1901

1986

1987

1988

1988–1989

1990

1991–1995

1996–1997

1998

1998–1999

2004

2007

Milestones in amylin research

Amylin, an endogenous nutrient-stimulated hormone, plays a crucial role in metabolic regulation. Since its discovery, researchers have made significant strides in understanding its secretion and receptor interactions. The physiological roles of amylin extend to regulating appetite, glucose metabolism, gastric emptying, leptin responsiveness, and bone health

This interactive timeline highlights the major milestones in amylin research that have deepened our knowledge of these critical processes and set the stage for future discoveries

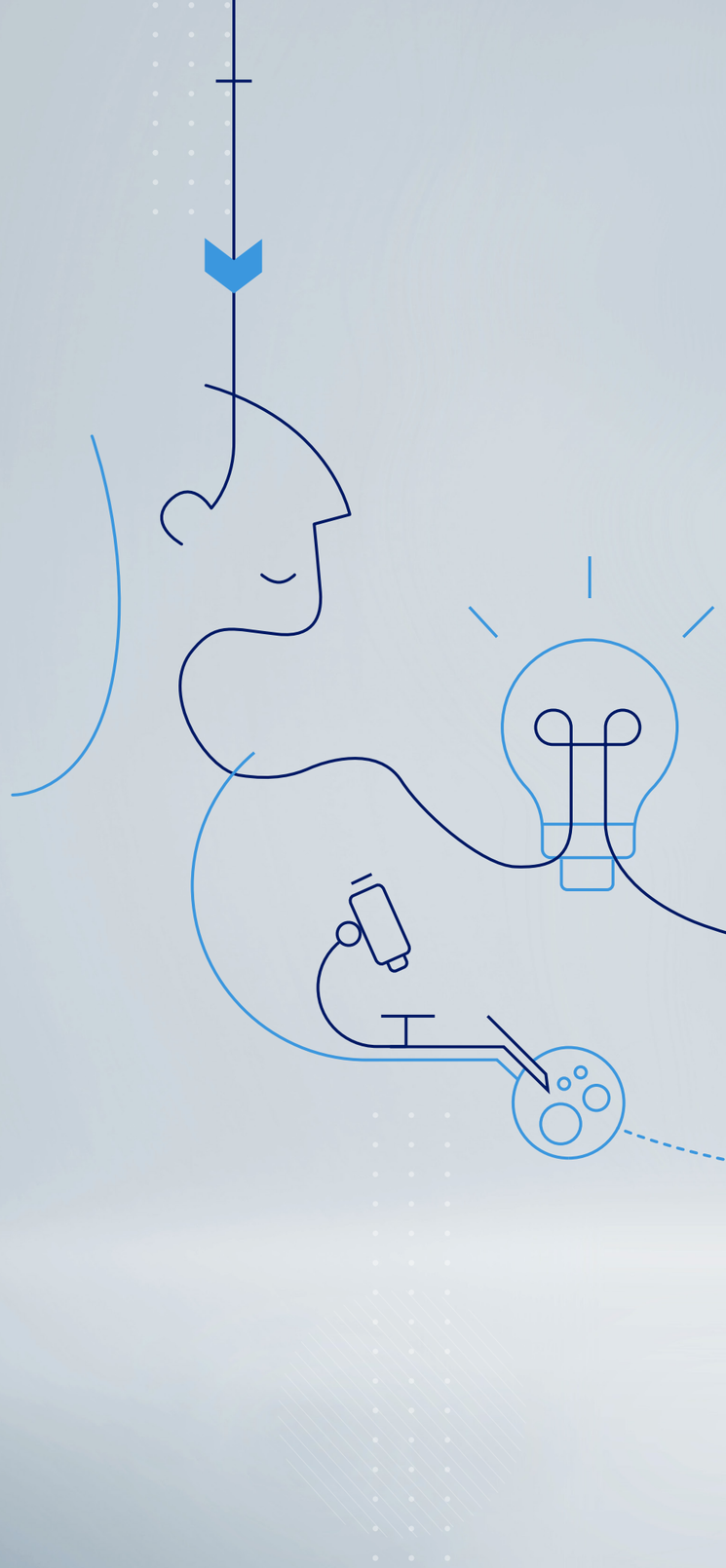
Hay DL et al. *Pharmacol Rev* 2015;67:564–600; Lutz TA. *Appetite* 2022;172:105965.

