

**UNITED STATES
SECURITIES AND EXCHANGE COMMISSION**
Washington, D.C. 20549

FORM 8-K

CURRENT REPORT

Pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934

Date of report (date of earliest event reported): May 2, 2016

TONIX PHARMACEUTICALS HOLDING CORP.

(Exact name of registrant as specified in its charter)

Nevada
(State or Other Jurisdiction
of Incorporation)

001-36019
(Commission
File Number)

26-1434750
(IRS Employer
Identification No.)

509 Madison Avenue, Suite 306, New York, New York 10022
(Address of principal executive offices) (Zip Code)

Registrant's telephone number, including area code: (212) 980-9155

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Check the appropriate box below if the Form 8-K filing is intended to simultaneously satisfy the filing obligation of the registrant under any of the following provisions (see General Instruction A.2. below):

- Written communications pursuant to Rule 425 under the Securities Act (17 CFR 230.425)
 - Soliciting material pursuant to Rule 14a-12 under the Exchange Act (17 CFR 240.14a-12)
 - Pre-commencement communications pursuant to Rule 14d-2(b) under the Exchange Act (17 CFR 240.14d-2(b))
 - Pre-commencement communications pursuant to Rule 13e-4(c) under the Exchange Act (17 CFR 240.13e-4(c))
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Item 7.01 Regulation FD Disclosure.

Tonix Pharmaceuticals Holding Corp. (the "Company") intends to utilize an updated investor presentation to conduct meetings with investors, stockholders and analysts and at investor conferences, and which the Company intends to place on its website, which may contain non-public information. A copy of the presentation is filed as Exhibit 99.01.

The information contained in Item 7.01 of this Current Report on Form 8-K, including Exhibit 99.01, is furnished pursuant to, and shall not be deemed to be "filed" for the purposes of, Section 18 of the Securities Exchange Act of 1934, as amended, or otherwise subject to the liabilities of that section. The information contained in Item 7.01 of this Current Report shall not be incorporated by reference into any registration statement or any other document filed pursuant to the Securities Act of 1933, as amended, except as otherwise expressly stated in such filing. By filing this Current Report on Form 8-K and furnishing the information contained in this Item 7.01, including Exhibit 99.01, the Company makes no admission as to the materiality of any such information that it is furnishing.

Item 8.01 Other Events.

On May 2, 2016, the Company issued a press release announcing that the Company has completed enrollment in its Phase 3 AFFIRM clinical trial of TNX-102 SL (cyclobenzaprine HCl sublingual tablets) for the treatment of fibromyalgia.

A copy of the press release that discusses this matter is filed as Exhibit 99.02 to, and incorporated by reference in, this report. The information in this Current Report is being furnished and shall not be deemed "filed" for the purposes of Section 18 of the Securities Exchange Act of 1934 or otherwise subject to the liabilities of that Section. The information in this Current Report shall not be incorporated by reference into any registration statement or other document pursuant to the Securities Act of 1933, except as shall be expressly set forth by specific reference in any such filing.

Item 9.01 Financial Statements and Exhibits.

(d) Exhibits.

- 99.01 Corporate Presentation by the Company for May 2016*
- 99.02 Press release, dated May 2, 2016, issued by Tonix Pharmaceuticals Holding Corp.*

* Furnished herewith.

SIGNATURE

Pursuant to the requirement of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned thereunto duly authorized.

TONIX PHARMACEUTICALS HOLDING CORP.

Date: May 2, 2016

By: /s/ SETH LEDERMAN

Seth Lederman

Chief Executive Officer



NASDAQ: TNXP

Investor Presentation

May 2016

Version: P0015-05-2-16

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Cautionary note on forward-looking statements

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Certain statements in this presentation regarding strategic plans, expectations and objectives for future operations or results are "forward-looking statements" as defined by the Private Securities Litigation Reform Act of 1995. These statements may be identified by the use of forward-looking words such as "anticipate," "believe," "forecast," "estimate," and "intend," among others. These forward-looking statements are based on Tonix's current expectations and actual results could differ materially. There are a number of factors that could cause actual events to differ materially from those indicated by such forward-looking statements. These factors include, but are not limited to, substantial competition; our possible need for additional financing; uncertainties of patent protection and litigation; uncertainties of government or third party payor reimbursement; limited research and development efforts and dependence upon third parties; and risks related to failure to obtain U.S Food and Drug Administration clearances or approvals and noncompliance with its regulations. As with any pharmaceutical under development, there are significant risks in the development, regulatory approval and commercialization of new products. The forward-looking statements in this presentation are made as of the date of this presentation, even if subsequently made available by the Company on its website or otherwise. Tonix does not undertake an obligation to update or revise any forward-looking statement, except as required by law. Investors should read the risk factors set forth in the Annual Report on Form 10-K for the year ended December 31, 2015, as filed with the Securities and Exchange Commission (the "SEC") on March 3, 2016, and future periodic reports filed with the SEC on or after the date hereof. All of the Company's forward-looking statements are expressly qualified by all such risk factors and other cautionary statements.


Developing innovative medicines for large and growing markets

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- **Targeting two common central nervous system disorders**
 - One clinical-stage proprietary candidate targeting two indications
 - Differentiated product with potential for sustainable competitive advantages
- **2016 to reveal results from two clinical trials**
 - Fibromyalgia – Phase 3 to report in 3Q
 - Central pain disorder
 - Phase 3 study (AFFIRM) enrollment complete
 - Post-traumatic stress disorder – Phase 2 to report in 2Q (2nd Half of May)
 - Serious mental health problem¹
 - Clinical phase of Phase 2 (AtEase) in military-related PTSD completed
- **All intellectual property owned by Tonix**

¹Schnurr, PP et al., *Contemporary Clinical Trials* 2015;41:75.

