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**Ediacaran**( **vendean** /**Ediacaran** ) **"fauna "**

[**Vis , zoogdier en calcium**](http://evodisku.multiply.com/journal/item/81/Vis_zoogdier_en_calcium)

 [cambrium](http://tsjok45.multiply.com/tag/cambrium)

[cambrische explosie](http://evodisku.multiply.com/journal/item/144/cambrische_explosie)

AVALON

**** [**economie**](http://www.sciencepalooza.nl/tag/economie/?s=)**(42)**

**Embryonale hersenontwikkeling**

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| Blog Entry | [Embryonale hersenontwikkeling](http://evodisku.multiply.com/journal/item/289/Embryonale_hersenontwikkeling) |

<http://neurokids.nl/verken/hersenen/hersen-ontwikkeling/>

**EMPATHIE**

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|  | [Boerenzwaluw](http://evodisku.multiply.com/journal/item/62/Boerenzwaluw) |
|  | [Morele apen](http://evodisku.multiply.com/journal/item/546/Morele_apen) |

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|  | [VERGELIJKING MENS DIER](http://evodisku.multiply.com/journal/item/67/VERGELIJKING_MENS_DIER) |
|  | [Altruisme](http://evodisku.multiply.com/journal/item/531/Altruisme) |

**(met het artikel) Verwantenselectie en groepsselectie 30 augustus 2010   PIERRA**

**spiegelneuronen**

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| Blog Entry | [Imiteren /spiegelneuronen](http://evodisku.multiply.com/journal/item/543/Imiteren_spiegelneuronen) |

<http://www.vpro.nl/wetenschap/index.shtml?3626936+2848322+3855404+5949841>

**Encephalartos lehmanni** [carboon planten](http://evodisku.multiply.com/journal/item/177/carboon_planten)
**Encephalartos woodii** [carboon planten](http://evodisku.multiply.com/journal/item/177/carboon_planten)

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[Endosymbiotic evolution and the tree of genomes](http://www.nature.com/scitable/content/endosymbiotic-evolution-and-the-tree-of-genomes-14665098)

**EPIGENETICA**

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| Blog Entry | [EPIGENETICA](http://evodisku.multiply.com/journal/item/212/EPIGENETICA) |
| Note | [EPIGENETICA EPIGENETICS](http://evodisku.multiply.com/notes/item/84) |

<http://tsjok45.multiply.com/photos/album/1637/EPIGENETICA>\_

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**Ethylglucose /Ethylene  glucol**[Universele biochemie](http://evodisku.multiply.com/journal/item/461/Universele_biochemie)

**Etroplus maculatus**[CICHLIDEN](http://evodisku.multiply.com/journal/item/146/CICHLIDEN)



**Escheria coli**

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| **Blog Entry** | [**E Coli**](http://evodisku.multiply.com/journal/item/225/E_Coli) |

**Evo-devo**

Symfonie van genen en Omgeving   N&T  maart 20O2   [Fenotype](http://evodisku.multiply.com/journal/item/235/Fenotype)

 [evo -devo](http://evodisku.multiply.com/journal/item/211/evo_-devo)

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| Blog Entry | [**EVO & FILOSOFIE INHOUD**](http://evodisku.multiply.com/journal/item/819/EVO_FILOSOFIE_INHOUD_) |

[**filosofie**](http://anticreato.multiply.com/tag/filosofie)

**(anti-creato)**

  [**evolutie**](http://www.sciencepalooza.nl/tag/evolutie/?s=) (101)

