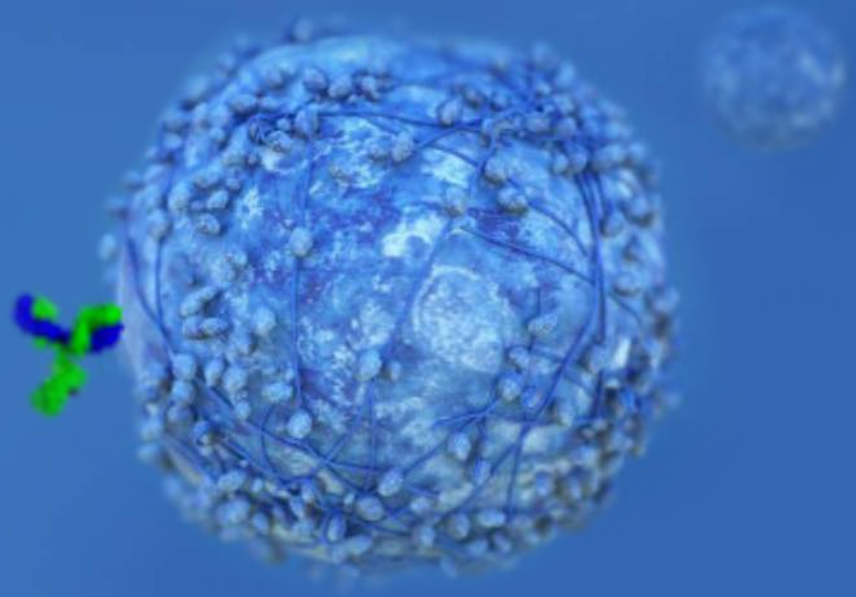


SUTRO BIOPHARMA

STRO 002

FolRα – Targeting ADC Phase 1

Potential Best-in-Class ADC for Ovarian and Endometrial Cancers

Forward Looking Statements

This presentation and the accompanying oral presentation contain “forward-looking” statements that are based on our management’s beliefs and assumptions and on information currently available to management. Forward-looking statements include all statements other than statements of historical fact contained in this presentation, including information concerning our future financial performance, business plans and objectives, current and future clinical and preclinical activities, timing and success of our ongoing and planned clinical trials and related data, the timing of announcements, updates and results of our clinical trials and related data, timing and success of our planned development activities, our ability to obtain and maintain regulatory approval, the potential therapeutic benefits and economic value of our product candidates, potential growth opportunities, financing plans, competitive position, industry environment and potential market opportunities.

Forward-looking statements are subject to known and unknown risks, uncertainties, assumptions and other factors, including risks and uncertainties related to our cash forecasts, our and our collaborators’ ability to advance our product candidates, the receipt and timing of potential regulatory submissions, designations, approvals and commercialization of product candidates, the timing and results of preclinical and clinical trials, and the expected impact of the COVID-19 pandemic on our operations. It is not possible for our management to predict all risks, nor can we assess the impact of all factors on our business or the extent to which any factor, or combination of factors, may cause actual results to differ materially from those contained in any forward-looking statements we may make. These factors, together with those that may be described in greater detail under the heading “Risk Factors” contained in our most recent Annual Report on Form 10-K, Quarterly Report on Form 10-Q and other reports the company files from time to time with the Securities and Exchange Commission, may cause our actual results, performance or achievements to differ materially and adversely from those anticipated or implied by our forward-looking statements.

You should not rely upon forward-looking statements as predictions of future events. Although our management believes that the expectations reflected in our forward-looking statements are reasonable, we cannot guarantee that the future results, levels of activity, performance or events and circumstances described in the forward-looking statements will be achieved or occur. Moreover, neither we nor our management assume responsibility for the accuracy and completeness of the forward-looking statements. We undertake no obligation to publicly update any forward-looking statements for any reason after the date of this presentation to conform these statements to actual results or to changes in our expectations, except as required by law.

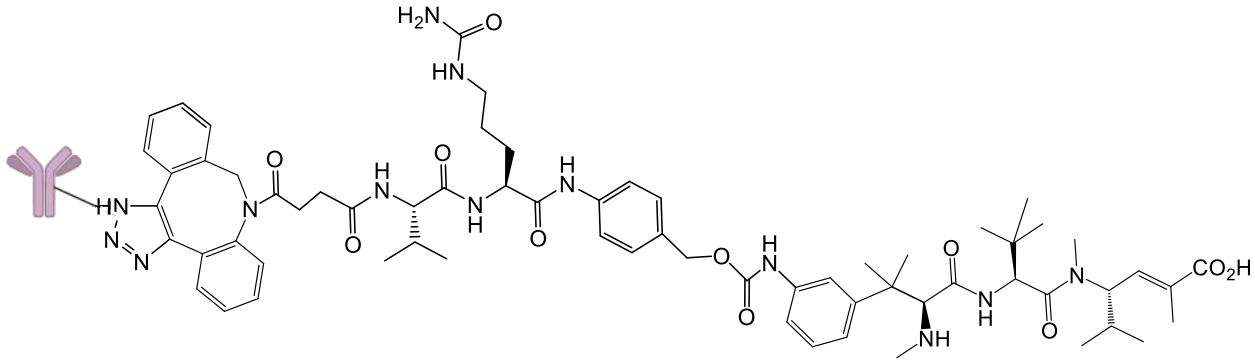
This presentation also contains estimates and other statistical data made by independent parties and by us relating to market size and growth and other data about our industry. This data involves a number of assumptions and limitations, and you are cautioned not to give undue weight to such estimates. In addition, projections, assumptions, and estimates of our future performance and the future performance of the markets in which we operate are necessarily subject to a high degree of uncertainty and risk.

This presentation shall not constitute an offer to sell or the solicitation of an offer to buy, nor shall there be any sale of these securities in any state or other jurisdiction in which such offer, solicitation or sale would be unlawful prior to registration or qualification under the securities laws of any such state or other jurisdiction.

