Rude Awakenings

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> *symbiosis as a source of evolutionary innovation speciation and morphogenesis yamaha music finder catalogue sorted by number wren and martin solutions download 300 mcqs of general knowledge book for tmo inspector the writers guide to character traits includes profiles of human behaviors and personality types linda n edelstein*

SYMBIOSIS AS A SOURCE OF EVOLUTIONARY INNOVATION SPECIATION AND MORPHOGENESIS

Trends in Ecology & Evolution. Trends in Ecology & Evolution. Symbiosis as a source of evolutionary innovation: Speciation and morphogenesis. The Quarterly Review of Biology. The Quarterly Review of Biology. *Symbiosis as a Source of Evolutionary Innovation: Speciation and Morphogenesis. Based on a Conference Held in Bellagio, Italy, 25-30 June 1989.*Lynn Margulis , Rene Fester. Speciation by Symbiosis: The Microbiome and Behavior.

Species are fundamental units of comparison in biology. The newly discovered importance and ubiquity of host-associated microorganisms is now stimulating work on the roles that microbes can play in animal speciation. We previously synthesized the literature and advanced concepts of speciation by symbiosis with notable attention to hybrid sterility and lethality. Here, we review recent studies and relevant data on microbes as players in host behavior and behavioral isolation, emphasizing the patterns seen in these analyses and highlighting areas worthy of additional exploration. We conclude that the role of microbial symbionts in behavior and speciation is gaining exciting traction, and the holobiont and hologenome concepts afford an evolving intellectual framework to promote research and intellectual exchange between disciplines such as behavior, microbiology, genetics, symbiosis and speciation. Given the increasing centrality of microbiology in macroscopic life, microbial symbiosis is arguably the most neglected aspect of animal and plant speciation, and studying it should yield a better understanding of the origin of species.

. Genetical Research. Genet. Res.. Symbiosis as a Source of Evolutionary Innovation: Special ion and Morphogenesis. Edited by Lynn Margulis and René Fester. MIT Press, Cambridge, Mass. and London. 1991. £33.75 in U.K. ISBN 0 262 13269 9.. A Hypothesis of Symbiosis between Humans and Poliovirus as a Critical Evolutionary Step in Human Speciation.

No single evolutionary event has been identified as the cause for the final emergence of our species. I propose that a mutation on CD155 receptor gene occurred to establish a symbiosis with poliovirus, which exerted its beneficial impact via RNA dependent non-genetic transgenerational inheritance, which caused a qualitative enhancement of cognitive functions. I posit that this mutation occurred in what we call, Anatomically Modern Humans, our immediate ancestor species and that the disruption of this symbiosis causes autism spectrum disorder. Positive selection of CD155 to the extent of becoming a species defining characteristic, the chronology of autism spectrum disorder prevalence increase and continued increase, the multigenerational nature of RNA inheritance, the universal infection of humans by poliovirus and a very low associated mortality rate, and several other factors support this hypothesis. Specific genetic, epidemiological and sperm miRNA content studies are suggested to test this hypothesis.

. Evolutionary Biology. Speciation Continuum. Speciation Continuum.
Understanding the origin of species is no easy task. Academic studies of speciation usually take place over a few years, while the process itself usually occurs over evolutionary timescales. How, then, can we possibly hope to understand speciation from start to finish? The idea of a “speciation continuum” has been presented as something of a solution to this problem. Because we are surrounded by many examples of speciation—each providing a snapshot at some point during the transition from populations to species—we can use them to understand the process as a whole. This article will (1) highlight some key references that laid the foundations for continuum thinking in speciation research, (2) explore the origins and definitions of the term “speciation continuum” and (3) highlight some outstanding empirical studies rooted in the speciation continuum.