[Evolutie aan het werk](http://www.encyclo.nl/begrip/Evolutie%20aan%20het%20werk) 1
[Evolutie aan het werk](http://www.encyclo.nl/begrip/Evolutie%20aan%20het%20werk) 2
[Evolutie betrapt](http://www.encyclo.nl/begrip/Evolutie%20betrapt)
[Evolutie en evolutietheorie](http://www.encyclo.nl/begrip/Evolutie%20en%20evolutietheorie)
[evolutie in de vorderingen](http://www.encyclo.nl/begrip/evolutie%20in%20de%20vorderingen)
[evolutie in de vorderingen](http://www.encyclo.nl/begrip/evolutie%20in%20de%20vorderingen)
[Evolutie met een slakkengang](http://www.encyclo.nl/begrip/Evolutie%20met%20een%20slakkengang)
[Evolutie van de mammoet](http://www.encyclo.nl/begrip/Evolutie%20van%20de%20mammoet)
[Evolutie van slaap](http://www.encyclo.nl/begrip/Evolutie%20van%20slaap)
[Evolutiebegrippen](http://www.encyclo.nl/begrip/Evolutiebegrippen)
[Evolutiebiologie](http://www.encyclo.nl/begrip/Evolutiebiologie)
[evolutiekring](http://www.encyclo.nl/begrip/evolutiekring)
[evolutieleer](http://www.encyclo.nl/begrip/evolutieleer)
[evolutieleer](http://www.encyclo.nl/begrip/evolutieleer)
[Evolutiemodellen](http://www.encyclo.nl/begrip/Evolutiemodellen)
[Evolutiën](http://www.encyclo.nl/begrip/Evoluti%C3%ABn)
[evoluties](http://www.encyclo.nl/begrip/evoluties)
[evolutietheorie](http://www.encyclo.nl/begrip/evolutietheorie)
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[Evolutietheorie](http://www.encyclo.nl/begrip/Evolutietheorie)
[evolutietheorie](http://www.encyclo.nl/begrip/evolutietheorie)
[Evolutietheorie van Darwin](http://www.encyclo.nl/begrip/Evolutietheorie%20van%20Darwin)

**Definition  evolution**  [evolution](http://www.nature.com/scitable/definition/evolution-78)

<http://www.encyclo.nl/begrip/evolutie>

**Evolution:**A change in allele frequency in a population over time. The only scientific theory to explain the diversity of life on earth. Observed fact.     SOURCE:Rubystars

**Evolutie boven soortniveau**

[Evolutie boven soortniveau](http://www.encyclo.nl/begrip/Evolutie%20boven%20soortniveau)

[DOUGLAS THEOBALD](http://evodisku.multiply.com/journal/item/968/_DOUGLAS_THEOBALD_)
[Macro evolutie](http://evodisku.multiply.com/journal/item/329/Macro_evolutie)

[anti-creato Algemeen : MACRO-EVOLUTIE](http://evodisku.multiply.com/journal/item/762/anti-creato_Algemeen_MACRO-EVOLUTIE)

**Evolutie van een complex geheel : het oog**

<http://tsjok45.multiply.com/photos/album/555/oogevolutie>

<http://evodisku.multiply.com/journal/item/358/Oog_evolutie>
<http://evodisku.multiply.com/journal/item/373/Oog-evolutie_volgens_Carl_Zimmer>
<http://evodisku.multiply.com/journal/item/38/adaptaties>
<http://anticreato.multiply.com/journal/item/205/Slecht_en_half_oog_>
<http://evodisku.multiply.com/journal/item/366/Dawkins_oogevolutie>
<http://evodisku.multiply.com/journal/item/386/ogen_en_kwallen>

[Nilson & Pelger](http://tsjok45.files.wordpress.com/2011/01/nilson-pelger.doc)

**evolutie van genen**

[**http://tsjok45.multiply.com/photos/album/978**](http://tsjok45.multiply.com/photos/album/978)

[Homologie en genen](http://evodisku.multiply.com/journal/item/288/Homologie_en_genen)

<http://www.kennislink.nl/publicaties/de-evolutie-van-genen>

<http://www.vib.be/nl/biotech-basics/Pages/Genen-en-evolutie.aspx>

<http://www.evolutietheorie.ugent.be/node/145>

**evolutie en hersenen**  [brein & evo](http://evodisku.multiply.com/tag/brein%20%26%20evo)

**evolutie mens**    [hominidenevolutie](http://tsjok45.multiply.com/tag/hominidenevolutie),

[evolutie walvis oor](http://evodisku.multiply.com/journal/item/96/evolutie_walvis_oor)      **Middenoor beentje (incus.) van  50-miljoen  jaar oude Pakicetide  -->foto's**[**New genus of Oligocene whale**](http://tsjok45.multiply.com/photos/album/2/New_genus_of_Oligocene_whale)

[Evolutie 2005](http://evodisku.multiply.com/journal/item/95/Evolutie_2005)

**Evolutionisme** -->[**CREATIONISME en EVOLUTIONISME**](http://evodisku.multiply.com/journal/item/143/CREATIONISME_en_EVOLUTIONISME)

[exoten](http://evodisku.multiply.com/journal/item/668/exoten)