Pipeline led by TNX-102 SL for fibromyalgia

Candidate	Indication	Preclinical	Phase 1	Phase 2	Phase 3	NDA	Market	Near-term Catalyst
TNX-102 SL (Tonmya®*)	Fibromyalgia							Top line data 3Q 2016
TNX-102 SL	Post-Traumatic Stress Disorder							Top line data 2Q 2016 (May 2016)

* Tonmya® has been conditionally accepted by the FDA as the proposed tradename of TNX-102 SL for fibromyalgia.

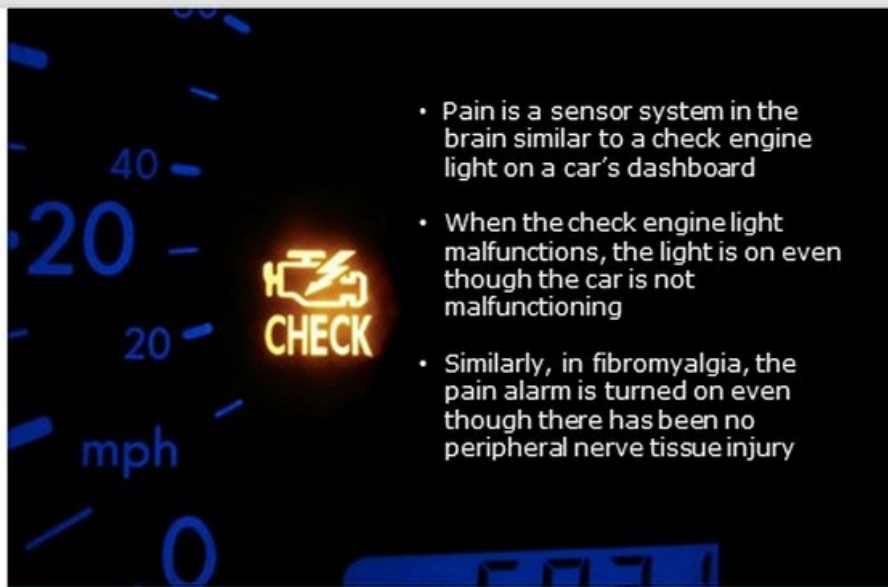
*NDA = New Drug Application; FDA = U.S. Food and Drug Administration.
TNX-102 SL (cyclobenzaprine HCl sublingual tablets, 2.8 mg) is an Investigational New Drug and is not approved for any indication.*

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Concept: Fibromyalgia is inappropriate central pain signaling in the absence of peripheral injury

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- Pain is a sensor system in the brain similar to a check engine light on a car's dashboard
- When the check engine light malfunctions, the light is on even though the car is not malfunctioning
- Similarly, in fibromyalgia, the pain alarm is turned on even though there has been no peripheral nerve tissue injury

Volkswagen Check Engine [Photograph]. (2011, October 14). Wikipedia

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Fibromyalgia is a chronic, debilitating disorder that imposes a significant societal and economic burden

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- **Fibromyalgia is considered neurobiological disorder characterized by¹:**
 - Chronic widespread pain
 - Nonrestorative sleep
 - Fatigue
 - Diminished cognition
- **Believed to result from amplified sensory and pain signaling in central nervous system¹**
- **Causes significant impairment in all areas of life²**
 - Lower levels of health-related quality of life – reduced daily functioning
 - Interference with work (loss of productivity, disability)
- **Inflicts substantial strain on the healthcare system**
 - Average patient has 20 physician office visits per year³
 - Annual direct medical costs are twice those for non-fibromyalgia individuals⁴

¹Phillips K & Clauw DJ, *Best Pract Res Clin Rheumatol* 2011;25:141.

²Schaefer et al., *Pain Pract*, 2015.

³Robinson et al, *Pain Medicine* 2013;14:1400.

⁴White et al, *J Occupational Environ Med* 2008;50:13.

Fibromyalgia is a prevalent disorder but remains underdiagnosed

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Estimated that >22 million prescriptions are issued for the treatment of fibromyalgia (on- and off-label usage) each year^{2,3}

- **1.1% diagnosis rate = 2.7 million U.S. adults¹**
 - Suggests under-diagnosis
- **Approximately 2.3 million U.S. adults receive treatment²**
- **Approved drugs achieved 2014 U.S. sales of \$1.2 billion⁴**
 - Represent about 5.6 million prescriptions³

¹Lawrence et al, *Arthritis Rheum* 2008;58:26; Vincent et al, *Arthritis Care Res* 2013;65:786; Jones et al, *Arthritis Rheum* 2015;67:568; U.S. Census Bureau, 2013 Projection.

²Robinson RL et al, *Pain Med* 2012;13:1366.

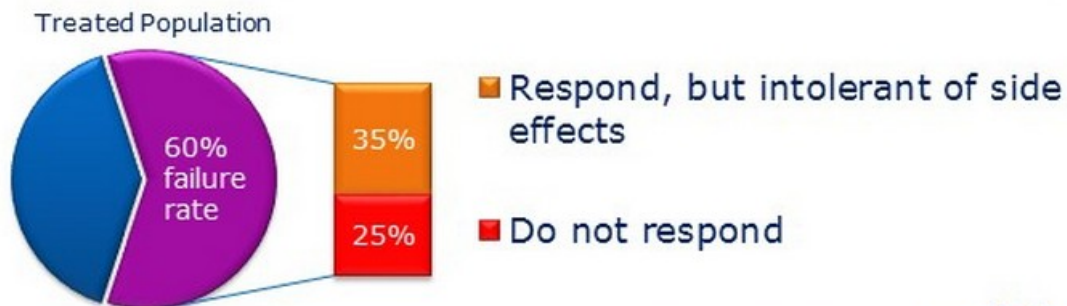
³Independent study conducted by IMS Consulting Group, April 2015 using IMS MIDAS (ex-manufacturing price), factored for fibromyalgia based on IMS National Disease and Therapeutic Index (NDTI).

⁴Product sales derived from IMS MIDAS; IMS NDTI used to factor usage for fibromyalgia; data accessed April 2015.