Date of preparation: September 2025

1901
First description of amylin

The first description of amylin-derived deposits in pancreatic islets dates back to 1901, when a “hyaline appearance” was reported within islets from people with diabetes

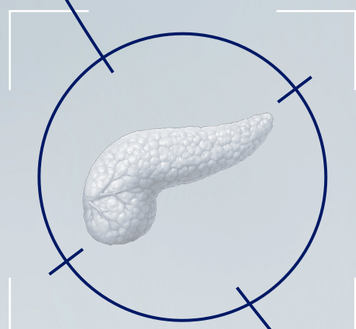
Opie EL. *J Exp Med* 1901;5:527–40; Lutz TA. *Appetite* 2022;172:105965.



1986
Discovery of amylin

Westermark and colleagues successfully isolated and characterized the partial sequence of the main constituent of pancreatic islet amyloid. The underlying peptide was originally called insulinoma amyloid peptide (IAP), and was later renamed islet amyloid polypeptide (IAPP). This discovery marked the first isolation of what would eventually be known as amylin

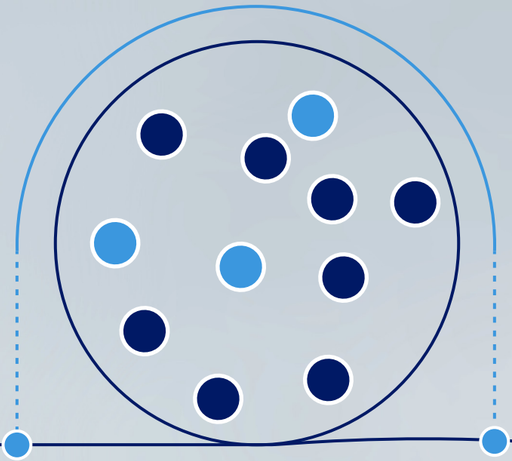
Westermark P et al. *Biochem Biophys Res Commun* 1986;140:827–31; Lutz TA. *Appetite* 2022;172:105965.



1987
Full characterization of amylin sequence

The full 37-amino acid sequence of human amylin was determined

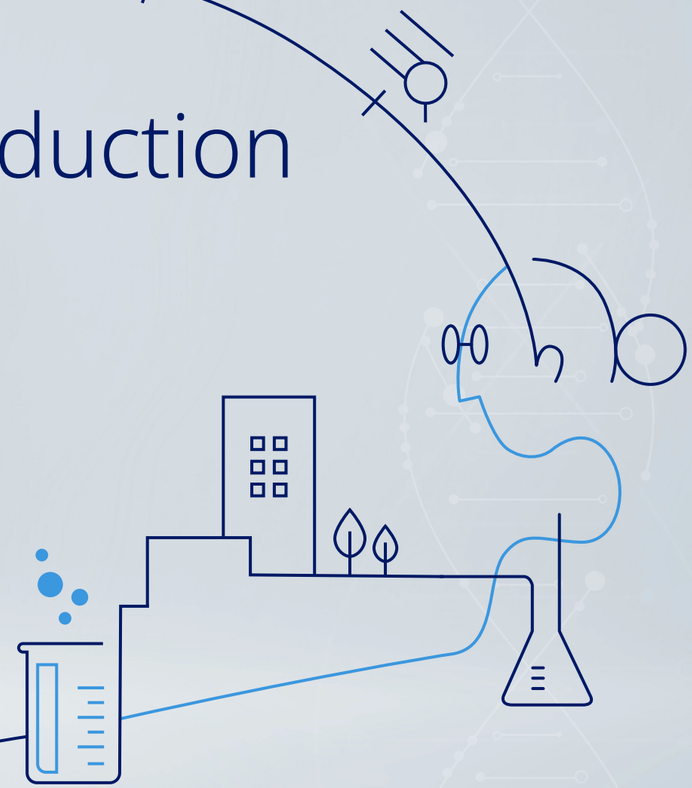
Cooper GJ et al. *Proc Natl Acad Sci USA* 1987;84:8628–32.