# NOTES

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|  | [EPIGENETICA EPIGENETICS](http://evodisku.multiply.com/notes/item/84) |  Apr 6, '09  |
|  | What Is Epigenetics? Berger et al. (2009) attempt to define epigenetics. "An epigenetic trait is a stably heritable phenotype resulting from changes in a chromosome without alterations in the DNA sequence." The main examples are "DNA methylation, histone modifications, histone variants, and nucleosome positioning." These are chromosomal alterations that are passed on to daughter cells following cell division by mitosis or meiosis. Although the Berger et al. don't mention it, these epigenetic signals are all reversible. However the term isn't really neccessary . It's far more accurate to refer to each of the individual examples by name and the field is regulation of gene expression. -------------------------------------------------------------------------------- Berger, S.L., Kouzarides, T., Shiekhattar, R., and Shilatifard, A. (2009) An operational definition of epigenetics. Genes & Dev. 23:781-783. [DOI: 10.1101/gad.1787609]

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| Blog Entry | [EPIGENETICA](http://evodisku.multiply.com/journal/item/212/EPIGENETICA) |

Peter Mudde : " ...Epigenese is NIET hetzelfde als wat we 'lamarckisme noemen. Door epigenese verandert het erfelijk materiaal niet definitief. Let op : er is al duizenden jaren een Lamarckiaans experiment aan de gang.. Als datgene wat tijdens het leven gebeurt zou worden overgedragen op de volgende generaties zou je toch inmiddels verwachten dat joodse jongetjes besneden geboren zouden worden..." Dit is dus een voorbeeld van wat Lamarck als drijvende kracht achter evolutie zag: het gebruik dan wel het niet gebruik van een lichaamsdeel zorgt voor de ontwikkeling dan wel degeneratie er van doordat dat van ouders op kinderen wordt doorgegeven. Dat is dus iets anders dan epigenese. Een voorbeeld van ideologisch "lamarckisme "is er ook : Het Lysenkoisme ... Het was de dogmatische " officieele erfelijkheidsleer " van de dialectisch materialisten en zorgde onrechtstreeks voor reusachtige misoogsten en hongersnoden in het Sovjet Rusland onder Stalin ... Het was een door de politiek en de ( hegeliaanse ) ideologen gekaapte en "aangepaste " verdraaing van de oorspronkelijke werkhypotheses van Jean Baptiste de Lamarck die tot dogma was gemaakt .... T. Dodzhansky ( overigens ook een gelovige Russische Orthodox ,) is onder andere daarom een van de Russische Biologen die niet meer terug wilde keren naar Rusland ) Woorden en begripsverwarring : <http://www.oeb.harvard.edu/faculty/haig/publications_files/04epigeneticorigins.pdf> <http://whyevolutionistrue.wordpress.com/2011/05/14/development-is-epigenetic/>  |

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|  | [EVOLUTION =FACT & THEORY](http://anticreato.multiply.com/notes/item/10)  |  Mar 27, '09  |
|  | Essentially there is agreement among scientists that evolution is a fact that explains the extraordinary complexity and interdependence of the living world. Moreover, the various mechanisms of evolution,chiefly natural selection ( NS ) and random genetic drift(,RGD) explain an extraordinary collection of data, including much that Darwin himself was unaware of.RGenetic drift <http://evodisku.multiply.com/notes/item/67>Natural selection is the mechanism proposed by Charles Darwin over 150 years ago and it remains one of the most interesting features of evolution because it explains complex adaptationsThe Three Necessary and Sufficient Conditions of Natural Selection <http://gregladen.com/wordpress/?p=144>zie ook <http://anticreato.multiply.com/journal/item/15/Evolutie_is_maar_een_theorie_en_geen_feit>[Globe+and+Mail_evolution.jpg]Ondersteunende EVIDENTIES voor de ETDe Evolutie DETECTIVES <http://www.deatheist.nl/downloads/EvoDetective.pdf>[**“Evolution Documentary” site**](http://www.youtube.com/user/EvolutionDocumentary?annotation_id=annotation_390069&feature=iv&src_vid=I91Huv4jbCk) <--clik = connection with the webpage [http://s2.googleusercontent.com/s2/favicons?domain=www.pbs.org&feature=youtube_channelEvolution FAQ's](http://www.pbs.org/wgbh/evolution/library/faq/)[http://s2.googleusercontent.com/s2/favicons?domain=evolution.berkeley.edu&feature=youtube_channelUnderstanding Evolution](http://evolution.berkeley.edu/evolibrary/home.php)[http://s2.googleusercontent.com/s2/favicons?domain=www.youtube.com&feature=youtube_channelBBC](http://www.youtube.com/playlist?list=PL6F572017231B7548)[http://s2.googleusercontent.com/s2/favicons?domain=www.youtube.com&feature=youtube_channelPBS](http://www.youtube.com/playlist?list=PL7D2133DCF4DED5DA)[http://s2.googleusercontent.com/s2/favicons?domain=www.youtube.com&feature=youtube_channelNOVA](http://www.youtube.com/playlist?list=PL3A262C8C2828321E)[http://s2.googleusercontent.com/s2/favicons?domain=www.youtube.com&feature=youtube_channelChannel 4](http://www.youtube.com/playlist?list=PL1D529113FD751FD7)[http://s2.googleusercontent.com/s2/favicons?domain=www.youtube.com&feature=youtube_channelDiscovery Channel](http://www.youtube.com/playlist?list=PLEE1F25B3F007FFCF)[http://s2.googleusercontent.com/s2/favicons?domain=www.youtube.com&feature=youtube_channelNational Geographic](http://www.youtube.com/playlist?list=PLD8E09BDA2899D14D)[http://s2.googleusercontent.com/s2/favicons?domain=www.youtube.com&feature=youtube_channelMost Viewed Videos](http://www.youtube.com/user/EvolutionDocumentary/videos?sort=p&flow=grid&view=0)***"There is grandeur in this view of life, with its several powers, having been originally breathed into a few forms or into one; and that, whilst this planet has gone cycling on according to the fixed law of gravity, from so simple a beginning endless forms most beautiful and most wonderful have been, and are being, evolved."*** Charles Darwin |

