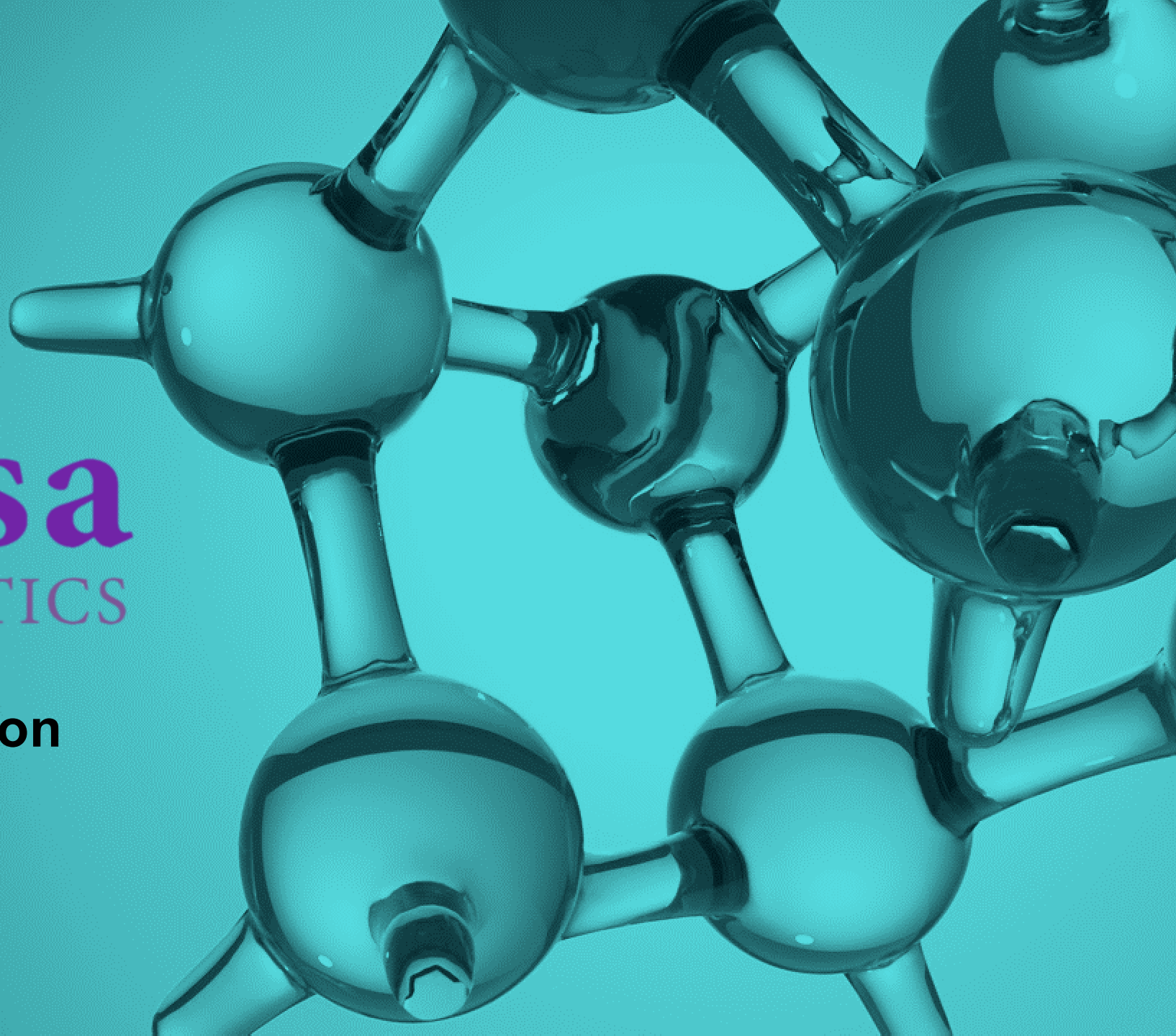

Atossa THERAPEUTICS

Corporate Presentation

June 26, 2025

NASDAQ: ATOS

www.atossatherapeutics.com

Disclaimer

- This presentation may contain certain forward-looking statements related to or Atossa Therapeutics, Inc. (the “Company”) that involve risks and uncertainties.
- Actual results and events may differ significantly from results and events discussed in forward-looking statements.
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- The Company may not yet have received clearance from the FDA or any other regulatory agency for some of the products described in this presentation.

