

Prova A

- 1) Che cosa si intende per conservazione preventiva.
- 2) Quali sono le procedure nella movimentazione interna dei beni?
- 3) Genesi delle collezioni zoologiche e antropologiche dell'università di Padova.
- 4) Domanda di informatica. Excel: come si ordina una tabella in base alla quarta colonna mantenendo intatta l'intestazione?
- 5) Leggere e tradurre il primo periodo del seguente abstract scientifico

Zhang Z, Strotz LC, Topper TP, Chen F, Chen Y, Liang Y, Zhang Z, Skovsted CB, Brock GA (2020)

An Encrusting Kleptoparasite-Host Interaction From the Early Cambrian

Nat Communications 11: 2625

Abstract

Parasite-host systems are pervasive in nature but are extremely difficult to convincingly identify in the fossil record. Here we report quantitative evidence of parasitism in the form of a unique, enduring life association between tube-dwelling organisms encrusted to densely clustered shells of a monospecific organophosphatic brachiopod assemblage from the lower Cambrian (Stage 4) of South China. Brachiopods with encrusting tubes have decreased biomass (indicating reduced fitness) compared to individuals without tubes. The encrusting tubes orient tightly in vectors matching the laminar feeding currents of the host, suggesting kleptoparasitism. With no convincing parasite-host interactions known from the Ediacaran, this widespread sessile association reveals intimate parasite-host animal systems arose in early Cambrian benthic communities and their emergence may have played a key role in driving the evolutionary and ecological innovations associated with the Cambrian radiation.

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Prova B

- 1) Manutenzione e restauro: quali sono i criteri che li distinguono?
- 2) Modalità della movimentazione dei reperti naturalistici in caso di esposizione temporanea.
- 3) Il "Museo vallisneriano" e la sua importanza per la nascita delle collezioni universitarie patavine.
- 4) Domanda di informatica. Excel: elenca almeno cinque formule di Excel?
- 5) Leggere e tradurre il primo periodo del seguente abstract scientifico

Bartolomaeus T, Ax P (1992)

Protonephridia and Metanephridia - their relation within the Bilateria

Journal of Zoological Systematics and Evolutionary Research 30: 21-45

Abstract

Two different kinds of nephridia occur within the Bilateria, protonephridia closed up by a terminal cell and metanephridia opening into the coelomic cavity. Both initially filter and subsequently modify intercellular fluids. Whereas metanephridia are strictly correlated to a coelom, proto-nephria occur in acoelomate as well as in coelomate organisms. Protonephridia of different bilaterian taxa correspond to each other in several structural features. Therefore, it is hypothesized that protonephridia are homologous organs throughout the Bilateria. They must have evolved once as one pair of monociliated organs originating from the ectoderm and consist of one terminal, one duct and one nephropore cell. In the ground pattern of the Bilateria the cilium of the terminal cell has only one rootlet and is surrounded by presumably eight strengthened and elongated microvilli. Cilium and microvilli extend into the hollow cylinder of the terminal cell, which is oriented distally and is attached to the adjacent duct cell by desmosomes. [...].

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Prova C

- 1) Qualche esempio di danno biologico sui esemplari tassidermizzati e come rimediarvi.
- 2) Il ruolo di Canestrini nell'incremento delle collezioni dei musei di zoologia e di antropologia.
- 3) Il sistema SigecWeb: spiegare di cosa si tratta.
- 4) Domanda di informatica. Excel: come si traspone una tabella su excel?
- 5) Leggere e tradurre il primo periodo del seguente abstract scientifico

Sato A, Bishop JDD, Holland PWH (2008)