1988
Identification of production and secretion sites

Research demonstrated that amylin is produced alongside insulin in pancreatic β cells and co-localized within secretory granules

Johnson KH et al. *Am J Pathol* 1988;130:1–8.



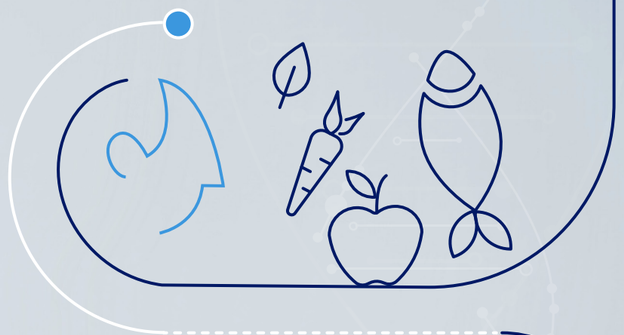
1988–1989
Human amylin gene characterization

Several research groups identified and characterized the human amylin gene and confirmed its location on chromosome 12. Sanke and colleagues also determined that the amylin peptide is derived from a larger 89-amino acid precursor protein through proteolytic processing

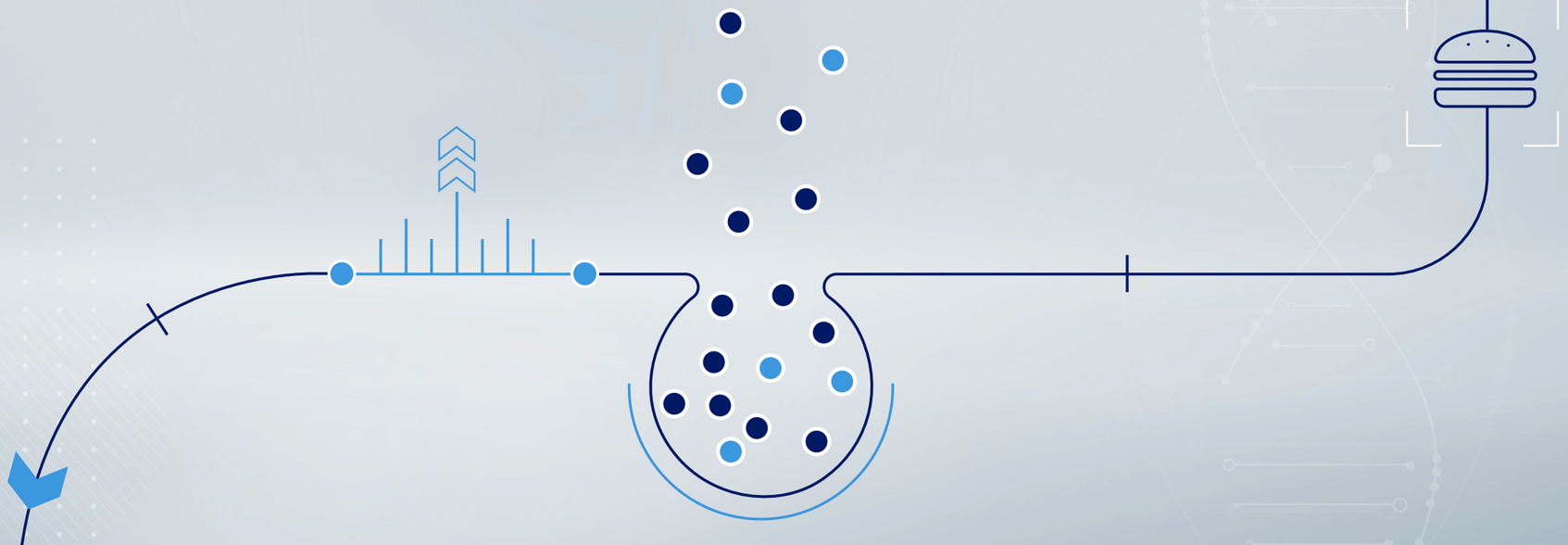
Sanke T et al. *J Biol Chem* 1988;263:17243–6; Cooper GJ et al. *Biochim Biophys Acta* 1989;1014:247–58; Mosselman S et al. *FEBS Lett* 1989;247:154–8; Nishi M et al. *Mol Endocrinol* 1989;3:1775–81; Roberts AN et al. *Proc Natl Acad Sci USA* 1989;86:9662–6.

