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): April 3, 2013

Mast Therapeutics, Inc.

(Exact name of registrant as specified in its charter)

Delaware	001-32157	84-1318182
(State or other jurisdiction of incorporation)	(Commission File Number)	(I.R.S. Employer Identification No.)
12390 El Camino Real, Suite 150, San Diego, California		92130
(Address of principal executive offices)		(Zip Code)

Registrant's telephone number, including area code: 858-552-0866

Not Applicable

Former name or former address, if changed since last report

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:

[ ] 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.

Begining on April 3, 2013, the information attached as Exhibit 99.1 to this report, which primarily relates to research and development of Mast Therapeutics, Inc.'s (the "Company") lead product candidate, MST-188, may be presented from time to time by the Company at various scientific, investor and analyst meetings.

Item 9.01 Financial Statements and Exhibits.

(d) Exhibits.

The list of exhibits called for by this Item is incorporated by reference to the Exhibit Index filed with this report.

The information in this report, including the information contained in Exhibit 99.1 attached hereto, is being furnished pursuant to this Item 7.01 and shall not be deemed "filed" for purposes of Section 18 of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), or otherwise subject to the liabilities of that section, and it shall not be deemed incorporated by reference in any filing under the Securities Act of 1933, as amended, or under the Exchange Act, whether made before or after the date hereof, except as expressly set forth by specific reference in such filing to this report.

By filing this report and furnishing this information, including the information contained in Exhibit 99.1 attached hereto, the Company makes no admission as to the materiality of any information in this report. The information contained in Exhibi 99.1 hereto is summary information that is intended to be considered in the context of the Company's filings with the U.S. Securities and Exchange Commission (the "SEC"), including its Annual Report on Form 10-K filed on March 19, 2013, and other public announcements that the Company makes, by press release or otherwise, from time to time. The Company undertakes no duty or obligation to publicly update or revise the information contained in this report, although it may do so from time to time as it believes is appropriate. Any such updating may be made through the filing of other reports or documents with the SEC, through press releases, or through other public disclosure.

Forward-Looking Statements
Mast Therapeutics cautions you that statements included in this report, including in Exhibit 99.1 attached hereto, that are not a description of historical facts are forward-looking statements that are based on the Company's current expectations and assumptions. Such forward-looking statements include, but are not limited to, statements regarding the Company's development and commercialization plans for MST-188, including in sickle cell disease, acute limb ischemia, and other indications, and plans for protecting its intellectual property related to MST-188, as well as the timing of activities related to those plans. Among the factors that could cause or contribute to material differences between the Company's actual results and the expectations indicated by the forward-looking statements are risks and uncertainties that include, but are not limited to: the potential for delays in the commencement or completion of clinical studies, including as a result of difficulties in obtaining regulatory agency agreement on clinical development plans or clinical study design, opening trial sites, enrolling study subjects, manufacturing clinical trial material, completing manufacturing process development activities, and being subject to a "clinical hold"; the risk of suspension or termination of a clinical study, including due to lack of adequate funding or patient safety concerns; the potential for institutional review boards or the FDA or other regulatory agencies to require additional nonclinical or clinical studies prior to initiation of planned phase 2 clinical studies of MST-188 in any particular indication in which the Company determines to develop MST-188, including acute limb ischemia, which likely would increase the total time and cost of development in the indication; the risk that clinical studies of MST-188 are not successfully executed and/or do not successfully demonstrate its safety or efficacy; the risk that, even if clinical studies are successful, the FDA determines they are not sufficient to support a new drug application; the risk that even if clinical studies of MST-188 in one indication are successful, clinical studies in another indication may not be successful; the Company's reliance on contract research organizations (CROs), contract manufacturing organizations (CMOs), and other third parties to assist in the conduct of important aspects of development of MST-188, including clinical studies, and regulatory activities for MST-188 and that such third parties may fail to perform as expected; the Company's ability to obtain additional funding on a timely basis or on acceptable terms, or at all; the potential for the Company to delay, reduce or discontinue current and/or planned development activities, including clinical studies, partner MST-188 at inopportune times or pursue less expensive but higher-risk and/or lower return development paths if it is unable to raise sufficient additional capital as needed; the risk that acceptable partnering opportunities for MST-188 may not be available in particular jurisdictions or indications and, consequently, the Company may not be able to pursue development of MST-188 in certain jurisdictions and indications; the risk that the FDA and regulatory agencies outside of the U.S. do not grant marketing approval of MST-188, on a timely basis, or at all; the risk that the Company is not able to adequately protect its intellectual property rights relating to the MAST platform and MST-188 and prevent competitors from duplicating or developing equivalent versions of its product candidates, including MST-188; and other risks and uncertainties more fully described in the Company's periodic filings with the SEC and press releases.

