Welcome!
September 18, 2017
2:00 pm ET/11:00 am PT

ALS Research Progress:
Hope for the Future

Jill Yersak, PhD
Associate Director, Communications
The ALS Association National Office

Attendees are advised that portions of this webinar will be recorded for later viewing in our archives. If you would like to review the recording, please refer to our website, for information (www.alsa.org).

Hosted by:
The ALS Association
National Office-Care Services
ALS Research Progress: Hope for the Future

Jill Yersak, Ph.D.
Associate Director, Research Communications
September 18, 2017
TREAT ALS™ Global Research Program

The World is Our Lab

Largest ALS non-profit research funder outside the U.S. federal government

Fuels global collaboration to expedite the discovery of treatments and a cure for ALS
Everything We Do is to Accelerate Progress Toward Treatments and Cures

- **Harnessing innovative ideas**: Basic research at the lab bench to find therapeutic targets
- **Translating concepts to therapies**: Drug development and biomarker discovery
- **Advancing treatments to patients**: Clinical trials
- **Championing patient care**: Assistive technology, patient and caregiver care
We Support a Wide Breadth of Scientific Focus Areas – Each Critical to Advancing ALS Research

- Disease Mechanisms
- Environmental Factors/Epidemiology
- Disease Models
- Genetics
- Cognitive Studies
- Natural History Studies
- Clinical Studies

- Assistive Technology
- Stem Cells
- Precision Medicine
- Biomarkers
- Drug Development
- Nanotechnology

http://www.alsa.org/research/our-approach/; http://www.alsa.org/research/focus-areas/
We Work With Top ALS Experts to Shape Our TREAT ALS™ Grant Program

- Investigator-Initiated Awards (Starter & Multi-Year Grants)
- *Milton Safenowitz Postdoctoral Fellows
- *Clinician Scientists
- Sheila Essey Award
- Strategic Calls (Biomarker studies)
- *Strategic Challenges (TDP-43 Biomarker, Assistive Technology)
- *Strategic Initiatives
- *Lawrence and Isabel Barnett Drug Development Program
- *Clinical Management Awards
- *Clinical Pilot Trials
We Inspire Partnerships Across All Sectors
8 Year Partnership with Northeast ALS Consortium (NEALS)

- Administers and assists ALS Association funded trials
- Patient clinical trial support
- Partner for webinars
- Initiated and supports Clinical Research Learning Institute (CRLI)

NEALS Meeting in Clearwater Beach, FL
October 3-5, 2017
CRLI Research Ambassador Program for ALS Patients
Oct. 5-6, 2017
We Support Ground Breaking ALS Research
We Fund Research That Makes an Impact on People with ALS and Caregivers
Clinical Management Grants

Designed to improve clinical, psychological and social management of ALS

Project Examples:

- Addressing gaps in the delivery of care
- Exploring and developing telemedicine practices
- Addressing the needs of caregivers
- Studying nutritional and respiratory approaches
- Addressing activities of daily living
- Alternative treatments
- Exploring psychological interventions to tackle stresses of living with ALS
Impact of Combined Inspiratory/Expiratory Respiratory Training in ALS

Dr. Emily Plowman
University of Florida
New Opportunities for Patient Care: Telemedicine With Brain-Computer Interface Communication

Drs. Andrew Geronimo & Zachary Simmons
Penn State University
Hershey Medical Center
ALS Assistive Technology Challenge

The ALS Assistive Technology Challenge, a joint initiative by The ALS Association and Prize4Life, offered a $400,000 award for the development of flexible, accessible technology to help people with ALS communicate with ease.
ALS Assistive Technology Finale
Pison Technology

Dexter Ang & David Cipoletta - Massachusetts

EMG communication and control sensor device
Donders Institute

Dr. Peter Desain (Donders Institute for Brain, Cognition and Behavior – the Netherlands)
& Evy Reviers (ALS Liga – Belgium)

NoiseTag Brain Computer Interface (BCI)
A Quick Genetics Lesson

The Central Dogma

[Diagram showing the process of DNA to RNA to protein]
ALS Gene Discovery is on the Rise