Developmental biology of pterobranch hemichordates: History and perspectives

Genesis 46: 587-591

Abstract

Hemichordates, like echinoderms and chordates, are deuterostomes, and study of their developmental biology could shed light on chordate origins. To date, molecular developmental studies in hemichordates have been confined to the enteropneusts or acorn worms. Here, we introduce the developmental biology of the other group of hemichordate, the pterobranchs. Pterobranchs generally live in cold, deep waters; this has hampered studies of this group. However, about 40 years ago, the colonial pterobranchs *Rhabdopleura compacta* and *R. normani* were discovered from shallow water, which has facilitated their study. Using *Rhabdopleura compacta* from south-west England, we have initiated molecular developmental studies in pterobranchs. Here, we outline methods for collecting adults, larvae, and embryos and demonstrate culturing of larvae under laboratory conditions. Given that the larval and adult forms differ from enteropneusts, we suggest that molecular developmental studies of pterobranchs may offer new insights into chordate origins. © 2008 Wiley-Liss, Inc.

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P. Sato

Prova D

- 1) Qualche esempio di danno fisico sui esemplari tassidermizzati e come rimediarvi.
- 2) Il restauro: sintesi delle procedure.
- 3) ICCD e schede catalografiche.
- 4) Domanda di informatica. Excel: ricevi un file testo in cui le colonne sono separate da una “,”: come puoi convertirlo in una tabella su Excel?
- 5) Leggere e tradurre il primo periodo del seguente abstract scientifico

Adoutte A, Balavoine G, Lartillot N, Lespinet O, Prud'homme B, De Rosa R (2000)

The new animal phylogeny: Reliability and implications

Proc Nat Acad Sci USA 97: 4453-4456

Abstract

A deep reorganization of the metazoan phylogenetic tree is presently taking place as a result of the input of molecular data. Far from being an exercise confined to a small circle of aficionados, the changing views on the pattern of animal interrelationships has profound consequences for understanding the underlying processes of animal diversification. As has repeatedly been stressed, we shall never be able to reason on the evolution of development and the way it has shaped animal diversity unless we have a reliable history of the path taken by this diversification. Here, we highlight the salient recent results based on genetic data, especially the displacement of taxa long thought to represent successive grades of complexity at the base of the metazoan tree, to much higher positions inside the tree. This leaves us with no evolutionary “intermediates” and forces us to rethink the genesis of bilaterian complexity. The reappraisal of animal evolution rests on several congruent approaches ranging from primary gene sequence analysis to qualitative molecular signatures within appropriate genes. Each of them, however, has its methodological difficulties; we shall, therefore, also try to briefly pinpoint the issues of contention and discuss the strength of the present view.

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B. De Rosa

Prova E

- 1) Che cos'è una scheda conservativa museale e qual è il suo uso?
- 2) Caratteristiche fondamentali dei depositi.
- 3) Linee per la comunicazione ai diversi target di pubblico.
- 4) Domanda di informatica. Word: come si modifica un testo lasciando traccia delle modifica?
- 5) Leggere e tradurre il primo periodo del seguente abstract scientifico

Parfrey LW, Lahr DJG (2013)

Multicellularity arose several times in the evolution of eukaryotes

BioEssays 35: 339-347

Abstract

The cellular slime mold *Dictyostelium* has cell-cell connections similar in structure, function, and underlying molecular mechanisms to animal epithelial cells. These similarities form the basis for the proposal that multicellularity is ancestral to the clade containing animals, fungi, and Amoebozoa (including *Dictyostelium*): Amorphea (formerly "unikonts"). This hypothesis is intriguing and if true could precipitate a paradigm shift. However, phylogenetic analyses of two key genes reveal patterns inconsistent with a single origin of multicellularity. A single origin in Amorphea would also require loss of multicellularity in each of the many unicellular lineages within this clade. Further, there are numerous other origins of multicellularity within eukaryotes, including three within Amorphea, that are not characterized by these structural and mechanistic similarities. Instead, convergent evolution resulting from similar selective pressures for forming multicellular structures with motile and differentiated cells is the most likely explanation for the observed similarities between animal and dictyostelid cell-cell connections.

