



# 29th international symposium on ALS/MND

Glasgow UK

7 – 9 December 2018

## Programme

Hosts:

MND Scotland



Organised by the Motor Neurone Disease Association in co-operation  
with the International Alliance of ALS/MND Associations



29th international  
**symposium**  
on ALS/MND

## Organiser of the Symposium:



### Motor Neurone Disease Association

10-15 Notre Dame Mews, Northampton NN1 2BG, UK

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Website: [www.mndassociation.org/symposium](http://www.mndassociation.org/symposium)

### CME Accreditation

The 29th International Symposium on ALS/MND **has been approved by the Federation of the Royal College of Physicians of the United Kingdom for 18 category 1 (external) CPD credits.**

## Host for the Symposium:



### MND Scotland

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The 29th International Symposium on ALS/MND, Glasgow, United Kingdom, 07/12/2018-09/12/2018 **has been accredited by the European Accreditation Council for Continuing Medical Education (EACCME®) with 16 European CME credits (ECMEC®s).** Each medical specialist should claim only those hours of credit that he/she actually spent in the educational activity.

Through an agreement between the Union Européenne des Médecins Spécialistes and the American Medical Association, physicians may convert EACCME® credits to an equivalent number of *AMA PRA Category 1 Credits™*. Information on the process to convert EACCME® credit to AMA credit can be found at [www.ama-assn.org/education/earn-credit-participation-international-activities](http://www.ama-assn.org/education/earn-credit-participation-international-activities).

Live educational activities, occurring outside of Canada, recognised by the UEMS-EACCME® for ECMEC®s are deemed to be Accredited Group Learning Activities (Section 1) as defined by the Maintenance of Certification Program of the Royal College of Physicians and Surgeons of Canada.

## Held in co-operation with:



INTERNATIONAL ALLIANCE  
OF ALS/MND ASSOCIATIONS

### The International Alliance of ALS/ MND Associations

Email: [alliance@als-mnd.org](mailto:alliance@als-mnd.org)

Website: [www.alsmndalliance.org](http://www.alsmndalliance.org)

## Welcome to Glasgow!

On behalf of MND Scotland, I would like to welcome you all to the 29th International Symposium on ALS/MND and the 26th Annual Meeting of the International Alliance of ALS/MND Associations. It's fitting that the organisations and institutes that have those affected by ALS/MND at their heart should come to Glasgow, the city which puts people at its heart (embodied in its slogan 'People Make Glasgow').

In 1997, the 8th International Symposium on ALS/MND was held in Glasgow for the first time. Much has changed since then. The number of people attending has dramatically increased, as has the number attending the International Alliance meetings, indicative of the rising interest and investment in finding a cure and improving care. Underlying this we have also seen the number of people affected by the condition increase. In Scotland, the numbers have doubled over the same period and it is for this reason that these meetings are so important.

At MND Scotland, our ambition is to transform care and fund a cure. This is the reason why we funded the re-establishment of the Scottish MND Register; why we work closely with centres of excellence like the Euan MacDonald Centre for MND Research in Edinburgh and invest in their work; why we support the MND Clinical Specialists across Scotland; why we introduced our new physiotherapy and advocacy services; and why we have seen, this year, the first clinical trial in Scotland for over twenty years. Our campaigning to improve the lives of those affected by MND has seen the introduction of free personal care and fast-tracking of benefits for the terminally ill, and legislation to ensure those with communication difficulties have access to AAC equipment.

Improvements in treatment, care and our understanding of the disease will only come through collaborative working, sharing of knowledge and enlightening each other. These meetings provide the perfect opportunity for this to happen.

I hope that when it's time for you to return home that you will have been inspired, energised and enthused to take what you have learned and use it to move us ever closer to a world without ALS/MND.

Glasgow is a city with a wonderful cultural heritage, so please take some time to explore and experience why it was voted the Friendliest City in the World. I hope you enjoy your time with us and all that Glasgow and Scotland has to offer.

**Craig W F Stockton**  
CEO, MND Scotland

## Foreword

To Scottish ingenuity we owe thanks for the decimal point, logarithms, television, the telephone, penicillin, animal cloning and many more seminal discoveries. Biological science continues to flourish here, with world leading research in regenerative medicine and genetics of particular relevance to ALS/MND. We are therefore delighted that the 29th International Symposium on ALS/MND is being held in Glasgow.

Who gets ALS? The role of environmental factors, metabolism and physical fitness continues to be an area of great interest and is covered in a number of sessions at this meeting. We now understand that significant numbers of people, even without a family history, carry detectable genetic variants which cause or contribute to their condition. We therefore look at how we support people in making an informed choice about whether to be tested, in an era where gene specific therapies are beginning to emerge.

A single cell like a motor neuron could be thought of as a whole universe in itself. In this meeting we will learn about the role of different neuronal compartments, axons and synapses, in ALS, and advances in single cell biology which promise to take our knowledge to a new level where we can dissect out the precise events which trigger ALS.

Measuring disease progression, including cognitive change, and its impact on quality of life is critical to care planning and facilitating individual autonomy, as well as for informing clinical trial design. A range of international experts consider these subjects in detail.

The International Symposium on ALS/MND has a deserved reputation for bridging the gulf between science and clinical practice. This meeting should convince you that we are moving forward in closing the gap between basic discovery science and treatments that will genuinely alter the course of ALS/MND.

**Kevin Talbot**  
Programme Committee Chair

# PROGRAMME

## Friday 7 December 2018

### SESSION 1

HALL 2

#### JOINT OPENING SESSION

*Chairs: S Light (UK) K Talbot (UK)*

#### 09.00 - 09.10

Welcome

*S Light (UK) K Talbot (UK)*

#### 09.10 - 09.30

**C1** Revised Airlie House Consensus Guidelines for design and implementation of amyotrophic lateral sclerosis (ALS) clinical trials based on the modified Delphi method

*H Mitsumoto (USA)*

#### 09.30 - 09.35

Welcome on behalf of MND Scotland

*L Cowan (UK)*

#### 09.35 - 09.40

Opening address

*HRH The Princess Royal*

#### 09.40 - 09.50

International Alliance Humanitarian Award

International Alliance Forbes Norris Award

#### 09.50 - 10.25

**C2** The microbiome, the immune system and brain function

*J Cryan (Ireland)*

#### 10.25 - 10.45

IPG Award and winner's research presentation

10.45 - 11.15

REFRESHMENTS AND NETWORKING: Hall 5

### SESSION 2

HALL 2

#### DEFINING ALS/MND

*Moderator: J Rosenfeld (USA)*

#### 11.15 - 12.30

**C3** Defining ALS/MND: The Big Debate

*A Al-Chalabi (UK); O Hardiman (Ireland); M Kiernan (Australia);*

*R Miller (USA)*

12.30 - 14.00 LUNCH: Hall 5

### SESSION 3A LOMOND AUDITORIUM

#### STEM CELL MODELS

Chairs: G Miles (UK) C Svendsen (USA)

##### 14.00 – 14.15

Cloning, stem cells and regenerative medicine

*I Wilmut (UK)*

##### 14.15 – 14.45

**C4** Modelling ALS using induced pluripotent stem cells combined with organ-on-chip technology

*C Svendsen (USA)*

##### 14.45 – 15.00

**C5** FM19G11 preserves blood brain barrier integrity and limits P-gP overexpression by reducing astrocytes toxicity in a human-derived in vitro cell model of familial and sporadic amyotrophic lateral sclerosis

*S Bonanno (Italy)*

##### 15.00 – 15.15

**C6** Dysregulation of GluA1 Ca<sup>2+</sup>-permeable AMPAR in ALS: A potential converging pathomechanism causing motor neuron vulnerability to excitotoxicity

*B Selvaraj (UK)*

##### 15.15 – 15.30

**C7** C9orf72 and TDP-43 iPS-derived motor neurons show alterations in calcium buffering through different mechanisms

*R Dafinca (UK)*

### SESSION 3B HALL 2

#### INFORMATION, AUTONOMY AND DECISION MAKING

Chairs: P Andersen (Sweden) C Jackson (USA)

##### 14.00 – 14.30

**C8** Gene testing for all? Supporting patient decisions in the post-genomic era

*C Shaw (UK)*

##### 14.30 – 14.50

**C9** Developing a framework for the diagnostic interpretation of ALS genomes

*D Leighton (UK)*

##### 14.50 – 15.10

**C10** Advance care planning in ALS: Representation and realisation of individual treatment goals through care management schemes

*S Spittel (Germany)*

##### 15.10 – 15.30

**C11** Decision support tools for motor neurone disease multidisciplinary care

*A Hogden (Australia)*

### SESSION 3C HALL 1

#### NEUROIMAGING

Chairs: N Atassi (USA) P Bede (Ireland)

##### 14.00 – 14.20

**C12** Lifetime sport practice and brain metabolism in ALS: A 18F-FDG-PET study

*A Calvo (Italy)*

##### 14.20 – 14.40

**C13** [11C] PBR28 PET imaging for characterizing spinal cord glial activation in ALS

*S Babu (USA)*

##### 14.40 – 15.00

**C14** Primary lateral sclerosis, part of the MND spectrum or disease entity: a multiparametric neuroimaging study with comprehensive clinical and genetic profiling

*E Finegan (Ireland)*

##### 15.00 – 15.20

**C15** Quantifying the post mortem ALS brain using ultra high-field MRI

*B Tendler (UK)*

15.30 – 16.00 REFRESHMENTS AND NETWORKING: Hall 5

**SESSION 4A**  
LOMOND AUDITORIUM

**CELL BIOLOGY AND PATHOLOGY**

*Chairs: J Atkin (Australia) V Bonetto (Italy)*

**16.00 – 16.30**

**C16** The role of synapses in neurodegeneration  
*T Spires-Jones (UK)*

**16.30 – 17.00**

**C17** Single cell biology as a tool to explore neurodevelopment and neurodegeneration  
*L Goff (USA)*

**17.00 – 17.15**

**C18** The interactome of human TDP-43 in a cellular model of ALS  
*E Feneberg (UK)*

**17.15 – 17.30**

**C19** Small non-coding RNAs generated by the ALS-associated ribonuclease angiogenin deliver novel and accessible biomarkers of disease progression in ALS  
*M Hogg (Ireland)*

**SESSION 4B**  
HALL 2

**CLINICAL TRIALS AND TRIAL DESIGN**

*Chairs: L van den Berg (Netherlands) M Cudkowicz (USA)*

**16.00 – 16.30**

**C20** Improving outcomes as rapidly as possible for patients: Multi-arm, multi-stage platform, umbrella and basket protocols  
*M Parmar (UK)*

**16.30 – 16.50**

**C21** Hurdles for pharmacogenetic interactions in ALS clinical trials: a post-hoc analysis and simulation study  
*R van Eijk (Netherlands)*

**16.50 – 17.10**

**C22** Novel composite endpoint extended analysis during extension of ibudilast phase 1A/2B clinical trial better predicts post wash out survival  
*B Brooks (USA)*

**17.10 – 17.30**

**C23** Randomized phase 2B trial of NP001, a novel immune regulator, in ALS  
*R Miller (USA)*

**SESSION 4C**  
HALL 1

**NEUROPATHOLOGY**

*Chairs: J Ravits (USA) O Ansorge (UK)*

**16.00 – 16.20**

**C24** Selective vulnerability of the primary motor cortex in ALS  
*M Nolan (UK)*

**16.20 – 16.40**

**C25** Upper motor neurons with TDP-43 pathology from different species display similar cellular dysfunctions  
*H Ozdinler (USA)*

**16.40 – 17.00**

**C26** Distinct TDP-43 inclusions suggest divergent pathomechanisms in FTLN and FTLN-ALS  
*R Tan (Australia)*

**17.00 – 17.20**

**C27** Cognitive deficits in ALS are a marker of localized TDP-43 cerebral pathology  
*J Gregory (UK)*

HALL 4

**POSTER SESSION A: 17.45 – 20.00**

**18.00 – 18.50**

**Theme 1:** Genetics and genomics  
**Theme 2:** In vitro experimental models  
**Theme 8:** Clinical imaging and electrophysiology  
**Theme 9:** Clinical trials and trial design

**18.50 – 19.40**

**Theme 3:** In vivo experimental models  
**Theme 4:** Human cell biology and pathology  
**Theme 10:** Disease stratification and phenotyping  
**Theme CW:** Clinical work in progress

## Saturday 8 December 2018

### SESSION 5A LOMOND AUDITORIUM

#### AXONAL DEGENERATION

Chairs: R Ribchester (UK) L Greensmith (UK)

##### 08.30 – 09.00

**C28** Mechanisms of axon degeneration and their relevance to ALS/MND

*M Coleman (UK)*

##### 09.00 – 09.30

**C29** Axonal transport as a therapeutic target

*G Schiavo (UK)*

##### 09.30 – 09.45

**C30** Neurotrophic factor-mediated regulation of axonal transport is impaired in SOD1 G93A mice

*A Tosolini (UK)*

##### 09.45 – 10.00

**C31** Axon loss and microglial activation in the corticospinal tract in sporadic ALS patients with predominant upper motor neuron symptoms

*F Song (USA)*

### SESSION 5B HALL 2

#### TECHNOLOGY AND ALS/MND

Chairs: T Meyer (Germany) S Chandran (UK)

##### 08.30 – 08.50

**C32** Computer assessment of speech in a successful ALS treatment trial

*R Smith (USA)*

##### 08.50 – 09.10

**C33** Remote pulmonary function testing in ALS telemedicine

*A Geronimo (USA)*

##### 09.10 – 09.30

**C34** Accelerometry for remote monitoring of disease progression in ALS clinical trials

*R van Eijk (Netherlands)*

##### 09.30 – 09.45

**C35** ALS patients can measure their own function at home: Reliability, tolerability and relationships between outcomes

*J Shefner (USA)*

##### 09.45 – 10.00

**C36** Preserving identity: The Speak: Unique voice banking pilot

*P Rewaj (UK)*

### SESSION 5C HALL 1

#### EPIDEMIOLOGY

Chairs: E Beghi (Italy) P Factor-Litvak (USA)

##### 08.30 – 08.50

**C37** Euro-MOTOR: a multicentre population-based case-control study of pre-existing medical conditions as risk factors for ALS

*S Peters (Netherlands)*

##### 08.50 – 09.10

**C38** Causal effects of presymptomatic lifestyle on ALS, stratified by C9orf72 genotype

*H-J Westeneng (Netherlands)*

##### 09.10 – 09.30

**C39** Are ALS motor phenotypes stochastic? A population-based study

*A Chiò (Italy)*

##### 09.30 – 09.45

**C40** Is psychological stress a predisposing factor for ALS? An online international case-control study of premorbid stressful life events, resilience and anxiety

*J Parkin Kullmann (Australia)*

##### 09.45 – 10.00

**C41** A family history of depression and anxiety predicts cognitive and behavioural changes in MND

*C McHutchison (UK)*

10.00 – 10.30 REFRESHMENTS AND NETWORKING: Hall 5

**SESSION 6A**  
LOMOND AUDITORIUM

**GENETICS AND GENOMICS**

*Chairs: M van Es (Netherlands) J Kirby (UK)*

**10.30 – 10.50**

**C42** Genomic structural variation in ALS: A case-control study using 6579 whole genome sequences  
*A Al Khleifat (UK)*

**10.50 – 11.10**

**C43** Identification of missing genetic association within non-coding elements using an artificial neural network  
*J Cooper-Knock (UK)*

**11.10 – 11.30**

**C44** A precision genomics approach to dissect the pathogenesis of ALS/MND  
*J Rubio (Australia)*

**11.30 – 11.50**

**C45** Discovery and characterisation of a novel genetic variant of amyotrophic lateral sclerosis  
*T Moll (UK)*

**11.50 – 12.10**

**C46** Expression levels of C9ORF72 associate with survival after onset in C9ORF72-linked diseases  
*M van Blitterswijk (USA)*

**12.10 – 12.30**

**C47** Spatial transcriptomics reveals spatially dysregulated expression of GRM3 and USP47 in amyotrophic lateral sclerosis  
*J Gregory (UK)*

**SESSION 6B**  
HALL 2

**CLINICAL SUPPORT AND QUALITY OF LIFE**

*Chairs: O Hardiman (Ireland) E Mioshi (UK)*

**10.30 – 10.50**

**C48** Patient Reported Outcomes Measures (PROMs) in Amyotrophic Lateral Sclerosis (ALS)  
*F De Marchi (USA)*

**10.50 – 11.10**

**C49** Understanding quality of life in ALS/MND by modelling patient-reported outcomes  
*C Young (UK)*

**11.10 – 11.30**

**C50** Jumping between the cracks: navigating the world of care in motor neurone disease, a qualitative study  
*E Hobson (UK)*

**11.30 – 11.50**

**C51** An online mindfulness intervention for people with ALS  
*F Pagnini (Italy)*

**11.50 – 12.10**

**C52** Investigating protective factors of psychological distress in motor neuron disease (MND) caregivers  
*S Carney (Ireland)*

**12.10 – 12.30**

**C53** Apathy subtypes, quality of life, wellbeing and caregiver burden in motor neurone disease  
*R Radakovic (UK)*

**SESSION 6C**  
HALL 1

**PRODROMAL AND EARLY DISEASE MARKERS**

*Chairs: M Turner (UK) Philippe Corcia (France)*

**10.30 – 10.50**

**C54** Relative thalamic hypometabolism as an early marker of C9orf72 pathology  
*J De Vocht (Belgium)*

**10.50 – 11.10**

**C55** Baseline and longitudinal volumetric changes associated with presymptomatic C9orf72 repeat expansion carriers  
*C McMillan (USA)*

**11.10 – 11.30**

**C56** Early and distinct perfusion alterations in presymptomatic C9orf72, MAPT and GRN mutation carriers  
*P Ferraro (USA)*

**11.30 – 11.50**

**C57** When does ALS begin? Insights from serum and CSF neurofilaments light and heavy  
*M Benatar (USA)*

**11.50 – 12.10**

**C58** Phosphorylated neurofilament heavy chains (pNfH) in blood as an early diagnostic and prognostic biomarker in ALS  
*K Poesen (Belgium)*

**12.10 – 12.30**

**C59** Peripheral immune biomarkers and the risk of neurodegenerative diseases in the Swedish AMORIS study  
*S Yazdani (Sweden)*

**12.30 – 14.00 LUNCH: Hall 5**



## SESSION 7A

### LOMOND AUDITORIUM

#### NON-NEURONAL CELLS

*Chairs: T Spires-Jones (UK) P Pasinelli (USA)*

##### 14.00 – 14.30

**C60** Function and dysfunction of innate immune genes in microglia: implications for neurodegenerative disease

*P St George-Hyslop (UK)*

##### 14.30 – 14.50

**C61** Pathological study of glial inflammation in clinically pre-symptomatic spinal cords in patients with sporadic amyotrophic lateral sclerosis

*S Hayashi (Japan)*

##### 14.50 – 15.10

**C62** Exosomes derived from bone marrow mesenchymal stem cells and their shuttled miRNAs remodel astrocytes isolated from adult SOD1G93A mice from a neurotoxic to a neuroprotective phenotype

*G Bonanno (Italy)*

##### 15.10 – 15.30

**C63** C9orf72 expansion in astrocytes causes loss of metabolic flexibility, metabolic transport defects and loss of glycogen metabolism leading to increased toxicity under metabolic stress

*S Allen (UK)*

## SESSION 7B

### HALL 2

#### COGNITIVE AND PSYCHOLOGICAL CHANGE

*Chairs: S Abrahams (UK) C Lomen-Hoerth (USA)*

##### 14.00 – 14.30

**C64** The ALS-FTD spectrum: Diagnosis and management

*J Hodges (Australia)*

##### 14.30 – 14.50

**C65** Cognition and behaviour does decline across the ALS disease course after controlling for attrition

*C Crockford (UK)*

##### 14.50 – 15.10

**C66** Clinical correlates of memory decline in motor neuron disease

*J Machts (Germany)*

##### 15.10 – 15.30

**C67** Unravelling psychosis in motor neurone disease: A study of clinical features, cognition, and survival

*R Ahmed (Australia)*

## SESSION 7C

### HALL 1

#### NEUROPHYSIOLOGY

*Chairs: M Weber (Switzerland) M De Carvalho (Portugal)*

##### 14.00 – 14.30

**C68** Beyond molecules: Could circuit pathophysiology contribute to pathology of motor neuron diseases?

*R Brownstone (UK)*

##### 14.30 – 14.50

**C69** Excitability of spinal motoneurons in patients with ALS

*V Marchand-Pauvert (France)*

##### 14.50 – 15.10

**C70** Implementing Motor Unit Number Index (MUNIX) in a large clinical trial: Real world experience from 27 centres

*C Neuwirth (Switzerland)*

##### 15.10 – 15.30

**C71** Dysfunction of attention switching networks in amyotrophic lateral sclerosis correlates to impaired cognitive flexibility

*R McMackin (Ireland)*

15.30 – 16.00 REFRESHMENTS AND NETWORKING: Hall 5

**SESSION 8A**  
LOMOND AUDITORIUM

**PRECLINICAL THERAPEUTIC STRATEGIES**

*Chairs: P Shaw (UK) L Bruijn (USA)*

**16.00 – 16.15**

**C72** WVE-3972-01, an investigational stereopure antisense oligonucleotide for the treatment of amyotrophic lateral sclerosis (ALS) and frontotemporal dementia (FTD)  
*Z Zhong (USA)*

**16.15 – 16.30**

**C73** Antibody therapy targeting RAN proteins rescues ALS/FTD in C9orf72 BAC mice  
*L Ranum (USA)*

**16.30 – 16.45**

**C74** *In vivo* delivery of single chain antibodies to target TDP-43 proteinopathy  
*S Pozzi (Canada)*

**16.45 – 17.00**

**C75** Robust SOD1 knockdown in large mammal spinal cord using a novel delivery paradigm with AAV gene therapy targeting SOD1 for the treatment of SOD1-ALS  
*H Patzke (USA)*

**17.00 – 17.15**

**C76** HTL0014242 a novel metabotropic glutamate receptor type 5 (mGlu5) negative allosteric modulator limits glial activation and slows late stage disease progression in the SOD1G93A mouse model of MND  
*H Brown-Wright (UK)*

**17.15 – 17.30**

**C77** Protective action of Cull(atsm) in models of ALS is mediated through copper-dependent upregulation of astrocytic Nrf2  
*J Liddell (Australia)*

