UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549

FORM 8-K

CURRENT REPORT
Pursuant to Section 13 or 15(d)
of the Securities Exchange Act of 1934

Date of Report (Date of earliest event reported): July 16, 2023

Acumen Pharmaceuticals, Inc.
(Exact name of Registrant as Specified in Its Charter)

Delaware	**001-40551**	**36-4108129**
(State or Other Jurisdiction of Incorporation)	**(Commission File Number)**	**(IRS Employer Identification No.)**

427 Park St., Charlottesville, Virginia	**22902**
(Address of Principal Executive Offices)	**(Zip Code)**

(434) 297-1000
(Registrant's Telephone Number, Including Area Code)

Not Applicable
(Former Name or Former Address, if Changed Since Last Report)

Check the appropriate box below if the Form 8-K filing is intended to simultaneously satisfy the filing obligation of the registrant under any of the following provisions (see General Instructions A.2. below):

☐ Written communications pursuant to Rule 425 under the Securities Act (17 CFR 230.425)

☐ Soliciting material pursuant to Rule 14a-12 under the Exchange Act (17 CFR 240.14a-12)

☐ Pre-commencement communications pursuant to Rule 14d-2(b) under the Exchange Act (17 CFR 240.14d-2(b))

☐ Pre-commencement communications pursuant to Rule 13e-4(c) under the Exchange Act (17 CFR 240.13e-4(c))

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Common Stock, $0.0001 par value	ABOS	The Nasdaq Global Select Market

Indicate by check mark whether the registrant is an emerging growth company as defined in Rule 405 of the Securities Act of 1933 (§230.405 of this chapter) or Rule 12b-2 of the Securities Exchange Act of 1934 (§240.12b-2 of this chapter).

Emerging growth company ☒

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☐

Item 7.01 Regulation FD Disclosure.

On July 16, 2023, the Acumen Pharmaceuticals, Inc. ("Acumen" or the "Company") issued a press release relating to the topline results from the Phase 1 INTERCEPT-AD trial of ACU193. A copy of this press release is furnished as Exhibit 99.1 to this Current Report on Form 8-K (this "Report") and is incorporated by reference.

Also on July 16, 2023, the Company posted an investor presentation relating to the topline results from the Phase 1 INTERCEPT-AD trial of ACU193 to its website at https://investors.acumenpharm.com/news-events/presentations, which the Company will use in connection with an investor update call on July 17, 2023 at 8:00 AM EDT. A copy of the investor presentation is attached as Exhibit 99.2 to this Report.

The information in this Item 7.01 of this Report (including Exhibit 99.1 and Exhibit 99.2), is being furnished and shall not be deemed "filed" for purposes of Section 18 of the Exchange Act, or otherwise subject to the liabilities of that Section, nor shall it be deemed incorporated by reference in any filing under the Securities Act or the Exchange Act, except as expressly set forth by specific reference in such filing. The Company's submission of this Report shall not be deemed an admission as to the materiality of any information required to be disclosed solely to satisfy the requirements of Regulation FD.

Item 8.01 Other Events.

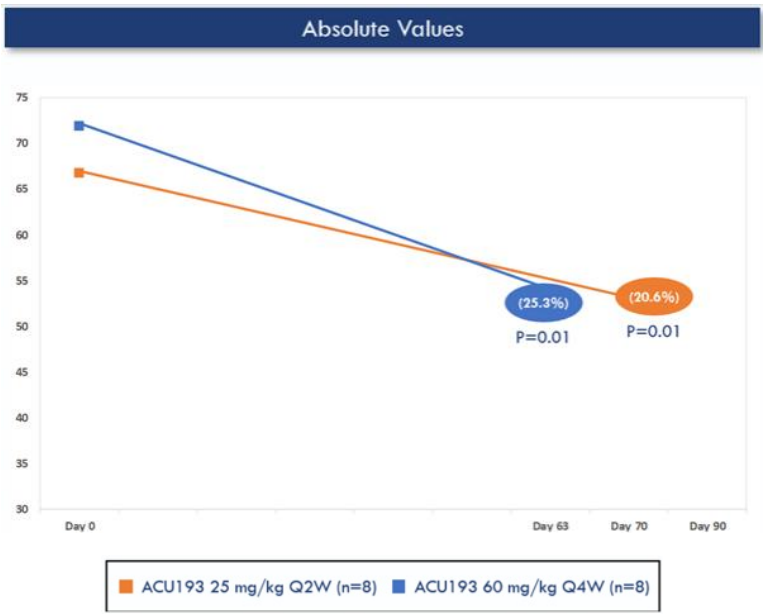
On July 16, 2023, the Company presented topline results from the Phase 1 INTERCEPT-AD trial of ACU193 at the Alzheimer's Association International Conference (AAIC®) 2023, taking place in Amsterdam and online from July 16-20, 2023.

Topline results demonstrated that ACU193 met the primary objective of the Phase 1, first-in-human, randomized, double-blind, placebo-controlled study in both single and multiple doses in 60 participants with early Alzheimer's disease ("AD"). Dose levels were 2, 10, 25 and 60 mg/kg for one to three doses administered intravenously. An analysis of change in amyloid plaque load, as measured by positron emission tomography ("PET") SUVr, demonstrated a rapid, dose-related mean decrease at the higher dose levels studied (60 mg/kg every 4 weeks [Q4W] and 25 mg/kg every 2 weeks [Q2W]). The overall rate of amyloid related imaging abnormalities – edema ("ARIA-E") was 10.4%, which included one case of symptomatic ARIA-E (2.1%). Pharmacokinetic ("PK") results in serum and cerebrospinal fluid ("CSF") demonstrated statistically significant dose proportionality and support monthly dosing of ACU193.

Statistically significant, dose-related central target engagement was observed as measured by ACU193-AßO complex, establishing the first target engagement assay developed that is specific to an AßO-targeting antibody. An exposure response relationship (Emax) model revealed near maximal target engagement with repeated dosing at 25 mg/kg and 60 mg/kg.

Higher doses of ACU193 (60 mg/kg Q4W and 25 mg/kg Q2W) showed a statistically significant reduction in amyloid plaque load as determined by amyloid PET after 6-12 weeks (from baseline to endpoint within cohorts ($p = 0.01$)). This finding provides evidence that ACU193 is active in the brain.

Mean Reduction in Amyloid Plaque (Centiloids)



Source: Acumen Pharmaceuticals, data on file; Cumulative drug administered: ACU193 60 mg/kg = 180 mg/kg (three doses administered); ACU193 25 mg/kg = 75mg/kg (three doses administered)

ACU193 was well-tolerated throughout the single-ascending ("SAD") and multiple-ascending ("MAD") dose cohorts. Three treatment-emergent serious adverse events were observed after administration of ACU193; all were deemed not related or unlikely related to ACU193. The most common treatment-emergent adverse events from all dose groups combined were ARIA-E (10.4%), ARIA-H (hemorrhage) (8.3%), COVID-19 (6.3%), hypersensitivity (6.3%), bronchitis (4.2%), headache (4.2%), fall (4.2%) and post LP syndrome (4.2%). Of the five individuals who developed ARIA-E, only one had associated clinical symptoms, representing an overall symptomatic ARIA-E rate of 2.1% in the study. Of note, no APOE4 homozygote patients exhibited ARIA-E (n=6 treated).

