



**LLS TAP**

# THERAPY ACCELERATION PROGRAM

LORE GRUENBAUM, VP, TAP  
JAVEED FROOZAN, VP, BD & SA

March 2021

**BEATING CANCER IS IN OUR BLOOD.**



LEUKEMIA &  
LYMPHOMA  
SOCIETY®

The mission of The Leukemia & Lymphoma Society (LLS) is to cure leukemia, lymphoma, Hodgkin's disease and myeloma, and improve the quality of life of patients and their families.

We fund **RESEARCH** to advance lifesaving treatments.

We provide patients, survivors, caregivers, families and healthcare professionals with hope, guidance, **EDUCATION** and **SUPPORT**.

We drive **ADVOCACY** for policies that protect patient access to lifesaving treatment.



Approximately every **3 minutes** someone in the U.S. is diagnosed with blood cancer



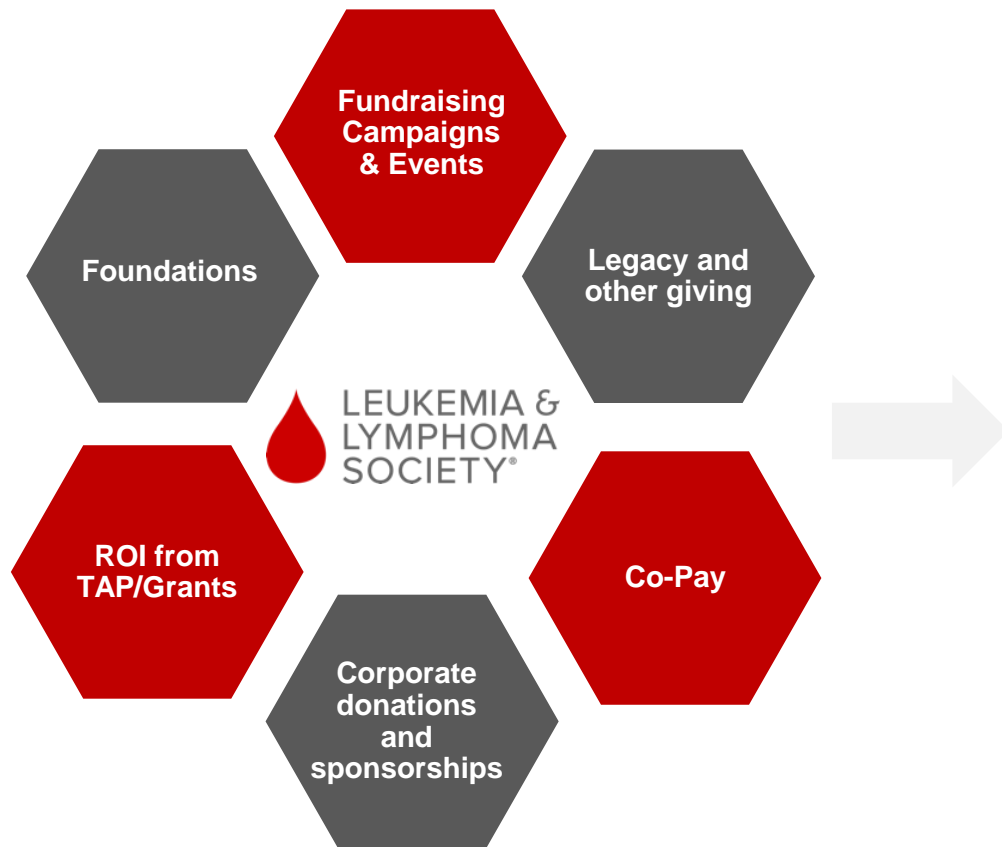
Nearly **1.4 million** people in the U.S. are living with or in remission from leukemia, lymphoma or myeloma



About **30 percent** of blood cancer patients still do not survive five years after diagnosis



About **40 percent** of all pediatric cancers are blood cancers


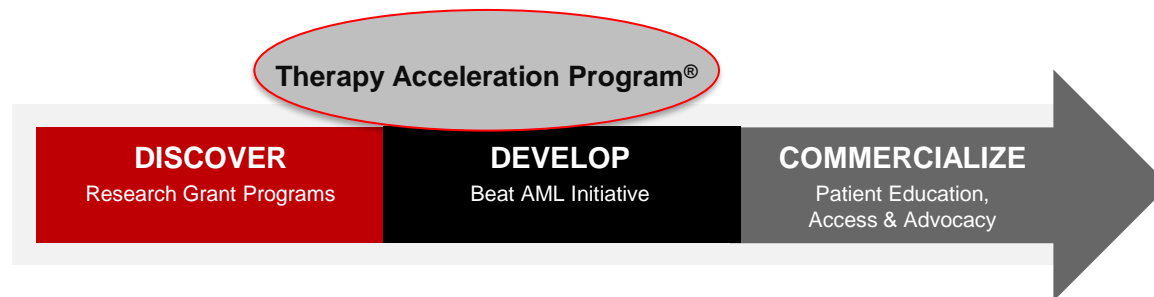


## OUR IMPACT

- Invested nearly \$1.3 billion in research and development worldwide since founded in 1949
- Helped advance 52 of 60 FDA approved blood cancer drugs
- Supported >93,000 patients since inception
- Responded to 20,000 inquiries in 2019


