

Research Forum

Advancing Science to Advance Patient Care

October 10, 2024 Sutro Biopharma NASDAQ: STRO



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Sutro's cell-free platform has come of age, **enabling precise design of ADCs** with a wide range of features that is **not possible with other platforms** Sutro's next-generation ADCs mitigate toxicity risk and increase dose to **improve efficacy and broaden the addressable patient population** Sutro's early-stage ADC portfolio has broad potential to deliver **three INDs over the next three years**



Today's Agenda and Speakers



ADC – antibody drug conjugate; ADC² – dual-payload ADC; iADC – immunostimulatory ADC



Sutro's Platform Enables Unique Design of Next-Generation ADCs

Hans-Peter Gerber, PhD Chief Scientific Officer



Sutro's Platform Enables Therapeutic Index (TI) Improvements of ADCs

Maximum Tolerated Dose (MTD) vs. Minimum Effective Dose (MED)



Adapted from Gerber et al, mAbs, 2023 HNSTD – highest non-severely toxic dose



ADC Development Up to 2020: Focused on Optimizing Potency



- Higher potency payloads
 - PBDs, PNUs, etc.
- Novel conjugation chemistry
- Improved ADC activity
 - In vitro potency
 - In vivo xenograft



However...

Clinical ADC breakthrough in 2019 with lower potency Camptothecin/Exatecan/Topo1i ADCs

PBD – pyrrolobenzodiazepines; PNU – a highly potent secondary metabolite of nemorubicin belonging to the anthracycline class of natural products; Topo1i – topoisomerase 1 inhibition

Lower Potency Payloads Enable Higher Dosing and Exposure, Which Drives ADC Efficacy



Only 1% of ADCs reach tumors, targeting the tumor effectively when it gets there

99% reside outside tumors, limiting ADC

 exposure as premature payload release causes platform toxicity

Topo1i ADCs outside the tumor are less toxic to healthy cells:





Early Surrogate *In Vitro* Assays Critical to Developing ADCs With Lower Platform Toxicities

The Problem: Platform Toxicities are Less Well Understood

- Different for each linker payload type & conjugation method
- Assays to study platform toxicity lagged behind potency assays
- Rodent safety studies not predictive for human outcome

The Good News: Platform Toxicities in NHPs are Predictive for Humans

• However, the most relevant experiments are resource intensive and at the end of the ADC development cycle

2015 to 2024: New In Vitro Assays Enable Better Understanding and Study of Technologies Designed to Reduce Key Platform Toxicities

• Early surrogate *in vitro* assays to select ADCs for reduced platform toxicities



NHP – non-human primate





PBS – phosphate buffered saline









FcRn – neonatal Fc receptor





FcyR – Fc gamma receptor; ILD – interstitial lung disease

Key Sutro Technologies to Improve ADCs Outside the Tumor



Improved PK (Higher ADC Exposure, Longer Half Life, Higher Dose)

PK-pharmacokinetics

Success Criteria





Comparison of Exposure Levels in NHPs at Highest Non-Severely Toxic Dose (HNSTD) Levels in DAR Equivalents



Why does it matter?

- For ADCs, exposure drives efficacy
- Based on PK data, our exatecan ADCs are positioned to be better than on-market

Exatecan/Topo1i ADCs





Enhancing ADCs Inside and Outside the Tumor With Sutro's Platform Technologies Leads to a Higher Therapeutic Index





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Adapted from Gerber et al, mAbs, 2023

Our Focused R&D Strategy – Make ADCs Better Inside the Tumor



Unique advantage of non-natural amino acid incorporation by Cell-free XpressCF® IO – immuno-oncology



Sutro's ADC Platform is Fundamentally Different: Manufacturing of Proteins in Cell-Free Extracts



Prokaryotic Cells



1976

Genentech: Boyer (UCSF) Purpose: Manufacture Protein Therapeutics

DNA - deoxyribonucleic acid; HGH - human growth hormone; UCSF - University of California, San Francisco



Sutro's ADC Platform is Fundamentally Different: Manufacturing of Proteins in Cell-Free Extracts





Sutro's ADC Platform is Fundamentally Different: Manufacturing of Proteins in Cell-Free Extracts



nnAA - non-natural amino acids; CF - cell-free; bsAb - bispecific antibody; GMP - good manufacturing practice



Comparison of Topo1i ADC Platforms (Selected)

	DAR>8	Beta-Glu Linker	ADC ² / Dual LPs	iADC/ iSAC	Site Specific	Fc Silent	Bispecific	HT Screening
SUTR:)	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc		\bigcirc	\bigcirc
Abbvie				\odot		\odot	\odot	
AstraZeneca					\oslash	\bigcirc	\odot	
Daiichi Sankyo								
Dualitybio				\oslash		\oslash	\oslash	
Genequantum			\oslash	\oslash	\oslash			
Genmab							\oslash	
Gilead								
Hansoh							\oslash	
Hengrui				\oslash				
Kelun							\oslash	
Lilly		\oslash				\oslash		
Medilink								
Merck KGaA		\bigcirc					\bigcirc	
Pfizer		\oslash		\oslash				