INTERCEPT-AD ARIA-E Results*

	10 mg/kg	25 mg/kg	60 mg/kg	Overall Study
Any ARIA-E	1/14 (7.1%)	1/14 (7.1%)	3/14 (21.4%)	5/48 (10.4%)
Symptomatic ARIA-E	0/14 (0.0%)	0/14 (0.0%)	1/14 (7.1%)	1/48 (2.1%)

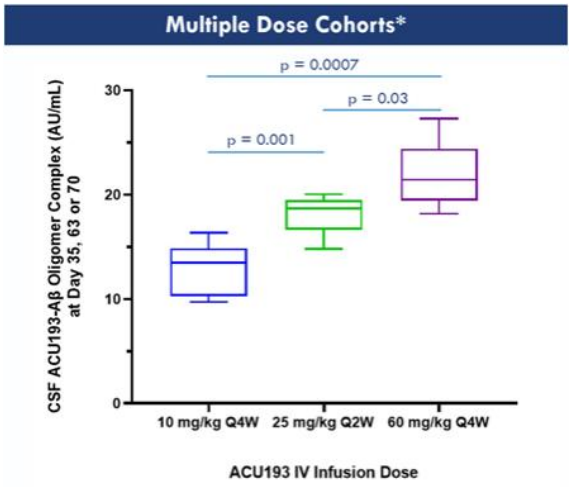
* 2 mg/kg cohort is omitted due to lack of ARIA-E cases. Denominator of 14 participants in 10 mg/kg, 25 mg/kg and 60 mg/kg inclusive of single-ascending dose and multiple-ascending dose cohorts. Overall study denominator of 48 participants includes all participants on ACU193.

In both the SAD and MAD cohorts of the study, clear evidence of a dose relationship was observed for ACU193 exposure. Serum PK was dose-related without drug accumulation, and CSF PK was dose- and dose-regimen proportional. Levels of ACU193 detected in CSF in all cohorts were in excess of endogenous levels of AßOs reported in CSF. Evidence of treatment emergent immunogenicity was observed; anti-drug antibodies were consistently low titer and preliminary assessment revealed no apparent effect on serum PK. These data support monthly dosing of ACU193.

In both the SAD and the MAD portions of the study, a statistically significant, dose-related increase in target engagement of toxic AßOs was observed starting at 10 mg/kg and was related to concentrations of drug in CSF. This was evaluated by a novel assay of target engagement that assessed the concentration of the ACU193-AßO complex

in CSF. Notably, maximal target engagement response was approached at the highest doses studied (25 mg/kg Q2W and 60 mg/kg Q4W), as assessed in an exposure-response relationship (Emax) model. This implies that at these dose levels, ACU193 concentrations approached saturation of AßOs, and suggests active removal of target from the brain.

Target Engagement of ACU193 with AßOs is Statistically Significant and Dose Proportional



* One patient from Cohort 5 (10 mg/kg Q4W) excluded because only received one administration of drug (study drug discontinued after lacunar infarct).

Exploratory measures of potential acute drug effects including assessment of cognition, as determined by a computerized cognitive battery, and changes in cerebral blood flow, as determined by arterial spin labelling with magnetic resonance imaging (Siemens MRI), did not show discernible effects from the immediate administration of ACU193. This was not unexpected due to the short duration and small sample size of INTERCEPT-AD. Additional biofluids for assessment of biomarkers of downstream neurodegeneration were collected during the study and analyses are in progress. These results will be presented at a later date and are not expected to show significant changes due to the short duration and small sample size of the trial.

The full results of the INTERCEPT-AD study will be presented at a future medical congress and submitted for publication in a peer-reviewed clinical journal. Acumen plans to discuss these results with regulators to assess next steps for the clinical development of ACU193 and determine a timeline for progressing to a Phase 2/3 clinical study.

Cautionary Note on Forward-Looking Statements

This Report contains forward-looking statements within the meaning of The Private Securities Litigation Reform Act of 1995. Words such as “will,” “anticipates,” “plans,” “potential”, “expected” and similar expressions are intended to identify forward-looking statements, although not all forward-looking statements contain these identifying words. Forward-looking statements include statements concerning the Company’s plans to present the full results of the INTERCEPT-AD Phase 1 clinical trial at future medical congresses and submit them for publication in a peer-reviewed clinical journal, and to discuss the results with regulators to assess next steps for the clinical development of ACU193 and determine a timeline for progressing to a Phase 2/3 clinical study. These statements are based upon the current beliefs and expectations of the Company’s management, and are subject to certain factors, risks and uncertainties, particularly those inherent in the process of discovering, developing and commercializing safe and effective human therapeutics. Such risks may be amplified by the impacts of the COVID-19 pandemic. These and other risks concerning Acumen’s programs are described in additional detail in Acumen’s filings with the Securities and Exchange Commission, including in Acumen’s Form 10-K for the year ended December 31, 2022 and future filings and reports by Acumen. Copies of these and other documents are available from Acumen. Additional information will be made available in other filings that Acumen makes from time to time with the SEC. These forward-looking statements speak only as of the date hereof, and Acumen expressly disclaims any obligation to update or revise any forward-looking statement, except as otherwise required by law, whether, as a result of new information, future events or otherwise. In this presentation, references to cash also include cash equivalents.

Item 9.01 Financial Statements and Exhibits.

(d). Exhibits

Exhibit No.	Description
99.1	Press Release, dated July 16, 2023.
99.2	Investor Presentation, dated July 17, 2023
104	Cover Page Interactive Data File (embedded within the Inline XBRL document).

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, as amended, the Company has duly caused this report to be signed on its behalf by the undersigned hereunto duly authorized.

Acumen Pharmaceuticals, Inc.

Dated: July 17, 2023

By: /s/ Matthew Zuga
Matthew Zuga
Chief Financial Officer and Chief Business Officer

Acumen Pharmaceuticals Presents Positive Topline Results from First-in-Human Phase 1 Study of ACU193 for Early Alzheimer's Disease at the Alzheimer's Association International Conference (AAIC) 2023

- *Topline results from INTERCEPT-AD trial met primary and secondary objectives, demonstrating proof-of-mechanism for ACU193, the first clinical-stage amyloid beta oligomer (AßO)-targeting antibody*
- *Rapid, dose-related, statistically significant (p=0.01) amyloid plaque reduction observed within higher dose cohorts (25% reduction in 60 mg/kg Q4W cohort at day 63 and 20% reduction in 25 mg/kg Q2W cohort at day 70)*
- *ACU193 approached maximal central target engagement of toxic AßOs beyond expected levels, establishing broad therapeutic index and path to convenient monthly dosing*
- *ACU193 was well-tolerated in patients with early Alzheimer's disease and resulted in no drug-related serious adverse events, with a low rate of ARIA-E across all cohorts*
- *Company to host conference call and webcast for investors and analysts July 17 at 8 a.m. ET*

CHARLOTTESVILLE, VA. and CARMEL, IND., July 16, 2023 – Acumen Pharmaceuticals, Inc. (NASDAQ: ABOS), a clinical-stage biopharmaceutical company developing a novel therapeutic that targets soluble amyloid beta oligomers (AßOs) for the treatment of Alzheimer's disease (AD), today presented positive topline results from the Phase 1 INTERCEPT-AD trial of ACU193, the first clinical-stage AßO targeting antibody therapy in early AD, at the Alzheimer's Association International Conference (AAIC®) 2023, taking place in Amsterdam and online from July 16-20, 2023.

Topline results demonstrated that ACU193 was generally well-tolerated with a compelling overall safety profile, meeting the primary objective of this Phase 1, first-in-human, randomized, double-blind, placebo-controlled study in both single and multiple doses in 60 participants with early AD. Dose levels were 2, 10, 25 and 60 mg/kg for one to three doses administered intravenously. An analysis of change in amyloid plaque load, as measured by positron emission tomography (PET) SUVr, demonstrated a rapid, dose-related mean decrease at the higher dose levels studied (60 mg/kg every 4 weeks [Q4W] and 25 mg/kg every 2 weeks [Q2W]). This finding is comparable to mean amyloid plaque decreases of approved Aß monoclonal antibodies at similar time points in their clinical development. The overall rate of amyloid related imaging abnormalities – edema (ARIA-E) was 10.4%, which included one case of symptomatic ARIA-E (2.1%). Pharmacokinetic results in serum and cerebrospinal fluid (CSF) demonstrated statistically significant dose proportionality and support monthly dosing of ACU193.

