THE FACULTY OF MEDICINE
Harvard University

Joel F. Habener



Photograph courtesy of Joel F. Habener

Joel Francis Habener, M.D. was an endocrinologist and long-standing leader in the field of molecular endocrinology. He conducted research at the Massachusetts General Hospital from 1971 to his retirement in 2023, having attained the rank of HMS professor of medicine in 1989. His lab was renowned for making many fundamental discoveries in the domain of peptide hormone synthesis, structure, and processing. The most clinically impactful among these advances was the discovery in his lab in 1982 of GLP-1, an insight that enabled development of a profoundly important new class of therapies for diabetes and obesity.

Joel Habener was born on June 29, 1937, in Indianapolis, the eldest of four sons of Arthur (an engineer who worked on bombsight technology during World War II) and Evelyn (Gaebe) Habener. The family moved to Anaheim, California when Joel was a child. He graduated from the University of Redlands in California in 1960 with a bachelor's degree in chemistry and received his M.D. degree from the UCLA School of Medicine in 1965. In 1963, he married Ann McFarlin, then a laboratory technician at UCLA Medical Center. Following his medical residency at John's Hopkins from 1966-67, he spent two years at the National Cancer Institute, where he conducted basic research on DNA.

He began his Harvard career at the Massachusetts General Hospital in 1971, as an Instructor in Medicine. He worked closely, initially as a mentee of John Potts, M.D., then chief of the Endocrine Unit in the Department of Medicine. Potts was a leader in studies of the synthesis and chemistry of parathyroid hormone, and Joel's initial work with Potts extended greatly our understanding of the biosynthesis and processing of parathyroid hormone, work that became a model for studies of the synthesis of many other peptide hormones.

In tribute to their dedicated efforts to science and medicine, deceased members of the Harvard Faculty of Medicine (those at the rank of full or emeritus professor) receive a review of their life and contributions with a complete reflection, ***a Memorial Minute****.*

By working with Alexander Rich at MIT, Joel acquired skills in the realm of molecular cloning that enabled major success in the early days when he created the Laboratory of Molecular Endocrinology in the MGH Endocrine Unit. From this work emerged critical new knowledge from the cloning of many hormones, including calcitonin, thyroid stimulating hormone, the gonadotropins LH and FSH, somatostatin, human chorionic gonadotropin, and several others.

Working at the leading edge of molecular endocrine science, he attracted to his lab the best and the brightest young physician-scientists who sought to apply molecular technology under the extraordinary mentorship that Joel provided. Among his many trainees who went on to be leaders in molecular endocrinology and science more broadly at Harvard and elsewhere were Bill Chin, Richard Goodman, Kay Lund, Larry Jameson, Mark Montminy, Joe Majzoub, Daniel Drucker, Doris Stoffers, and many others.

Joel was elected to the National Academy of Sciences in 2020. For the discovery of GLP-1, he received the Warren Alpert Foundation Award in 2021 with Jens Juul Holst and Daniel Drucker; the Lasker-DeBakey Clinical Medical Research Award in 2024 together with Drs. Lotte Knudson and Svetlana Mojsov; and the Breakthrough Prize in Life Sciences in 2025, shared with Drs. Holst, Mojsov, Knudsen and Drucker.

Given the great impact that the discovery of GLP-1 has had on health, how it came about deserves further discussion. The focus of the lab became cloning of genes expressing peptide hormones, starting with parathyroid hormone, employing this approach to understand their biosynthesis and processing, and from this position developing new insights into their actions. In the mid-1970s, the City of Cambridge (where Joel was working with Alex Rich at MIT) imposed limitations for a period of time on the cloning of genes from mammalian organisms. This restriction promoted their lab's use of anglerfish islets (which had the added benefit of existing apart from the exocrine pancreas) as a starting material from which to examine several mRNAs and gene structures. In this way, the lab identified proglucagon mRNA in 1982 and discovered that the peptide product of the glucagon gene, preproglucagon, also encoded two previously unknown peptides, which they named GLP-1 and GLP-2. Work in the lab over subsequent years showed that GLP-1 was expressed in gut enteroendocrine cells, identified the bioactive peptide, and reported its actions to promote insulin expression and secretion in a glucose-dependent manner *in vitro and in vivo*. Work from the Habener lab, his former fellows, and eventually many others enabled the successful development and marketing of GLP-1 medications that are transforming the treatment of diabetes, obesity, and many other disorders. This path from discovery to clinical impact reveals the many unknowns faced in the course of basic-science research as well as the critical value of lab environments that unite cutting edge science with outstanding trainees and great mentors, like Joel Habener, dedicated to supporting them.

Joel had a unique and effective mentoring style. He came to the lab in the late morning and often stayed until the late evening. During these times, his postdocs would relish the opportunity to discuss their

projects and benefit from his creative musings. He never held traditional lab meetings. He allowed his trainees to work in a wide range of areas, as is evident from the wide variety of important discoveries across the field of endocrinology that came from his lab. He was generous with his praise and worked to secure good positions for his trainees as they began their independent careers.

Joel Habener died after a long illness in a retirement community in Newton, Massachusetts on December 28, 2025. He was predeceased by his wife Ann in 2017. It will require many years to measure the full impact of his discovery of GLP-1, as its benefits to human health seem to increase by the day. He will be remembered by many of us as a creative, supportive, and kind mentor, and a determined physician-scientist who worked for over 40 years to see his major discovery become the basis for one of the most important medicines of the 21st century.

Respectfully submitted,

Jeffrey S. Flier, MD, *Chairperson*
Joseph A. Majzoub, MD
Richard Goodman, MD, PhD