LP – linker payloads; iSAC – immune stimulating antibody conjugate; HT – high throughput

TI of Exatecan Platform ADCs with Best-in-class Potential

- Unique combination of FcγR deficiency, beta-Glu linker and DAR>8
- Lack of ILD & eye tox due to FcγR deficiency, exatecan payload
- Low on-target skin tox & neutropenia due to beta-Glu linker
- Industry best PK due to highly stable conjugation technology

ADC Enhancement Enabled by nnAA: High DAR, Dual-payload, iADC

• To reach low copy number tumors, enhance CPI combination, reduce resistance

Platform Provides Significant Long-term Potential

- 3 months from clinical candidate selection to GLP tox batch achievable
- COGs comparable with CHO cell manufacturing
- Vaxcyte provides important platform validation

CPI - checkpoint inhibitor; GLP - good laboratory practice; COGS - cost of goods; CHO - Chinese hamster ovary





ADC Program Deep Dive: STRO-004, a Tissue Factor ADC

Alice Yam, PhD Vice President, Drug Discovery

Our Focused R&D Strategy: Make ADCs Better Inside the Tumor with Higher DAR



Unique advantage of non-natural amino acid incorporation by Cell-free XpressCF® IO – immuno-oncology



STRO-004: ADC Targeting Tissue Factor with Broad, Pan-Tumor Potential (IND 2H 2025)





Tissue Factor is Highly Expressed Across Multiple Solid Tumor Indications



De Bono (2022) Cancer Reports Unruh and Horbinski (2020) J Hematology & Oncology TF – Tissue Factor; TCGA – The Cancer Gene Atlas; HR –hazard ratio; mRNA – messenger RNA



STRO-004: DAR8 Exatecan Payload ADC Designed for Enhanced Stability, Potency and Tumor Selectivity



 β -glucuronidase upregulated in tumor



Enhanced therapeutic window



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Delivering More Payload Corresponds to Greater Clinical Response (Enhertu Example)



Meric-Bernstam, et al (2023) J Clin Oncology. DESTINY-PanTumor02 trial

a - Responses in the other tumors cohort include responses in extramammary Paget disease, oropharyngeal neoplasm, head and neck cancer, and salivary gland cancer.

ORR - objective response rate; BTC - biliary tract cancer; IHC - immunohist ochemistry



Selected DAR8 ADC Delivers More Payload to Low-TF Expressing Tumors Corresponding to Greater Anti-Tumor Response





STRO-004 DAR8 Exatecan Achieves Sustained Tumor Regressions in Xenograft Models of NSCLC and HNSCC at Low Doses





STRO-004 Shows Promising Anti-tumor Activity In TF Positive PDX Models of HNSCC and NSCLC



STRO-004 Demonstrates Reduced On-target Toxicity Due to Site Specific Linker-Payload Design





STRO-004 Well-Tolerated in NHP up to 50 mg/kg

Objective:

Compare nonclinical safety of DAR4 and DAR8 TF exatecan-ADC

Study:

Dosed twice, three weeks apart, payload-matched doses

Findings:

- DAR4 and DAR8 ADCs were welltolerated up to 100 and 50 mg/kg, respectively
- No evidence of eye toxicity
- Mild skin toxicity, observed in both DAR4 and DAR8





STRO-004 Widens the Therapeutic Window Compared to First Generation TF ADCs



*Breij & Parren, Can Res, 2014 # Sutro. 2024 interim data

Cmax – maximum concentration; AUClast - drug exposure over the specified time period; h – hour

STRO-004 is a Next Generation ADC with Enhanced Therapeutic Potential

TF presents an opportunity for pan-tumor targeting

• Clinical validation of TF in cervical cancer, and signs of early activity in HNSCC, pancreatic cancer, and multiple other solid tumors with significant unmet need

STRO-004 is optimally designed for broad therapeutic benefit

- Clinically validated payload with potent activity, bystander and reduced susceptibility to resistance
- Optimized linker design with enhanced tumor selectivity and hydrophilicity
- Maximized drug performance with high DAR8 and optimized conjugation positioning
- Significant safety window, driving drug exposure and efficacy

IND filing and First-in-Human studies planned for 2H 2025





Making ADCs Better Inside the Tumor: Dual-Payload ADCs (ADC²)