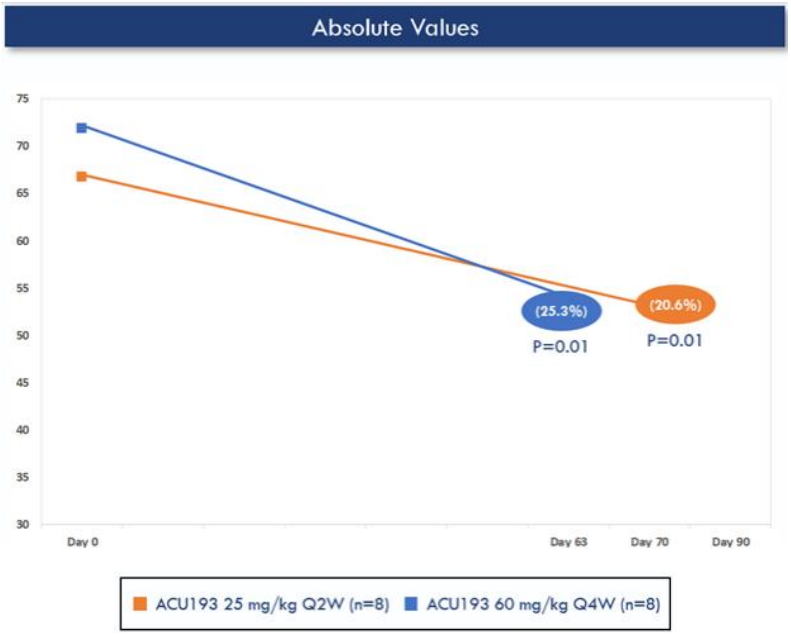
Statistically significant, dose-related central target engagement was observed as measured by ACU193-AßO complex, establishing the first target engagement assay developed that is specific to an AßO-targeting antibody. An exposure response relationship (Emax) model revealed near maximal target engagement with repeated dosing at 25 mg/kg and 60 mg/kg.

“We are very pleased to present the first clinical data from our Phase 1 INTERCEPT-AD study at AAIC. ACU193’s observed dose-related central target engagement, rapid reduction of amyloid plaque and compelling safety profile validate our confidence in ACU193’s differentiated mechanism of action: selectively targeting amyloid beta oligomers,” said Daniel O’Connell, President and Chief Executive Officer of Acumen. “We believe that the robust data package generated by this comprehensive Phase 1 study establishes ACU193’s broad therapeutic index and guides a future clinical dosing rationale. We look forward to an anticipated interaction with the FDA in the fourth quarter to inform our next phase of development for ACU193.”

ACU193 Demonstrated Rapid, Dose-Related, Statistically Significant Amyloid Plaque Reduction

Higher doses of ACU193 (60 mg/kg Q4W and 25 mg/kg Q2W) showed a statistically significant reduction in amyloid plaque load as determined by amyloid PET after 6-12 weeks (from baseline to endpoint within cohorts ($p = 0.01$)). This finding provides evidence that ACU193 is active in the brain.

Mean Reduction in Amyloid Plaque (Centiloids)



Source: Acumen Pharmaceuticals, data on file; Cumulative drug administered: ACU193 60 mg/kg = 180 mg/kg (three doses administered); ACU193 25 mg/kg = 75mg/kg (three doses administered)

ACU193 was Well-Tolerated Across Dose Cohorts

ACU193 was well-tolerated throughout the single-ascending (SAD) and multiple-ascending (MAD) dose cohorts. Three treatment-emergent serious adverse events (SAEs) were observed after administration of ACU193; all were deemed not related or unlikely related to ACU193. The most common treatment-emergent adverse events (AEs) from all dose groups combined were ARIA-E (10.4%), ARIA-H (hemorrhage) (8.3%), COVID-19 (6.3%), hypersensitivity (6.3%), bronchitis (4.2%), headache (4.2%), fall (4.2%) and post LP syndrome (4.2%). Of the five individuals who developed ARIA-E, only one had associated clinical symptoms, representing an overall symptomatic ARIA-E rate of 2.1% in the study. Of note, no APOE4 homozygote patients exhibited ARIA-E (n=6 treated).

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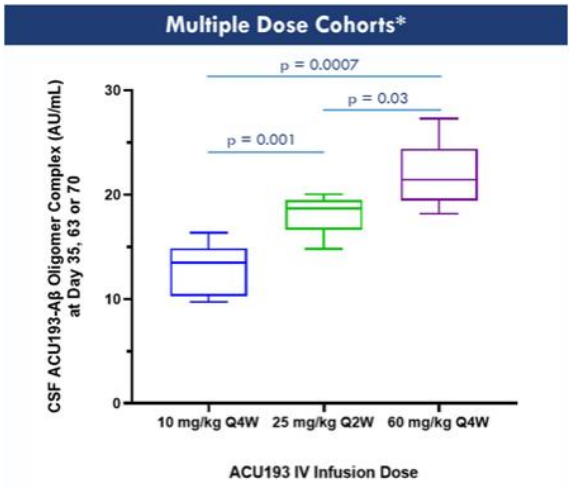
ACU193 Demonstrated Consistent Dose-Related Pharmacokinetics (PK)

In both the SAD and MAD cohorts of the study, clear evidence of a dose relationship was observed for ACU193 exposure. Serum PK was dose-related without drug accumulation, and CSF PK was dose- and dose-regimen proportional. Levels of ACU193 detected in CSF in all cohorts were in excess of endogenous levels of AßOs reported in CSF. Evidence of treatment emergent immunogenicity was observed; anti-drug antibodies were consistently low titer and preliminary assessment revealed no apparent effect on serum PK. These data support monthly dosing of ACU193.

ACU193 Demonstrated Dose-Related Target Engagement of Toxic AßOs

In both the SAD and the MAD portions of the study, a statistically significant, dose-related increase in target engagement of toxic AßOs was observed starting at 10 mg/kg and was related to concentrations of drug in CSF. This was evaluated by a novel assay of target engagement that assessed the concentration of the ACU193-AßO complex in CSF. Notably, maximal target engagement response was approached at the highest doses studied (25 mg/kg Q2W and 60 mg/kg Q4W), as assessed in an exposure-response relationship (Emax) model. This implies that at these dose levels, ACU193 concentrations approached saturation of AßOs, and suggests active removal of target from the brain.

Target Engagement of ACU193 with AßOs is Statistically Significant and Dose Proportional



* One patient from Cohort 5 (10 mg/kg Q4W) excluded because only received one administration of drug (study drug discontinued after lacunar infarct).

“I am thrilled to announce that ACU193 bound to toxic AßOs in patients and did so in a dose-proportional manner with evidence of near-maximal target engagement. I’m also proud that our team has made significant progress developing the first target engagement assay for an Aß oligomer-targeted antibody,” said Eric Siemers, M.D., Chief Medical Officer of Acumen. “Taken together with the compelling safety profile at doses that engage the target, and pharmacokinetic data that supports monthly dosing, ACU193 has the distinct potential to be a differentiated antibody for the treatment of early Alzheimer’s disease.”

Exploratory measures of potential acute drug effects including assessment of cognition, as determined by a computerized cognitive battery, and changes in cerebral blood flow, as determined by arterial spin labelling (ASL) with magnetic resonance imaging (Siemens MRI), did not show discernible effects from the immediate administration of ACU193. This was not unexpected due to the short duration and small sample size of INTERCEPT-AD. Additional biofluids for assessment of biomarkers of downstream neurodegeneration were collected during the study and analyses are in progress. These results will be presented at a later date and are not expected to show significant changes due to the short duration and small sample size of the trial.

In addition to the topline readout, Acumen also presented data during the Featured Research Session at AAIC describing the baseline characteristics for INTERCEPT-AD patients as well as study recruitment techniques that were used to help Acumen recruit a diverse population for the trial.

The full results of the INTERCEPT-AD study will be presented at a future medical congress and submitted for publication in a peer-reviewed clinical journal. Acumen plans to discuss these results with regulators to assess next steps for the clinical development of ACU193 and determine a timeline for progressing to a Phase 2/3 clinical study.

Conference Call Details

Acumen will host a webcast presentation and conference call for analysts and investors on Monday, July 17, 2023, at 8:00 a.m. ET to discuss the topline data from the INTERCEPT-AD clinical trial. The webcast will feature members of Acumen's leadership team as well as Steven DeKosky, M.D., Deputy Director of the McKnight Brain Institute at the University of Florida and member of Acumen's scientific advisory board, and Lawrence Honig, M.D., Ph.D., Director of the New York State Center of Excellence for Alzheimer's Disease at Columbia University and an INTERCEPT-AD trial investigator.

