

Extraordinary Variations of the Human Mind: Lessons for Anthropogeny

Glossary

Amusia: The inability to recognize musical tones or to reproduce them (tone deafness).

Anomaly: Something that deviates from what is standard, normal, or expected.

Anxiety: A nervous disorder characterized by a state of excessive uneasiness and apprehension.

Autism: A mental condition, present from early childhood, characterized by difficulty in communicating and forming relationships with other people and in using language and abstract concepts.

Autism spectrum disorder: A range of conditions characterized by challenges with social skills, repetitive behaviors, speech, and nonverbal communication.

Autobiography: An account of a person's life written by that person.

Behavior: The way in which one acts or conducts oneself, especially toward others.

Chromosomes: Discrete strands of packaged DNA.

Cognition: The mental action or process of acquiring knowledge and understanding through thought, experience, and the senses.

Congenital: A disease or physical abnormality present from birth.

DNA: Deoxyribonucleic acid. The molecule of inheritance, consisting of sequences of the four nucleotide building blocks (ATGC).

7q11.23 Duplication Syndrome: A developmental disorder resulting from a duplication of approximately 25 genes on chromosome 7.

Gene: DNA whose information encodes a function.

Genius: A person who is exceptionally intelligent or creative, either generally or in some particular respect.

Genome: All DNA in a cell. Also refers to the DNA sequence that typifies an individual or species.

Genotype: The two alleles at one or more diploid loci.

Hemideletion: One of two paired chromosomes is affected by a deletion. The other chromosome is intact.

Idiosyncrasy: A mode of behavior or way of thought peculiar to an individual.

Intuition: A thing that one knows or considers likely from instinctive feeling rather than conscious reasoning.

Memory: The faculty by which the mind stores and remembers information.

Mind: The element of an individual that enables them to be aware of the world and their experiences, to think, and to feel; the faculty of consciousness and thought.

Mutation: Change of a DNA sequence.

Nerve: A bundle of fibers that transmits impulses of sensation to the brain or spinal cord, and impulses from these to the muscles and organs.

Nervous system: The network of nerve cells and fibers that transmits nerve impulses between parts of the body.

Neuron: A specialized cell that transmits nerve impulses.

Neural circuit: A neural circuit is a functional entity of interconnected neurons that is able to regulate its own activity using a feedback loop.

Neurobiology: The study of the morphology, behavior, and other qualities of the nervous system.

Neurogenetics: The study of the role of genetics in the development and function of the nervous system.

Neurological: Relating to the anatomy, functions, and organic disorders of nerves and the nervous system.

Neuropsychology: The study of the relationship between behavior, emotion, and cognition and brain function.

Neurotypical: Not displaying or characterized by autistic or other neurologically atypical patterns of thought or behavior.

Perception: The ability to see, hear, or become aware of something through the senses.

Phenotype: Observable traits of an organism (result from interactions between genes and environment).

Plasticity: The adaptability of an organism to changes in its environment or differences between its various habitats.

Polymorphism: An allelic difference observed in more than 1% of the population studied.

Prodigy: A person, especially a young one, endowed with exceptional qualities or abilities.

Savant: A person affected with a mental disability who exhibits exceptional skill or brilliance in some limited field.

Savant Syndrome: is a loose term that refers to people who have a combination of significant cognitive difficulties, often stemming from autism, and profound skills.

Sequencing: Reading the order of nucleotides in DNA.

Social: Relating to society or its organization.

Synaesthesia: A condition in which one type of stimulation evokes the sensation of another.

Variant: DNA that differs among groups studied.

Williams Syndrome: A genetic condition characterized by medical problems, including cardiovascular disease, developmental delays, and learning challenges. These often occur side by side with striking verbal abilities, highly social personalities and an affinity for music. 1 in 10,000 people worldwide are affected and occurs equally in males and females and in every culture. Children with Williams syndrome tend to be social, friendly and endearing.

EVOLUTION & ANTHROPOGENY

Admixture: Breeding between isolated populations.

Allele: Alternative variant gene forms at the same locus (location on the chromosome).

Anatomically Modern Humans: *Homo sapiens* dating back to almost 200,000 years ago that are within range of the skeletal features of modern *Homo sapiens*.

Archaic *Homo sapiens*: Earlier forms of *Homo sapiens*, anatomically distinct from modern humans.

Behaviorally Modern Humans: Current *Homo sapiens*, a population of hominins who evolved in Africa 200-100,000 years ago, developed a suite of behavioral and cognitive traits that distinguished them from other hominins in and outside Africa, which likely allowed them to replace all other related hominins across the planet, with some interbreeding but no surviving hybrid species.

Clade: A group of organisms consisting of a common ancestor and all lineal descendants and represent a single branch on the "tree of life."

Conspecifics: Members of the same species.

Cumulative Cooperative Culture: In human culture, the accumulation of cultural modifications over time ("ratchet effect") resulting from social learning, active teaching, social motivations for conformity, and normative sanctions against non-conformity.

Denisovans: An extinct hominin population contemporary with Neanderthals that hybridized with ancient humans. Knowledge of Denisovan morphology is limited to two small fossils found in Siberia.

Developmental adaptation: An irreversible biological characteristic acquired during growth and development in a stressful environment.

Gene Flow: Movement of alleles between populations.

Genetic adaptation: A biological characteristic with a heritable basis that improves reproduction and/or survival and results from evolution by natural selection.

Genetic Drift: Loss of alleles by chance.

"Great Apes": A taxonomic family that was once incorrectly used to denote chimpanzees, bonobos, gorillas and orangutans, but not humans.

Genotype: The two alleles at one or more diploid loci.

Hominid: A classification comprising all modern and extinct "Great Apes" and humans.

Hominin: A classification comprising modern and extinct human species, and all immediate ancestors (includes the genera *Homo*, *Australopithecus*, *Paranthropus* and *Ardipithecus*).

***Homo*:** The genus that comprises the species *Homo sapiens*, which includes modern humans, as well as several extinct species classified as ancestral to or closely related to modern humans.

***Homo erectus*:** An extinct hominin species with fossil evidence from 1.9 million (possibly earlier) to 70 thousand years ago and found from Africa to Indonesia. May have been the first hominin to leave Africa. *Homo erectus* DNA may be present in other hominin species due to archaic admixture.

Hybridization: Breeding among recognized species.

Introgression: Transfer of alleles between species.

Locus (pl. Loci): A unique physical position on a chromosome.

Maladaptation: A genotypic or phenotypic trait that is (or has become) more harmful than helpful in determining survival and reproductive success (in contrast to an adaptation, which is more helpful than harmful).

Middle Pleistocene: A period of geological time (781-126,000 years ago). An important time for the diversification of hominins, including the emergence of Neanderthals and *Homo sapiens*.

Morphology: Shape or form (outward appearance) of an organism.

Neanderthals: An extinct Eurasian hominin species that existed from 500,000 to 30,000 years ago and interbred with ancient humans, but left behind no true hybrid species.

Phenotype: Observable traits of an organism (result from interactions between genes and environment).

Phylogeny: Historical relationships of species or genetic loci.

Population: A defined group of similar individuals among whom interbreeding occurs.

Primates: A group of mammals that include humans, apes, monkeys, and prosimians.

Selection: Allele frequency change over time caused by the different replication rate of specific alleles.

Species: A population that can produce viable and fertile offspring. (debated definition)