LONGITUDINAL 148-WEEK EXTENSION STUDY OF ANAVEX®2-73 FOR THE TREATMENT OF ALZHEIMER'S DISEASE DEMONSTRATES MAINTAINED ACTIVITIES OF DAILY LIVING SCORE (ADCS-ADL) AND REDUCED COGNITIVE DECLINE (MMSE) FOR PATIENT COHORT ON HIGHER DRUG CONCENTRATION AND CONFIRMS ROLE OF PRECISION MEDICINE PATIENT SELECTION BIOMARKERS

American Society for Experimental Neurotherapeutics - ASENT 2019 Annual Meeting

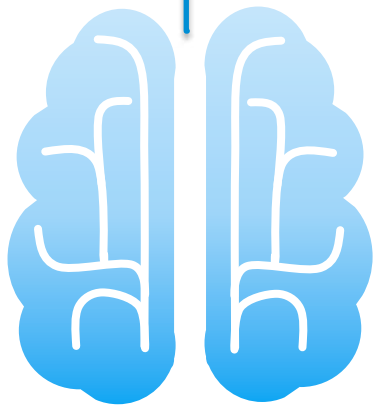
Walter E Kaufmann, MD | CMO

Nasdaq: AVXL | March 2019

SAFE HARBOR

This presentation contains forward-looking statements made within the meaning of the Private Securities Litigation Reform Act of 1995 by Anavex® Life Sciences Corp. and its representatives. These statements can be identified by introductory words such as “expects,” “plans,” “intends,” “believes,” “will,” “estimates,” “forecasts,” “projects,” or words of similar meaning, and by the fact that they do not relate strictly to historical or current facts. Forward-looking statements frequently are used in discussing potential product applications, potential collaborations, product development activities, clinical studies, regulatory submissions and approvals, and similar operating matters. Many factors may cause actual results to differ from forward-looking statements, including inaccurate assumptions and a broad variety of risks and uncertainties, some of which are known and others of which are not. Known risks and uncertainties include those identified from time to time in reports filed by Anavex Life Sciences Corp. wit the Securities and Exchange Commission, which should be considered together with any forward-looking statement. No forward-looking statement is a guarantee of future results or events, and one should avoid placing undue reliance on such statements. Anavex Life Sciences Corp. undertakes no obligation to update publicly any forward-looking statements, whether as a result of new information, future events or otherwise. Anavex Life Sciences Corp. cannot be sure when or if it will be permitted by regulatory agencies to undertake clinical trials or to commence any particular phase of clinical trials. Because of this, statements regarding the expected timing of clinical trials cannot be regarded as actual predictions of when Anavex Life Sciences Corp. will obtain regulatory approval for any “phase” of clinical trials. We also cannot be sure of the clinical outcome for efficacy or safety of our compounds. Potential investors should refer to the risk factors in our reports filed on Edgar.

Anavex at a Glance



APPROACH

Applying precision medicine to CNS disorders
Patient selection based on genomic screening and biomarkers

MECHANISM

SIGMAR1 restoring cellular homeostasis

FOCUS

Finding effective treatments for neurodevelopmental and neurodegenerative diseases

LARGE MARKETS

Addressing unmet needs such as global dementia, other neurodegenerative diseases as well as catastrophic orphan genetically caused diseases

SIGMAR1 Activation has been Shown to Modulate Multiple Aspects of Neurodegenerative Processes

Sigma-1 receptor agonists have been shown to restore neuronal functions in neurodegenerative processes

Contents lists available at ScienceDirect

Journal of Pharmacological Sciences

journal homepage: www.elsevier.com/locate/jphs

Critical review

Role of sigma-1 receptors in neurodegenerative diseases

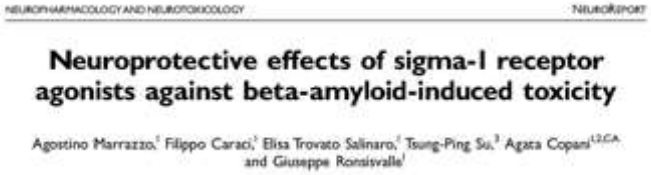
Linda Nguyen [a, b, c], Brandon P. Lucke-Wold [d], Shona A. Mookerjee [e], John Z. Cavendish [d], Matthew J. Robson [f], Anna L. Scandinaro [a, b, c], Rae R. Matsumoto [a, b, c, e, *]

ANAVEX®2-73 alleviates Tau pathology in neurodegenerative disease models

Blockade of Tau Hyperphosphorylation and $A\beta_{1-42}$ Generation by the Aminotetrahydrofuran Derivative ANAVEX2-73, a Mixed Muscarinic and σ_1 Receptor Agonist, in a Nontransgenic Mouse Model of Alzheimer's Disease

Valentine Lahmy[1,2,3,4], Johann Meunier[4], Susanna Malmström[4], Gaelle Naert[1,2,3], Laurent Givalois[1,2,3], Seung Hyun Kim[5], Vanessa Villard[4], Alexandre Vamvakides[6] and Tangui Maurice[*,1,2,3]

Sigma-1 receptor agonists have a neuroprotective effect in neurodegenerative disease models