**SESSION 8B**  
HALL 2

**CLINICAL PROGRESSION**

*Chairs: Z Stevic (Serbia) A Chiò (Italy)*

**16.00 – 16.20**

**C78** ALS onset in old people: Clinical features and prognosis  
*M De Carvalho (Portugal)*

**16.20 – 16.40**

**C79** Primary lateral sclerosis (PLS)-specific PLSFRS reveals significant clinical changes over time in patients with PLS  
*H Mitumoto (USA)*

**16.40 – 17.00**

**C80** Phenotype-genotype characterisation of 'long survivors' with motor neurone disease in Scotland  
*D Leighton (UK)*

**17.00 – 17.15**

**C81** Validation of the D50 model of ALS progression in representative cohorts from Europe and the USA  
*J Grosskreutz (Germany)*

**17.15 – 17.30**

**C82** An examination of riluzole effect on transitions from stage to stage in the PRO-ACT cohort  
*N Thakore (USA)*

**SESSION 8C**  
HALL 1

**TISSUE BIOMARKERS**

*Chairs: R Bowser (USA) A Malaspina (UK)*

**16.00 – 16.15**

**C83** Neuroendocrine and metabolic biomarkers in amyotrophic lateral sclerosis and frontotemporal dementia  
*R Ahmed (Australia)*

**16.15 – 16.30**

**C84** Distinct features of plasma extracellular vesicles in amyotrophic lateral sclerosis patients  
*V Bonetto (Italy)*

**16.30 – 16.45**

**C85** Plasma extracellular vesicle microRNA expression in ALS patients from the National ALS Registry  
*P Factor-Litvak (USA)*

**16.45 – 17.00**

**C86** Identification of a non-coding RNA biomarker signature from serum in ALS  
*G Joilin (UK)*

**17.00 – 17.15**

**C87** A combination of ferroptosis-based biomarkers improves the prediction of functional decline in ALS patients  
*P-F Pradat (France)*

**17.15 – 17.30**

**C88** Novel function of neuronal apoptosis inhibitory protein: implication for a risk factor and a prognostic marker in ALS  
*O Kano (Japan)*

## HALL 4

**POSTER SESSION B: 17.45 – 20.00****18.00 – 18.50****Theme 5:** Epidemiology and informatics**Theme 6:** Tissue biomarkers**Theme 11:** Cognitive and psychological assessment and support**Theme 12:** Respiratory and nutritional management**18.50 – 19.40****Theme 7:** Pre-clinical therapeutic strategies**Theme 13:** Clinical management and support**Theme 14:** Palliative care and decision making**Theme BW:** Biomedical work in progress**Sunday 9 December 2018****SESSION 9A**

LOMOND AUDITORIUM

**DISEASE MODELS***Chairs: L Van Den Bosch (Belgium) P Fratta (UK)***08.30 – 09.00****C89** Identification of a pro-apoptotic signalling cascade in FTD-ALS models  
*S Sweeney (UK)***09.00 – 09.20****C90** C9orf72 arginine-rich dipeptide proteins interact with ribosomal proteins in vivo to induce a toxic translational arrest that is rescued by eIF1A  
*T Moens (UK)***09.20 – 09.40****C91** ALS/FTD associated C9orf72 expansions activate the heat shock response and induce SOD1 proteinopathy –  
*T Ramesh (UK)***09.40 – 10.00****C92** BMAA, a cyanobacterial neurotoxin, triggers neurodegenerative changes in motor neurons and microglial activation in the spinal cord  
*D Davis (USA)***SESSION 9B**

HALL 2

**END OF LIFE DECISIONS***Chairs: G D Borasio (Switzerland) Z Simmons (USA)***08.30 – 08.50****C93** Wishes for hastened death in ALS: How should we as clinicians respond?  
*G D Borasio (Switzerland)***08.50 – 09.10****C94** MAiD in Canada: Legalization of medical assistance in dying has changed the discussion of WTHD in ALS  
*W Johnston (Canada)***09.10 – 09.30****C95** Wishes for hastened death in ALS in Japan: The need for culture-sensitive answers  
*M Ogino (Japan)***09.30 – 10.00**

PANEL DISCUSSION

**10.00 – 10.30 REFRESHMENTS AND NETWORKING: Hall 5**

## SESSION 10A

LOMOND AUDITORIUM

### RNA AND PROTEIN PROCESSING

Chairs: C Shaw (UK) J Rothstein (USA)

**10.30 – 11.00**

**C96** Connection between nucleocytoplasmic transport and protein aggregation in ALS

*D Dormann (Germany)*

**11.00 – 11.20**

**C97** Synergistic interaction between low complexity domains in FUS is important for toxicity in drosophila and for liquid-liquid phase separation

*L Van Den Bosch (Belgium)*

**11.20 – 11.40**

**C98** Mechanisms of paraspeckle hyper-assembly in ALS

*T Shelkownikova (UK)*

**11.40 – 12.00**

**C99** Mouse TDP-43 C-terminal mutations lead to an ALS-like phenotype and splicing gain of function producing novel splicing events, skiptic exons

*P Fratta (UK)*

**12.00 – 12.20**

**C100** Optogenetic enhancement of TDP-43 intermolecular interaction triggers its cytoplasmic mislocalization and inhibits axon outgrowth of spinal motor neurons

*K Asakawa (Japan)*

**12.20 – 12.40**

**C101** Optogenetic modulation of TDP-43 proteinopathy

*C Donnelly (USA)*

## SESSION 10B

HALL 2

### RESPIRATORY AND NUTRITIONAL SUPPORT

Chairs: G Pattee (USA) S Pinto (Portugal)

**10.30 – 10.50**

**C102** Gastrostomy, rates of decline of ALSFRS-R subscores and BMI, and survival

*N Thakore (USA)*

**10.50 – 11.10**

**C103** Measuring rate of decline in pulmonary function in ALS: Results from the ALS Nutrition/NIPPV Study Group

*C Jackson (USA)*

**11.10 – 11.30**

**C104** Slow vital capacity and functional decay in ALS

*S Pinto (Portugal)*

**11.30 – 11.50**

**C105** Enhancing the efficacy of non-invasive ventilation for patients with motor neurone disease: A systematic review and multicentre survey

*D O'Brien (UK)*

**11.50 – 12.10**

**C106** Impact of a combined expiratory and inspiratory respiratory strength training program in ALS: Results of a randomized sham controlled trial

*E Plowman (USA)*

**12.10 – 12.30**

**C107** Survival and outcomes of 122 patients with ALS/MND using tracheostomy ventilation (TV)

*P Cazzolli (USA)*

**12.30 – 14.00 LUNCH: Hall 5**

## SESSION 11 HALL 2

### JOINT CLOSING SESSION

Chairs: K Talbot (UK) M Kiernan (Australia)

**13.30 – 14.00**

**C108** Energy metabolism defects in ALS

*L Dupuis (France)*

**14.00 – 14.30**

**C109** Fitness, exercise and ALS

*P Shaw (UK)*

**14.30 – 14.40**

Patient Impact Award

**14.40 – 14.50**

Poster Prize Presentation

**14.50 – 15.00**

Invitation to Perth 2019

**15.00 – 15.15**

Late breaking news

# Poster sessions

## THEME 1

### Genetics and Genomics

#### GEN-01 ALSgeneScanner: a pipeline for the analysis of DNA next-generation sequencing data of ALS patients

Alfredo Iacoangeli, Ahmad Al Khleifat, William Sproviero, Aleksey Shatunov, Ashley Jones, Richard Dobson, Stephen Newhouse, Ammar Al-Chalabi

#### GEN-02 Whole genome sequencing as tool to unravel rare variants associated with ALS survival

Matthieu Moisse, the Project MinE Sequencing Consortium

#### GEN-03 Residual signals in ALS GWAS

Ross Byrne, Wouter van Rheenen, Orla Hardiman, Jan Veldink, Russell McLaughlin

#### GEN-04 Yield of an ALS Genetic Testing Algorithm in a Tertiary Care ALS Clinic: Test Outcomes in 142 Patients

Jennifer Roggenbuck, Radha Patel, Adam Quick, Stephen Kolb

#### GEN-05 The IceBucket Challenge Sporadic ALS Australia Systems Genomics Consortium: SALSA-SGC

Anjali Henders, Robert Henderson, Madhura Bhadravathi Lokeshappa, Shyuan Ngo, Fleur Garton, Ammar Al-Chalabi, Rob Edis, Matthew Keirnan, Nigel Laing, Philippa Lamont, Susan Mathers, Merrilee Needham, Garth Nicholson, Roger Phamphlett, Dominic Rowe, David Schulz, Paul Talman, Jan Veldink, Leonard van den Berg, Peter Visscher, Steve Vucic, Kelly Williams, Pamela McCombe, Ian Blair, Naomi Wray

#### GEN-06 Characterising polymorphic retrotransposon insertions in the genomes of ALS patients

Abigail Savage, Ammar Al-Chalabi, Jose Garcia-Perez, Ulrike Held, Anja Bock, Alejandro Rubio, Gerome Breen, Bradley Smith, Alfredo Iacoangeli, Vivien Bubb, Gerald Schumann, John Quinn

#### GEN-07 Genetic polymorphisms of the KATP channel and their expression are associated with progression and survival in Amyotrophic Lateral Sclerosis

José Vidal-Taboada, Maria Salvadó, Alan Lopez-Lopez, Nicole Mahy, Manuel Rodríguez, Josep Gamez

#### GEN-08 DNA Methylation in Amyotrophic Lateral Sclerosis

Charlie Appleby Mallinder, Paul Heath, J Highley

#### GEN-09 Transcriptomic profile in ALS: possible correlation between disease progression and RNA deregulation

Stella Gagliardi, Susanna Zucca, Cecilia Pandini, Daisy Sproviero, Maria Garofalo, Matteo Bordoni, Orietta Pansarasa, Raffaele Calogero

#### GEN-10 GM604 regulates developmental neurogenesis pathways and the expression of genes associated with amyotrophic lateral sclerosis

William Swindell, Krzysztof Bojanowski, Mark Kindy, Dorothy Ko

#### GEN-11 Genetic polymorphisms relate to cognitive, behavioural, and neuromuscular profile in sporadic ALS

Katerina Placek, Laura Hennessy, Pilar Ferraro, Lauren Elman, Leo McCluskey, Vivianna Van Deerlin, Murray Grossman, Corey McMillan

#### GEN-12 A 5 year review of clinical neurodegenerative disease genetic testing in NHS Scotland

Elizabeth Elliott, Elaine Cleary, Jon Warner, Austin Diamond, Shuna Colville, Siddharthan Chandran, Mary Porteous, Suvankar Pal

#### GEN-13 The diagnostic yield of NGS in ALS and related neuromuscular disorders

Sien Van Daele, Matthieu Moisse, Valérie Race, Project MinE consortium, Philip Van Damme

#### GEN-14 The Malta MND DNA Bank: Identification of genetic risk factors in an isolated island nation

Rebecca Borg, Karl Bonavia, Ruben Cauchi

#### GEN-15 Genetic Profile of ALS Patients in Portugal

Marta Gromicho, Susana Pinto, Eugeniu Gisca, Ana Pronto-Laborinho, Mamede de Carvalho

#### GEN-16 Genetic testing in amyotrophic lateral sclerosis and frontotemporal dementia: outcomes in patients and relatives referred to clinical genetics over a five-year period

Lauren Cairns, Andrew Douglas

#### GEN-17 Validation of genetic factors affecting survival in Japanese ALS patients

Ryoichi Nakamura, Naoki Atsuta, Genki Tohrai, Masahiro Nakatochi, Naoki Hayashi, Daichi Yokoi, Hirohisa Watanabe, Masahisa Katsuno, Yuishin Izumi, Mitsuya Morita, Akira Taniguchi, Nobutaka Hattori, Osamu Kano, Masaya Oda, Koji Abe, Satoshi Kuwabara, Kouichi Mizoguchi, Ryuji Kaji, Gen Sobue

#### GEN-18 Genotypes and phenotypes of Amyotrophic Lateral Sclerosis in Mongolia

Tselmen Daria, Kathrin Muller, Zolzaya Doljoo, Suvd Oidovdorj, Sarantsetseg Turbat, Bolormaa Dambasuren, Oyungerel Bosookhuu, Chimegkham Banzrai, Erdenechimeg Yadamsuren, Patrick Weydt, Elmar Pinkhardt, Angela Rosenbohm, Munkhtuvshin Namid, Baasamjav Damchaa, Josef Hogel, Guntram Borck, Munkhbat Batmunkh, Albert Ludolph, Jochen Weishaupt

#### GEN-19 Screening for TUBA4A mutations in a large Chinese cohort of ALS patients: re-evaluating the pathogenesis of TUBA4A in ALS

Jiao Li, Dongsheng Fan

#### GEN-20 Screening for CCFN mutations in a Chinese amyotrophic lateral sclerosis cohort

Danyang Tian, Dongsheng Fan

#### GEN-21 Mutation screening of the KIF5A gene in Chinese patients with amyotrophic lateral

Xiaojing Gu, Chunyu Li, YongPing Chen, Qianqian Wei, Bei Cao, Ruwei Ou, Xiaoqin Yuan, Yanbing Hou, Lingyu Zhang, Hui Liu, Ying Wu, Wei Song, Bi Zhao, Xueping Chen, Huifang Shang

#### GEN-22 Mutation analysis of KIF5A in Chinese amyotrophic lateral sclerosis patients

Kang Zhang, Qing Liu, Dongchao Shen, Hongfei Tai, Shuangwu Liu, Zhili Wang, Jiayu Shi, Hanhui Fu, Xiaoguang Li, Yuzhou Guan, Mingsheng Liu, Xue Zhang, Liyong Cui

#### GEN-23 The first report of SOD1-A4V mutation in a Chinese patient with familial amyotrophic lateral sclerosis without the A4V founder effect common in North America

Lu Tang, Yan Ma, Xiaolu Liu, Lu Chen, Dongsheng Fan

#### GEN-24 ANXA11 mutations analysis in Chinese amyotrophic lateral sclerosis patients

Xiangyi Liu, Dongsheng Fan

#### GEN-25 Mutational analysis of ANXA11 in ALS patients in Taiwan

Yi Chung Lee, Pei-Chien Tsai, Yi-Chu Liao

#### GEN-26 NEK1 Variants in Korean Patients with Sporadic Amyotrophic Lateral Sclerosis

Seong Il Oh, Young-Eun Kim, Min-Young Noh, Ki Wook Oh, Chang-Seok Ki, Seung Hyun Kim, Jin-Seok Park

#### GEN-27 Association between clinical characteristics and SOD1 variants in Korean patients with motor neuron disease.

Ki Wook Oh, Young-Eun Kim, Jinseok Park, Sanggon Lee, Pyung Kang Park, Kyong Jin Shin, Chang-Seok Ki, Seung Hyun Kim

#### GEN-28 A novel SOD1 mutation p.D126N associated with a rapidly evolving form of amyotrophic lateral sclerosis with bulbar involvement

Antoine Pegat, Kevin Mouzat, Serge Lumbroso, Emilien Bernard

#### GEN-29 Screening of the TBK1 gene in a spanish motor neuron disease cohort

Josep Gamez, Cecilia Garcia, Jose Manuel Vidal-Taboada, Maria Salvado

#### GEN-30 CAG Intermediate-repeat expansion in ATXN2 associated with increase of risk in ALS in the Irish population

Jennider Hengeveld, Mark Doherty, Leoni Dupuis, Alice Vajda, Mark Heverin, Dan Bradley, Orla Hardiman, Russell McLaughlin

#### GEN-31 A cross-sectional analysis of the C9orf72 repeat expansion in South Africans with ALS

Jeannine Heckmann, Gloudi Agenbag, Ansie Wichers, Francko Henning, Helen Cross, Alina Esterhuizen, Melissa Nel

#### GEN-32 De novo FUS p.P525L mutation in sporadic juvenile amyotrophic lateral sclerosis with aggressive progression and mental disabilities

Orly Goldstein, Mali Gana-Weisz, Beatrice Nefussy, Shir Twito, Batel Vainer, Avi Orr-Urtreger, Vivian Drory

**THEME 2**

**In Vitro Experimental Models**

**IVT-01 Antioxidant drugs reveal the potential for patient stratification in Motor Neurone Disease**

Chloe Allen, Monika Myszczyńska, Matthew Stopford, Noemi Gatto, Heather Mortiboys, Pamela Shaw, Laura Ferraiuolo

**IVT-02 Targeting autophagy in ALS by BiAgil – a specific TGFRII LNA-ASO**

Sabrina Kuespert, Rosmarie Heydn, Sebastian Peters, Eva Wirkert, Tim-Henrik Bruun, Ludwig Aigner, Ulrich Bogdahn

**IVT-03 Multimodal regulation of autophagy by the Amyotrophic Lateral Sclerosis-associated kinase, TBK1**

Maria Davies, Mark Collins

**IVT-04 The neuromuscular junction the hidden player in ALS: studies from ALS model mice, ALS patients, and the construction of an *in vitro* human neuromuscular circuit**

Qiao Ding, Timothy Tracey, Prajwal Thakre, Elyse Wimberger, Aaron Russell, Refik Kanjhan, Mark Bellingham, Lindy Jeffree, Michael Colditz, Robert Henderson, Pamela McCombe, Kimberley Forrest, Matthew Devine, Massimo Hilliard, Ernst Ernst Wolvetang, Shyuan Ngo, Peter Noakes

**IVT-05 Neurochondrin interacts with the SMN protein suggesting a novel mechanism for Spinal Muscular Atrophy pathology**

Luke Thompson, Kimberley Morrison, Sally Shirran, Ewout Groen, Thomas Gillingwater, Catherine Botting, Judith Sleeman

**IVT-06 miR-105 as a critical determinant of neuronal intermediate filament steady-state mRNA levels in ALS**

Zachary Hawley, Danae Campos-Melo, Kathryn Volkening, Michael Strong

**IVT-07 The neurotoxin BMAA is a contributor to Wallerian-like degeneration, and its transcellular transmission**

Vanessa Tan, Benjamin Lassus, Say Hwa Tan, Adrian Teo, Chai Lim, Philippe Tixador, Josquin Courte, Gilles Guillemain, Jean-Michel Peyrin

**IVT-08 Neurotoxicity of isomers of the environmental toxin beta-N-methylamino-L-alanine (BMAA)**

Doug Lobner, Thomas Schneider

**IVT-09 Examining the potential role of cyanotoxins in sporadic motor neurone disease**

Kenneth Rodgers, Mehdi Mirzaei, Adam Quinn

**IVT-10 Inosine reverses motor neuron toxicity observed in amyotrophic lateral sclerosis (ALS) patient astrocytes with an adenosine deaminase deficiency**

Scott Allen, Benjamin Hall, Alexander McGown, Lydia Castelli, Ryan Woof, Laura Francis, Adrian Higginbottom, Monika Myszczyńska, Chloe Allen, Matthew Stopford, Christopher Webster, Guillaume Hautbergue, Tennore Ramesh, Laura Ferraiuolo, Pamela Shaw

**IVT-11 Matrin-3 coalesces into novel nuclear structures in response to stress, a property that is impaired by the ALS-linked S85C mutation**

Ryan Mulligan, Jacob Ayers, Cara Croft, Jared Richardson, Andy Berglund, Dave Borchelt, Edgardo Rodriguez Lebron

**IVT-12 Functional consequences of a novel L84F SOD1 mutation identified in a familial amyotrophic lateral sclerosis family from north India**

Vibha Taneja, Abhishek Vats, M Gourie-Devi, Saima Wajid, Nirmal Ganguly

**IVT-13 Origin of toxicity in SOD1-associated ALS**

Nikolay Dokholyan

**IVT-14 Layer V Pyramidal Neurons showing synaptic hyper-excitability has altered TrkB receptor signaling in SOD1G93A mouse model of ALS**

Jonu Pradhan, Peter Noakes, Mark Bellingham

**IVT-15 Amyotrophic lateral sclerosis-associated mutant SOD1 inhibits anterograde axonal transport of mitochondria by PINK1/Parkin dependent degradation of Miro1**

Claudia Bauer, Annekathrin Moller, Rebecca Cohen, Christopher Webster, Kurt De Vos

**IVT-16 Targeting the mechanisms governing alterations in motor neuron excitability in MND**

Yossi Buskila, Orsolya Kekesi, Lezanne Ooi

**IVT-17 Hyperexcitability in G93A-SOD1 neurons: multi-electrode recordings with morphological and molecular correlates**

Stefania Marcuzzo, Benedetta Terragni, Silvia Bonanno, Emilio Ciusani, Renato Mantegazza, Pia Bernasconi, Ludovico Minati

**IVT-18 Pathogenic protein aggregation is a poor inducer of the heat shock response**

Rebecca San Gil, Prachi Mehta, Dezeræ Cox, Lezanne Ooi, Justin Yerbury, Adam Walker, Heath Ecroyd, Luke McAlary

**IVT-19 Restoration of ubiquitin homeostasis reduces mutant SOD1 toxicity but has no effect on the formation of large SOD1 aggregates**

Isabella Lambert Smith, Natalie Farrawell, Darren Saunders, Stephen Oliver, Giorgio Favrin, Justin Yerbury

**IVT-20 Wildtype TDP 43 functions in dna repair but this process is perturbed in ALS**

Anna Konopka, Manal Farg, Shafi Jamali, Julie Atkin

**IVT-21 Linking miR9 and miR124 expression in motor neurons of ALS models to chromatin remodelling, neuronal gene expression and plasticity**

Benoit Gentil, Jaime Colavincenzo, Mario Fernandez, Heather Durham

**IVT-22 *In vitro* compound screening assays for the identification of small molecules modulating TDP-43 accumulation**

Christopher Secker, Hannah Niederlechner, Mirjam Groh, Thomas Meyer, Matthias Endres, Erich Wanker

**IVT-23 The intrinsically disordered region of TDP-43 is essential for gene regulation**

Martina Hallegger, Anob Chakrabarti, Flora Lee, Nicholas Luscombe, Jernej Ule

**IVT-24 TARDBP pre-mRNA with a mutation causes disturbance of TDP-43 autoregulation via altered interaction with ALS-related splicing factors**

