Pharmamar Mediterranean Expedition V, 9/13/92 - 9/24/92.

Jefe de la expedición: Andres Gomez
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Just Bayle, PhD (Univ. Alicante) - fishes
H. Bulnet Kukuruzs (Pharmamar) (Turk)
Judy Connor, PhD (MBARI) - Algae
Andres Gomez, PhD (Pharmamar)
Karen Green - Sponges
José Antonio Moya - photography
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Eduardo Vega, PhD (Pharmamar)
Regina Welzer (SDNHM)
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Planned itinerary

9/13: Drive to Castellana de la Plana
9/14 - 9/18: Columbretes Is. (Reserva Marina)
9/19 - 9/25: Drive to (exchange personnel)
9/26: Isla de Tabarca (Reserva Marina)
9/27 - 9/31: Islas Hormigas
9/30 - 9/31: Cabo Tiñoso
9/30: Return to Madrid

TARGET SPECIES

Tunicates

- Aplidium albicans
- Distaplia sp. (= Aplidium albicans deepwater morph, w/o arrowhead)
- Ectyphoides sp. (= Pseudodistoma sp.) (Pseudodistoma sp. collected on this 1992 exp)
- Clavelina nana
- Polysyncrateron sp. (P. rosa?) - Canaries Is.
- Sidneyum sp. (S. turbinatum collected on this 1993 exp)

Balanophyllia europaea - solitary coral
- Berthella aurantiaca - Apricot slug
- Peltodoris atramaculata - white slug (w/black spots)
- Bugula neritina - bryozoan
- Concinasterias tenerispina - blue multi-armed seastar
- Sphaerechinus granularis - Common purple echin
- Margareta cereoides - yellow-brown Bugula-like bryozoan

Sponges

- Clothrina sp. - yellow lacy sponge
- Hymenometra hystrix - Blood-red papillate sponge
- Scopalina lophyropoda - sponge (Canaries)
TARGET SPECIES (cont.)

Plants

- Cladophora sp. - green, filamentous alga
- Zanardinia prototypus - encrusting brown alga
- Cymodocea nodosa - seagrass

TAXONOMIC CHANGES (per Françoise Mouniot) (viz. Javier Turon)

1. Botryloides sp. B (of '91 Explo) = Pseudodistoma (P. crucigaster)
   Outer tunic smoky black with abundant lighter-colored surface pits; inner tunic light gray; zooids white w/orange endostyle.

2. Distaplia sp.? (of '91 Explo) = Aplidium albicans
   Tunic light amber-yellow; zooids pale orange, scattered; 1-4 cm tall flat-topped lobes; deep (>100').

NOTES ON "APLIDIUM"

(based on P-358 & A-249 anti-tumor activity)

Active forms: stalked, zooids visible
   Oblisk, " "

Inactive forms: Encrusting or w/o visible zooids
   (i.e. solid orange, white, milky)
14 September 1992  Ints: All work for this Expedition is on coast of Murcia Province, Costa Azahar & Costa Blanca.
Colombretes Islands. (Staying in house in Burriana, SW of Castellón de la Plana)
Dive #1. Banco de Don Jorge Juan. 3-50 m.
39°31.9' N 0°40.3' E.  H 0 T° = 70 °F (below thermocline @ 60' = 62 °F). Wetzer/Bruce/Gomez
to 82' for 43 min.

1. Spongia sp. A
2. Hamigera hamigera
3. Anchinia tenacior
4. Geodiidae sp. A
5. Sphaerechinus granularis. Test globoid; spines white or purple w/white tips (see urchin key).
6. Paracentrotus lividus, most common urchin on rocks, 0-100'.
7. Sphaerechinus granularis, Spines tan w/white tips.
8. Eutendrion rameum
9. Margareta cereoides
10. Salpa sp. (Salpa maxima?)
11. Peltodoris atromaculata
12. Aglaophenia elongata } hydroids
13. Nemertesia antennina
14. ?Bostryx? Black kidney-shaped colonies, to 5 cm across;
   with white disc-like CaCO3 spicules; zooids not evident (obscured by dark color).

