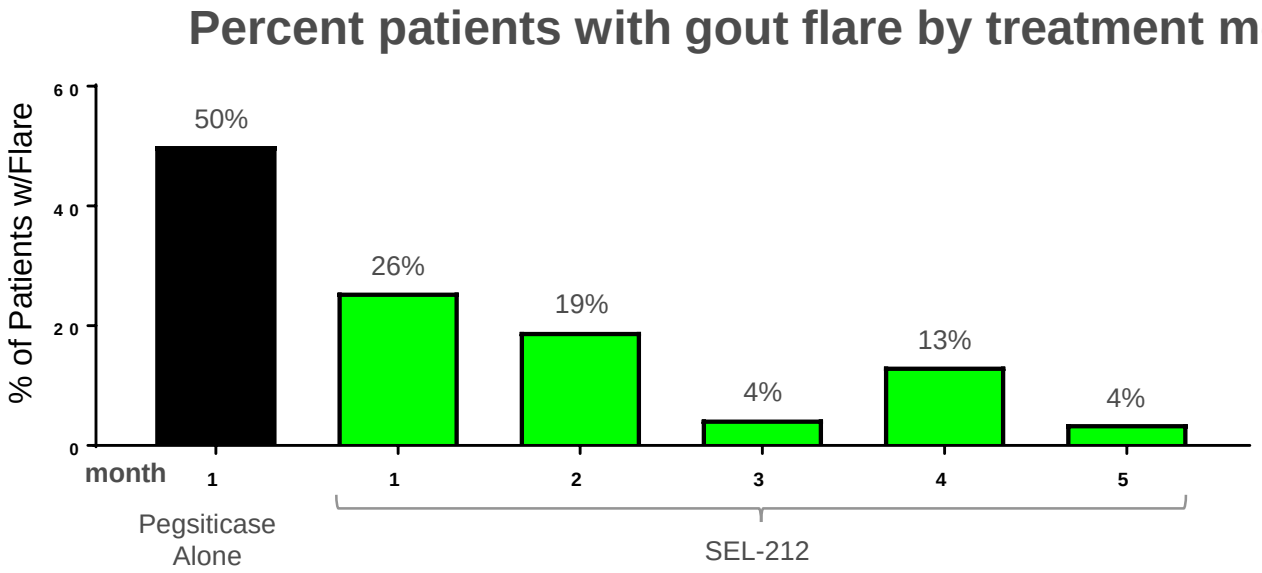


New PANLAR Data Continue to Show Low Overall Incidence of Gout Flares



* *Pegsiticase 0.2 or 0.4 mg/kg with SVP-Rapamycin 0.125 or 0.15 mg/kg; Patients evaluable at 12 weeks who received a full first dose and completed treatment cycle 1*

SEL-212 Continues to Show Low Overall Incidence of Gout Flares In Total Phase 2 Patient Population



SEL-212 Safety For the Total Phase 2 Patient Population

- **SEL-212 has been generally well tolerated at clinically active doses following >300 administrations**
- **Fifteen SAEs reported in the ongoing Phase 2 trial:**
  - Seven were reported not to be or unlikely to be related to study drug
  - Eight infusion reactions:
    - Four in cohorts receiving pegsiticase alone or pegsiticase in combination with the lowest dose of SVP-Rapamycin, as anticipated
    - Two due to protocol deviations related to dosing errors
    - Two during a repeat dose of SEL-212 in higher (0.1 – 0.15 mg/kg) dose cohorts
    - None occurred after treatment period 2
- **All SAEs were successfully treated without further issues**