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|  | [EXAPTATIE EXAPTATION](http://evodisku.multiply.com/notes/item/104) |  Feb 7, '10  |
|  | An “exaptation” is just one example of a characteristic that evolved, but that isn’t considered an adaptation. Stephen Gould and Elizabeth Vrba1 proposed vocabulary to let biologists talk about features that are and are not adaptations: Adaptation—a feature produced by natural selection for its current function (such as echolocation in bats ). Exaptation—a feature that performs a function but that was not produced by natural selection for its current use. Perhaps the feature was produced by natural selection for a function other than the one it currently performs and was then co-opted for its current function. For example, feathers might have originally arisen in the context of selection for insulation, and only later were they co-opted for flight. In this case, the general form of feathers is an adaptation for insulation and an exaptation for flight. <http://evolution.berkeley.edu/evosite/evo101/IIIE5cExaptations.shtml> **Exaptation** The function of traits can shift under the influence of evolutionary selection, such that a trait serving one function evolves to serve another function. This process, which is commonly observed in both anatomy and behavior, was termed **exaptation** by Gould and Vrba.1) A character, previously shaped by natural selection for a particular function (an adaptation), is coopted for a new use—cooptation, or2) A character whose origin cannot be ascribed to the direct action of natural selection (a nonaptation), is coopted for a current use—cooptation.Such shifts in the function of a trait are referred to as *exaptation*, *cooption*, or *preadaptation*. Feathers provide the classic example of exaptation – having initially evolved for temperature regulation, feathers later evolved for their function in flight. Human hands result from a long sequence of exaptations – fins in fish; forelimbs in transitional forms such as [Tiktaalik](http://www.nytimes.com/2006/04/06/science/06fossil.html?_r=1&pagewanted=all), [Acanthostega](http://www.tolweb.org/Acanthostega), or [Ichthyostega](http://www.devoniantimes.org/Order/re-ichthyostega.html); forelimbs in tetrapods; structures for grasping of tree branches in arboreal primates; tool-grasping structures in hominids and humans. The proteins that form the bacterial flagellum are derived from proteins that served other functions in smaller assemblages. Interest in exaptation results from its relationship to both the process and product of evolution: to the process that creates complex traits and to the product that may be imperfectly designed.Gould, Stephen Jay, and Elizabeth S. Vrba (1982), "Exaptation - a missing term in the science of form," Paleobiology 8 (1): 4-15. An **exaptation** is a [biological](http://www.biology-online.org/dictionary/Biological) [adaptation](http://www.biology-online.org/dictionary/Adaptation) where the [biological](http://www.biology-online.org/dictionary/Biological) [function](http://www.biology-online.org/dictionary/Function) currently performed by the [adaptation](http://www.biology-online.org/dictionary/Adaptation) was not the [function](http://www.biology-online.org/dictionary/Function) performed while the [adaptation](http://www.biology-online.org/dictionary/Adaptation) evolved under earlier [pressures](http://www.biology-online.org/dictionary/Pressures) of [natural selection](http://www.biology-online.org/dictionary/Natural_selection)

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| 1. | a process in which a feature acquires a function that was not acquired through natural selection. |

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| 2. | a feature having a function for which it was not originally adapted or selected. |

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| 3. | a morphological or physiological feature that predisposes an organism to adapt to a different environment or lifestyle. |