To participate in the live conference call, please register using this link. After registration, you will be informed of the dial-in numbers including PIN.

The webcast audio will be available via this link.

An archived version of the webcast will be available for at least 30 days in the Investors section of the Company's website at www.acumenpharm.com.

About ACU193

ACU193 is a humanized monoclonal antibody (mAb) discovered and developed based on its selectivity for soluble AßOs, which Acumen believes are the most toxic and pathogenic form of Aß, relative to Aß monomers and amyloid plaques. Soluble AßOs have been observed to be potent neurotoxins that bind to neurons, inhibit synaptic function and induce neurodegeneration. By selectively targeting toxic soluble AßOs, ACU193 aims to directly address a growing body of evidence indicating that soluble AßOs are a primary underlying cause of the neurodegenerative process in Alzheimer's disease. ACU193 has been granted Fast Track designation for the treatment of early Alzheimer's disease by the U.S. Food and Drug Administration.

About INTERCEPT-AD

INTERCEPT-AD is a Phase 1, U.S.-based, multi-center, randomized, double-blind, placebo-controlled clinical trial evaluating the safety and tolerability, and establishing clinical proof of mechanism, of ACU193 in patients with early Alzheimer's disease (AD). Sixty-five individuals with early AD (mild

cognitive impairment or mild dementia due to AD) enrolled in this first-in-human study of ACU193. The INTERCEPT-AD study consists of single-ascending-dose (SAD) and multiple-ascending-dose (MAD) cohorts and is designed to evaluate the safety, tolerability, pharmacokinetics (PK), and target engagement of intravenous doses of ACU193. More information can be found on www.clinicaltrials.gov, NCT identifier NCT04931459.

About Acumen Pharmaceuticals, Inc.

Acumen, headquartered in Charlottesville, VA, with clinical operations based in Carmel, IN, is a clinical-stage biopharmaceutical company developing a novel therapeutic that targets toxic soluble amyloid beta oligomers (AßOs) for the treatment of Alzheimer's disease (AD). Acumen's scientific founders pioneered research on AßOs, which a growing body of evidence indicates are early and persistent triggers of Alzheimer's disease pathology. Acumen is currently focused on advancing its investigational product candidate, ACU193, a humanized monoclonal antibody that selectively targets toxic soluble AßOs. For more information, visit www.acumenpharm.com.

Forward-Looking Statements

This press release contains forward-looking statements within the meaning of The Private Securities Litigation Reform Act of 1995. Words such as "believes," "expects," "anticipates," "aims," "plans," "potential," "will," and similar expressions are intended to identify forward-looking statements, although not all forward-looking statements contain these identifying words. Forward-looking statements include statements concerning the safety profile and mechanism of action of Acumen's product candidate, ACU193, the regulatory path and clinical development of ACU193, including a possible Phase 2/3 study, and the timing of the presentation of additional data on ACU193. These statements are based upon the current beliefs and expectations of Acumen management, and are subject to certain factors, risks and uncertainties, particularly those inherent in the process of discovering, developing and commercializing safe and effective human therapeutics. Such risks may be amplified by the impacts of geopolitical events and macroeconomic conditions, such as rising inflation and interest rates, supply disruptions and uncertainty of credit and financial markets. These and other risks concerning Acumen's programs are described in additional detail in Acumen's filings with the Securities and Exchange Commission ("SEC"), including in Acumen's most recent Annual Report on Form 10-K, and in subsequent filings with the SEC, including Acumen's most recent Quarterly Report on Form 10-Q. Copies of these and other documents are available from Acumen. Additional information will be made available in other filings that Acumen makes from time to time with the SEC. These forward-looking statements speak only as of the date hereof, and Acumen expressly disclaims any obligation to update or revise any forward-looking statement, except as otherwise required by law, whether, as a result of new information, future events or otherwise.

Investors:

Alex Braun
abraun@acumenpharm.com

Media:

Jessica Laub
ICR Westwicke
AcumenPR@westwicke.com

Exhibit 99.2

Investor Conference Call to Discuss INTERCEPT-AD Results

July 17, 2023

Forward-Looking Statements

This presentation contains forward-looking statements within the meaning of The Private Securities Litigation Reform Act of 1995. Any statement describing Acumen's goals, expectations, financial or other projections, intentions or beliefs is a forward-looking statement and should be considered an at-risk statement. Words such as "believes," "expects," "anticipates," "could," "should," "would," "seeks," "aims," "plans," "potential," "will," "milestone" and similar expressions are intended to identify forward-looking statements, although not all forward-looking statements contain these identifying words. Forward-looking statements include statements concerning: Acumen's business; the safety, tolerability, pharmacokinetics, target engagement and other clinical measures associated with Acumen's product candidate, ACU193, including its performance against other antibodies; and the anticipated timeline for reporting topline data. These statements are based upon the current beliefs and expectations of Acumen management, and are subject to certain factors, risks and uncertainties, particularly those inherent in the process of discovering, developing and commercializing safe and effective human therapeutics. Such risks may be amplified by the impacts of geopolitical events and macroeconomic conditions, such as rising inflation and interest rates, supply disruptions and uncertainty of credit and financial markets. These and other risks concerning Acumen's programs are described in additional detail in Acumen's filings with the Securities and Exchange Commission ("SEC"), including in Acumen's most recent Annual Report on Form 10-K, and in subsequent filings with the SEC, including Acumen's most recent Quarterly Report on Form 10-Q. Copies of these and other documents are available from Acumen. Additional information will be made available in other filings that Acumen makes from time to time with the SEC. These forward-looking statements speak only as of the date hereof, and Acumen expressly disclaims any obligation to update or revise any forward-looking statement, except as otherwise required by law, whether, as a result of new information, future events or otherwise.

Agenda

- **Introduction**

  Alex Braun, Head of Investor Relations

- **ACU193 & INTERCEPT-AD Topline Results**

  Dan O'Connell, Chief Executive Officer

  Dr. Eric Siemers, Chief Medical Officer

- **Topline Results Q&A**

  Dr. Eric Siemers, Chief Medical Officer

  Dr. Steven DeKosky, *Deputy Director of the McKnight Brain Institute at the University of Florida and member of Acumen's scientific advisory board*

  Dr. Lawrence Honig, *Director of the New York State Center of Excellence for Alzheimer's Disease at Columbia University and INTERCEPT-AD trial investigator*

- **Open Q&A**

  Dan O'Connell, Chief Executive Officer

  Dr. Eric Siemers, Chief Medical Officer

  Matt Zuga, Chief Business Officer & Chief Financial Officer

  Dr. Steven DeKosky

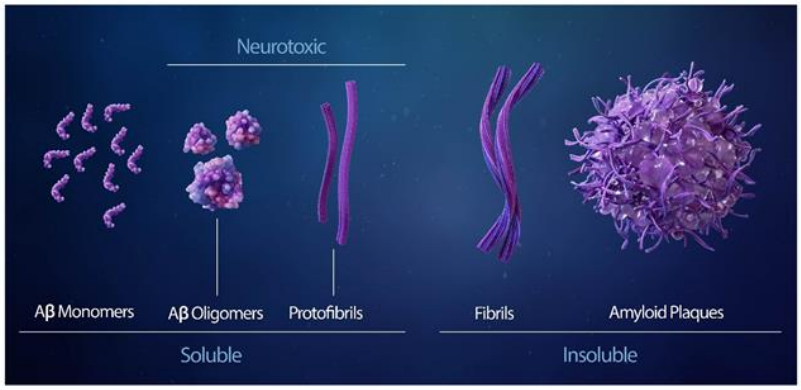
  Dr. Lawrence Honig

ACU193: Novel mAb Targeting Amyloid Beta Oligomers (AβOs), the Most Toxic Form of Aβ

