Forward-Looking Statements

Before we begin, we would like to remind everyone that during our presentation, we will be making forward-looking statements about our business, plans, and objectives. These statements are based on how we see things today. These statements can be identified by words such as believes, estimates, expects, or similar references to the future, and include statements we may make regarding our product development strategy, business prospects, and clinical and operational milestones. We wish to caution you that actual events or results may differ materially from those expressed in forward-looking statements made by us or on our behalf. For more information on the many factors that can result in actual performance differing from our forward-looking statements, please see our filings made with the SEC, including our 2015 Annual Report on Form 10-K filed on March 4, 2016 and our Quarterly Report on Form 10-Q filed on May 6, 2016.
InVivo – Pioneering Spinal Cord Injury Therapies

• Two Ground-Breaking Investigational Products for Spinal Cord Injury (SCI)
  – Acute SCI: *Neuro-Spinal Scaffold™* implant (targeting 2017 FDA filing for approval)
  – Chronic SCI: Bioengineered Neural Trails™ injection (targeting 2016 pre-IND meeting)

• No Treatments Available for SCI
  – 12,500 annual acute incidence in US\(^1\)
  – 276,000 chronic sufferers in US\(^1\)

• Pivotal Study Underway for *Neuro-Spinal Scaffold*
  – Regular data updates from open-label study (n=20)
  – Study success = 5 patients (25%) regaining neurologic function
  – FDA filing for approval expected 2017

• Compelling Early Data for *Neuro-Spinal Scaffold*
  – Animal data predictive of mechanism of action and surgical feasibility in man
  – 4 of first 7 study patients (57%) have regained neurologic function by 6 months

• World-class Scientific Advisory Board (SAB)
  – Robert Langer, Sc.D. (cofounder): 1,000+ patents worldwide
  – Richard Roberts, Ph.D.: Nobel Laureate in medicine & physiology
  – V. Reggie Edgerton, Ph.D.: Pioneer of electrostimulation for rehabilitation
  – James Guest, M.D., Ph.D.: Neurosurgeon & stem cell expert

**Financial Information**

<table>
<thead>
<tr>
<th>Trading Symbol</th>
<th>NVIV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stock Price (^1)</td>
<td>$6.33</td>
</tr>
<tr>
<td>Exchange</td>
<td>NasdaqGM</td>
</tr>
<tr>
<td>Market Cap (^1)</td>
<td>$201.97 M</td>
</tr>
<tr>
<td>Primary Shares Outstanding (^2)</td>
<td>31.9 M</td>
</tr>
<tr>
<td>Fully Diluted Shares (^2)</td>
<td>38.5 M</td>
</tr>
<tr>
<td>Avg. Daily Trading Volume (3 mo) (^1)</td>
<td>448,990</td>
</tr>
<tr>
<td>Cash on Hand (^2)</td>
<td>$45.8 M</td>
</tr>
</tbody>
</table>

- Financing in March 2016 resulted in net proceeds of approximately $29.9 M
- Monthly cash burn of about $1.5 M

\(^1\) As of 5/17/16

\(^2\) As of 3/31/16
Spinal Cord Injury: A Huge Unmet Clinical Need

- No products today treat SCI
- Large patient population
  - 12,500 new cases of acute SCI per year in US
  - 276,000 currently live with chronic SCI in US
  - Only small percentage of patients ever regain function
- Direct cost of spinal cord injury
  - Cost of care for the first year post-SCI: $340K - $1.0M+
  - Net present value of a quadriplegic injured at 25 for life: $4.6M+


InVivo’s Mission

To Redefine the Life of the SCI Patient

Motor → recover muscle control, movement, strength

Sensory → recover sensation and avoid injury (bed sores or burns)

Autonomic → recover bowel/bladder control and sexual function

Quality of life → reduce disabling pain and improve self-care
Neuro-Spinal Scaffold™
for Acute SCI
Designed to Promote Healing in Spinal Cord Injury
InVivo’s Pioneering Clinical Approach for Acute SCI: The *Neuro-Spinal Scaffold™*

- Highly porous biopolymer *Neuro-Spinal Scaffold*
- Composition:
  - PLGA is the biodegradable skeleton along which cells can grow
  - Poly-L-Lysine promotes cellular adhesion
Neuro-Spinal Scaffold™ Mechanism of Action

- Promotes the formation of neuro-permissive remodeled tissue that supports neural regeneration
- Provides structural support to surrounding viable tissue
- Serves as a locus for 3-dimensional appositional healing

Butterfly Bandage

Butterfly Bandage

2D Wound Healing

Neuro-Spinal Scaffold

Internal 3D Wound Healing

- Preserves macroscopic spinal cord architecture and decreases cyst volume
- Increases spared white matter and promotes remyelination of denuded axons
Two Types of Spinal Cord Injury: Closed (Contusion) vs Open (Compound) Injury

