

# 水母 973 课题文献专题服务 (16)

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2017 年 1 月 12 日

**1. Phylogenetic relationships of Proboscoida Broch, 1910 (Cnidaria, Hydrozoa): Are traditional morphological diagnostic characters relevant for the delimitation of lineages at the species, genus, and family levels?**

**Proboscoida Broch 1910 的亲缘关系：传统的形态学鉴别特征与种、属等血统划分相关吗？**

<http://www.sciencedirect.com/science/article/pii/S1055790316302378>

Overlapping variation of morphological characters can lead to misinterpretation in taxonomic diagnoses and the delimitation of different lineages. This is the case for hydrozoans that have traditionally been united in the family Campanulariidae, a group known for its wide morphological variation and complicated taxonomic history. In a recently proposed phylogenetic classification of leptothebate hydrozoans, this family was restricted to a more narrow sense while a larger Glade containing most species traditionally classified in Campanulariidae, along with members of Bonneviellidae, was established as the suborder Proboscoida. We used molecular data to infer the phylogenetic relationships among campanulariids and assess the traditional classification of the family, as well as the new classification scheme for the group. The congruity and relevance of diagnostic characters were also evaluated. While mostly consistent with the new phylogenetic classification of Proboscoida, our increased taxon sampling resulted in some conflicts at the family level, specially regarding the monophyly of Clytiidae and Obeliidae. Considering the traditional classification, only Obeliidae is close to its original scope (as subfamily Obeliinae). At the genus level, Campanularia and Clytia are not monophyletic. Species with Obelia-like medusae do not form a monophyletic group, nor do species with fixed gonophores, indicating that these characters do not readily diagnose different genera. Finally, the species *Orthopyxis integra*, *Clytia gracilis*, and *Obelia dichotoma* are not monophyletic, suggesting that most of their current diagnostic characters are not informative for their delimitation. Several diagnostic characters in this group need to be reassessed, with emphasis on their variation, in order to have a consistent taxonomic and phylogenetic framework for the classification of campanulariid hydrozoans.

**2. Artificial substrates preference for proliferation and immigration in *Aurelia aurita* (s. l.) polyps**

**海月水母水螅体增殖和迁移对人工基质的偏好**

<http://link.springer.com/article/10.1007%2Fs00343-016-5230-y>

The increasing amounts of artificial marine substrates, in many parts of the world have been proposed as a potential driver of *Aurelia* spp. blooms, on account of providing extra habitats for the settlement and the proliferation of the benthic stage (polyps). Previous experiments have mainly focused on the substrate choices of *Aurelia* spp. planulae. However, substrate preferences for the proliferation and immigration of polyps have not been reported. We monitored the propagation and immigration of *Aurelia aurita* (s. l.) polyps on two natural and nine artificial substrates at constant temperature ( $20 \pm 0.5$  °C) and salinity ( $30 \pm 0.5$ ) in beakers and a glass aquarium in the laboratory, respectively. The results showed that, among artificial substrates, the highest number for polyp proliferation and immigration was found on nets, rigid polyvinyl chloride plates (RPVC), and wood. The lowest density of polyps was present on iron plates. Among natural substrates, the asexual reproduction rate of polyps on

*Patinopecten yessoensis* (Jay, 1857) shells was significantly higher than *Azumapecten farreri* (Jones & Preston, 1904). On the account of the distinction in the roughness, chemical properties and biofilms of these material surfaces, bare artificial or natural substrates discriminatively affect the proliferation and the immigration of *Aurelia* spp. polyps at laboratory. These observations suggest that, even in the natural environment, different materials and texture may influence the composition and the abundance of the fouling communities and the assemblages of polyps and, indirectly, have effects on the amounts of released medusae.

**3. High spatial heterogeneity of two planktonic cnidarian species related to the variability of a shelf-slope front at short time scales**

**两种水母的高空间异质性**

<http://scientiamarina.revistas.csic.es/index.php/scientiamarina/article/view/1682>

We investigated the variability in the mesoscale distribution of the siphonophore *Muggiaea atlantica* and the hydromedusa *Aglaura hemistoma* in relation to the rapid spatial oscillations of the shelf-slope front off the Catalan coast (NW Mediterranean). Three extensive surveys were carried out in spring at ten-day intervals. High variability in the position of the front resulted from the advection of low-salinity waters originating in the Gulf of Lions, mainly from the Rhone River runoff. High spatial variability in the distribution of the two species was closely related to the shifting positions of the front. Both species occurred on its inshore side in much higher abundances than on its offshore side, where they were scarce or absent. The front acts as a barrier limiting offshore displacement of these two cnidarians. Statistical analyses showed that bottom depth and salinity, as independent variables, were indicators of the signature and position of the front, explaining most of the variance in the distribution and abundance of the two species.