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H
Lahr

Prova F

- 1) Standard facilities report: di cosa si tratta?
- 2) Esempi di almeno tre reperti importanti del museo di zoologia dell'Università di Padova.
- 3) Criteri da seguire nella collocazione dei reperti in deposito.
- 4) Domanda di informatica. Word: come si inseriscono i numeri di riga?
- 5) Leggere e tradurre il primo periodo del seguente abstract scientifico

Kapp H (2000)

The unique embryology of chaetognatha

Zool Anz 239: 263-266

Abstract

Chaetognaths are doubtlessly coelomate Bilateria, but after doubting the relationship of Chaetognatha and Deuterostomia there is no phylogenetic basis for considering the embryology of chaetognaths as a kind of enterocoely, on the contrary it differs considerably from an enterocoely. The pattern of the embryonic development and especially of the stages determining the further formations or the body organisation are outlined. This developmental pattern is characterised by a blastocoel which soon after gastrulation disappears - hence the mesoderm cannot grow between ectoderm and entoderm - and by an entoderm which is so closely connected to the mesoderm that it does not even persist as a primitive gut: A part of the entoderm develops into epithelial folds being anlagen of coelom walls as well as gut anlagen: The other part of the entoderm differentiates directly to coelom wall anlagen. All the embryonic organs grow in the cavity enclosed by the original entoderm. I propose to term this unique mode of embryonic development heterocoely and place it beside enterocoely and metamerism.

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B. Schubert

Prova G

- 1) Procedure del prestito in caso di mostre organizzate da altre istituzioni.
- 2) Modalità di schedatura dei reperti zoologici e antropologici nel sistema catalografico nazionale.
- 3) Linee per la didattica museale ai diversi target di pubblico.
- 4) Domanda di informatica. Word: é possibile inserire nel testo una formula matematica? Come?
- 5) Leggere e tradurre il primo periodo del seguente abstract scientifico

Moller PC, Philpott CW (1973)

The circulatory system of Amphioxus (*Branchiostoma floridae*) I. Morphology of the major vessels of the pharyngeal area

Journal of Morphology 139: 389-406

Abstract

In order to clarify the morphology of the circulatory system of amphioxus the blood vessels were investigated using modern techniques of light and electron microscopy. The pattern of circulation in amphioxus is forward ventrally and backwards dorsally. In addition, circulating corpuscles, usually associated with the blood of higher chordates, are absent. The circulatory system of amphioxus consists of well defined contractile vessels and vascular spaces or sinuses within a connective tissue matrix. The contractile vessels have a discontinuous endothelial lining resting on a basal lamina and are enclosed by a simple layer of contractile myoepithelial cells. Discontinuous endothelial linings occur throughout the vascular tree, including major and minor afferent and efferent vessels and blood sinuses. This is in contrast to higher animals where the endothelium forms a more or less continuous lining along the inner surface of the boundary layer. It is suggested that the endothelial cells of amphioxus, like the endothelial cells in capillaries of higher chordates, most likely play a role in the physiology of the circulatory system by removing residues of filtration from the basal lamina, thereby facilitating an exchange of materials to and from the surrounding tissues.

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Prova H

- 1) Esempi di almeno tre reperti/lotti importanti del museo di antropologia dell'Università di Padova.
- 2) Parametri fisici fondamentali nell'analisi di un microclima museale e loro controllo.
- 3) Cosa si intende per inclusione museale.
- 4) Domanda di informatica. Power Point: come si modifica lo sfondo di una diapositiva? E di tutte le diapositive nella presentazione?
- 5) Leggere e tradurre il primo periodo del seguente abstract scientifico

Gasmi S, Nève G, Pech N, Tekaya S, Gilles A, Perez Y (2014)

Evolutionary history of Chaetognatha inferred from molecular and morphological data: A case study for body plan simplification