NEUROPHARMACOLOGY AND NEUROTOXICOLOGY NEUROREPORT

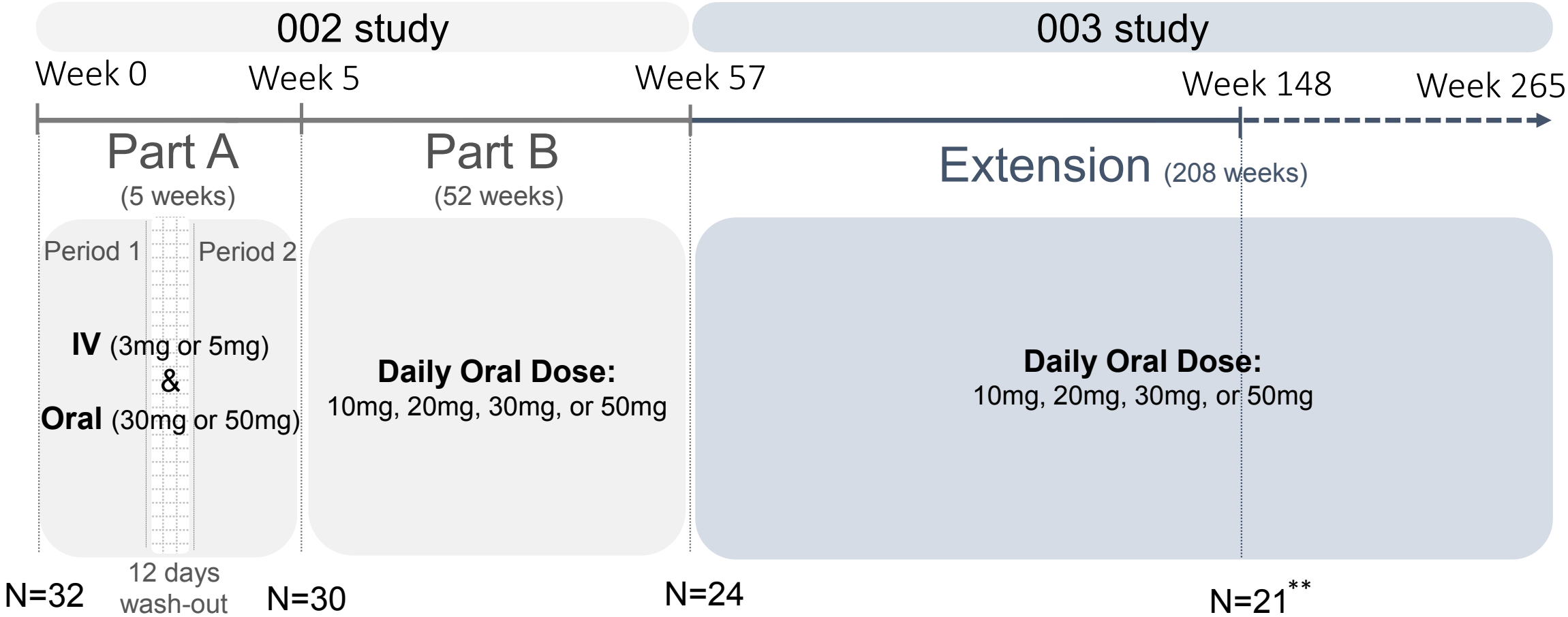
Neuroprotective effects of sigma-1 receptor agonists against beta-amyloid-induced toxicity

Agostino Marrazzo,[1] Filippo Caraci,[1] Elisa Trovato Salinaro,[1] Tsung-Ping Su,[2] Agata Copani[1,2,CA] and Giuseppe Ronsisvalle[1]