Fewer than half of those treated for fibromyalgia receive sustained benefit from the three currently marketed drugs

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- The treatment objective is to restore functionality and quality of life by broadly improving symptoms while avoiding significant side effects
- The majority fail therapy due to **lack of a response** or **poor tolerability**¹



¹Market research by Frost & Sullivan, commissioned by Tonix (2011).

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Large need for new fibromyalgia therapies that provide broad symptom improvement with better tolerability

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- **Currently-approved medications may have side effects that limit long-term use¹**
 - Many patients skip doses or discontinue altogether within months of treatment initiation
- **Medication-related side effects may be similar to fibromyalgia symptoms**
- **High rates of discontinuation, switching and augmentation**
 - Attempt to treat multiple symptoms and/or avoid intolerable side effects
 - Average of 2-3 medications used simultaneously²
 - The typical patient has tried six different medications³
- **Substantial off-label use of narcotic painkillers and prescription sleep aids³**

¹Nuesch et al, *Ann Rheum Dis* 2013;72:955-62.

²Robinson RL et al, *Pain Medicine* 2012;13:1366.

³"Patient Trends: Fibromyalgia", *Decision Resources*, 2011.

Tonix is developing TNX-102 SL for fibromyalgia

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- **Advanced sublingual tablet containing low-dose cyclobenzaprine (CBP)**
 - Designed for daily bedtime administration with no titration
 - Efficient transmucosal absorption
 - Avoidance of first-pass metabolism reduces formation of long-lived metabolite
- **TNX-102 SL's pharmacologic action is believed to improve sleep quality**
 - Non-restorative sleep is a common clinical and diagnostic feature of fibromyalgia¹
 - Evolving understanding of the role of sleep in pain control and fibromyalgia development²
 - TNX-102 SL targets receptors believed to play key roles in sleep physiology
- **Phase 2b "BESTFIT" study was successfully completed in 3Q14**
- **Top line data from ongoing Phase 3 "AFFIRM" study expected to report in 3Q16**

¹Swick TJ, *Ther Adv Musculoskel Dis* 2011;3:167-178.

²Choy EH, *Nat Rev Rheumatol*; 2015: 11:513-520.

TNX-102 SL (cyclobenzaprine HCl sublingual tablets, 2.8 mg) is an Investigational New Drug and is not approved for any indication.



Phase 2b “BESTFIT” study of TNX-102 SL in fibromyalgia

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- **BESTFIT = Bedtime Sublingual TNX-102 SL as Fibromyalgia Intervention Therapy**
 - Randomized, double-blind, placebo-controlled trial
 - 2010 American College of Rheumatology diagnostic criteria for fibromyalgia
 - 205 participants randomized 1:1 at 17 U.S. sites
 - Sublingual tablet of TNX-102 SL 2.8 mg or placebo daily at bedtime for 12 weeks
 - Evaluated measures of pain, sleep quality, and other assessments of fibromyalgia

TNX-102 SL (cyclobenzaprine HCl sublingual tablets, 2.8 mg) is an Investigational New Drug and is not approved for any indication.

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BESTFIT results on key clinical endpoints

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Category	Endpoint – week 12 ¹	p value
Pain Relief	30% responder analysis ²	0.033
Sleep Quality	PROMIS Sleep Disturbance	0.005
Overall response to therapy	PGIC	0.025
Assessment of disease impact	FIQ-R Total score	0.014

p < 0.05 → statistically significant

BESTFIT pre-specified primary endpoint:
change in week 12 mean pain score
(p=0.172)

- PROMIS = Patient-Reported Outcomes Measurement Information System
- PGIC = Patient Global Impression of Change
- FIQ-R = Fibromyalgia Impact Questionnaire - Revised

¹Intent-to-treat analysis, N=205 (TNX-102 SL N=103, placebo N=102).

²FDA-accepted primary endpoint in current Phase 3 AFFIRM study.

Source: Phase 2b BESTFIT study data.

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TNX-102 SL safety and tolerability profile in the BESTFIT study

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- **No serious adverse events (SAE) reported with TNX-102 SL**
- **Systemic adverse events reported by at least 3% of the total BESTFIT population**

	TNX-102 SL (N=103)	Placebo (N=101)	Total (N=204)
Somnolence	1.9	6.9	4.4
Dry Mouth	3.9	4.0	3.9
Back Pain	4.9	3.0	3.9
Nausea	4.9	2.0	3.4
Sinusitis	3.9	3.0	3.4

- **Most frequent local adverse events were administration site reactions**
 - Previously reported in Phase 1 studies; no detectable bias on efficacy results
 - Transient tongue numbness (44% TNX-102 SL vs. 2% placebo)
 - Abnormal taste (8% TNX-102 SL vs. 0% placebo)
- **Trial completion rates of 86% with TNX-102 SL vs. 83% with placebo**

Source: Phase 2b BESTFIT study data – Preliminary Study Report.

TNX-102 SL (cyclobenzaprine HCl sublingual tablets, 2.8 mg) is an Investigational New

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Drug and is not approved for any indication.

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Enrollment completed in TNX-102 SL in Phase 3 trial for fibromyalgia

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- Phase 3 AFFIRM Study is fully enrolled
 - TNX-102 SL once-daily at bedtime**
2.8 mg N = 250
 - Placebo once-daily at bedtime**
N = 250
 - Randomized, double-blind, placebo-controlled study in fibromyalgia
 - N=500; approximately 35 U.S. clinical sites
 - Primary efficacy endpoint:**
 - Difference in 30% pain responder analysis at Week 12 between TNX-102 SL and placebo
- 12 weeks → open-label extension
- Top line data expected 3Q 2016**
- Second Phase 3 Study ("REAFFIRM") expected to begin in 2Q 2016
 - Expected to be similar to AFFIRM in design and sample size

TNX-102 SL (cyclobenzaprine HCl sublingual tablets, 2.8 mg) is an Investigational New Drug and is not approved for any indication.