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| 4. | predisposition toward adaptation. |

[**https://lingweb.eva.mpg.de/linguipedia/index.php/Exaptation**](https://lingweb.eva.mpg.de/linguipedia/index.php/Exaptation)**Exaptation** is a diachronic process whereby morphological material that has become functionless is used for some new function that is quite different from its original function.  **Gould, Stephen J. & Vrba, Elisabeth**. 1982. "Exaptation: a missing term in the science of form." *Paleobiology* 8: 4-15. <http://www.jstor.org/pss/2400563><http://paleobiol.geoscienceworld.org/cgi/content/abstract/8/1/4><http://www.mendeley.com/research/exaptation-missing-term-in-the-science-of-form/> **Lass, Roger**. 1988. "How to do things with junk: Exaptation in language evolution." *Stellenbosch Papers in Linguistics* 17: 33-63.  **Lass, Roger**. 1990. "How to do things with junk: Exaptation in language evolution." *Journal of Linguistics* 26: 79-102. <http://en.wikipedia.org/wiki/Exaptation><http://www.sscnet.ucla.edu/comm/haselton/webdocs/spandrels.html> |

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|  | [exon shuffling](http://evodisku.multiply.com/notes/item/112)  | Jul 18, '10  |
|  | Definition of exon shuffling :<http://www.everythingbio.com/glos/definition.php?word=exon%20shuffling>The hypothesis put forward by Walter Gilbert that exons code for functional units of a protein and that evolution of new genes has proceeded by recombination or exclusion of exons.<http://www.mondofacto.com/facts/dictionary?exon+shuffling>Process by which the evolution of proteins with multifunctional domains could be accelerated. If exons each encoded individual functional domains, then introns would allow their recombination to form new functional proteins with minimal risk of damage to the sequences encoding the functional parts. (This entry appears with permission from the Dictionary of Cell and Molecular Biology )Exon shuffling : In eukaryotic split genes, the creation of new genes by the addition or removal of exons through unequal crossing over within introns intervening between the exons of a split gene.<http://medicine.jrank.org/pages/2220/Evolution-Molecular.html><http://medicine.jrank.org/pages/2229/Evolution-Genes.html><http://medicine.jrank.org/pages/2228/Evolution-Genes-Exon-Shuffling.html><http://www.answers.com/topic/evolution-of-genes>Walter Gilbert publiceerde in 1997 een boek getiteld "Oorsprong van de genen" Daarin wordt het begrip "exon shuffling," ( het "heen en weer schuiven" van exons) voor heteerst gebruikt Gilbert stelde : Door middel van exon shuffling kan genetisch materiaal veranderen : met dezelfde verzameling exons kunnen verschillende "genen" worden gecreëerd. (1)De Evolutie van eukaryoten wordt grotendeels aangedreven door sexuele recombinatie van de ouderlijke genomen. Crossovers (waarbij materiaal wordt uitgewisseld door de chromosomen) onstaan daarbij toevallig...maar wel homoloog en volgens een frequentie die afhangt van de lengte van de uitgewisselde DNA sequenties(2001/<http://www.nature.com/nbt/journal/v19/n5/abs/nbt0501_423.html>)-Exons maken ongeveer 1% uit van het menselijk genoom /introns ongeveer 24%-De meeste cross-over uitwisselingen zijn echter uitwissellingen van exons -Het natuurlijke proces waarbij nieuwe exon combinaties worden gecreerd noemt "exon shuffling"Op basis van gevonden verbindingen binnen "splicing frames " kunnen voorlopig 9 klassenexons en 3 klassen introns worden onderscheiden ... "Splice frame " diagrammen van natuurlijke genen tonen aan hoe "splice frame "wetmatighedende exon-shuffling aansturen...dat geeft meteen ook de mogelijkheid om een bilbliotheek aan te leggen van genen onstaan door "exon shuffling" "exon shuffling"genen die menselijke pharmaceutische eiwitten kunnen bouwen, bestaan daaromuitsluitend uit kompleet menselijke sequenties , en zonder de punt mutaties die kopzorgen op het gebied van de immunogeneciteit kunnen veroorzaken ...(1)Het blijkt zelfs zo te zijn dat bij het creëren van genen ook genetische onderdelen(waaronder dus vooral de "exonen" ? )van andere organismen gebruikt kunnen worden. Zo heeft men ontdekt dat de mens meer dan 200 genen heeft verworven door bacteriële infecties. De van bacteriën naar de mens overgebrachte genen bleken nuttig te zijn voor het zenuwstelsel en het afweersysteem. |