# LLS GLOBAL RESEARCH AND DEVELOPMENT FOCUS

Research and development programs and clinical trials using LLS resources



**Academic Grants**

~\$50 Million/yr over past 20 years at over 80 institutions with >4,000 projects total



**PedAL**

Global precision medicine trial focused on pediatric relapsed leukemia



**Therapy Acceleration Program®**

~\$10 Million/yr venture philanthropy initiative funding 70 portfolio projects since 2007



**Beat AML® Master Clinical Trial**

LLS Sponsored precision medicine trial

# LLS THERAPY ACCELERATION PROGRAM (TAP)

## Venture philanthropy funding to support novel therapies

Established in 2007

>\$125 Million invested to date

- Biotech: >\$90 Million
- Institutions: ~\$35 Million
- 70 financings of companies and assets
- >20 assets currently in clinical development

### 3 FDA-Approved Therapies

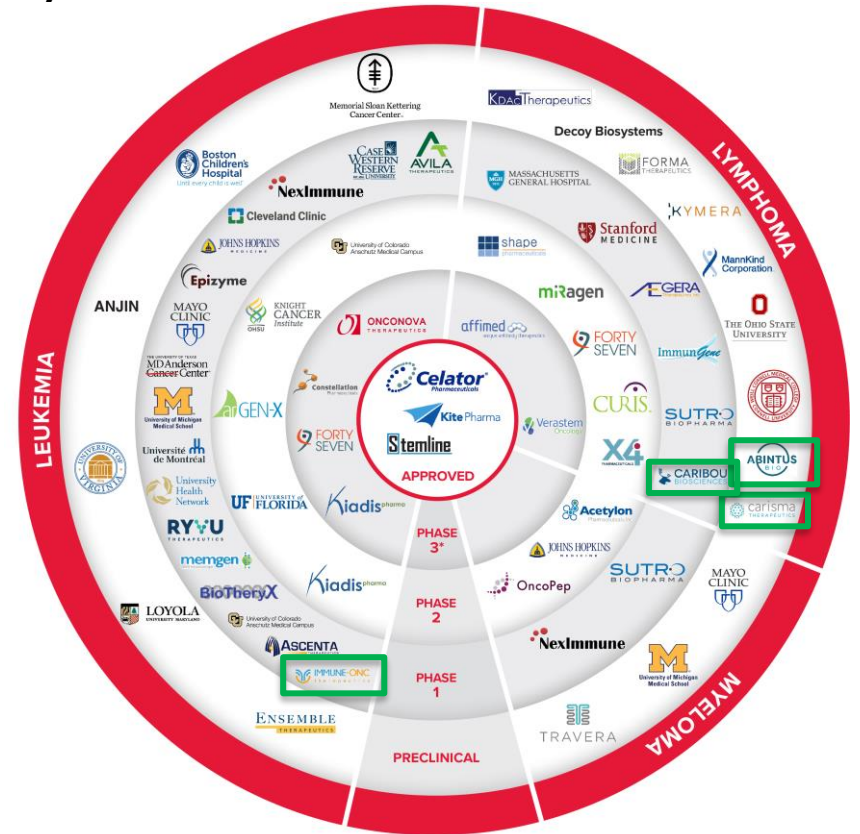
- Vyxeos (AML)
- Yescarta (DLBCL, tFL, PMBCL)
- Elzonris (BPDCN)

### ROI Focus:

- FDA Approvals
- Assets in clinical development
- Strategic transactions & financing for portfolio companies
- Financial ROI to LLS

[www.LLS.org/therapy-acceleration-program](http://www.LLS.org/therapy-acceleration-program)

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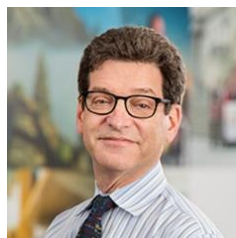
\*Includes Phase 2 registration-enabling studies

New - FY21



**Lore Gruenbaum, PhD**  
VP, TAP

- 20 years drug discovery & clinical development
- VP, Gotham Therapeutics; Exec Dir, Applied Biomath
- Biomarker Head, Virology, Roche; Group Leader, BI
- Yale postdoctoral work, principal investigator and collaborator on several SBIR grants



**Lee Greenberger, PhD**  
SVP, Chief Scientific Officer

- 20 years big pharma and biotech
- Oversight responsibility for >\$50 M annual research budget
- Advanced > 10 oncology therapeutics into the clinic
- Search & due diligence experience with big pharma



