NASDAQ: STEM

BIO CEO & Investor Conference

February 15, 2011

Martin McGlynn
President & CEO

STEMCELLS Groundbreaking **science**. Breakthrough **medicine**.™

Forward Looking Statement

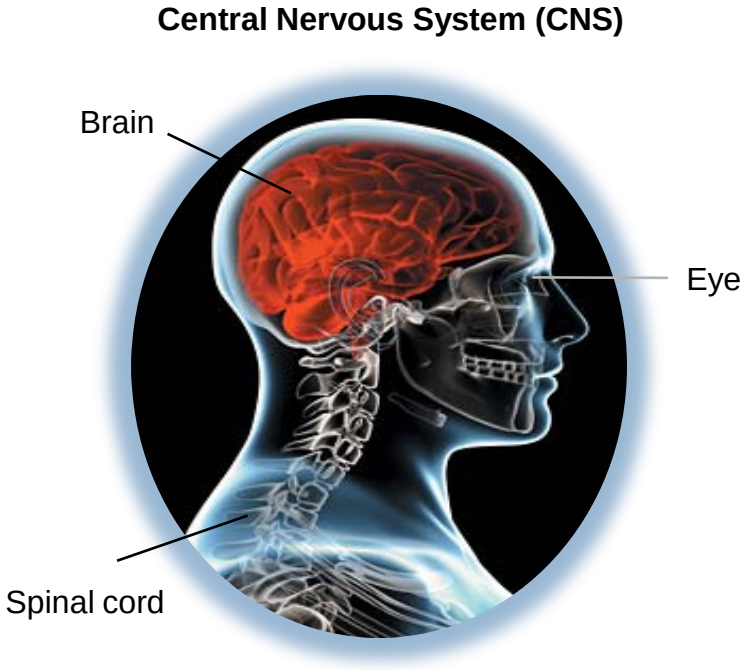
This presentation contains forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended. These forward-looking statements can be identified by the use of words such as "anticipates," "believes," "estimates," "expects," "intends," "may," "plans," "should," "will," and similar words.

Except for historical information discussed, the statements made today are forward-looking statements that involve risks and uncertainties. Investors are cautioned that such statements are only predictions and that actual events or results may differ materially. We are subject to substantial scientific, regulatory, manufacturing, financial, and legal risks, any of which could prevent us from achieving the clinical, preclinical and other developments described in these forward-looking statements and from pursuing our planned research, development or clinical programs. Additional factors that might cause actual events or results to differ include, but are not limited to, the risks set forth in "Risk Factors" in our most recent Form 10-K and subsequent Forms 8-K and 10-Q filed with the Securities and Exchange Commission, which we encourage you to consult.

These forward-looking statements speak only as of the date of this presentation. StemCells does not undertake to update any of these forward-looking statements to reflect events or circumstances that occur after the date hereof.

Overview

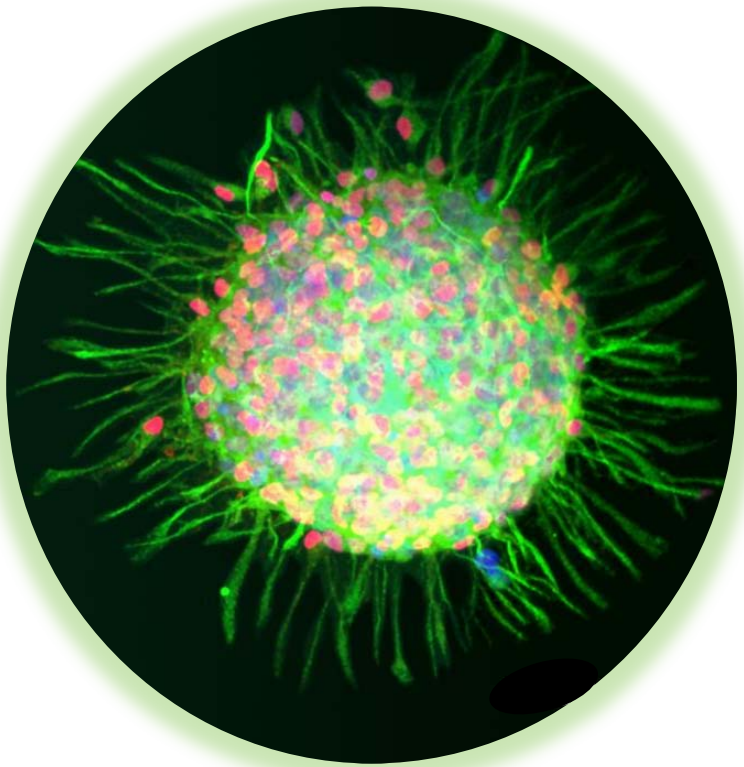
- Cell-based **therapeutics** and enabling **tools & technologies**
- Presentation focus: **therapeutics** for the CNS
- Pioneers; discovery & development of HuCNS-SC® cells
- Translational targets
  - Lysosomal Storage Diseases
  - Myelination Disorders
  - Spinal Cord Injury
  - Retinal Disorders
  - Alzheimer's Disease
- Goal -
  - Preserve or restore function
  - Enduring benefit for life of patient