. Evolutionary Biology. Parallel Speciation. Parallel Speciation.
Parallel speciation is a young concept, derived as a specific case from the more general concept of parallel evolution. It was coined by Dolph Schluter and Laura Nagel in a seminal paper from 1995. In this paper they illustrated parallel speciation using the three-spined stickleback that repeatedly form freshwater ecotypes from marine ancestral populations. However, already in 1993 Schluter and McPhail provided a review on “replicate adaptive radiation” discussing parallel evolution of fish ecotypes in postglacial lakes and of Anolis lizards on Caribbean islands. Parallel speciation is essentially equivalent to parallel evolution of reproductive isolation, and both can be partial rather than complete. And similar to the more general discussion on speciation, it is mostly impossible to draw the line between partial and complete. The core attribute of parallel speciation is that traits leading to reproductive isolation evolve repeatedly and independently when a species is distributed over contrasting environments. The driver of parallel speciation is divergent natural selection. Mostly the reproductive barriers are not the direct target of selection but evolve as a by-product of repeated adaptation to different environments. For example, a species

evolves into a small ecotype in one type of habitat and a large in another, and due to the size differences individuals of the different ecotypes avoid mating with each other while individuals from different locations of the same ecotype remain compatible. The expectation under parallel speciation is that barriers to reproduction between different ecotypes establish in contact zones where the environment shifts, despite these populations being phylogenetically the most closely related. However, there are no barriers between individuals of similar ecotype coming from different areas (when these are brought together in experimental tests).

. Evolutionary Biology. Founder Effect Speciation. Founder Effect Speciation.
The origin of species (speciation)—the process by which two or more species evolve from a single ancestral species—is a central problem in evolutionary biology. During the evolutionary synthesis of the twentieth century, the dominant theory of speciation for those working on sexually reproducing animals was allopatric speciation. Allopatric speciation posits that an ancestral species becomes subdivided into two or more geographical subpopulations by changing climates, colonization of new areas, the erection of geological barriers, etc. If these geographical subpopulations have little to no genetic interchange, they will begin to evolve separately. Speciation then arises as an incidental by-product of the independent evolution occurring within the geographical isolates. Evolution within species (microevolution) was often envisioned as being dominated by natural selection leading to adaptive divergence between the geographical isolates. However, the modern synthesis made it clear that microevolution involved many processes in addition to natural selection. One of these processes was genetic drift, the random changes in a population's gene pool (the set of alleles or gametes collectively shared by a reproducing population) that inevitably arise from random sampling of a finite number of gametes to form the next generation. Just by chance, a particular form of a gene can decrease or increase in frequency in the population, including being completely lost or fixed. The impact of random sampling increases as the population size decreases. One special case of strong genetic drift is the founder effect, in which a population is established by a small number of founding individuals from a much larger ancestral population. Strong genetic drift in the founder population could lead to an immediate evolutionary divergence from the ancestral population. This accelerated divergence is the essence of founder effect speciation models. Founder effect speciation is a special

case of allopatric speciation in which one of the geographical isolates was established from a small number of individuals. This does not mean that other microevolutionary forces, such as natural selection, are not operating, but rather that the founder effect enhances and accelerates microevolutionary divergence in concert with natural selection and other microevolutionary forces, thereby making speciation more likely.

. Symbiosis. Symbiosis. A Margulian View of Symbiosis and Speciation: the Nasonia Wasp System.
Species are fundamental units of biology that exemplify lineage diversification, while symbiosis of microbes and macrobial hosts exemplify lineage unification between the domains of life. While these conceptual differences between speciation and symbiosis often dominate the narrative of the respective fields, Lynn Margulis argued for interconnection between these two subdisciplines of biology in a manner that left a legacy for scholars and students alike to pursue, detail, and discover. The Margulian perspective has always been that host evolutionary processes such as speciation are more impacted by microbial symbioses than typically appreciated. In this article, we present and review the case system that she long envisioned, one in which layers of microbial symbiosis reduce species interbreeding and assist species diversification among a closely related group of small, metallic green, parasitoid wasps from the genus Nasonia.