**Javeed Froozan, MBA, BS**  
VP, Business Development

- 25 years biopharma and health technology value creation
- Sr. Dir, Emergent BioSolutions, Multiple start-ups/exits, 2 IPOs
- Business lead on EBS-Trubion M&A transaction. Alliance Manager for Pfizer relationship
- Strategic Investments, M&A, Business Development, Asset Management, and Economic Development



**Blaine Robinson, PhD**  
Executive Director, TAP

- 15 years research & clinical development in blood cancer
- Search & Diligence on 100+ projects
- Scientific lead for over 20 TAP projects including Constellation, Kymera, Ryvu & most recently Abintus, Caribou & Immune-Onc
- Pediatric leukemia researcher, Children's Hospital of Philadelphia



**Jun Xu, PhD**  
Executive Director – TAP Lead

- 20 years oncology/immunology drug discovery/development
- Search & Diligence on 100+ projects
- Scientific lead for over 20 TAP projects including multiple high impact ones, such as Stemline, Kite, argenX, Forty Seven & most recently Carisma

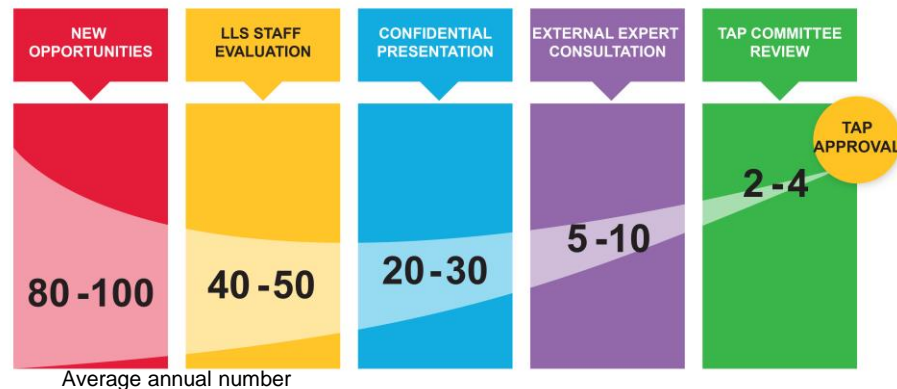
**Therapy Acceleration Program Committee:** <https://www.lls.org/therapy-acceleration-program/oversight>

# TAP GOALS & INVESTMENT STRATEGY

Accelerate innovative blood cancer therapies and generate ROI for LLS mission

## Focus on high-value assets:

- Existing and emerging populations with high unmet needs
- Gaps in current and emerging treatment landscape
- Innovative science, first-in-class assets
- First-in-heme/onc and registration trials
- Strong intellectual property, management, and finances



## 2 PATHS TO CO-INVEST WITH INVESTORS AND VENTURE PHILANTHROPIES



### Strategic

- Range of Investment: \$2 Million to \$10 Million
- Presentation to TAP Committee
- Typically, 3-6 months to reach TAP Committee



### Opportunistic

- Target Investment: \$500,000
- LLS TAP team briefs TAP Committee Chair
- Transaction completion in 1-3 months



# TAP VALUE ADD TO BIOTECH COMPANIES

TAP-funded companies benefit from LLS blood cancer insight

- Deep knowledge of indications and rapidly changing SoC
- Unique scientific, clinical, and drug development expertise
- Patient access services to enable understanding of patient needs
- Immediate access to extensive KOL network
- Pharmaceutical, biotech, and research institution partner connections
- Regulatory insight through LLS initiatives (Beat AML Master Clinical Trial®)

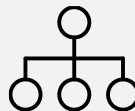
**TAP record of success provides scientific & investment credibility, and visibility enabling companies to raise additional funds.**

## Co-fund assets with institutions on clinical stage projects



### Therapeutics Development

Collaborate with leading institutions on assets with potential to outlicense or spin out