Akihiro Sugai, Akihide Koyama, Takuya Konno, Osamu Onodera

**IVT-25 Investigating cell autonomous and non-cell autonomous effects in a TDP-43M337V BAC mouse model of Amyotrophic Lateral Sclerosis**

Jayden Clark, Myrna Kelfkens, Ruxandra Dafinca, David Gordon, Kevin Talbot

**IVT-26 Development of a high throughput screening pipeline to identify modifiers of stress granule dynamics in motor neurons from a TDP-43 transgenic mouse model of ALS**

David Gordon, Ruxandra Dafinca, Lucy Farrimond, Daniel Ebner, Kevin Talbot

**IVT-27 Translocation of TDP-43 and FUS in cortical neurons and spinal motor neurons after glutamatergic stress or in presence of the neurotoxic peptide Aβ 1-42**

Alexandre Henriques, Maud Combes, Clémence Farrugia, Philippe Poindron, Noëlle Callizot

**IVT-28 Characterisation of a novel isoform of FUS and its role in ALS**

Marta Vidal, Audrey Ragagnin, Albert Lee, Ben Heng, Gilles Guillemain, Roger Chung, Julie Atkin

**THEME 3**

**In Vivo Experimental Models**

**IVV-01 Rewiring muscles to restore function in ALS using stem cells and optogenetics**

Barney Bryson, Linda Greensmith

**IVV-02 Nucleocytoplasmic Transport Defects in a Novel Mouse Model of Neurodegeneration Caused By Mutations in NEMF.**

Roger Sher, Paige Martin, Tyler McGathey, Gregory Cox

**IVV-03 Decreased Glycogenolysis by miR-338-3p Leads to Regional Glycogen Accumulation in the Spinal Cord of Amyotrophic Lateral Sclerosis Mice**

Chunyu Li, Qianqian Wei, Xiaojing Gu, Yongping Chen, Xueping Chen, Bei Cao, Ruwei Ou, Huifang Shang

**IVV-04 Disruption of the astrocytic TNFR1-GDNF axis accelerates motor neuron degeneration and disease progression in amyotrophic lateral sclerosis**

Liliana Brambilla, Giulia Guidotti, Francesca Martorana, Anand Iyer, Eleonora Aronica, Chiara Valori, Daniela Rossi

**IVV-05 Mutations in NEMF, a ribosomal quality control protein, cause progressive neurodegeneration and motor phenotypes in mice**

Jennifer Stauffer, Paige Martin, Yu Kigoshi-Tansho, Roger Sher, Claudio Joaziero, Gregory Cox  
**IVV-06 Neuromuscular Junction Rescue in SMA: Why Early Treatment Is Key**  
 Alison Thomson, Rachel Kline, Eric Villalón, Erkan Osman, Christian Lorson, Lyndsay Murray

**IVV-07 Pathogenic and therapeutic relevance of the CB2 receptor in TDP43 transgenic mice, a model of amyotrophic lateral sclerosis**

Carmen Rodríguez-Cueto, Laura García Toscano, Marta Gómez-Almería, Julián Romero, Cecilia Hillard, Javier Fernández-Ruiz, Eva de Lago

**IVV-08 Enteroviral Infection Leads to Cytoplasmic Mislocalization of TDP-43 in Mouse Brain**

Yuan Chao Xue, Gabriel Fung, Yasir Mohamad, Haoyu Deng, Huitao Liu, Jingchun Zhang, Ralph Feuer, Neil Cashman, Honglin Luo, Chelsea Ruller

**IVV-09 Sarm1 deletion protects motor axons and dendritic spines in TDP-43Q331K transgenic mice**

Matthew White, Ziqiang Lin, Andrea Loreto, Eugene Kim, Richard Mead, Camilla Simmons, Diana Cash, Michael Coleman, Jemeen Sreedharan

**IVV-10 Pathological alterations to Golgi apparatus structure and protein trafficking occur prior to disease onset in a TDP-43 mouse model of ALS**

Britt Berning, Prachi Mehta, Christoph Krisp, Mehdi Mirzaei, Julie Atkin, Mark Molloy, Adam Walker

**IVV-11 The neuroprotective function of the oxidation resistance 1 gene in the TDP-43-associated pathology of ALS**

Silvia Corrochano, Matthew Williamson, Mattea Finelli, David Gordon, Kevin Talbot, Key Davies, Peter Oliver

**IVV-12 Chemogenetic exploration of the Blood-Spinal Cord-Barrier impairment in an ALS mouse model**

Najwa Ouali Alami, Linyun Tang, Barbara Commisso, Tobias Boeckers, Albert Ludolph, Francesco Roselli

**IVV-13 Shifting the Spectrum: Utilizing a Known Modifier Locus to Suppress Disease Severity in *Ighmbp2*-Associated Motor Neuron Disease Models**

Paige Martin, Sarah Holbrook, David Schroeder, Amy Hicks, Jennifer Stauffer, Gregory Cox

**IVV-14 Initial Characterisation of a New Rat Model of ALS8**

Brenda Murage, Rachel Kline, Mark Harmon, Thomas Wishart, Mandy Jackson, Paul Skehel

**IVV-15 Characterization of mice with heterozygous TBK1 deletion**

Clara Bruno, Kirsten Sieverding, David Brenner, Jochen Weishaupt

**IVV-16 FUS is required for post-synaptic neuromuscular junction differentiation: evidence from knock-in mice and iPS based cellular models**

Gina Picchiarelli, Maria Demestre, Tobias Boeckers, Erik Storkebaum, Luc Dupuis

**IVV-17 Quantitative proteomic profiling of nerve and muscle identifies a dynamic evolution in mitochondrial bioenergetics underpinning accelerated neuromuscular junction degeneration in the mature mouse**

Rachel Kline, Kosala Dissanayake, Maica Llaveró Hurtado, Alexander Ahl, Douglas Lamont, Richard Ribchester, Thomas Wishart, Lyndsay Murray

**IVV-18 Intracerebroventricular administration of cystatin C extended the survival time of SOD1G93A mouse model**

Seiji Watanabe, Okiru Komine, Fumito Endo, Keisuke Wakasugi, Koji Yamanaka

**IVV-19 Muscle dysfunction precedes loss of motor unit connectivity in SOD1(G93A) mice**

Christopher Wier, Alexander Crum, Anthony Reynolds, Chitra Iyer, Deepti Chugh, Marilly Paletas, Patrick Heilman, David Kline, W Arnold, Stephen Kolb

**IVV-20 Neuregulin 1 regulation and its organizing functions in C-type cholinergic afferents on normal and altered  $\alpha$ -motor neurons**

Sara Salvany, Anna Casanovas, Olga Tarabal, Sara Hernández, Lidia Piedrafita, María Clara Soto-Bernardini, Manuel Santafé, Jordi Calderó, Markus Schwab, Josep Esquerda

**IVV-21 Necroptosis contributes minimally to disease onset and progression in SOD1G93A mice**

Taide Wang, Nirma Perera, Doris Tomas, Brittany Cuic, James Murphy, Bradley Turner

**IVV-22 Counteracting roles of MHC1 and CD8+ T cells in the peripheral and central nervous system of ALS SOD1G93A mice**

Giovanni Nardo, Maria Chiara Trolese, Mattia Verderio, Alessandro Mariani, Massimiliano De Paola, Nilo Riva, Giorgia Dina, Nicolò Panini, Eugenio Erba, Angelo Quattrini, Caterina Bendotti

**IVV-23 Circuit-Specific Early Sensory Abnormalities in the SOD1G93A Mouse Model for Amyotrophic Lateral Sclerosis**

Martina Wiedau, Soju Seki, Toru Yamamoto, Ravindu Udugampola, Igor Spigelman, Xia Yang, Michael Levine, Scott Chandler, Sharmila Venugopal

**IVV-24 Deconstructing genes, pathways and networks of selective motor neuron vulnerability and tolerance in perinatal SOD1G93Amice**

Fatemeh Zanganeh, Christopher Bye, Bradley Turner

**IVV-25 An in vivo model of intercellular pathogenic protein transmission in ALS**

Mouna Haidar, Valeria Rytova, Linda Lau, Bradley Turner, Christopher Bye

**IVV-26 Human mutant SOD1 is transmitted from neuron to neuron across the synapse in vivo**

Catherine Cowan, Ilya Capralov, Natalie Nahirney, Douglas Allan, Neil Cashman

**IVV-27 A comparison of the fatty acid distribution in different tissues of SOD1-bearing mice and wildtype animals**

Christine Dawczynski, Wiebke Wogawa, Silke

Keiner, Beatrice Stubendorff, Otto Witte, Stefan Lorkowski, Julian Grosskreutz

**IVV-28 Antisense Oligonucleotide Therapy Targeting SOD1 for the Treatment of Canine Degenerative Myelopathy: A Disease Model of ALS**

Joan Coates, Curt Mazur, Eric Swayze, Gayle Johnson, Daniella Vansteenkiste, Katherine Bibi, Stefanie Lim, Frank Bennett, Timothy Miller

**IVV-29 Does pThr175tau mediate cytoplasmic inclusion formation through exposure of the N-terminal phosphatase activating domain of tau?**

Matthew Hintermayer, Alexander Moszczynski, Michael Strong

**IVV-30 APX-051T, astaxanthin derivatives, attenuates functional disability in ALS model rats by orchestrating the suppression of IL-17A related events**

Kaoru Kobayashi, Tomihisa Yokoyama, Katsuhiko Yamano, Yasuhiro Nishida, Michinori Takashina, Michihisa Mukawa, Makoto Ogawa, Takashi Fujita

**IVV-31 Characterisation of a Zebrafish model of Annexin A11**

Bradley Smith, Valentina Marchica, Nicholas Nicholaou, Corinne Houart

**IVV-32 Pathogenesis and motor neuron vulnerability in spinal muscular atrophy is modulated by bioenergetic status**

Helena Chaytow, Penelope Boyd, Wen-Yo Tu, Hannah Shorrock, Ewout Groen, Roderick Carter, Rachael Powis, Sophie Thomson, Derek Thomson, Laura Graham, Anna Motyl, Thomas Wishart, J. Robin Highley, Nicholas Morton, Thomas Becker, Catherina Becker, Paul Heath, Thomas Gillingwater

**IVV-33 High throughput screening of LifeArc ion channel library using the *sod1G93R* zebrafish model of ALS**

Olfat Abduljabbar, Alexander McGown, Jonathan Wood, Tennesse Ramesh

**IVV-34 Traumatic injury exaggerates neurodegeneration in ALS models and perturb nucleocytoplasmic transport**

Eric Anderson, Lauren Gochenaur, Aditi Singh, Rogan Grant, Krishani Patel, Simon Watkins, Jane Wu, Jacob Schwartz, Udai Pandey

**IVV-35 Importance of Sigma-1 receptor in amyotrophic lateral sclerosis: Genetic analysis in *Drosophila***

Bilal Khalil, Simon Couly, Tanguy Maurice, Jean Charles Liévens

**IVV-36 Experimental set-up to study the in vivo spread of C9orf72-derived Di-peptide Repeats in *Drosophila melanogaster***

Javier Morón Oset, Sebastian Grönke, Linda Partridge

**IVV-37 *Drosophila* TBK1 dysfunction in glia cells cause abnormal postsynaptic glutamate receptor clustering**

Minyeop Nahm, Min-Young Noh, Su Min Lim, Seung Hyun Kim

**IVV-38 amino acid ratios and racemases in ALS/MND**

James Metcalf, Sandra Banack, Paul Cox

**THEME 4**

**Human Cell Biology and Pathology**

**HCB-01 Generation of an induced pluripotent stem cell (iPSC) bank for amyotrophic lateral sclerosis: An MNDA initiative**

Erin Hedges, Agnes Nishimura, Christopher Shaw

**HCB-02 Metabolic alterations in motor neurons derived from ALS-patients.**

Tijs Vandoorne, Wenting Guo, Bart Ghesquiere, Katrien De Bock, Ludo Van Den Bosch

**HCB-03 Ryanodine receptor and IP3 receptor role in the ER-mitochondria-calcium-cycle of iPSC derived ALS motor neurons**

Benjamin Vlad, Vedrana Tadic, Saikata Sengupta, Beatrice Stubendorff, Otto Witte, Andreas Hermann, Julian Grosskreutz

**HCB-04 Calcium dynamics in hiPSC-derived astrocytes and their influence on motor neuron function**

Veronica Brivio, Abby Scurfield, Bhuvaneish Selvaraj, Arpan Mehta, Karen Burr, Siddharthan Chandran, Gareth Miles

**HCB-05 Perturbations in Na<sup>+</sup>/K<sup>+</sup> pumps in ALS patient iPSC-derived motoneurons harbouring C9ORF72 mutations**

Amit Chouhan, Abby Scurfield, Bhuvaneish Selvaraj, Arpan Mehta, Karen Burr, Siddharthan Chandran, Gareth Miles

**HCB-06 Stress granules formation upon condition of chronic stress in human ALS disease models**

Claudia Colombrita, Valentina Gumina, Annamaria Maraschi, Alberto Doretto, Clara Volpe, Francesca Sassone, Patrizia Bossolasco, Vincenzo Silani, Antonia Ratti

**HCB-07 Investigating nucleocytoplasmic transport and stress granule dynamics in TDP-43 iPSC-derived MNs**

Ruxandra Dafinca, Ana Candalija, Emily Carroll, Helen Christian, Sally Cowley

**HCB-08 Modulation of the Unfolded Protein Response by L-serine: a Putative Mechanism for Neuroprotection**

Rachael Dunlop, James Powell, Benjamin Heng, Gilles Guillemin, Paul Cox

**HCB-09 Regulation of exosome secretion to diminish the toxicity of the muscle secretome in ALS myotubes**

Owen Connolly, Virginie Mariot, Geetha Vijayakumar, Pierre Pradat, William Duddy, Stephanie Duguez

**HCB-10 Perinuclear accumulation and microparticle secretion of SOD1 in sporadic ALS myotubes**

Vanessa Milla, Laura Le Gall, Virginie Mariot, Geetha Vijayakumar, Pierre François Pradat, Julie Dumonceaux, William Duddy, Stephanie Duguez

**HCB-11 Alteration of FUS pathway leading to a communication breakdown in ALS**

Laura Le Gall, William Duddy, Sylvain Roquevière, Virginie Mariot, Julie Dumonceaux, TRANE group

study, Olivier Lucas, Cedric Raoul, Susan Knoblach, Cecile Martinat, Jose-Luis Gonzales De Aguilar, Pierre Francois Pradat, Stephanie Duguez

**HCB-12 Translating ribosome affinity purification from C9orf72-ALS/FTD patient-derived iPSC Motor Neurons**

Chaitra Sathyaprakash, Jakub Scaber, Nidaa Ababneh, Ana Candalija, Ruxandra Dafinca, Kevin Talbot

**HCB-13 Bulk and single-cell transcriptomic profile of iPSC-derived motor neurons from C9orf72-ALS/FTD patients**

Ana Candalija, Jakub Scaber, Ruxandra Dafinca, Nidaa Ababneh, Viola Volpato, Caleb Webber, Bart Swinnen, Ludo Van Den Bosch, Georg Haase, Kevin Talbot

**HCB-14 Methylation of C9orf72 promoter: a disease modifier and a model confounder in C9orf72 ALS/FTLD iPSCs and iMNs**

Clara Volpe, Claudia Colombrita, Patrizia Bossolasco, Cinzia Tiloca, Silvia Peverelli, Valentina Gumina, Francesca Sassone, Vincenzo Silani, Antonia Ratti

**HCB-15 Dissecting the contribution of dipeptide repeats to the toxicity in C9orf72 iPSC-derived motor neurons from patients with ALS/FTD**

Paola Barbagallo, Sally Cowley, Ruxandra Dafinca, Kevin Talbot

**HCB-16 Bioenergetic and cytoskeletal deficits are caused by the C9orf72 repeat expansion in human iPSC-derived motor neurones**

Arpan Mehta, Bhuvaneish Selvaraj, Owen Dando, Karen Burr, Jenna Gregory, Roderick Carter, Nicholas Morton, Colin Smith, Giles Hardingham, Siddharthan Chandran

**HCB-17 C9-ALS patient specific iPSC-derived lines as in vitro model to study pathogenesis and to test Morpholino oligomers efficacy**

Michela Taiana, Margherita Bersani, Monica Nizzardo, Paola Rinchetti, Silvia Barabino, Nereo Bresolin, Giacomo Comi, Stefania Corti

**HCB-18 C9ORF72 repeat expansions cause axonal transport defects in iPSC-derived motor neurons**

Laura Fumagalli, Steven Boeynaems, Raheem Fazal, Wenting Guo, Ann Swijssen, Mathias De Decker, Matthieu Moisse, Bart Swinnen, Delphine Bohl, Wim Robberecht, Phillip Koch, Pieter Vanden Berghe, Ludo Van Den Bosch, Catherine Verfaillie, Philip Van Damme

**HCB-19 Neuronal differentiation of induced pluripotent stem cells from a patient with severe neurological impairment reveals mutations in the MND candidate gene GCN5L1, causing mitochondrial defects**

Timothy Tracey, Dmitry Ovchinnikov, Sally Martin, Ruojie He, Adeline Vanderver, Guy Helman, Ernst Wolvetang, Shyuan Ngo

**HCB-20 Progressive Motor Neuron Pathology and the Role of Astrocytes in a Human Stem Cell Model of VCP-Related ALS**

Claire Hall, Zhi Yao, Minee Choi, Giulia Tyzack, Andrea Serio, Raphaëlle Luisier, Jasmine Harley,

Elisavet Preza, Charlie Arber, Sarah Crisp, P. Marc Watson, Dimitri Kullmann, Andrey Abramov, Selina Wray, Russell Burley, Samantha Loh, L.Miguel Martins, Molly Stevens, Nicholas Luscombe, Christopher Sibley, Andras Lakatos, Jernej Ule, Sonia Gandhi, Rickie Patani

**HCB-21 Autophagy in ALS patients with SOD1 and C9orf72 mutations**

Mariya Zakharova, Ivan Kochergin, Nataliya Abramychcheva, Yuliya Shpilukova, Elena Lysogorskaia, DenisYu Logunov, Alexey Vasiliev, Anna Roslyakova, Ilya Bakuli, Taras Simaniv, Inessa Zakroyshchikova, Juliya Korzhova, Mariya Ivanova, Sergey Illarioshkin

**HCB-22 Mitophagy Dysregulation in PBMCs of Sporadic ALS Patients**

Matteo Bordon, Valentina Fantini, Roberta Leone, Jonathan Vinet, Orietta Pansarasa, Stella Gagliardi, Cristina Cereda

**HCB-23  $\gamma$ ' fibrinogen and changes in morphology of erythrocytes in Amyotrophic Lateral Sclerosis**

Ana Catarina Pronto Laborinho, Catarina Lopes, Marta Gromicho, Nuno Santos, Filomena Carvalho, Mamede de Carvalho

**HCB-24 R-loops and stress granules interaction in Amyotrophic Lateral Sclerosis**

Marta Giannini, Daisy Sproviero, Matteo Bordon, Luca Diamanti, Jonathan Vinet, Stella Gagliardi, Serena Carra, Orietta Pansarasa, Cristina Cereda

**HCB-25 Muscleblind modulates FUS-associated neurodegeneration and promotes stress granule turn-over**

Ian Casci, Karthik Krishnamurthy, Sukhleen Kour, Nandini Ramesh, Rogan Grant, Eric Anderson, Stacie Oliver, Vadreenath Tripathy, Jared Sternecker, Amanda Gleixner, Christopher Donnelly, Marc-David Ruepp, Piera Pasinelli, Udai Pandey

**HCB-26 Cortical Cytokine Changes in Healthy Ageing, Motor Neurone Disease and Alzheimer's Disease**

Anuradha Tennakoon, Ian Musgrave, Ian Johnson, Vythia Katharesan

**HCB-27 Aberrant Assembly Machines Involved in ALS: A New Paradigm with Diagnostic and Therapeutic Implications**

Suganya Selvarajah, Shao Feng Yu, Nick DeYarman, Dennis Solas, Anatoliy Kitiagorodskyy, Yemi Akintunde, Kumar Paulvannan, Amanda Macieik, Anuradha Lingappa, Shriya Sahu, Ana Moreira, Danielle Goldsmith, Alex Parker, Caludia Maios, Vinod Asundi, Kent Matlack, Verian Bader, Svenja Trossbach, Kim Staats, Justin Ichida, Lyle Ostrow, Carsten Korth, Vishwanath Lingappa, Deben Dey, Jeffrey Rosenfeld

**HCB-28 Functional interplay between TDP-43 and p62 - relevance for proteostasis in ALS**

Daniel Scott, Alice Montgomery, Neil Oldham, Mark Searle, Robert Layfield

**HCB-29 ALS-RAP: The reproducible antibody platform initiative for ALS research**

Carl Laflamme, Thomas Durcan, Susanne Gräslund, Wen Hwa Lee, Peter McPherson, Opher Gileadi



**HCB-30 Human mutations link genes with proteins and protein-protein interactions to reveal the most important canonical pathways, protein interactome domains and novel pathologies in ALS**

Ina Dervishi, Eileen Bigio, Hande Ozdinler

**HCB-31 Serum microRNA profiles identify Fragile-X-related proteins as novel neuropathological markers in amyotrophic lateral sclerosis**

Axel Freischmidt, Katharina Limm, Anand Goswami, Vitaly Zimyanin, Maria Demestre, Karlheinz Holzmann, Anika Helferich, Priyanka Tripathi, Alfred Yamoah, Peter Oefner, Tobias Böckers, Dietmar Thal, Peter Andersen, Albert Ludolph, Andreas Hermann, Joachim Weis, Jörg Reinders, Jochen Weishaupt

**HCB-32 Multiple miRNAs and proteins cascade from miR-18b to Mctp1 and Rab are involved in the pathogenesis of SOD1 mutation ALS**

Ki Yoon Kim, Yu Ri Kim, Kyung Won Choi, Young Nam Kwon, Jaeyoung Seo, Sang-Jeong Kim, Seung-Yong Seong, Jung-Joon Sung