Unaudited data reported as of April 02, 2018 | Clinicaltrials.gov NCT02959918

SEL-212 PANLAR Data Compared to KRYSTEXXA® Data+

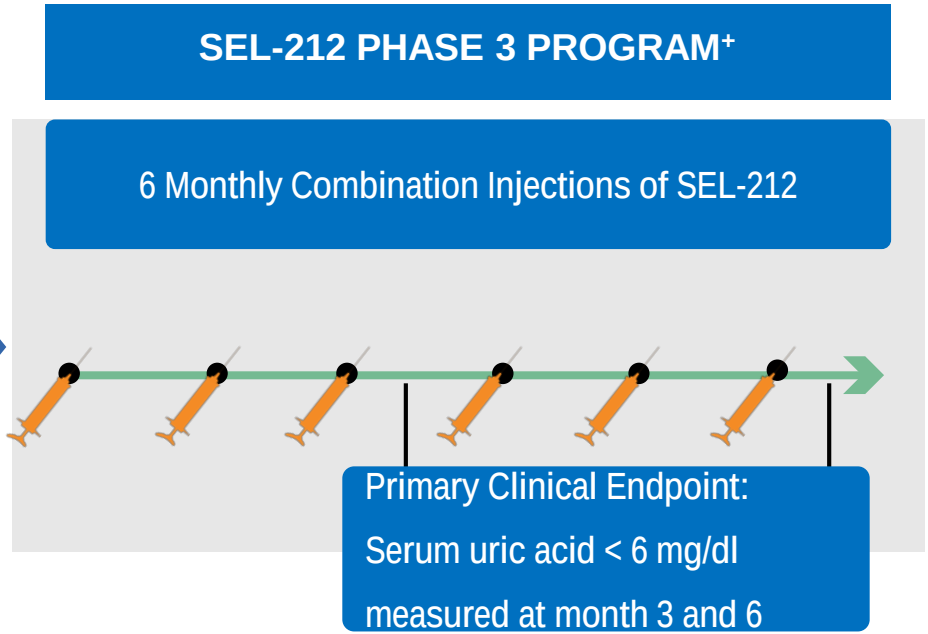
Category	SEL-212 (12 weeks)	KRYSTEXXA® (16 weeks)
sUA control	74%++	44%
Gout flare %	42%	52%
Dosing regimen	3 monthly injections	3 weekly followed by 7 bi-weekly injections

+Krystexxa results from "Initial Clinical Study to determine whether a tolerizing regimen of pegloticase can increase frequency of subjects having sustained lowering of serum urate." Kenneth E. Saag, Mitchell Finemann, Alan Kivitz, Herbert Baraf, Roy Fleishmann, Arthur Kavanaugh, and Peter Lipsky; ACR Poster 2017

++ Defined as % of evaluable patients at 12 weeks with sUA <6 mg/dl who received a full first dose and completed treatment cycle 1

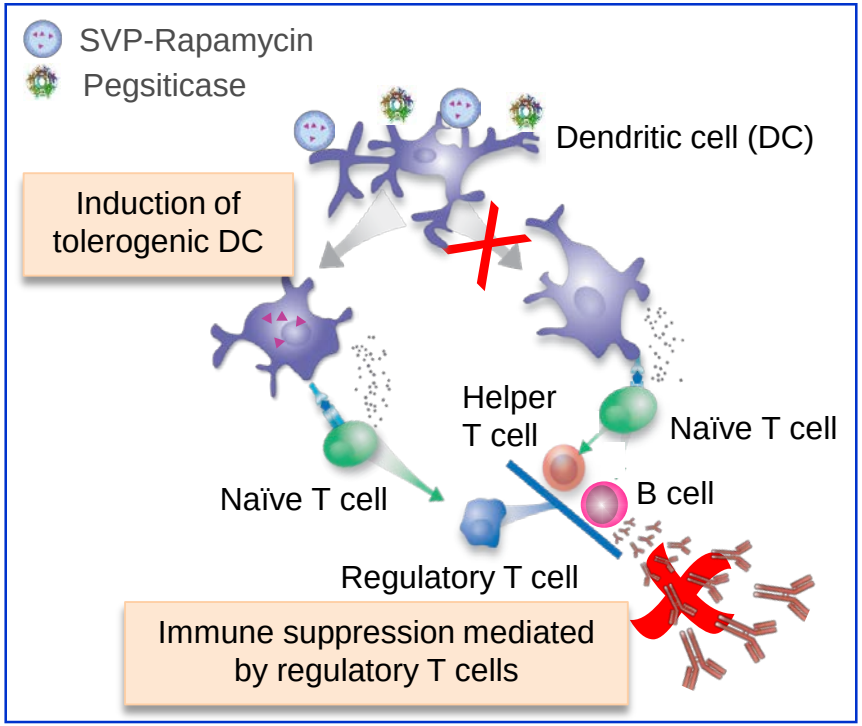
Phase 3 Initiation Expected in 2018

- **Data expected in third quarter from patients receiving five combination doses of SEL-212**
- **Phase 3 trial expected to begin in 2018**