ACUMEN

ACU193: A Monoclonal Antibody that Selectively Binds Toxic AβOs

- Humanized, affinity matured mAb developed to target toxic Aβ oligomers
  - >500-fold greater selectivity for AβOs over Aβ monomers
  - >85-fold selectivity for AβOs over Aβ fibrils
- IgG2 subclass mAb with reduced effector function
  - Potential for more selective targeting of AβOs and lower ARIA-E relative to Aβ plaque directed mAbs
- ACU193 discovered as part of research collaboration between Acumen and Merck & Co.
  - Currently developed by several former senior members of Eli Lilly's Global Alzheimer's development team
- ACU193 has been granted Fast Track designation for the treatment of early Alzheimer's disease by the U.S. FDA



ACU193 high selectivity for toxic AβOs may provide superior cognitive efficacy and improved safety and tolerability

INTERCEPT-AD Results Confirm Proof of Mechanism for ACU193 and Demonstrate Reduction in Amyloid Plaques at Higher Doses Studied

1. **Rapid, dose-related, statistically significant amyloid plaque reduction observed at higher doses studied (60 mg/kg Q4W and 25 mg/kg Q2W cohorts)* at 6-12 weeks**
   - Comparable to currently approved Aβ monoclonal antibodies at similar time points in their clinical development
2. **First antibody to demonstrate target engagement of Aβ oligomers, the most toxic form of amyloid beta, in a dose-related manner**
   - Serum and CSF exposure are dose proportional; antibody concentrations significantly exceeded levels of endogenous oligomers
   - Highest doses studied (25 mg/kg Q2W and 60 mg/kg Q4W) approached maximal target engagement (23.2 AU/mL Emax)
3. **Compelling overall safety profile, with low rate of ARIA-E**
   - No known drug-related SAEs; treatment emergent ADAs consistently low titer
   - No cases of symptomatic ARIA-E at 10 mg/kg Q4W and 25 mg/kg Q2W doses
   - No ARIA-E observed in ApoE4 homozygotes (n=6)
4. **Broad therapeutic index; clear path to more convenient monthly dosing regimen**

*Statistically significant reduction from baseline to endpoint within cohorts (p = 0.01)

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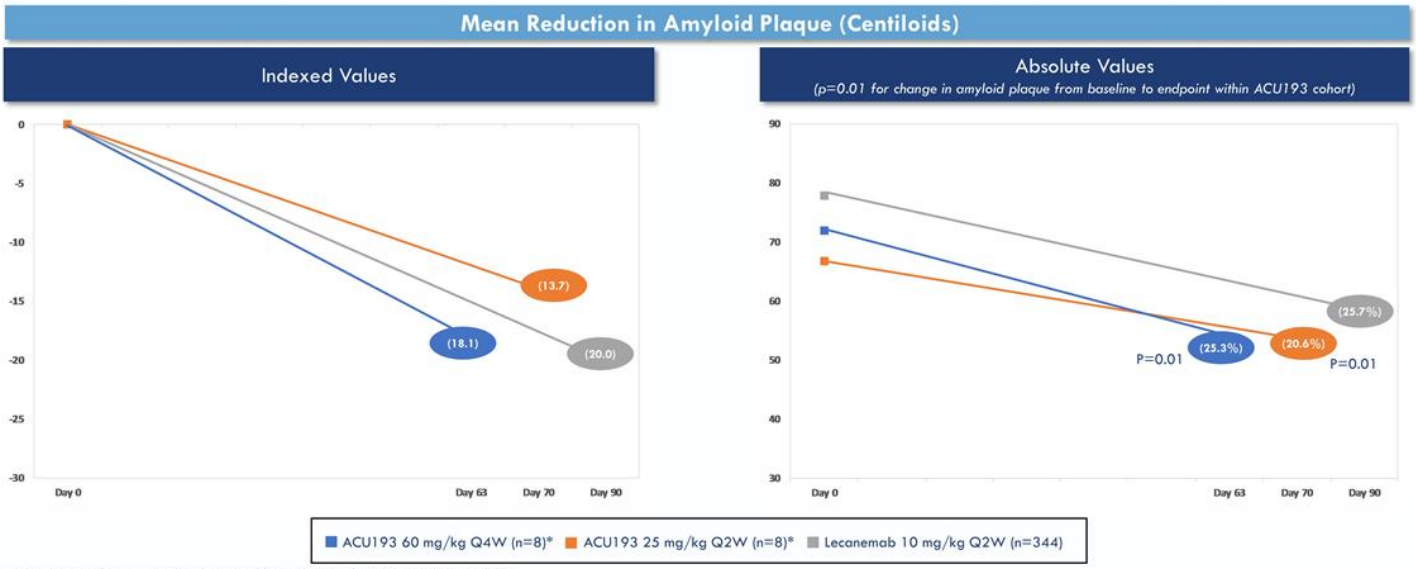
Highest Doses of ACU193 Demonstrate Rapid Reduction in Amyloid Plaque Reduction Comparable to Lecanemab (in Phase 3) at Similar Timeframe



*Statistically significant reduction from baseline to endpoint within cohort (p = 0.01).

Source: Acumen Pharmaceuticals, data on file; van Dyck (2023), NEJM (amyloid PET reduction estimated from graphs); Cumulative drug administered: ACU193 60mg/kg = 180 mg/kg (three doses administered); ACU193 25mg/kg = 75mg/kg (three doses administered)

Note: There have been no head-to-head clinical trials between the product candidates listed above. Study designs and protocols for each product candidate were different, and as a result, results may not be comparable between product candidates.

Low ARIA-E at Elevated Single Doses Enables Broad Therapeutic Index

Lower Doses	Aducanumab[1] (30 mg/kg)	Donanemab[2] (20 mg/kg)	Lecanemab[3] (15 mg/kg)	ACU193[4,5] (25 mg/kg)
ARIA-E rate	0% (0/6)	28.6% (2/7)	0% (0/6)	0% (0/6)
Higher Doses	**Aducanumab[1] (60 mg/kg)**	**Donanemab[2] (40 mg/kg)**	**Lecanemab[3]**	**ACU193[4] (60 mg/kg)**
ARIA-E rate	100% (3/3)	50% (2/4)	Not tested	14.3% (2/14)

1. Ferrero et al. Alzheimer's & Dementia: Translational Research & Clinical Interventions 2 (2016) 169-176 (3 of 3 ARIA-E cases symptomatic).
2. Lowe et al. J Prev Alz Dis 2021; Published online http://dx.doi.org/10.14283/jpad.2021.56 (2 of 12 total ARIA-E cases symptomatic).
3. Logovinsky et al. Alzheimer's Research & Therapy (2016) 8:14 DOI 10.1186/s13195-016-0181-2.
4. Acumen Pharmaceuticals, data on file (1 of 2 ARIA-E cases symptomatic).
5. For 25 mg/kg dosing level, analyzed SAD patient group (6 patients) instead of both SAD and MAD because MRIs were after the second dose of MAD (dosing was Q2W and first MRI was on Day 28)

Note: There have been no head-to-head clinical trials between any of the product candidates listed above. Study designs and protocols for each product candidate were different, and as a result, results may not be comparable between product candidates.