**HCB-33 A Novel de novo ATP1A3 Mutation in Motor Neuron Disease Mimicking Rapid Onset Dystonia Parkinsonism**

Su Min Lim, Jinseok Park, Young-Eun Kim, Chang-Seok Ki, Seung Hyun Kim

**HCB-34 Synapse loss in the frontal cortex is associated with cognitive decline in amyotrophic lateral sclerosis**

Chris Henstridge, Dimitrios Sideris, Emily Carroll, Sanziana Rotariu, Sally Salomonsson, Makis Tzioras, Chris-Anne McKenzie, Colin Smith, Christine von Arnim, Albert Ludolph, Dorothee Lulle, Danielle Leighton, Jon Warner, Elaine Cleary, Judith Newton, Robert Swingler, Siddharthan Chandran, Thomas Gillingwater, Sharon Abrahams, Tara Spiers-Jones

## THEME 5

### Epidemiology and Informatics

**EPI-01 Changing epidemiology of motor neurone disease in Scotland**

Danielle Leighton, Judith Newton, Laura Stephenson, Shuna Colville, Richard Davenport, George Gorrie, Ian Morrison, Siddharthan Chandran, Suvankar Pal

**EPI-02 The MND Register for England, Wales and Northern Ireland**

Sarah Opie-Martin, Lynn Ossher, Anna Kulka, Kevin Talbot, Ammar Al-Chalabi

**EPI-03 Epidemiology of amyotrophic lateral sclerosis in Russia**

Anastasia Ataulina, Vera Fominyh, Anna Vorobieva, Rafiz Shihkerimov, Lev Brylev, Maria Zakharova, Alla Guekht, Ettore Beghi

**EPI-04 Geospatial quantification of historical exposure estimates of putative environmental risk factors for ALS**

Angeline Andrew, Walter Bradley, Elijah Stommel, Bart Guetti, Dominic Facciponte, Olivia Hunter, Patricia Henegan, Tanya Butt, Xun Shi

**EPI-05 POSTER WITHDRAWN**

**EPI-06 POSTER WITHDRAWN**

**EPI-07 Exploring Cyanobacterial Exposure as a Risk Factor for Neurodegenerative Disease in Autopsy Cases from Northern New England, USA**

Tanya Butt, Patricia Henegan, Elizaveta Maslak, Walter Bradley, William Pendlebury, Jessica Crothers, Angeline Andrew, Elijah Stommel

**EPI-08 Identifying Aerosolized Cyanobacteria as an Environmental Risk Factor for Amyotrophic Lateral Sclerosis (ALS) using Human Bronchoalveolar Lavage and Nasal Swab Specimens**

Dominic Facciponte, Matthew Bough, Darius Seidler, James Carroll, John Dessaint, Angeline Andrew, Louis Vaickus, Jacob Rau, Tanya Butt, Elijah Stommel

**EPI-09 Is exposure to mercury a risk factor for ALS? Analysis of results from an international online case-control study**

Jane Parkin Kullmann, Roger Pamphlett

**EPI-10 Antibiotics Use and Risk of Amyotrophic Lateral Sclerosis: a Nationwide Population-Based Nested Case-Control Study**

Jiangwei Sun, Daniela Mariosa, Henrik Larsson, Catarina Almqvist, Caroline Ingre, Ulrika Zagai, Yudi Pawitan, Fang Fang

**EPI-11 Smoking is associated with younger age of onset in Motor Neurone Disease**

Roger Mills, Alan Tennant, Carolyn Young, TONIC Study Group

**EPI-12 Investigating causality in associations between smoking and risk of ALS: a Mendelian randomisation study using methylation and genotype data**

Sarah Opie Martin, Ashley Jones, Gibran Hemani, Ahmad Al Khleifat, Alfredo Iacoangeli, George Davey-Smith, Paul Hop, Ramona Zwamborn, Eilis Hannon, Jonathan Mill, Leonard van den Berg, Jan Veldink, Ammar Al-Chalabi, The Project MinE Consortium

**EPI-13 Physical activity and Amyotrophic Lateral Sclerosis: a UK case control study**

Mohamed Oumar, Sarah Opie-Martin, Puja Mehta, Ton Fang, Anna Kulka, Christopher Shaw, Neil Pearce, Karen Morrison, Ammar Al-Chalabi

**EPI-14 The Role of Exercise in the Development of Motor Neurone Disease Relating to G4C2 Repeat Expansion of C9orf72**

Nicholas Glasgow, Alexander Barry, Jonathan Cooper Knock, Ceryl Harwood, Soren Brage, Martin Turner, Kevin Talbot, Channa Hewamadduma, Thomas Jenkins, Christopher McDermott, Pamela Shaw

**EPI-15 C9orf72 expansion is associated with accelerated decline of respiratory function and decreased survival in amyotrophic lateral sclerosis**

Gabriel Miltenberger Miltenyi, Vasco Conceição, Marta Gromicho, Ana Pronto-Laborinho, Susana Pinto, Mamede de Carvalho

**EPI-16 Identification of A4V SOD1 mutation in a Spanish family with the A4V sharing the founder haplotype observed in European SOD1-A4V patients**

Cecilia Garcia, Jose Manuel Vidal-Taboada, Maria Salvado, Josep Gamez

**EPI-17 Natural history and survival relevance of ALS/MND in different phenotypes – data from a hospital-based registry**

Qianqian Wei, yongping Chen, Xueping Chen, Bei Cao, Ruwei Ou, lingyu zhang, yanbing hou, Huifang Shang

**EPI-18 POSTER WITHDRAWN**

**EPI-19 Mitochondriomics analysis in a subset of ALS patients from the National ALS Registry**

Diana Garofalo, Wendy Kaye, Kasey Brennan, Diane Re, Andrea Bacarelli, Marianthi Anna Kioumourtzoglou, Hiroshi Mitsumoto, Paul Mehta, Jamie Raymond, Pam Factor-Litvak

**EPI-20 Comparison of Mortality Rates: United States vs. the National ALS Registry, 2011–2014**

Ted Larson, Jessica Cohen, Paul Mehta, Kevin Horton

**EPI-21 Big Data Analytics for Early Diagnosis of Amyotrophic Lateral Sclerosis**

Tara Grabowsky, Christopher Miller, Oodaye Shukla, Manjula Kasoji, Ronald Payne, Charlotte Merrill, Wendy Agnese, Nazem Atassi

**EPI-22 POSTER WITHDRAWN**

**EPI-23 Validation of a Suite of Machine Learning Models using the Longitudinal VITALITY-ALS Data Set**

Danielle Beaulieu, Jonavella Cuerdo, Albert Taylor, Amy Bian, Lisa Meng, Andrew Wolff, David Ennis

**EPI-24 Global Patient Ecosystem: from Patient Identification to Data Visualization and Analyses to Distribution**

Alexander Sherman, Igor Katsovskiy, Olga Kharakozova, Alexander Korin, Amanda Podesta, Ervin Sinani, Prasha Vigneswaran, Yusra Wahab, Jason Walker, Merit Cudkowicz

**EPI-25 Longitudinal data collection of combined clinic cohorts for improved understanding of ALS natural history**

Ximena Arcila, Kim Goslin, Scott Vota, Alexander Sherman, Eric Macklin, Ervin Sinani, Hong Yu, Tamela Stuchiner, Tamika Walthour, Daniel Newman, Kara Steijlen, Ghazala Hayat, Jacqueline Jones, Lucia Alvarado, Ken Faulconer, James Wymer, Nicholas Olney, Megan Somers, Valerie Ferment, David Walk

**EPI-26 World Health Organisation Disability Assessment Schedule (WHODAS-2.0) in MND/ALS**

Eleanor James, Roger Mills, Alan Tennant, Carolyn Young, TONIC Study group

**EPI-27 Risk factors for depression in Motor Neurone Disease**

Daniela Schlüter, Giuseppina Miele, Roger Mills, Carolyn Young, TONIC Study Group

**EPI-28 Neuropathic pain in ALS/MND**

Zoe Syrimi, Roger Mills, Carolyn Young, TONIC Study Group

**EPI-29 Updated Results From a US-Focused Online Survey of Patient and Caregiver Perspectives on Disease Burden in ALS**

Amy Laverdiere, Bonnie Charpentier, Jennifer Petrillo, Kristina Bowyer, James Berry, John Bridges, Madeline Kennedy, Brian Kennedy, Zachary Simmons, John Ravits, Richard Bedlack, Miriam Galvin, Orla Hardiman, Calaneet Balas, Allison Martin, David Zook, James Valentine, Lucie Bruijn

**EPI-30 Concurrence between amyotrophic lateral sclerosis and polymyositis, myasthenia gravis, Guillain-Barré syndrome, and multiple sclerosis – a medical records review study**

Elisa Longinetti, Olafur Sveinsson, Rayomand Press, Weimin Ye, Fredrik Piehl, Fang Fang

**EPI-31 Causes of death in a representative cohort of amyotrophic lateral sclerosis patients**

Elisa Longinetti, Virginio Bonito, Eugenio Vitelli, Ettore Beghi

**EPI-32 Increased mortality among family members of patients with ALS – a register-based epidemiological study**

Ulf Kläppe, Elisa Longinetti, Catarina Almqvist, Fang Fang, Caroline Ingre

**THEME 6**

**Tissue Biomarkers**

**BIO-01 Evaluation of Oxidative Stress (OS) and Other Biomarkers and Survival in a Large ALS Cohort Study**

Hiroshi Mitsumoto, Diana Garofalo, Regina Santella, Jonathan Hupf, Irina Gurvich, Marianthi-Anna Kioumourtzoglou, Chris Gennings, Pam Factor-Litvak

**BIO-02 Biomarkers of Glia Activation in ALS**

Lucas Vu, Jiyan An, Robert Bowser

**BIO-03 Image registration for quantitative post mortem MRI and histology comparison**

Istvan Huszar, Karla Miller, Menuka Pallegage-Gamarallage, Olaf Ansorge, Martin Turner, Benjamin Tendler, Ricarda Menke, Anna Leonte, Chaoyue Wang, Christopher Mirfin, Mattias Heinrich, Mark Jenkinson

**BIO-04 Biomarkers of inflammation and Blood Brain Barrier Dysfunction in Amyotrophic Lateral Sclerosis disease progression**

Saikat Sengupta, Beatrice Stubendorff, Robert Steinbach, Tino Prell, Otto Witte, Julian Grosskreutz

**BIO-05 Gut Microbiome Assessment in People with ALS: A Pilot Study**

Katharine Nicholson, Kjetil Bjornevik, James Chan, Galeb Abu-Ali, Ramnik Xavier, Curtis Huttenhower, Alberto Ascherio, James Berry

**BIO-06 Characterizing the contribution of chitinases to immune alterations in Amyotrophic Lateral Sclerosis**

Nayana Gaur, Caroline Perner, Florian Perner, Beatrice Stubendorff, Otto Witte, Julian Grosskreutz

**BIO-07 Serum C-Reactive Protein as a Prognostic Biomarkers in Amyotrophic Lateral Sclerosis (ALS)**

Halil Idrisoglu, Nurkan Polat, Mustafa Idrisoglu, Fatma Dervis, Emir Dervis

**BIO-08 CSF chitinase proteins as ALS biomarkers**

Alexander Thompson, Elizabeth Gray, Alexander Bampton, Dominka Raciborska, Kevin Talbot, Martin Turner

**BIO-09 Glycosphingolipid dysregulation and lysosomal dysfunction in motor neurone disease**

Carla Da Silva Santos, Mylene Huebecker, David Priestman, Frances Platt

**BIO-10 Loss of lipid homeostasis as an underlying disease mechanism in Primary Lateral Sclerosis**

Estela Area Gomez, Robin Chan, Jonathan Hupf, Pam Factor-Litvak, Hiroshi Mitsumoto, ALS/PLS COSMOS Study Group

**BIO-11 Altered erythrocyte fatty acid profile in patients with amyotrophic lateral sclerosis**

Rajna Minic, Aleksandra Arsic, Milica Kojadinovic, Ivo Bozovic, Visnja Pantic, Irena Zivkovic, Brizita Djordjevic, Zorica Stevic

**BIO-12 Pattern identification of blood analytes for the discrimination and characterization of ALS and lower MND patients a machine learning approach**

Alberto Greco, Anna Romanelli, Maria Rosa Chiesa, Ilaria Da Prato, Cristina Dolciotti, Valentina Azzollini, Gabriella Cavallini, Renata Del Carratore, Paolo Bongioanni, Maria Chiara Carboncini

**BIO-13 Exosomal content in patients with ALS compared to those with selective involvement of lower motor neuron**

Ilaria Da Prato, Renata Del Carratore, Valentina Azzollini, Cristina Dolciotti, Gabriella Cavallini, Paolo Bongioanni, Maria Chiara Carboncini

**BIO-14 Efficacy evaluation of nusinersen in an adult spinal muscular atrophy case using peripheral blood mRNA.**

Tomohiko Ishihara, Akihide Koyama, Akihiro Sugai, Osamu Onodera

**BIO-15 Cell-free DNA as a biomarker for ALS**

Barbara Celona, Fleur Garton, Christa Caggiano, Catherine Lomen-Hoerth, Robert Henderson, Pamela McCombe, Anjali Henders, Shyuan Ngo, Frederik Steyn, Naomi Wray, Noah Zaitlen

**BIO-16 A Pilot Study Evaluating the Correlations Between Mitochondrial DNA Copy Numbers in Blood, Motor Cortex and Spinal Cord**

Diana Garofalo, Wendy Kaye, Kasey Brennan, Diane Re, Andrea Baccarelli, Marianthi-Anna Kioumourtzoglou, Hiroshi Mitsumoto, Paul Mehta, Jamie Raymond, Pam Factor-Litvak

**BIO-17 MicroRNA profiling in cerebrospinal fluid in a cohort of Brazilian Amyotrophic Lateral Sclerosis patients**

Felipe Busser, Frederico Jorge, Fatima Pasisni, Ida Fortini, Gerson Chadi

**BIO-18 ALS, FTD, AD and PD: RNA in extracellular vesicles as neurodegenerative biomarker**

Daisy Sproviero, Stella Gagliardi, Susanna Zucca, Marta Giannini, Jessica Garau, Maddalena Arigoni, Raffaele Calogero, Orietta Pansarasa, Cristina Cereda

**BIO-19 Muscle-related enzymes in amyotrophic lateral sclerosis**

Xueping Chen, Huifang Shang

**BIO-20 Clinical disease stage related changes of serological factors in amyotrophic lateral sclerosis**

Xueping Chen, Huifang Shang

**BIO-21 Relationship between serum creatinine, creatine kinase level and skeletal muscle mass in patients with amyotrophic lateral sclerosis**

Hongfei Tai, Liying Cui, Wei Yu, Mingsheng Liu, Xiaoguang Li, Wenmin Guan, Shuangwu Liu, Kang Zhang

**BIO-22 A multi-centre study of neurofilament assay reliability and inter-laboratory variability**

Elizabeth Gray, Patrick Oeckl, Kaj Blennow, Maria Del Mar Amador, Jens Kuhle, Foudil Lamari, Andrea Malaspina, Koen Poesen, Francois Salachas, Charlotte Teunissen, Henrik Zetterberg, Albert Ludolph, Andreas Jeromin, Martin Turner, Markus Otto

**BIO-23 Autoantibodies against axonal proteins as biomarkers and therapeutic targets in Amyotrophic Lateral Sclerosis**

Fabiola Puentes, Ozlem Yildiz, Chingua Lu, Joanne Wu, Michael Benatar, Andrea Malaspina

**BIO-24 Natural course of neurofilament light in patients with amyotrophic lateral sclerosis appears not to be stable in subgroup analysis: a register-based longitudinal study in Sweden**

Ulf Kläppe, Yiqiang Zhan, Kristin Samuelsson, Rayomand Press, Fang Fang, Caroline Ingre

**BIO-25 Plasma neurofilament heavy chain levels predict clinical course in a large ALS clinical trial population**

Satish Eraly, Steve Han, Dawei Liu, Sai Thankamony, Shawn Ciotti, Toby Ferguson

**BIO-26 Wild-type SOD1 is misfolded in cerebrospinal fluid of sporadic ALS**

Yoshiaki Furukawa, Eiichi Tokuda, Shinji Ohara, Noriko Fujiwara

**BIO-27 Elevated troponin t levels in patients with amyotrophic lateral sclerosis**

Emir Dervis, Halil Idrisoglu, Nurkan Polat, Fatma Idrisoglu, Mustafa Idrisoglu

**BIO-28 Elemental Redistribution of Copper, Iron and Zinc in the Motor Neurone Disease CNS**

Kai Kysenius, Bence Paul, Dominic Hare, Peter Crouch

**BIO-29 Preclinical in vivo Raman spectroscopy: Shining light on muscle in motor neurone disease**

Maria Plesia, Oliver Stevens, Gavin Lloyd, Ian Coldicott, Aneurin Kennerley, Gaynor Miller,

Christopher McDermott, Pamela Shaw, Catherine Kendall, Richard Mead, John Day, James Alix

## THEME 7

### Pre-Clinical Therapeutic Strategies

#### TST-01 Variation of Gut Microbiome Rescues ALS Phenotypes Through Fatty Acid Metabolism

Audrey Labarre, Ericka Guitard, Alex Parler

#### TST-02 Ligand-mediated stabilization of the native hSOD1 conformation – an ALS treatment strategy

Karoline Santur, Jeannine Mohrlüder, Dieter Willbold

#### TST-03 Characterization of the SOD1-G93A mouse model of Amyotrophic lateral sclerosis and a promising treatment for the disease

Sara Figuerola Santamónica, Francesca De Lorenzo, Michael Sendtner, Mart Saarna, merja Voutilainen

#### TST-04 Retinoid activating nanoparticles increase lifespan and reduce neurodegeneration in the SOD1G93A mouse model of ALS

David Medina, Eugene Chung, Collin Teague, Rachael Sirianni, Robert Bowser

#### TST-05 Liraglutide shows no effect on disease progression in SOD1G93A and TDP-43Q331K transgenic mouse models of motor neurone disease (MND)

Amy Keerie, James Alix, Ahmed Iqbal, Christian Hölscher, Richard Mead

#### TST-06 Gene therapy approaches for familial ALS

Marisa Cappella, Mathilde Cohen-Tannoudji, Thibaut Marais, Stéphanie Astord, Aurore Besse, Benoit Giroux, Cynthia Lefebvre, Delphine Bohl, Martine Barkats, Maria Grazia Biferi

#### TST-07 Chronic Systemic Treatment with a Muscarinic Antagonist Improves Neuromuscular Function at the NMJ in an ALS Mouse Model

Elsa Tremblay, Danielle Arbour, Richard Robitaille

#### TST-08 Therapeutic potential of the Coronavirus X protein and X-derived peptide in Amyotrophic Lateral Sclerosis

Stéphanie Chevallier, Claire Leger, Jean-Marie Cabelguen, Benoît Delignat Lavaud, Paul Irubetagoiena, Manon Faraldi, Clément Jourdain, Bernard Klonjowski, Daniel Gonzalez-Dunia, Marion Szelechowski, Stéphane Oliet, Gwendal Le Masson

#### TST-09 Continuous administration of CDFN in a model of Amyotrophic Lateral Sclerosis

Francesca De Lorenzo, Mart Saarna, Merja Voutilainen

#### TST-10 Inhibition of exosome secretion by GW4869 improves the locomotor function in mutant SOD1 mice

Nirma Perera, Doris Tomas, Laura Vella, Brad Turner

#### TST-11 Immunogenes for targeted neurotrophic factor gene delivery to motor neurons *in vivo*

Courtney Subramaniam, Zachary Willson, Ur Saragovi, Mouna Haidar, Bradley Turner, Mary Louise Rogers

#### TST-12 Using a novel molecular chaperone to reduce toxic proteins in ALS model systems

Stephanie Santarriaga, Emily Seminary, Eric Clark, Dominic Fee, Paul Barkhaus, Brian Link, Allison Ebert, Matthew Scaglione

#### TST-13 Diseased cortex communicates via exosomes in ALS

Mukesh Gautam, Hande Ozdinler

#### TST-14

#### Treatment of the SOD1G93A transgenic mouse model of amyotrophic lateral sclerosis (ALS) with an all-D-enantiomeric peptide

Julia Post Schulz, Antje Willuweit, Karl-Josef Langen, Janine Kutzsche, Dieter Willbold

#### TST-15 Adipose Derived Stem Cells for cell therapy of Motor Neuron Disease

Yuri Ciervo, Laura Ferraiuolo, Monika Myszczyńska, Chloe Allen, Ke Ning, Jun Xu, Pamela Shaw, Richard Mead

#### TST-16 Liposome-mediated uptake of H-ferritin improves outcomes in the SOD1G93A mouse model of ALS

Amanda Snyder, A Madhankumar, Elizabeth Neely, Russell Payne, Oliver Mrowczynski, Elias Rizk, Olivia Hess, Zachary Simmons, James Connor

#### TST-17 A miRNA-based Gene Therapy Approach to Target Mutated SOD1 in Key Cell Types in Amyotrophic Lateral Sclerosis (ALS)

Valérie Vilmont, Julianne Aebischer, Cylia Rochat, Bernard Schneider

#### TST-18 Assessing the Neuroprotective Effects of Cromolyn Sodium in the SOD1G93A Mouse Model of Amyotrophic Lateral Sclerosis

Eric Granucci, Kaly Mueller, Ana Griciuc, Hoang Le, Amanda Dios, Sabrina Paganoni, James Berry, Merit Cudkowicz, David Elmaleh, Rudolph Tanzi, Ghazaleh Sadri Vakili

#### TST-19 A peptide-directed knockdown of misfolded SOD1 as a therapy for ALS

Jiming Kong, Teng Guan

#### TST-20 MRI/PET traceable microglia-targeted nanovectors: a new potential theranostic platform for tracking and modulating neuroinflammation in Amyotrophic Lateral Sclerosis

Renato Auriemma, Umberto Capasso Palmiero, Mattia Sponchioni, Tyler Mathews, Javier Molina Estevez, Simone Gatti, Letterio Politi, Alessandra Biffi, Davide Moscatelli, Marco Peviani

#### TST-21 Neuromuscular cellular targets of tyrosine kinase inhibitors in ALS patients and SOD1G93A rats

Emiliano Trias, Peter King, Ying Si, Yuri Kwon, Valentina Varela, Sofia Ibarburu, Mariángeles Kovacs, Ivan Moura, Olivier Hermine, Joseph Beckman, Luis Barbeito

#### TST-22 Stimulation of mTOR-independent autophagy amplifies TDP-43 pathology and disease progression in a bi-transgenic TDP-43 mouse model of ALS

