NEWS RELEASE

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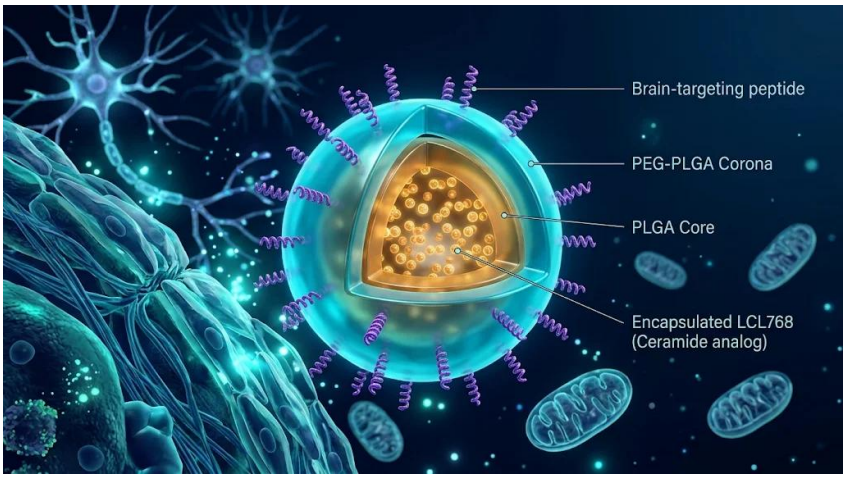
FOR IMMEDIATE RELEASE

Encure Co-Founders Report Brain-Targeted Nanoparticle Delivery in Alzheimer's Study Published in *EMBO Reports*

A peptide-targeted nanoparticle carried a mitochondria-targeted ceramide analog into the brain after intranasal dosing in aged Alzheimer's mouse models, in a study with MUSC and MMRI

HOUSTON, Texas — November 15, 2026 — Encure Biotherapeutics, Inc., an AI-native therapeutics company based at the Texas Medical Center, today announced the publication in *EMBO Reports* of a study to which its Founder, Chief Executive Officer and Chief Scientific Officer, **Dr. Rajendran JC Bose, M.Pharm, PhD**, and its Scientific Co-Founder, **Prof. Jason R. McCarthy, PhD**, contributed the brain-delivery nanoparticle. The study, led by the laboratory of Prof. Besim Ogretmen at the Medical University of South Carolina (MUSC), links amyloid pathology to failed mitochondrial quality control in Alzheimer's disease. The nanoparticle, developed at the Masonic Medical Research Institute (MMRI), carried a mitochondria-targeted ceramide analog into the brain after intranasal dosing and shifted disease readouts in aged mouse models. It builds on more than a decade of targeted nano delivery engineering by Encure's founding team.

Read the paper (open access): Amyloid beta governs mitochondrial lipid metabolism defects and neurodegenerative lysosomal stress, *EMBO Reports*, November 2, 2026



Pen-Cera-LCL768. *A PLGA core carrying the encapsulated ceramide analog, a PEG–PLGA corona, and a surface-displayed brain-targeting peptide. Each layer answers a different constraint: payload retention, circulation, and tissue access.*

The paper was published open access on November 2, 2026. First author Chase Walton and senior authors Prof. Ogretmen and Prof. McCarthy led the work across MUSC and MMRI. The MUSC team traces the failure of mitophagy, the process by which neurons clear damaged mitochondria, to a loss of mitochondrial ceramide, and reports that amyloid species interfere with it in neuronal, mouse and human Alzheimer's tissue. The mechanism and the genetic evidence are set out in full in the paper.

That framing raised a delivery question. LCL768, the mitochondria-targeted ceramide analog developed in the Ogretmen laboratory, does not cross the blood–brain barrier on its own, and a compound that cannot reach the brain is not yet a candidate for a neurodegenerative indication. Dr. Bose and Prof. McCarthy designed and screened a panel of nanoparticle formulations of the payload at MMRI, including peptide-targeted and cell-membrane-coated variants, and tested them in vivo by intranasal administration, measuring accumulation in brain against kidney and serum. One preparation separated clearly from the rest: a peptide-targeted PEG–PLGA particle, designated Pen-Cera-LCL768.

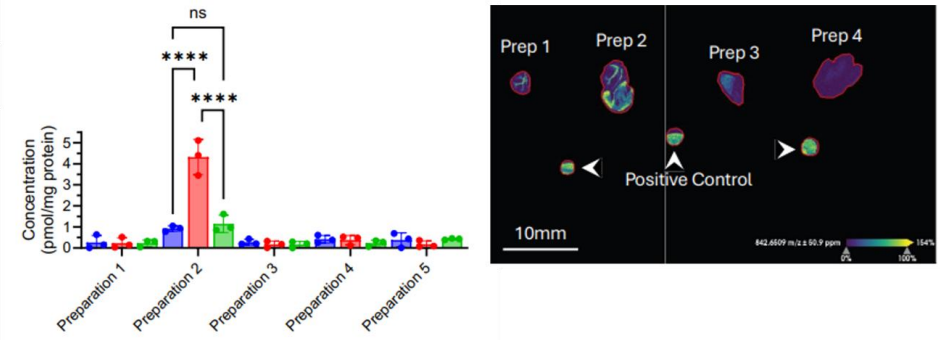


Prof. Jason R. McCarthy, PhD (left), Encure Scientific Co-Founder, and Dr. Rajendran J. C. Bose (right), Encure Founder, CEO and CSO, at the Masonic Medical Research Institute, where the targeted nanoparticle formulation work was carried out.