1990
Insights into conditions of amylin secretion

Research by Butler and colleagues demonstrated that plasma amylin levels rise alongside insulin following ingestion of glucose or mixed meal. Kahn and colleagues demonstrated that neonatal rat islet cultures release amylin in response to glucose, co-secreting it with insulin at a consistent molar ratio



Butler PC et al. *Diabetes* 1990;39:752–6; Kahn SE et al. *Diabetes* 1990;39:634–8;
Hay DL et al. *Phamacol Rev* 2015;67:564–600.



1991–1995
Demonstrated insights of amylin on food intake

Multiple in vivo studies in mice and rats in the early 1990s demonstrated the inhibitory effect of amylin on eating

Balasubramaniam A et al. *Peptides* 1991;12:919–24; Chance WT et al. *Brain Res* 1991;539:352–4; Morley J, Flood JF. *Peptides* 1991;12:865–9; Lutz TA et al. *Physiol Behav* 1994;55:891–5; Lutz TA et al. *Physiol Behav* 1995;58:1197–202.

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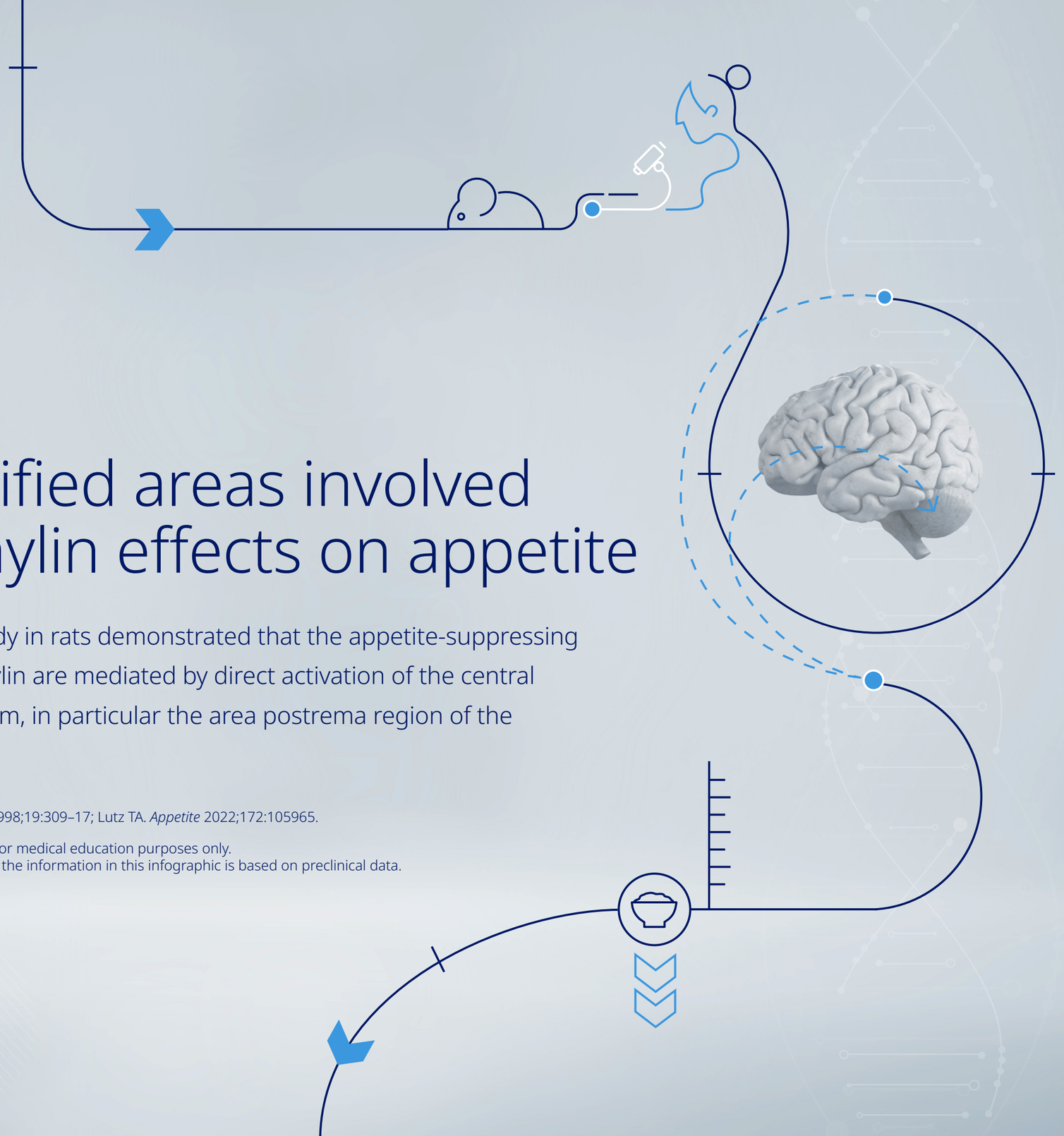
1996–1997
Characterized role of amylin in glucose control