Nirma Perera, Doris Tomas, Nayomi Wanniarachchilage, Chris Bye, Brad Turner

#### TST-23 Gamma-carbolines slow progression of pathology in FUS transgenic mice

Valeria Goloborsheva, Tamara Ivanova, Kirill Chaprov, Pavel Mazin, Sergey Bachurin, Natalia Ninkina, Vladimir Buchman

#### TST-24 Synaptotagmin 13 protects motor neurons from degeneration in ALS and SMA

Monica Nizzardo, Federica Rizzo, Michela Taiana, Julio Aguila Benitez, Jik Nijssen, Ilary Allodi, Nereo Bresolin, Giacomo Comi, Eva Hedlund, Stefania Corti

#### TST-25 A combination of acamprosate and baclofen (PXT864) as a potential new therapy for amyotrophic lateral sclerosis

Lydie Boussicault, Julien Laffaire, Philippe Rinaudo, Serguei Nabirovitchkin, Nathalie Cholet, Rodolphe Hajji, Daniel Cohen

#### TST-26 AMPA receptor-specific RNA aptamers rescued ALS phenotype in conditional ADAR2 knockout mice

Megumi Akamatsu, Takenari Yamashita, Sayaka Teramoto, Zhen Huang, Li Niu, Shin Kwak

#### TST-27 Cannabinoids enhance nerve-evoked muscle contraction in an *ex vivo* model of neuromuscular weakness

Anna Sanchez Avila, Shakil Khan, Jamie Fogarty, Lydia Johnston, Roger Pertwee, Guy Bewick

#### TST-28 Effects of cannabinoid in Amyotrophic Lateral Sclerosis (ALS) or Motor Neurone Disease (MND): A pre-clinical systematic review and meta-analysis

Berzenn Urbi, Maame Amma Owusu, Ian Fraser, Matthew Katz, Arman Sabet

#### TST-29 Perturbations to copper and cuproenzyme functionality are a significant, treatable feature of sporadic MND

James Hilton, Kai Kysenius, Carsten Rautengarten, Stephen Mercer, Catriona McLean, Dominic Hare, Blaine Roberts, Anthony White, Peter Crouch

#### TST-30 Disrupted copper availability in sporadic motor neurone disease promotes ferroptotic stress and toxic glial activation

James Hilton, Jeffrey Liddell, Kai Kysenius, Stephen Mercer, Catriona McLean, Dominic Hare, Blaine Roberts, Paul Donnelly, Anthony White, Ashely Bush, Peter Crouch

#### TST-31 Cull1(ATS1) potentially inhibits neuronal ferroptosis: implications for pathogenesis in MND

Adam Southon, Abdel Belaidi, Scott Ayton, Joseph Beckman, Peter Crouch, Ashley Bush

#### TST-32 Human antibodies engage intraneuronal C9ORF72 dipeptide repeat proteins

Kevin Meyer, Nicole Cavegn, Petra Bortner, Roger Nitsch, Fabio Montrasio, Jan Grimm

#### TST-33 Neurogenic niche activity: Modulation by targeting TGFβ-RII

Sebastian Peters, Eva Wirkert, Sabrina Kuespert, Rosmarie Heydn, Ludwig Aigner, Tim-Henrik Bruun, Ulrich Bogdahn

**TST-34 The effect of Timolol on Sialorrhea in Amyotrophic Lateral Sclerosis (ALS) patients (a pilot study)**

Halil Idrisoglu, Nurkan Polat, Emir Dervis, Fatma Dervis, Mustafa Idrisoglu

**TST-35 Retigabine Trials in Amyotrophic Lateral Sclerosis (ALS) Patients**

Halil Idrisoglu, Nurkan Polat, Fatma Dervis, Emir Dervis, Mustafa Idrisoglu

**TST-36 The ALS Target Validation Initiative – academic-industry guidelines for advancing ALS translational research**

Neta Zach, Ammar Al Chalabi, Robert Bowser, Adriano Chio, Toby Ferguson, Opher Giladi, Linda Greensmith, Orla Hardiman, Justin Ichida, Joseph Lewcock, Michael O'Neill, Ian Reynolds, Jill Richardson, Pamela Shaw, Leonard van den Berg, Lee Wenhwa, Lucie Bruijn, John Landers

**THEME 8**

**Clinical Imaging and Electrophysiology**

**IMG-01 Assessing EEG-EMG Coherence Patterns in Motor Neuron Disease**

Amina Coffey, Teresa Buxo, Antonio Fasano, Stefan Dukic, Roisin McMackin, Mark Heverin, Madeleine Lowery, Richard Carson, Edmund Lalor, Bahman Nasseroleslami, Orla Hardiman

**IMG-02 Impaired horizontal saccades in juvenile onset ALS with FUS mutation**

Mark Ross, Benn Smith

**IMG-03 Differences in size of EMG-detected fasciculation potentials between muscles with and without US-detected fasciculations in ALS**

Kota Bokuda, Toshio Shimizu, Ryo Morishima, Hideki Kimura, Tsutomu Kamiyama, Yuki Nakayama, Akihiro Kawata, Eiji Isozaki

**IMG-04 Ultrasonography versus electroneuromyography for the diagnosis of fasciculation in ALS a systematic review**

Márcio Duarte, Wagner Iared, Acary Oliveira, Lucas Santos, Maria Peccin

**IMG-05 Introducing a novel tool to assess fasciculation potentials in motor neuron disease**

James Bashford, Aidan Wickham, Emmanuel Drakakis, Martyn Boutelle, Kerry Mills, Chris Shaw

**IMG-06 Peripheral Neuropathy in ALS: prevalence and risk factors**

Mamede De Carvalho, Susana Pinto, Peter Andersen, Julian Grosskreutz, Magdalena Kuźma-Kozakiewicz, Susanne Petri, Hilmi Uysal, Marta Gromicho

**IMG-07 Cutaneous silent periods in patients with early-stage ALS**

Joel Gutierrez, Rachel Perez-Lalana, Tatiana Zaldivar, Gloria Lara, Asdrubal Arias, Yodeisy Ferrer, Orla Hardiman

**IMG-08 Looking for an early fatigue marker in mnd patients by means of dynamic linear electric impedance myography**

Silvia Corbianco, Marco Dini, Paolo Bongioanni, Maria Chiara Carboncini

**IMG-09 Laryngeal electromyography in patients with amyotrophic lateral sclerosis als preliminary results**

Melina Martins, Tauana Leoni, Agrício Crespo, Paulo Kimaid, Anamarli Nucci, Marcondes França Jr

**IMG-10 A novel impedance spectroscopy for the assessment of tongue musculature in ALS**

Harry Mc Donough, Buket Sonbas, Sophie French, Parham Aram, D Rao, Christopher McDermott, Pamela Shaw, Visakan Kadiramanathan, T Healey, James Alix

**IMG-11 The Motor Neuron Number Index (MUNIX) profile of patients with adult forms of Spinal Muscular Atrophy (SMA)**

Giorgia Querin, Jean-Yves Hogrel, Rabab Debs, Véronique Marchand-Pauvert, Peter Bede, Timothée Lenglet

**IMG-12 Thoracic segment denervation predicts the need for early ventilation in MND: Are we picking up early signs of respiratory impairment?**

Desiree Yen, Suresh Chhetri, Godwin Lekwuwa

**IMG-13 Functional connectivity in ALS using EEG source analysis**

Stefan Dukic, Roisin Mc Mackin, Teresa Buxo, Christina Schuster, Mark Heverin, Peter Bede, Muthuraman Muthuraman, Bahman Nasseroleslami, Edmund Lalor, Orla Hardiman

**IMG-14 Vital staining of human NMJs with non-toxic tetanus toxin derivatives**

Cornelia Roesl, Ross Jones, Molly Scott, Guy Allan, Kosala Dissanayake, Robert Chou, Thomas Gillingwater, Paul Skehel, Richard Ribchester

**IMG-15 Image and Neurophysiological findings in amyotrophic lateral sclerosis**

Barbara Hernandez

**IMG-16 Regional dynamics of the resting brain in amyotrophic lateral sclerosis**

Ana Bueno, Walter Pinaya, Keila Rebello, Leonardo de Souza, Michael Hornberger, João Sato

**IMG-17 The Canadian ALS Neuroimaging Consortium (CALSNIC)**

Sanjay Kalra, Christian Beaulieu, Michael Benatar, Hannah Briemberg, Annie Dionne, Nicolas Dupre, Dean Eurich, Richard Frayne, Angela Genge, Simon Graham, Christopher Hanstock, Abdullah Ishaque, Julia Keith, Lawrence Korngut, Dennell Mah, Christen Shoosmith, Ojas Srivastava, Brian Steele, Alan Wilman, Herbert Yang, Yana Yunusova, Lorne Zinman

**IMG-18 Texture analysis as a tool to detect corticospinal tract degeneration from T1-weighted magnetic resonance images**

Abdullah Ishaque, Dennell Mah, Peter Seres, Collin Luk, Wendy Johnston, Sneha Chenji, Christian Beaulieu, Yee Yang, Sanjay Kalra

**IMG-19 Early involvement of insula cortex in ALS: Insights from Event-Based Modelling**

Matt Gabel, Martin Gorges, Mara Cercignani, Albert Ludolph, P Nigel Leigh, Jan Kassubek

**IMG-20 Accounting for motion during structural MRI improves sensitivity for detecting local cortical thickness differences between ALS-FTD**

Matthew Tisdall, Nikolas Kinney, Laura Hennessy, Daniel Wakeman, Lauren Elman, Leo McCluskey, David Irwin, Murray Grossman, Corey Mc Millan

**IMG-21 Longitudinal MRI supports a spectrum of disease progression in ALS and ALS-FTD**

Pilar M Ferraro, Christopher A. Olm, Katerina Placek, Laura Hennessy, Lauren Elman, Leo McCluskey, David J Irwin, Murray Grossman, Corey T McMillan

**IMG-22 In vivo staging of cortical atrophy in ALS. Does the neurodegenerative process begin in motor cortex?**

Monica Consonni, Eleonora Dalla Bella, Valeria Contarino, Giuseppe Lauria

**IMG-23 Investigating directionality of neurodegeneration in vivo in ALS using multimodal MRI**

Charmaine Toh, Andrew Keslake, Nigel Hoggard, Julia Bigley, Christopher McDermott, Pamela Shaw, Iain Wilkinsn, Thomas Jenkins

**IMG-24 Analysis of hypothalamic volumetric changes in patients with Amyotrophic Lateral Sclerosis**

Ana Luisa Hernández, Marcondes França Jr, Thiago de Rezende, Lucas Branco

**IMG-25 Characterising occipital lobe pathology in ALS using individual patient analyses: the quest for a “posterior” phenotype**

Rangaroiyashe Chipika, Eoin Finegan, Orla Hardiman, Peter Bede

**IMG-26 Altered functional connectivity in early stage of ALS patients: A resting-state fMRI study**

Qianqian Wei, Yanbing Hou, Huifang Shang

**IMG-27 Diffusion tensor imaging detects brain pathology in canine degenerative myelopathy**

Melissa Lewis, James Holland, Jeremy Shopper, Baye Williamson, Daniella Vansteenkiste, Katherine Bibi, Stephanie Lim, Janice Robertson, Joan Coates

**IMG-28 Structural grey-and white matter pathology in ALS correlates with the D50 disease progression model: insights from VBM and TBSS studies**

Robert Steinbach, Annika Voss, Meerim Batyrbekova, Tino Prell, Annkathrin Rödiger, Benjamin Ilse, Anne Gunkel, Beatrice Stübendorff, Thomas Mayer, Otto Witte, Julian Grosskreutz

**IMG-29 Cerebellar involvement in hereditary spastic paraplegias**

Katiane Servalhere, Raphael Casseb, Thiago de Rezende, Camila Piccinin, Marcondes França Junior

**IMG-30 Widespread Brain Changes Differentiated by Graph Theory Network Analysis in UMN-predominant ALS Patients With and Without Corticospinal Tract Hyperintensity**

Venkateswaran Rajagopalan, Erik Pioro

**IMG-31 Quantitative analysis of fluid-attenuated inversion recovery (FLAIR) MRI data of ALS patients by the Lesion Segmentation Toolbox (LST)**

Anna Wirth, Andrei Khomenko, Dobri Baldaranov, Siw Johannesen, Tim-Henrik Bruun, Mark Greenlee, Ulrich Bogdahn

**IMG-32 Relationships between Neurite Orientation Dispersion and Density Magnetic Resonance Imaging (NODDI) and Resting State Functional MRI (rsfMRI) Networks in Amyotrophic Lateral Sclerosis**

Andrew Barritt, Rebecca Broad, Charlotte Rae, Nigel Leigh, Mara Cercignani

**IMG-33 Interplay between spinal cord and cerebral cortex metabolism in amyotrophic lateral sclerosis**

Cecilia Marini, Silvia Morbelli, Angelina Cistaro, Cristina Campi, Claudia Caponnetto, Corrado Cabona, Matteo Bauckneht, Alessandro Bellini, Ambra Buschiazzo, Iolanda Calamia, Mauro Beltrametti, Simone Margotti, Piercarlo Fania, Ilaria Poggi, Selene Capitanio, Roberta Piva, Andrea Calvo, Cristina Moglia, Antonio Canosa, Annamaria Massone, Flavio Nobili, Gianluigi Mancardi, Adriano Chiò, Michele Piana, Gianmario Sambucetti

**IMG-34 The spinal and cerebral profile of adult spinal-muscular atrophy: a multimodal imaging study**

Giorgia Querin, Mohamed Mounir El Mendili, Timothée Lenglet, Rabab Debs, Véronique Marchand-Pauvert, Jean-Yves Hogrel, Peter Bede, Pierre-François Pradat

**IMG-35 Resting state fMRI is an inappropriate method to distinguish different cognitive states in non-demented ALS-patients**

Charlotte Buettner, Martin Dyrba, Elisabeth Kasper, Christina Schuster, Judith Machts, Daniel Bittner, Jörn Kaufmann, Stefan Vielhaber, Stefan Teipel, Johannes Prudlo

**IMG-36 VAPB-Related and sporadic ALS have distinct patterns of brain damage**

Tauana Leoni, Thiago Junqueira, Melina Pazian, Antonio Coimbra Neto, Paula Rabello, Marcondes França Junior

**IMG-37 Towards the in vivo determination of PNS immune activity in ALS – an ultrasound study**

Stefanie Schreiber, Frank Schreiber, Cornelia Garz, Grazyna Debska-Vielhaber, Susanne Abdulla, Judith Machts, Stefan Vielhaber

**THEME 9**

**Clinical Trials and Trial Design**

**CLT-01 A Systematic Review of Enrichment Strategies for Current Clinical Trials in ALS**

Namita Goyal, Merit Cudkowicz, James Berry, Katherine Nicholson, Robert Brown, Anthony Windebank, Nathan Staff, Robert Miller, Jonathan Katz, Liberty Jenkins, Robert Baloh, Ralph Kern, Yael Gothelf, Chaim Lebovits, Kevin Ryder

**CLT-02 The NEALS Consortium – a Collaborative Research Organization**

Tara Lincoln, Carly Allen

**CLT-03 The United States National Amyotrophic Lateral Sclerosis (ALS) Registry Provides Comprehensive Recruitment Assistance for Clinical Trials**

Paul Mehta, Ted Larson, Kevin Horton

**CLT-04 Correlation between Slow Vital Capacity Measured in the Home and in the Clinic for Patients with Amyotrophic Lateral Sclerosis**

Lisa Meng, Stacy Rudnicki, Bettina Cockroft, Andrew Wolff, Fady Malik, Jeremy Shefner

**CLT-05 Non-Invasive ventilation use in patients enrolled in VITALITY-ALS**

Stacy Rudnicki, Bettina Cockroft, Fady Malik, Lisa Meng, Andrew Wolff, Jeremy Shefner

**CLT-06 Can you validly use a total ALSFRS-R score? A Rasch analysis to provide interval scale estimates**

Carolyn Young, Jessica Paris-Davies, Roger Mills, Alan Tennant, TONIC study group

**CLT-07 Sit to Stand (STS) Vs. Stair climbing (SC) as a Measure of Lower Extremity (LE) Function in Ambulatory patients with Amyotrophic sclerosis (ambALS)**

Mohammed Sanjak, Scott Holsten, Enayet Raheem, Nigel Rozario, Elena Bravver, William Bockenek, Benjamin Brooks

**CLT-08 Study 201283: An Exploratory Study to Investigate the Use of Biotelemetry to Identify Markers of Disease Progression in Subjects with Amyotrophic Lateral Sclerosis –Physical Activity and Movement Data**

Madeline Kelly, Arseniy Lavrov, Luis Garcia Gancedo, Jim Parr, Rob Hart, Theresa Chiwera, Chris Shaw, Ammar Al Chalabi, Rachael Marsden, Martin Turner, Kevin Talbot

**CLT-09 Study 201283: An Exploratory Study to Investigate the Use of Biotelemetry to Identify Markers of Disease Progression in Subjects with Amyotrophic Lateral Sclerosis –Feasibility Data**

Luis Garcia Gancedo, Madeline Kelly, Arseniy Lavrov, Jim Parr, Rob Hart, Theresa Chiwera, Chris Shaw, Ammar Al Chalabi, Rachael Marsden, Martin Turner, Kevin Talbot

**CLT-10 Study 201283: An Exploratory Study to Investigate the Use of Biotelemetry to Identify Markers of Disease Progression in Subjects with Amyotrophic Lateral Sclerosis –Heart Rate Variability and Speech Data**

Arseniy Lavrov, Madeline Kelly, Luis Garcia Gancedo, Jim Parr, Rob Hart, Theresa Chiwera, Chris Shaw, Ammar Al Chalabi, Rachael Marsden, Martin Turner, Kevin Talbot

**CLT-11 A Patient-Centric Motor Neuron Disease Activities of Daily Living Scale (PADL-ALS)**

Jeffrey Statland, Alex Karanevich, Laura Herbelin, Kristina Bowles, Callyn Kirk, Richard Barohn, Michael Benatar, CREATe Investigators

**CLT-12 Feasibility and Validation of the Modified Oculobulbar Facial Respiratory Score (mOBFRS) in Amyotrophic Lateral Sclerosis**

Marie Wencel, Nadia Araujo, Eileen Medina, Danh Nguyen, Lishi Zhang, Tahseen Mozaffar, Namita Goyal

**CLT-13 Radicava® (edaravone) for Amyotrophic Lateral Sclerosis: New formulation and its development plan**

Koji Takei, Yoshinobu Nakamaru, Masae Kakubari, Makoto Akimoto, Manabu Hirai, Joseph Palumbo

**CLT-14 Radicava® (edaravone) for Amyotrophic Lateral Sclerosis: Progress on Postmarketing Requirements and Commitments**

Heeyoung Park, Laura Bower, Koji Takei, Steve Apple, Wendy Agnese, Joseph Palumbo

**CLT-15 The effect of riluzole on the different clinical stages in ALS**

Adriaan Jongh, Ruben Eijk, Susan Peters, Roel Vermeulen, Leonard Berg

**CLT-16 Long term efficacy of edaravone for ALS**

Hiide Yoshino

**CLT-17 Results from the EPI-589 safety and pharmacology trial in ALS patients**

Matthew Klein, Jonathan Katz, Robert Baloh, Kimberly Goslin, Richard Lewis, Dallas Forshew, Peggy Allred, Arlena Cummings, Robert Miller

**CLT-18 Safety and Clinical Effects of two intrathecal infusions of Mesenchymal Stem Cells in Amyotrophic Lateral Sclerosis: Preliminary results of a Phase 1/2 Clinical Trial in a Cohort of Brazilian patients**

Gerson Chadi, Frederico Jorge, Dagoberto Callegari, Felipe Busser, Paulo Brofman, Alexandra Senegaglia, Carmen Rebelatto, Débora Daga, Giuseppe Palmisano

**CLT-19 Intraspinal transplantation of the adipose tissue-derived regenerative cells in amyotrophic lateral sclerosis – preclinical and clinical outcome**

Magdalena Kuzma Kozakiewicz, Andrzej Marchel, Anna Kaminska, Malgorzata Gawel, Jan Sznajder, Anna Figiel-Dabrowska, Edyta Maj, Arkadiusz Nowak, Natalia Krzesniak, Bartłomiej Noszczyk, Krystyna Domanska-Janik, Anna Sarnowska

**CLT-20 Clinical features and effect of erythropoietin in spinal and bulbar muscular atrophy (SBMA)**

Sanggon Lee, Pyung Kang Park, Jinseok Park, Kiwook Oh, Seung Hyun Kim

**CLT-21 A Phase 2 Trial of Ezogabine on Neuronal Excitability in Amyotrophic Lateral Sclerosis**

Brian Wainger, Eric Macklin, Steve Vucic, Courtney McIllduff, Sabrina Paganoni, Nicholas Maragakis, Richard Bedlack, Seward Rutkove, Namita Goyal, Dale Lange, Michael Rivner, Bjorn Oskarsson, Stephen Goutman, Zachary Simmons, Robert Baloh, Shafeeq Ladha, Joan Camprodon, William David, Jeremy Shefner, Nazem Atassi, Merit Cudkowicz

**CLT-22 Impact of Time Since Diagnosis on Response to Tirasemtiv, a Fast Skeletal Muscle Troponin Activator, in Patients With Amyotrophic Lateral Sclerosis: a Subgroup Analysis of VITALITY-ALS**

Andrew Wolff, Bettina Cockroft, Fady Malik, Lisa Meng, Stacy Rudnicki, Jeremy Shefner

**CLT-23 POSTER WITHDRAWN**

**CLT-24 Update on FORTITUDE-ALS: a Phase 2, Double-Blind, Randomized, Placebo-Controlled Study to Evaluate Efficacy, Safety and Tolerability of Reldesemtiv in Patients with Amyotrophic Lateral Sclerosis**

Jeremy Shefner, Jinsy Andrews, Angela Genge, Carlyne Jackson, Noah Lechtzin, Timothy Miller, Bettina Cockroft, Fady Malik, Andrew Wolff, Stacy Rudnicki

**CLT-25 Oral levosimendan in ALS: the REFALS phase 3 study design**

Merit Cudkowicz, Angela Genge, Nicholas Maragakis, Susanne Petri, Leonard van den Berg, Valterri Aho, Chris Garratt, Toni Saraphoja, Ammar Al-Chalabi