### Clinical Indication Expansion

Actively solicit and fund innovative ISTs to impact the current SoC

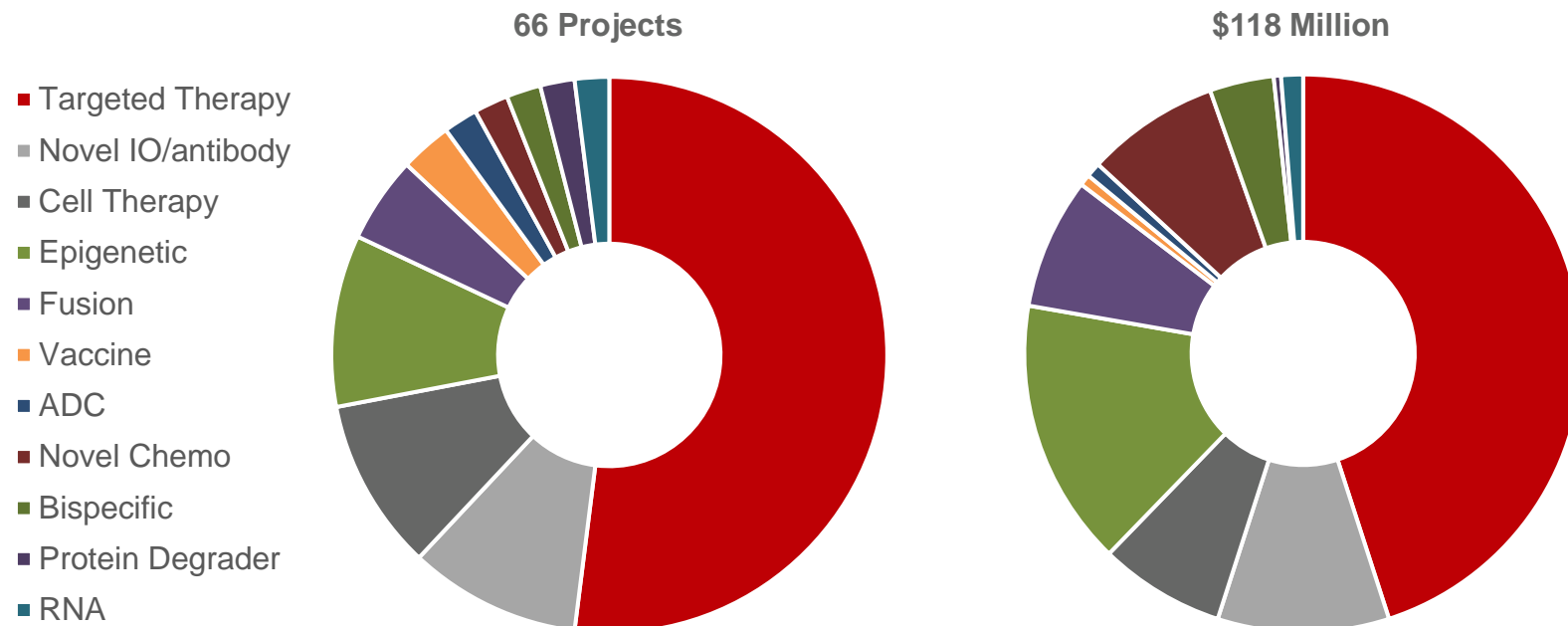


### Special Projects

Build collaborations with non-profits and other cooperative groups

## TAP PORTFOLIO THERAPEUTIC PLATFORMS FUNDED (2007-2020)

Portfolio is aligned with strong industry focus on Targeted Therapy and reflects growing interest in Cell and IO Therapies in blood cancer



# TAP PORTFOLIO INVESTMENTS IN ACUTE MYELOID LEUKEMIA (AML)

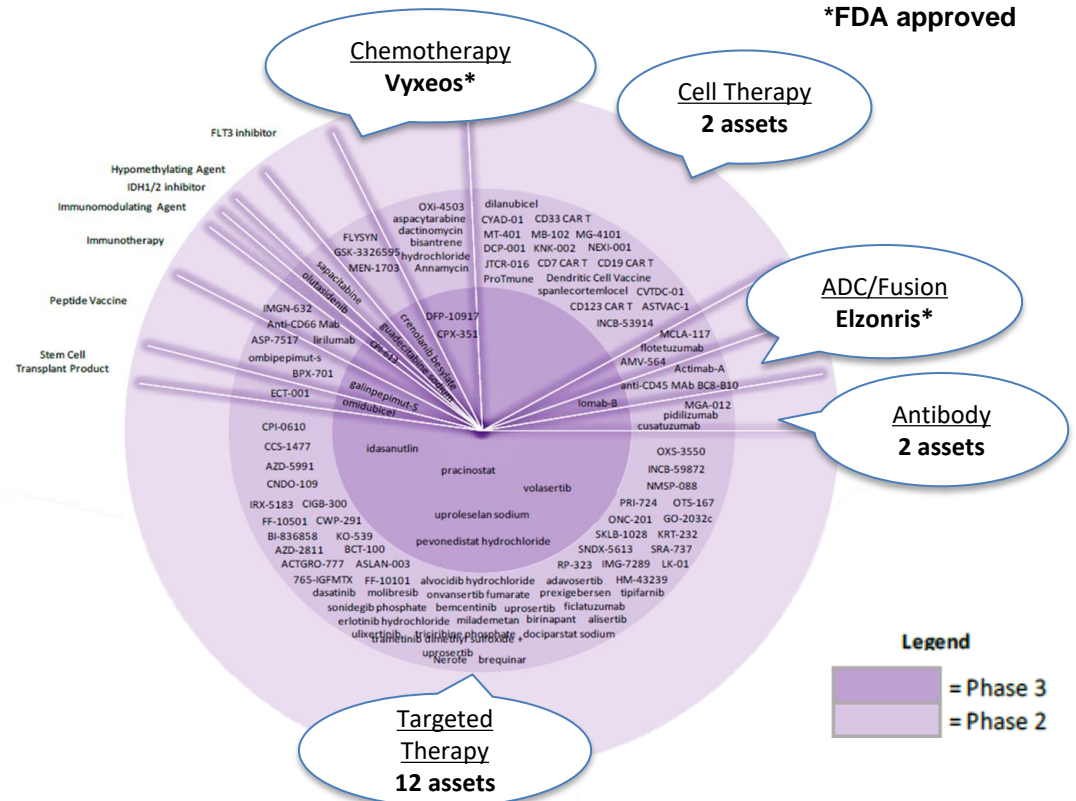
TAP team understands & successfully invests in complex therapeutic areas