ANAVEX®2-73 Phase 2a Study in Alzheimer's Disease*

ANAVEX®2-73 observed to be safe and well tolerated

Efficacy (MMSE & ADCS-ADL) has been evaluated long-term



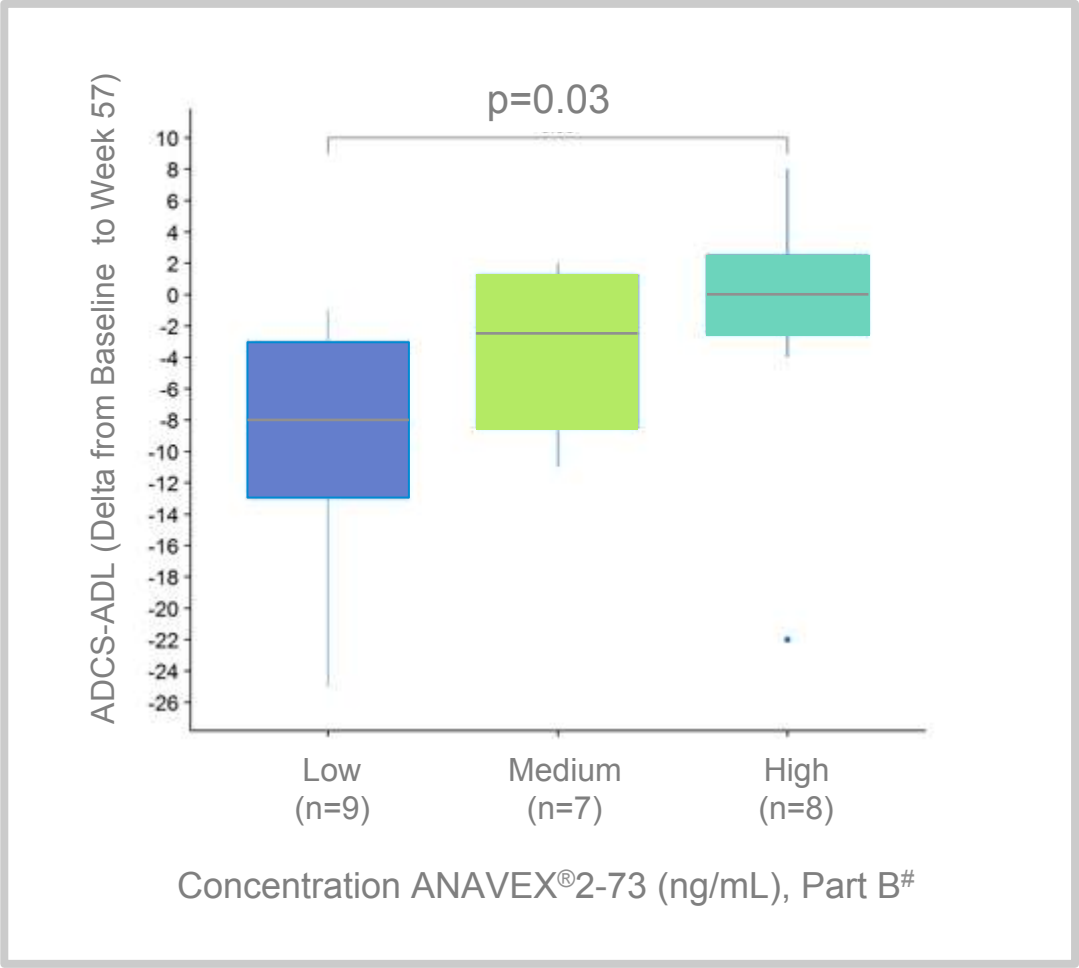
*ClinicalTrials.gov Identifier: ANAVEX®2-73-AD-002/3 STUDY (NCT02244541/NCT02756858)