**CLT-26 Modification of ALS Disease Progression in a Phase 1 Trial of CuATSM**

Dominic Rowe, Susan Mathers, Georgia Smith, Emma Windebank, Mary-Louise Rogers, Kay Noel, Craig Rosenfeld

**THEME 10**

**Disease Stratification and Phenotyping**

**DSP-01 Beyond known genes: the relevance of detailed family histories**

Marie Ryan, Emmet Costello, Michaela Hammond, Nicola Davis, Katie Nolan, Susan Byrne, Margaret O'Brien, Mark Heverin, Russell McLaughlin, Niall Pender, Orla Hardiman

**DSP-02 Intermediate-length ataxin-2 polyglutamine repeats are associated with disease phenotype in ALS**

Alice Harrison, Vivianna Van Deerlin, Rosa Rademakers, Laura Hennessy, Kaylee Faulkner, Ralph Perkerson, Matthew Baker, David Irwin, Murray Grossman, Leo McCluskey, Lauren Elman, Marielle Wallace, Joanne Wu, Michael Benatar, Corey Mc Millan, CReATe Consortium

**DSP-03 Characterisation of an ALS patient with a novel TBK1 mutation: demonstration of coexistent risk factors and an extreme disease phenotype**

Pamela McCombe, Shyuan Ngo, Christine Guo, Amir Fazlollahi, Saskia Bollmann, Liting Wang, Hu Xintao, Markus Barth, Olivier Salvado, Mark Davis, Amelia Cesis, Gail Robinson, Robert Henderson, Frederik Steyn

**DSP-04 Protein signatures help differentiate site-specific onset and mode of disease progression in Italian ALS patients**

Szymon Filip, Tori Sosnowski, Young Goo, Renata Del Carratore, Halil Idrisoglu, Paolo Bongioanni, Hande Ozdinler

**DSP-05 Longitudinal studies reveal serum protein dynamics in ALS patients with prominent upper motor neuron involvement**

Halil Idrisoglu, Szymon Filip, Nurkan Polat, Tori Sosnowski, Young Goo, Hande Ozdinler

**DSP-06 Association study of serum creatine kinase level and clinical characteristics in amyotrophic lateral sclerosis**

Kazuaki Nagashima, Yukio Fujita, Masaki Ikeda

**DSP-07 Neuroinflammation in amyotrophic lateral sclerosis: the association between neutrophil-to-lymphocyte ratio and the rate of disease progression**

Seok Jin Choi, Young Nam Kwon, Jaeyoung Seo, Ki Yoon Kim, Sang-Jeong Kim, Seung-Yong Seong, Jung-Joon Sung

**DSP-08 Enhancing the comparability of individual disease courses in partner centers of the ONWebDUALS project using the D50 progression model**

Beatrice Stubendorff, Marta Gromicho, Katarzyna Szacka, Frauke Fartmann, Mamede de Carvalho, Magdalena Kuzma-Kozakiewicz, Susanne Petri, Hilmi Uysal, Julian Grosskreutz

**DSP-09 The development of a Norwegian ALS registry**

Tore Meisingset, Geir Bråthen

**DSP-10 Influence of environment and lifestyle factors on onset and progression of Amyotrophic Lateral Sclerosis (ALS) in a German population**

Sonja Körner, Johanna Kammeyer, Antonia Zapf, Magdalena Kuzma-Kozakiewicz, Maria Piotrkiewicz, Bożenna Kuraszkiewicz, Hanna Goszczyńska, Marta Gromicho, Julian Grosskreutz, Peter Andersen, Mamede de Carvalho, Susanne Petri

**DSP-11 Juvenile and adult-onset Amyotrophic Lateral Sclerosis among Tunisian people: clinical spectrum and survival**

Imen Kacem, A Berrechid, S Bougatef, A Nasri, I Sghaier, S Mrabet, M Ben Djebara, Senda Ajroud Driss, Riadh Gouider

**DSP-12 Pattern, Clinical Characteristics, and Outcome of Amyotrophic Lateral Sclerosis Patients Admitted in a Tertiary Hospital in Eastern China: A Cross-Sectional Study**

Qi Niu, Qingwen Jin

**DSP-13 Regional Spreading of Bulbar-Onset ALS Patients: implications of UMN vs LMN phenotypes**

Susana Pinto, Marta Gromicho, Peter Andersen, Julian Grosskreutz, Magdalena Kuzma-Kozakiewicz, Susanne Petri, Hilmi Uysal, Mamede de Carvalho

**DSP-14 The NEALS Primary Lateral Sclerosis (PLS) Registry**

Sabrina Paganoni, Fabiola De Marchi, James Chan, Sara Thrower, Nathan Staff, Neil Datta, Yaz Kisanuki, Vivian Drory, Christina Fournier, Erik Pioro, Stephen Goutman, Alexander Sherman, Nazem Atassi

**DSP-15 Primary lateral sclerosis (PLS), a rare and neglected motor neuron disease: time for new diagnostic criteria and an international collaboration**

Hiroshi Mitsumoto, Nazem Atassi, Lauren Elman, Mary Kay Floeter, Sabrina Paganoni, Teepu Siddique

**DSP-16 FOSMN-MND: Broadening the phenotype of a heterogeneous disease**

Hugo Oliveira, Stephan Jaiser, Tuomo Polvikosk, Johannes Attems, Abhijit Joshi, Ming Lai, Mark Baker, Tim Williams

**DSP-17 CADASIL in ALS**

Pyungkang Park, Sanggon Lee, Jinseok Park, Kiwook Oh, Kyong Jin Shin, Seung Hyun Kim

**DSP-18 A Spreadsheet Calculator for the Diagnosis of ALS**

Rodney Li Pi Shan, Lawrence Korngut, Benjamin Brooks

**DSP-19 Factors influencing diagnosis delay in amyotrophic lateral sclerosis**

Katarzyna Szacka, Peter Andersen, Mamede de Carvalho, Marta Gromicho, Julian Grosskreutz, Susanne Petri, Beatrice Stubendorff, Hilmi Uysal, Magdalena Kuzma-Kozakiewicz

**DSP-20 A diagnostic pathway in patients with amyotrophic lateral sclerosis**

Krzysztof Nieporecki, Katarzyna Szacka, Peter Andersen, Mamede de Carvalho, Marta Gromicho, Julian Grosskreutz, Susanne Petri, Beatrice Stubendorff, Hilmi Uysal, Magdalena Kuzma-Kozakiewicz

**DSP-21 The impact of hand dominance in the ALSFRS-R scoring**

Susana Pinto, Marta Gromicho, Mamede de Carvalho

**DSP-22 Prognostic modelling of patients with motor neurone disease: using routinely collected data to predict survival**

Danielle Leighton, Judith Newton, Laura Stephenson, Shuna Colville, Samuel Leighton, Richard Davenport, George Gorrie, Ian Morrison, Siddharthan Chandran, Suvankar Pal

**DSP-23 Use of a Smartphone-Based Digital Phenotyping Platform to Quantify ALS Progression**

James Berry, Sabrina Paganoni, Katherine Burke, Harli Weber, Kenzie Carlson, Joel Salinas, James Chan, Josh Barback, Kathryn Connaghan, Jordan Green, Jukka-Pekka Onnela

**DSP-24 The ALS Mobile Analyzer: monitor disease progression using a mobile app**

Yehuda Snir, Noa Davis, Idit Ron, Shay Rishoni

**DSP-25 A Short-form Version of the CNS-BFS, a Patient Reported Outcome for Assessing Bulbar Function in Amyotrophic Lateral Sclerosis**

Eric Macklin, Kathleen Myers, Paul Wicks, Richard Smith

**DSP-26 POSTER WITHDRAWN**

**DSP-27 ALS with FTD-onset: features and progression pattern**

Marta Gromicho, Susana Pinto, Ana Pronto-Laborinho, Peter Andersen, Julian Grosskreutz, Magdalena Kuzma-Kozakiewicz, Susanne Petri, Hilmi Uysal, Mamede de Carvalho

**DSP-28 Impact of Alzheimer's Disease co-pathology on Amyotrophic Lateral Sclerosis with and without Frontotemporal Degeneration**

Laura Hennessy, Kim Finn, Lauren Elman, Leo McCluskey, David Irwin, Edward Lee, John Trojanowski, Murray Grossman, Corey Mc Millan

**DSP-29 Development of secondary phenotypes within the ALS/FTD spectrum in sporadic and C9orf72 expansion cases**

Kaylee Faulkner, Laura Hennessy, Carrie Caswell, Lauren Elman, Leo McCluskey, Vivianna Van Deerlin, Lauren Massimo, David Irwin, Murray Grossman, Sharon Xie, Corey Mc Millan

## THEME 11

**Cognitive and Psychological Assessment and Support****COG-01 A National Audit of Cognitive Assessments in people with Amyotrophic Lateral Sclerosis (pwALS) in Scotland**

Maria Stavrou, Judy Newton, Gill Stott, George Gorrie, Ian Morrison, Siddharthan Chandran, Sharon Abrahams, Suvankar Pal, Richard Davenport

**COG-02 Cognitive assessment tools used in ALS/MND-specific health-care: A systematic review**

Tina Taule, Margaret Søvik, Regina Lein, Eike Wehling, Tiina Rekan

**COG-03 Neuropsychological Characteristics of sporadic Amyotrophic Lateral Sclerosis Patients in Korea**

Jinseok Park, Ki-Wook Oh, Hee-Jin Kim, Seung Hyun Kim, Kyoung Jin Shin

**COG-04 Limitations of the translated Edinburgh Cognitive and Behavioural ALS screen in South African controls**

Christine Albertyn, Natasha Jooste, Jeannine Heckmann

**COG-05 Implementing Edinburgh Cognitive and Behavioural ALS Screen (ECAS) in palliative care in patients with Motor Neurone Disease (MND) - experience from Phyllis Tuckwell Hospice Care (PTHC)**

Beata Le Bon

**COG-06 Thinking about Cognitive assessment: Piloting ECAS clinics in South Wales**

Katie Gibbon, Richard Betts, Philippa Stewart, Siwan Seaman, Andrew Green, Ruth Glew

**COG-07 The Edinburgh Cognitive and Behavioural ALS Screen (ECAS) is sensitive to both Alzheimer's Disease and behavioural variant Frontotemporal Dementia**

Mónica De Icaza Valenzuela, Thomas Bak, Shuna Colville, Suvankar Pal, Sharon Abrahams

**COG-08 Impact of the Edinburgh Cognitive and Behavioural ALS Screen on clinical practice and the patient experience**

Faith Hodgins, Steve Bell, Steven Meldrum, Luke Williams, Sharon Mulhern, Sharon Abrahams

**COG-09 The Edinburgh Cognitive and Behavioural ALS Screen - Russian version**

Veronika Chernenkaia, Kirill Gorbachev, Denis Gorbachev, Anastasiia Ataulina, Vera Fominykh, Lev Brylev

**COG-10 Age and education-matched cut-off scores for the Polish version of the Edinburgh Cognitive and Behavioural ALS Screen (ECAS)**

Katarzyna Ciećwierska, Beata Pilczuk, Maksymilian Bielecki, Magdalena Kuźma-Kozakiewicz

**COG-11 Cognitive impairment in Polish ALS patients using newly developed age and education-matched cut-off scores of the Edinburgh Cognitive and Behavioural ALS Screen (ECAS)**

Katarzyna Ciećwierska, Beata Pilczuk, Maksymilian Bielecki, Magdalena Kuźma-Kozakiewicz

**COG-12 Reliability and Validity of the brief Dimensional Apathy Scale (bDAS)**

Ratko Radakovic, Debbie Gray, Kaitlin Dudley, Eneida Mioshi, David Dick, Giulia Melchiorre, Harry Gordon, Judith Newton, Shuna Colville, Suvankar Pal, Siddharthan Chandran, Sharon Abrahams

**COG-13 The impact of behavioural symptoms in motor neurone disease comparisons across neurodegenerative brain conditions**

Elizabeth Highton Williamson, Jashelle Caga, David Foxe, Nicollette Thornton, Eleanor Ramsey, John Hodges, Olivier Piguet, Rebekah Ahmed, Matthew Kiernan

**COG-14 What are MND patients really distressed about? Using the concerns checklist in an MND clinic to enhance the recognition and management of distress**

Luke Williams, Helen Lennox

**COG-15 Abstractive skills of mnd patients neuropsychological assessment by means of an eye tracking system approach**

Susanna Nanni, Enrica Armiamenti, Valentina Azzolini, Paolo Bongioanni, Maria Chiara Carboncini

**COG-16 Investigating depression and disability in a cross-sectional sample of people with ALS/MND**

Noah Granger, Daniela Schlüter, Andrea Bredin, Roger Mills, Carolyn Young, TONIC Study group

**COG-17 The Boat test: a new task assessing moral and utilitarian judgment**

Monica Consonni, Eleonora Catricalà, Veronica Boschi, Eleonora Dalla Bella, Virginia Borsa, Francesca Conca, Riccardo Verni, Celeste Gasparri, Nicola Canessa, Giuseppe Lauria, Stefano Cappa

**COG-18 Investigation of Isolated Agraphia in Amyotrophic Lateral Sclerosis**

Yiou Huang, Ayano Kondo, Yu Kawakami, Takashi Uematsu, Chisato Ohba, Mari Miyajima, Kotaro Oiwa, Saori Morozumi, Shigenori Kato, Keizo Yasui, Tatsuya Miyake

**COG-19 Language Impairment in Frontotemporal dementia with amyotrophic lateral sclerosis: A review**

Beatriz Santana, Adriana Oda, Leticia Mansur

**COG-20 Distinct neuropsychological profiles in bvFTD and ALS-FTD**

Jennifer Saxon, Jennifer Thompson, Jennifer Harris, Matthew Jones, Julie Snowden

**COG-21 A longitudinal study of cognition in the ALS-FTSD: r7esults from a population-based cohort of incident cases**

Marta Pinto Grau, Bronagh Donohoe, Sarah O'Connor, Lisa Murphy, Emmet Costello, Rebecca Corr, Alice Vajda, Mark Heverin, Niall Pender, Orla Hardiman

**COG-22 The story of the ALS-FTD continuum retold: Rather two distinct entities**

Dorothee Lulé, Cynthia Vazquez, Ulrike Weiland, Jochen Weishaupt, Markus Otto, Sarah Straub, Elisa Semler, Ingo Uttner, Albert Ludolph, Peter Andersen, Magdalena Kuzma-Kozakiewicz

**COG-23 Wellbeing in patients with a severe neurological condition: differences between Germany, Poland and Sweden**

Magdalena Kuzma-Kozakiewicz, Peter Andersen,

Kasia Ciecwińska, Natalia Szejko, Thomas Meyer, Susanne Petri, Katharina Linse, Andreas Hermann, Olof Semb, Erica Stenberg, Simona Nackberg, Johannes Dorst, Ingo Uttner, Anci Haggström, Albert Ludolph, Dorothee Lulé

**COG-24 Social factors and their contribution to quality of life in ALS/MND: a systematic review of the literature**

Laurence Nee, Noah Granger, Carolyn Young

**COG-25 Coping in Motor Neurone Disease/ Amyotrophic Lateral Sclerosis: Qualitative Analysis of Themes**

Carolyn Young, Hikari Ando, Rosanna Cousins, TONIC study group

**COG-26 Hope in Motor Neurone Disease/ Amyotrophic Lateral Sclerosis: Qualitative Analysis of Concepts and Domains**

Carolyn Young, Hikari Ando, Rosanna Cousins, TONIC Study Group

**COG-27 ALS patient perspectives on physician assisted death after recent passage of the end of life options act in California**

Nicole Heintz, Carol Tran, Catherine Lomen Hoerth

**COG-28 Investigation of preferences in physician-assisted death in a cohort of spanish ALS patients: legal issues preparing for the future**

Ana Canovas, Estefania Soler, Maria Salvado, Josep Gamez

**COG-29 Physicians' Attitudes toward End-of-Life Decisions in Amyotrophic Lateral Sclerosis**

Tamara Thurn, Gian Borasio, Johanna Anneser

**COG-30 Awareness and Understanding of Amyotrophic Lateral Sclerosis in newly diagnosed patients, family, and friends**

Jamison Creekmore, Heather Hayes, Mark Bromberg, Summer Gibson, Jamie Leatham

**COG-31 Shared experiences of informal caring: Support with empathy on a Motor Neurone Disease online health forum**

Sarah Hargreaves, Peter Bath, Suzanne Duffin, Julie Ellis, Melanie Lovatt

**COG-32 Clustering of cognitive deficits in relatives of Familial vs Sporadic ALS patients**

Emmet Costello, Marie Ryan, Mark Heverin, Niall Pender, Orla Hardiman

**COG-33 Behavioural changes in MND are associated with symptoms of neuropsychiatric disorders in first and second-degree family members**

Caroline Mc Hutchison, Marie Ryan, Emmet Costello, Mark Heverin, Andrew McIntosh, Orla Hardiman, Sharon Abrahams

**COG-34 "Just another piece of equipment." The role, identity and experiences of caregivers in motor neurone disease: a qualitative study**

Esther Hobson

**COG-35 Quality of life among relatives to ALS patients- a prospective and longitudinal study**

Birgitta Jakobsson Larsson

**COG-36 Psychosocial work with children of patients diagnosed with als mnd in a medical context**

Daniel Ståhl, Malin Björkquist

**THEME 12**

**Respiratory and Nutritional Management**

**RNM-01 Club-cell protein (CC-16): prognostic biomarker in ALS**

Ana Catarina Pronto Laborinho, Marta Gromicho, Mariana Pereira, Susana Pinto, Swash Swash, Mamede de Carvalho

**RNM-02 Interleukin (IL)-6 in Amyotrophic Lateral Sclerosis: correlation with respiratory function**

Ana Pronto Laborinho, Marta Gromicho, Mariana Pereira, Susana Pinto, Michael Swash, Mamede de Carvalho

**RNM-03 Spirometry as Prognostic for ALS (SPALS)**

Andrea Calvo, Umberto Manera, Enrico Matteoni, Margherita Daviddi, Davide Casale, Silvia Gallo, Claudio La Mancusa, Luana Focaraccio, Alessio Mattei, Luca Solero, Cristina Moglia, Fabrizio D'Ovidio, Adriano Chiò

**RNM-04 Respiratory physiotherapy using Lung Insufflation assist maneuver to patients with ALS - The Evaluation of Lung Insufflation Capacity by LIC TRAINER®**

Keisuke Yorimoto, Yousuke Ariake, Takako Saotome, Yoko Kobayashi, Yuji Takahashi

**RNM-05 Supine FVC does not predict Sleep Disordered Breathing in ALS**

Urvi Desai, Benjamin Brooks, Velma Langford, Enayet Raheem

**RNM-06 Prevalence of OSA in ALS**

Urvi Desai, Benjamin Brooks

**RNM-07 Human diaphragm remodelling in amyotrophic lateral sclerosis**

Raquel Guimarães-Costa, Thomas Similowski, Isabelle Rivals, Capucine Morélot-Panzini, Marie-Cécile Niérat, Mai Thao Bui, David Akbar, Norma Beatriz Romero, Patrick Pierre Michel, Fabrice Menegaux, François Salachas, Jesus Gonzalez-Bermejo, Gaëlle Bruneteau

**RNM-08 Importance and Benefit of the Simple Inexpensive Chest X-Ray to Evaluate the Diaphragm in ALS/MND Patients**

Raymond Onders, Bashar Katirji, MaryJo Elmo, Cindy Stepien, Robert Schilz

**RNM-09 Can the use of techniques that increase lung capacity and the formation of a greater volume of dead space and oropharyngeal be a strategy to airway protection and to improve swallowing in bulbar ALS patients?**

Alessandra Dorça

**RNM-10 Respiratory reorganization and rehabilitation therapy (TR3), an approach that may favor lung capacity increase and minimize weakness due to disuse in the upper airway post-tracheostomies in ALS patients**

Alessandra Dorça, Edna Rocha, Denise Sisterolli, Vagner Santos

**RNM-11 Use of non-invasive ventilation in ALS: A 10-year experience at the Ljubljana ALS Centre**

Polona Klavžar, Patricija Kranjc, Polona Klinar, Blaž Koritnik, Lea Leonardis, Leja Dolenc Grošelj, Stanka Ristič Kovačič, Dušan Dumič, Janez Zidar

**RNM-12 Airway Sensorimotor Function in Individuals with Amyotrophic Lateral Sclerosis**

Lauren Tabor, Emily Plowman, Teresa Vasilopoulos, Alessandra Gallastegui

**RNM-13 Monitoring and promoting effectiveness and adherence to non-invasive ventilation in motor neurone disease using EncoreAnywheretelemonitoring: a pilot and feasibility, randomised controlled trial**

Esther Hobson, Treesa James, Natasha Mupambo, Alison Proctor, Christopher McDermott

**RNM-14 Greater Tolerance to Disease Progression and Survival Advantage with Volume Assured Pressure Support Ventilation in Patients with ALS**

Andreea Anton, Paul Barkhaus, Kathryn Sherman, Kavita Ratarasarn

**RNM-15 Use of Transcutaneous Carbon Dioxide Values for Improving Compliance and Effectiveness of Non-invasive Ventilation in Individuals with Amyotrophic Lateral Sclerosis**

Aubrey Isaacs, Heather Hayes, Jamie Leatham, Mark Bromberg, Jeanette Brown

**RNM-16 Factors predicting survival in ALS patients on non-invasive ventilation**

Kalliopi Marinou, Riccardo Sideri, Beatrice De Maria, Gabriele Mora

**RNM-17 Pulmonary pathology of amyotrophic lateral sclerosis patients with non-invasive ventilation, a retrospective institute-based study**

Kiyonobu Komai, Chiho Ishida, Kazuya Takahashi, Atsuro Tagami, Yuko Motozaki, Atsuhiko Kawashima

**RNM-18 Continued use of non-invasive ventilation is appropriate even after admission to hospice**

Michael Murn, Robin Turner, Richard Bedlack, Philip Choi

**RNM-19 Adherence evaluation to home use of mechanical airway clearance devices in ALS patients: a pilot experience**

Elisa De Mattia, Chiara Gallivanone, Andrea Lizio, Marino Iatomasi, Sara Lupone, Elena Mollar, Barbara Garabelli, Fabrizio Rao, Valeria Sansone, Christian Lunetta