## High Unmet Medical Need

- 72,000 newly diagnosed in 8 major markets (2019)
- >10,000 deaths per year in US
- Complex, heterogeneous disease
- Ineffective long-term disease control with current therapies
- Elderly patients not fit for chemo
- Growing use of targeted therapies and combinations

## Significant Market Opportunity

- Global AML market \$1.4 Billion (2019)
- CAGR 13.6% (projected to 2029)



# TAP PORTFOLIO ASSETS IN DEVELOPMENT

Therapy	Target/Modality	Indications	Preclinical	Phase 1	Phase 2	Phase 2 Reg / Phase 3	FDA status
Magrolimab + Azacitidine	CD47 antibody	MDS				FortySeven <sup>1</sup>	
AFM13	CD30/CD16A bispecific engager	PTCL				affimed	
Pelabresib + Ruxolitinib	BET small molecule	MPN				Constellation PHARMACEUTICALS	
Duvelisib	PI3Kδ/γ small molecule	PTCL				Verastem <sup>2</sup> Oncology	
Magrolimab + Rituximab	CD47 antibody	DLBCL			FortySeven <sup>1</sup>		
Cusatuzumab + Azacitidine	CD70 antibody	AML			argenx <sup>3</sup>		
K-NK002	NK cell therapy	AML/MDS			Kiadis <sup>4</sup>		
KO-539	Menin small molecule	MLL leukemia		KURA ONCOLOGY			
STRO-001	CD74 antibody drug conjugate	MM/DLBCL/MCL/FL		SUTRO BIOPHARMA			(MM)
Mavorixafor + Ibrutinib	CXCR4 small molecule	Waldenström macroglobulinemia		X4 PHARMACEUTICALS			
SEL120	CDK8/19 small molecule	AML/MDS		RYU THERAPEUTICS			
PVX-410 + ACY-241 +/- Len	XBP1/CD138/CS1 vaccine	Smoldering myeloma		OncoPep			
NEXI-001 NEXI-002	T cell therapy	AML MM		NexImmune			
BTX-A51	CK1-α/CDK7/CDK9 small molecule	AML/MDS		BioTherX			
IO-202	LILRB4 antibody	AML/CMML		IMMUNE-ONC THERAPEUTICS			
CB-010	CD19/PD1 KO allogeneic CAR	NHL		CARIBOU BIOSCIENCES			
KT-413	IRAK4IMiD heterobifunctional degrader	Lymphoma	KYMERA				
TBD	<i>in vivo</i> CAR	Hematological malignancies	ABINTUS				
TBD	CAR macrophage	Hematological malignancies	carisma THERAPEUTICS				

Orphan Drug Designation

Fast Track Designation

Breakthrough Therapy Designation

1: Acquired by Gilead ♦ 2: Duvelisib acquired by Secura Bio ♦ 3: Collaboration with Janssen ♦ 4: Acquisition by Sanofi announced ♦ 5: Licensed from University of Michigan

# TAP FUNDED ASSETS CREATE STRATEGIC VALUE

TAP portfolio partners have had successful M&A, collaboration and license transactions

## LLS TAP Funding

### \$40 Million

	➔	
 Kite Pharma		 GILEAD
 FORTY SEVEN		 Jazz Pharmaceuticals
 Celator Pharmaceuticals		 MENARINI group
 Stemline		 SANOFI
 Kiadis pharma		 janssen   PHARMACEUTICAL COMPANIES OF Johnson-Johnson
 arGEN-X		
 Acetylon Pharmaceuticals, Inc.		 Celgene
 Epizyme		
 AVILA THERAPEUTICS		
 JOHNS HOPKINS MEDICINE		 WindMIL THERAPEUTICS
 University of Michigan Medical School		 KURA ONCOLOGY