TNX-102 SL in Phase 2 development for post-traumatic stress disorder (PTSD)

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Candidate	Indication	Preclinical	Phase 1	Phase 2	Phase 3	NDA	Market	Near-term Catalyst
TNX-102 SL (Tonmya®*)	Fibromyalgia							Top line data 3Q 2016
TNX-102 SL	Post-Traumatic Stress Disorder							Top line data 2Q 2016 (May 2016)

* Tonmya® has been conditionally accepted by the FDA as the proposed tradename of TNX-102 SL for fibromyalgia.

NDA = New Drug Application; FDA = U.S. Food and Drug Administration.

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PTSD is a chronic stress disorder triggered by a traumatic event

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- **PTSD is characterized by:**
 - re-experiencing the triggering event
 - negative alterations in mood/cognition
 - situation/stimulus avoidance
 - hypervigilance (anxiety, difficulty sleeping)
- **Considered a stress response, but prolonged and does not resolve with time**
 - 20% of women and 8% of men who experience significant trauma develop PTSD¹
- **Associated with significant life disruption**
 - Social isolation, inability to maintain employment, loss of independent living
 - Unpredictable acts of violence, suicidal thoughts

¹ Kessler et al, *Arch Gen Psychiatry* 1995;52:1048.

PTSD is a prevalent problem for both civilians and the military

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- **Higher prevalence in military population**
 - 20% of veterans from recent conflicts will have potential/provisional PTSD³
 - ~638,000 veterans with PTSD in the VA health system (2012)⁴
 - Majority are male
 - Alcohol and substance abuse are common
- **~70% are considered to have moderate to severe symptoms**
- **Of those diagnosed, ~50% utilize professional healthcare (psycho/pharmacotherapy)²**

¹Kessler RC et al, *Arch Gen Psychiatry* 2013;62:617; U.S. Census Bureau, 2013 Projection.

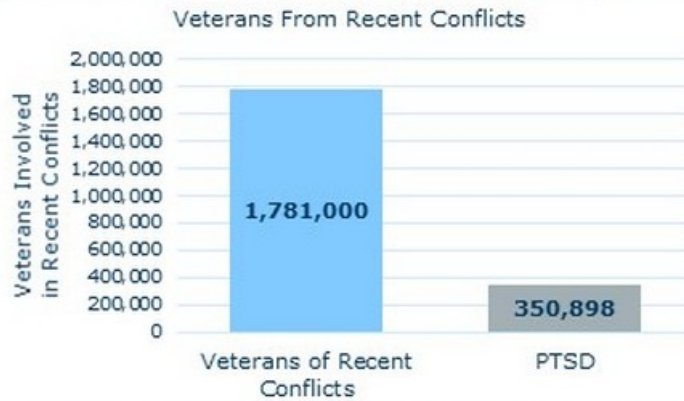
²Wang et al, *Arch Gen Psychiatry* 2005;62:629.

³Report on VA Facility Specific Operation Enduring Freedom (OEF), Operation Iraqi Freedom (OIF), and Operation New Dawn (OND) Veterans Diagnosed with Potential or Provisional PTSD.

⁴Bowe et al, *J Dual Diagnosis* 2015;11:22.

PTSD veteran population: recent conflicts only

Veteran Administration (VA) records indicate that 20% of veterans from recent conflicts will have potential or provisional PTSD



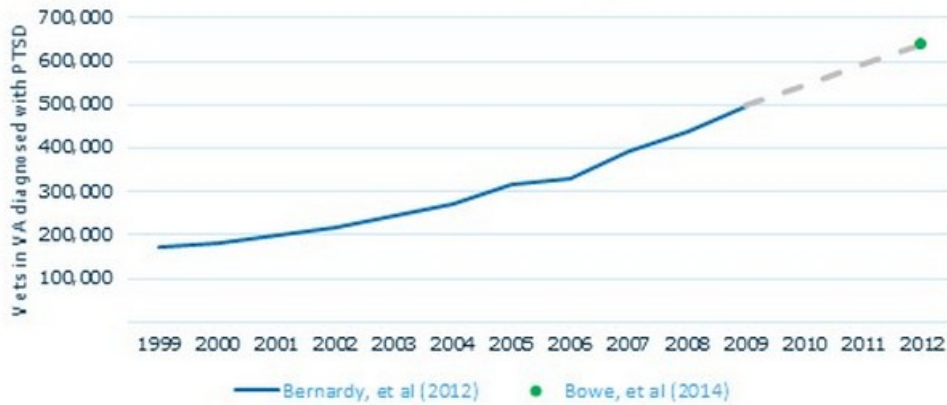
Source: Report on VA Facility Specific Operation Enduring Freedom (OEF), Operation Iraqi Freedom (OIF), and Operation New Dawn (OND) Veterans Diagnosed with Potential or Provisional PTSD. Cumulative from 1st Qtr FY 2002 through 1st Qtr FY 2014 (October 1, 2001 – March 31, 2014)



PTSD veteran population: all conflicts

The number of veterans in the VA system and diagnosed with PTSD has been rising^{1,2}

- Does not include veterans with PTSD not treated or diagnosed in the VA system



¹Bernardy et al., *J Clin Psychiatry*, 2012, 73:297-303

²Bowe et al., *J Dual Diagnosis*, 2014, 11:22-32

Significant gap in current therapeutic landscape for PTSD

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- **Medicines approved for PTSD often provide inadequate and/or inconsistent benefit**
 - Limited to two SSRI antidepressants, both of which carry suicidality warnings
 - U.S. Institute of Medicine (IOM) concluded that evidence of treatment effect is low¹
 - Lack of efficacy evidence in those with a history of combat-related trauma²
 - No new therapy since 1999
- **Sleep dysfunction in PTSD is resistant to currently-approved options**
 - 95%+ report insomnia, 83% report recurrent dreams of the trauma³
 - Correlated with disease severity, depression, substance abuse and suicide⁴
 - Drugs approved for insomnia have been shown to not improve PTSD sleep dysfunction
- **Off-label use of anxiolytics, sedative-hypnotics, and antipsychotics is common⁵**
 - Limited evidence of effectiveness; may be harmful
 - May interfere with other treatments such as cognitive behavioral therapy (CBT)

SSRI = selective serotonin reuptake inhibitor.