STEMCELLS

HuCNS-SC Neural Stem Cells

- Tissue-derived (adult) stem cell
- Highly purified population
- Not genetically modified
- Homologous use
- “Hard wired” to form neurons, astrocytes, and oligodendrocytes
- Robust engraftment, migration, site-specific differentiation *in vivo*
- Does not give rise to tumors
- Broad potential application to multiple CNS injuries / disorders



HuCNS-SC Manufacturing

- Processed to exacting cGTP/cGMP standards
- Expandable and bankable –
  "Stem cells in a bottle"
- Single MCB ➔ multiple patient doses
- Cells for clinical programs already banked
- Process scalable for commercial use


1. Cell Sorting


2. Cell Culturing


3. Cell Banking


4. Final Product

STEMCELLS

HuCNS-SC Translational Rationale

Lysosomal Enzyme Production

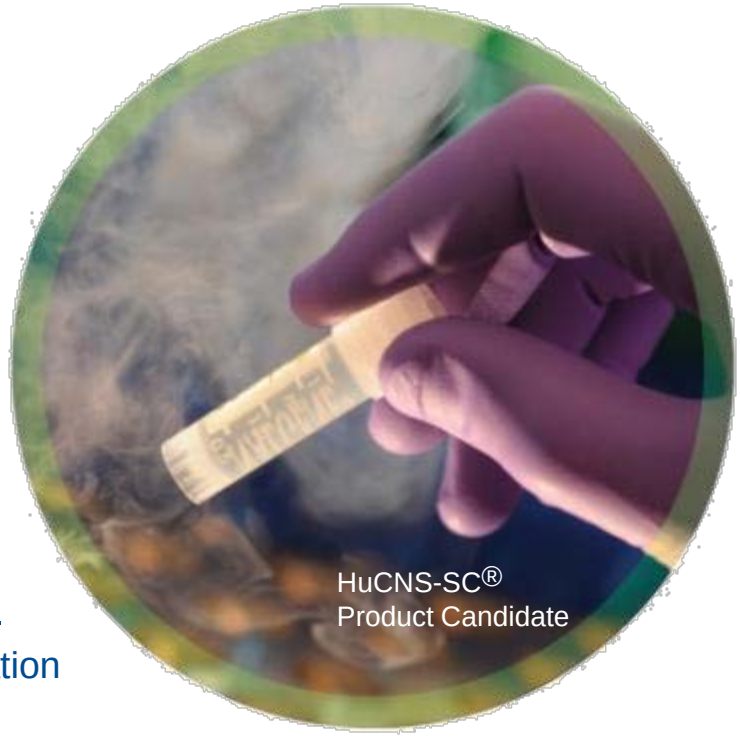
LSDs

Locomotor Recovery

Spinal Cord Injury

Photoreceptor Protection

Age-related Macular Degeneration
Retinitis Pigmentosa



Myelination

PMD
Spinal Cord Injury
Others

Neuroprotection

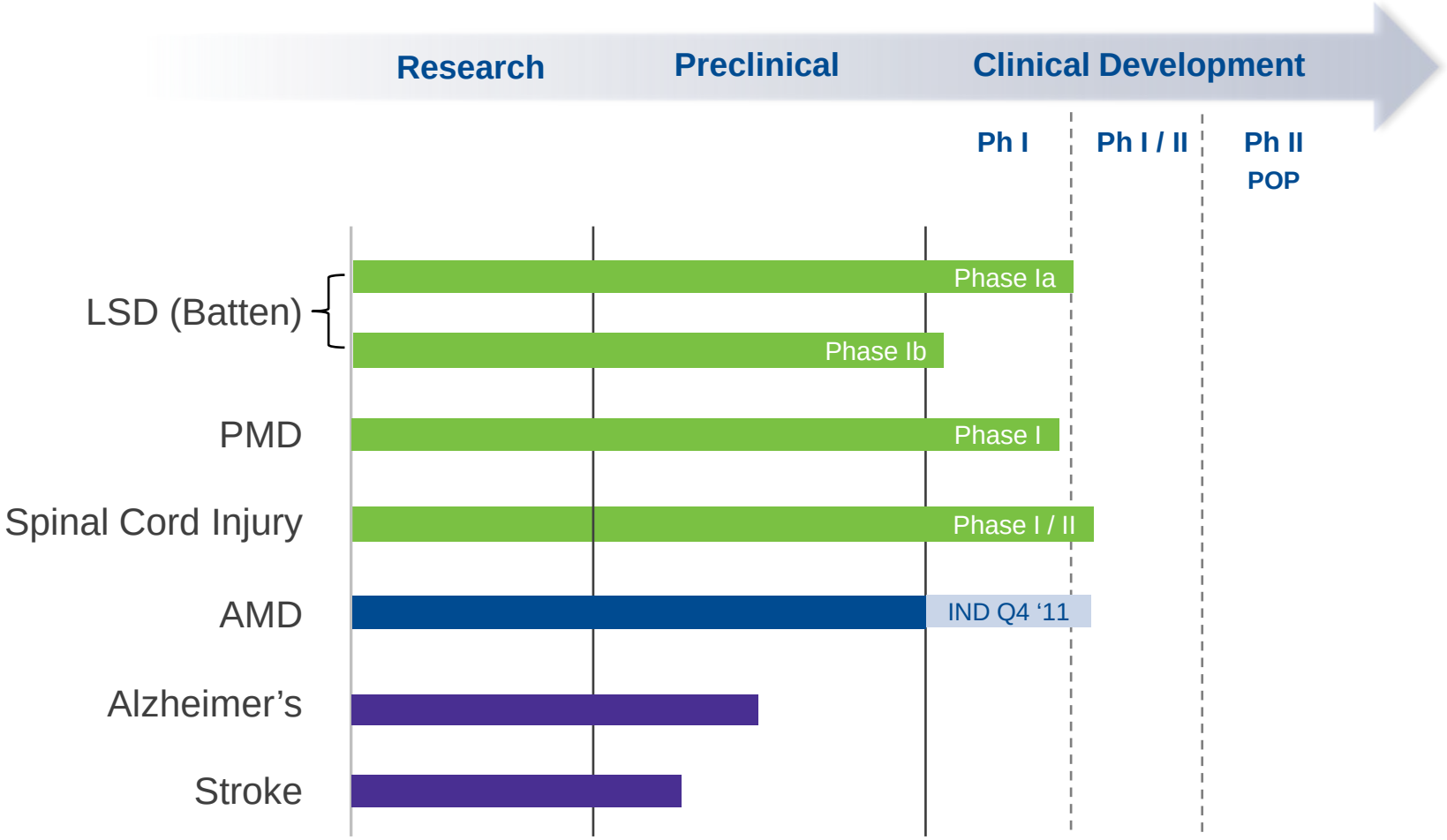
Alzheimer's Disease

VEGF Production

Stroke

STEMCELLS

HuCNS-SC Translational Progress



STEMCELLS

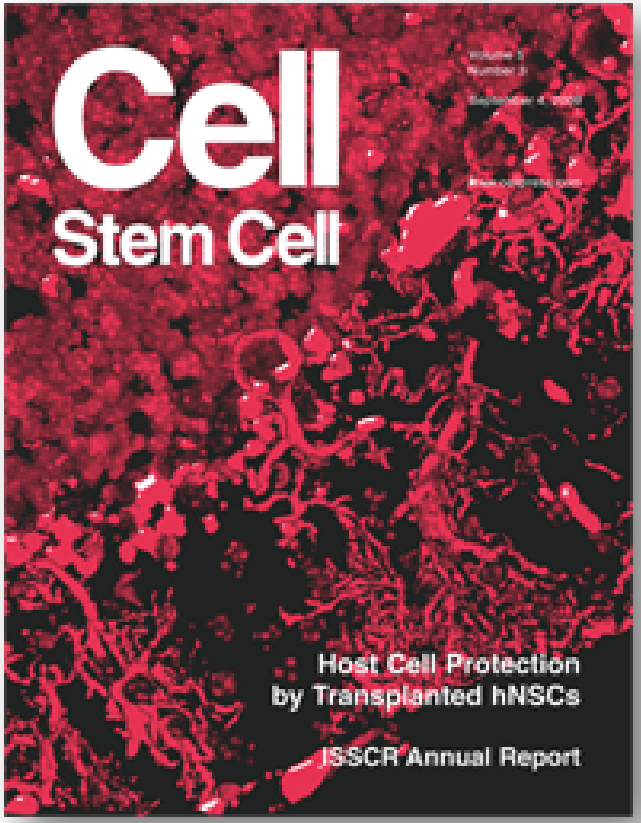
Lysosomal Storage Disease - NCL

- Pediatric neurodegenerative disorder
  - Lack of essential “housekeeping” enzyme
  - Progressive loss of neurological function
  - Fatal; no treatment

- Strong preclinical proof-of-concept –