**Closed (Contusion) Injury**
- Outer region of cord is preserved and cord appears intact externally
- Injury leads to cavity filled with necrotic material
- Pressure builds inside the cord, which may lead to further injury
- Preclinical model: contusion injury

**Open (Compound) Injury**
- Outer region of cord is breached and injury is visible externally
- Myelotomy (cutting into the cord) may not be required
- Minimal added pressure inside cord
- Preclinical model: hemicordectomy
Progression of Acute SCI to Post-Traumatic Cavity in Contusion Injuries

- Hemorrhage & Spinal Cord Swelling
- Reduced Blood Flow & Ischemic Necrosis
- Cavity Development & White Matter Reduction

**Spinal Cord Injury**

**Hemorrhage & Spinal Cord Swelling**

**Reduced Blood Flow & Ischemic Necrosis**

**Cavity Development & White Matter Reduction**

**Chronic injury and mature cavity formation**

**Time**

**Normal**
- Highly vascularized gray matter
- White matter

**2 hours after SCI**
- Acute hemorrhage & necrosis

**24 hours after SCI**
- Liquefactive necrosis

**12 weeks after SCI**
- Mature cavity

*Histology from rat contusion model of SCI*
Neuro-Spinal Scaffold™ Implantation in Human Contusion Injury
The *Neuro-Spinal Scaffold™* Preserves Macroscopic Spinal Cord Architecture

Rat Acute Spinal Cord Contusion Injury (at 12 weeks)

**Cyst Reduction**

**White Matter Sparing**

**Remodeled Tissue**

*P<0.05*
The *Neuro Spinal Scaffold™* Increases Remodeled Tissue Supporting Neural Regeneration

**Control**

- Minimal neuro-permissive matrix

**Neuro-Spinal Scaffold**

- Remodeled tissue with extensive neuro-permissive matrix
- Neuro-permissive matrix with neural regeneration

Company images
Neural Regeneration and Remyelination with Schwann Cells after *Neuro-Spinal Scaffold™* Implantation

Inset: Schwann cells ensheathing axons

Oligodendrocytes  Schwann Cells  Axons
Neuro-Spinal Scaffold™ Promotes Neural Regeneration and Functional Recovery

Primate Hemicordectomy Model (at 3 Months)

Increased remodeled tissue

Neural regeneration
Myelin basic protein stained axons in remodeled tissue

Improved functional recovery

Kinematics score

Control

Neuro-Spinal Scaffold

Slotkin JR et al., manuscript submitted
Neuro-Spinal Scaffold™ for Acute SCI
Clinical Translation
Humanitarian Device Exemption (HDE) is an Accelerated Approval Path

• Indicated population must be fewer than 4,000
  – Thoracic and cervical SCI patients with complete paralysis (AIS A)*

• Provides simpler and faster regulatory process
  – Lower approval threshold: demonstrate safety and probable benefit

• Probable benefit: a classic risk/benefit analysis
  – Device does not expose patients to an unreasonable or significant risk
  – Probable benefit to health from the use of the device outweighs the risk

*Excludes penetrating injuries such as gunshot or knife injuries
The INSPIRE Study

**InVivo Study of Probable Benefit of the Neuro-Spinal Scaffold™ for Safety and Neurologic Recovery in Subjects with Complete Thoracic AIS A Spinal Cord Injury**

- Designed as 20-patient pivotal study to be used for HDE application
  - Pilot study converted to a pivotal probable benefit study
  - Pilot study patients included in the 20

- Objective Performance Criterion (study success definition) – at least 25% of patients improve ASIA Impairment Scale (AIS) grade by 6 months

- Additional Endpoints: sensory and motor scores, bladder and bowel function, Spinal Cord Independence Measure, pain, quality of life

- 20 sites currently enrolling (40 US clinical sites allowed)
  - Plan also to include Canada and United Kingdom clinical sites in 2016
Promising Neurologic Outcomes and Favorable Safety Profile in The INSPIRE Study

<table>
<thead>
<tr>
<th>Subject</th>
<th>Date of Implantation</th>
<th>Neurologic Level of Injury</th>
<th>Neurologic Outcome to Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Oct 2014</td>
<td>T11</td>
<td>Converted to AIS C at 1 month</td>
</tr>
<tr>
<td>2</td>
<td>Jan 2015</td>
<td>T7</td>
<td>Remains AIS A but with marked bowel and bladder improvement through 12 months</td>
</tr>
<tr>
<td>3</td>
<td>Jun 2015</td>
<td>T4</td>
<td>Converted to AIS B at 1 month</td>
</tr>
<tr>
<td>4</td>
<td>Aug 2015</td>
<td>T3</td>
<td>Remains AIS A at 6 months</td>
</tr>
<tr>
<td>5</td>
<td>Sep 2015</td>
<td>T8</td>
<td>Converted to AIS B at 6 months</td>
</tr>
<tr>
<td>6</td>
<td>Feb 2016</td>
<td>T10</td>
<td>Converted to AIS B at 2 months</td>
</tr>
<tr>
<td>7</td>
<td>Mar 2016</td>
<td>T3</td>
<td>Remains AIS A at 1 month</td>
</tr>
<tr>
<td>8</td>
<td>Apr 2016</td>
<td>T4</td>
<td>Patient passed away (cause of death deemed unrelated to Scaffold or implantation)</td>
</tr>
</tbody>
</table>

