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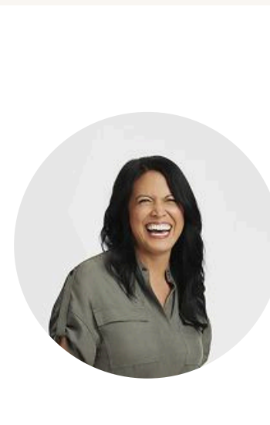
Top Five C15:0 Science Themes of The Year

January 4, 2026

Welcome to Issue 161 of Science Says! Our weekly newsletter where you'll learn the latest healthy aging and C15:0 research news that our team of doctors, scientists, and experts are most excited about—without having to go search for it.

Eric and Steph
Co-Founders, Doctors, Nerds



What Dr. Stephanie Venn-Watson, our co-founder and author of *The Longevity Nutrient* and over 80 peer-reviewed scientific publications, is reading.

HEALTHY AGING

A Year of Revalidation

Last year was another big year of newly published, peer-reviewed science supporting C15:0's health benefits. With an average of about one new scientific paper relevant to C15:0's health benefits published per week throughout 2025 (the biggest year yet!), we thought it would be swell to summarize what some of these latest studies had to say.

So, here are the top 5 C15:0 science themes of 2025 (if you're a skimmer, fear not - we made this one easy to hit the most important points):

#1: C15:0 Was Revalidated As An Emerging Essential Fatty Acid.

During 2025, Ciesielski et al. repeated the same hallmark study design used to confirm linoleic acid (LA, an omega-6) and alpha linolenic acid (ALA, an omega-3) as essential fatty acids nearly a century ago. In this study, pregnant rats were fed diets lacking LA, ALA, and C15:0, which resulted in pups with poor growth. ***When these deficient pups were supplemented with just C15:0, they restored normal growth*** - which matched that of pups fed just LA. This study followed on the heels of last year's study by Ruan et al., which showed that baby nematodes *deprived of all nutrients except C15:0* restored normal neuronal growth. These hallmark studies with animal models of nutritional deficiencies are strengthening the gold-standard base for prior years' papers, including extensive human data, proposing C15:0 as an essential fatty acid (Venn-Watson et al. 2020, Dornan et al. 2021, Ciesielski et al. 2024).

Bottom line: From nematodes to rats to dolphins to humans, C15:0 is emerging as an essential nutrient we all need to grow and thrive.

#2: Use Of C15:0 To Reverse A Detailed Nutritional Deficiency Syndrome Was Revalidated, Too.

In November, Aabis et al. published an independent study revalidating how C15:0 reverses multiple components of a previously described nutritional C15:0 deficiency syndrome. In this study, they showed in a third animal model that ***C15:0 supplementation effectively lowered lipid peroxidation, proinflammatory cytokines, and harmful iron deposition; protected liver function and red blood cell stability; and reversed biomarkers of ferroptosis.*** These benefits aligned with the prior description of a nutritional C15:0 deficiency syndrome, named Cellular Fragility Syndrome, which involves weakened red blood cells, increased lipid peroxidation and ferroptosis (a new form of cell death that causes abnormal iron deposition), leading to impaired liver, immune, cardiometabolic, and cognitive function (Venn-Watson et al. 2024, Dixon et al. 2012).

Bottom line: There is increasing support that C15:0 reverses the entirety of a nutritional C15:0 deficiency syndrome, including ferroptosis, a newly discovered form of cell death that accelerates aging.

#3: Higher C15:0 Was Incrementally Associated With Better Long-Term Cardiometabolic Health. Again. And Again.

Hot off the presses, Schaefer et al. just published an extensive meta-analysis of 27 prospective cohort studies following over 100,000 people. This meta-analysis showed that there is a dose-response relationship between higher C15:0 and associated better long-term protected metabolic health. Specifically, ***for every 0.1% increase in C15:0 levels, there was an associated 32% increased protection of long-term metabolic health*** (we'll cover this study more next week). Sun et al.'s meta-analysis reported similar incremental improvements in long-term metabolic health in September. On the cardiovascular health front, Arghavani et al., Chen et al., and Huang et al. all published studies during 2025 that the higher one's C15:0 levels, the better the associated protected vascular and blood pressure health - for both the near-term and long-term.

