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# HMX Short Course - GLP-1-Based Therapies: Mechanisms of Action, Development, and Clinical Impact

Understand the science behind GLP-1-based therapies and how they're revolutionizing patient care.

Early research at Massachusetts General Hospital contributed to identifying the incretin GLP-1, which laid the foundations for the development of GLP-1-based therapies. Today, these medicines are transforming clinical care, delivering meaningful improvements in glycemic control and weight management, and expanding the possibilities for reducing long-term cardiometabolic risk.

For clinicians, researchers, and industry professionals whose work intersects with metabolic health, it is now more essential than ever to understand the physiology, pharmacology, and evidence behind these game-changing therapies. This advanced course offers a unique way to learn from leading Harvard Medical School faculty about how GLP-1-based medicines work and the difference they are making in clinical practice..

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## Participants will

- Understand how incretin signaling (GLP-1 and GIP) integrates with insulin and glucagon across organs to regulate glucose homeostasis, appetite, and energy balance
  - Trace how insights from GLP-1 physiology were translated into drug development, including key molecular engineering strategies used to optimize the stability, duration of action, and delivery of these therapeutics
  - Interpret the clinical evidence for GLP-1-based therapies using major outcomes and biomarkers, including HbA1c, weight loss, and different assessments of cardiometabolic risk
  - Evaluate real-world clinical use, including disease impact, safety profiles, and contraindications, as well as further uses of these medicines as co- and poly-agonists in applications beyond diabetes and obesity
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## Topics Covered Include

- Overview
- GLP-1 Biology and Incretin Physiology
- In Focus: Glucose Homeostasis and Diabetes
- The Development of GLP-1 Receptor Agonists
- Molecular Engineering of GLP-1 Receptor Agonists
- GLP-1 Receptor Agonist Efficacy in Diabetes and Obesity
- In Focus: Diagnosis, Complications, and Management of Type 2 Diabetes
- GLP-1 Receptor Agonist Efficacy in Cardiovascular and Kidney Disease
- Deep Dive: Obesity and the Metabolic Syndrome
- Safety, Risks, and Misuse of GLP-1 Receptor Agonists
- GLP-1 Co-Agonists, Poly-Agonists, and Further Indications
- Why Isn't Every Patient on a Co-Agonist?
- Clinical Linkage: GLP-1-Based Medicines in Practice

HMX Short Courses feature targeted lessons on the latest medical science information and advancements to keep learners up to date.