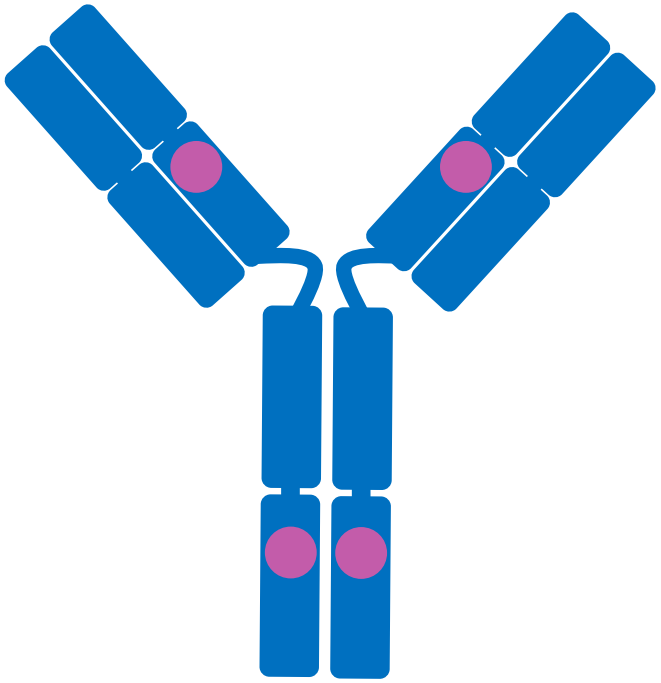
STRO-002 Structure and Design

Optimized molecule provides potential for best-in-class

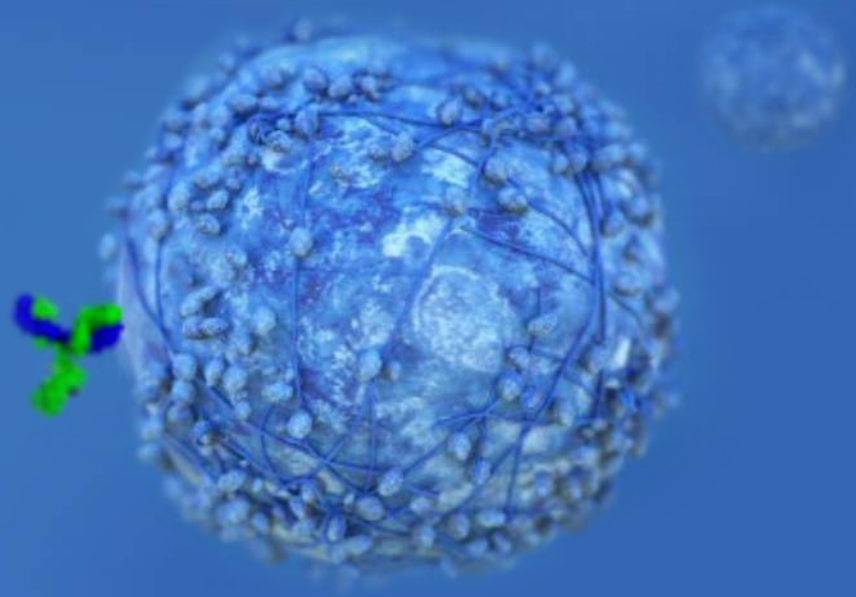
- STRO-002 is a novel homogeneous antibody drug conjugate using precisely positioned non-natural amino acids
- STRO-002 has a drug-antibody ratio of 4:1, with a proprietary cleavable hemiasterlin linker-warhead that is stable in circulation
- Internalization of the ADC releases hemiasterlin in the tumor cell, resulting in immunogenic cell death of cancer cells



Structure of hemiasterlin linker-warhead following conjugation



STRO-002



SUTRO BIOPHARMA

Phase 1 Dose-Escalation Data Presented by Dr. Wendel Naumann

International Gynecologic Cancer Society Annual Meeting (Sept 10–13, 2020)

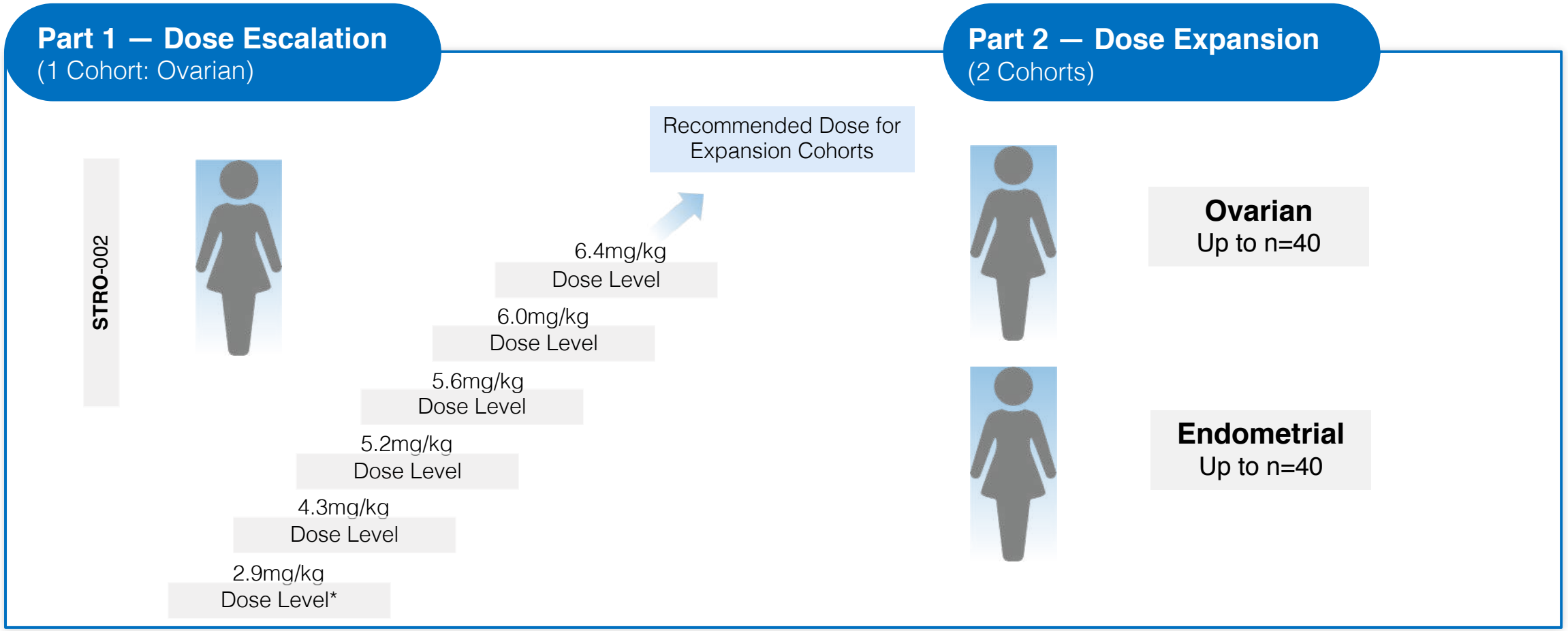
Phase 1 Dose-Escalation Study of STRO-002, an anti-Folate Receptor alpha (FRα) Antibody Drug Conjugate (ADC), in Patients with Advanced Platinum-Resistant / Refractory Epithelial Ovarian Cancer (OC)