Bottom line: Numerous robust prospective cohort studies, paired with C15:0's direct dose-response activities demonstrated in experimental studies, increasingly support that the higher our C15:0 levels, the better protected our long-term cardiometabolic health.

#4: C15:0 Is Emerging As Important To Early Development, Too.

In Yuan et al.'s 2025 study, they followed up to 1,200 mother-child pairs over a period of six years and showed that the higher the C15:0 levels in mom during pregnancy and breastfeeding, as well as the ***the higher the C15:0 in mom's milk, the better the overall cognitive development and language abilities in her child at ages 3 and 5-6 years old.*** This matched the earlier mentioned study by Ruan et al. showing that C15:0 has a direct positive effect on neurodevelopment in *C. elegans*. Further, Duan et al.'s study published in May showed that piglets, which are a common model for human infant nutritional studies, fed milk replacers supplemented with pure C15:0 had better daily growth, gut health, and mitochondrial function compared to piglets with just milk replacers. These studies further support prior studies from George et al. and Li et al. showing that higher C15:0 from mom is associated with better human fetal and infant growth and development.

Bottom line: These studies support that C15:0 is not just associated with, but plays an active role, in whole body growth and cognitive development.

#5: C15:0 For Brain Health Is Getting Our Attention.

In April, we published the discovered role of C15:0 as a dose-dependent inhibitor of two enzymes, called MAO-B and FAAH. Molecules that inhibit these enzymes, especially as we get older, are considered neuroprotectants because ***these activities support higher, healthier dopamine and endocannabinoid levels.*** Together, dopamine and endocannabinoids promote healthy memory, mood, and sleep. Which may help explain why prior studies from Shen et al. and Brydges et al. have associated higher C15:0 with better memory and calmer mood, respectively. In the early cognitive development studies above, C15:0's brain health were attributed to its role as an mTOR inhibitor and PPARα activator.

Bottom line: C15:0's beneficial activities are increasingly translating to its ability to support cognitive function - among both adults and children.

What a year! And to think - these are studies that are so new, they are not in our USA Today Bestseller Simon & Schuster book, *The Longevity Nutrient*, which covers 100+ other peer-reviewed studies on C15:0.

Have a fantastic week, everyone! Here's to a healthy, science-enriched 2026.

Dive deeper into the science

READ THESE STUDIES AT
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- Ciesielski, V. et al. Dietary pentadecanoic acid supplementation at weaning in essential fatty acid-deficient rats shed light on the new family of odd-chain n-8 PUFAs. J Nutritional Biochemistry 137:109814 (2025).
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- Venn-Watson et al. The Cellular Stability Hypothesis: Evidence of Ferroptosis and Accelerated Aging-Associated Diseases as Newly Identified Nutritional Pentadecanoic Acid (C15:0) Deficiency Syndrome. Metabolites 14, 355 (2024).
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- Ruan, M. et al. Free long-chain fatty acids trigger early postembryonic development in starved Caenorhabditis elegans by suppressing mTORC1. PLOS Biol 22:e3002841 (2024).
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- Shen et al. The Associations between plasma fatty acid and cognitive function mediated by immune response.. Diabetes, Metabolic Syndrome and Obesity 15, 1423-1436 (2022).
- Brydges, C.R. et al. Metabolomic and inflammatory signatures of symptoms dimensions in major depression. Brain Behav Immun 102, 42-52 (2022).

CLINICAL TRIALS WITH C15:0

- Stallings et al. (2013) Int J Clin Pharmacol Ther 51, 263-273.
- Mascarenhas et al. (2015) J Clin Pharmacol 55, 854-865.
- Robinson et al.(2024) J Nutr 154, 2763-2771.
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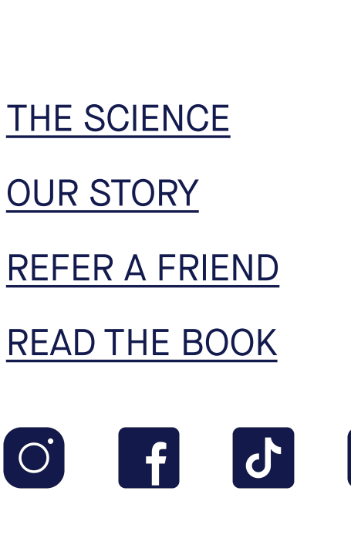

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