10% familial ALS
90% sporadic ALS

- SOD1
- TDP43
- FUS
- C9orf72
- TUB4A
- TBK1
- C21orf2
- NEK1

Year: 1990 - 2020

Total gene count: 0 - 40
Several New ALS Genes Discovered Since The ALS Ice Bucket Challenge

NEK1 is a common genetic contributor to ALS

Identifying ALS genes allows researchers to target them for therapy, increasing the likelihood that a treatment will be found.
We Fund 9 Strategic Initiatives –
All Made Possible With ALS IBC Donations

ALS Accelerated Therapeutics (ALS ACT)

Neuro Collaborative

ALS ONE

GTAC

NEW YORK GENOME CENTER

CReATE

Therapies for ALS & Related Disorders

NEUROLINCS
Genomic Translation for ALS Care (GTAC)

$3.5 million investment from The ALS Association

- Dr. Matthew Harms at Columbia University Medical Center and Biogen
- To understand how different genes contribute to various clinical forms of ALS - to design better, more focused clinical trials
- Will give back genome sequencing results to participants
- Enrolling now: 1,500 people at 10 sites – follow over 3 years in 3-month visit intervals

*Discovered TBK1 gene in 2015
The Neuro Collaborative in California

To develop and expedite therapeutic approaches for ALS with focus on:

- Innovation
- Multidisciplinary teams
- Leveraging Dollars
- Academic-Industry Partnerships

Dr. Clive Svendsen  
Cedars-Sinai  
Dr. Steven Finkbeiner  
Gladstone Institutes  
Dr. Don Cleveland  
U. California San Diego
Accelerating iPSC Technology and Sharing

iPSC = induced pluripotent stem cells

**Goal**
To create clinical-grade iPSCs from people living with ALS to be shared globally with ALS researchers

Dr. Clive Svendsen
Cedars-Sinai
The Brain Bot Harnesses Therapeutic Potential

Dr. Steven Finkbeiner
Gladstone Institutes

• Can track millions of cells over many months at one time
• Drug screening
• Therapeutic compound development
• Partnerships with pharmaceutical & biotech companies
Advances in Antisense Technology

Founding Team: Drs. Don Cleveland, Timothy Miller, Richard Smith, Frank Bennett and Merit Cudkowicz

The ALS Association supported antisense technology starting in 2004 when the idea was risky.
What is Antisense Technology?

Antisense drugs prevent the production of proteins involved in disease, with the aim to slow or stop the progression in people living with ALS.

Antisense technology works to eliminate mutated protein by preventing it from being created.
Failed Ikea Furniture Assembly
IMPACT: Antisense Technology

The ALS Association Supported > $1.5 million
Converted to > $100 million

SOD1 antisense drug is now in Phase I/II clinical trial in partnership with Ionis Pharmaceuticals and Biogen

C9orf72 antisense drug is going to enter clinical trial in the near future

Other diseases in development: Alzheimer’s disease, Huntington’s disease, Myotonic Dystrophy

Biomarker DiscoveryAccelerated

What is a Biomarker?

• Any measurable substance that changes in quantity or that appears or disappears with a change in the body’s state
• Are desperately needed to improve diagnosis, follow disease progression and track response to therapy
• Examples:
  – Chemical change in blood, urine or cerebral spinal fluid
  – Structural or chemical change in the brain
Biomarkers on the Horizon

ALS Diagnostic Test

- Combination lab test that measures key proteins in blood and cerebral spinal fluid
- High accuracy
- Results back in ~week

“The ALS Test will benefit patients by aiding physicians to make a more rapid and definitive diagnosis, allowing more efficient clinical trials in particular in early phases of ALS, thereby shorting the time to finding a cure.” – Dr. Bowser

Dr. Robert Bowser, President
Increased Numbers of ALS Clinical Trials
Interventional Clinical Trial Examples

