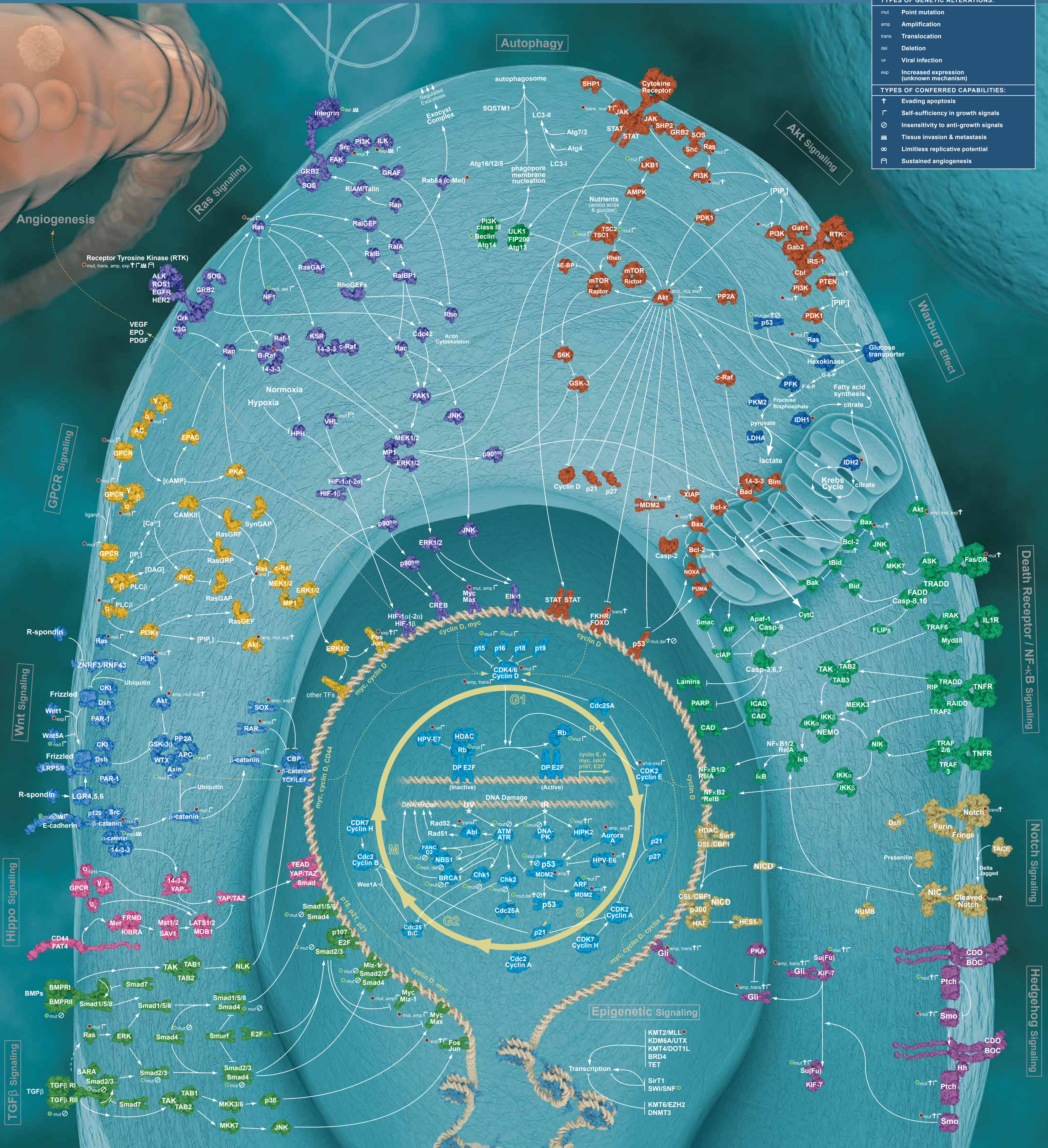


# Pathways in Human Cancer

Revised Edition

The *Pathways in Human Cancer* poster summarizes some of the key signaling pathways implicated in tumorigenesis and tumor progression in humans. Within each pathway, gene products known to be mutated in human tumors—oncogenes and tumor suppressor genes—are coded with information on types of genetic alterations and conferred capabilities to the tumor. Proteins are shown using structural representatives. New to this revised poster edition are signaling pathways for Hippo Signaling, Autophagy, Warburg Effect, and Epigenetic Regulation.

	Ras	Common protein name
		Structural representative from PDB
		oncogene
		tumor suppressor
	mut	Type of genetic alteration
		Type of conferred capability
		Direct stimulatory modification
		Direct inhibitory modification
		Multistep stimulatory modification
		Tentative stimulatory modification
		Transcriptional contribution
TYPES OF GENETIC ALTERATIONS:		
	mut	Point mutation
	amp	Amplification
	trans	Translocation
	del	Deletion
	vir	Viral infection
	exp	Increased expression (unknown mechanism)
TYPES OF CONFERRED CAPABILITIES:		
	↑	Evading apoptosis
	⌞	Self-sufficiency in growth signals
	⊖	Insensitivity to anti-growth signals
	⌘	Tissue invasion & metastasis
	∞	Limitless replicative potential
	⌞	Sustained angiogenesis



This poster was created by scientists at Cell Signaling Technology in collaboration with Robert A. Weinberg and others at the forefront of cancer research. Expanded versions of each pathway, including additional downstream signaling nodes, can be found at [www.cellsignal.com/CSTcancer](http://www.cellsignal.com/CSTcancer)

Cell Signaling Technology would like to thank digizyme for their collaboration on the design and concept of this poster. Please visit [www.digizyme.com](http://www.digizyme.com) to see more of their work.

This poster accompanies the textbook *The Biology of Cancer*, Second Edition by Robert A. Weinberg and published by Garland Science. Dr. Weinberg is a founding member of the Whitehead Institute for Biomedical Research and the Daniel K. Ludwig Professor of Cancer Research at the Massachusetts Institute of Technology.



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