R. Wendel Naumann[1], Fadi S. Braiteh[2], John P. Diaz[3], Erika Hamilton[4], Sami Diab[5], Russell J. Schilder[6], John W. Moroney[7], Lainie P. Martin[8], Denise Uyar[9], David M. O'Malley[10], Richard Penson[11], Clifford DiLea[12], Michael Palumbo[13], Venita DeAlmeida[13], Craig J. Berman[13], Shannon Matheny[13], Arturo Molina[13]

[1]Levine Cancer Institute, Carolinas Medical Center, Charlotte, NC; [2]Comprehensive Cancer Centers of Nevada, Las Vegas, NV; [3]Miami Cancer Institute at Baptist Health, Miami, FL; [4]Sarah Cannon Research Institute, Tennessee Oncology PLLC, Nashville, TN; [5]Rocky Mountain Cancer Center, Aurora, CO; [6]Sidney Kimmel Cancer Center, Thomas Jefferson University, Philadelphia, PA; [7]University of Chicago, Chicago, IL; [8]University of Pennsylvania, Abramson Cancer Center, Philadelphia, PA; [9]Medical College of Wisconsin, Milwaukee, WI; [10]Ohio State University, Wexner Medical Center, Columbus, OH; [11] Massachusetts General Hospital, Boston, MA; [12]Aclairo Pharmaceutical Development Group, Vienna, VA; [13]Sutro Biopharma, Inc., South San Francisco, CA

Phase 1 Clinical Trial Design

Fast Track FDA Registration Pathway Possible Based on Recent Precedents



Key Objectives

Part 1: Safety, MTD, RP2D, PK, ADA, preliminary efficacy

Part 2: Response rates, duration of response, PFS, safety, PK

First Patient Dosed March 2019

All-comers study: Unenriched population (not selected on basis of FRα expression levels)

STRO-002 is given by IV infusion on Day 1 of 21-day cycles

* Excludes initial dose levels of 0.5-1.8mg/kg

Heavily Pretreated Ovarian Cancer Patients: Demographics/Dose Levels

Data as of August 31, 2020

Characteristic	Total N = 39 (%)
Age, median (range), years	61 (48-79)
Tumor type	
EOC	30 (77)
Fallopian tube	7 (18)
Primary peritoneal	2 (5)
ECOG PS	
0	23 (59)
1	16 (41)
Median time from diagnosis (range)	3.9 years (0.6–17.1)
Median lines of prior therapy (range)	5 (2–10)
Platinum	39 (100)
≥ 3 prior platinum regimens	14 (36)
Taxanes	38 (97)
Bevacizumab	31 (79)
PARP inhibitors	23 (59)
Checkpoint inhibitors	8 (21)
Experimental therapy	13 (34)

Characteristic	Total N = 39 (%)
Dose Level of STRO-002	
0.5 mg/kg, 1.0 mg/kg, 1.8 mg/kg	5 (13)
2.9 mg/kg	3 (8)
4.3 mg/kg	5 (13)
5.2 mg/kg	12 (31)
5.6 mg/kg	3 (8)
6.0 mg/kg	10 (26)
6.4 mg/kg	1 (3)

Generally Well Tolerated Without Ocular DLTs or SAEs

Treatment Emergent AEs in ≥ 25% of Patients (without causality attribution)

The emerging STRO-002 safety profile includes **mostly mild adverse events - 87% of all AEs reported are grade 1 or 2**

Treatment Emergent Adverse Events (TEAE)					
TEAE >20%	**Grade 1**	**Grade 2**	**Grade 3**	**Grade 4***	**N= 39 (%)**
Fatigue	7 (18)	16 (41)	4 (10)		27 (69)
Nausea	15 (38)	9 (23)			24 (62)
Neutropenia/ Neutrophil count decreased		2 (5)	10 (26)	12 (31)	24 (62)
Constipation	12 (31)	9 (23)			21 (54)
Decreased appetite	11 (28)	9 (23)			20 (51)
Arthralgia	6 (15)	7 (18)	5 (13)		18 (46)
Abdominal pain	6 (15)	4 (10)	3 (8)		13 (33)
AST increased	10 (28)	2 (3)	1 (3)		13 (33)
Diarrhea	8 (21)	3 (8)	1 (3)		12 (31)
Dizziness	9 (23)	3 (8)			12 (31)
Peripheral neuropathy	2 (5)	7 (18)	2 (5)		11 (28)
Vomiting	7 (18)	4 (10)			11 (28)
Headache	7 (18)	3 (8)			10 (26)