¹ Marshall et al, *Am J Psychiatry* 2001;158:1982.

² Jonathan Davidson, personal communications, 2014.

³ Green B. Post-traumatic stress disorder: Symptom profiles in men and women. *Curr Med Res Opin* 2003;19:200-4.

⁴ Germain et al, *J Anxiety Disord* 2005;19:233; Krakow et al, *J Nerv Ment Dis* 2002;190:442.

⁵ Bernardy et al., *J Clin Psychiatry*, 2012, 73:297-303.

Targeting sleep quality is a novel mechanism of action in PTSD therapy

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- **PTSD patients complain of sleep disturbance as a core symptom¹**
 - Distressing dreams (nightmares) are part of "re-experiencing"
 - Avoidance can be of bed/sleep due to fear of nightmares
 - Restless sleep is part of the "hyper-arousal" cluster of PTSD diagnostic criteria
- **Sleep disturbance after trauma is linked to onset of PTSD²**
- **Sleep disturbance also correlates with depression, substance abuse and suicidal behaviors in PTSD³**
- **TNX-102 SL is a tricyclic molecule that potently targets three molecular mechanisms⁴, each of which is associated with treating aspects of disturbed sleep, enhancing sleep quality**
 - Blocks the 5-HT_{2A} receptor (like trazodone)
 - Blocks the α_1 adrenergic receptor (like prazosin)
 - Blocks the H₁ receptor (like low-dose doxepin)

¹ American Psychiatric Association: *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition*, 2013.

² Koren et al, *AJP* 159:855-857, 2002; Mellman et al, *AJP* 159:1969-1701, 2002.

³ Germain, *AJP* 170:372-382, 2013; McHugh et al, *J Traumatic Stress* 27:82-89, 2014; Betts et al, *Journal of Anxiety Disorders* 27:735-41, 2013.

⁴ Daugherty et al, *Society of Biological Psychiatry 70th Annual Scientific Convention*, May 14-16, 2015 Toronto, Ontario, Canada.

TNX-102 SL (cyclobenzaprime HCl sublingual tablets, 2.8 mg) is an Investigational New Drug and is not approved for any indication.

Tonix's AtEase study in military-related PTSD: primary endpoint and power considerations

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- **Primary endpoint is the change from baseline of the Clinician Administered PTSD Scale for DSM-5 (CAPS-5)**
 - Raters are trained, certified, and monitored for reliability throughout the study
- **Powered at $\geq 80\%$ to detect an effect size of 0.5 (Cohen's *d*)**
 - Translates to detection of difference of approximately 10 points (8.5-11.5) at group level between TNX-102 SL 2.8 mg and placebo for the reduction in total CAPS-5 score
 - Assuming that approximately 66 patients complete the 12 week study in each of the TNX-102 SL and placebo groups
 - A 10-point difference on CAPS-5 between treatment groups is approximately equivalent to a 17-point difference on CAPS-4 for DSM-IV

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Limitations of current FDA-approved pharmacotherapies for PTSD

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- **Britain's National Institute for Clinical Excellence (NICE) National Clinical Practice Guideline for management of PTSD reported an effect size in paroxetine trials of 0.42 and for sertraline trials, the effect size was 0.26¹**
 - *A priori*, NICE had set a threshold of 0.5 as an effect size that would indicate a clinically meaningful effect on PTSD
 - NICE stated that neither of these two FDA-approved therapies had conclusive evidence to determine if there was a clinically important difference from placebo
- **Limited treatment response to SSRIs in males and US military**
 - In a review of sertraline registration trials, no effect on PTSD demonstrated for male subgroups in an FDA-conducted post-hoc analysis
 - None of the four double-blind placebo-controlled trials of SSRIs in U.S. military veterans demonstrated any evidence that SSRIs were superior to placebo²

¹ National Clinical Practice Guideline No. 26, National Institute for Clinical Excellence, 2005.

² Davidson J, *Journal of Psychopharmacology*, 2015.

TNX-102 SL's potential as a treatment for PTSD is supported by clinical evidence and pharmacology

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- **TNX-102 SL is active on receptor sites believed to have treatment potential for sleep problems in PTSD**
 - Targeted receptors include 5-HT_{2a}, alpha-1 adrenergic, and histamine-1 receptors
- **Efficacy of "tricyclic" drug class in PTSD is supported by clinical data¹**
 - Oral tricyclics have side effects that limited their use
- **Improvements observed in BESTFIT study relate to PTSD core symptoms²**

Outcome Measure at Week 12 in BESTFIT	p value
PROMIS Sleep Disturbance	0.005
FIQ-R Anxiety Item	0.012
FIQ-R Sensitivity Item	0.020

p < 0.05 →
statistically significant

¹ Davidson J, *J Psychopharm* 2015;29;264.

² Phase 2b BESTFIT study data.

TNX-102 SL (cyclobenzaprine HCl sublingual tablets, 2.8 mg) is an Investigational New Drug and is not approved for any indication.

Phase 2 "AtEase" trial of TNX-102 SL in PTSD is fully enrolled

25

TNX-102 SL at bedtime once-daily

2.8 mg

N ~ 90

TNX-102 SL at bedtime once-daily

5.6 mg

N ~ 45

Placebo at bedtime once-daily

N ~ 90

- Randomized, double-blind, placebo-controlled trial in military-related PTSD
- Randomized >240; approximately 25 U.S. clinical sites
- **Primary efficacy endpoint:**
 - Difference in Clinician-Administered PTSD Scale (CAPS) score between TNX-102 SL 2.8 mg and placebo at week 12

12 weeks → open-label extension

Top line data expected 2Q 2016
(2nd Half of May)

Clinical phase completed

TNX-102 SL (cyclobenzaprine HCl sublingual tablets, 2.8 mg) is an Investigational New Drug and is not approved for any indication.