**RNM-20 Implementation of Mechanical Insufflator-Exsufflator for patients with ALS and Bulbar Dysfunction in Uppsala University Hospital, Sweden**

Jenny Snickars, Annelie Berthén

**RNM-21 Safety of cough assist in invasive mechanically ventilated ALS patients**

Josep Gamez, Maria Salvado, Sergi Martí, Julia Sampol, Miriam Barrecheguren, Esther Rodriguez, Irene Bello, Mario Montesinos, Alba Gomez

**RNM-22 Trends in home care of ALS patients with TPPV in a prefecture of Japan: stable number of patients, but decreased use of home-care from 2008 to 2017**

Yugo Narita, Takemasa Ishikawa, Keiko Fukuroku, Michiko Nakai

**RNM-23 Comparing Outcomes of Patients with Amyotrophic Lateral Sclerosis (ALS) Using Tracheostomy Invasive Ventilation (TIV) in Tokyo, Japan and Ohio, USA**

Yuki Nakayama, Pamela Cazolli, Chiharu Matsuda, Michiko Haraguchi, Kentaro Hayashi, Kota Bokuda, Toshio Shimizu

**RNM-24 Relation between peak cough flow and functional levels of swallowing in patients with Amyotrophic Lateral Sclerosis and Progressive Bulbar Paralysis**

Luciana Frabasile, Adriana Oda, Juliana Neves, Percília Alves, Cristina Salvioni, Rosana Borges, Helena Sierra, Eduardo Carvalho, Acary Oliveira

**RNM-25 Relationships between Mechanisms of Airway Protection, Bolus Thickness and Swallowing Safety in Individuals with Amyotrophic Lateral Sclerosis**

Ashley Waito, Carly Barbon, Jennifer Chapin, Kelby Magennis, Raelie Robison, Sana Smaoui, Lauren Tabor-Gray, Teresa Valenzano, Emily Plowman, Catriona Steele

**RNM-26 Pseudobulbar affect facilitates the diagnosis of bulbar onset ALS**

Mark Ross, Megha Rao

**RNM-27 Marker of the time course of bulbar swallowing, speech and voice symptoms in patients with Amyotrophic Lateral Sclerosis and Progressive Bulbar Paralysis**

Percília Alves, Adriana Oda, Rosana Borges, Juliana Neves, Luciana Frabasile, Helena Sierra, Sheila Flores, Maria Rocha, Cristina Salvioni, Eduardo Carvalho, Acary Oliveira

**RNM-28 Understanding bulbar function in motor neuron disease through speech, swallowing and salivation scales**

Juliana Neves, Adriana Oda, Rosana Borges, Percília Alves, Luciana Frabasile, Cristina Salvioni, Helena Sierra, Eduardo Carvalho, Acary Oliveira

**RNM-29 Analysis of the impact of tongue strength and fatigue on functional bulbar aspects in patients with Motor Neuron Disease/Amyotrophic Lateral Sclerosis**

Adriana Oda, Rosana Borges, Luciana Frabasile, Percília Alves, Juliana Neves, Helena Sierra, Cristina Salvioni, Eduardo Carvalho, Acary Oliveira

**RNM-30 Relationship between the tongue fatigability and bulbar functional measures of patients with Motor Neuron Disease: bulbar and appendicular onset**

Rosana Borges, Adriana Oda, Cristina Salvioni, Juliana Neves, Percília Alves, Luciana Frabasile, Helena Sierra, Eduardo Carvalho, Acary Oliveira

**RNM-31 Identification of Sensitive Screening Tools for Early Detection and Accurate Monitoring of Dysphagia in Multidisciplinary ALS Clinics**

Emily Plowman, Lauren Tabor-Gray, Jennifer Chapin, May Smith, Raelie Robison, Terrie Vasilopoulos, Amber Anderson, James Wymer



**RNM-32 The use of Botulinum Toxin B in the management of oral secretions in patients with Motor Neurone Disease in the Institute of Neurological Sciences, Queen Elizabeth Hospital Glasgow**

George Gorrie, Laura Cunningham, Ann Silver, Helen Lennox, Kitty Millar, Janice Hatrick

**RNM-33 Oral Secretory Problems in MND: Clinical Signs and Assessment Tools**

Evelyn Chew, Julie Labra, Natalie James, Steve Vucic

**RNM-34 Is prediagnostic body weight loss a prognostic factor for disease progression and survival in ALS?**

Olof Sundstroem, Bitu Banieghbal, Ingela Nygren

**RNM-35 Segmented body composition assessment and clinical characteristics in Amyotrophic Lateral Sclerosis/Motor Neuron Disease**

Cristina Salvioni, Marcio Ottoboni, Adriana Oda, Camilla Borba, Juliana Neves, Luciana Frabasile, Percilia Alves, Rosana Borges, Helena Sierra, Acary Bulle

**RNM-36 The Impact of Swallowing and Nutrition on Gastrostomy Decision-Making in MND**

Julie Labra, Anne Hogden, Emma Power, Vicki Flood, Natalie James

**RNM-37 Safe Patient Selection for Percutaneous Endoscopic Gastrostomy in Motor Neurone Disease**

Jolene Brown, David Oliver, Anthony Hanratty, Emma Wood, Alex Nicholson

**RNM-38 Multidisciplinary approach in the indication of Percutaneous Endoscopic Gastrostomy (PEG) in patients with Amyotrophic Lateral Sclerosis**

Eduardo Carvalho, Simone Holsapfel, Fatima Caromano, Adriana Oda, Helena Sierra, Juliana Neves, Lucana Frabasile, Percilia Alves, Cristina Salvioni, Acary Oliveira

**RNM-39 Paravertebral block for radiologically inserted gastrostomy tube placement in ALS, a single center series**

Bjorn Oskarsson, Christopher Robards, Robert McClain, Steven Clendenen, Ricardo Paz-Fumagalli, Beau Toskich, Carla Palmucci, Ilana Logvinov,, Karina Hex, Steven Porter

**RNM-40 Stress load and neurodegeneration after gastrostomy tube placement in ALS patients**

Vera Fominykh, Kirill Gorbachev, Anastasia Ataulina, Veronika Chernenkaia, Tatiana Druzkova, Alla Guekht, Natalia Gulyaeva, Lev Brylev

**RNM-41 Patient experience of Gastrostomy placement by Nasal unsedated seated technique (NuPEG)**

Artika Datta, Helen Copsey, Tracy Papworth, Jeremy Woodward, Dunecan Massey, Rhys Roberts

**RNM-42 Outcome of late stage percutaneous endoscopic gastrostomy in als analysis of our experience in a spanish population**

Maria Salvado, Fiorella Palmas, Sergi Marti, Miriam Barrecheguren, Alba Gomez, Mireia Guerrero, Ana Canovas, Susana Rodriguez, Esther Ruiz, Elisenda Conde, M. Dolores Julve, Clara Sanchez, Miriam

Nadal, Joan Dot, Josep Ramon Armengol, Jaume Ferrer, Carolina Puiggros, Rosa Burgos, Josep Gamez

**RNM-43 Artificial nutrition interventions in the Scottish MND population diagnosed between 2015 and 2016**

George Gorrie, Menai MacDonald, Robert Swingler, Shuna Colville, Judith Newton, Richard Davenport, Anthony Bateman, Sharon Abrahams, Siddharthan Chandran, Ian Morrison

**RNM-44 Evaluation of quality of information provision, complications and quality of life post gastrostomy in patients with motor neurone disease**

George Gorrie, Morag Vickers

**THEME 13**

**Clinical Management and Support**

**CMS-01 Delivering bad news in amyotrophic lateral sclerosis and modulating emotional trauma: Where physician duty meets patient autonomy, and recommended guidelines for clinical practice**

Wesleigh Edwards, Sahana Malik, Ivy Chippendale, John Ravits

**CMS-02 Evaluation of delay to diagnosis in a cohort of individuals with Motor Neurone Disease assessed within NHS Greater Glasgow & Clyde**

Liam Carroll, Emily Rose, George Gorrie

**CMS-03 Repurposing an electronic data capture system to document research discussions with ALS patients**

Anne Haulman, Heidi Runk, Matthew Bankert, Jennifer Crossen, Ruth Stewart, Zachary Simmons

**CMS-04 Improving the measurement of isometric muscle strength in Amyotrophic Lateral Sclerosis by using Fixed Dynamometry**

Japie Bakers, Anita Beelen, Ruben van Eijk, Anne Visser-Meily, Leonard van den Berg

**CMS-05 A model of telemedicine for the care for patients at a US-based ALS clinic**

Anne Haulman, Matthew Bankert, Andrew Geronimo, Susan Walsh, Zachary Simmons

**CMS-06 Health care professionals' perspectives of multidisciplinary home-based e-Health for amyotrophic lateral sclerosis**

Natalie James, Anne Hogden, Emma Power, Steve Vucic

**CMS-07 Carers' perspectives of multidisciplinary home-based e-Health for amyotrophic lateral sclerosis**

Natalie James, Emma Power, Anne Hogden, Steve Vucic

**CMS-08 Individualized medicine in individuals with ALS/MND: bending patient's progression curve utilizing Precision Medicine**

Eduardo Locatelli, Merit Cudkowicz, Lauren Tabor, Fiona Scarlett

**CMS-09 Potentially severe drug drug interactions in ALS patients**

Elisabetta Pupillo, Elisa Bianchi, Luca Pasina, Ettore Beghi

**CMS-10 Early post-marketing experience with Edaravone in patients with ALS**

Beatrice Nefussy, Batel Vainer, Yaara Fainmesser, Vivian Drory

**CMS-11 Summary of the US Safety Data for Radicava® (edaravone): Findings from the Postmarketing Pharmacovigilance**

Laura Bower, Ming Ji, Stephen Apple, Minh Hoang, Lesly Tran, Bernard Hahn, Alexander Kalin, Alex Kim

**CMS-12 Prescribing Practices and Patient Experience with edaravone for Amyotrophic Lateral Sclerosis**

Sarah Dehoney, Western ALS Study Group, Heather Hayes, Mark Bromberg

**CMS-13 Edaravone Therapy in Amyotrophic Lateral Sclerosis (ALS) – Initial Experience at 4 ALS Centres in Germany**

André Maier, Susanne Spittel, Birgit Koch, Dagmar Kettemann, Andreas Funke, Nadine Gajewski, Teresa Baldes, Bertram Walter, Torsten Grehl, Ute Weyen, Julian Grosskreutz, Jenny Norden, Christoph Münch, Thomas Meyer

**CMS-14 Single-Site Experience in Edaravone (Radicava) Treatment Deployment for Amyotrophic Lateral Sclerosis (ALS) Patients: Insurance Verification, Infusion Options, Delivery System Initiation, Safety and Monitoring**

Benjamin Brooks, Elena Bravver, William Bockenek, Scott Lindblom, Navid Jalali, William Dawson, Urvi Desai, Amy Linville, Tiffany Williamson, Fawn Paling, Nicole Lucas, Velma Langford, Scott Holsten, Mohammed Sanjak, Amber Ward, Rachel Hillberry, Shivangee Thorne, Kathryn Wright

**CMS-15 Edaravone: Patients' Initial Perspective**

Mark Ross, Ann Chang, Amanda Canizales

**CMS-16 Edaravone therapy in ALS: the University of California San Francisco (UCSF) ALS Center experience**

Janice Wong, Catherine Lomen Hoerth

**CMS-17 Radicava® (edaravone) for Amyotrophic Lateral Sclerosis: US Experience at 1 Year After Launch**

Tatyana Baranovsky, Glenn McAnanama, Wendy Agnese, Mike Martin

**CMS-18 Effect of Radicava (Edaravone) on uric acid levels: Preliminary results**

Terry Heiman Patterson, John Furey, Isabelle Kaminer, Justin Chen, Anahita Deboo, Sabrina Paganoni

**CMS-19 Equity of access to Riluzole for individuals with MND/ALS in the UK**

Daniela Schlüter, Bethan James, Roger Mills, Carolyn Young, TONIC Study Group

**CMS-20 The MotOrtose project – Development of a motorized upper extremity orthosis for ALS**

Tore Meisingset, Geir Bråthen, Terje Lien

**CMS-21 Robotics in ALS – acceptance of robotic assistance systems in patients with ALS**

Christoph Münch, Thomas Meyer, Susanne Spittel, Jörn Kiselev, Cornelia Eicher, Marius Greußel, Diana Kiemel, Kirsten Brukamp, Dagmar Kettemann, Nadine Gajewski, Barbara Hildebrandt, Bertram Walter, André Maier

**CMS-22 Advances in Power Mobility: Technology to Increase Power Feature Utilization**

Amber Ward, Jennith Bernstein

**CMS-23 Thuis ALS Thuis, a Virtual Home environment for ALS patients**

Rinske Maathuis, Jonna Parren - Kramer, Esther Kruitwagen - van Reenen, Anita Beelen, Anne Visser - Meily

**CMS-24 “Freedom to make my own decisions” - What patients with ALS want when they get their first power wheelchair**

Kristina Simacek, Sherry Xiao, Christopher Curran, Elizabeth Lawler, Jamie Granskie, Karin Leire, Helene Svahn, Paul Wicks

**CMS-25 Clinical Audit Research and Evaluation for MND (CARE-MND): an electronic platform for motor neurone disease in Scotland**

Danielle Leighton, Judith Newton, Harry Gordon, Giulia Melchiorre, Shuna Colville, Laura Stephenson, Anthony Bateman, Sharon Abrahams, Richard Davenport, Ian Morrison, George Gorrie, Robert Swingler, Siddharthan Chandran, Suvankar Pal

**CMS-26 Access to care for ALS patients in Canada: Findings from the Canadian Neuromuscular Disease Registry**

Victoria Hodgkinson-Brechenmacher, Areesha Salman, Josh Lounsbury, Timothy Benstead, Hannah Briemberg, Angela Genge, Ian Grant, Sanjay Kalra, Gary Linassi, Rami Massie, Michel Melanson, Kerri Schellenberg, Christen Shoesmith, Sean Taylor, Scott Worley, Lorne Zinman, Colleen O’Connell, Wendy Johnston, Lawrence Korngut

**CMS-27 Vale Community Resource Service (VCRS) : Innovative, successful and collaborative management of clients with Motor Neurone Disease (MND) in their own homes. Co-production to improve client experience**

Dewi Druce Perkins, Elinor Evans, Joanna Phillips, Natasha Hinkin-Evans

**CMS-28 McGill University Single Item Quality-of-Life (QoL) Scale Compared with ALS Health-Related Quality-of-Life Likert Scales Including Breathing QoL Measurement**

Benjamin Brooks, Elena Bravver, Urvi Desa, Navid Jalali, William Dawson

**CMS-29 Defining quality of care in ALS: a European Delphi study**

Jolien Hendriks, Evy Reviere, Anne Jolie, Philip Van Damme, Walter Sermeus

**CMS-30 YCare: A multidisciplinary caregiving skills and intervention for young caregivers in families with ALS**

Melinda Kavanaugh, Megan Howard, Dominic Fee, Paul Barkhaus, Lori Barker-Horner

**CMS-31 Informal ALS caregivers – expressing their needs within a health care setting: a qualitative analysis**

Miriam Galvin, Sile Carney, Bernie Corr, Niall Pender, Orla Hardiman

**CMS-32 The relatives experience of the care for the patients during the ALS disease progression**

Birgitta Larsson, Cecilia Franke, Chaitanya den Dulk

**CMS-33 A qualitative study to understand the experiences of being a caregiver for a partner/spouse who has Motor Neurone Disease**

Heidi Morris

**THEME 14**

**Palliative Care and Decision Making**

**PAL-01 Symptomatic and palliative pharmacotherapy of people with ALS in Germany - analysis of a platform-case management approach**

Thomas Meyer, Susann Spittel, Dagmar Kettemann, Andreas Funke, Torsten Grehl, Ute Weyen, Julian Grosskreutz, Susanne Petri, Nadine Gajewski, Bertram Walter, Teresa Baldes, Jenny Norden, Christoph Münch, André Maier

**PAL-02 Patients’ Satisfaction and Usability for Tetrahydrocannabinol/Cannabidiol (THC:CBD) in the Treatment of Spasticity in Patients with Amyotrophic Lateral Sclerosis (ALS)**

Susanne Spittel, Andreas Funke, Dagmar Kettemann, André Maier, Nadine Gajewski, Teresa Baldes, Bertram Walter, Annette George, Christoph Münch, Thomas Meyer

**PAL-03 “Dog assisted physiotherapy improve the results of traditional treatment in ALS patients”**

Manuela Vignolo, Romina Truffelli, Riccardo Zuccarino, Elisa Giove, Davide Manunza, Fabrizio Rao, Clotilde Trincherio, Matteo Pardini, Claudia Caponnetto

**PAL-04 Reliability and Validity of Speech & Pause Measures during Passage Reading in ALS**

Yana Yunusova, Carolina Barnett, Nicholas Wasyluk, James Berry, Gary Pattee, Lorne Zinman, Sanjay Kalra, Jordan Green

**PAL-05 Development of Specialized Time-Sensitive Communication Method for ALS patients**

Takayo Namba, Chiaki Ishii

**PAL-06 Amyotrophic lateral sclerosis ALS related impact on social communication patient and caregivers perceptions**

Lavoisier Neto, Thais de Novais, Marcondes França Júnior, Regina Chun

**PAL-07 A baseline audit of Alternative and Augmentative Communication aid provision for people with MND in NHS Scotland**

Elizabeth Elliott, Judith Newton, Shuna Colville, Richard Davenport, George Gorrie, Ian Morrison, Siddharthan Chandran, Suvankar Pal

**PAL-08 A pilot study of voice banking in Amyotrophic Lateral Sclerosis patients**

Giordana Donvito, Lucia Catherine Greco, Andrea Lizio, Stefania Bona, Elena Carraro, Valeria Sansone, Christian Lunetta

**PAL-09 The palliative care needs of people with motor neurone disease and their informal caregivers: a qualitative systematic review**

Kate Flemming, Victoria Turner

**PAL-10 Symptom relief and palliative care last week of life in motor neuron disease**

Anneli Ozanne, Rick Sawatzky, Anette Alveriza, Kristoffer Årestedt, Cecilia Håkansson, Joakim Öhlin

**PAL-11 Sleep-wake disturbances in Chinese Patients with Sporadic Amyotrophic Lateral Sclerosis**

Shuangwu Liu, Hongfei Tai, Kang Zhang, Zhili Wang, Dongchao Shen, Hanhui Fu, Mingsheng Liu, Yuzhou Guan, Yan Huang, Liying Cui

**PAL-12 Decision-making support for the use of tracheostomy with invasive ventilation in patients with ALS in Japan**

Woojung Shin, Tomoko Inoue, Yuki Nakayama, Hide Yoshino, Takanori Yokota, Makoto Tanaka

**PAL-13 The preparations and countermeasure of patients with amyotrophic lateral sclerosis for disaster after the Great East Japan earthquake**

Yuji Tanaka

**PAL-14 Evaluation of patients’ shortness of breath and opioid introduction**

Yoko Nishikawa, Yugo Narita, Takamasa Ishikawa, Akihiro Shindo, Hidekazu Tomimoto

**PAL-15 Investigation of opioid use for the patients with end of life stage ALS using NPPV**

Takashi Asakawa, Mieko Ogino, Hiide Yoshino

**PAL-16 Advance care planning in progressive chronic neurological diseases - what we can learn from ALS - a qualitative study**

Antje Seeber, A. Jeannette Pols, Dick Willems, Marianne De Visser

**PAL-17 Advance care planning (ACP) and the impact of intervention in the Lancashire and South Cumbria MND Care Centre**

Amy Parkes, Suresh Chhetri, Pauline Callagher

**PAL-18 Discussing trying and dying on Twitter: depictions of non-standard care options for people with Amyotrophic Lateral Sclerosis (ALS)**

Rebecca Foley, Westerly Luth, Mark Bieber, Tania Bubela, Wendy Johnston

**PAL-19 The attitude of neurologists to end-of-life care in amyotrophic lateral sclerosis**

Krzysztof Barc, Peter Andersen, Helena Aho-Ozean, Albert Ludolph, Dorothee Lule, Magdalena Kuzma-Kozakiewicz

**PAL-20 Advance directives in ALS patients: The Piedmont and Valle d’Aosta register experience**

Cristina Moglia, Andrea Calvo, Alessandro Bombaci, Umberto Manera, Antonio Canosa, Antonio Ilardi, Adriano Chiò

## THEME BW

## Biomedical Work in Progress

**BW-01 The Dominant Inherited ALS (DIALS) Network: Methods For a Work in Progress**

Katharine Nicholson, Katherine Burke, Diane Lucente, Sara Thrower, James Chan, Tania Gendron, Mercedes Prudencio, Leonard Petrucelli, James Berry, Timothy Miller

**BW-02 Kinesin heavy chain (KIF5A) mutations in amyotrophic lateral sclerosis: A follow up study**

Yevgeniya Abramzon, Adriano Chio, Bryan Traynor

**BW-03 The potential role of a polymorphic VNTR in the aetiology of Motor Neurone Disease**

Jack Marshall, Ben Middlehurst, Abigail Savage, Richard Mead, Pamela Shaw, Vivien Bubb, John Quinn

**BW-04 The role of non-LTR retrotransposons in the increased genetic burden to MND at the NEK1 gene**

Jack Marshall, Ben Middlehurst, Gerald Schumann, Abigail Savage, Richard Mead, Pamela Shaw, Vivien Bubb, John Quinn

**BW-05 Regulation of Ubiquitin 2 dependent protein clearance**

Matthew Keuss, Roland Hjerpe, John Bett, Thimo Kurz

**BW-06 Variability in the level of a motor neurone disease-relevant protein: survival motor neurone (SMN) in individual cells and associated vulnerability to hypoxic damage**

Elena Hernandez Gerez, Ian Fleming, Simon Parson

**BW-07 ARF GTPases control motor neuron death in models of fALS**

Lei Zhang, Jelena Mojsilovic-Petrovic, Robert Kalb

**BW-08 The clinical effects of chlorovirus atcv 1 on sod1 g93 a transgenic als mice and identification of anti atcv 1 ig isotypes subclasses associated with ALS**

Gary Pattee, Thomas Petro, David Dunnigan, Zack Guinn, Irina Agarkova, James Van Etten