Corporate Highlights

Multi-billion market opportunity across the rapidly growing estrogen receptor positive breast cancer market

Demonstrated broad utility across the breast cancer paradigm with first in best-in-class potential:

- ✓ Metastatic
- ✓ Prevention
- ✓ Neoadjuvant/Adjuvant

Robust and Growing IP Portfolio with broad protections in the U.S. and globally

Experienced Leadership Team and world-renowned advisors

Strong financial position with ~ two years of runway and zero debt

Experienced Leadership

Steven Quay, MD, PhD
Chairman, CEO and President

NASTECH Pharmaceutical Company Inc. · SONUS Pharmaceuticals

Heather Rees, CPA
Chief Financial Officer and Secretary

Avalara · gettyimages

Claudia Lopez, DVM, MSC
VP, Clinical Product Development

LANDOS BIOPHARMA · ARENA PHARMACEUTICALS

Delly Behen, PHR, SHRM-CP
SVP, Business Operations

Impel NEUROPHARMA · cti BIOPHARMA

Michael Parks
VP, Investor and Public Relations

J&J · Pfizer

World-renowned Thought Leadership

Per Hall, M.D., PhD
Karisma Principal Investigator

Karolinska Institutet

Laura Esserman, M.D., MBA
I-Spy Principal Investigator

UCSF Health

Matthew Goetz, M.D.
EVANGELINE Principal Investigator

MAYO CLINIC

David Lyden, M.D., PhD
TNBC Research Lead

Weill Cornell Medicine

Problem: High unmet need for ET in breast cancer

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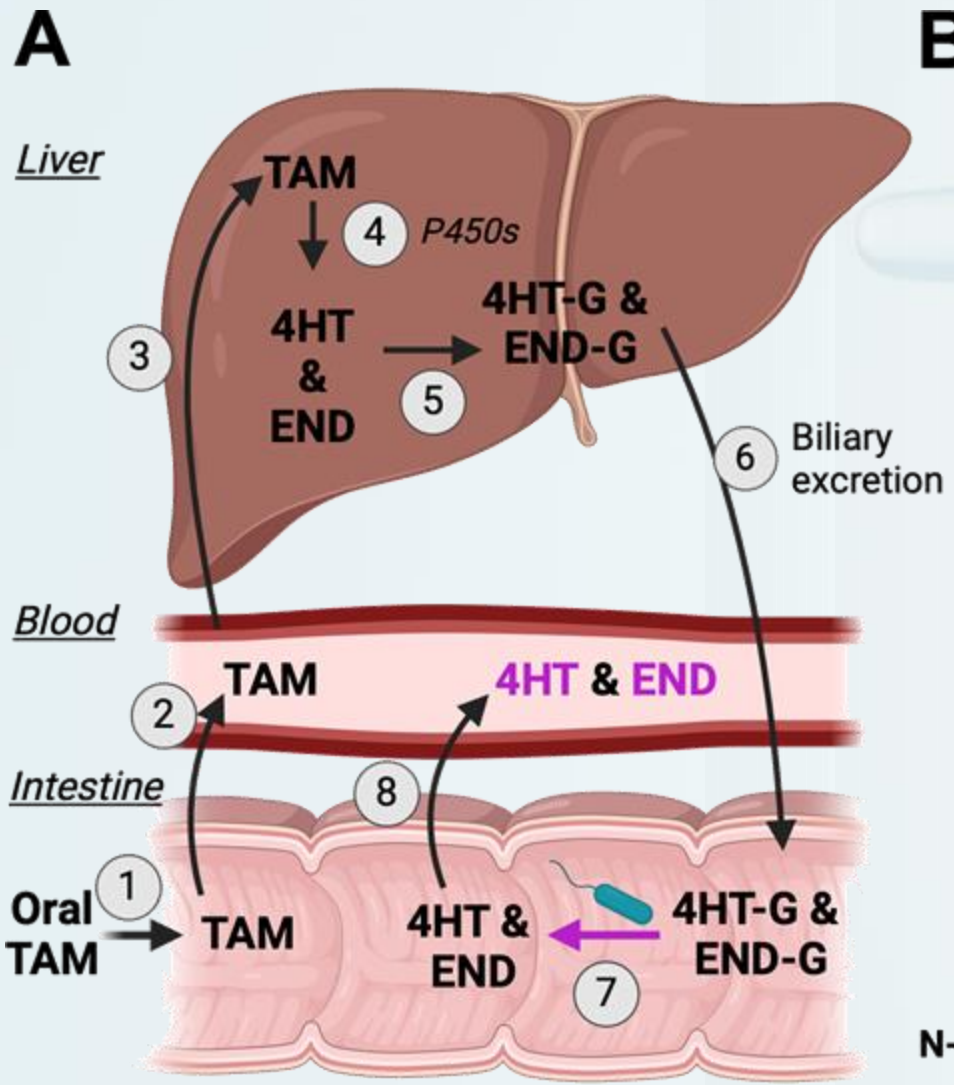
~40-50%	~50%	~60%
Patients Discontinue Adjuvant Endocrine Therapy	Patients Do Not Respond to 1L Aromatase Inhibitors + CDK4/6	Patients Do Not Benefit from 2L fulvestrant monotherapy