Studies have demonstrated that amylin decreases gastric emptying in rat models, delaying the inflow of nutrients into the small intestine and thereby reducing the amount of glucose available for absorption into the circulation. Amylin was also shown to suppress meal-related glucagon secretion

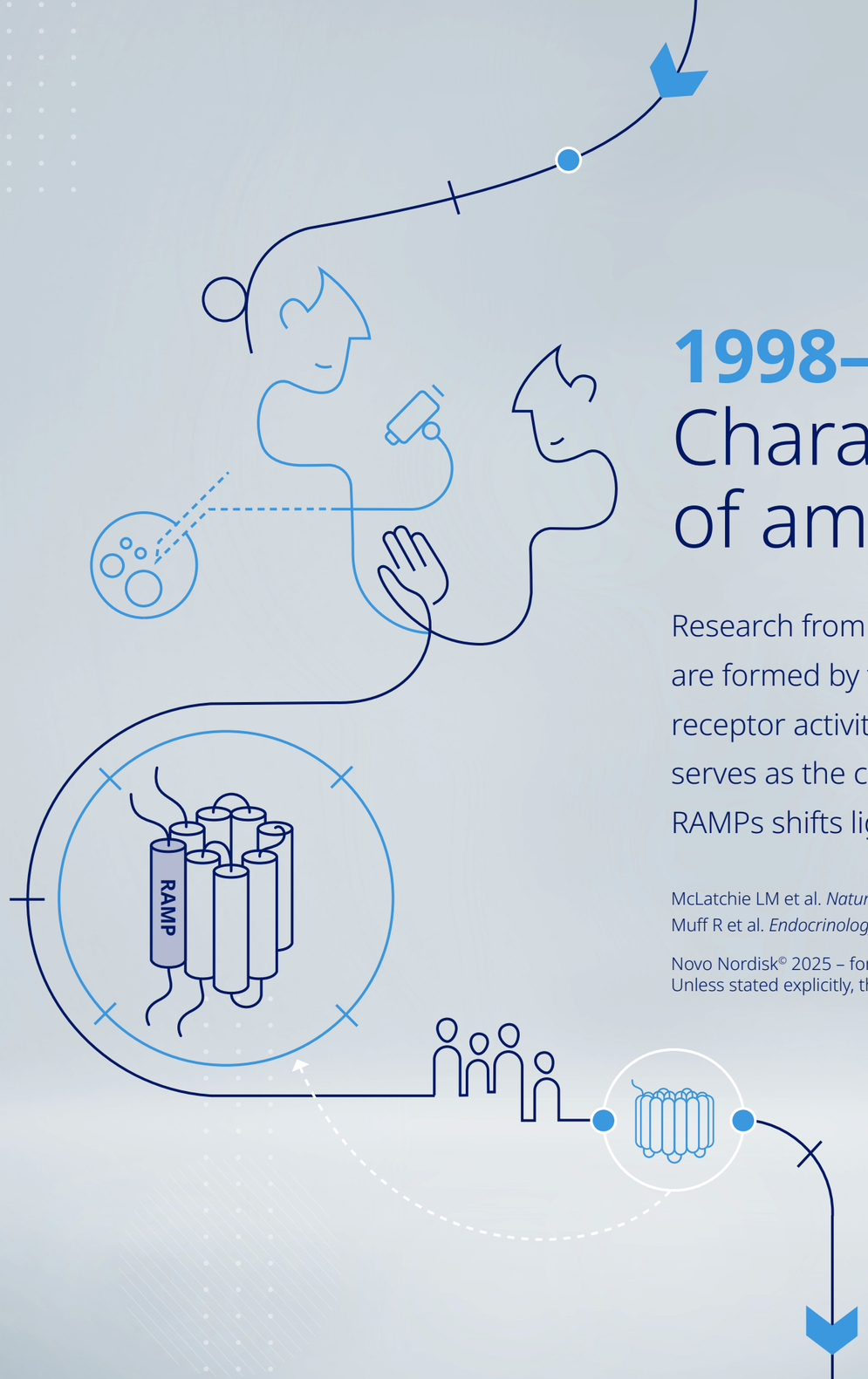
Gedulin BR et al. *Metabolism* 1997;46:67–70; Young AA et al. *Diabetologia* 1995;38:642–8; Young AA et al. *Metabolism* 1996;45:1–3.



1998
Identified areas involved in amylin effects on appetite

An in vivo study in rats demonstrated that the appetite-suppressing effects of amylin are mediated by direct activation of the central nervous system, in particular the area postrema region of the hindbrain

Lutz TA et al. *Peptides* 1998;19:309–17; Lutz TA. *Appetite* 2022;172:105965.