Low levels of ARIA-E at elevated single doses compared with aducanumab and donanemab, as was expected, and now is confirmed

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Proof of Mechanism Achieved

Low Levels of ARIA-E, Dose-Related Target Engagement, CSF ACU193 Levels Exceeding AβO Levels, Supporting Q4W Dosing

		Potentially Therapeutic Doses		
Endpoint	**Critical Success Factors**	**10mg/kg**	**25mg/kg**	**60mg/kg**
Safety & Tolerability	• Deaths, SAEs Related to Study Drug	**None**	**None**	**None**
	• Any ARIA-E	1/14 (7.1%)	1/14 (7.1%)	3/14 (21.4%)
	• Symptomatic ARIA-E	0/14 (0.0%)	0/14 (0.0%)	1/14 (7.1%)
PK	• Consistent Dose-Related PK • CSF Exposure Above Oligomer Levels	**Achieved** *(**Significantly Higher** than Reported Aβ Oligomer Levels)*	**Achieved** *(**Orders of Magnitude Higher** than Reported Aβ Oligomer Levels)*	**Achieved** *(**Orders of Magnitude Higher** than Reported Aβ Oligomer Levels)*
Target Engagement	• Measurement of ACU193-Aβ Oligomer Complex in CSF	**Measurement Achieved**	**Dose-Dependent; Nearing Max Target Engagement**	**Dose-Dependent; Nearing Max Target Engagement**
Amyloid PET	• Reduction in Amyloid PET in Centiloids	**No Reduction Observed**	**Reduction within MAD Cohort** *($p = 0.01$)*	**Reduction within MAD Cohort** *($p = 0.01$)*

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INTERCEPT-AD Summary

Design	Robust and well-designed study with well established (PK, ARIA) and novel endpoints (AβO target engagement, COGState/ASL)
Execution	60 patients enrolled, no training difficulties observed
Data	Proof-of-Mechanism achieved and new learnings demonstrated through statistically significant plaque reduction shown in highest MAD dose cohorts
Dosing	Optionality for dose in next phase of development (Proof of Concept) – broad therapeutic index due to higher doses nearing maximal target engagement
Team	Former Eli Lilly AD Development Team executing ACU193 trials since initiation of Phase 1 & plans to advance program into next stage of development

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INTERCEPT-AD Topline Results

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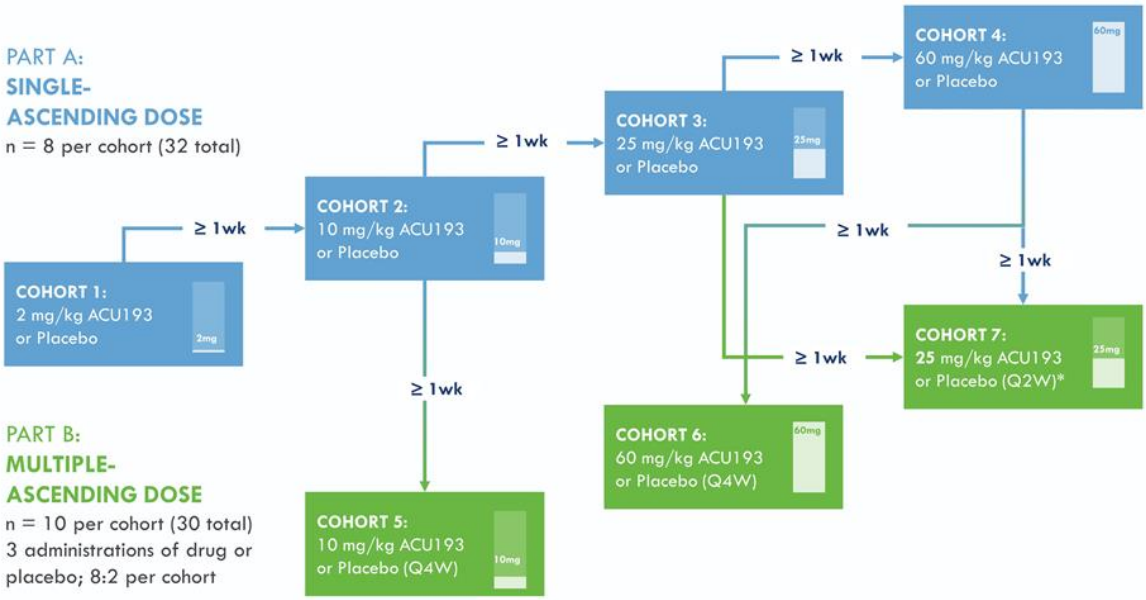
INTERCEPT-AD: A Randomized Placebo Controlled Phase 1 in Early AD patients



Q2W: Dosing every two weeks; Q4W: Dosing every four weeks.

INTERCEPT-AD Baseline Characteristics

Modified intent to treat

Characteristic	ACU193 N=48	Placebo N=14
Age, mean (SD)	72.3 (7.9)	71.5 (7.5)
Gender Female, n (%)	27 (56.3)	7 (50)
Race Caucasian, n (%)	46 (95.8)	14 (100)
Ethnicity non-Latino, n (%)	41 (85.4)	13 (92.9)
BMI, mean (SD)	28.0 (5.4)	28.9 (5.7)
MMSE, mean (SD)	24.1 (3.7)	24.8 (3.6)
CDR-GS, mean (SD)	0.6 (0.3)	0.6 (0.2)
CDR-SB, mean (SD)	3.6 (1.9)	3.2 (1.8)
APOE4 homozygote, n (%)	6 (12.5)	2 (14.3)
APOE4 heterozygote, n (%)	21 (43.8)	8 (57.1)

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Treatment Emergent SAEs

Treatment Assignment	SAE Verbatim	Severity	Relationship	Action Taken	Outcome
10mg/kg (Cohort 5, MAD)	Ovarian Fibroma	3	**Not Related**	Dose Not Changed	Resolved
10mg/kg (Cohort 5, MAD)	Pneumonia	3	**Unlikely Related**	Dose Not Changed	Resolved
10mg/kg (Cohort 5, MAD)	Altered Mental Status	2	**Not Related**	Dose Not Changed	Resolved

All SAEs for patients taking ACU193 were deemed unrelated or unlikely related by the site Principal Investigator

ARIA-E Summary for INTERCEPT-AD

SAD

2 mg/kg
Cohort 1

ApoE	D21	D140
3,4		
3,3	PBO	PBO
3,4		
2,3		
3,4	PBO	PBO
3,3		
3,3		
3,3		

10 mg/kg
Cohorts 2, 5

ApoE	D21	D140
3,4	PBO	PBO
3,3		
3,3		
3,4		
3,4	PBO	PBO
3,4		
3,4		
3,4		

25 mg/kg
Cohorts 3, 7

ApoE	D21	D140
3,3		
3,3	PBO	PBO
4,4		
3,3		
2,4		
3,3	PBO	PBO
3,4		
3,3		

60 mg/kg
Cohorts 4, 6

ApoE	D21	D140
4,4	PBO	PBO
3,4		
3,4	PBO	PBO
3,3		
3,3		
3,4		
2,4		
3,4		

NO ARIA-E
Asymptomatic ARIA-E
Symptomatic ARIA-E
Discontinued

MAD

ApoE	D28	D70	D196
2,3			
3,3			
3,3			
4,4			
3,3	PBO	PBO	PBO
3,4			
4,4			
3,4			
3,3			
3,4	PBO	PBO	PBO

ApoE	D28	D70	D98
3,3			
3,4			
3,4			
3,4			
3,4			
3,4	PBO	PBO	PBO
3,3			
3,4	PBO	PBO	PBO
4,4			
4,4			

ApoE	D28	D63	D126
3,4			
3,3			
3,3			
4,4			
4,4	PBO	PBO	PBO
3,3			
3,4			
3,4			
3,4	PBO	PBO	PBO
3,3			

PBO: Patient on placebo

No ε4 homozygotes developed ARIA-E despite comprising 13% in study;
4/5 ARIA-E cases are ε4 heterozygotes which comprise 47% of our study population

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Safety Update: ARIA-E, Total 5 Cases

Cohort	ApoE4	Gender	Age	Baseline/Endpoint Plaque Load (Centiloids)	Severity by FDA Criteria
C4 SAD 60 mg/kg	**Heterozygote**	**F**	**58**	93.1/83.8	Moderate - Asymptomatic
C5 10 mg/kg Q4W	**Heterozygote**	**F**	**72**	78.2/62.2	Mild - Asymptomatic 3rd/final dose on D56
C6 60 mg/kg Q4W	**Heterozygote**	**F**	**80**	89.1/46.9	Moderate - **Symptomatic** (R leg dysfunction) 1 dose at BL; 2 remaining doses withheld
C6 60 mg/kg Q4W	**NonCarrier**	**F**	**56**	111.2/80.7	Mild - Asymptomatic 3rd/final dose on D56
C7 25 mg/kg Q2W	**Heterozygote**	**F**	**70**	69.3/59.6	Moderate - Asymptomatic 3rd/final dose on D28 D28 ARIA-E (mild) noted in retrospective review

Of 5 total ARIA-E cases, 1 was symptomatic (2.1% overall) and symptoms resolved with resolution of radiographic ARIA-E; All cases showed radiographic resolution or improvement