  HuCNS-SC cells supply enzyme and preserve neurological function in mouse model (Cell Stem Cell, Sept. ’09)

- Goal: Replicate in humans



STEMCELLS

NCL Ph I Trial – Summary of Results

Doernbecher Children's Hospital
A division of Oregon Health & Science University

- Successfully completed Jan '09
- 6 patients; advanced stage
- Two cell dose cohorts
- Cells, surgery, 12-month immunosuppression regimen well tolerated
- Evidence of donor cell engraftment and survival
- 2 less affected patients had most stable neuropsychological results
- 4-year observational study ongoing

STEMCELLS

NCL Ph Ib Trial Enrolling

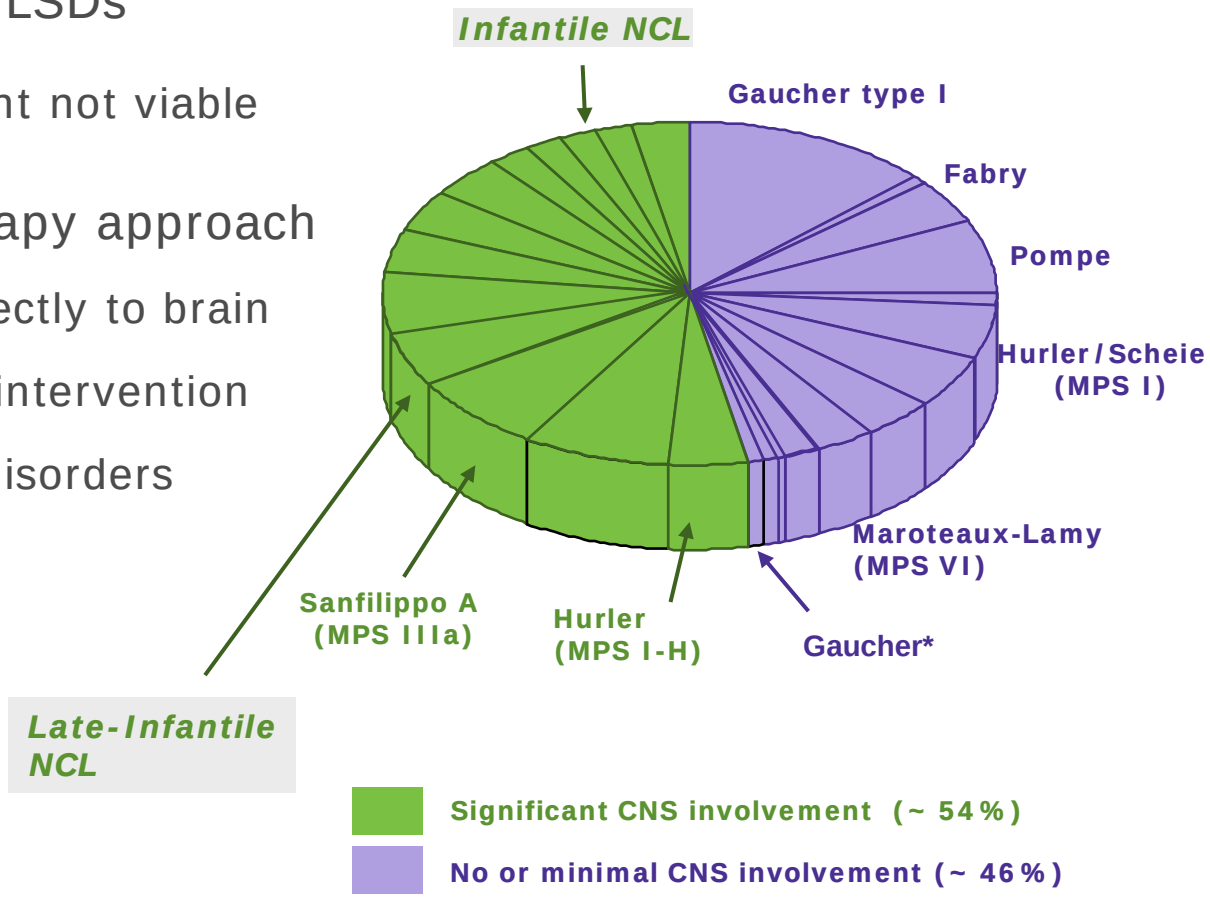
Doernbecher Children's Hospital
A division of Oregon Health & Science University