** 1 patient is outside inclusion criteria. This patient was excluded from calculations

ANAVEX®2-73 Concentration
&
MMSE/ ADCS-ADL Trajectories

Significant Relationship between ANAVEX®2-73 Concentration and Patients Response

Activities of Daily Living (ADCS-ADL)*

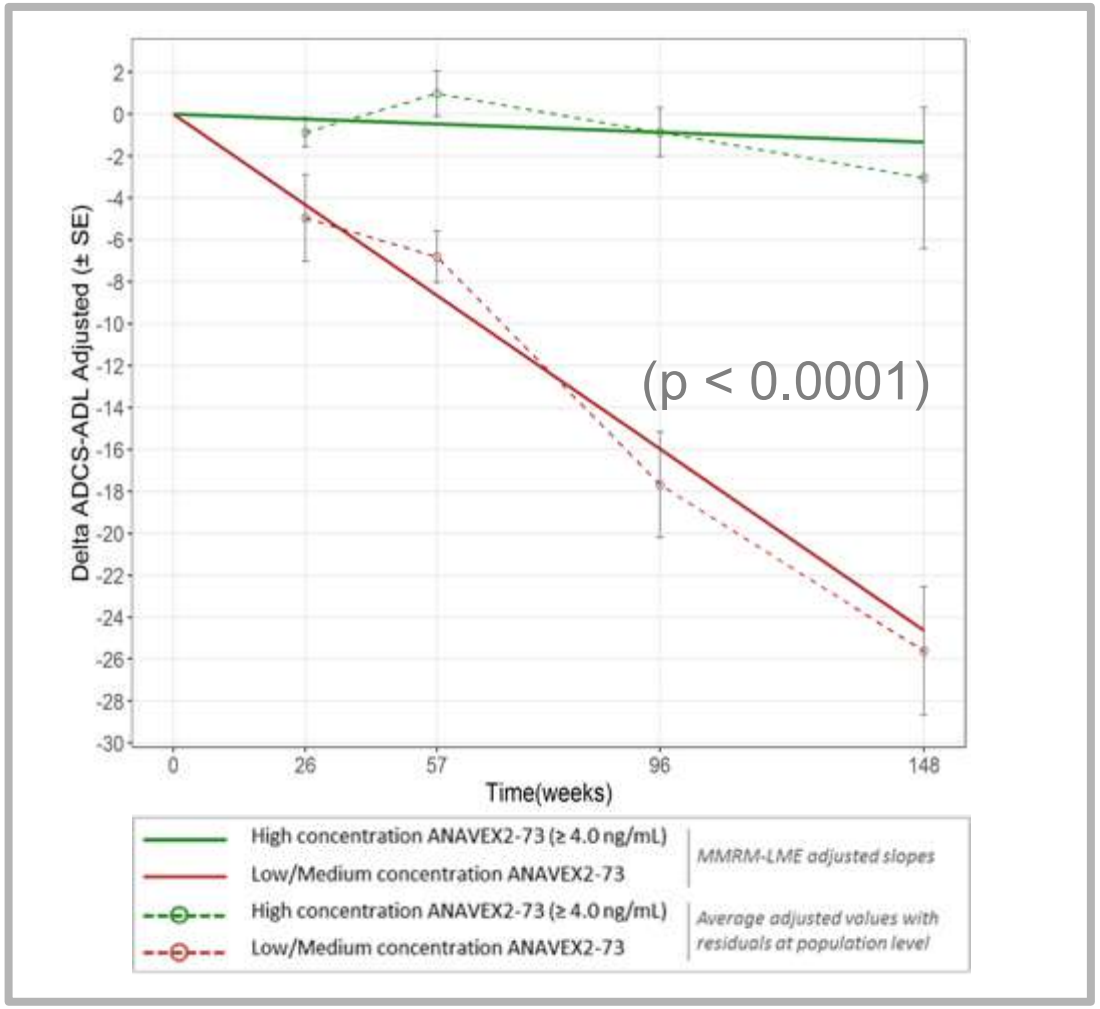


- High Concentration of ANAVEX®2-73
  => High Delta ADCS-ADL (improved response)
- # Plasma concentration of ANAVEX®2-73 is correlated with the administered dose
  - All n=24 patients in study at week 57
  - p = p-value of Mann–Whitney U test

*Source: H Hampel et al., AAIC 2018; *Alzheimer's Disease Cooperative Study Activities of Daily Living 23-item scale (ADCS-ADL)*

Patients Treated with Higher ANAVEX®2-73 Concentration Maintain ADCS-ADL* Performance vs Lower Concentration Cohort

High Concentration cohort shows 88 % difference to low concentration cohort



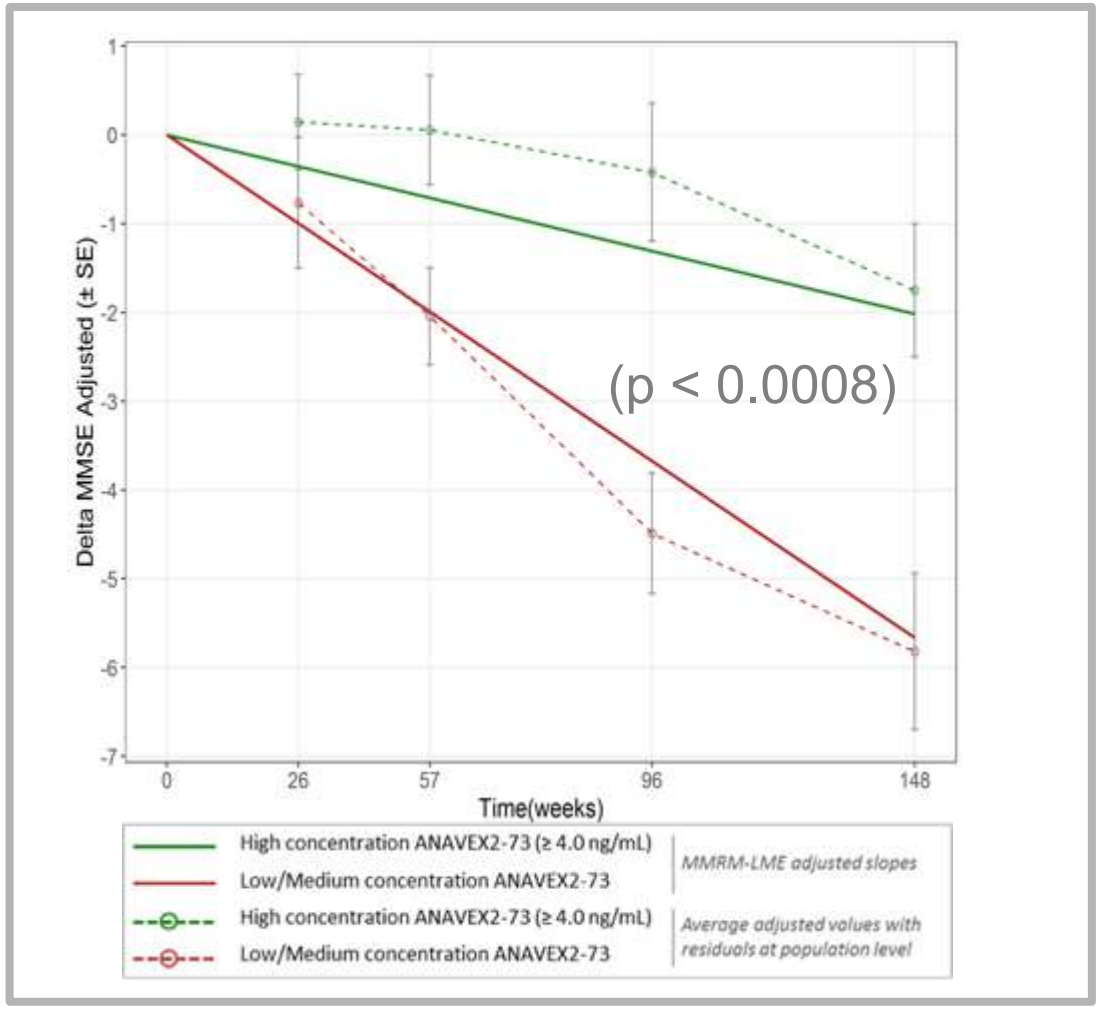
- High plasma concentration of ANAVEX®2-73 [≥4.0 ng/ml] is correlated with the clinically administered dose
- In addition to concentration, the significant covariates identified in MMRM-LME model are:
  - **SIGMAR1** (p<0.0080),
  - **COMT** (p<0.0014)