+Will include placebo controlled trials; potentially positive controlled trials (e.g., Head to Head with KRYSTEXXA®)

Preclinical Studies Demonstrate Induction of Antigen-Specific Immune Tolerance by SVP-Rapamycin

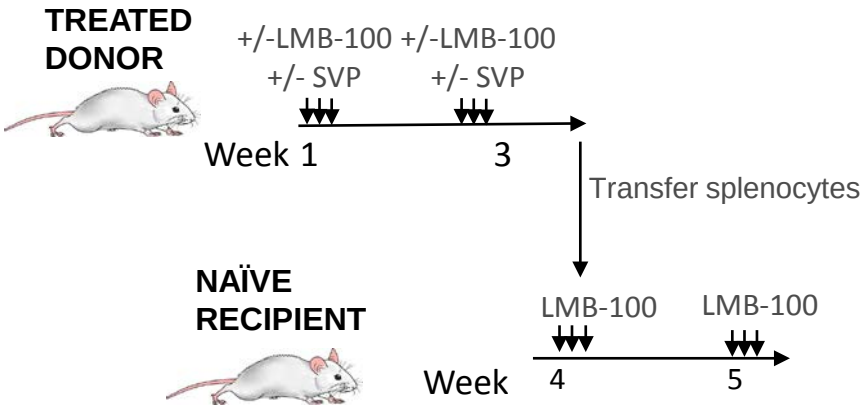


Preclinical mechanism of action studies

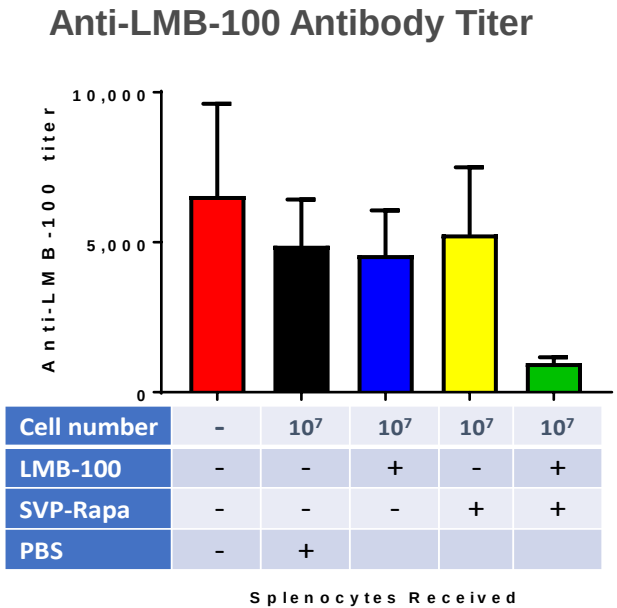
- Antigen-specific[1, 2, 5]
- Induction of tolerogenic DCs in vivo[2]
- Induction of antigen-specific Tregs in vivo[1, 2, 4]
- Biodistribution of SVP-Rapamycin to antigen-presenting cells in the spleen[1, 2, 3]
- Free rapamycin does not induce immune tolerance[2]
- Reversal of tolerance by depletion of Tregs[5]
- Transfer of tolerance from SVP-Rapa-treated mice to naïve mice[3, 4, 5]

1. Maldonado et al., PNAS, 2015, 112(2):E156-65
2. Kishimoto et al, Nature Nanotech, 2016, 11(10):890-899
3. Mazor et al., PNAS, 2018,115(4):E733-E742
4. LaMothe et al. Frontiers Immunol, 2018, 9:281
5. Amine et al., Mol Therapy, 2016, 24, Suppl 1, S34,