- 6 patients; less advanced stage
- Single cell dose; 9-month immunosuppression regimen
- Greater focus on evaluation of disease progression
- Designed to inform pivotal study design

STEMCELLS

Lysosomal Storage Diseases

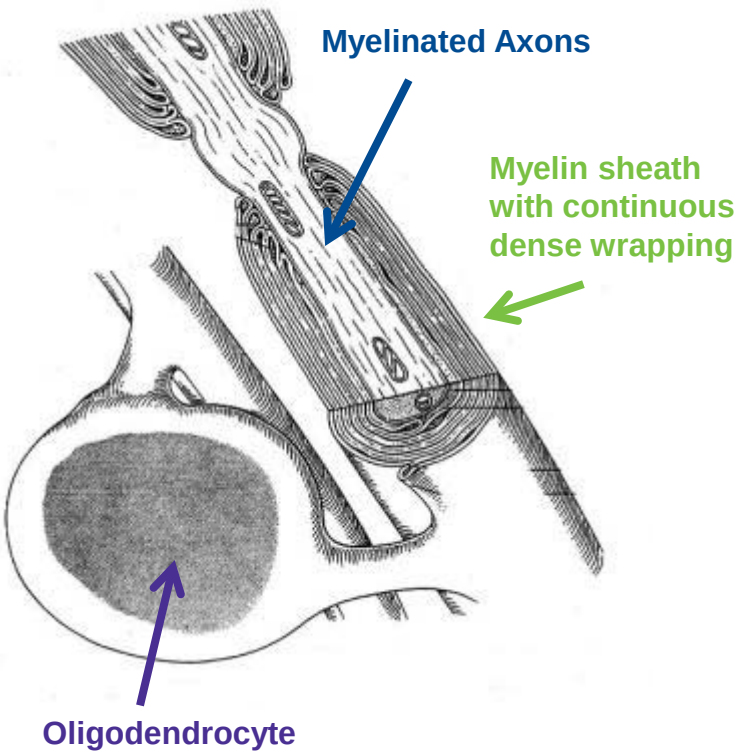
- 20+ CNS-mediated LSDs
  - Enzyme replacement not viable
- HuCNS-SC cell therapy approach
  - Deliver enzyme directly to brain
  - Potential one-time intervention
  - One cell: multiple disorders



Meikle P et al JAMA. 1999; 281:249-254

STEMCELLS

Myelination Disorders



- Axons require myelin to transmit nerve impulses
- Oligodendrocytes make myelin
- HuCNS-SC cells shown to:
  - Make new oligodendrocytes
  - Form donor-derived myelin around host nerve axons
- Myelination disorders:
  - Spinal Cord Injury
  - Multiple Sclerosis
  - Cerebral Palsy
  - PMD

STEMCELLS

PMD Ph I Trial

UCSF Benioff Children's Hospital

- PMD
  - Myelination disorder
  - Genetic defect ➔ no myelin
  - Affects male children
  - Loss of neurological function
  - Fatal; no treatment
- 4 patients; single cell dose
- Plan to complete dosing in Feb '11
- Goal: evidence of donor-derived myelin by MRI

Nalin Gupta MD, PhD, Chief of Pediatric Neurological Surgery at UCSF Children's Hospital, performing the first transplantation of HuCNS-SC® cells in Phase I PMD trial.