The covariates that are included in the MMRM-LME model for ADCS-ADL change are: time as continuous, AV2-73 concentration group (High and Low/Med), sex, APOE ε4 status, age (Low, High), baseline MMSE score, ongoing Donepezil treatment, SIGMAR1-Q2P, COMT-L146FS variants, interactions between time and concentration group, time and APOE ε4 status, time and SIGMAR1, time and COMT, concentration group and APOE ε4 status, and concentration group and SIGMAR1 variant.

Source: M Afshar et al., CTAD 2018 ** Alzheimer's Disease Cooperative Study Group - Activities of Daily Living Inventory (ADCS-ADL)*

Patients Treated with Higher ANAVEX®2-73 Concentration Show Higher MMSE* Performance Compared to Lower Concentration

High Concentration cohort shows 64 % less decline than low concentration cohort



- High plasma concentration of ANAVEX®2-73 [≥4.0 ng/ml] is correlated with the clinically administered dose

Covariates included in the MMRM-LME model for MMSE change are: time as continuous, AV2-73 concentration group (High and Low/Med), APOE ε4 status, age (Low, High), baseline MMSE score, SIGMAR1-Q2P variant, interactions between time and concentration group, time and APOE ε4 status, time and SIGMAR1, and concentration group and SIGMAR1 variant.

Source: M Afshar et al., CTAD 2018

** Mini Mental State Examination (MMSE)*

Precision Medicine (Genomic Biomarkers)
&
MMSE/ ADCS-ADL Trajectories

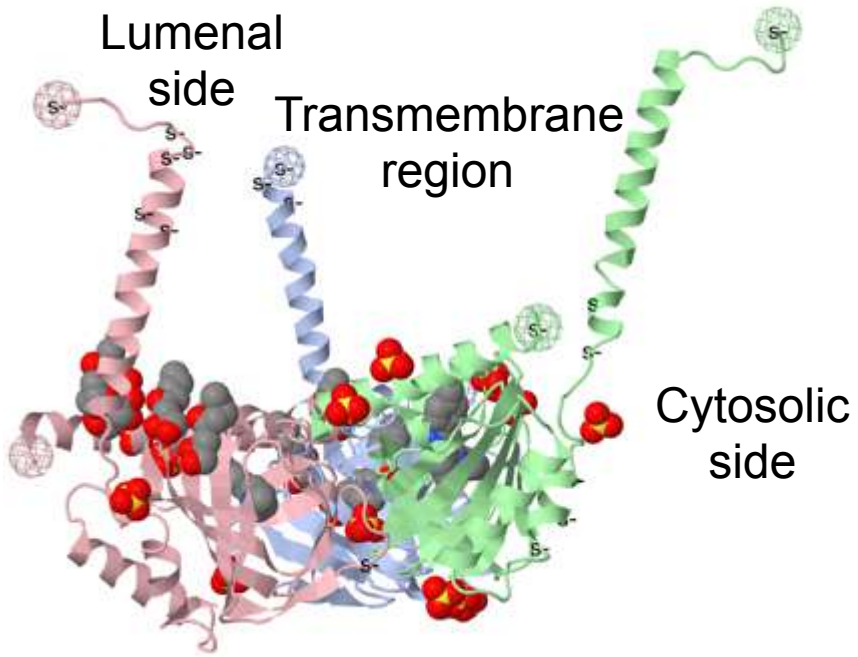
Identification of Gene “Signature” from ANAVEX®2-73-Treated Patients

- Genomic signature (WT SIGMAR1 gene) strongest responders to ANAVEX®2-73
- This genomic “biomarker” is **drug specific**, not indication specific, so it applies to all indications treated with ANAVEX®2-73