With the exception of dramatically positive or negative results, the Company expects to communicate any interim information according to industry standards. The Company does not consider a patient’s unchanged AIS classification or a medically insignificant adverse event to be material.
Marked Long-term Improvement in First Patient

- Complete AIS A spinal cord injury at T11/T12
- Improved from AIS A to AIS C at 1 month
  - Fewer than 5% of AIS A patients with a T10-T12 injury progress to AIS C or D at 1 month and approximately 15% at 24 weeks\(^1\)
- Regained bowel function and improved bladder function
- Continued significant motor improvement from months 6 to 12

1 Zariffa et al., Spinal Cord (2011)
Video of First Patient at 12 Months
AIS Conversions Observed Across Injury Types and Implantation Times

### Closed (Contusion) Injury

<table>
<thead>
<tr>
<th>Patient</th>
<th>Time to Implant</th>
<th>AIS Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>9 hrs.</td>
<td>AIS A → C at 1 mo.</td>
</tr>
<tr>
<td>3</td>
<td>83 hrs.</td>
<td>AIS A → B at 1 mo.</td>
</tr>
<tr>
<td>4</td>
<td>53 hrs.</td>
<td>AIS A at 6 mos.</td>
</tr>
<tr>
<td>7</td>
<td>21 hrs.</td>
<td>AIS A at 1 mo.</td>
</tr>
</tbody>
</table>

### Open (Compound) Injury

<table>
<thead>
<tr>
<th>Patient</th>
<th>Time to Implant</th>
<th>AIS Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>46 hrs.</td>
<td>AIS A at 12 mos.</td>
</tr>
<tr>
<td>5</td>
<td>69 hrs.</td>
<td>AIS A → B at 6 mos.</td>
</tr>
<tr>
<td>6</td>
<td>9 hrs.</td>
<td>AIS A → B at 2 mos.</td>
</tr>
<tr>
<td>8</td>
<td>71 hrs.</td>
<td>N/A</td>
</tr>
</tbody>
</table>

- No obvious correlations between AIS conversions and injury type or time to surgery
- Conversions observed with open injuries
  - Open injuries unlikely to benefit from surgical decompression alone
- Delayed and prolonged recoveries indicate that neural regeneration may be taking place beyond the acute injury period
Objective Performance Criterion: 25% AIS Grade Conversion by 6 months

- Historical benchmarks for AIS conversion rates
  - European Multicenter Study about Spinal Cord Injury (EMSCI)\(^1\); \(n = 256\)
  - Spinal Cord Injury Model System (US)\(^2\); \(n = 265\)
  - Sygen clinical trial in spinal cord injury\(^3\); \(n = 139\)

**Complete (AIS A) Thoracic SCI AIS Conversions**

<table>
<thead>
<tr>
<th>Dataset</th>
<th>6 months</th>
<th>12 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>EMSCI</td>
<td>15.6%</td>
<td></td>
</tr>
<tr>
<td>Model Systems</td>
<td>15.5%</td>
<td></td>
</tr>
<tr>
<td>Sygen</td>
<td>12.9%</td>
<td></td>
</tr>
<tr>
<td>INSPIRE</td>
<td>57.1%</td>
<td></td>
</tr>
</tbody>
</table>

\(^*\) Patient 7 only has one month of follow-up

\(^1\) Zariffa et al., Spinal Cord (2011)
\(^2\) Lee et al., J. Spinal Cord Med. (2014)
\(^3\) Fawcett et al., Spinal Cord (2007)

NOTE: Approval is not guaranteed if the OPC is met and HDE approval may still be obtained if OPC is not met.
The Neuro-Spinal Scaffold™
Clinical Development Portfolio

• Acute Complete (AIS A) Thoracic SCI via HDE
  – Target completion of The INSPIRE Study and submission in 2017

• Acute Complete (AIS A) Cervical SCI via HDE
  – Projected study initiation mid-2016
  – InVivo can pursue a similar rapid, streamlined program

