Safety and Efficacy of Lomecel-B in Patients with Mild Alzheimer's Disease: Results of a Double-Blinded, Randomized, Placebo-Controlled Phase 1 Clinical Trial

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Anthony A. Oliva Jr., PhD[1], Mark Brody, MD[2], Marc Agronin, MD[3], Brad Herskowitz, MD[4], Susan Bookheimer, PhD[5], Ben Hitchinson, PhD[1], Kevin N. Ramdas, MD[1], Tyler Wishard, PhD[5], Lisa McClain-Moss[1], Liliana Diaz[1], Keyvan Yousefi, PhD[1], Carmen Perez[6], Ana Fuquay[2], Savannah Rodriguez[4], Joshua M. Hare, MD[1,6], and Benard Baumel, MD[6].
(1)Longeveron Inc., Miami, FL, USA, (2)Brain Matters Research, Delray Beach, FL, USA, (3) Miami Jewish Hospital, Miami, FL, USA, (4)The Neurology Group, Miami, FL, USA, (5)UCLA School of Medicine, Los Angeles, CA, USA, (6)University of Miami Miller School of Medicine, Miami, FL, USA

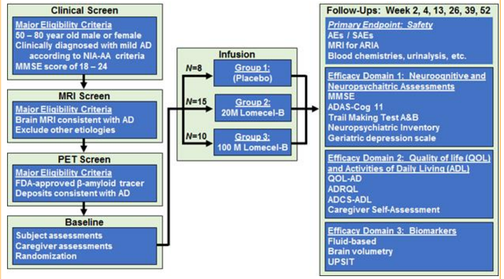
Lomecel-B is a cell-based investigational therapy found to be safe for patients with mild Alzheimer's diseases in this Phase 1 clinical trial. Efficacy data supports Lomecel-B as a potential disease-altering therapeutic. Biomarker results support pleiotropic mechanisms of action of Lomecel-B.

INTRODUCTION

Lomecel-B is a medicinal signaling cell (MSC) formulation under clinical evaluation for Alzheimer's disease (AD). Pleiotropic mechanisms of action, which include pro-vascular and anti-inflammatory activities, make Lomecel-B promising for simultaneously targeting multiple aspects of AD pathology.

METHODS

Phase 1 trial: randomized, double-blinded, placebo-controlled. A single IV infusion of Lomecel-B at 20 (20M) or 100 (100M) million cells, or placebo, was given to each subject. This trial was powered for safety, and not efficacy.



RESULTS

Patient demographics.

	Placebo (n=8)	20M Lomecel-B (n=15)	100M Lomecel-B (n=10)
Age (Years) Mean ± SD	75.9 ± 5.03	70.1 ± 9.49	69.3 ± 8.08
Female sex [n (%)]	6 (75.0)	4 (26.7)	6 (60.0)
Clinical assessment (Points) [Mean ± SD (range)]			
Mini Mental State Exam	20.45 ± 1.46 (18.0 – 22.0)	20.60 ± 2.06 (18.0 – 23.0)	20.70 ± 2.26 (18.0 – 24.0)
ADAS-cog-11	23.46 ± 6.34 (15.7 – 37.7)	24.71 ± 8.49 (12.7 – 43.3)	25.07 ± 8.30 (12.7 – 38.7)
QOL-AD (patient version)	36.3 ± 7.3 (25 – 44)	37.4 ± 4.8 (30 – 46)	37.5 ± 4.9 (30 – 45)
ADCS-ADL	57.60 ± 11.16 (44.0 – 74.0)	58.93 ± 13.33 (31.0 – 73.0)	50.40 ± 19.87 (20.0 – 73.0)
Plasma Biomarkers (pg/mL) [Mean ± SD (range)]			
IL-4 (pg/mL)	0.08 ± 0.04 (0.04 – 0.12)	0.13 ± 0.10 (0.04 – 0.34)	0.10 ± 0.06 (0.04 – 0.23)
IL-6 (pg/mL)	4.52 ± 8.21 (0.76 – 24.79)	1.94 ± 1.85 (0.71 – 6.98)	1.68 ± 1.15 (0.82 – 4.80)
IL-10 (pg/mL)	0.73 ± 0.89 (0.19 – 2.90)	0.51 ± 0.23 (0.15 – 1.16)	0.46 ± 0.20 (0.19 – 0.91)
VEGF (pg/mL)	52.1 ± 20.3 (32 – 86)	42.8 ± 28.6 (11 – 126)	60.9 ± 39.1 (15 – 129)
Aβ38 (pg/mL)	143.9 ± 228.7 (26.6 – 630.2)	37573.2 ± 136662.1 (26.6 – 531361.8)	40.1 ± 28.6 (26.6 – 95.5)
Aβ40 (pg/mL)	65.1 ± 60.4 (12.1 – 189.2)	2457.1 ± 7676.0 (21.0 – 29952.8)	82.2 ± 47.8 (26.6 – 159.5)
Aβ42 (pg/mL)	12.9 ± 11.2 (5.2 – 39.7)	1061.4 ± 3520.2 (7.9 – 13756.2)	11.5 ± 7.2 (5.2 – 28.8)

