

**THE RUSSIAN-VIETNAMESE  
OPEN LABORATORY OF  
BIOCHEMISTRY**



# The Russian-Vietnamese Open Laboratory of Biochemistry

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09/3/2010 г.

## ДОГОВОР

о создании открытой Российско-Вьетнамской научно-исследовательской лаборатории

1.) Институт биологии моря им. А.В. Жирмунского Дальневосточного отделения Российской академии наук (упоминаемый далее как ИБМ), зарегистрированный по адресу: Россия, 690041, г. Владивосток, ул. Пальчевского, 17, с российской стороны,

и

2.) Нячангский Институт научных исследований и прикладных технологий Вьетнамской академии науки и технологии (упоминаемый далее как НИНИПТ), зарегистрированный по адресу: 02, Hung Vuong St., Nha Trang, Vietnam,

3.) Институт химии природных соединений Вьетнамской академии науки и технологии (упоминаемый далее как ИХПС), зарегистрированный по адресу: 18 Hoang Quoc Viet – Nghia Do Cau Giay, Hanoi, Vietnam, с вьетнамской стороны,

заключили Договор о нижеследующем:

С целью проведения совместных фундаментальных и прикладных исследований в области биохимии природных соединений морских микро- и макроорганизмов Вьетнама создать открытую Российско-Вьетнамскую лабораторию биохимии (далее Лабораторию) с местом расположения в НИНИПТ (г. Нячанг, Вьетнам).

A.V. Zhirmunsky  
Institute of Marine  
Biology  
FEB RAS

Institute of Natural  
Products  
Chemistry VAST

Nha Trang Institute  
of Technology  
Research and  
Application VAST



The **Laboratory** have been founded with the participation of the Institute of Marine Biology (IMB) FEB RAS, the Institute of Natural Products Chemistry (INPC) VAST and the Nha Trang Institute of Technology Research and Application (NITRA) VAST at **March 2010**.

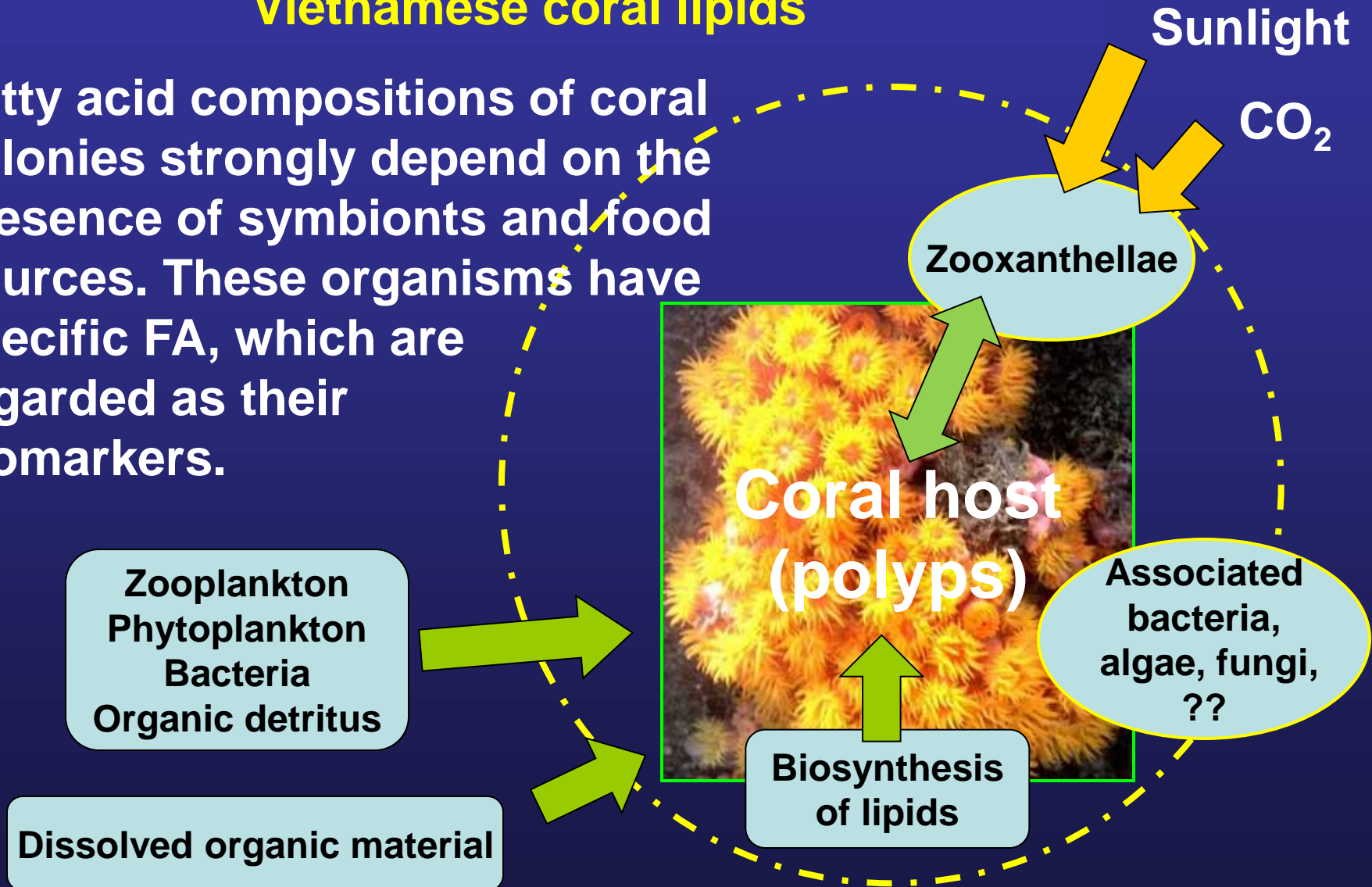
The main **goal** of the **Laboratory**: basic and applied scientific studies in the field of biochemistry of marine natural compounds and physiology of marine micro- and macroorganisms.

