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## Marine Mammal Encapsulated Probiotics

Accacia has been partnering with experts from Texas A & M University, Baylor College of Medicine, and The University of Texas at Austin as well as with international collaborators to develop a wide range of affordable products for health care.

Currently there are no probiotics available exclusively for dolphins. Antibiotic treatment is the current regimen to mitigate gastrointestinal health issues. However, emergence of antibiotic-resistant gastrointestinal pathogens in marine mammals have been on the rise. Therefore, Accacia's microencapsulated probiotic product would be an excellent choice as an alternative treatment for gastrointestinal diseases. Since the probiotics are microencapsulated and packed in acid resistant capsules, the bacteria can survive the harsh acid conditions in stomach and bile salts in intestine and colonize the intestine better than corresponding uncoated probiotic organisms.

The probiotic product for dolphins was developed using its indigenous microbiota to maintain marine mammal health. Accacia's novel microencapsulated probiotic capsule is the first commercial probiotic product available for dolphins. The present probiotic market estimated for marine mammals to be around \$ 1 million annually. Customers who are interested in preventive measures to address marine mammal GI health would be immensely benefitted from this novel probiotic product.



**Marine Mammal Encapsulated Probiotics**  
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## What we offer

- Probiotic products for marine mammals and humans
- Molecular diagnostics for infectious agents using proprietary PACeR-Gold technology based on rolling circle amplification
- Natural antimicrobial hand sanitizers
- Solid or liquid phase bimolecular detection utilizing the principles of proprietary Reflectance (R), Fluorescence Intensity (FI) and Fluorescence Polarization (FP) technologies
- Contract research in probiotic development, antimicrobial research, molecular diagnostics and aptamer development

## Contact Us

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## Accacia International LLC



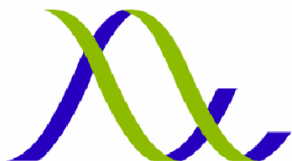
Accacia International Inc. operates a research facility and corporate office in Austin, TX. The facility includes a Biosafety Level-2 lab for biochemical and microbiological research. Accacia has access to the ICMB Core Research Facilities at the University of Texas at Austin, TX, and microencapsulation pilot plant at the Southwest Research Institute, San Antonio, TX.



**Encapsulated Human Probiotics (Copyright 2015, Accacia International Inc.)**



**Handheld Fluorescence Polarization (FP) Instrument (Copyright 2014, Accacia International Inc.)**



## Accacia International

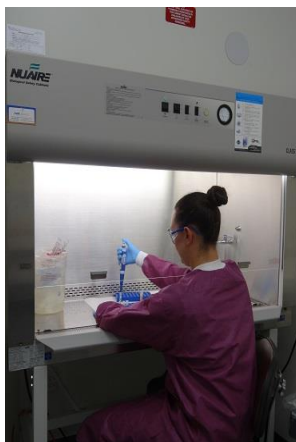
### Company History

Established in 2000, Accacia International has been engaged in SBIR/STTR biotechnology research creating access to affordable and innovative point-of-care products and medical devices. In addition to molecular diagnostics, Accacia is currently developing antimicrobial handwash products and microencapsulated probiotics for enhancing animal health.

### Mission/Vision Statement

We are a global biotechnology research company committed towards creating access to low cost, cutting-edge products through advancements in medicine and engineering.

Focused on innovation, our researchers have developed novel diagnostic bioassays, detection instruments and are currently venturing into health supplements. Our goal remains to integrate complex technologies and make it simple to fulfill customer needs.



Accacia BSL-2 Research Lab

### Core Competency

#### R&D:

- Isolation and characterization of candidate probiotic strains from dolphin oral and fecal samples, and development of microencapsulated probiotic products
- Development of molecular diagnostics for infectious diseases using isothermal amplification methods
- Development of oligonucleotides (aptamers) with biodefense capabilities

#### Production:

- Sister company Oxlee Pharma (Ontario, Canada) is well established in manufacturing and marketing probiotics for human consumption

#### Patents (In Process):

- Bacterial strain isolated from dolphin samples

#### Business Awards:

- Austin Business Journal-Largest Medical Device Company, TX -July 2013

#### Research Contract Awards (SBIR/STTR) – Selected:

- Polyvalent Aptamer Networks (USAF)
- Nanosphere Beacons for Real-Time Detection In Vivo (DARPA)
- PACer-Gold™ Multiplex Pathogen Identification Platform (OSD/DHP)
- Oligonucleotide Enzyme Surrogate (CBD); Aptamers for Chemical Defense
- T7 RNA polymerase engineering and RNA amplification (NIH)



DNA-based Assay Development for *Mycobacterium tuberculosis* Detection

### Market/Customers

Supporting product development for the Medical, Veterinary, and Agricultural industries

#### Probiotics:

- US Navy – National Marine Mammal Program
- SeaWorld
- Aquariums/Dolphinaria

#### Molecular Diagnostics:

- US Air Force (USAF)
- DARPA
- OSD/Defense Health Program (DHP)
- Chemical and Biological Defense (CBD)
- National Institutes of Health (NIH)



Courtesy of U.S. Navy 030318-N-5319A-002 MAR 2003