SIGMAR1 Gene Plays a Role in Protein Trafficking

SIGMAR1 WT structure

rs1800866 variant impairs protein trafficking

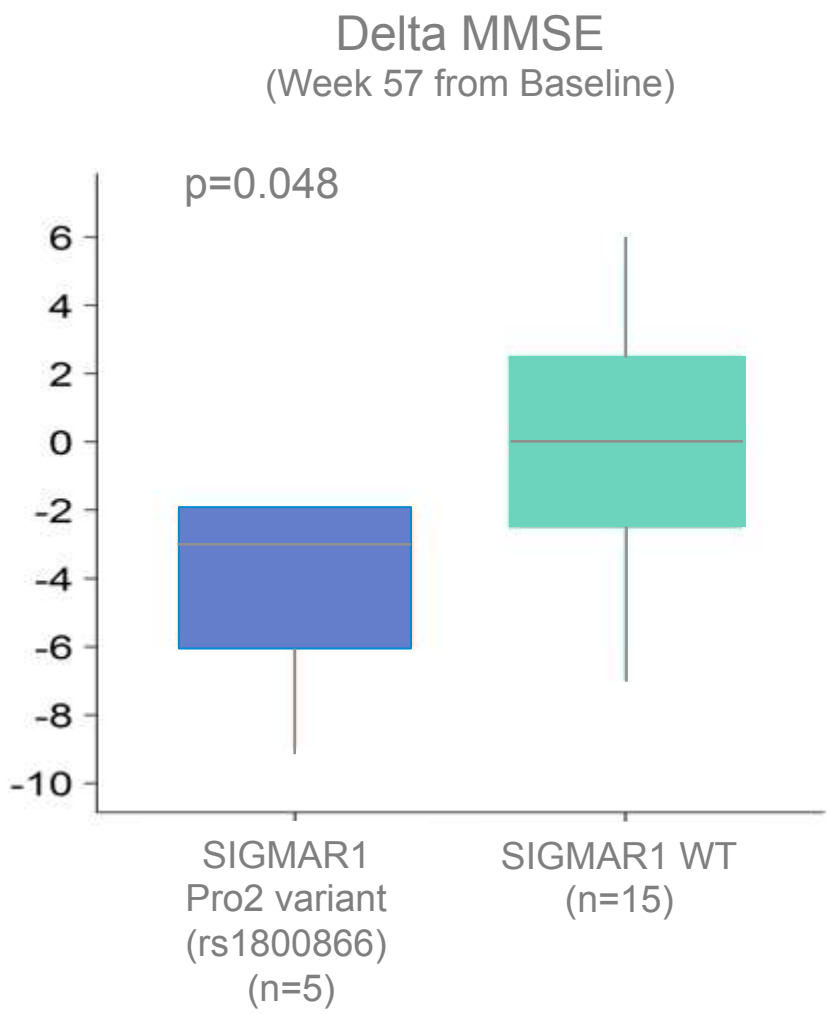


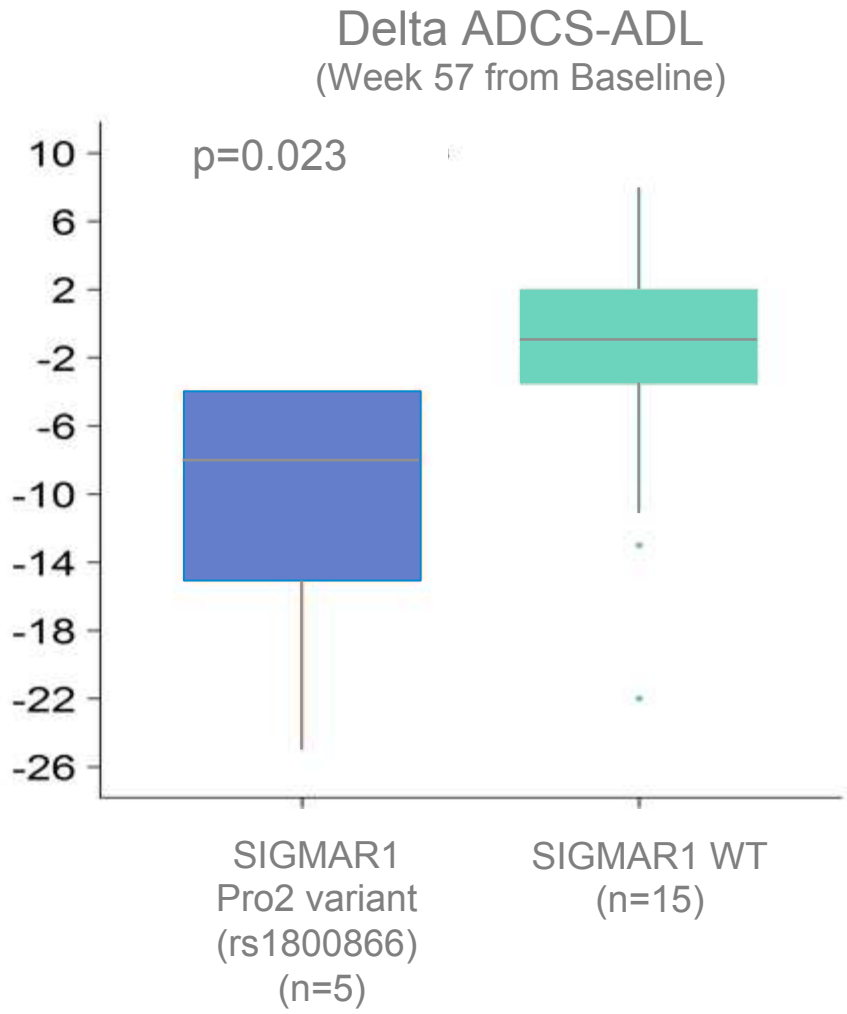
- Majority of the population (~80%) carries SIGMAR1 WT
- Majority of patients (~80%) are expected to benefit from SIGMAR1 activation with ANAVEX®2-73
- rs1800866 variant found in the remaining (~20%) of the population can cause structural change, leading to impaired protein trafficking

Adapted from: Laurini E., Marson D., Fermeglia M., Pricl S. (2017) 3D Homology Model of Sigma1 Receptor. Evolution of the Concept of Sigma Receptors. Handbook of Experimental Pharmacology, vol 244. Springer, Cham
Schmidt H.R. et al, Nature. 2016 Apr 28; 532(7600): 527–530