You are cautioned not to place undue reliance on forward-looking statements, which speak only as of the date hereof. Mast Therapeutics does not intend to revise or update any forward-looking statement set forth in this press release to reflect events or circumstances arising after the date hereof, except as may be required by law. This caution is made under the safe harbor provisions of Section 21E of the Exchange Act.

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SIGNATURES

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

Mast Therapeutics, Inc.

April 3, 2013

By: /s/ Patrick L. Keran

Name: Patrick L. Keran
Title: President and Chief Operating Officer

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Exhibit Index

Exhibit No.	Description
99.1	Mast Therapeutics, Inc. corporate presentation slide deck, dated April 3, 2013

MAST THERAPEUTICS, INC.

NYSE MKT: MSTX

Corporate Overview

April 3, 2013

Brian M. Culley, CEO

Forward-Looking Statements

This presentation includes forward-looking statements about our business prospects, financial position, and development of MST-188 for therapeutic use in humans. Any statement that is not a statement of historical fact should be considered a forward-looking statement. Because forward-looking statements relate to the future, they are subject to inherent risks, uncertainties and changes in circumstances that are difficult to predict. Actual events or performance may differ materially from our expectations indicated by these forward-looking statements due to a number of factors, including, but not limited to, results of our pending and future clinical studies, the timeline for clinical and manufacturing activities and regulatory approval; our dependency on third parties to conduct our clinical studies and manufacture our clinical trial material; our ability to raise additional capital, as needed; our ability to establish and protect proprietary rights related to MST-188; and other risks and uncertainties more fully described in our press releases and our filings with the SEC, including our annual report on Form 10-K for the period ended December 31, 2012.

We caution you not to place undue reliance on any of these forward-looking statements, which speak only as of the date of this presentation. We do not intend to update any forward-looking statement included in this presentation to reflect events or circumstances arising after the date of the presentation, except as may be required by law.

Corporate Restart

"From the brink of liquidation in 2009 to the most clinically-advanced new drug in SCD in 2013."

2009
- Minimal business operations
- 2 employees, $1.5M working capital

2010
- Appoint new CEO and COO
- Raise ~$60 million
- Restructure BOD

2011
- Acquire SynthRx (MST-188)
- Appoint new SVP, Development

2012
- Appoint new CMO
- Engage CROs and manufacturers

2013
- Initiate phase 3 EPIC study
- Rename as "Mast Therapeutics"

Corporate Overview

- Developing MST-188 for "microcirculatory insufficiency"
- Initially focused on rare/orphan diseases
  - Sickle Cell Diseases
  - Acute Limb Ischemia
- Planned expansion into larger markets
  - Resuscitation Following Major Hemorrhage
  - Acute Decompensated Heart Failure
  - Transfusion (Storage Lesion)
  - Acute Ischemic Cerebrovascular Infarction (Stroke)
- Recruiting subjects in pivotal phase 3 study in SCD
  - Most clinically advanced new molecular entity in development

MST-188 Overview

API Structure:

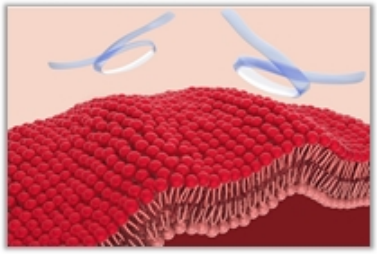
$$HO-(CH_2CH_2O)_{80}-(CH_2\underset{\displaystyle CH_3}{\underset{|}{C}}HO)_{27}-(CH_2CH_2O)_{80}-H$$

Drug Product:	Formulated as a clear, citrate-buffered solution
CMC:	Large polymeric molecule (8,500 Daltons) manufactured by chemical synthesis and proprietary purification process
Administration:	24-48h IV in acute-care settings (hospital, ICU, specialized out-patient)

