

GVF Comparative Table Across Biological Systems

System	Generator (G)	Validator (V)	Filter (F)	Timescale
Immune System	V(D)J recombination, Somatic hypermutation, Receptor diversity	Antigen binding, Affinity maturation	Clonal deletion, Regulatory suppression	Hours–Days
Neural Development	Synaptic overproduction	Activity-dependent validation (Hebbian)	Microglial pruning, Apoptosis	Days–Years
Embryogenesis	Cell proliferation, Lineage diversification	Morphogens, Mechanical cues	Apoptosis shaping structures	Hours–Weeks
Cancer Control	DNA replication, Cell division	Checkpoints (G1/S, G2/M)	Senescence, Apoptosis, Immune editing	Minutes–Days
Microbiome	Colonization, Environmental exposure	Nutrient competition, Host signaling	Immune filtering (IgA, AMPs)	Continuous
Evolution	Mutation, Recombination, Drift	Natural selection	Extinction, Developmental constraints	Millions of years