SIGMAR1 WT Gene Associated with Improved Response …

… and validated at **148** weeks





Source: H Hampel et al., AAIC 2018

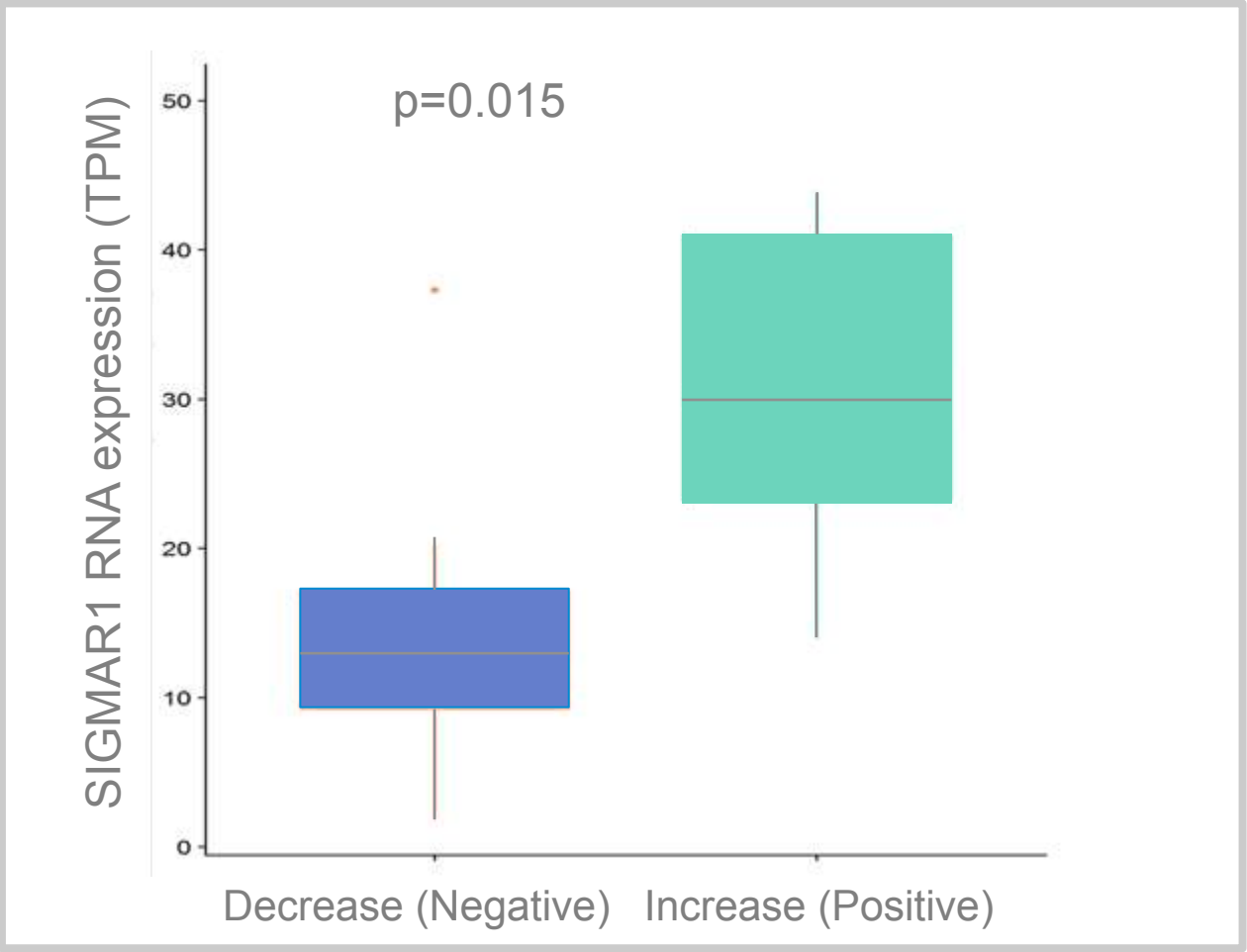
p = p-value of Mann–Whitney U test

All n=20 patients in study at week 57 with available genomic data

anavex

Patients Improvement Correlates with ANAVEX®2-73 and SIGMAR1 RNA Expression

Activities of Daily Living (ADCS-ADL)* Slope pattern from Baseline to Week 57



ANAVEX®2-73 positive response in functional (ADCS-ADL) outcomes in Alzheimer's disease patients corelate with SIGMAR1 mRNA levels

Gut Microbiota in AD

p = p-value of Mann–Whitney U test
All n=20 patients in study at week 57 with available genomic data

*Source: H Hampel et al., AAIC 2018; *Alzheimer's Disease Cooperative Study Activities of Daily Living 23-item scale (ADCS-ADL)*

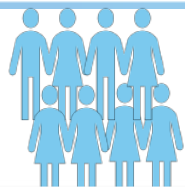
Clinical Studies:

- Parkinson’s Disease Dementia (PDD)
- Alzheimer’s Disease (AD)
- Rett Syndrome (RTT)