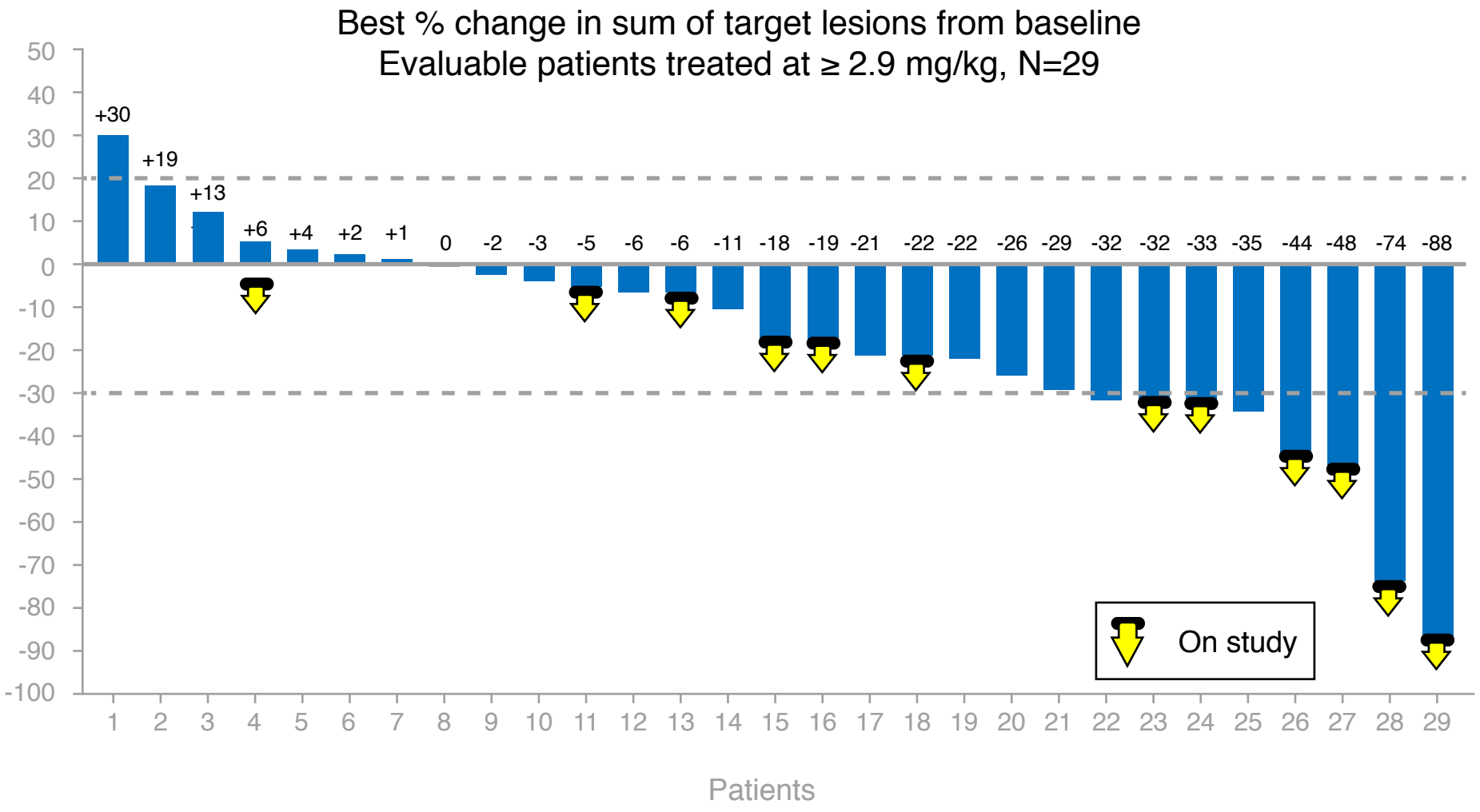
2 DLTs have been reported: neuropathy (6.0 mg/kg); bone pain (6.4 mg/kg)
*Only other Grade 4 events reported include WBC decrease (N=1), febrile neutropenia (N=1), and GI hemorrhage (N=1)
2 Grade 5 events have been observed, both reported as unrelated to study drug: Death NOS (not otherwise specified); Patient above with Grade 4 GI hemorrhage and progressive disease developed Grade 5 Acute GI bleed
Data as of August 31, 2020

Robust Anti-Tumor Activity in Heavily Pre-Treated, Unselected Patients

ORR: 24% (8/33)