## Strategic Transactions

### \$20 Billion

## SIGNIFICANT EQUITY FINANCING RAISED SINCE LLS TAP FUNDING

Equity since TAP Funding*	TAP Portfolio Company
>\$1 Billion	argenx Epizyme
>\$500 Million	Constellation Kura <sup>2</sup>
\$250-\$500 Million	Curis Forty Seven <sup>1</sup> Kymera <sup>2</sup> Sutro
\$100-\$250 Million	Affimed Caribou <sup>2</sup> Neximmune <sup>2</sup> X4 <sup>2</sup>
\$50-\$100 Million	BioTherix <sup>2</sup> Carisma <sup>2</sup> Immune-Onc <sup>2</sup> Ryvu WindMIL <sup>2</sup>
<\$50 Million	Abintus <sup>2</sup> OncoPep <sup>2</sup>

## KEY POINTS

### LLS TAP has established record of success

- Targeting unmet medical needs
- Leading to FDA approvals of life changing therapeutics
- Creating value for patients, companies and ROI for the LLS mission

### LLS would like to expand the reach & impact of the TAP program

- Leverage its unique expertise in novel collaborations
- Attract more companies and investors to blood cancer indications
- Expand TAP capacity to support the most promising assets

### For more information, contact:

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Javeed Froozan, MBA 914.821.8817 | [Javeed.Froozan@LLS.org](mailto:Javeed.Froozan@LLS.org)







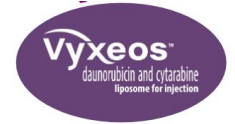
# TAP SUCCESS STORIES

BEATING CANCER IS IN OUR BLOOD.



# TAP SUCCESS: NOVEL LIPOSOMAL CYTOTOXIC THERAPY

Vyxeos® is the first FDA-approved treatment for two types of poor-prognosis AML (2017)

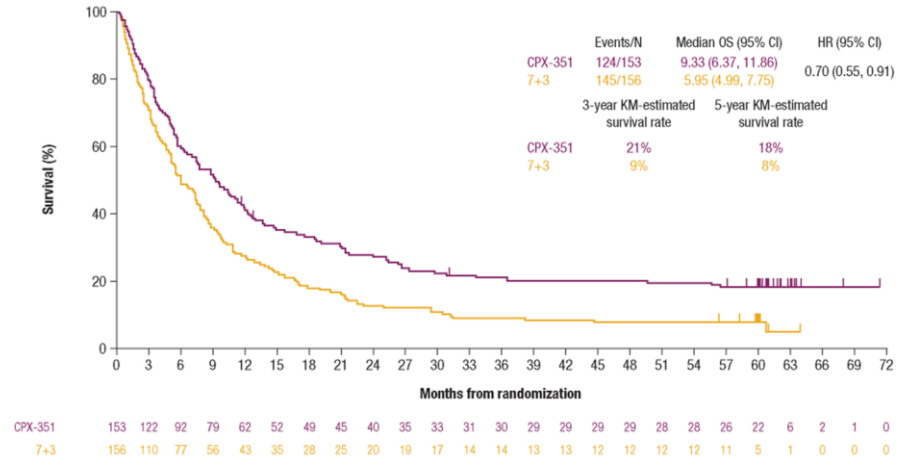


**ACQUIRED BY JAZZ PHARMA  
FOR \$1.5 BILLION IN 2016**

**LLS TAP PROVIDED:**

**\$9.15 MILLION ASSET FUNDING**

**ROI: \$25.3 MILLION**



Five-year final results of a phase 3 study of CPX-351 versus 7+3 in older adults with newly diagnosed high-risk/secondary AML

*J. Lancet et al., ASCO 2020*

# TAP SUCCESS: CD19 CHIMERIC ANTIGEN RECEPTOR (CAR) T-CELL THERAPY

**Yescarta® is the first FDA-approved CAR-T Therapy in NHL (2017)**

**LLS has invested > \$80 M in Cellular Immunotherapy since 1998**

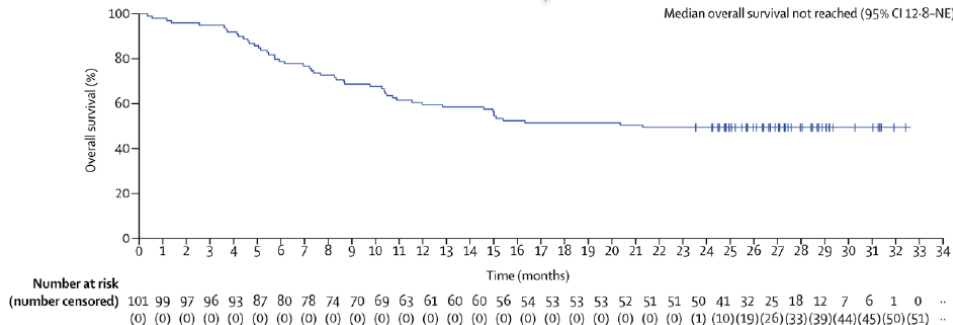
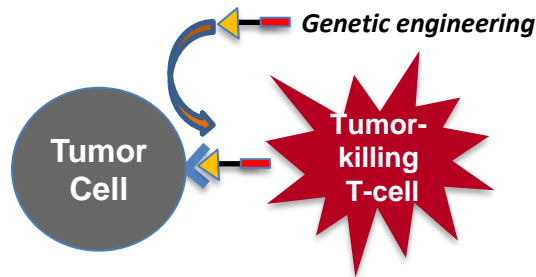