- Nuedexta
- Masitinib
- NP001
- GDC-0134
- RNS60
- Inosine
- Lunasin
- HERV-K anti-retroviral therapy
- Cu(II)ATSM
- Mexiletine
- AMX0035
- Edaravone/Radicava
- Neuralstem
- *BrainStorm: NurOwn® stem cells
- CIRM: GDNF stem cells
- Tirasevmtiv – VITALITY/VIGOR-ALS
- Ezogabine
- Tocilizumab/Actemra
- Arimoclomol
- *C9orf72 antisense
- SOD1 antisense

* Trials starting in the near future
We Fund ALS Clinical Trials

Funded Interventional Trials:
- Tirasemtiv – VITALITY-ALS trial
- Retigabine
- Tocilizumab/Actemra
- Arimoclomol
- Mexelitine
- Nuedexta
- RNS60
- Amylyx (AMX0035)

Major role in preclinical support:
- SOD1 antisense trial
- C9orf72 antisense trial – anticipated to start in the near future
- CIRM: GDNF stem cells
Tirasemtiv

VITALITY/VIGOR-ALS trial – Phase III

Cytokinetics

• Target: skeletal muscle
• Goal: to increase muscle strength and respiratory function
• Study: Testing 3 drug doses with 48 weeks of active treatment; primary outcome is change in vital capacity at 24 weeks.
• Timeframe: enrollment complete; last visits this summer; results late fall/early winter 2017
• Phase 3, Open-Label Extension Study of Tirasemtiv for Patients With Amyotrophic Lateral Sclerosis (ALS) Who Completed VITALITY-ALS (CY 4031) (VIGOR-ALS) to assess long-term safety and tolerability: Enrolling now

* Portion is ALS Association funded  https://www.neals.org/als-trials/1248
Biomarker/Phenotype/Genotype Study

- Dr. Michael Benatar, U. Miami
- Goals: To better understand relationship between ALS phenotype (observable characteristics) and genotype (DNA code); To develop ALS biomarkers
- Enroll sporadic and familial cases; family members also may be enrolled
- Collection of blood, urine, CSF

* ALS Association funded
https://www.neals.org/als-trials/1183
How to Search for Clinical Trials in Your Area

www.alsa.org/research/clinical-trials/

Participate in a clinical trial

Search this database to find a clinical trial near you.

- Search by Location
- Search by Study Type
- Search by Keyword

Search

Clinical Trial Support:
Carly Doyle
NEALS Communications and Outreach Coordinator
(855) 437-4823
alstials@neals.org
We Funded More Bright Young Scientists
Milton Safenowitz Postdoctoral Fellowship Program

90% of our Postdoctoral Fellows stay in ALS research!
We Support Bright Young Scientists

Dr. Tiffany Todd
Mayo Clinic Jacksonville

“Modeling selective vulnerability and disease function in mice by the comparison of C9 models to other neurodegenerative diseases”
Clinician Scientist Awards 2017
Partnership with The American Academy of Neurology (AAN)

Dr. Sabrina Paganoni
The Clinician Scientist Development Award in ALS Research
Massachusetts General Hospital

Dr. Nicholas Olney
The Clinical Research Training Fellowship in ALS Research
University of California San Francisco
ALS Association Impact

ALS Ice Bucket Challenge: $115 million donated to The Association during an 8-week period with $77 million dedicated to ALS research. To date, The Association has spent or committed >$89 million to research.

In 2016:

- ~$19 million budget
- 180+ active funded global research projects in 11 countries
- Several new genetic discoveries supported
- 2 new global partnerships forged – ALS ONE and NeuroLINCS
- 6 Milton Safenowitz Postdoctoral Fellow awardees
- 2 Clinical Research Fellow awardees
- 2 ALS Challenge programs completed – The ALS Assistive Technology Challenge & The TDP-43 Grand Biomarker Challenge
- 2 antisense drugs targeting the 2 most common inherited causes of ALS into or entering clinical trials supported

Go to www.alsa.org/ibcspending to learn more.
For More Information

www.alsa.org/blog/

www.alsa.org/research/

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#ALS
THANK YOU!!!

Contact me anytime with questions.
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