1998–1999
Characterization of amylin receptors

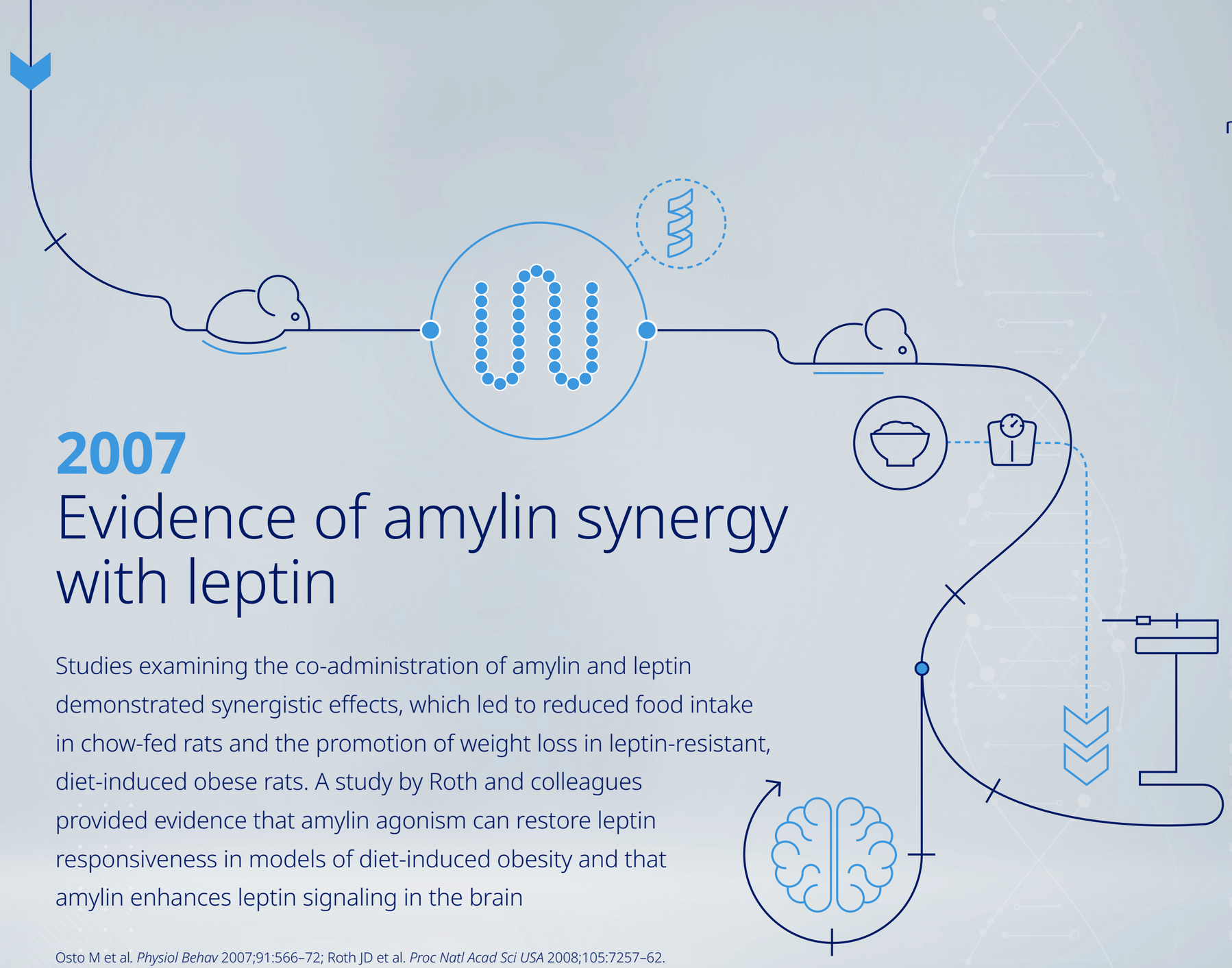
Research from multiple groups established that amylin receptors are formed by the association of the calcitonin receptor with specific receptor activity-modifying proteins (RAMPs). The calcitonin receptor serves as the core protein, and the association with one of the three RAMPs shifts ligand specificity from calcitonin to amylin

McLatchie LM et al. *Nature* 1998;393:333–9; Christopoulos G et al. *Mol Pharmacol* 1999;56:235–42; Muff R et al. *Endocrinology* 1999;140:2924–7.

2004
Demonstrated impact of amylin on bone regulation

Research has demonstrated that amylin preserves bone mass by inhibiting bone resorption.
Amylin-deficient mice developed a low bone mass phenotype that mimics osteoporosis, which is attributed to increased bone resorption

Dacquin R et al. *J Cell Biol* 2004;164:509–14.



2007
Evidence of amylin synergy with leptin

Studies examining the co-administration of amylin and leptin demonstrated synergistic effects, which led to reduced food intake in chow-fed rats and the promotion of weight loss in leptin-resistant, diet-induced obese rats. A study by Roth and colleagues provided evidence that amylin agonism can restore leptin responsiveness in models of diet-induced obesity and that amylin enhances leptin signaling in the brain

Osto M et al. *Physiol Behav* 2007;91:566–72; Roth JD et al. *Proc Natl Acad Sci USA* 2008;105:7257–62.