Transfer of Tolerance from Treated Mice to Naïve Mice



Mazor et al., PNAS 2018



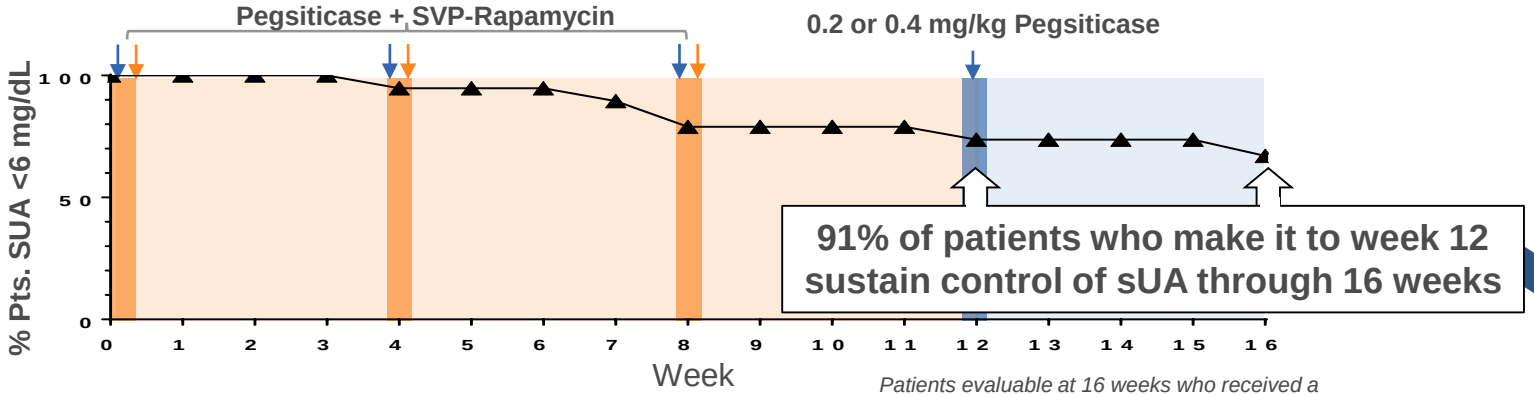
T cells from mice treated with SVP-Rapamycin and LMB-100 are able to transfer tolerance to naïve mice that have never been exposed to SVP-Rapamycin

Current Phase 2 Data Provides Evidence for Immune Tolerance Induction

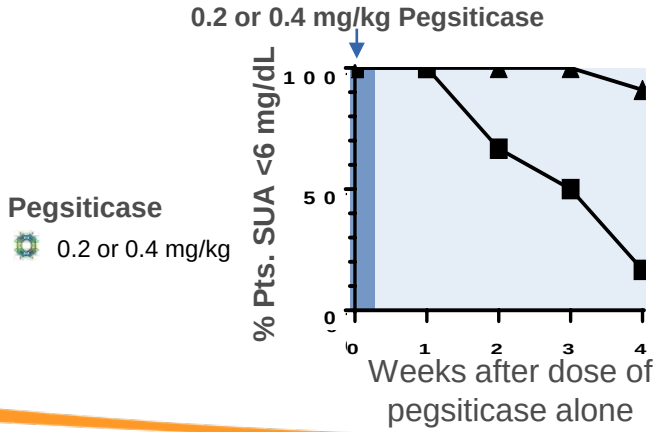
SEL-212

Pegsiticase
0.2 or 0.4 mg/kg

SVP-Rapamycin
0.125 or 0.15 mg/kg



Patients evaluable at 16 weeks who received a full first dose and completed treatment cycle 1



Pegsiticase
0.2 or 0.4 mg/kg

91%
▲ SEL-212-treated patients with control of sUA at 12 weeks after 1 dose of pegsiticase alone

17%
■ Treatment naïve patients after 1 dose of pegsiticase alone

We thank all of the patients that participated in our clinical trials. We are very grateful to the clinical trial site investigators and their staff.