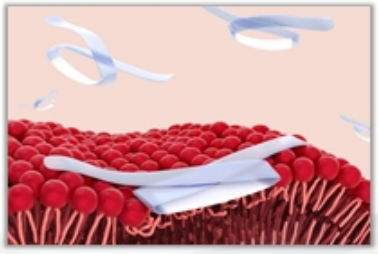
MST-188 Mechanism of Action

Hydrophobic core binds to hydrophobic domains in circulation
(e.g., damaged cell membranes, acute phase reactant proteins)

No Affinity for Healthy Cell Membranes



Adheres to Damaged Cell Membranes



MST-188 Pharmacodynamics

Single mechanism with four pharmacodynamic effects addresses multiple pathophysiologic processes

The MST-188 Pipeline

	Preclinical	Phase 1	Phase 2	Phase 3
2013				
Sickle Cell Disease (orphan)	▬	▬	▬	▬
Acute Limb Ischemia (orphan)	▬	▬		
Resuscitation following Major Trauma*	▬	▬		
Acute Decompensated Heart Failure	▬			
Transfusion (storage lesion)	▬			
2014				
Stroke	▬	▬		

* Development contingent on U.S. government funding/other collaborator

Sickle Cell Disease

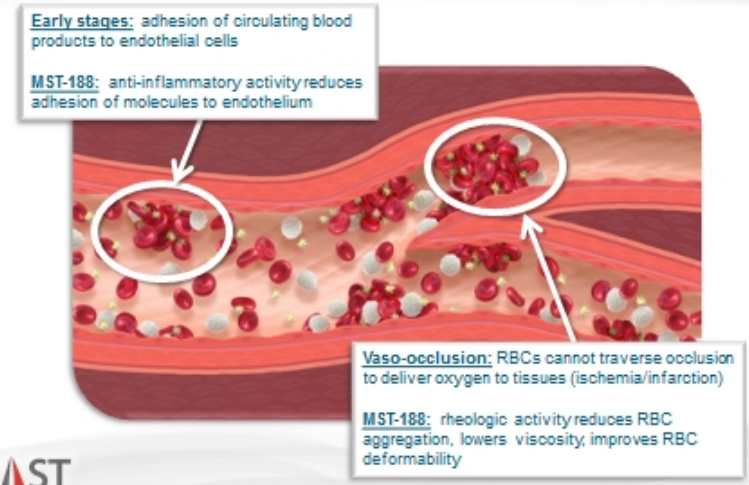
(vaso-occlusive crisis)

Overview

- **An inherited genetic disorder and orphan disease**
  - Characterized by "sickling" of erythrocytes (red blood cells, RBCs)
- **Hallmark is recurring episodes of extreme pain ("crisis")**
  - Typically last 4 to 5 days, but may last a week or longer
  - Patients "suffer at home" until pain requires IV analgesia (hospital visit)
- **Significant unmet need**
  - Average age of death ~40 years
  - No approved agents to shorten duration or severity of crisis
- **Substantial interest from Big Pharma**
  - Pfizer: $395 million* for phase 2 investigational drug (Oct 2011)
  - Novartis: $650 million* for phase 2 investigational drug (Sep 2012)

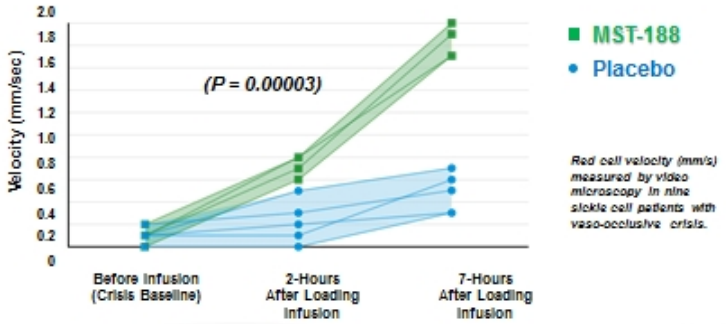
* Reported deal value

Pathophysiology: impaired blood flow



MST-188: improves blood flow

Improvement in microvascular blood flow in SCD patients in crisis following treatment with MST-188



Red cell velocity (mm/s) measured by video microscopy in nine sickle cell patients with vaso-occlusive crisis.