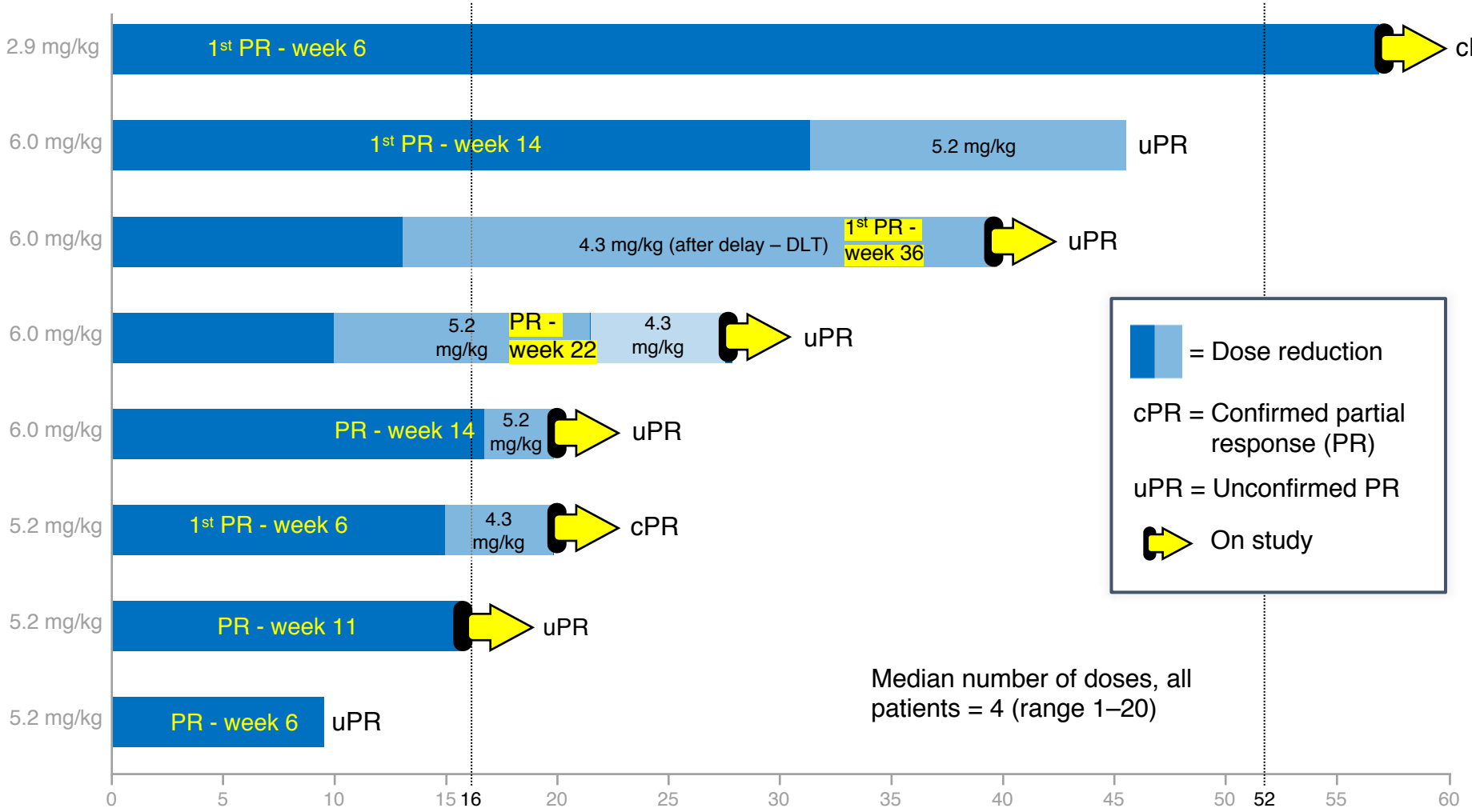
Partial response = ≥ 30% reduction

DCR at ≥ 12 weeks: 60% (20/33)



4 pts off study before post baseline scan
1 pt ongoing, not yet at first post baseline scan
Data as of August 31, 2020

Partial Response Achieved in 24% of Unenriched, Heavily Pre-Treated Ovarian Cancer Patients