Daniel Calarese, PhD Senior Director, Innovation and Strategy

Our Focused R&D Strategy: Make ADCs Better Inside the Tumor with Dual-Payloads



Unique advantage of non-natural amino acid incorporation by Cell-free XpressCF \circledast IO – immuno-oncology



Potential Advantages of Dual-Payload ADC Approach





Reduced Toxicity



Reduced Clinical Complexity



Simultaneous Payload Delivery



Overcome Resistance Mechanisms



Emerging Clinical Trends: Sequential Treatment with ADCs



SABCS – San Antonio Breast Cancer Symposium; ASCO – American Society of Clinical Oncology





SDS-PAGE – sodium dodecyl sulfate polyacrylamide gel electrophoresis; IgG – immunoglobulin G;HC – heavy chain; LC – light chain



















Topo1i + Anti-Tubulin Dual-Payload ADC Positioned to Address Broad Therapeutic Opportunity



Source: internal Sutro data muEGFR – mutant epidermal growth factor; SCLC – small cell lung cancer



Topo1i + Anti-Tubulin Dual-Payload Clinically Validated by Trodelvy + Padcev Combination Study

			DAR	Clinical Data			
ADC(s)	Developer(s)	Payload		Trial	Median PLoT	Ν	ORR (%)
Sacituzumab Govitecan (Trodelvy)	Gilead	SN-38	7.6	TROPHYU-01 ^{1,2}	3 (1-8)	87	29%
Enfortumab Vedotin (Padcev)	Seattle Genetics, Astellas	MMAE	4	EV-201 ³	3 (1-6)	89	51%
Tradeback Dadaase	Gilead	SN-38	7.6		\mathbf{N}	01	700/
nodervy + Padcev	Seattle Genetics, Astellas	MMAE	4	DAD	< 2	21	10%

Non-overlapping toxicities of Tubulin and Topoisomerase 1 inhibitors⁴

Well-tolerated when dosed simultaneously⁴

Clinical trial amended to include a "DAD-IO" arm to test the ADC combination with pembro⁴

¹Loriot Y., et al. 2023 ASCO Annual Meeting Abstract Number 4579. ²Loriot Y., et al. 2023 ASCO Annual Meeting Abstract Number 4514. ³McGregor BA., et al. 2021 ASCO Annual Meeting Abstract Number 4524. ⁴McGregor BA., et al. 2024 ASCO PLoT – prior lines of therapy



Optimization of Dual-Payload ADC Design (Topo1i + anti-Tubulin)





Improved In Vitro Activity of Dual-Payload ADC





Dual-Payload ADC Displays Desirable Preclinical Mouse PK



	D	AR	Cl _{obs}	V _{ss}	t _{1/2} (days)	
	Торо1і	MMAE	(mL·d ^{−1} /kg)	(mL/̃kg)		
	8	2	3.3	75.8	16.3	
—	8	4	4.2	81.4	14	

CLobs - observed clearance; Vss - volume of distribution at steady state; t1/2 - half-life





Dual-Payload ADC Has Solid In Vivo Stability







Opportunity and Challenges in Combining PARP and Topoisomerase 1 Inhibitors: A Path Forward with Dual-Payload ADCs

MDA-MB-231 Well-established preclinical synergy 2000-PARP directly involved in Fumor volume (mm³) Topoisomerase 1 inhibitor DNA 1500damage repair 1000 Combo not realized in clinic due to 500 toxicity 60 80 20 40 ADC + PARPi under clinical investigation Days post treatment **TGI (Day 56)** - Vehicle PARP inhibition toxicity Talazoparib (0.33 mpk) 9% ---- DAR4 Topo1i ADC (0.25 mpk) 69% ---- DAR4 Topo1i ADC (0.25 mpk) + Talazoparib (0.33 mpk)

PARPi - Poly (ADP-ribose) Polymerase inhibitor; TGI - tumor growth inhibition



Optimization of Dual-Payload ADC Design (Topo1i + PARPi)





Dual-Payload Topo1i + PARPi ADC Shows Increased Activity Compared to Topo1i ADC



PBS – phosphate buffered saline







Multiple different dual-payload ADCs



Best-in-class platform potential to optimize dual-payload ADCs



Overcome resistance in clinic



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Making ADCs Better Inside the Tumor: Immunostimulatory Antibody Drug Conjugate (iADC)

Peter Sandor, MD

Executive Vice President, Head of Corporate Strategy, Astellas Pharma

Astellas is a specialty global pharmaceutical company

CORPORATE VISION:

On the forefront of healthcare change to turn innovative science into VALUE for patients

QUICK FACTS:



Formed in **2005** from the • merger of Yamanouchi and Fujisawa; headquartered in Tokyo, Japan



We have a culture of doing good for others, putting patients at the heart of everything we do



Growing expertise in **emerging areas** of discovery research, including Primary Focus areas: Immunooncology, Genetic Regulation, Blindness & Regeneration and Targeted Protein Degradation