• Acute Incomplete (AIS B, AIS C) SCI
  – Expand to larger acute SCI population (thoracic and cervical injuries)
  – Expedited Access Pathway (EAP) may be an option
    ▪ Similar pathway to Breakthrough Therapy Designation for drugs to reduce time to approval
    ▪ Two-phase study allows for early PMA approval based on pre-specified criterion with remaining confirmatory information submitted post-approval
InVivo’s Chronic SCI Product: Bioengineered Neural Trails™

Neural Stem Cells Incorporated into an Injectable Scaffold for Minimally-Invasive Delivery
Bioengineered Neural Trails™: InVivo’s Novel Neural Stem Cell Product for Chronic SCI

• Neural stem cells incorporated into an injectable scaffold for minimally-invasive delivery designed to:
  – Bridge the site of injury to create neuronal detour circuits
  – Activate the resting potential of network below injury site
Bioengineered Neural Trails Provide Many Advantages Over Conventional Bolus Injections

**Bolus approach**
- Reflux at multiple injection sites
- Sub-optimal cell distribution
- No longitudinal connectivity

**Trail approach**
- No reflux at single injection site
- Homogeneous cellular suspension
- Immediate longitudinal connectivity

Collagen matrix to simulate spinal cord
A Novel Patented Surgical Device for Creation of Bioengineered Neural Trails™

Instrumentation
- Syringe Pump
- Stepper Motor
- Stereotaxic Positioning Mechanism

Disposable tubing, guide needle and injection needle

Pre-filled syringe with NSCs in soft gel

Complete product

Syringe Pump
Tubing
Guide Needle
Injection Needle

InVivo Therapeutics
The Bioengineered Neural Trail Creates a Continuous Neural Plexus Bridging the Injury

MRI of Bioengineered Neural Trail in pig spinal cord

Histology of human neural plexus in pig spinal cord
Next Steps for Bioengineered Neural Trails™

- Optimize all aspects of product profile in preparation for IND: instrumentation, biomaterial, and NSCs
- Strengthen and broaden intellectual property portfolio
- Partner with a stem cell company to accelerate project timelines
- Target pre-IND meeting with the FDA by the end of 2016

Human Cells (STEM121) and Neural Progenitors (DCX)
Neuro-Spinal Scaffold™ and Bioengineered Neural Trails™

Commercial Opportunities, IP, and Anticipated Milestones
**Neuro-Spinal Scaffold™ and Bioengineered Neural Trails™**

**Commercial Opportunities**

- **Cost of spinal cord injury**
  - Cost of care for the first year post-SCI: $340 k - $1.0 M+ \(^1\)
  - Net present value to maintain a quadriplegic injured at 25 for life: $4.7 M+ \(^1\)
  - InVivo is developing a comprehensive burden-of-illness publication

- **US commercial opportunity**
  - Majority of acute SCIs treated in Level I trauma centers (217 in US)
  - Feasible to vertically integrate with a focused commercial organization

<table>
<thead>
<tr>
<th>Spinal Cord Injury Type</th>
<th>US Incidence/ Prevalence(^1,2)</th>
<th>US Market (^2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complete (AIS A); non-penetrating(^3)</td>
<td>3,750/yr</td>
<td>$200 - $600 M/yr</td>
</tr>
<tr>
<td>All acute SCI</td>
<td>12,500/yr</td>
<td>$600 M - $1.8 B/yr</td>
</tr>
<tr>
<td>Chronic SCI</td>
<td>276,000</td>
<td>$&gt;10 B</td>
</tr>
</tbody>
</table>

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2. Research analysts & company estimates
3. Subset of SCI patients in HUD application
Dramatically Strengthened and Broadened Intellectual Property Portfolio

• Core technology covering *Neuro-Spinal Scaffold™* licensed from MIT and Boston Children’s Hospital
  – US composition and methods patent 8,858,966 (expires 2027)
    ▪ Japanese patent issued; European patent application in prosecution
  – Broader US composition patent 9,101,695 (expires 2027)
  – Broader US methods patent notice of allowance 14/694,466 (expires 2027)

• Exclusive agreements with UC San Diego and Dr. James Guest cover delivery methods and devices for Bioengineered Neural Trails™
  – UC San Diego exclusive license – US device and methods patent 9,011,410 (expires 2031)
  – Dr. Guest assignment – US methods patent 7,666,177 (expires 2024)

• Additional patents and applications held by InVivo
  – Packaging, instrumentation, and manufacturing patents are pending for *Neuro-Spinal Scaffold*
  – Additional intellectual property filed for Bioengineered Neural Trails
Upcoming Anticipated Milestones

• Continue enrollment of patients into INSPIRE pivotal study and provide patient updates as appropriate
• Expand number of participating sites in US
• Expand INSPIRE to United Kingdom and Canada
• Initiate acute cervical spinal cord injury study
• **Complete enrollment in INSPIRE**
• Target pre-IND meeting on Bioengineered Neural Trails™ by end of 2016
• HDE submission in 2017