**4. Ecological and Economic Consequences of Ignoring Jellyfish: A Plea for Increased Monitoring of Ecosystems**

**忽视水母的生态和经济后果：呼吁增加对生态系统的监测**

<http://www.tandfonline.com/doi/abs/10.1080/03632415.2016.1232964?journalCode=ufsh20>

dominate the dynamics of marine ecosystems; can have major ecological, social, and economic impacts; are often indicative of broader ecosystem perturbations; and are increasingly being harvested by humans. Yet fisheries scientists typically do not monitor these taxa on a regular basis, despite the existence of clear rationales and even mandated authorizations to do so. Notably, the costs of monitoring jellyfish during regular fisheries research cruises would be a small increase over the cost of running a large fishery survey and a small fraction of the costs caused by impacts from these taxa. As ecosystems experience increasing pressures from climate change and fisheries, we recommend considering routine monitoring before some future jellyfish-associated crisis arises. El plancton gelatinoso puede determinar la dinamica de los ecosistemas marinos; este tiene fuertes impactos ecologicos, sociales y economicos y en ciertas ocasiones es indicativo de perturbaciones a nivel ecosistema; y esta siendo explotado cada vez con mas intensidad. Los científicos pesqueros no monitorean estos taxa de forma regular pese a que existen relaciones claras, e incluso autorizaciones obligatorias,

para hacerlo. Es de hacer notar que los costos asociados al monitoreo de medusas durante los cruceros pesqueros típicos, representarían un incremento marginal con respecto al costo de un crucero para una pesquería importante y apenas una fracción en cuanto a los costos de los impactos ocasionados por estas. A medida que los ecosistemas experimentan presiones crecientes por el cambio climático y las pesquerías, se recomienda considerar un monitoreo rutinario antes de que se apegue una crisis relacionada con las medusas. Le zooplancton gélatineux peut dominer la dynamique des écosystèmes marins; avoir des impacts écologiques, sociaux et économiques ; est souvent révélateur de perturbations d'écosystèmes plus vastes ; et est de plus en plus exploité par l'homme. Pourtant, les scientifiques de la pêche ne surveillent généralement pas ces taxons régulièrement, en dépit de l'existence de justifications claires et même, d'autorisations mandatées pour le faire. Notamment, les coûts de la surveillance des méduses au cours des campagnes de recherche halieutique régulières représenteraient une petite augmentation par rapport au coût de l'exécution d'une enquête à grande échelle et une petite fraction des coûts causés par les impacts de ces taxons. Comme les écosystèmes font face à des pressions croissantes exercées par le changement climatique et la pêche, nous recommandons de considérer la surveillance de routine avant qu'une crise associée à la méduse ne survienne.

##### 5. Prey capture by the cosmopolitan hydromedusae, *Obelia* spp., in the viscous regime

水螅水母 *Obelia* spp. 捕获猎物的分析

<http://onlinelibrary.wiley.com/doi/10.1002/lno.10390/abstract;jsessionid=92614638B543B105FCD783CE80A54668.f04t02?systemMessage=Wiley+Online+Library+Journal+subscribe+and+renew+pages+for+some+journals+will+be+unavailable+on+Wednesday+11th+January+2017+from+06%3A00-12%3A00+GMT+%2F+01%3A00-07%3A00+EST+%2F+14%3A00-20%3A00+SGT+for+essential+maintenance.+Apologies+for+the+inconvenience>

*Obelia* spp. are cnidarian hydromedusae with a cosmopolitan distribution but very little is known about their feeding. The small size of *Obelia* (bell diameter ~ 1 mm, tentacle width ~ 0.05 mm) suggests that feeding occurs in a viscous regime characterized by thick boundary layers. During feeding observations with a natural prey assemblage the majority of prey were captured at the tentacle tips during the contraction phase. Swimming kinematics from high speed videography confirmed that swimming was a low  $Re$  number process ( $Re < 50$ ) and showed that maximum tentacle velocities occurred at the tentacle tips midway through a bell contraction. Flow visualizations from particle image velocimetry demonstrated that fluid motion between the tentacles was limited and that velocities were highest at the tentacle tips, leading to a thinning of boundary layer in this region. The highest nematocyst densities were observed in this same region of the tentacle tips. Taken together, the body kinematics, flow visualizations and nematocyst distributions of *Obelia* explain how these predators are able to shed viscous boundary layers to effectively capture microplanktonic prey. Our findings help explain how other small feeding-current medusae whose feeding interactions are governed by viscosity are able to successfully forage.