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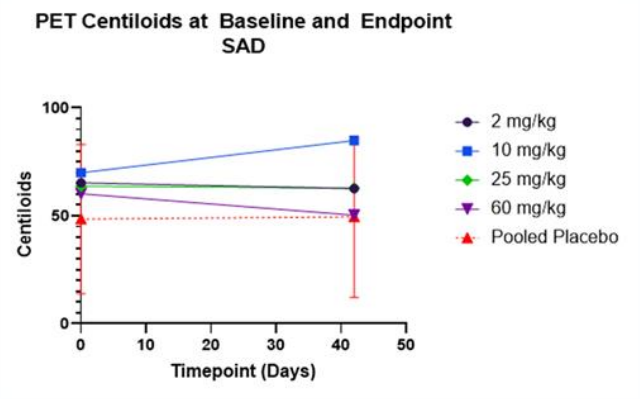
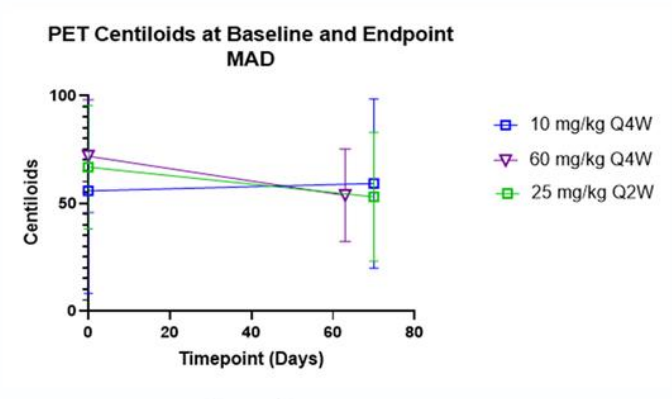
Aβ PET: Mean Changes in Amyloid Plaque in SAD and MAD Cohorts

Single Dose Cohorts



Means ± SD. Error bars shown only for pooled placebo group.

Multiple Dose Cohorts*+



Means ± SD.

Rapid, dose-related, statistically significant reduction of plaque load based on florbetapir PET present in 60 mg/kg Q4W and 25 mg/kg Q2W cohorts

*Placebo patients not included in MAD due to limited patient numbers and varying data collection time points.

+p=0.01 from baseline to endpoint within cohorts 6 (60mg/kg Q4W) and 7 (25mg/kg Q2W)

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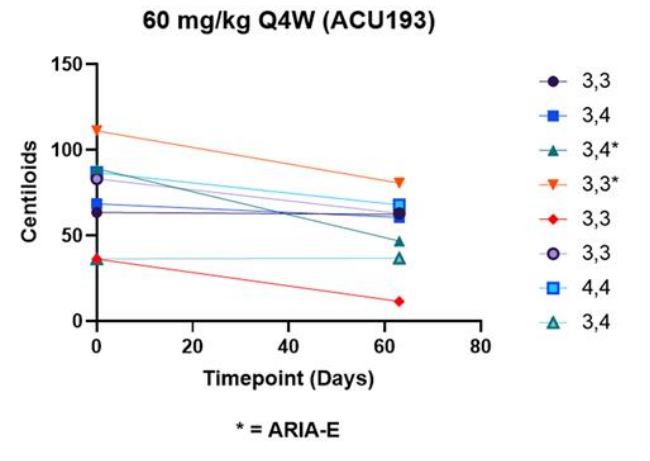
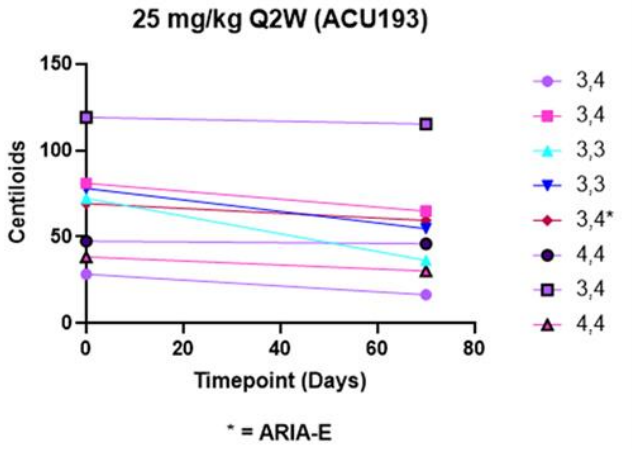
Aβ PET: Individual Patient Changes in Amyloid Plaque in Cohort 6 at 60 mg/kg Q4W and Cohort 7 at 25 mg/kg Q2W





Majority of patients in 60 mg/kg Q4W and 25 mg/kg Q2W cohorts showed reductions in plaque load after 63 or 70 days

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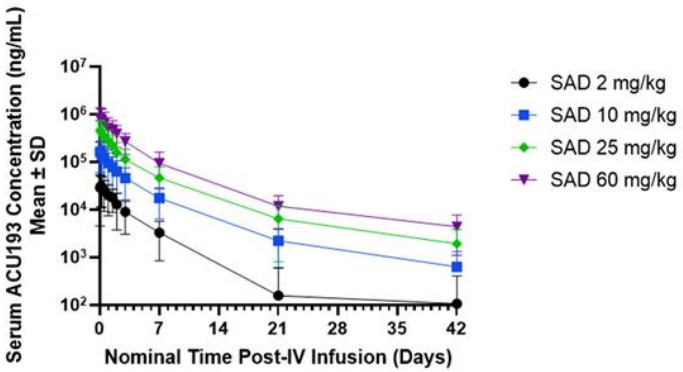
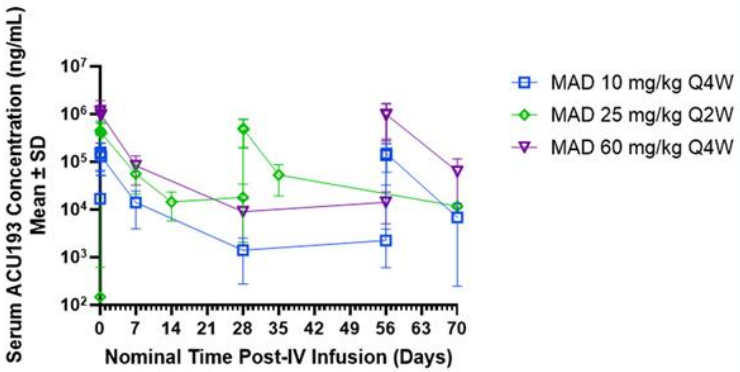
ACU193 Serum PK

Single Dose Cohorts



Multiple Dose Cohorts



Serum exposure is dose proportional without accumulation

Estimated serum terminal $T_{1/2}$ of 5-7 days

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Immunogenicity (preliminary assessment)

- Some evidence of treatment emergent immunogenicity was observed
- Observations more common in the MAD cohorts vs. SAD cohorts
- Treatment emergent ADAs are consistently low titer
- Preliminary assessment reveals no apparent effect on serum PK