**BW-09 Knock in mouse models to understand ALS pathomechanisms**

Abraham Acevedo Arozena, Thomas Cunningham, Anny Devoy, Adrian Isaacs, Linda Greensmith, Pietro Fratta, Elizabeth Fisher

**BW-10 Repeated concussions lead to CSMN degeneration with neuroinflammation**

Amiko Lagrimas, Eric McLaren, Eileen Bigio, P. Hande Ozdinler, Javier Jara

**BW-11 Humanised mouse models of ALS**

Remya Nair, Anny Devoy, Samanta Gasco, Charlotte Tibbit, Asif Nakhuda, Carmelo Milioto, Abraham Acevedo-Arozena, Pietro Fratta, Adrian Isaacs, Thomas Cunningham, Elizabeth Fisher

**BW-12 Extramotor involvement differs with severity of bulbar ALS: post-mortem neuropathological findings**

Sanjana Shellikeri, Julia Keith, Sandra Black, Lorne Zinman, Yana Yunuslova

**BW-13 Mutations in TARDBP show axonal transport defects in induced pluripotent stem cell-derived motor neurons**

Raheem Fazal

**BW-14 Molecular mechanisms underlying TDP-43 regulation on the Stress Granule assembly factor G3BP1**

Hadjara Sidibé, Geneviève Di Tomasso, Anaïs Aulas, Jade-Emmanuelle Deshaies, Laurie Destroismaisons, Alex Parker, Pascale Legault, Christine Vande Velde

**BW-15 Utilizing network medicine approaches to explore the role of muscle in ALS**

Stephen Morgan, Stephanie Duguez, William Duddy

**BW-16 Gene expression biomarkers: a longitudinal study in ALS and FTD patients**

Gabriel Garcia Salameró, Gabriela Atencia Cibreiro, Adrián Martínez Cortes, Clara Muñoz Pancorbo, Naiara Carrillo Lucas, Ana Cristina Calvo Royo, Daniel Borrego Hernandez, Alexandra Juarez Rufian, Miguel Angel Martin Casanueva, Alberto Villarejo Galende, Alejandro Herrero San Martin, Sara Llamas Velasco, Marta Gonzalez Sanchez, Jesús Esteban Perez, Rosario Osta Pinzolas, Alberto Garcia Redondo

**BW-17 Exosomes a Window into ALS**

Sandra Banack, Paul Cox, Rachael Dunlop

**BW-18 Biomarkers for disease progression and potential therapeutic targets in Amyotrophic Lateral Sclerosis**

Ozlem Yildiz, Gary Warnes, Valentina Pucino, Vittoria Lombardi, Fabiola Puentes, Jesmond Dalli, Claudio Mauro, Klaus Schmierer, Andrea Malaspina

**BW-19 An AI Drug Discovery Case Study Establishing New Neuroprotective Compounds for Treating ALS**

Matthew Stopford, Nora Markus, Monika Myszczyńska, Richard Mead, Laura Ferraiuolo, Dave Sheppard, Peter Richardson, Mark Rackham

**BW-20 All-Optical Electrophysiology for High-Throughput Drug Screens and Functional Characterization of Human iPSC-Derived Motor Neurons from ALS patients**

Sandy Hinckley, Hongkang Zhang, Luis Williams, Graham Dempsey, Daniel Elbaum, Adam Cohen, Kevin Eggan, Kasper Roet

**BW-21 Patient Blood Derived Cell Lines Provide Unlimited Supply of DNA**

Debbie Blick, Clare Wilson, Ayuen Lual, Sharon Bahia, Edward Burnett, Bryan Bolton, Julie Russell

**BW-22 Alterations of lipid metabolism define potential circulating biomarkers of amyotrophic lateral sclerosis**

Gorka Fernández Eulate, José Ignacio Ruiz-Sanz, Javier Riancho, Mónica Zufiria, Roberto Fernández-Torrón, Juan José Poza-Aldea, Juan Bautista Espinal, Gonzalo González-Chinchón, Miren Zulaica, M Begoña Ruiz-Larrea, Francisco Gil-Bea, Adolfo López de Munain

**BW-23 Investigating metabolic dysfunction in a yeast model of Sod1-associated ALS**

Kevin Doyle

## THEME CW

## Clinical Work in Progress

**CW-01 Investigating bioenergetic dysfunction in motor neurone disease using 31 phosphorus magnetic resonance spectroscopy: a feasibility study**

Matilde Sassani, Julia Bigley, James Alix, Nigel Hoggard, Pamela Shaw, Thomas Jenkins, Iain Wilkinson

**CW-02 Exploring SICI using TMS-EEG: a potential diagnostic tool for MND**

Vishal Rawji, Izabella Kaczmarczyk, Lorenzo Rocchi, John Rothwell, Nikhil Sharma

**CW-03 Investigating selective vulnerability to denervation in MND using whole-body muscle MR measures**

Taniya Esmail, Jacob Fingret, James Alix, Nigel Hoggard, Julia Bigley, Christopher McDermott, Pamela Shaw, Iain Wilkinson, Thomas Jenkins

**CW-04 Are there acoustic markers of LMN versus UMN involvement in motor neuron diseases?**

Nathalie Leveque, François Salachas, Timothée Lenglet, Maria Del Mar Amador, Rabab Debs, Nadine Le Forestier, Pierre-François Pradat, Cécile Fougerson, Gaëlle Bruneteau

**CW-05 Case of Motor Neuron Disease in patient with Human Immunodeficiency Virus: association or coincidence?**

Aram Aslanyan, David McKee

**CW-06 People living with ALS and their caregivers' input into drug development in Europe**

Miriam Galvin, Orla Hardiman, Christopher McDermott (on behalf of Impact European Survey Advisory Group), Amy Laverdiere, Bonnie Charpentier, Jennifer Petrillo, Kristina Bowyer, Lucie Bruijn

**CW-07 Analysing Inclusion Criteria in Surgical Trials in ALS/MND to Identify Differences in Long Term Results**

Raymond Onders, MaryJo Elmo, Bashar Katirji, Robert Schilz

**CW-08 Rationale and methods of EMERALD: A randomised, double-blind, single-centre, placebo-controlled phase II trial evaluating the safety, tolerability, and efficacy of Cannabis based medicine extract (CBME) in patients with Amyotrophic Lateral Sclerosis (pALS)**

Arman Sabet, Berzenn Urbi, Richard Bedlack, Ethan Russo, Simon Broadley

**CW-09 Observational Quantitative Data in Adult Patients with SMA Dosed with Nusinersen**

Cosette Burian, Senda Ajroud Driss, Ashley Bozeman

**CW-10 Design and status of the ongoing Phase II, randomized, placebo-controlled trial of AMX0035 in Amyotrophic Lateral Sclerosis (CENTAUR)**

Joshua Cohen, Kent Leslie, Justin Klee, Patricia Andres, Merit Cudkovic, Nazem Atassi, Sabrina Paganoni

**CW-11 Long-term Outcome of Filgrastim (G-CSF) in ALS Patients**

Siv Johannesen, Bettina Budeus, Tim-Henrik Bruun, Sebastian Peters, Anne-Louise Meier, Sabrina Küspert, Ines Kobor, Ohnmar Hsam, Anna-Maria Wirth, Wilhelm Schulte-Mattler, Sabine Iberl, Armin Schneider, Winfried Koch, Ulrich Bogdahn

**CW-12 Novel drug RCH4 slows ALSFRS-R decline by 63.3%. ( $n=51$   $p=0.0001$ . Treatment-years=54). The presentation compares treatment outcomes between Radicava, generic Edaravone, RCH4, and addresses the question: "Do they work", not: "How do they work".**

Michael Curan

**CW-13 Edaravone as an antioxidant agent to treat amyotrophic lateral sclerosis: a longitudinal prospective study of a cohort of patients from Veneto area, Italy**

Gianni Soraru, Andrea Fortuna, Ilaria Martinelli, Elena Pegoraro, Maurizio Corbetta, Giorgio Caneve, Nicoletta Freddi, Sandro Guzzon, Stefania Lelli, Alessandra Vidali, Marianna Fortunato, Franco Ferraci, Luigi Bartolomei, Francesco Perini, Flavio Sanson, Mauro Scarpelli, Silvia Romito, Ernesto Gastaldo, Roberto Lerario, Matteo Gizzi

**CW-14 Surveillance of using novel free radical scavenger, edaravone to investigate survival effect for ALS patients in Japan (SUNRISE Japan): Report for intermediate summary**

Manabu Hirai, Satoshi Yuki, Kaoru Ishizaki, Hiroaki Matsuda, Gen Sobue

**CW-15 Protocol and Design of the Radicava® (edaravone) Biomarker Study for ALS Patients in the United States**

Benjamin Brooks, James Berry, Angela Genge, Terry Heiman-Patterson, Stanley Appel, Michael Benatar, Robert Bowser, Merit Cudkowicz, Clifton Gooch, Jeremy Shefner, Jean Hubble, Steve Apple, Wendy Agnese, Charley Merrill, Sally Nelson

**CW-16 French securing of Edaravone distribution network: risk management linked to Japanese packaging and time consuming consequences**

Emmeline Lagrange, Audrey Lehman

**CW-17 What would a King's staging 2.0 look like? A retrospective review**

Nathalie Magnan, Toni Vitale, Natalie Saunders, Angela Genge

**CW-18 Development of improved single switch scanning for powered wheelchair control: the result of effective collaboration**

Rosanne Gibb

**CW-19 MND association wheelchair champions project**

Jenny Rolfe

**CW-20 Outcome measures for the mobile arm support in individuals with amyotrophic lateral sclerosis (ALS)**

Joyce Khowdee Mot Otr L, Jeffrey Rosenfeld

**CW-21 Modifying Cervical Support to Allow Rotation with a 3-D Printed Attachment**

Sara Feldman, Mark Goren, Thinh Nguyen

**CW-22 The initiation of Dignity Therapy for people affected by Motor Neurone Disease in the West of Scotland.**

Laura Cunningham, Bridget Johnston

**CW-23 Mechanisms of psychosis and psychosis-risk in motor neurone disease and frontotemporal dementia with motor neurone disease**

Alicia Wilcox, Rhys Roberts, James Rowe

**CW-24 Successful introduction of Alternative and Augmentative Communication for pALS: retrospective study of cases of 'Yay' and 'Nay'**

Malin Börjesson

**CW-25 An education program to support communication for people with ALS: checking discretion ability by a pre- and post-test evaluation**

Takemasa Ishikawa<sup>1</sup>, Yugo Narita<sup>1</sup>, Chihiro Mizumoto<sup>1</sup>, Erisa Takahashi<sup>1</sup>, Michiko Nakai<sup>2</sup>, Keiko Fukuroku, Yuji Tanaka, Tamotsu Imura

**CW-26 The Multidisciplinary Chest Management Programme for Patient's Living with Motor Neurone Disease: The benefits of joint Speech and Language Therapy and Physiotherapy working in the assessment and management of swallow and cough**

Jodi Allen, Charlotte Massey

**CW-27 Speech and Language Therapy Assistant led Voice Banking Education Groups**

Rebecca Yalland, Hannah Davies, Julieanne Yates, Hayley Regan-Wall, Belinda Done, Stephanie Durnan

**CW-28 Bringing Voice Banking to Dorset - lessons in time, timing & technology**

Sharon Owens

**CW-29 Identifying features of dysarthria as acoustic biomarkers for ALS using a tablet based speech analysis system**

Julie Stierwalt, Sandra Schneider, Christian Poellabauer, Louis Daudet

**CW-30 Exploring Voice Measures to Track Disease Onset and Progression in Amyotrophic Lateral Sclerosis (ALS)**

Jordan Green, Kathryn Connaghan, Yana Yunusova, Kaila Stipancic, Sarah Gutz, James Berry

**CW-31 Respiratory Management of Amyotrophic Lateral Sclerosis /Motor Neurone Disease patients attending the West of Scotland Long-Term Ventilation Unit (WoSLTVU)**

Grace Murphy, Joanne Payne, Alison Clarke, Dave Raeside, George Gorrie, Scott Davidson

**CW-32 Optimising the management of ventilated patients with motor neurone disease through telemedicine via call centre: multidisciplinary team approach**

Helen Ashcroft, Hikari Ando, Carolyn Young, Rob Halhead, Robert Angus

**CW-33 Home-monitoring in ALS/MND care: Evaluation of a Tailored eHealth care process for personalized ALS/MND care**

Remko Van Eenennaam, Jochem Helleman, Anita Beelen, Esther Kruitwagen-van Reenen, Willeke Kruithof, Marja Slappendel, Leonard van den Berg, Anne Visser-Meily

**CW-34 Case Report Elective withdrawal of Non-Invasive Ventilation in an MND patient at home – a partnership approach but only possible with experienced staff with the right skills**

Beata Le Bon

**CW-35 A Pocket Tool for those with ALS/ MND seeking Urgent Medical Care**

Patricia Wilkinson

**CW-36 Development of a Motor Neurone Disease Patient Concerns Inventory (MND PCI) for identifying MND patients' main concerns in the outpatient clinic setting**

Mary O'Brien, Jennifer Kirton, Emma Pearson, Suresh Chhetri, Simon Rogers

**CW-37 Purpose of a Functional Hydration Scale on Motor Neuron Disease/Amyotrophic Lateral Sclerosis**

Adriana Oda, Luciana Frabasile, Cristina Salvioni, Percília Alves, Rosana Borges, Juliana Neves, Helena Sierra, Eduardo Carvalho, Acary Oliveira

**CW-38 Improving Outcomes in Feeding Tube Placement for ALS/MND patients using an Interdisciplinary, Collaborative Approach**

Paula Brockenbrough, Rebecca Rhodes, Michelle Gebhardt, Amanda Butler, Kathleen Pearson, Scott Vota

**CW-39 Development of the South Wales MND Care Network Gastrostomy Placement Guidance**

Stephanie Durnan, Idris Baker, Andrea Lowman, Joanne Bradburn, Elizabeth Green, Victoria Prendiville, Linda Morgan

**CW-40 Exploring the effectiveness of communicating wellbeing and quality of life information in Motor Neurone Disease to multidisciplinary teams**

Gillian Medley, Clarissa Giebel, Maria Thornton, Michelle Ennis, Sandra Smith, Paula Sutton, Moira Furlong, Carolyn Young

**CW-41 Motor Neurone Disease: supporting people to die at home in Lancashire and South Cumbria**

Maddy Bass, Philomena Swarbrick, Pauline Callagher

**CW-42 POSTER WITHDRAWN**

**CW-43 The Challenges of Addressing the Needs of Family Carers across South Wales**

Caroline Bidder, Ruth Glew, Carol Smith

**CW-44 'Many hands make light work' - the success of the South Wales MND Care Network Multidisciplinary Team days**

Ruth Glew, Katie Gibbon, Caroline Bidder, Sara Mallams, Alice Richards, Richard Pawsey, Stephanie Durnan, Idris Baker

## Programme of events/locations

### Friday 7 December

07.00 – 08.50	Arimoclomol in ALS: Advisory Committee Meeting – Hosted by Orphazyme A/S (closed meeting)	Alsh 1	SEC Centre (Loch Suite)
07.00 – 18.00	Registration International Symposium	Concourse	SEC Centre
07.00 – 19.00	Speaker Room	Room 5.1	SEC Centre
07.30 - 08.30	BIG Data in ALS Workgroup: Resources, Collaborations and Sharing (closed meeting)	Alsh 2	SEC Centre (Loch Suite)
09.00 – 10.45	Symposium Joint Opening Session	Hall 2	SEC Centre
10.45 / 15.30	Refreshments and Networking	Hall 5	SEC Centre
11.15 – 12.30	Symposium Joint Session 2	Hall 2	SEC Centre
12.30 – 14.00	Lunch	Hall 5	SEC Centre
13.00 – 14.00	Pan-Asian Consortium for Treatment and Research in ALS (PACTALS)*	Alsh 2	SEC Centre (Loch Suite)
14.00 – 17.30	Symposium Biomedical Sessions 3A/4A	Lomond Auditorium	SEC Centre (Loch Suite)
14.00 – 17.30	Symposium Clinical Sessions 3B/4B	Hall 2	SEC Centre
14.00 – 17.20	Symposium Alternative Sessions 3C/4C	Hall 1	SEC Centre
17.45 – 20.00	Poster Session A	Hall 4	SEC Centre
17.45 – 19.00	Cochrane Neuromuscular Group	Alsh 1	SEC Centre (Loch Suite)
18.30 – 20.00	BRAIN-MEND Consortium Meeting (closed meeting)	Alsh 2	SEC Centre (Loch Suite)

### Saturday 8 December

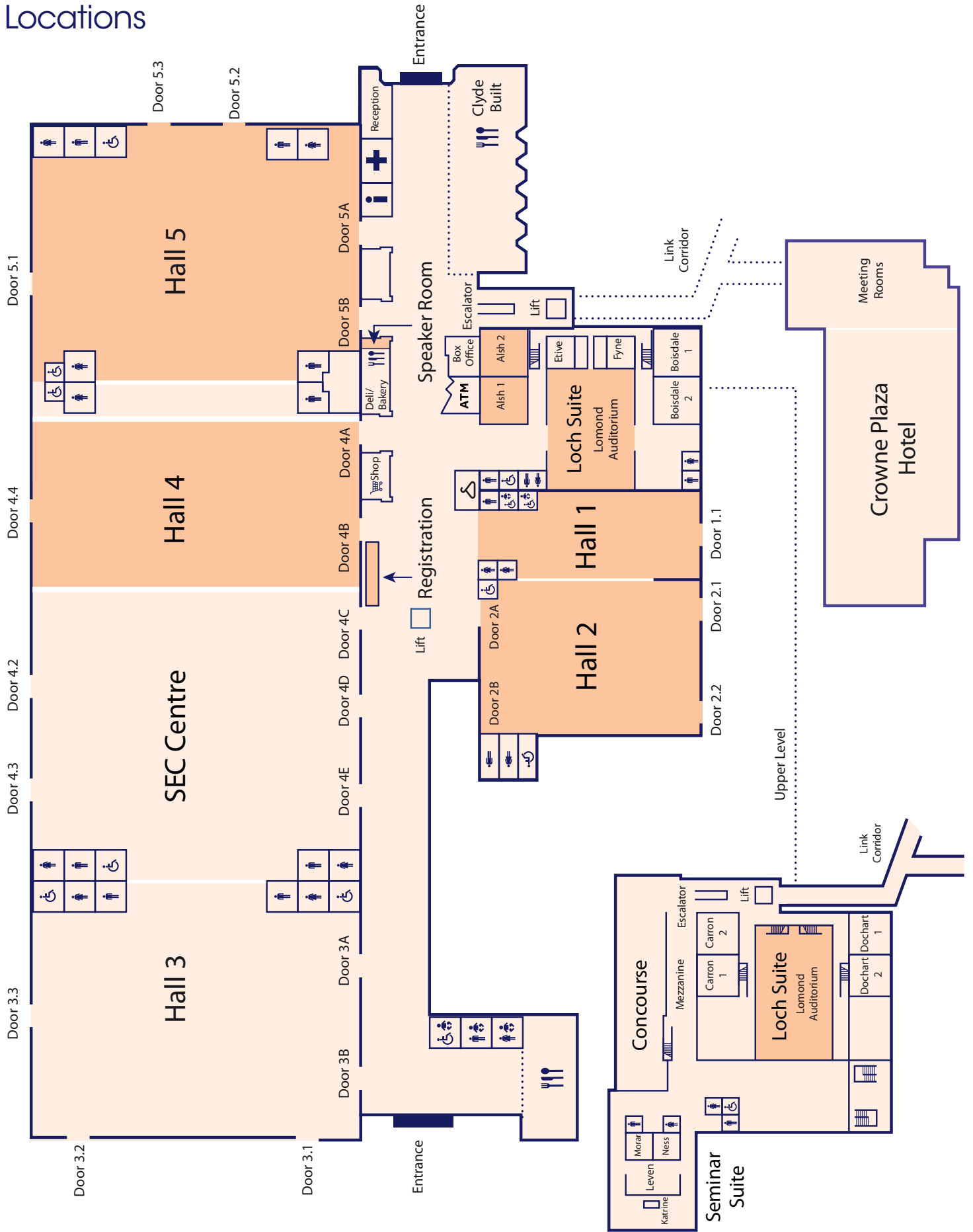
07.15 - 08.15	Innovation Landscape in ALS/MND: Designing Tomorrow's Clinical Trials Today, Inclusion and Exclusion Criteria – A Live Debate (Sponsored by Cytokinetics)	Argyll Suite	Crowne Plaza Glasgow
07.00 – 18.00	Registration International Symposium	Concourse	SEC Centre
07.00 – 19.00	Speaker Room	Room 5.1	SEC Centre
08.30 – 17.30	Symposium Biomedical Sessions 5A/6A/7A/8A	Lomond Auditorium	SEC Centre (Loch Suite)
08.30 – 17.30	Symposium Clinical Sessions 5B/6B/7B/8B	Hall 2	SEC Centre
08.30 – 17.30	Symposium Alternative Sessions 5C/6C/7C/8C	Hall 1	SEC Centre
10.00 / 15.30	Refreshments and Networking	Hall 5	SEC Centre
12.30 – 14.00	Lunch	Hall 5	SEC Centre
17.45 – 20.00	Poster Session B	Hall 4	SEC Centre
18.30 – 21.00	Bulbar Guidelines Development Symposium	Alsh 1	SEC Centre (Loch Suite)

### Sunday 9 December

07.00 – 13.30	Registration International Symposium	Concourse	SEC Centre
07.00 – 13.30	Speaker Room	Room 5.1	SEC Centre
07.15 – 08.15	NEALS Consortium (closed meeting)	Alsh 1	SEC Centre (Loch Suite)
08.30 – 12.40	Symposium Biomedical Sessions 9A/10A	Lomond Auditorium	SEC Centre (Loch Suite)
08.30 – 12.30	Symposium Clinical Sessions 9B/10B	Hall 2	SEC Centre
10.00 – 10.30	Refreshments and Networking	Hall 5	SEC Centre
12.30 – 13.30	Lunch	Hall 5	SEC Centre
13.30 – 15.15	Symposium Joint Closing Session	Hall 2	SEC Centre

\* This meeting is open to delegates from the Asia-Pacific Region

# Locations



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