**6. Incidental consumption of ephyrae of moon jellyfish *Aurelia aurita* s.l. by three filter-feeding sessile organisms: laboratory experiments**

海月水母 *Aurelia aurita* s. l. 蝶状幼体的附属消耗

<http://link.springer.com/article/10.1007%2Fs12562-016-1034-4>

Moon jellyfish *Aurelia aurita* s.l. has been suggested to have high mortality during the ephyra stage, which potentially affects the population size of the later medusa stage. However, the mechanism behind the high mortality rate has still not been clarified. Ephyrae of *A. aurita* are liberated from the sessile strobila, which are usually surrounded by filter-feeding sessile organisms. In the present study, we carried out a series of feeding trials at 10 °C, offering *A. aurita* ephyrae to three potential predatory filter-feeding sessile organisms: the mussel *Mytilus galloprovincialis*, the ascidian *Styela plicata*, and the barnacle *Amphibalanus eburneus*. From the experiments, the mussel was estimated to have the highest ability to consume ephyrae among the sessile organisms. Size-selective filtration experiments showed that the mussel consumed newly liberated ephyrae [3 mm total body diameter (TBD)] at a significantly higher efficiency than larger (5 and 7 mm TBD) ephyrae. Our results demonstrate that filter-feeding sessile organisms, especially the mussel, are potential consumers of the early ephyra stage.

**7. Cell tracking supports secondary gastrulation in the moon jellyfish *Aurelia***

细胞跟踪支持海月水母第二原肠胚的形成

<http://link.springer.com/article/10.1007%2Fs00427-016-0559-y>

The moon jellyfish *Aurelia* exhibits a dramatic reorganization of tissue during its metamorphosis from planula larva to polyp. There are currently two competing hypotheses regarding the fate of embryonic germ layers during this metamorphosis. In one scenario, the original endoderm undergoes apoptosis and is replaced by a secondary endoderm derived from ectodermal cells. In the second scenario, both ectoderm and endoderm remain intact through development. In this study, we performed a pulse-chase experiment to trace the fate of larval ectodermal cells. We observed that prior to metamorphosis, ectodermal cells that proliferated early in larval development concentrate at the future oral end of the polyp. During metamorphosis, these cells migrate into the endoderm, extending all the way to the aboral portion of the gut. We therefore reject the hypothesis that larval endoderm remains intact during metamorphosis and provide additional support for the "secondary gastrulation" hypothesis. *Aurelia* appears to offer the first and only described case where a cnidarian derives its endoderm twice during normal development, adding to a growing body of evidence that germ layers can be dramatically reorganized in cnidarian life cycles.

**8. The onset of regenerative properties in ctenophores**

栉水母再生特性的引发

<http://www.sciencedirect.com/science/article/pii/S0959437X16300922>

Ctenophores are a clade of animals that branch off at the base of the animal tree. They have a unique and delicate body plan, and distinct pattern forming mechanisms at different life history stages. They have a stereotyped embryonic cell lineage and are highly 'mosaic' as embryos, but most have amazing capacity to regenerate as adults. Unfortunately, only a handful of ctenophore species have been studied in detail. This

review summarizes the key features of the regenerative properties of adults, and the characteristics of the embryological onset of regenerative abilities. The genomes of several ctenophore species have already been sequenced, and these resources set the stage for more detailed cellular and molecular analysis of body plan patterning in this group.

#### **9. Novel Structures Associated with Presumed Photoreceptors in the Aboral Sense Organ of Ctenophores**

**栉水母感觉器官中与假定的光感受器相关的新结构**

<http://www.journals.uchicago.edu/doi/abs/10.1086/690089?journalCode=bbj>

It is rare nowadays to find something that nobody has seen before, especially without using a new methodology or looking in a new place. Using conventional differential interference contrast (DIC) microscopy, I describe structur...

#### **10. Box Jellyfish *Alatina alata* Has a Circumtropical Distribution**

**箱型水母 *Alatina alata* 的 Circumtropical 分布**

<http://www.journals.uchicago.edu/doi/abs/10.1086/690095?journalCode=bbj>

Species of the box jellyfish (Cubozoa) genus *Alatina* are notorious for their sting along the beaches of several localities of the Atlantic and Pacific. These species include *Alatina alata* on the Caribbean Island of Bonaire (the Netherlands), *A. moseri* in Hawaii, and *A. mordens* in Australia. Most cubozoans inhabit coastal waters, but *Alatina* is unusual in that specimens have also been collected in the open ocean at great depths. *Alatina* is notable in that populations form monthly aggregations for spermcast mating in conjunction with the lunar cycle. Nominal species are difficult to differentiate morphologically, and it has been unclear whether they are distinct or a single species with worldwide distribution. Here we report the results of a population genetic study, using nuclear and mitochondrial sequence data from four geographical localities. Our analyses revealed a general lack of geographic structure among *Alatina* populations, and slight though significant isolation by distance. These data corroborate morphological and behavioral similarities observed in the geographically disparate localities, and indicate the presence of a single, pantropically distributed species, *Alatina alata*. While repeated, human-mediated introductions of *A. alata* could explain the patterns we have observed, it seems more likely that genetic metapopulation cohesion is maintained via dispersal through the swimming medusa stage, and perhaps via dispersal of encysted planulae, which are described here for the first time in *Alatina*.

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