NEW? color entirely black

disc-like CaCO3 spicules

Chambers lined with more spicules
Colombretes Islands.
Dive #1. Brusca and Wetzer 100ft 45min
Islet Navarrete, 3-30m. 39°55'N 0°40'W

15/09/92 - 1001 Aphysia depilans (new)
1002 Marthasterias glacialis
1003 Aplidium Conicum
1004 Aplidium ?Conicum (zooids not visible)
1005 Sertella beaniana
1006 Paracentrotus lividus
1007 Cidaris aurantiaca
1008 Margaretta cereoides
1009 dorid nudibranch; apricot-orange w/hard white bumps.
1010 Peltodoris atromaculata
1011 Ascidia conchilega (asidian)
    Green translucent tunic; yellow pharynx;
    w/adhering sand.
1012 ? Holothuria. Dorsum tan w/numerous dark brown spots
    (1-2 mm spots); ventrum creamy white with
    scattered brown spots; 10"-12" long; distinct
    sole (ventrum).
1013 (no sample)
1014 Axinella dicornis
1015 Clathrina clathrus
1016 Cliona viridis
1017 Agelas oroides
1018 Halichondria ep. B

1019 Cacospongia scalaris
1020 Spongia sp. A

Sponges
Dive. #2. Brusca/Triton to 60 ft. 38 min. Columbretes, La Horada (entre Isote Méndez Núñez e Isote Lebe). 2-20m 39°53'N 0°41'E.

15/09/92-2001 Ophidiaster ophidianus
2002 Paracentrotus lividus. Common dark brown-green Urchin. Spines light colored, w/dark longitudinal stripes; and encircled by white-patched fleshy basal region; 3 spine sizes (small, medium, long); longest spines to ~2 cm max. length; largest specimens ~6 cm diameter; oral test opening w/6 notches or slits, ~50% test diameter.

2003 Abalidium conicum
2004 Coryphilla (C. inacnata) (not saved)
2005 Peltodoris atramaculata
2006 Platydoris argo (see p. 298 in Poppe & Goto)
2007 Hexaplex trunculus
2008 Anemonea sulcata (= A. viridis)
2009 Eudendrium rameum
2009/2010 (no samples)

2011 Hamigera hamigera
2012 Axinella damicornis
2013 Oscarella lobularis
16 September 1992

Columbretes. Dive #1. Piedra Joaquín. 0-57 m
38°53' N 0°40' E. Brusca and Weber 60 ft./18 m

16.09.91

1-001 Paracentrotus lividus (2 bags)
1-002 Sphaerechinus granularis (2 bags)
1-003 Ophidiaster ophidianus
1-004 Peltodoris atromaculata
1-005 Aplidium conicum (vouched)
1-006 Aplidium ? conicum (vouched)
1-007 Aplidium sp. C (vouched)
1-008 Aplidium sp. D (dead or dying specimen?) (vouched)
1-009 Echinaster sepositus
1-010 margaretta cerealis

? NEW

1-011 Ophiomyxa pentagona. Solid chocolate brown; disc pentagonal; disc ~ 2 cm diameter, arms ~ 10 cm long; oral surface lighter (orangish); jaws with many teeth.

1-012 Holothuria forskali ?. Black above, brown below; white-blue tipped papillae.

? NEW

1-013 Parazoanthus sp. Colonial zoanthid; polyps 7-8 mm tall; orange column; tentacles yellow with orange tips; on rocks (not on sponge or other mixture); ~ 20 short tentacles.

(vouched)

? NEW

1-014 Compound tunicate. Encrusting; thin; tunic mustard yellow-orange; zooids scattered; bright orange, not in cycles.

(vouched) (small sample)
11 Sept. 1992 (cont.)

? NEW
1-015 Acanthogorgia hirsuta ? E.its Carpinter & Grasshoff (1975), p. 68. (vouchered)
1-016 ? Batrillus (see 14/09/92-1014). (vouchered)
1-017 Paracyanoium spinulosum. Eits description in Riedl (p. 200/201). This may be what Jose Maria Tur called "Maasella edwardsi" in 1991. (vouchered)

1-018 to 1-024 = no samples

1-025 Callyspongiidae sp. A
1-026 Axinella darwiniensis - tall, branching, gorgonian-like yellow sponge (RCB has underwater photo).
1-027 Hancigera hamigera - red papillose encrusting sponge; RCB has underwater photo.

Sponges
1-028 Agelas oroides
1-029 Axinella polyoides
1-030 Petrosia sp. B
1-031 Raspailia sp. A
1-032 Haliclona sp. B
17 September 1992

Columbretes Islands.