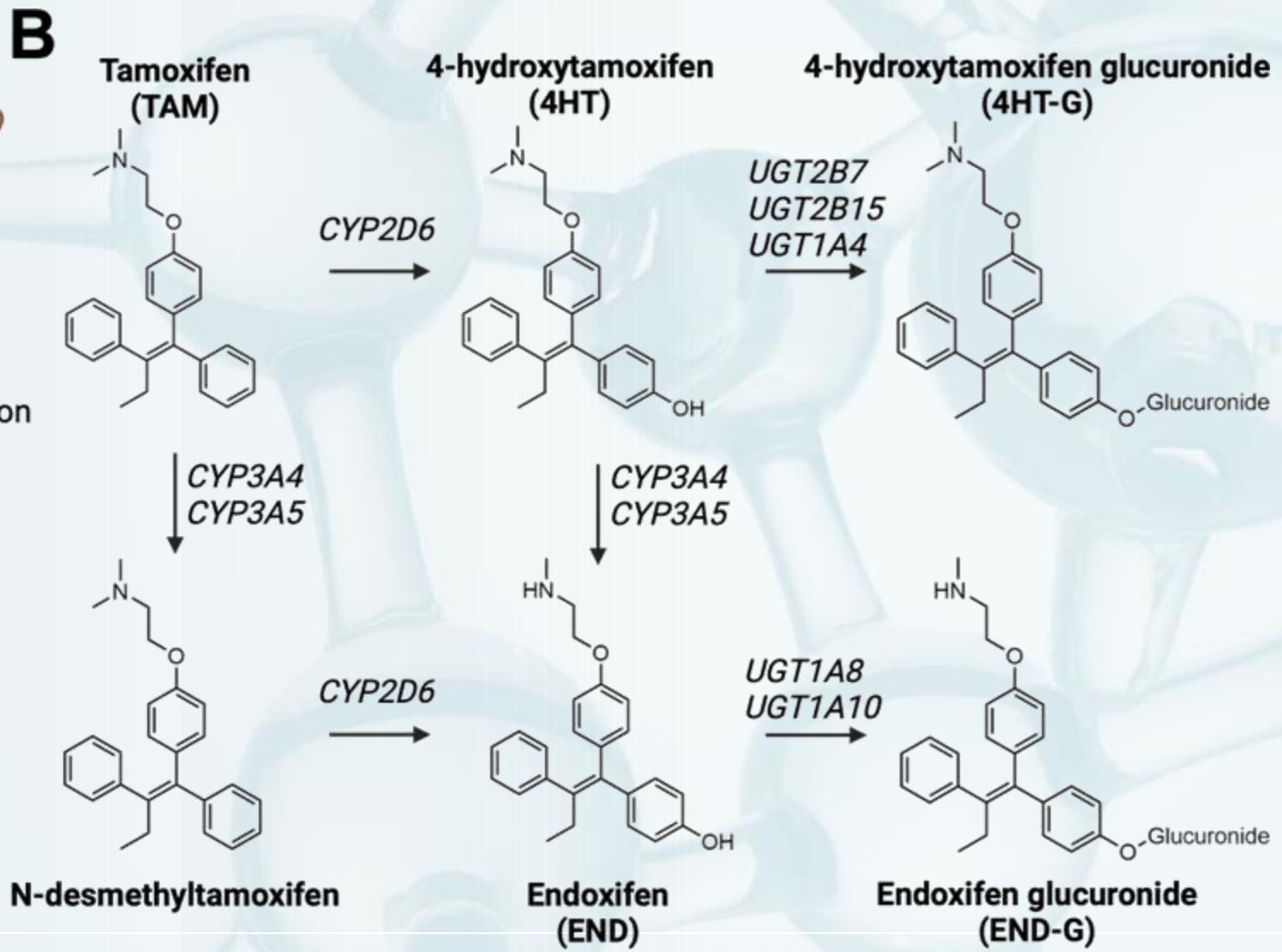
Although, endocrine therapy remains the mainstay treatment for patients, there are numerous UNMET NEEDS that still exist for new treatment options

- Improved efficacy
- Reduced resistance
- Induced apoptosis
- Improved adherence

References: 1) Annals of Oncology 29: 1541–1547, 2018. 2) IBRANCE Label. 3) KISQALI label. 4) VERENZIO label. 5) Annals of Oncology 29: 1541–1547, 2018. 6) N Engl J Med 2016;375:1925-36. *7) JCO* 35, 3638-3646(2017). 8) CancerNetwork, December 8, 2022. 9) OncLive Ph3 CAPItello-291 Trial Data, January 4, 2023. 10) AstraZeneca Press Release, December 8, 2022. 12) Faslodex Package Insert. 11) Breast Cancer Res Treat. 2022; 193(3): 567–577.