. Eco-evolutionary Dynamics. Ecological Speciation. Ecological Speciation.
This chapter examines how populations in different environments can fall at different stages along a continuum of progress toward ecological speciation. It traces how variation can be used to infer ecological speciation through either of two general approaches: (1) integrated signatures of reproductive isolation based on measures of gene flow, and (2) confirmation of the ecological basis of reproductive barriers. The chapter also addresses the rapidity of ecological speciation (rapid speciation), at what point progress toward ecological speciation becomes irreversible (speciation reversal), to what extent ecological speciation is driven by competitive (adaptive speciation) or reproductive (reinforcement) interactions, and how many traits (magic traits) and selective pressures (dimensionality) are involved.

. Evolutionary Biology. Geography of Speciation. Geography of Speciation.

Speciation is the process of a single lineage splitting into two or more daughter lineages. Geography is key to this process. When populations are spatially isolated, they no longer exchange genes and can diverge. A byproduct of this divergence is the evolution of intrinsic reproductive barriers—traits that prevent species from interbreeding and signal the completion of speciation. Allopatric speciation is the origin of new species in spatially isolated populations. Allopatric speciation is the simplest and easiest model of speciation because there is no gene flow between populations that can erode divergence. Given enough time, allopatric speciation is expected, and it is widely agreed to be the most common mode of speciation. Indeed, allopatric speciation was described by Coyne and Orr in Speciation (2004) as "so plausible that it hardly seems worth documenting." Speciation can of course occur in other geographic contexts, with differing levels of gene flow. A single panmictic population can be split into two isolated populations through disruptive selection, known as sympatric speciation, or new species can arise from populations that do not directly overlap, but are in close enough proximity to exchange genes, known as parapatric speciation. These three geographic modes represent different points on a continuum of spatial isolation that determines the connectivity, or amount of gene flow, among diverging populations. However, these are hardly discrete categories, and the term "speciation-with-gene-flow" (also "divergence-with-gene-flow") is often used to encompass any geographic model of speciation other than strict allopatry. This article will provide an overview of the various geographic contexts for speciation, with a focus on cases where spatial isolation ranges from complete (allopatric speciation) to some form of contact between diverging populations.

. Evolutionary Biology. Sequential Speciation and Cascading Divergence. Sequential Speciation and Cascading Divergence.

A central, long-standing, and largely untested premise in evolutionary ecology is that "biodiversity begets biodiversity" in a process referred to as "sequential" or "cascading" divergence or speciation. The hypothesis of sequential speciation postulates that as populations diverge and new species form (i.e., the process of speciation), they create new niches for interacting organisms to utilize and adapt to in kind, potentially catalyzing a chain reaction of speciation events upwards across trophic levels. As a result, the process of sequential speciation has been inferred to help explain a number of observational and correlative patterns in ecology and evolutionary biology, such as adaptive radiations following mass extinctions, increased species richness in tropical climates, and the incredible diversity of one of the most speciose group of animals on the planet, specialist insects. However, the most direct evidence for the process of sequential speciation comes from tritrophic systems of interacting organisms involving plants, insects that feed on these plants, and insect natural enemies that feed on these plant-feeding insects. This article first provides a broad overview of the sequential speciation literature and a guide to important reviews that detail the current state of the field. To best understand and study sequential speciation, it is important to understand how it differs from and is similar to related concepts in evolutionary ecology. In this regard, this article provides literature that defines the process and contrasts sequential speciation and strict cocladogenesis, a coevolutionary phenomenon that can result in similar patterns of biodiversity. Next, references are provided that highlight the general implications for sequential speciation and detail indirect evidence from multiple subfields of biology that implicate the process in generating biodiversity. The article then details several resources that define the conditions conducive for sequential speciation, summarizes the primary literature providing direct evidence in support of the process, and references specific studies that test for but find no evidence of sequential speciation. Lastly, the bibliography concludes by detailing future directions and considerations for studying sequential speciation and its role for understanding patterns of species diversity.