Dive #1. Muscles to 112 ft., 59 min.

1-011 to 1-012 = sponges

17/09/92
1-011 Aplidium conicum
1-012 Haselia attenuata. Uniform light orange in color; 25cm ann. span.
1-013 Peltodoris atroumaculata
1-014 Eudendrium rameum
1-015 Hippodiploia sp. A
1-016 Cladocora caespitosa
1-017 ? Helothuria sp. Solid chocolate brown; ventrum weakly defined. (Voucher of skin saved)
1-018 Aglaophenia elongata (see 14/10/92-1012)
1-019 Hydroid (voucher retained). Long yellow-tan whips (~12") w/ very thin feathery side branches (~1cm long); ~10-20 stalks arise from a hold fast.

1-020 Sphaerechinus granularis

1-021 Paracentrotus lividus

Dive #2.

2-001 Sponge
2-002 Thais phaemostoma
2-003 ? Didemnum gelatinosum (voucher) (new)
18 Sept. 1992
Cradabufes Islands.
Dive #1.

Brusca/Vega, 130', 60 min.

18/09/92 1:001 Cladocora caespitosa
1:002 ? Aurelia aurita (new)
1:003 gastropod egg case (Buccinum sp.) (new)
1:004 Echinaster sepositus
1:005 Ophioderma longicauda
1:006 Aplidium conicum
1:007 ? Holothuria sp. A
1:008 Holothuria forskali?
1:009 Botryllus schlosseri (new) (voucher)
1:010 Sphincter turbatinum (new) (voucher)
1:011 Holothuria tubulosa [gut sample for micro]
1:012 Rapana venosa (new)
1:013 Paracentrotus lividus [gut sample for micro]
1:014 Pinna nobilis [gut sample for micro] - commercial shrimp retained for research
1:015 Cerianthus membranaceus, tube only (new)
1:016 (No sample)

Dive #2.

Brusca/Vega/Conner/Topiolas; 70'; 20 min.

18-09-92 2:002 Aplidium sp. C
2:001 Callyspongidae sp. A
21 Sept. 1992
Dive #1:
Isla Tabarca, La Barba. Staying at Hotel Rocas Blancas. Santa Pola (Cabo de Santa Pola), So. of Alicante. Brusca/Vega, 135', 40 min.

Mud bottom, isolated rocks

21/09/92-1-001 Sphaerechinus granularis
002 Peltodoris atromaculata
003 Huidia ciliaris (new)
004 Filograna impetexa Salmacina (S. dispersa ?)
005 Egg cases of squid (Loligo ?)
006 Pelagia noctiluca. Brown/purple spots on
umbrellar surface; diameter 3 cm. (new)

007 Bonellia viridis
008 Alcyonium acaule
009 Dendractis branch: anterior orange & hard white bumps.
010 Aplidium sp. C (= 22/09/91 - 1034); Tunic opaque white; scattered zooids orange & brown. (= Diazona sp.)
011 Compound tunicate # A

Encrusting but massive; colony
up to 4 cm x 18 cm; tunic opaque milky-white; zooids orange & located deep within colony (beneath ~0.5 mm of opaque tunic); no CaCO3 crystals (New).

(Conclusion) 012 Distapia sp. Brown-orange tunic with large orange atria; soft & mushy; zooids bright orange; no apparent CaCO3 crystals. (New)

Sponges
013 Axinella damicornis
014 verrucosa
015 Aeglas croides
Sponges

- 016 Cacospongia scalaris
- 017 Hymeniacidonidae sp. B
- 018
- 019 Acanthella acuta

Dive #2: Off Isla Tabarca

21/09/92 - 2001 Axinella damicornis
2002 Clathrina clathrus
2003 Aeglas ovoides
2004 Acanthella acuta
2005
2006 Sphaerechinus granularis
2007 Keltdoris atromaculata
2008 Aplysia depilans (150-250g)
2009 ?Aplidium sp. C (see 21/09/92 - 1010) (= Diazone ?)
2010 ?Aplidium sp. 6
2011 ?Aplidium sp. 4
2012 Ascidian Sp. A (=21/09/91 - 1020) Compound ascidian
2013 ?Nolothuria sp. A (=18/09/92 - 1-009) Solid brown cucumber; papillae
darker brown, 4-5 windows
2014 ?Nolothuria sp. B
4-6 pairs of windows in each spicule; solid brown w/white halo
around @ papilla

Dive #1. Brosca/snetzer, 85', 51 min.