Tamoxifen: The Proven Paradigm





(Z)-endoxifen – The New Paradigm with Broad Clinical Utility

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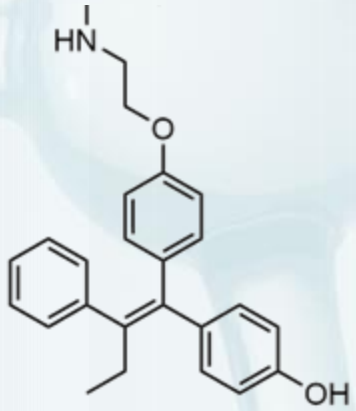

Endoxifen

(Z)-endoxifen is NOT your grandmother's tamoxifen or your mother's aromatase inhibitor

(Z)-endoxifen's points of differentiation

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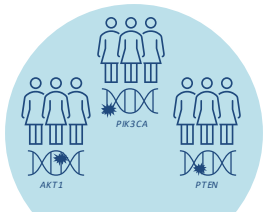
Superior ER Antagonist

100-fold more potent vs other SERMs

Superior antitumor efficacy in preclinical + clinical studies



PKCβ1 Inhibition

Binds to and inhibits protein kinase C beta one (PKCβ1, a known oncogenic protein)

Downregulates AKT pathway and induces apoptosis in breast cancer cells

***ESR1* Mutant Inhibition**

Inhibits clinically relevant *ESR1* mutants, an acquired resistance mechanism to aromatase inhibitors

Improved safety & tolerability

Potential to avoid current negative "on target off tissue" effects

May increase adherence

Superior Combination Partner

Potential to be preferred endocrine combination partner

(Z)-endoxifen is a novel, next-generation anti-estrogen with best-in-class potential across the breast cancer treatment paradigm

(Z)-endoxifen can be positioned in all stages of ER+/HER2- breast cancer treatment paradigm

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(Z)-endoxifen

Prevention → Neoadjuvant → Adjuvant → Metastatic

Value Proposition

- Earlier detection in patients with dense breast tissue
- Prevention of cancer in at-risk patients
- Phase 2 trial completed

Value Proposition

- Potential Improvement in Breast Conservation Rate
- Premenopausal women may avoid ovarian function suppression (OFS), which results in higher use and compliance
- Phase 2 underway

Value Proposition

- Many patients are refractory to Tamoxifen / contraindicated for aromatase inhibitors
- Improved safety / tolerability profile and avoid OFS

Value Proposition

- PD effects and stable-disease responses from Ph1 study reinforce it as a potential next-generation ET.
- Tolerable safety profile makes it a promising backbone for combination regimens
- Phase 2 reporting underway

(Z)-endoxifen Lead Program - Metastatic

(Z)-endoxifen

Metastatic – Priority Indication and Major Focus

Metastatic provides fastest path to market, highest probability of success

- **Efficient** Clinical and Regulatory Path
- **Allows Atossa to more rapidly** bring (Z)-endoxifen to patients who need it most.
- **Strengthens foundation** for the expansion of (Z)-endoxifen into earlier-stage disease settings.
- **Right sized program** for Atossa with significant upside in a therapeutic market projected to reach **~$42 billion by 2030.**

Value Proposition

- PD effects and stable-disease responses from Ph1 study reinforce it as a potential next-generation ET.
- Tolerable safety profile makes it a promising backbone for combination regimens
- Phase 2 reporting underway

(Z)-endoxifen exhibits superior anti-tumor activity to SOC agents

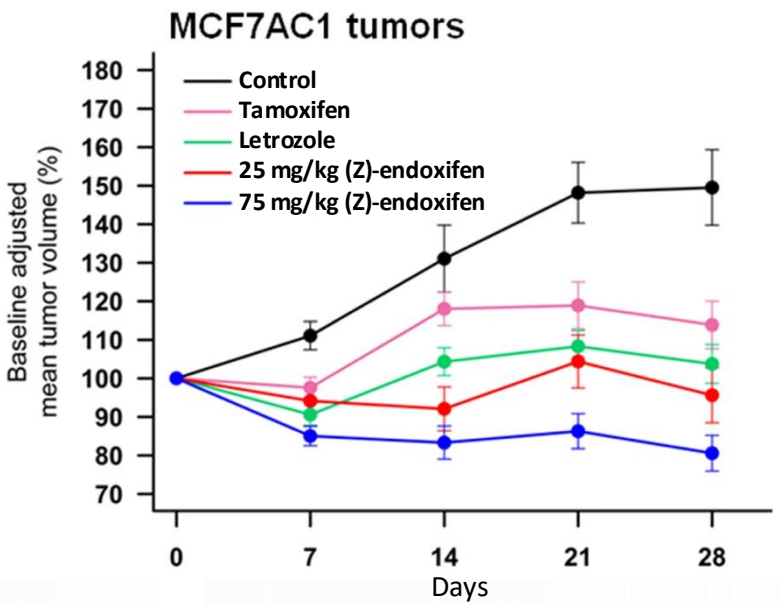
Superior anti-tumor activity

Compared to tamoxifen, (Z)-endoxifen is 100-fold more potent in anti-estrogen activity.