Key findings

What the formulation achieved, as reported in the paper:

- **Targeted brain accumulation.** Roughly 4.5 pmol/mg protein of payload in the frontal cortex after intranasal dosing, well above the levels measured in kidney and serum, a favorable brain-to-periphery ratio for a lipid payload.
- **Confirmed spatial distribution.** MALDI imaging across the brain, rather than a conclusion inferred from a single bulk measurement.
- **A usable exposure window.** Measurable increases in brain ceramide after dosing.
- **Effect in vivo.** On chronic dosing in aged 3xTg mice, higher mitophagy-associated readouts, reduced amyloid plaque burden, and motor and cognitive performance returning toward wild-type.



Screen, then confirm. *Left: payload concentration in brain across the five candidate preparations; Preparation 2 separates clearly from the rest. Right: MALDI imaging of treated brains, confirming distribution rather than inferring it from a bulk measurement. Data from Walton et al., EMBO Reports 2026, under CC BY 4.0.*

> *"Most CNS programs lose their molecule at the blood–brain barrier, not in the biology. This study is a good illustration of why we design the delivery system alongside the molecule rather than after it."*
>
> **— Dr. Rajendran JC Bose, M.Pharm, PhD, Founder, CEO & CSO, Encure Biotherapeutics**

The authors are careful about scope. The measurements show accumulation in brain tissue after intranasal administration; they do not distinguish transport across the blood–brain barrier from other routes, and several assays report mitochondrial quality-control markers rather than degradation flux. These are mouse results in two models, a starting point for translation rather than a conclusion about it.

Why this matters for Encure

In central nervous system drug development, promising biology often stalls because the payload never reaches its target tissue at a useful dose. Getting a mitochondria-targeted payload into the brain, and then showing it does something measurable there, is one of the genuinely hard parts of neuro drug delivery.

The work illustrates a point Encure was built around: the carrier is not a packaging decision taken after the molecule is settled. Five formulations were made and tested in vivo before one reached the brain at a useful concentration, and the winning design turned on ligand chemistry and route of administration together. Encure's founding team has spent more than a decade on this kind of soft-matter carrier engineering, including cell-membrane-derived nanocarriers, lipid nanoparticles, polymeric depots and now a brain-penetrant peptide-targeted particle, carrying each generation through biodistribution and efficacy studies in vivo rather than stopping at physicochemical characterization.

Encure's SWATI-AI engine is designed to compress exactly this loop, co-designing the molecule, its delivery system and its safety profile as one problem rather than three sequential ones. The *EMBO Reports* study is an empirical reference point for the delivery half of that approach, produced the slow way. Encure intends to reach comparable results in fewer experimental rounds.

Acknowledgments

The biology and the LCL768 chemistry are the work of Prof. Besim Ogretmen's laboratory at MUSC. Encure thanks first author Chase Walton, senior authors Prof. Ogretmen and Prof. McCarthy, and the full MUSC and MMRI team, including Natalia Oleinik, Mohamed Faisal Kassir, Han Gyul Lee and Khanh Ha, and congratulates them on the publication.

Full citation: Walton C, Oleinik N, Kassir MF, Lee HG, Bhat NR, Sambamurti K, Albayram O, Angel P, Wang GY, Bose RJC, Ha K, McCarthy JR, Ogretmen B. Amyloid beta governs mitochondrial lipid metabolism defects and neurodegenerative lysosomal stress. *EMBO Reports*, published November 2, 2026. DOI: 10.1038/s44319-026-00984-1

Intellectual property: LCL768 and the underlying Alzheimer's biology are the intellectual property of Prof. Besim Ogretmen's laboratory at MUSC and its licensee. Encure's founders' contribution to this publication was targeted nanoparticle formulation and delivery, performed at the Masonic Medical Research Institute. Encure does not hold rights to LCL768 and is not developing it as a program.

About Encure Biotherapeutics

Encure Biotherapeutics, Inc. is an AI-native therapeutics company headquartered at the Texas Medical Center in Houston, Texas. The company operates on a hub-and-spoke model: its SWATI-AI generative design engine serves as the central hub, supporting therapeutic programs in cardiovascular disease, oncology, neuroscience and drug safety. Encure pairs computational design with experimental validation through academic and clinical collaborations, and funds early development with a non-dilutive-first strategy. Learn more at www.encurebio.com.

About the collaborating institutions

The Medical University of South Carolina (MUSC) in Charleston is home to the Hollings Cancer Center, where the Ogretmen laboratory is based. The Masonic Medical Research Institute (MMRI) in Utica, New York, is where the nanoparticle formulation work was carried out.

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