22/09/92-1001 Clathrina clathrus (Sponge)
1002 Anella damicornis (Sponge)
1023 Sphaerechinus granularis
1004 Heterocentrotus atraculata
1005 Ophidiaster ophiomorpha
1006 Hacelia attenuata (yellow form)
1007 Marthasterias glacialis (mico sample also taken - off gat)
1008 Alcyonium acaule
1009 Paramuscoria clavata (= P. chamaeleon)
1010 Halocordylus distichus (hydroid) (new)
1011 ? Pseudodistoma sp. Massive colonies (1-4 cm thick), encrusting rocks at 140'-80'. Smoky black exterior with scattered white zooids (not in cycles).
   Interior milky white, opaque. "Spicules" fusiform, white, not CaCO3. Zooids white with salmon spot (endosyle?) (Vouched).
   [May be Diplodistoma sp.]
1012 Clavelina sp. Zooids large, 3-4 cm tall, widely separated and appearing solitary. Tunic clear; pharynx banded with golden yellow; endostyle purple-black; gut large, dark brown with white flecks. Does not quite resemble C. nana or C. lepadiformis (new) (Vouched).
Dive #1 (cont.)

1013. *Aplidium sp.* (Maybe *A. nordmannii*). Tunic translucent w/orange tint; zooids dark orange, not in cycles, long and curled or twisted (not straight as in *Aplidium sp.* 6 of 21/09/92-3010). Encrusting colonies, to 2-4 cm across. Very common in Hormigas. Possibly *Aplidium albicans*.

1014. *Distomus hupferi*. Small social intense yellow ascidian; forms thin fragile mats on shaded rocks; rare; somewhat resembling the fragile yellow sponge Clathrina. *new* (unvouchered)

1015 *Parazoanthus sp.* (= 10/09/92-1013)


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**Dive #2**

brusca/wetzer to 81', for 45 min.

12/09/92-2001

2002  
2003  
2004  
2005. *Haeckia attenuata*

2006. *Sphaerachinus granularis*

2007. *Peltodoris atronomaculata*

2008. *Marthasterias glacialis*

2009. *Pentapora sp.* A (= *Hippopiodia*). Resembles *P. fascialis* but w/different aperture shape. *voucher*
Dive #2 (cont.)

2010 ? Aplidium sp. I  (= 21/09/12 - 10:13)
2011 Aplidium albicans  (vouchered)
2012 Aplidium sp. J. Encrusting, to 10 cm across; orange opaque tunic; zooids scattered, lying in all directions; stalk pale orange, head red. (vouchered) Tunic firm.

2013 Aplidium sp. K. Like giant A. albicans with short fat stalk; to 8 cm tall; color as in 2012 (above).

2014 ? Aplidium sp. C  (vouchered)  [= Diazono ?] white.


2016. Green compound ascidean. Encrusting, 5-1 cm thick; tunic translucent green w/disk-like "spicules" (not CaCO₃); zooids dark green minute, in circlets on surface. (new ?) (vouchered)
Dive #2 (cont.)

2017 Sabella pavonina

2018 Eunicella singularis (white gorgonian)

Dive #1. Brute water 110 ft/50 min. Brusca to 185' with E. Vega to examine sunken ship. Vega to 190'.

001 Sponges

002 Eudendrium sp. = polyp

003 ? Aplidium sp. I

005 Sphaerechinus granularis

006 Clavelina sp. (= 22/09/92 - 012)

007 Nudibranch egg mass

008 Ophiomyxa pentagona (microsample of gut taken)

009 Ophioderaster ophidianus

010 ? Pseudodistoma sp. (= 22/09/92 - 1011)

011 Sabella pavonina

012 New Green compound ascidian (= 22/09/92 - 2016)

013 ? Aplidium sp. J (= 22/09/92 - 2016)

014 ? Aplidium sp. C (= Diazioma)

015 Halocordyle disticha

016 Holothuria forskali ? =

019 Marthasterias glacialis

[Diagram of papillae with blue tips and spicules]
23 sept. (cont.)

Dive #2. Brusca/Wetzer, 48°, 53 min.