Source: J. Investig. Med. 2004;52(8):403-8

Completed Phase 2 Study in SCD

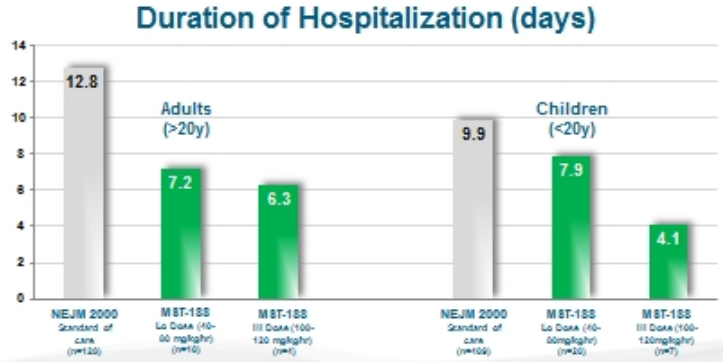
Improvement in various endpoints in SCD patients in crisis following treatment with MST-188*

	Subjects who received ≥ 24h infusion (n=45)		
	MST-188*	Placebo	Improvement
Duration of Crisis	60h	88h	32% shorter
Duration of Hospitalization	5 days	7 days	2 days shorter
Total Analgesic Use	49mg	169mg	71% less
Parenteral Analgesic Use	40mg	150mg	73% less

Source: Blood, September 1, 1997 – Vol 90, No. 6
* 1st generation (non-purified) formulation

Completed Phase 2 Study in SCD

Reduction in duration of hospitalization in SCD patients (n=41) with acute chest syndrome following treatment with MST-188



Source: Data on file

Completed Phase 3 Study in SCD
(Primary and Post-Hoc Analyses)

Improvement in duration of crisis in SCD patients in crisis following treatment with MST-188

Group	MST-188	Placebo	*P* Value
All treated patients (n=249)	132 hours	140 hours	0.07
Patients <16 years old (n=73)	127 hours	149 hours	0.01

Source: JAMA, November 17, 2001 – Vol 286, No. 17

Completed Phase 3 Study in SCD
(Primary and Post-Hoc Analyses)

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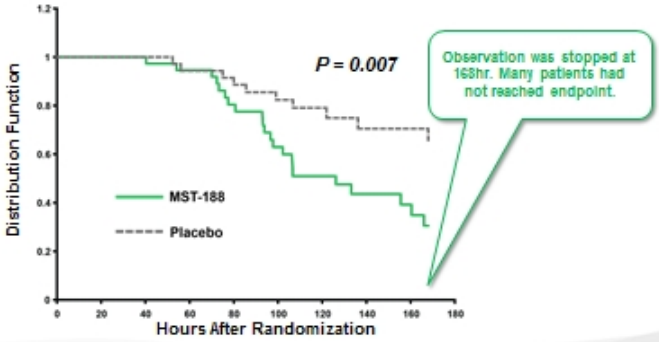
Patients <16 years old (n=73)	127 hours	149 hours	0.01

Original trial statistical plan required 350 patients. Reduced by almost 30% by prior sponsor (capital constraints).

Source: JAMA, November 17, 2001 – Vol 286, No. 17

Completed Phase 3 Study in SCD
(Post-Hoc Analysis)

Proportion of Patients <16 Years Remaining in Crisis Over Time (n=73)



Source: JAMA, November 17, 2001 – Vol 286, No. 17

Completed Phase 3 Study in SCD
(Post-Hoc Analysis)

Proportion of Patients Achieving Crisis Resolution within 168 Hours

Group	MST-188	Placebo	*P* Value
All treated patients (n=249)	51.6%	36.6%	0.02
Patients <16 years old (n=73)	62.2%	27.8%	0.01

Source: JAMA, November 17, 2001 – Vol 286, No. 17

Lessons Learned

- Simplify endpoint to minimize protocol violations and missing ("left-censored") data
- Follow subjects until hospital discharge to avoid truncated ("right- censored") data
- Avoid subjective endpoints, which increase variability
- Standardize pain management practices across study sites
- Increase homogeneity in terms of cumulative disease burden (chronic pain)
- Control duration of crisis ("suffering at home") prior to randomization
- Limit SCD genotypes