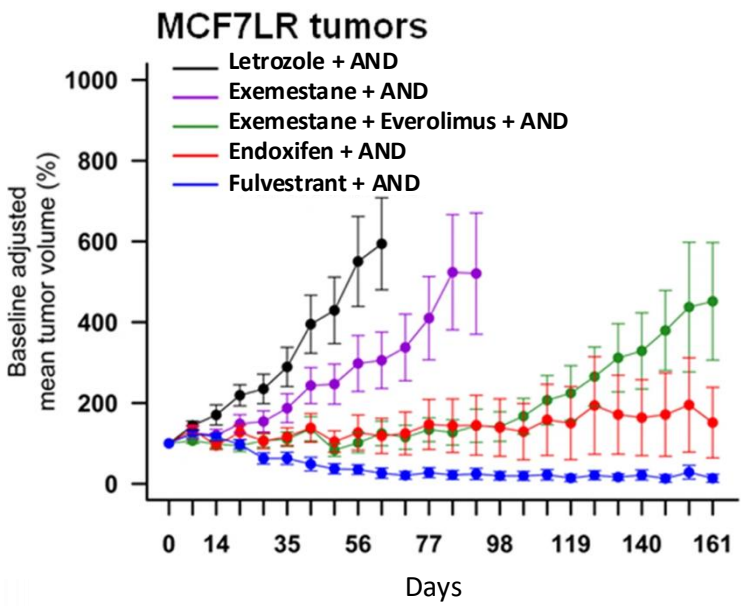
Preclinical studies revealed **superior antitumor activity compared to tamoxifen and aromatase inhibitors** in both endocrine-sensitive (MCF7AC1) and endocrine-resistant (MCFLR) ERα+ breast cancer models.

Preclinical Superior anti-tumor and anti-estrogenic activity to current SoC

(Z)-endoxifen demonstrates promising anti-tumor activity



At both 25 and 75 mg/kg (Z)-endoxifen decreased mean tumor volume compared to tamoxifen (at 500 µg/day) and letrozole (at 10 µg/day) in letrozole-sensitive MCF7 aromatase expressing model (MCF7AC1).



In letrozole-resistant MCF7 models (MCF7LR), (Z)-endoxifen showed less increase in mean tumor volume than exemestane and exemestane + everolimus. Androstenedione (AND) was injected to test the efficacy of aromatase inhibitors

References: 1) Breast Cancer Res. 2020 May 19;22(1):51,

(Z)-endoxifen exhibits superior anti-tumor activity in the clinic

Superior anti-tumor activity

In previous **clinical studies**, (Z)-endoxifen demonstrated **promising anti-tumor activity** in endocrine-refractory metastatic breast cancer patients

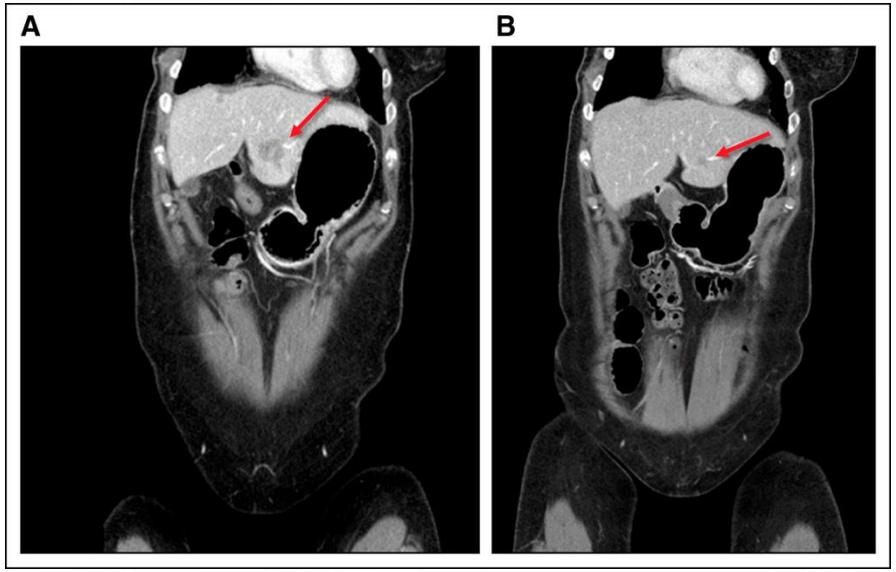
In a Phase 2 trial comparing (Z)-endoxifen with tamoxifen, **CDK4/6 inhibitor naïve patients had improved PFS with (Z)-endoxifen compared to tamoxifen**.