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Wholly-owned by Tonix with no obligations to others

TNX-102 SL

Fibromyalgia, PTSD

- **Composition-of-matter (eutectic)**
 - Patents filed
 - Protection expected to 2034
- **Pharmacokinetics (PK)**
 - Patents filed
 - Protection expected to 2033
- **Method-of-use**
 - Fibromyalgia: patents issued, 2020 expiry
 - PTSD: patents filed

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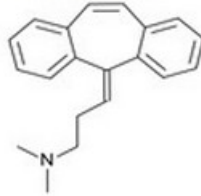
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TNX-102 SL: Active Pharmaceutical Ingredient

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- **Cyclobenzaprine (CBP) is a tricyclic molecule that binds to a number of central nervous system (CNS) receptor types**



- **Highest affinity for three receptors believed to have a role in sleep quality**
 - 5-HT_{2A} receptor
 - α_1 adrenergic receptor
 - H₁ receptor

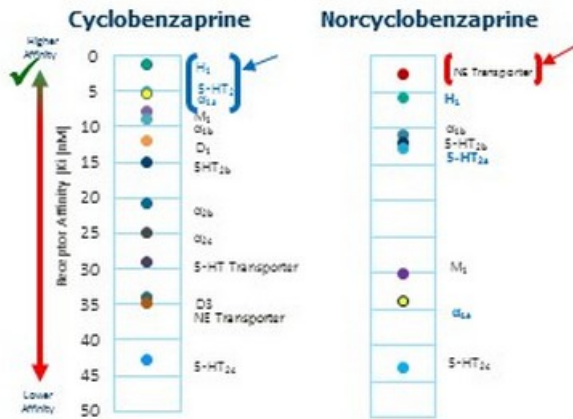
TNX-102 SL (cyclobenzaprine HCl sublingual tablets, 2.8 mg) is an Investigational New Drug and is not approved for any indication.

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Properties of cyclobenzaprine and its metabolite norcyclobenzaprine: opportunity to modify pharmacokinetic profile

Receptor Binding Dot Plots for Human Receptors



Cyclobenzaprine Properties:

- High affinity for 3 receptors believed to have a role in sleep quality
 - 5HT_{2B}
 - H₁
 - α_{1B}
- Functional assays ≈ antagonism

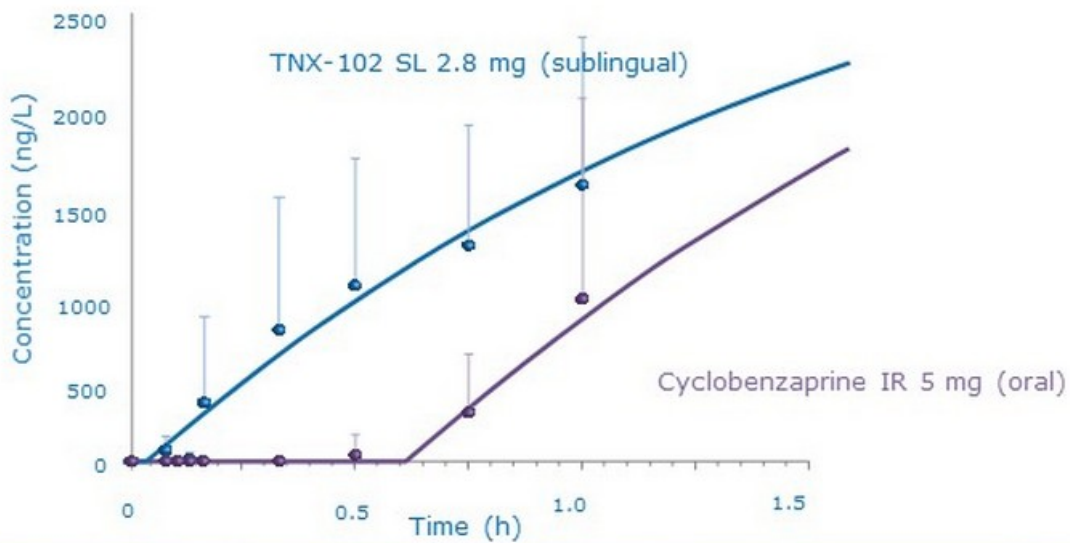
Norcyclobenzaprine Properties:

- Product of first-pass hepatic metabolism
- Persistent - half-life (t_{1/2}) ~72 hours
- Less selective for target receptors
- Contributes equally to daytime and nighttime exposure
- Decreased potential for adverse events

Cyclobenzaprine is detected in plasma within minutes following sublingual TNX-102 SL

Plasma Concentration Versus Time of TNX-102 SL Compared to oral Cyclobenzaprine IR

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Source: U.S. Patent applications 13/918,692 - Transmucosal absorption
TNX-102 SL (cyclobenzaprine HCl sublingual tablets, 2.8 mg) is an Investigational New Drug and is not approved for any indication.

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TNX-102 SL: Pharmacokinetic profile after sublingual route of administration

