# Marine Natural Product Yields Cancer Therapeutic (NCE)

Tech ID: 22510 / UC Case 2010-216-0

## BACKGROUND

SIO scientists have mined their rare collection of marine organisms to identify, characterize and analog a proprietary, small molecule with anti-cancer properties. SAR studies have identified regions of the molecule that have yielded analogs of greatest interest. Compositions of matter and methods of use are claimed for the treatment of cancer and hyperproliferative disorders.

## TECHNOLOGY DESCRIPTION

UC inventors have used human cancer bio-assays to identify, isolate and characterize novel compositions from marine cyanobacteria. Subsequent work with parent compounds and potent analogs has yielded compositions of matter, methods for synthesis and methods of using Apratoxins F & G to treat cancer.

## APPLICATIONS

While *in vivo* studies have not confirmed which drugs will be most useful for which cancers, studies suggest the first targets may be solid tumors, particularly colon cancer. In general, any disease or condition characterized by hyperproliferative cell growth may benefit from this therapeutic approach.

## STATE OF DEVELOPMENT

Thus far, *in vivo* studies with Apratoxin F have corroborated the more extensive *in vivo* studies with the related composition, Apratoxin A (see Luesch et al., below). Complete structures and SAR have been worked out for Apratoxins F and G. Both compositions have demonstrated solid, *in vitro*, toxicity against two human tumor cell lines, HCT-116 and H125. Cytotoxicity was tested in NCI H-460 human lung tumor cells and HCT-116 cells.

## INTELLECTUAL PROPERTY INFO

Worldwide rights available for pending patent application WO2011/112893.

## RELATED MATERIALS

- Grindberg RV et al., Single cell genome amplification accelerates identification of the apratoxin biosynthetic pathway from a complex microbial assemblage. PLoS One. 2011 Apr 12;6(4):e18565. (link to: http://www.ncbi.nlm.nih.gov/pubmed/21533272) - 04/12/2011
- Tidgewell K et al., Evolved diversification of a modular natural product pathway: apratoxins F and G, two cytotoxic cyclic depsipeptides from a Palmyra collection of Lyngbya bouillonii. Chembiochem. 2010 Jul 5;11(10):1458-66. (Link to: http://www.ncbi.nlm.nih.gov/pubmed?term=Evolved%20diversification%20of%20a%20modular%20natural%20product%20pathway%3A%20apratoxins%20F%20and%20G%2C%20two%20cytotoxic%20cyclic%20depsipeptides%20from%20a%20Palmyra%20collection%20of%20Lyngbya%20bouilloni) - 07/05/2010
- Gutiérrez M et al., Apratoxin D, a potent cytotoxic cyclodepsipeptide from papua new guinea collections of the marine cyanobacteria Lyngbya majuscula and Lyngbya sordida. J Nat Prod. 2008 Jun;71(6):1099-103. (link to: http://www.ncbi.nlm.nih.gov/pubmed/21533272) - 06/01/2008
- Luesch, H et al. , A functional genomics approach to the mode of action of apratoxin A. Nat Chem Biol, 2006, 2(3), 158-167 (link to: http://www.ncbi.nlm.nih.gov/pubmed?term=A%20Functional%20Genomics%20Approach%20to%20the%20Mode%20of%20Action%20of%20the%20Antiproliferative%20Natural%20Product%20Apratoxin%20A ) - 03/01/2006

## PATENT STATUS

| Country | Type | Number | Dated | Case |
|---|---|---|---|---|
| United States Of America | Issued Patent | 8,598,313 | 12/03/2013 | 2010-216 |

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## INVENTORS

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## OTHER INFORMATION

**KEYWORDS**

New Chemical Entity, NCE, composition, Natural Product, Cancer , oncology, tumor, colon cancer, hyperproliferative, hyperproliferation, therapy, therapeutic, analog, Apratoxin, cytotoxicity, SAR, structure activity, structure-activity

**CATEGORIZED AS**

- **Medical**
  - Disease: Cancer
  - New Chemical Entities, Drug Leads

**RELATED CASES**

2010-216-0

## ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- Unique Compound Inhibits Angiogenesis in Cancer and Eye Diseases
- Anti-inflammatory compounds for dermatology and chronic inflammation

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