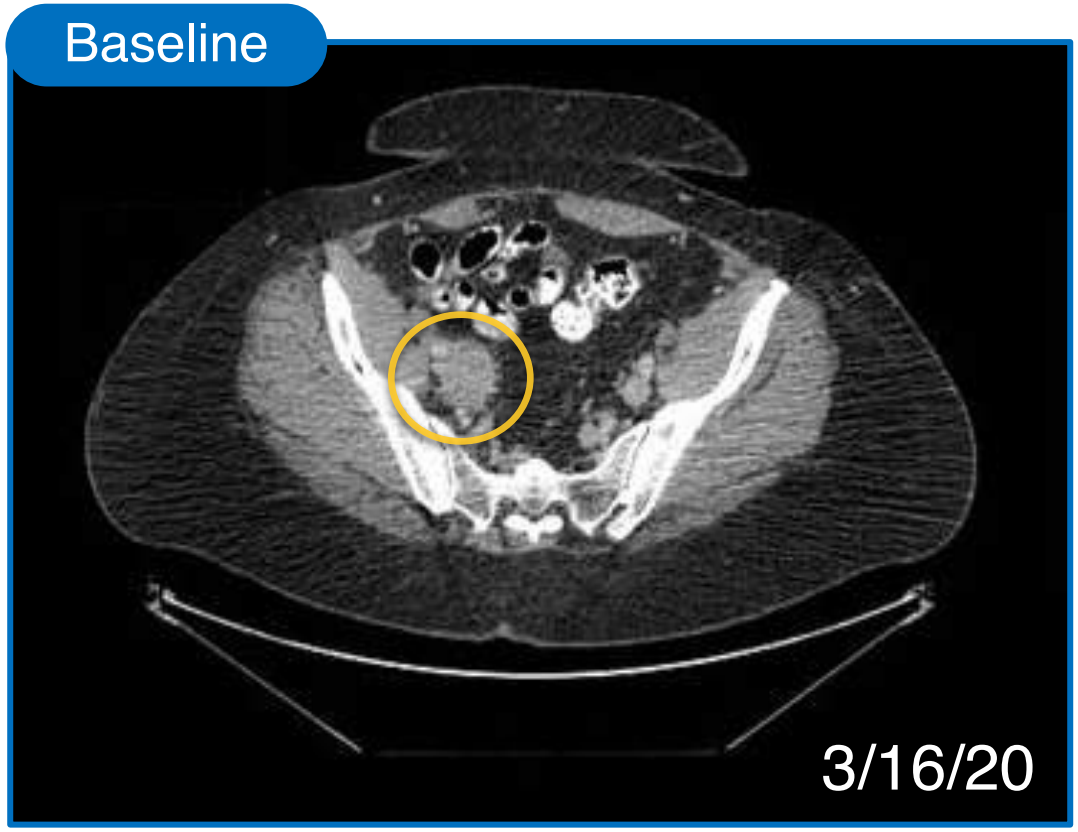
Data as of Aug 31, 2020

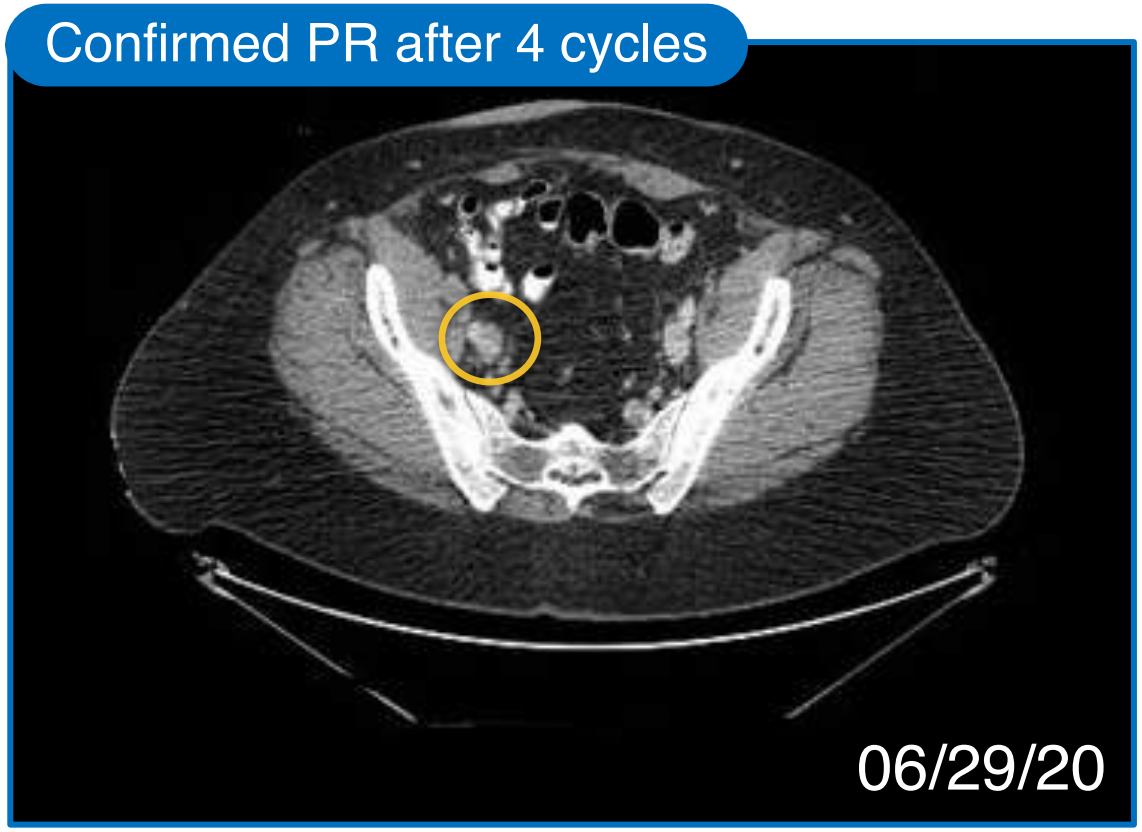
X-Axis: Weeks

Duration calculated as time from first dose to last dose given (on study) or date of PD (off study).

Partial Response with 74% Tumor Reduction

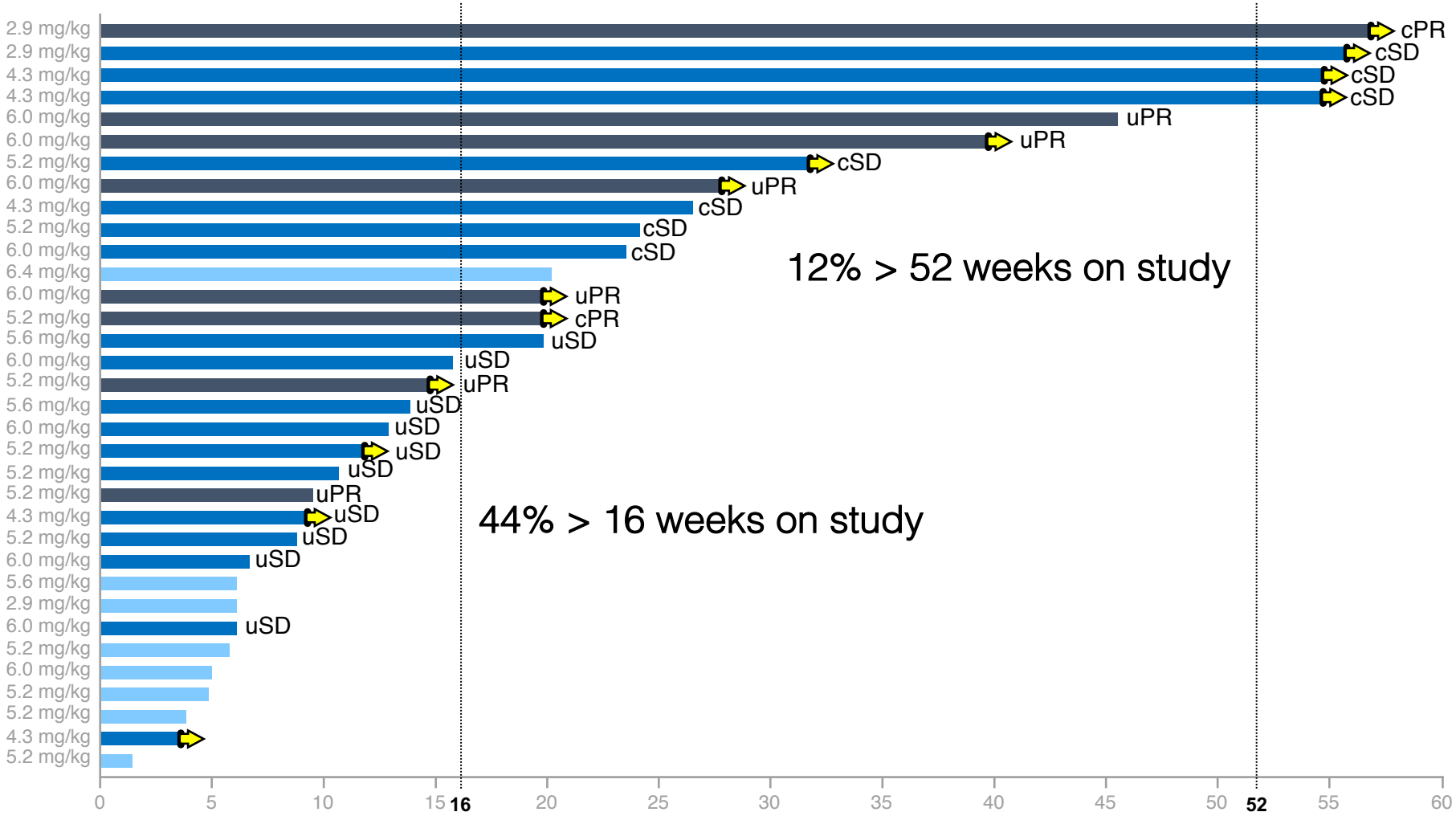
Patient Continues on Treatment





57-year-old woman with platinum resistant ovarian cancer progressing after 4 prior regimens received STRO-002 at 5.2 mg/kg and remains on study treatment

Long Duration on Study and Disease Control Observed in Unenriched, Heavily Pre-Treated Ovarian Cancer Patients



Data as of Aug 31, 2020

X-Axis: Weeks

Duration calculated as time from first dose to last dose given (on study) or date of PD (off study).