Z)-endoxifen has not shown unexpected safety concerns beyond what is typically seen with tamoxifen and has been better tolerated.

Clinical

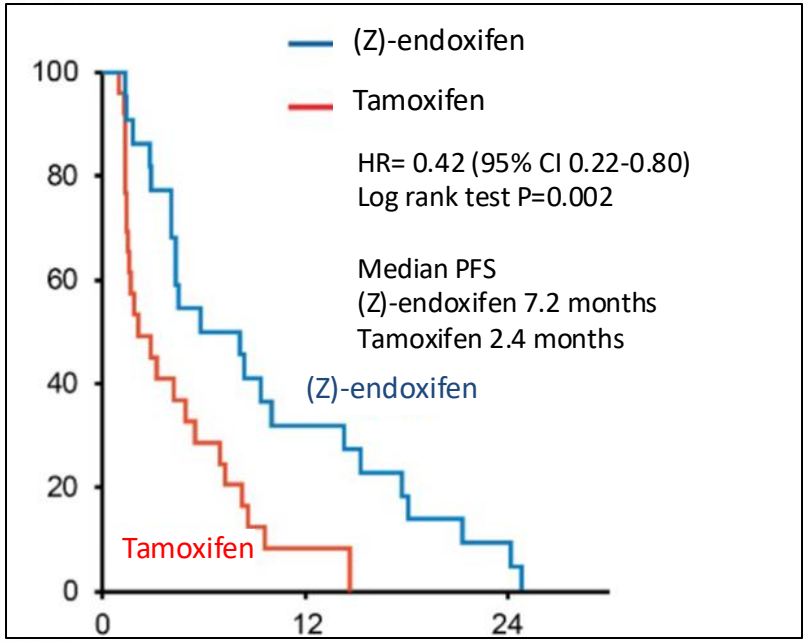
(Z)-endoxifen demonstrates promising efficacy in the relapsed/refractory setting

(Z)-endoxifen leads to disease regression



Tumor shrinkage with (Z)-endoxifen treatment in tamoxifen, aromatase inhibitor, fulvestrant and Everolimus refractory breast cancer after 9 months

Progression Free Survival (PFS) in Postmenopausal Women



Extended PFS demonstrated by (Z)-endoxifen in a Phase II randomized clinical trial, in the relapse/refractory metastatic setting. n=40 evaluable patients in each arm

References: J Clin Oncolo 2017 Oct 20; 35 (30): 3391-3400; Cancer Res 80(4 Suppl): Abstract nr GS4-04

(Z)-endoxifen exhibits superior anti-tumor activity in the clinic

Superior anti-tumor activity

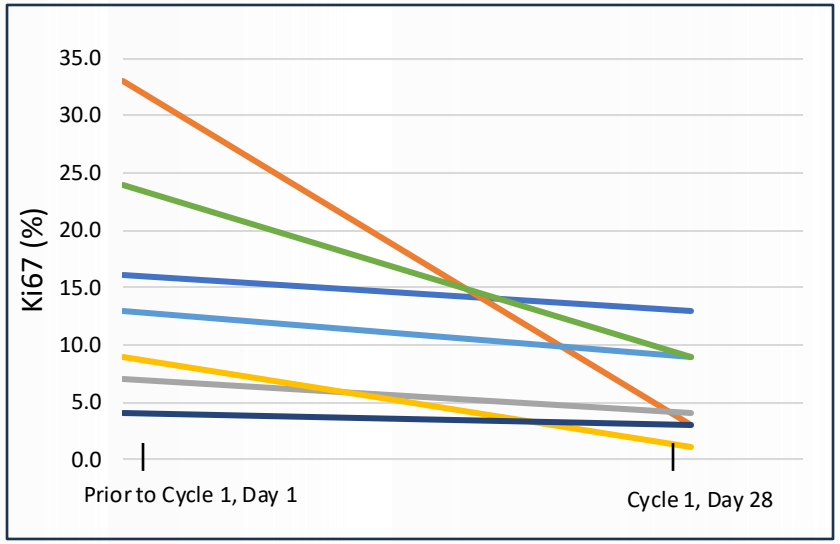
In an ongoing neoadjuvant clinical study, (Z)-endoxifen has demonstrated promising early efficacy with **1 CR and multiple PRs**.

The 4-week Ki-67 ≤10% response rate was generally **above 85% across dose levels**, with or without the presence of OFS.

Endocrine therapies are generally observed to be cytostatic and do not cause tumor shrinkage.