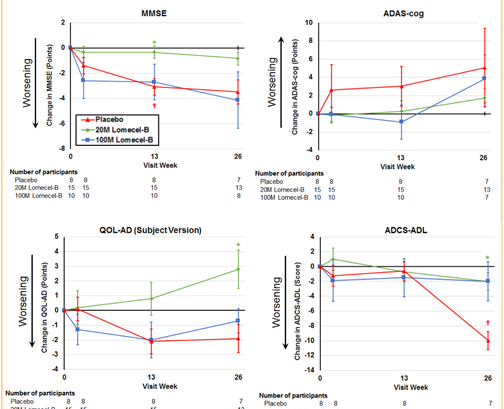
Lomecel-B was found safe at both 20M and 100M doses. Study Stopping Rules were not triggered (primary endpoint).

Adverse Event (AE) and Serious AE (SAE) Category	Placebo	20M Lomecel-B	100M Lomecel-B
SAEs occurring within 30 days after treatment (defined as TE-SAEs used for Stopping Rules trigger) (n)	0	0	1
Subjects with at least one TE-SAE [n (%)]	0	0	1 (10.0%)
Stopping Rules triggered (***primary endpoint***)	0	0	0
SAEs over entire trial (n)	4	2	3
Subjects with at least one SAE [n (%)]	3 (37.5%)	2 (13.3%)	2 (20.0%)
AEs occurring over entire trial (n)	33	23	15
Subjects with at least one AE [n (%)]	7 (87.5%)	10 (66.7%)	5 (50.0%)
AEs or SAEs related to study drug (n)	0	0	0
Deaths on study (n)	0	1 *	0
Alzheimer's-related imaging abnormalities (ARIA) (n)	0	0	0

* Patient withdrew from trial first and subsequently died in an assisted-living facility at day 144 post-infusion.

RESULTS

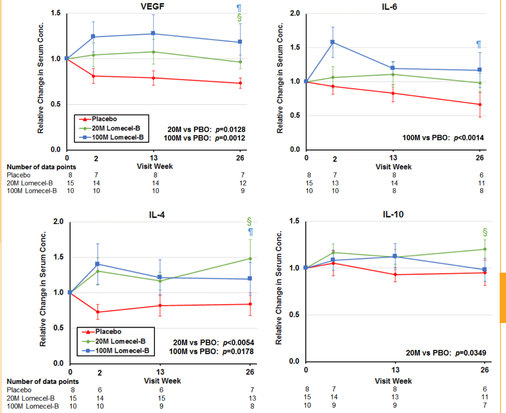
Slower cognitive decline, improved quality-of-life (QOL), and improved activities of daily living (ADLs) in the 20M Lomecel-B arm versus placebo.



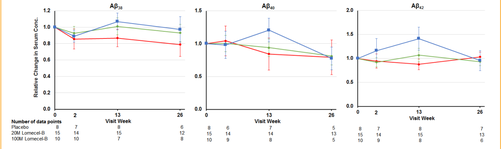
Asterisks: $p<0.05$ for change from baseline in Lomecel-B arm versus change in placebo. Daggers: $p<0.05$ for intra-arm change from baseline. No patient-performed assessment showed worsening versus placebo.

RESULTS

Pro-vascular and anti-inflammatory serum biomarkers were higher after Lomecel-B infusion versus placebo.



Trending increases in serum Aβ forms after Lomecel-B infusion.



CONCLUSIONS

- Lomecel-B is safe for AD patients.
  - Primary safety endpoint met.
  - No AEs or SAEs related to product.
  - No ARIA.
- Effect data showed improved cognitive performance, QOL, and ADLs with the 20M Lomecel-B dose versus placebo.
- Serum biomarkers support pleiotropic MOAs including:
  - Anti-inflammatory activities;
  - Pro-vascular activities;
  - Improve blood-brain barrier (BBB) function to clear Aβ forms.
- Paves way for Phase 2 trial powered for efficacy.

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CONTACT

Anthony A. Oliva, PhD
aoliva@longeveron.com

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