ORR: 24% (8/33)

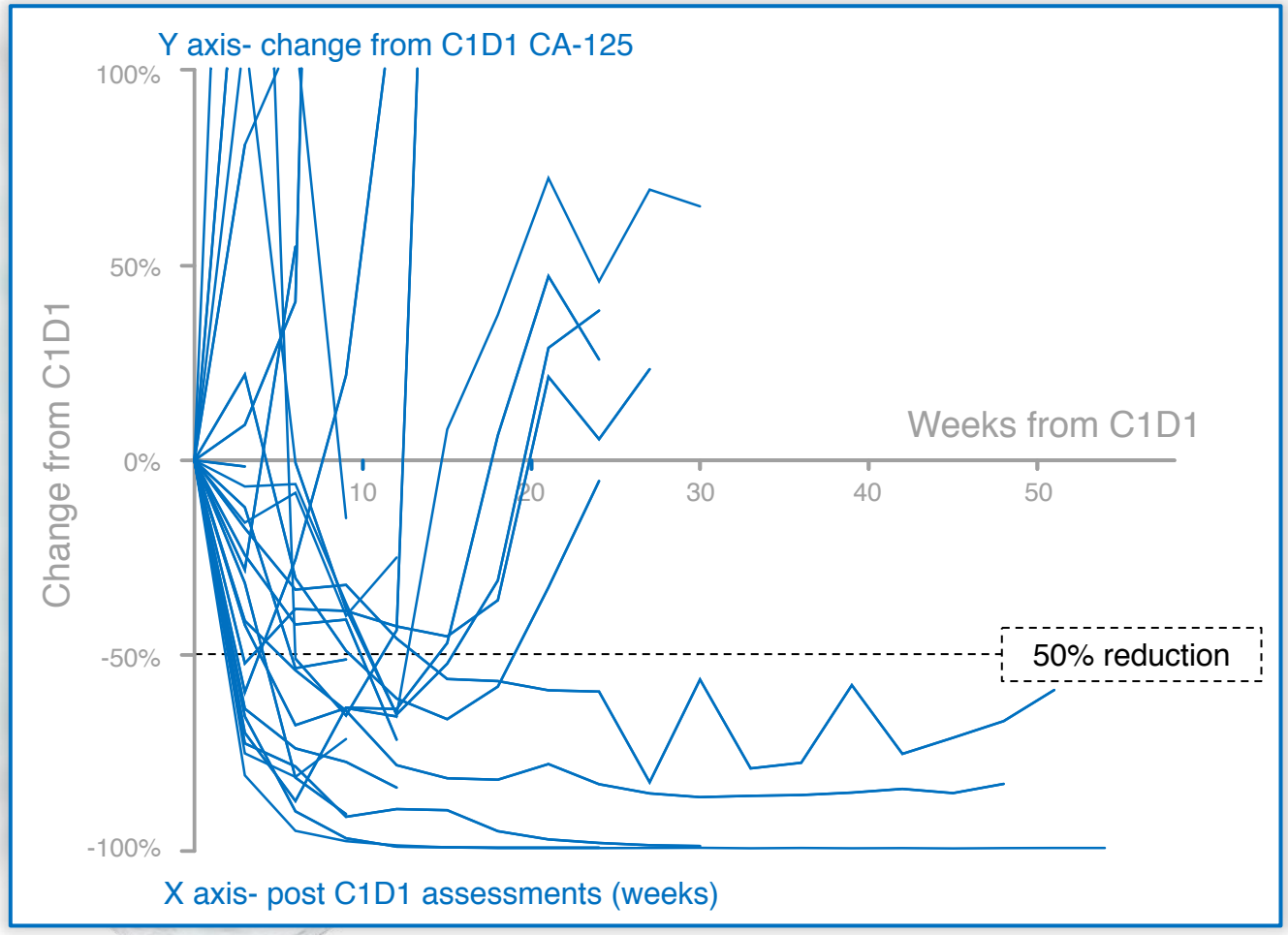
DCR at ≥ 12 weeks: 60% (20/33)

cPR = Confirmed partial response (PR)
uPR = Unconfirmed PR
cSD = Confirmed stable disease (SD)
uSD = Unconfirmed SD
On study

Median number of doses, all patients = 4 (range 1–20)

SUTRO BIOPHARMA

High Rates of CA-125 Responses are Associated with Anti-Tumor Activity



72% (18/25) of patients with elevated CA-125 levels at baseline had ≥ 50% reduction in CA-125 in at least 1 post-treatment timepoint

- 10/25 (40%) have confirmed CA-125 reductions ≥ 50% that is maintained and confirmed 28 days later
- 9 pts not evaluable for CA-125 response per GCIG criteria*

CA-125 decreases ≥ 50% from baseline are associated with tumor control with RECIST responses and stable disease

*Gynecologic Cancer InterGroup (GCIG) criteria requires an elevated baseline CA-125 level of at least twice the upper limit of normal

Promising Efficacy in a Heavily Pre-treated, Resistant/Refractory Unenriched Patient Population

Improved efficacy outcomes (increased ORR and DCR) observed as data matures with longer follow-up

- Overall response rate is 24% (8/33)
- High DCR of 60% at ≥ 12 weeks and 47% at ≥ 16 weeks
- Population not enriched for high FRα expression
- 38% (13/34) of patients still on study with potential to further improve efficacy outcomes

Heterogeneity of tumor regression and response, with some delayed partial responses observed after initial and variable period of stable disease