. Evolution and Speciation in Protozoa. Induction and Morphogenesis. New Developments in Evolutionary Innovation. Punctuated Equilibrium, Speciation, and Exaptation in Innovation. New Frontiers.

Evolutionary thinking has grown significantly and has had a profound impact on various fields such as economics, strategy, and technological innovation. An important paradigm that underlies the evolutionary theory of innovation is neo-Darwinian evolution. According to this paradigm, evolution is gradualist and is based on the mechanisms of variation, selection, and retention. Starting from the 1970s, new theoretical advancements in evolutionary biology have recognized the central role of punctuated equilibrium, speciation, and exaptation in evolution and of Woesian dynamics. However, despite their significant influence in evolutionary biology, these advancements have been reflected only partially in evolutionary approaches to economics, strategy, and technological innovation. This chapter reviews these advancements and explores their key implications for innovation, such as the role of serendipity and unpre-stateability leading to disequilibrium in economics systems, and the importance of adopting an option-based logic during the innovation process.

. French-Ukrainian Journal of Chemistry. Fr. Ukr. J. Chem.. Cheminformatics: A Patentometric Analysis.

Cheminformatics has entrenched itself as a core discipline within chemistry, biology, and allied sciences, more particularly in the field of Drug Design Discovery and Development. The article begins with a patent analysis of the progressing field of cheminformatics from 1996 to early 2021 using the Relecura and Lens patent database. It proceeds with a description of patents in various domains and aspects. The eye-catching mind map shows the landscape of cheminformatics patent search. The results reveal the star rating-wise patent counts and the trends in the sub-technological research areas. At the end of the article, quantum clustering and eminent directions towards the future of cheminformatics have been discussed. This study would provide the directions to academicians, techno enthusiasts, researchers, stakeholders, or investors and helps increase the awareness of the potential of cheminformatics and quantum clustering.

. Paleobiology. Paleobiology. Symbiosis as an evolutionary innovation in the radiation of Paleocene planktic foraminifera.

Symbioses are often regarded as an important means for the creation of evolutionary novelty as well as a trigger for the abrupt appearance of higher taxa. The fossil record of foraminifer-algal symbiosis suggests that the appearance of this ecological association contributed to the radiation of Paleogene planktic foraminifera. Isotopic evidence shows that photosymbiosis evolved in synchrony with a major diversification of trochospiral planktic foraminifera about 3.5 m.y. after the end-Cretaceous extinction. In modern planktic foraminifera, photosymbiotic species tend to have more cosmopolitan distributions than asymbiotic foraminifera and a greater ability to withstand periods of nutrient stress. The simultaneous taxonomic radiation and acquisition of photosymbiosis are evidence that the ecological strategy permitted Paleocene foraminifera to expand their niche in pelagic environments by diversifying into low-nutrient surface waters.

A comparison of the species longevities of Neogene and Paleogene symbiotic clades suggests that photosymbiosis does not regulate the characteristic rate of taxonomic turnover in clades after they appear. Species longevities are much shorter in Paleocene and Eocene photosymbiotic morphospecies than they are among photosymbiotic Neogene clades; apparently photosymbiosis does not exert a significant control over long-term evolutionary rates. In addition, the absence of a characteristic morphology associated with photosymbiosis in Cenozoic planktic foraminifera suggests that morphology, as with rate of evolutionary turnover, is linked to symbiosis only because of common inheritance instead of a functional relationship. Although the coincidence between the acquisition of photosymbiosis and generic diversification does suggest a linkage between this ecology and the appearance of foraminiferal higher taxa, there is little indication at the present that symbioses control long-term morphological or ecological patterns within these groups after their appearance. Photosymbiosis, and other evolutionary innovations, may be more a catalyst for the differentiation of major groups than a predictable governor on evolutionary rates.