23/09/92-2001

2002 Sponges

2003

2004 Sphaerechinus granularis

2005 Margaretta ceriodes

2006 ? Pseudodistoma (= 22/09/92-10u)

2007 Green compound ascidean (= 22/09/92-2016)

2008 ? Aplidium sp. C (= Diagona ?)

2009 ? Aplidium sp. I

2010 ? Aplidium sp. I

2011 ? Aplidium sp. L

2012 Sabella pavonina

2013 Peltodoris atromaculata

2014 Phascolosoma sp.
Dive #1, Brava/ Vega 91 ft. 50 min. off Cabo Falcón
Wester/ Kukurute 80 ft. 52 min. (between Mazarron & Cartagena)

24/09/92 - 1001
1002
1003
1005 Sphaerechinus granularis
1006 Platydoris argo
1007 Lineus bilineatus (new)
1008 Alicia mirabilis (new)
1009 Salpa maxima (new)
1010 Peltodoris atronaculata
1011 Echinaster sepositus (+ micro sample)
1012 Octopus eggs (octopus sp.) (new)
1013 ? Aplidium sp. J
1014 Sabella pavonina
1015 Pelagia noctiluca
1016 Sertella boaniana
1017 Pentapecta fascialis
1018 Compound ascidian. Thin (2-3 mm), encrusting, greyish. Tunic translucent grey; zooids black, comma-shaped, arranged randomly (not in any pattern). (new) (uncerated)
1019 Holothuria tubulosa. Dark chocolate brown on dorsum; flattened sole mottled brown & light tan; knobby spicules.

Dive #2. Bruno letter 58 ft. 52 min. Wall dive just E. of Cobol Falcon.

24/09/92–2001
2002
2003
2004
2005 Sphaerechinus granularis
2006 Hypselodoris elegans (on yellow sponge)
2007 Pentapora fascialis
2008 Compound ascidean (= 24/09/92, dive #1, 1018)
2009 Sabella pavonina
2010 ? Aplidium sp. J
2011 ? Ditemus hypferi (= 22/09/92–1014)
2012 ? Aplidium sp. C (= Diacena ?)

NEW
2013 Cerianthus membranaceus
2014 ? Phallusia fumigata
2015 Sabella pavonina
2016 Asciidiad sp. A. Black solitary ascidean; attached all along one side: to 7cm. (uncovered)
2017 Halocordyle disticha (hydroid)

PCB photo of urchin tests (oral view); left-to-right: Sphaerechinus granularis, Paracentrotus lividus, Arbacia lixula.
25. September 1992

Dive #1. Brina Water 115 ft., 52 min. Wall dive along coastal cliffs, Cabo Falcón.

25/09/92 - 1001
1002
1003
1004
1005 -> sponges
1006
1007
1008
1009
1010

1011. Aglaophenia elongata
1012. Sphaerediopus granulatus
1013. Cotylorhiza tuberculata
1014. Diazioma violacea
1015. Plethodis atroraculata
1016. Platydoris argo
1017. Compound ascidian (24/09/92 - 1018)
1018. Salpa maxima
1019. Marthasterias glacialis
1020. ? Aplidium sp. J

NEW

NEW
1022. Hippodiplosia sp. G. Like H. foliacea, but branches thinner.
1023. Hippodiplosia foliacea
Brusca got a strong (delayed) reaction after this dive, in which his right hand swelled up to the point of near immobilization. The swelling was focused on the index finger, which had some previous deep lacerations. That finger also turned red and red streaks ran from it up his forearm ~ 8". The red area was quite painful. I presume this was a reaction to neotoxins in the Aglaophenia elongate, a large amount of which was collected with the right hand. Some stinging sensation was noted specifically in the index finger lacerations during the collecting. Symptoms persisted for 4-10 days.
Summary

1. 204 invert samples taken (non-sponge)
2. About 25 new (?) species
3. 6 from "hit list" collected

- Extractions (on site) are made with methanol acetone.
- Other solutes used in lab, once compounds are identified.
- PharmaMar is currently screening for:
  1. HIV. The Anti-HIV tests are being done in Glynne Faircloth's lab in Boston, by Glynne & Sue Cross.
  2. Immunological suppressants/enhancements. Also by Glynne & sue.
  3. Anti-tumor screening, using a variety of tumor cell lines (e.g. human colon cancer, lamb liver cancer, monkey kidney cancer, etc.)
  4. Enzyme inhibition studies.