**ACQUIRED BY GILEAD FOR \$11.9 BILLION IN 2017**

**LLS TAP PROVIDED:**

**\$2.5 MILLION ASSET FUNDING**

**ROI: \$6.25 MILLION**



Long-term safety and activity of axicabtagene ciloleucel in refractory large B-cell lymphoma (ZUMA-1): a single-arm, multicenter, Ph 1-2 trial

*Locke et al. 2019. Lancet Oncology*

# TAP SUCCESS: NOVEL TARGETED CD123 FUSION PROTEIN

**Elzonris® is the first approved therapy for rare blood cancer indication BPDCN (2018)**



**ACQUIRED BY MENARINI GROUP  
FOR \$677 MILLION IN 2020**

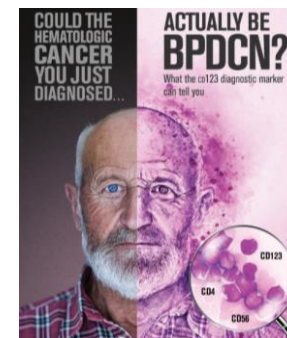
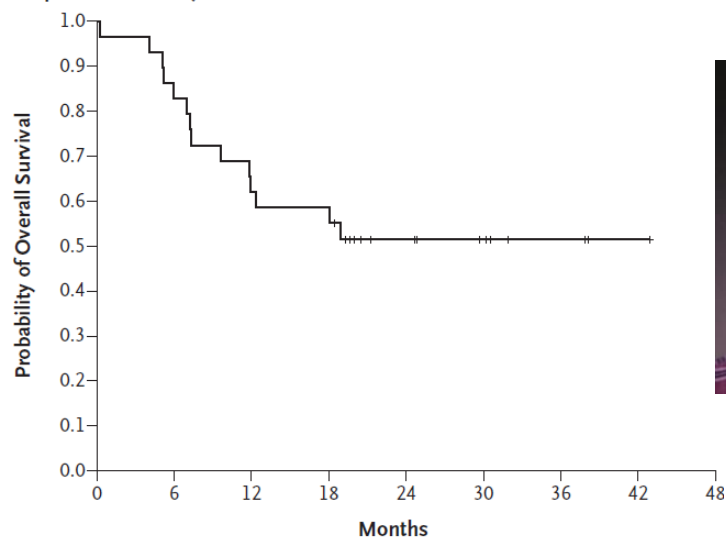
**LLS TAP PROVIDED:**

**\$2.9 MILLION NET ASSET FUNDING**

**ROI: \$5.8 MILLION TO DATE**



**B Kaplan–Meier Analysis of Overall Survival**



Treatment outcomes of 29 patients with blastic plasmacytoid dendritic cell neoplasm (BPDCN) who received first-line treatment with tagraxofusp: Probability of overall survival

*Pemmaraju et al., 2019. NEM*

# TAP SUCCESS: MAGROLIMAB (ANTI-CD47 ANTIBODY)

Magrolimab + Azacitidine induces high response rates in MDS and AML

Initiation of registration-enabling studies in 2020

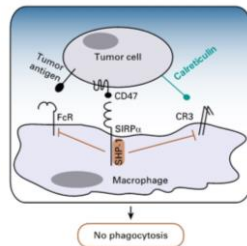


ACQUIRED BY GILEAD FOR \$4.9 BILLION IN 2020

LLS TAP PROVIDED:

\$4.175 MILLION ASSET FUNDING  
\$3 MILLION EQUITY INVESTMENT

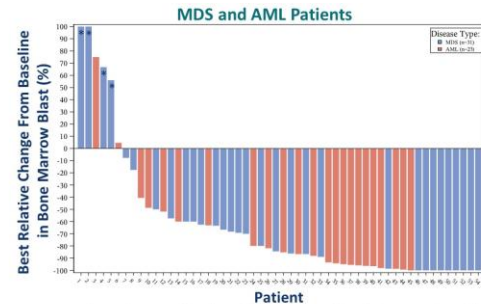
ROI: >\$40 MILLION



Magrolimab blocks the 'don't eat me' signal on tumor cells

Best Overall Response	1L MDS N=33	1L AML N=25
ORR	30 (91%)	16 (64%)
CR	14 (42%)	10 (40%)
CRi	NA	4 (16%)
PR	1 (3%)	1 (4%)
MLFS/marrow CR	8 (24%) 4 with marrow CR + HI	1 (4%)
Hematologic improvement (HI)	7 (21%)	NA
SD	3 (9%)	8 (32%)
PD	0	1 (4%)

Response assessments per 2008 IWG MDS criteria and 2017 AML ELN criteria. Patients with at least 1 post-treatment response assessment are shown; all other patients are on therapy and are too early for first response assessment, except for 2 MDS patients not evaluable (withdrawal of consent) and 3 AML patients (1 AE, 2 early withdrawal).