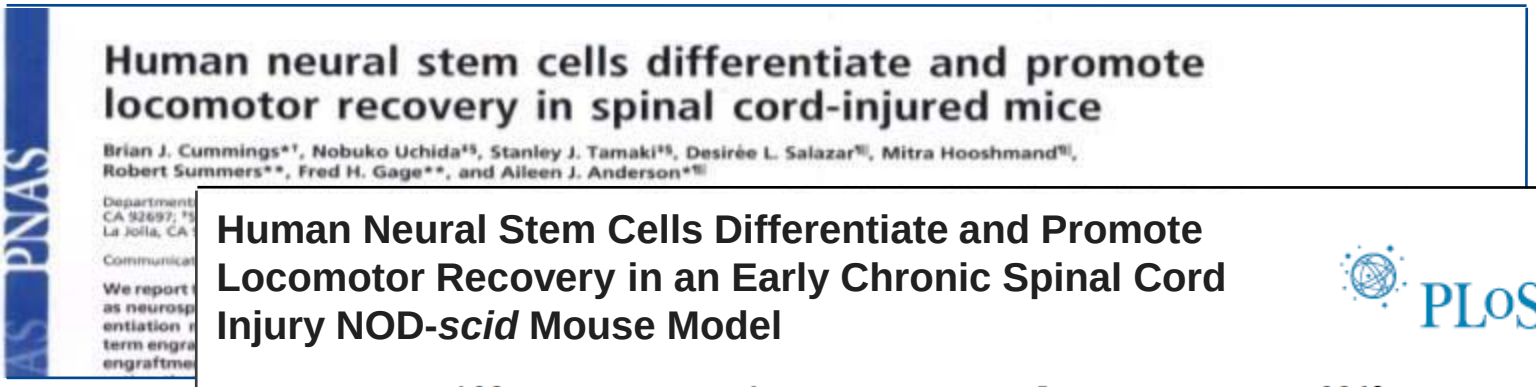
STEMCELLS

Spinal Cord Injury (SCI)

- 1.3 mm people in U.S. with chronic SCI
- Average age at time of injury – 31 years
- No therapeutic treatment options
- Post-traumatic demyelination and neuronal loss
- HuCNS-SC naturally differentiate into oligodendrocytes and neurons in spinal cord injury models

SCI – HuCNS-SC Preclinical POP

- HuCNS-SC cells restore motor function long term in mice with **sub-acute** SCI (*PNAS*, Sept '05)
- HuCNS-SC cells restore motor function long term in mice with **chronic** SCI *(PLoS ONE,* Aug '10)
  - Broadens window for therapeutic intervention
  - Potential to treat broad population of injured patients