Overview ANAVEX®2-73 Ongoing Precision Medicine Clinical Trials

PHASE 2 PARKINSON'S DISEASE DEMENTIA

14 WEEK STUDY



120

ANAVEX®2-73-PDD-001 STUDY (NCT03774459)*

PHASE 2b/3 ALZHEIMER'S DISEASE

48 WEEK STUDY

450

ANAVEX®2-73-AD-004 STUDY (NCT03790709)*

PHASE 2 RETT SYNDROME**

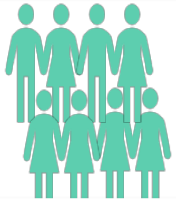
7 WEEK STUDY

15

ANAVEX®2-73-RS-001 STUDY (NCT03758924)*

PHASE 2a ALZHEIMER'S DISEASE

208 WEEK STUDY



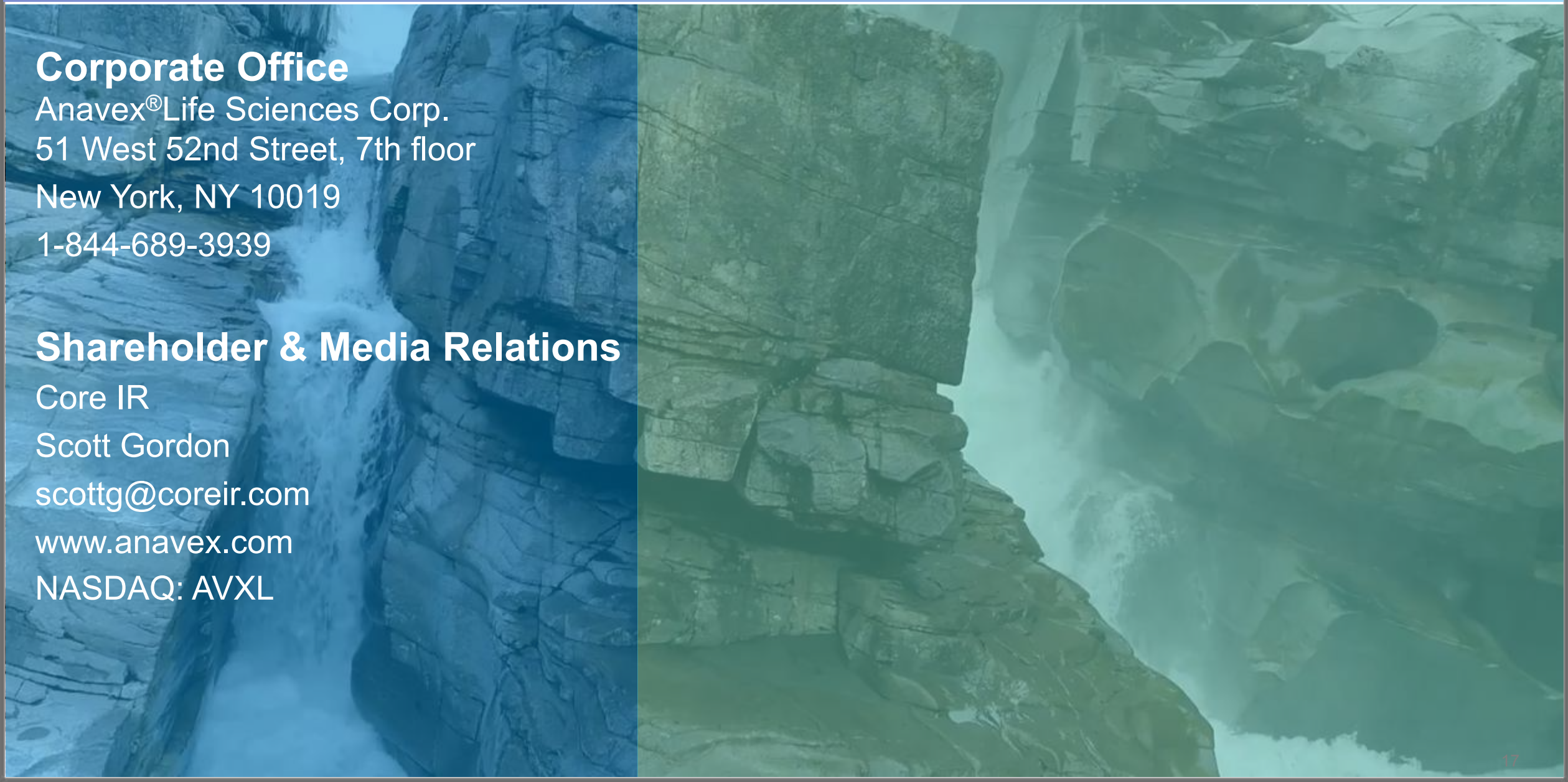
32

ANAVEX®2-73-AD-002/3 STUDY (NCT02244541/NCT02756858)*

- Sufficient cash including non-dilutive grant and governmental third party support to fund objectives for the next 2 years

**ClinicalTrials.gov Identifier; **FDA granted ANAVEX®2-73 Orphan Drug Designation (ODD) for Rett syndrome*

Contact Us



Corporate Office

Anavex®Life Sciences Corp.
51 West 52nd Street, 7th floor
New York, NY 10019
1-844-689-3939

Shareholder & Media Relations

Core IR
Scott Gordon
scottg@coreir.com
www.anavex.com
NASDAQ: AVXL