Frontiers in Zoology 11: 84

Abstract

Chaetognatha are a phylum of marine carnivorous animals which includes more than 130 extant species. The internal systematics of this group have been intensively debated since it was discovered in the 18(th) century. While they can be traced back to the earlier Cambrian, they are an extraordinarily homogeneous phylum at the morphological level - a fascinating characteristic that puzzled many a scientist who has tried to clarify their taxonomy. Recent studies which have attempted to reconstruct a phylogeny using molecular data have relied on single gene analyses and a somewhat restricted taxon sampling. Here, we present the first large scale phylogenetic study of Chaetognatha based on a combined analysis of nearly the complete ribosomal RNA (rRNA) genes. We use this analysis to infer the evolution of some morphological characters. This work includes 36 extant species, mainly obtained from Tara Oceans Expedition 2009/2012, that represent 16 genera and 6 of the 9 extant families.

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Prova I

- 1) Caratteristiche delle schede catalografiche dei beni zoologici e dei beni antropologici.
- 2) Come si attua il monitoraggio dei reperti?
- 3) Principali cause del degrado di un bene naturalistico.
- 4) Domanda di informatica. Internet Browser: cosa sono i malware?
- 5) Leggere e tradurre il primo periodo del seguente abstract scientifico

Telford MJ, Holland PW (1993)

The phylogenetic affinities of the chaetognaths: a molecular analysis.

Mol Biol Evol 10: 660-676

Abstract

The chaetognaths, or arrowworms, constitute a small and enigmatic phylum of marine invertebrates whose phylogenetic affinities have long been uncertain. A popular hypothesis is that the chaetognaths are the sister group of the major deuterostome phyla: chordates, hemichordates, and echinoderms. Here we attempt to determine the affinities of the chaetognaths by using molecular sequence data. We describe the isolation and nucleotide sequence determination of 18S ribosomal DNA from one species of chaetognath and one acanthocephalan. Extensive phylogenetic analyses employing a suite of phylogenetic reconstruction methods (maximum parsimony, maximum likelihood, evolutionary parsimony, and two distance methods) suggest that the hypothesized relationship between chaetognaths and the deuterostomes is incorrect. In contrast, we propose that the lineage leading to the chaetognaths arose prior to the advent of the coelomate metazoa.

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B. N. S.

Prova J

- 1) Che cosa si intende per manutenzione
- 2) La nascita delle collezioni naturalistiche universitarie patavine.
- 3) Esempi di almeno tre categorie di reperti museo di antropologia dell'Università di Padova.
- 4) Domanda di informatica. Internet Browser: come si rimuovono le password/login salvate?
- 5) Leggere e tradurre il primo periodo del seguente abstract scientifico

Hervé P, Brinkmann H, Martinez P, Riutort M, Baguña J (2007)

Acoel flatworms are not Platyhelminthes: Evidence from phylogenomics

PLoS ONE 8: e717

Abstract

Acoel flatworms are small marine worms traditionally considered to belong to the phylum Platyhelminthes. However, molecular phylogenetic analyses suggest that acoels are not members of Platyhelminthes, but are rather extant members of the earliest diverging Bilateria. This result has been called into question, under suspicions of a long branch attraction (LBA) artefact. Here we re-examine this problem through a phylogenomic approach using 68 different protein-coding genes from the acoel *Convoluta pulchra* and 51 metazoan species belonging to 15 different phyla. We employ a mixture model, named CAT, previously found to overcome LBA artefacts where classical models fail. Our results unequivocally show that acoels are not part of the classically defined Platyhelminthes, making the latter polyphyletic. Moreover, they indicate a deuterostome affinity for acoels, potentially as a sister group to all deuterostomes, to Xenoturbellida, to Ambulacraria, or even to chordates. However, the weak support found for most deuterostome nodes, together with the very fast evolutionary rate of the acoel *Convoluta pulchra*, call for more data from slowly evolving acoels (or from its sister-group, the Nemertodermatida) to solve this challenging phylogenetic problem.

UB

AA

B. Maria Pappas