High rate of CA-125 responses (≥ 50%) are associated with anti-tumor activity

Data as of Aug 31, 2020

STRO-002 is Generally Well Tolerated

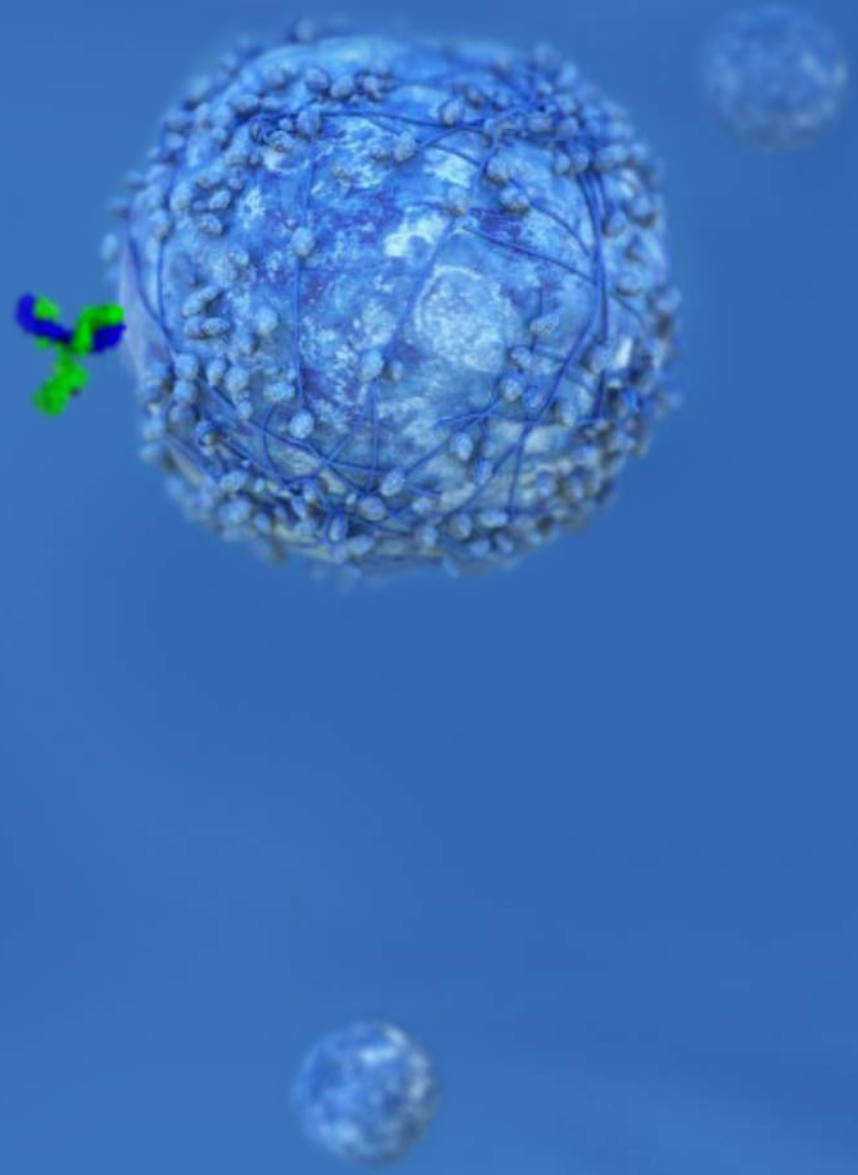
Safety Profile Is Encouraging

- 87% of AEs were Grade 1–2
- No need for prophylactic corticosteroid eyedrops
- Neutropenia readily reverses within 1 week, without the need for G-CSF
- Peripheral neuropathy/arthralgia can be managed with dose reduction/delay without evidence of compromised efficacy

Acknowledgements

Our gratitude to the women who chose to participate in this study and their families

Thank you to the STRO-002-GM1 investigators and study staff for their diligence in caring for these patients



SUTRO BIOPHARMA

Summary and Next Steps

Arturo Molina, MD, MS

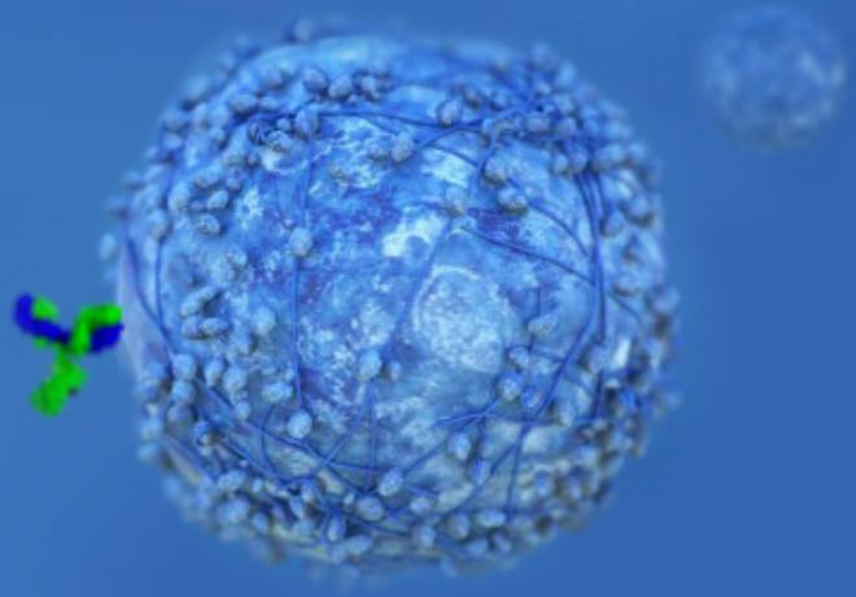
Improved Efficacy Outcomes (Increased ORR and DCR) Observed as Data Matures with Longer Follow-Up

STRO-002 Clinical Data Readout			
		April 20th, 2020 Interim Analysis	August 31st, 2020 Interim Analysis
N ≥ 2.9 mg/kg*		25 (20 evaluable)	34 (33 evaluable)
Median Age		61 (47–76)	61 (48–79)
Median Prior Lines		5 (2–10)	5 (2–10)
RECIST	Responses	1 PR	8 PRs
	ORR	5% (1/20) of evaluable pts	24% (8/33) of evaluable pts
	DCR @ ≥12 Wks	40% (8/20) of evaluable pts	60% (20/33) of evaluable pts
Dur. on Study	Pts on Study @ 16 Wks	32% (8/25)	44% (15/34)
	Pts on Study @ 52 Wks	n/a	12% (4/34)
CA-125	Reduction in level of ≥50%	57% (12/21)	72% (18/25)

***38% (13/34) of patients still on study** with potential to further improve efficacy outcomes

Summary and Next Steps in Clinical Development

- STRO-002 is clinically efficacious at multiple doses, starting at 2.9 mg/kg
  - Dose reductions or delays were not associated with loss of anti-tumor activity
- Further dose optimization will be explored during dose expansion
  - Anticipate RP2D will be in 4.3 – 5.2 mg/kg range
- Expansion cohort will seek to enroll less heavily pre-treated patients
  - Monotherapy unenriched expansion cohort in ovarian cancer planned for 4Q20
- Two FRα IHC assays are being compared for accuracy and consistency
- EOP1/2 FDA meeting planned for next year



SUTRO BIOPHARMA

STRO 002

FolRα – Targeting ADC Phase 1

Potential Best-in-Class ADC for Ovarian and Endometrial Cancers