Our 'Focus Area' approach means that we approach our drug discovery, research and development from multiple perspectives

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Broad pipeline including focuses on oncology, overactive bladder, women's health and more



We seek to address areas of significant unmet patient need through our Focus Area approach

Our Focus Area Approach guides our R&D activities as we prioritize our investments to deliver meaningful value for the patients that need our help the most and potentially define entirely new chapters in the treatment of disease:

Focus Area approach

Exploring unique combinations of Biology, Modality/Technology and Disease



Current Primary Focus

Prioritize investment in four Primary Focus areas:



• Explore Biology, Modality/Technology and Disease components and connections further



New Modality for Cold Tumors: Immunostimulatory Antibody Drug Conjugate (iADC)



- Tumor targeted delivery of a cytotoxin and an immune stimulator
- Disruption of the primary tumor and activation of innate immune cells
- Activation and infiltration of cytotoxic T cells
- Bridge innate and adaptive immune responses





iADC Engaged Both Innate and Adaptive Immune Compartments in hTAA-MC38 Tumor Bearing Mice



Early activation of pDCs following iADC and ISAC treatment

Followed by increased infiltration of CD8⁺ T cells and increased CD8/Treg ratio following iADC treatment

Single 10 mg/kg dose Data Presented at FOCIS Meeting June 2022



iADC Increased CD8+ T cells in Tumor Microenvironment



Data Presented at FOCIS Meeting June 2022



Superior and Durable Anti-Tumor Response with Single Dose of iADC vs. ADC Alone



Data Presented at FOCIS Meeting June 2022 CR – complete response



Novel Mechanism of Action Differentiates iADC from Other Immunotherapies

Sutro iAD	Cs bi	ridge innate and						
adaptive in protection i	nmun n a s	ity to provide broad single molecule	Sutro iADC	STING / TLR	ISAC	PD-1 / PDL-1	CAR-T Cells	Vaccine
		Molecule	Targeted and homogeneous	Chemo	Mixed ADC	Ab	Biologic	Biologic
		Opportunity: Risk	Combine ICD with innate agonists (TLR, STING, etc.)	Non-targeted, issues with TI	Requires Fc effector	Limited tumor types, small tumors	Safety concerns	Ag selection challenge
		FcγR meditated uptake into myeloid						
		Direct tumor cell killing						
Mechanisms		Tumor antigen presentation	•					•
to achieve anti-tumor immunity		Priming and activation of Antigen Presenting Cells		•	•			•
, in the second s		T-cell recruitment to tumor						

STING - stimulator of interferon genes; TLR- toll-like receptor; immunogenic cell death



iADC Offers A New Treatment Option

Potential to work alone by pushing on the gas of the immune system and priming new populations of immune cells. Potential to synergize with other immune therapies that release the brake off the immune system such as checkpoint inhibitors. Has the potential in hard-to-treat cancers by activating an antitumor immune response.



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Closing Remarks

Jane Chung, RPh President and Chief Operating Officer



Our Current ADC Portfolio with Three Expected INDs by 2027

		LEAD GEN	LEAD OPT	DEV CANDIDATE	IND-ENABLING	PHASE 1/1B	PHASE 3 / REGISTRATIONAL
SUTRO-LED PROG	RAMS						
Luvelta (STRO-002)	Multiple Clinical Programs						•
STRO-004 Tissue Factor exatecan ADC	IND 2H 2025				-		
STRO-00X exatecan ADC	IND 2026			-•			
STRO-00X dual-payload ADC	IND 2027		•				
STRO-00X dual-payload ADC	IND TBD		•				

STRO-003 – Ipsen has an exclusive global license to STRO-003 (ROR1 ADC) iADC – Sutro has a strategic collaboration with Astellas to develop two iADCs

IND - investigational new drug application



Sutro Next-Gen ADCs Target Significant Patient Populations



Patients for a given tumor type will be double- or triple-counted if multiple targets demonstrate ≥45% expression in that tumor type

Note: Tissue Factor (TF) eligible patients in Non-TNBC Breast are not included due to particularly high variability in reported expression levels in that tumor type; across targets, Pancreatic eligible patients are not included due to the challenges associated with treatments in that tumor type

If only overall NSCLC data is available for biomarker expression, same values are used for both NSQ-NSCLC and SQ-NSCLC

NSQ-NSCLC – non-squamous non-small cell lung cancer; TNBC – triple negative breast cancer; HNSCC – head and neck squamous cell carcinoma; mCRPC – metastatic castration-resistant prostate cancer; SQ-NSCLC – squamous non-small cell lung cancer



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Appendix

mAb - monoclonal antibody; MMAE - Monomethyl Auristatin E; DAR - drug-antibody ratio

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