Evidence of low titer treatment emergent immunogenicity

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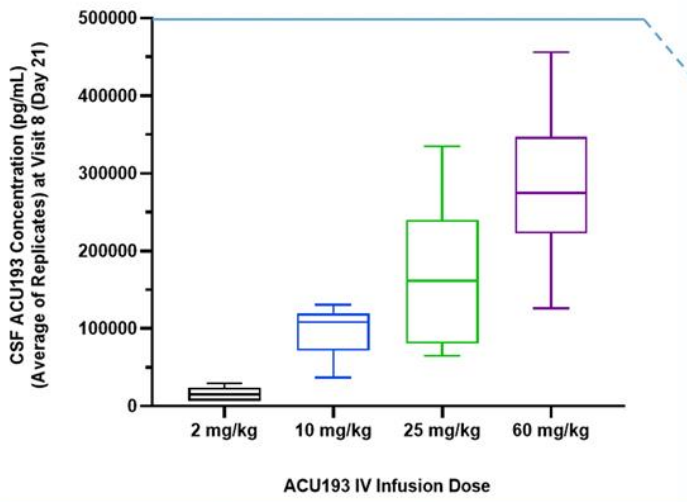
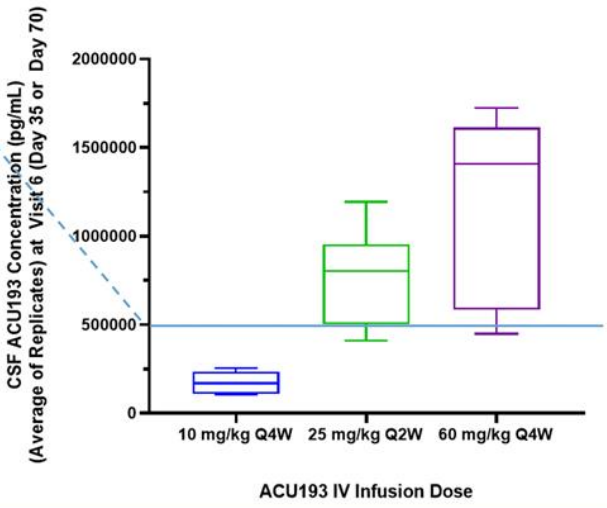
Dose-Related CSF ACU193 Exposure: Above Endogenous CSF AβO Levels

Single Dose Cohorts



Multiple Dose Cohorts*



CSF exposure is dose & dose-regimen proportional

*One patient from Cohort 5 (10 mg/kg Q4W) excluded because only received one administration of drug (study drug discontinued after lacunar infarct).

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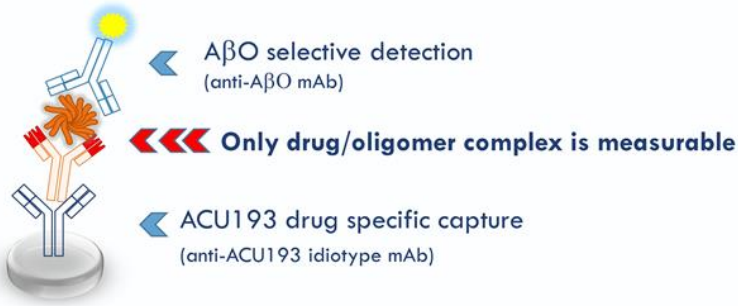
Target Engagement Assessed by Measuring ACU193-AβO Complex in CSF

MSD S-Plex (Turbo) Immunoassay

ACU193-AβO Complex



Novel assay configuration tailored to selectively detect ACU193-AβO complex in CSF as direct measure of target engagement

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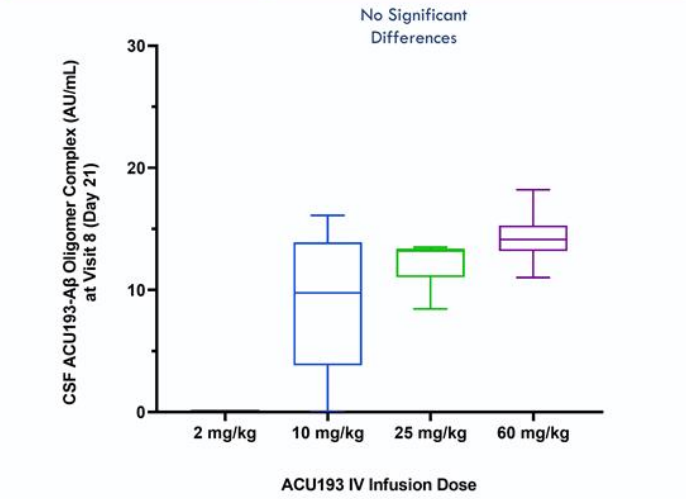
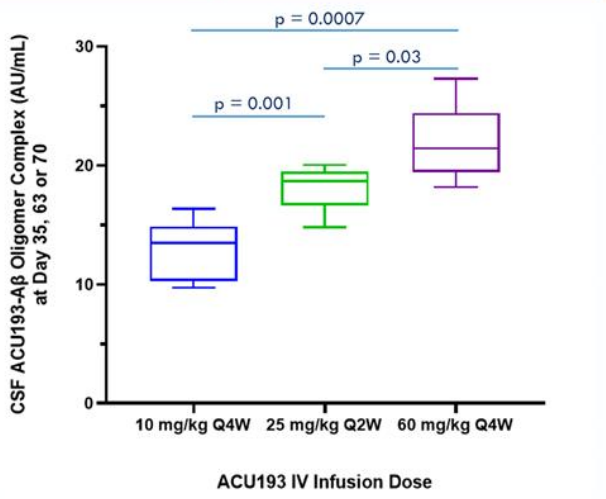
Target Engagement of ACU193 with AβOs is Dose Proportional

Single Dose Cohorts



Multiple Dose Cohorts*



Dose-related target engagement

*One patient from Cohort 5 (10 mg/kg Q4W) excluded because only received one administration of drug (study drug discontinued after lacunar infarct).

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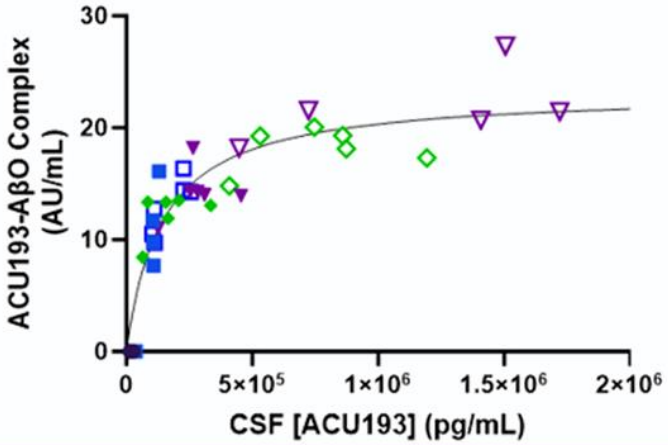
Maximal TE Response Observed at Doses of 25 mg/kg Q2W and 60 mg/kg Q4W

Single & Multiple Dose Cohorts - Exposure Response Relationship (Emax Model)



Emax: 23.2 AU/mL ACU193-AβO complex
EC50: 1.43 x 10^5 pg/mL ACU193

- SAD 2 mg/kg
- SAD 10 mg/kg
- SAD 25 mg/kg
- SAD 60 mg/kg
- MAD 10 mg/kg Q4W
- MAD 60 mg/kg Q4W
- MAD 25 mg/kg Q2W

Taken together with compelling safety profile and rapid plaque reduction, doses approaching maximal TE should guide dose selection for next study phase

*One patient from Cohort 5 (10 mg/kg Q4W) excluded because only received one administration of drug (study drug discontinued after lacunar infarct).

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Phase 1 Data Supports Advancing to Phase 2/3

- ✓ Rapid, dose-related, statistically significant amyloid plaque reduction observed within higher dose cohorts
- ✓ Topline results from INTERCEPT-AD demonstrated proof-of-mechanism for ACU193, the first clinical stage AβO-targeting antibody
- ✓ ACU193 well-tolerated in patients with early AD; resulted in no drug-related SAEs; low rate of ARIA-E
- ✓ ACU193 approached maximal central target engagement of toxic AβOs, establishing broad therapeutic index and path to convenient monthly dosing

- Exploratory measures:
  - As expected, no effects observed with clinical cognitive measures
  - As expected, no effects observed with MRI ASL pulse sequence
  - Fluid biomarker data expected late Q3 2023

PROOF OF MECHANISM ACHIEVED

RAPID, DOSE-RELATED, STATISTICALLY SIGNIFICANT AMYLOID PLAQUE REDUCTION OBSERVED AT HIGHER DOSES STUDIED

Compelling Safety Profile and CNS Target Engagement;
Monthly Dosing Enabled

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Future Strategic Plans

- Anticipated interaction with the FDA in Q4 2023 to inform our proposed Phase 2/3 study
- Further investigate the development of a subcutaneous administration of ACU193
- Evaluate potential next generation product opportunities
- Explore partnership opportunities that have the potential to enhance shareholder value

Q&A

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