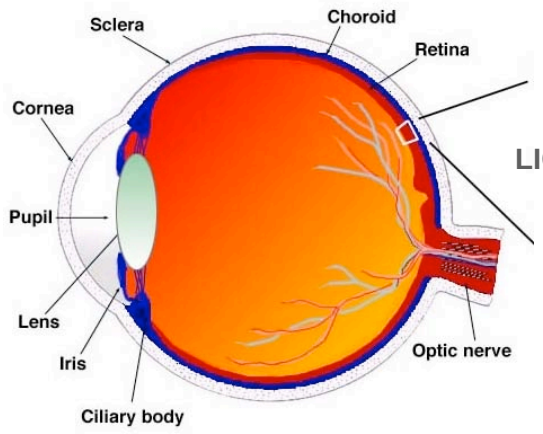
STEMCELLS

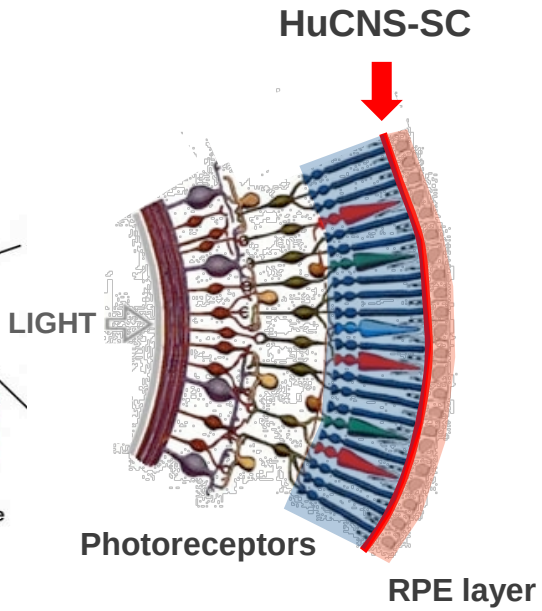
SCI - Phase I / II Trial

- Approved by Swissmedic and Univ. of Zurich / Balgrist Hospital
- Plan to initiate study in Mar ’11
- 12 patients with thoracic injuries (T2 – T11)
- Evaluate safety and preliminary efficacy
  - Safety – tolerability of cells, surgery, immunosuppression
  - Efficacy endpoints – improved sensation & motor, bowel/bladder function
- Unique attributes of trial:
  - Chronic phase (3-12 months post-injury)
  - Progressive design - 3 cohorts (ASIA A, B, C)
    - Complete, sensory incomplete, motor incomplete

Age-related Macular Degeneration (AMD)

- Progressive loss of photoreceptors in macula leads to central vision loss
- Leading cause of visual impairment age 55+ (25–30 mm worldwide)
- No medical or surgical treatment for dry AMD
- HuCNS-SC cells prevent vision loss in RCS rat model
- Plan to file IND for Phase I/II trial in Q4 '11



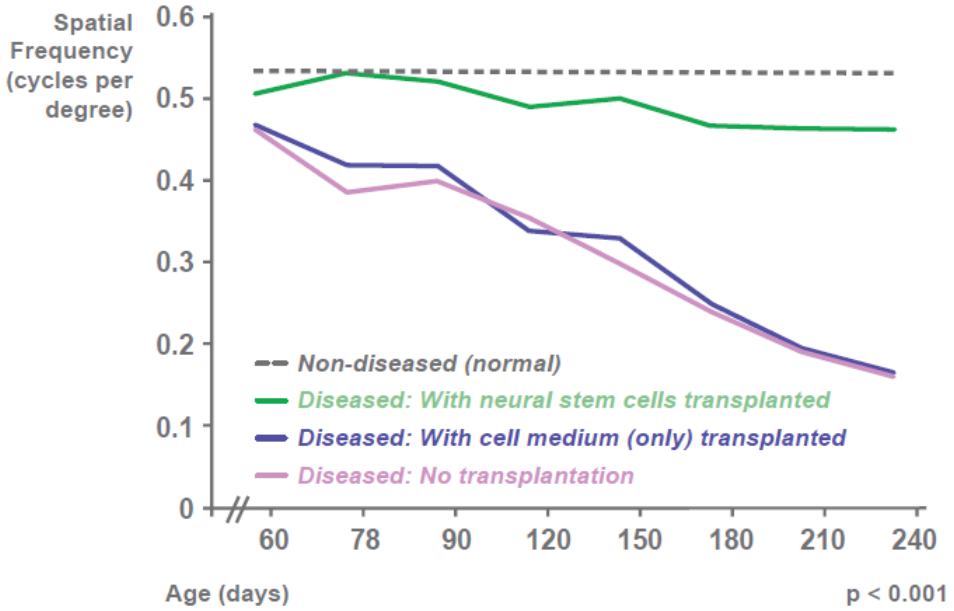


STEMCELLS

AMD - HuCNS-SC Preclinical POP

- HuCNS-SC cells protect photoreceptors and preserve vision (ARVO *Annual Meeting 2009)*
- HuCNS-SC cells protect both rod and cone photoreceptors (*Society for Neuroscience Annual Meeting 2009)*
  - Macular vision highly dependent on cone photoreceptors