Four patients not shown due to missing values; <5% blasts imputed as 2.5%. \*Baseline bone marrow blasts ≤5%.

- Magrolimab + AZA induces a 91% ORR (42% CR) in MDS and 64% ORR (56% CR/CRi) in AML
- Responses deepened over time with a 56% 6-month CR rate in MDS patients (assessed in all patients 6 months after initial treatment)
- Median time to response is 1.9 months, more rapid than AZA alone
- Magrolimab + AZA efficacy compares favorably to AZA monotherapy (CR rate 6-17%<sup>1,2</sup>)

1. Azacitidine USPL. 2. Fenaux P, et al. *Lancet Oncol.* 2009;10(3):223-232.

## TAP SUCCESS: KO-539 (MENIN INHIBITOR)

First-in-class inhibitor of the menin-MLL interaction in Ph1 trial for patients with relapsed/refractory AML



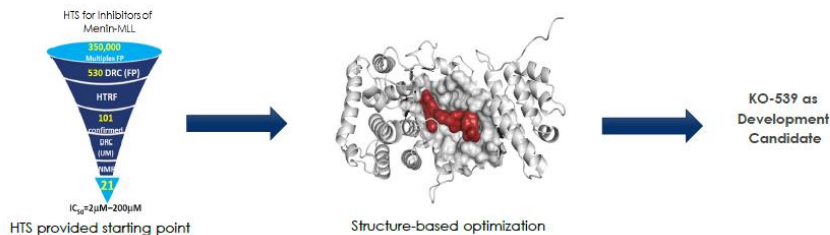
**PRECLINICAL COMPOUNDS  
RELATED TO KO-539 LICENSED  
TO KURA ONCOLOGY IN 2015**

**LLS TAP PROVIDED:**

**\$6.31 MILLION ASSET FUNDING  
TO U MICHIGAN**

**ROI: EQUITY: 26,000+ SHARES  
+ \$26,000+ CASH TO DATE**

**KO-539 is a potent & selective menin-MLL inhibitor  
with robust activity in models of MLL-rearranged AML**



*Burrows et al. 2017. AACR poster*

- Grants initially and then TAP supported preclinical development (including chemistry) of menin-MLL interaction inhibitors by Jolanta Grembecka at University of Michigan and licensing of assets to Kura Oncology in Dec 2014
- KO-539 received orphan drug designation in July 2019; in ph1/2a trial for r/r AML with MLL fusions/NPM1 mutations (FPI in Sep 2019)

**Casey Cunningham, MD (Chair) +**  
Santé Ventures

**Giulio Draetta, MD, PhD**  
The University of Texas MD Anderson Cancer Center

**Christopher Flowers, MD, MS, FASCO +**  
The University of Texas MD Anderson Cancer Center

**Patrick Fortune, PhD, MBA**  
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**Laura Kaufman, PhD, DABT**  
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**Ronald Levy, MD**  
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**Robert Rosen, JD +**  
Grehawke Capital Advisors

**Steven Rosen, MD, FACP**  
City of Hope

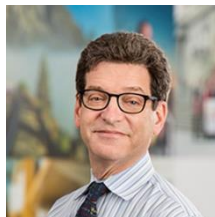
**Robert Spiegel, MD, FACP**  
Spiegel Consulting LLC

**David Weinstock, MD**  
Dana-Farber Cancer Institute

**+ National Board Member**

# THANK YOU!

## LLS Research Grants and TAP



**Lee Greenberger, PhD**  
*CSO & SVP Research*



**Michael Yaffe, PhD**  
*VP of Research*



**Erik Nelson, PhD**  
*Exec. Dir. Research*



**James Kasper, MS**  
*Sr. Dir. Research*



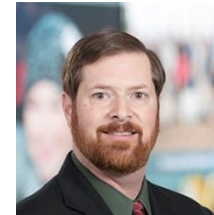
**Orsi Giricz, PhD**  
*Dir. Research*



**Lore Gruenbaum, PhD**  
*VP of TAP*



**Jun Xu, Ph.D.**  
*Exec. Dir. TAP*



**Blaine Robinson, PhD**  
*Exec. Dir. TAP*



**Javeed Frooman, MBA**  
*VP of BD & Alliance*