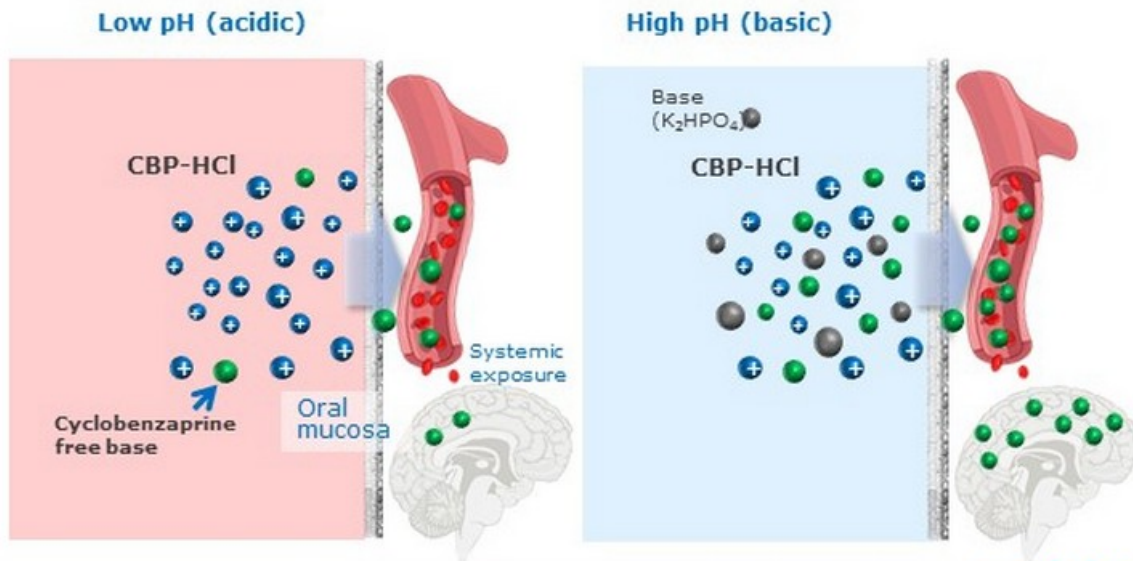
30

- **Very rapid absorption after dosing (measurable in plasma within 3 minutes of administration)**
 - Maintains T_{max} at ~4 hours after administration
 - Approximately 50% of exposure to cyclobenzaprine occurs during first 8 hours
- **Avoids first-pass hepatic metabolism to persistent metabolite, norcyclobenzaprine**
 - Large reduction in exposure to norcyclobenzaprine (-48% AUC_{0-48})
 - Should equally reduce both daytime and nighttime exposure to norcyclobenzaprine at steady-state
 - Decreased potential for adverse events

TNX-102 SL (cyclobenzaprine HCl sublingual tablets, 2.8 mg) is an Investigational New Drug and is not approved for any indication.

Formulation with base increases systemic absorption of sublingual cyclobenzaprine¹

Concentration gradient increases diffusion of free base across oral mucosa (Le Chatelier's Principle) 31



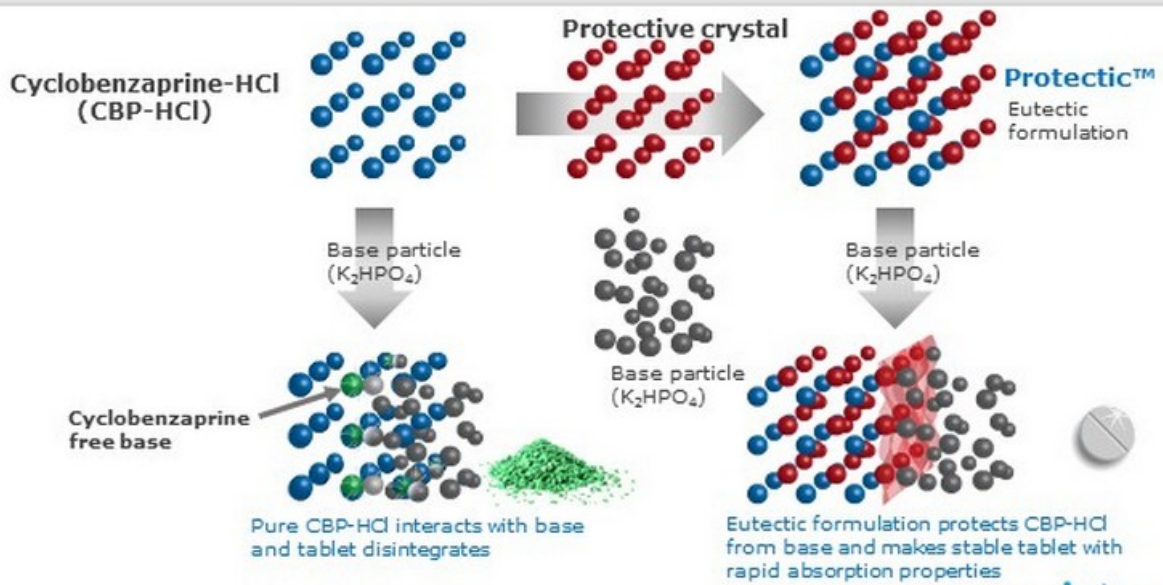
¹U.S. Patent applications 13/918,692, 14/214,433 and 14/776,624 - Eutectic Formulations

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PHARMACEUTICALS

Proprietary cyclobenzaprine hydrochloride eutectic mixture stabilizes tablet formulation¹

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¹U.S. Patent applications 14/214,433 and 14/776,624 - Eutectic Formulations

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NASDAQ: TNPX

Cash, cash equivalents, and marketable securities reported at December 31, 2015 \$ 43.0 million

Cash used in operations in 2015 \$ 42.5 million

Shares outstanding (May 2, 2016) 18.9 million

Management team

Seth Lederman, MD

President & CEO



Bruce Daugherty, PhD, MBA

Chief Scientific Officer



Gregory Sullivan, MD

Chief Medical Officer



COLUMBIA UNIVERSITY
Department of Psychiatry

New York State
Psychiatric Institute

Bradley Saenger, CPA

Chief Financial Officer



Jessica Edgar Morris

EVP, Administration

Deutsche Bank



Ronald Notvest, PhD

EVP, Commercial Planning & Development



Board of directors

35

Seth Lederman, MD

Chairman

Ernest Mario, PhD

ALZA, Glaxo, Reliant Pharma

Stuart Davidson

Labrador Ventures, Alkermes, Combion

Charles Mather

BTIG, Janney, Jefferies, Cowen, Smith Barney

Patrick Grace

Apollo Philanthropy, WR Grace, Chemed

John Rhodes

NYSERDA, NRDC, BoozAllen Hamilton

Donald Landry, MD, PhD

Chair of Medicine, Columbia University

Samuel Saks, MD

Jazz Pharma, ALZA, Johnson & Johnson

Milestones – recent and upcoming

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TNX-102 SL – Fibromyalgia

- May 2015** **Began Phase 3 AFFIRM study**
- November 2015** **Presented additional data from Phase 2b BESTFIT study at ACR Meeting**
- May 2016** **Reported completion of enrollment in P3 AFFIRM study**
- Q3 2016** **Report top-line results from P3 AFFIRM study**