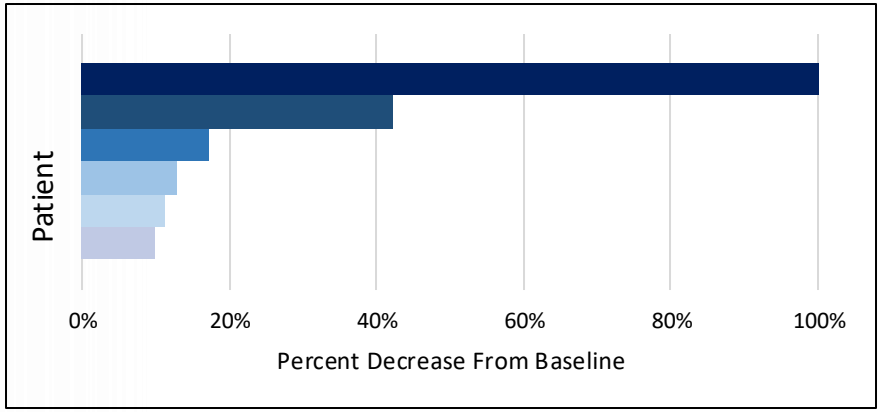
Clinical (Z)-endoxifen demonstrates promising efficacy in the neoadjuvant setting

Ki67 From Baseline to Cycle 1, Day 28



One pt discontinued due to wk4 Ki-67 (marker for cell proliferation) remaining > 10%. The remaining 6 had endocrine sensitive disease and underwent surgery after 24 weeks.

% Decrease in Tumor Size at Cycle 3, Day 28 by MRI Imaging



5 PR and 1 CR were observed in the neoadjuvant setting with (z)-endoxifen treatment in post-menopausal ER+/HER2- breast cancer patients.

EVANGELINE estimated enrollment will be ~180 patients

References: *Cancer Res* (2024) 84 (7_Supplement): CT205.

(Z)-endoxifen has the potential to be the preferred endocrine therapy for combination partners

(Z)-endoxifen as the preferred combination partner for CDK4/6 inhibitors

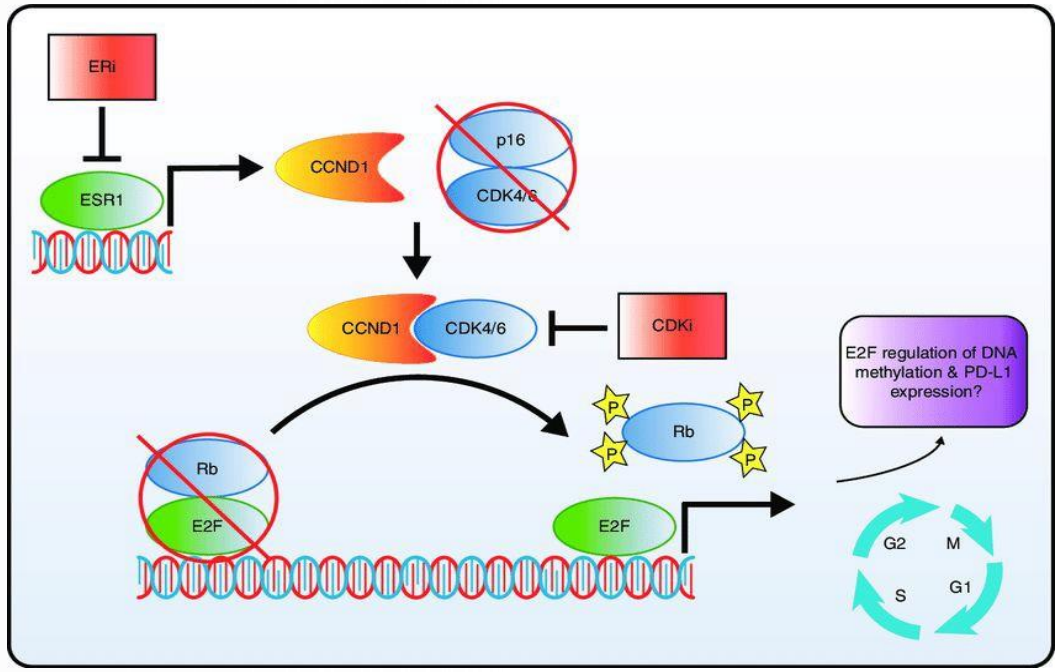
CDK4/6 inhibitors are FDA-approved combination partners for tamoxifen, aromatase inhibitors and fulvestrant

(Z)-endoxifen's superior safety and efficacy could make it the preferred endocrine therapy combination partner.

The recently initiated I-SPY2 trial will help confirm the hypothesis that (Z)-endoxifen is the preferred endocrine therapy for CDK4/6 combination.