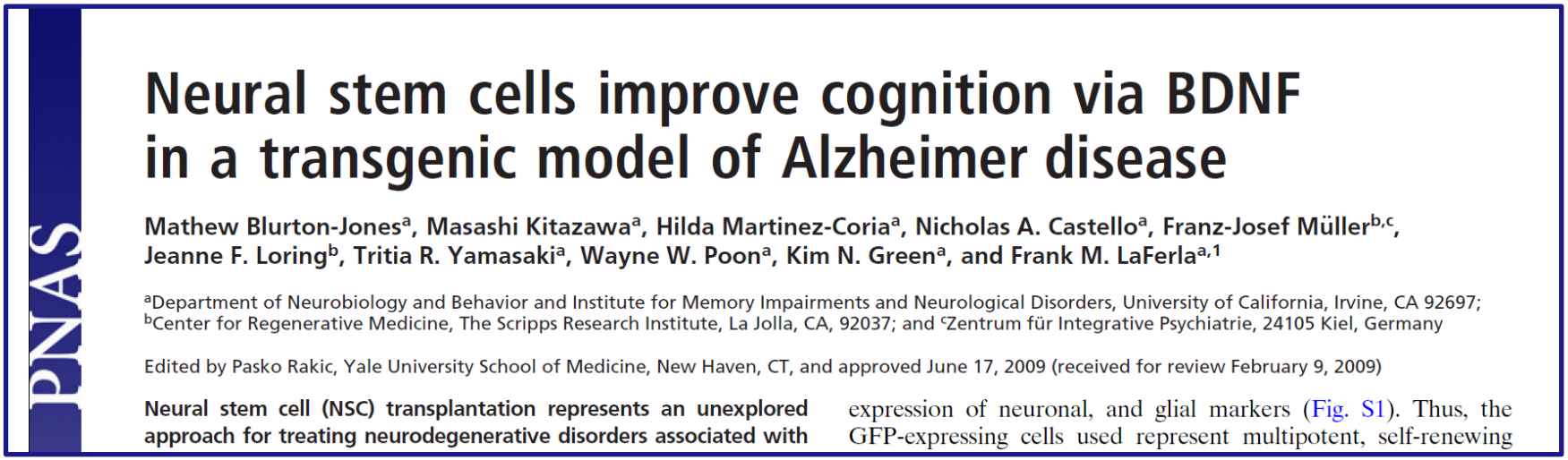
Optokinetic Test Measuring Visual Function Over Time



STEMCELLS

Alzheimer's Disease (AD)

- Data suggests neural stem cells may have utility in AD
  - HuCNS-SC cells survive in plaque-riddled AD mouse brain (unpublished data)
  - Evidence of improved cognitive function in AD mouse following mouse neural stem cell transplants due to trophic factors (*PNAS*, Aug '09)
- Pursuing collaboration to further evaluate HuCNS-SC in AD mouse models



PNAS

Neural stem cells improve cognition via BDNF in a transgenic model of Alzheimer disease

Mathew Blurton-Jones[a], Masashi Kitazawa[a], Hilda Martinez-Coria[a], Nicholas A. Castello[a], Franz-Josef Müller[b,c], Jeanne F. Loring[b], Tritia R. Yamasaki[a], Wayne W. Poon[a], Kim N. Green[a], and Frank M. LaFerla[a,1]

[a]Department of Neurobiology and Behavior and Institute for Memory Impairments and Neurological Disorders, University of California, Irvine, CA 92697; [b]Center for Regenerative Medicine, The Scripps Research Institute, La Jolla, CA, 92037; and [c]Zentrum für Integrative Psychiatrie, 24105 Kiel, Germany

Edited by Pasko Rakic, Yale University School of Medicine, New Haven, CT, and approved June 17, 2009 (received for review February 9, 2009)

Neural stem cell (NSC) transplantation represents an unexplored approach for treating neurodegenerative disorders associated with

expression of neuronal, and glial markers (Fig. S1). Thus, the GFP-expressing cells used represent multipotent, self-renewing

STEMCELLS

Summary Financials

- NASDAQ-listed since 1992
- *Pro Forma* Cash at 9/30/10: $34.1 mm
  - Includes $9.4 mm raised in Jan '11
- Cash used in operations
  1st nine months 2010: $19.7 mm
- ~137 mm shares outstanding
  - 26.0 mm options/warrants outstanding

Why Invest in STEM?

- Leading the translation of stem cell therapies for CNS disorders
- Our program is broadest and most advanced in the field
  - Translational focus spans entire CNS – brain, spinal cord, eye
  - Favorable human safety profile to date; database growing
  - Advancing into areas of significant unmet medical need
  - cGTP/cGMP-compliant cells banked
  - Emphasis now on clinical outcomes
- Compelling investment value

HuCNS-SC Clinical Development - Target 2011 Milestones

Complete enrollment in Phase I PMD trial	Q1
Initiate Phase I/II SCI trial	Q1
Dose 1st patient(s) in Phase Ib NCL trial	Q2
Complete 1st cohort enrollment (ASIA A's) in SCI trial	Q4
File IND for Phase I/II clinical trial in AMD	Q4