TNX-102 SL – Post-Traumatic Stress Disorder

- December 2015** **Entered into Collaborative Research and Development Agreement (CRADA) with the United States Army Medical Materiel Development Activity (USAMMDA)**
- December 2015** **Reported completion of enrollment in Phase 2 AtEase study**
- 2nd Half May 2016** **Report top-line results from AtEase study**



NASDAQ: TNXP

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Tonix Pharmaceuticals Completes Enrollment in Phase 3 Clinical Trial of TNX-102 SL in Fibromyalgia

- Top-line Results on Track to be Reported 3Q 2016 for Pivotal Study in Flagship Program -

New York, NY – May 2, 2016 – Tonix Pharmaceuticals Holding Corp. (NASDAQ: TNXP) (Tonix), which is developing next-generation medicines for common disorders of the central nervous system, including fibromyalgia and post-traumatic stress disorder, announced today that it has completed enrollment in its Phase 3 AFFIRM clinical trial of TNX-102 SL (cyclobenzaprine HCl sublingual tablets) for the treatment of fibromyalgia.

“We are developing a new medicine for fibromyalgia because there are still inadequate therapy options despite its prevalence as one of the most common chronic pain conditions. Many individuals with fibromyalgia cannot tolerate the existing medicines or achieve a durable therapeutic benefit from them according to the United States Food and Drug Administration (FDA) October 2014 Patient-Focused Drug Development Initiative Fibromyalgia Report¹,” said Seth Lederman, M.D., president and chief executive officer of Tonix. “The completion of patient enrollment in our flagship development program is an important clinical milestone, and we look forward to reporting top-line data from this trial in the third quarter of 2016,” added Dr. Lederman.

The AFFIRM study is a randomized, double-blind, placebo-controlled, 12-week Phase 3 clinical trial, designed to evaluate the efficacy of TNX-102 SL for the management of patients with fibromyalgia. Participants are treated with TNX-102 SL 2.8 mg, sublingually once daily at bedtime for 12 weeks. The primary outcome assessment for the study will be an FDA-accepted pain responder analysis, defined as the proportion of patients who report at least a 30 percent reduction in pain from baseline at the end of the 12-week treatment period. The AFFIRM study is being conducted at approximately 35 U.S. clinical sites, and enrollment has achieved the 500-patient goal per protocol.

About Fibromyalgia

Fibromyalgia is a chronic neurobiological disorder that is thought to result from amplified sensory and pain signaling. Fibromyalgia afflicts five to 15 million Americans, and physicians and patients report widespread dissatisfaction with currently marketed products. Common symptoms of fibromyalgia include chronic widespread pain, nonrestorative sleep, fatigue, and morning stiffness. Other associated symptoms include cognitive dysfunction and mood disturbances, including anxiety and depression. Individuals suffering from fibromyalgia struggle with their daily activities, have impaired quality of life and frequently are disabled.

¹For more information, see the United States Food and Drug Administration's October 2014 Patient Focused Drug Development Initiative Fibromyalgia Report at www.fda.gov/downloads/ForIndustry/UserFees/PrescriptionDrugUserFee/UCM422351.pdf.

About TNX-102 SL

TNX-102 SL is a proprietary sublingual (under the tongue) eutectic formulation of cyclobenzaprine (CBP) that efficiently delivers a low dose of cyclobenzaprine to the bloodstream through mucosal membrane absorption. TNX-102 SL is designed for use at bedtime and provides rapid drug exposure after administration. The active ingredient of TNX-102 SL, cyclobenzaprine, functions as an antagonist at the serotonin-2A, alpha-1 adrenergic, and histamine H1 receptors. Because of sublingual transmucosal absorption, TNX-102 SL avoids first-pass metabolism and decreases exposure to the active metabolite norcyclobenzaprine, a less desirable molecule due to its long plasma half-life. Tonmya® has been conditionally accepted by the FDA as the proposed tradename of TNX-102 SL for fibromyalgia. TNX-102 SL is an Investigational New Drug and has not been approved for any indication.

About Tonix Pharmaceuticals Holding Corp.

Tonix is developing next-generation medicines for common disorders of the central nervous system, including fibromyalgia and post-traumatic stress disorder. These disorders are characterized by chronic disability, inadequate treatment options, high utilization of healthcare services, and significant economic burden. This press release and further information about Tonix can be found at www.tonixpharma.com.

Safe Harbor / Forward-Looking Statements

Certain statements in this press release are forward-looking within the meaning of the Private Securities Litigation Reform Act of 1995. These statements may be identified by the use of forward-looking words such as “anticipate,” “believe,” “forecast,” “estimate,” “expect,” and “intend,” among others. These forward-looking statements are based on Tonix’s current expectations and actual results could differ materially. There are a number of factors that could cause actual events to differ materially from those indicated by such forward-looking statements. These factors include, but are not limited to, substantial competition; our possible need for additional financing; uncertainties of patent protection and litigation; uncertainties of government or third party payor reimbursement; limited research and development efforts and dependence upon third parties; and risks related to failure to obtain FDA clearances or approvals and noncompliance with FDA regulations. As with any pharmaceutical under development, there are significant risks in the development, regulatory approval and commercialization of new products. Tonix does not undertake an obligation to update or revise any forward-looking statement. Investors should read the risk factors set forth in the Annual Report on Form 10-K for the year ended December 31, 2015, as filed with the Securities and Exchange Commission (the “SEC”) on March 3, 2016, and future periodic reports filed with the SEC on or after the date hereof. All of Tonix’s forward-looking statements are expressly qualified by all such risk factors and other cautionary statements. The information set forth herein speaks only as of the date hereof.

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Source: Tonix Pharmaceuticals Holding Corp.

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