Other potential combinations have been preclinically tested and suggested**, including PI3Ki, MDM2i and others.**

CDK4/6 and ER pathways converge on regulation of cell cycle and Rb phosphorylation



References: 1) In Silico Medicine Analysis; 2) Lumanity Strategic Analysis, Research and Insights; https://investors.atossatherapeutics.com/news-releases/news-release-details/atossa-therapeutics-announces-updated-protocol-clinical-trial

(Z)-endoxifen may offer improved safety

Atossa THERAPEUTICS

(Z)-endoxifen is safe and well tolerated in preclinical and early clinical trials

Preclinical

- Preclinical data supports that (Z)-endoxifen **does not induce bone loss and does not affect uterine wet weight** in ovariectomized animals.

Clinical

- **Overall**: In studies conducted by other groups, (Z)-endoxifen was **well tolerated at doses up to 360 mg/day**, for **up to 5 years with relatively few adverse events reported** demonstrating a relatively **wide therapeutic window.**
- **Metastatic**: In Phase I studies (including heavily pretreated metastatic ER+ breast cancer patients), (Z)-endoxifen was escalated from 20 mg to as high as 160 mg/day **without identifying a clear maximum tolerated dose** (MTD). Most adverse events were **mild-to-moderate.**
- **EVANGELINE** is currently ongoing in premenopausal women with Grade 1 or 2 ER+/HER2- breast cancer in the neoadjuvant setting (40 and 80 mg/day; 22 participants to date).
    - (Z)-endoxifen has been **generally well-tolerated,** the **majority of AEs** have been **mild or moderate in severity, one SAE** was reported related to study drug (hemorrhagic ovarian cyst)**.**

Current Clinical Strategy – Early Disease

(Z)-endoxifen

Prevention

KARISMA:

- **Unmet need to prevent breast cancer**s.
- (Z)-endoxifen has demonstrated 1 mg dose **of (Z)-endoxifen reduced MBD by 17.3 percentage points (p<0.01)**, compared to a minimal change in the placebo group of 0.27 percentage points.
- Plasma concentrations for (Z)-endoxifen was measured at 4.8 ng/mL for the 1 mg**, highlighting the effectiveness of the lower dose in achieving significant reductions.**
- Importantly, **no significant differences in adverse events were observed between the 1 mg dose and placebo**

Greater than $20B TAM based on eligible high-risk women with average 5-years of treatment.

Neoadjuvant/Adjuvant

EVANGELINE:

- **The 4-week Ki-67 ≤10% response rate** was generally above 85% across dose levels, with or without the presence of OFS

I-SPY2:

- **Primary feasibility goal surpassed** –95% of participants completed at least 75% of planned dosing
- **Early anti proliferative activity** – Median Ki-67 fell from 10.5 percent at baseline to 5 percent by Week 3 in 65% of patients, and suppression was maintained at surgery.
- **Robust imaging response** – Median FTV measurement decreased 77.7 percent from baseline to surgery.

~240k ER+ BC cancers diagnosed annually with average 6mo neoadjuvant and 5-years of adjuvant treatment.

(Z)-endoxifen is highly differentiated from current SoC

Atossa THERAPEUTICS

(Z)-endoxifen is a novel, next generation anti-estrogen with best-in-class potential				
	(Z)-endoxifen	Tamoxifen	Aromatase Inhibitors	Fulvestrant
Novel Agent	✓	FDA Approved	FDA Approved	FDA Approved
Level of Antiestrogenic Activity	✓✓✓	✓	✓	✓
Safety	✓✓	✓	✓	✓
ER-dependent & -independent MoA	✓	✗	✗	✗
Addressable Patients	✓✓✓	✓	✓	✓
Combination Potential	✓✓✓	✓	✓✓	✓✓

Anticipated Upcoming Milestones

Mid 2025	2nd HALF 2025*	1st HALF 2026*	2nd HALF 2026*
✓ mBC Global Steering Committee	Early Disease FDA Meeting	I-Spy Combination Readout (neo)	Evangeline Trial Update
✓ mBC FDA Meeting	mBC 1st patient on path	mBC Combination Update	mBC Combination Selection
mBC PI Selection	Continued regulatory readouts for Early Disease	Continued regulatory readouts on Early Disease	Continued regulatory readouts on Early Disease
mBC CRO Selection			

Approximately two years of cash on hand at current burn rate and zero debt

*timing subject to FDA feedback

Finance

KEY STATISTICS

$ 65.1 M Cash (as of 03/31/25)

Approximately 2 years of working capital and NO debt

- **Nasdaq: ATOS Market Cap - $107M (as of 06/25/25)**
  - Share Price - $0.86
  - 52 Week Range - $0.55 - $1.66
  - Outstanding Shares - 129,170,004

8.7% Beneficial Ownership – Management & the Board of Directors

12.3 MM Shares

Outstanding Warrants

17.8 MM warrants

$1.00 to $2.88/share; June to September 2025

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Experienced Leadership Team and world-renowned advisors

Strong financial position with ~ two years of runway and zero debt

Questions