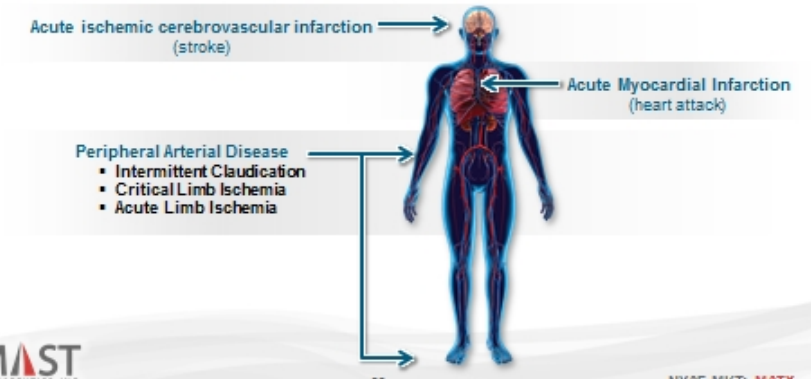
Pivotal Phase 3 Trial (EPIC)
Evaluation of Purified 188 In Children

- Study Design
  - Randomized, two-arm, double-blind, placebo controlled
  - 388 patients ages 8-17 from ~40 centers in the U.S.
  - 90% power
- Primary endpoint
  - Duration of crisis
  - Time from randomization to last dose of parenteral opioid
- Secondary endpoints
  - Re-hospitalization rate (for vaso-occlusive crisis) within 14 days
  - Acute chest syndrome within 120 hours of randomization
- Initiated: January 2013
- Expected Completion (enrollment): 2015

Acute Limb Ischemia

Arterial Disease

- A progressive circulatory problem in which obstructed arteries reduce blood flow to tissue
  - Thrombolytic agents (tPA) used to treat acute complications
  - Significant morbidity and mortality



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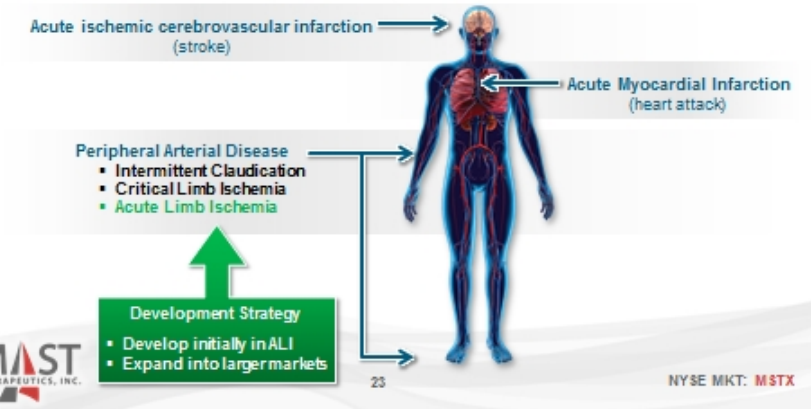
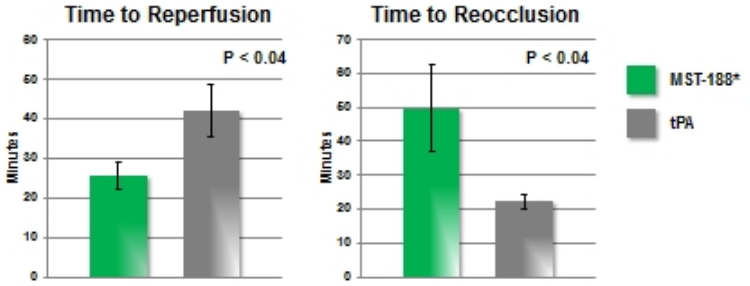


MST-188 Improved tPA Effectiveness

Animals randomized to tPA (duteplase) (n = 10) or tPA + MST-188* (n = 10)



Source: Data on file
* 1st generation (non-purified) formulation

Planned Phase 2 Study

- **Generate Clinical Proof-of-Concept Data**
  - Biomarkers
  - Clinical outcomes
  - Protocol under development
- **Study Concept**
  - Design: randomized, double-blind, active-controlled
  - Population: Rutherford Class 2A / 2B and catheter-directed thrombolysis
  - Arms: tPA vs. tPA + MST-188
  - Sample Size: ~60 subjects
  - Evaluate multiple doses
- **Timing**
  - Initiation: late 2013/early 2014
  - Enrollment: 15 - 18 months

Resuscitation Following Major Trauma

MST-188 Improved Survival in Numerous Experimental Models

- MST-188* studied in 5 controlled models of hemorrhagic shock / resuscitation by 4 different investigator groups
- Consistently improved survival (reproducibility across studies)