. Results and Problems in Cell Differentiation, Symbiosis: Cellular, Molecular, Medical and Evolutionary Aspects. Chemiosmosis, Evolutionary Conflict, and Eukaryotic Symbiosis. Insect Symbiosis, Volume 2. The evolutionary origin and maintenance of the mutualistic symbiosis between termites and fungi

YAMAHA MUSIC FINDER CATALOGUE SORTED BY NUMBER

Yamaha Music Finder Catalogue Sorted by Number: A Comprehensive Guide to Yamaha Instruments

Q: What is the Yamaha Music Finder Catalogue?

A: The Yamaha Music Finder Catalogue is a comprehensive online resource that provides detailed information on all Yamaha musical instruments. It allows users to quickly and easily find the perfect instrument for their needs, with instruments conveniently sorted by number.

Q: How do I use the catalogue?

A: The Yamaha Music Finder Catalogue is easy to use. Simply browse through the categories of instruments, such as keyboards, guitars, drums, and wind instruments. Each instrument is assigned a unique number, which you can use to quickly locate detailed specifications, pricing, and availability.

Q: What information can I find in the catalogue?

A: The Yamaha Music Finder Catalogue provides a wealth of information on each instrument, including:

- High-quality images
- Detailed specifications
- Pricing and availability
- Reviews from other users
- Related accessories

Q: Why is the catalogue sorted by number?

A: Sorting the catalogue by number makes it easy for users to quickly find the instrument they are looking for. The unique number assigned to each instrument eliminates the need to search through large lists or use specific keywords.

Q: Can I purchase instruments directly from the catalogue?

A: No, the Yamaha Music Finder Catalogue does not offer direct sales. However, you can use the catalogue to find the instrument you want and then contact your local Yamaha dealer or visit the Yamaha website to make a purchase.

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300 MCQS OF GENERAL KNOWLEDGE BOOK FOR TMO INSPECTOR

300 MCQs of General Knowledge Book for TMO Inspector: A Comprehensive Guide

The TMO Inspector Examination demands a thorough understanding of general knowledge across various domains. To assist aspirants in preparing effectively, a meticulously compiled book offers a vast repository of 300 multiple-choice questions (MCQs). Here's an overview of the book's content, organized into five paragraphs:

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THE WRITERS GUIDE TO CHARACTER TRAITS INCLUDES PROFILES OF HUMAN BEHAVIORS AND PERSONALITY TYPES LINDA N EDELSTEIN

The Writer's Guide to Character Traits: Profiles of Human Behaviors and Personality Types by Linda N. Edelstein

Linda N. Edelstein's "The Writer's Guide to Character Traits" offers a comprehensive guide to understanding and developing compelling literary characters. This article explores some of the key questions authors may have about character traits.

1. What are character traits?

Character traits are the distinguishing qualities that define a character's behavior and personality. They can be physical, psychological, emotional, or social.

2. Why are character traits important in writing?

Character traits are the building blocks of believable and relatable characters. They provide a framework for understanding characters' motivations, actions, and relationships.

3. How can I identify and develop character traits?

Edelstein encourages writers to observe real people, studying their mannerisms, behaviors, and conversations. Reading widely and researching different personality types can also provide insights.

4. What are some common character traits?

Edelstein presents a taxonomy of character traits, including:

- **Physical traits:** Appearance, height, weight, scars, mannerisms
- **Psychological traits:** Intelligence, temperament, beliefs, fears
- **Emotional traits:** Empathy, anger, joy, sadness
- **Social traits:** Relationship dynamics, communication skills, leadership qualities

5. How can I create complex and nuanced characters?

Avoid stereotypes and one-dimensional characters. Instead, strive for complexity by exploring a character's strengths, flaws, and motivations. Give them a backstory and allow them to evolve over the course of the narrative. By understanding and developing character traits, writers can create compelling characters that resonate with readers and leave a lasting impact.