Resuscitation (2011) (DARPA-funded)	MST-188 (n=7)	Control (n=16)	*P* value
Median Survival Time (min) (95% CI)	161 (80 - 180)	55.8 (36.5 - 86)	0.0186

Shock (2009)	MST-188 + Hextend	Hextend	*P* value
Survival time from onset of hemorrhage (min) (n=10/arm)	589±99	289±37	0.002

Sources: Resuscitation 82 (2011) 1453-1458, SHOCK, Vol 32, No. 4, pp. 442-450, 2009
*Some studies evaluated 1st generation (non-purified) formulation

Planned Phase 2 Study & Funding

- Generate Clinical Proof-of-Concept Data
- Study Protocol (complete)
  - Design: randomized, double-blind, controlled
  - Population: admitted to ICU for resuscitation following major torso trauma
  - Arms: Standard resuscitation protocol (SRP) vs SRP + MST-188
  - Sample Size: ~60 subjects
  - Evaluate multiple doses
  - Enrollment: 18 - 24 months
- Collaboration with University of Florida
  - A leader in clinical research and trauma care
- U.S. Government Funding
  - MST-188 prior recipient of funding (DARPA)
  - Preparing / submitting new applications
  - Timeline: 9 - 12 months

Market Opportunities for MST-188

Therapeutic Area	U.S. Incidence (annual)	Ex-U.S.* Incidence (annual)
Sickle Cell Disease (vaso-occlusive crisis)	~100,000 hospitalizations	~70,000 hospitalizations
Peripheral Arterial Disease (thrombolysis)**	500,000 to 600,000	1.6 to 2.0 million
Resuscitation following Major Trauma	1.0 million	2.9 to 3.3 million
Acute Decompensated Heart Failure	1.0 million	3.1 to 4.1 million
Transfusion	4.5 million	20 to 22 million
Stroke	800,000	2.4 million

* Includes developed countries
**Includes all end-stage PAD (i.e. ALI, CLI, DVT and other thrombotic diseases)

MST-188 Exclusivity

Multiple Barriers to Entry

Marketing Exclusivity	➢ SCD: orphan drug designation in U.S. and EU ➢ ALI: orphan drug designation expected in U.S. and EU
Patents	➢ Filed applications cover: ▪ proprietary purification process ▪ methods of using poloxamers ▪ use of poloxamers in combination therapy ➢ Additional applications in-process
Trade Secrets	➢ Macromolecules difficult to characterize ("biosimilars") ➢ Non-patented / non-published manufacturing steps ➢ Proprietary specifications (in-take; in-process; release) ➢ Evaluating proprietary analytical standards / bioassays

Financial Overview

- Cash/investments at 12/31/12: ~$36.5 million
- 46.3 million shares outstanding
  - Warrants for 16.5 million shares (10.6 million @ $1.10)
- Average daily volume (3 mo): ~384,000*
- No debt
- Opportunities for U.S. government funding
- Evaluating ex-U.S. partnerships to fund U.S. development

*As of April 1, 2013

Recent and Upcoming Events

✓	Initiate Phase 3 Study in SCD
✓	Identify development plans outside SCD
✓	Secure orphan designation for MST-188 for SCD in EU
✓	Engage ex-U.S. partnering advisor
✓	Initiate tQT/QTc Study
	Submit Applications for U.S. government funding for Phase 2 Study in Major Trauma
	Request "rare pediatric disease" designation for SCD
	Request Orphan Drug Designation for MST-188 for ALI in U.S.
	Initiate Nonclinical Proof-of-Concept Study in Heart Failure
	Report Data from tQT/QTc Study
	File New Patent Applications
	Open ex-U.S. Clinical Sites (EPIC)
	Initiate mBF Sub-study
	Initiate Phase 2 Study in ALI

Investment Highlights

- Balanced Pipeline
  - Mitigates corporate-level development risk
  - Multiple partnering opportunities
- Staged Development Strategy
  - Initial focus on rare diseases; planned expansion into larger markets
- Late-Stage Program in Sickle Cell Disease
  - Only company with NME in phase 3 development
  - Increase in Big Pharma dealmaking activity
- Non-Dilutive Financing Opportunities
  - U.S. government funding
  - Ex-U.S. partnerships to fund U.S. development
- Attractive Valuation
  - Market capitalization: $34 million*

*Based on closing price of $0.73 on 3/28/2013

(NYSE MKT: MSTX)