The **Laboratory** is situated in **NITRA VAST** (Nha Trang city). Working space of the main room – 32 m<sup>2</sup> .

The **head** of the **Laboratory**: Andrey B. Imbs, deputy director of IMB FEB RAS.

# Project #1: The study of molecular diversity of Vietnamese coral lipids

Fatty acid compositions of coral colonies strongly depend on the presence of symbionts and food sources. These organisms have specific FA, which are regarded as their biomarkers.

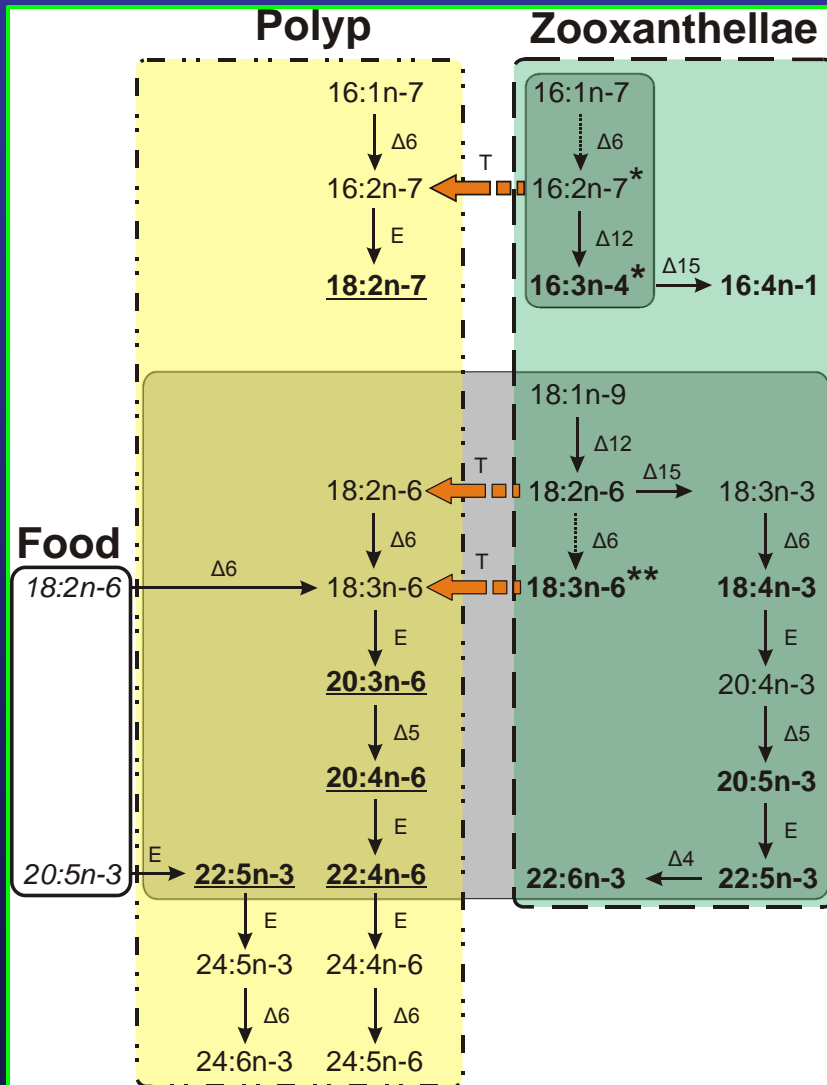


## Project #2: The study of transport of fatty acids in host-symbiont association of Vietnamese corals



- The PUFA transfer between coral host and zooxanthellae should be regarded as a part of exchange of organic substances in host-symbiont association.
- Zooxanthellae transfer their marker PUFA to the host.
- The host transfers specific PUFA and modifies the FA profile of zooxanthellae.
- The host controls FA biosynthesis in zooxanthellae.

# Project #3: The study of biosynthesis of coral PUFAs



C18-22 PUFA of n-3 series (18:4n-3, 20:5n-3, 22:5n-3, and 22:6n-3) were mainly synthesized by the zooxanthellae, and C20-22 PUFA of n-6 series (20:3n-6, 20:4n-6, and 22:4n-6) – by the host.

Soft coral host (polyps) were able to synthesize 24:5n-6 and 24:6n-3 and 18:2n-7, their zooxanthellae – C16 PUFA (16:3n-4, and 16:4n-1).

Relatively smooth distribution of three FA (18:2n-6, 18:3n-6, and 16:2n-7) among the zooxanthellae and the host indicates a possibility of the transport of these FA from zooxanthellae to the host.

## Project #4: Restoration of *Sargassum* beds in Vietnam

*Sargassum* algae have the key position in Vietnamese shallow-water marine ecosystems. These algae are used for food, polysaccharide production and as a natural fertilizer. Last years, the increasing of export of *Sargassum* algae have resulted in the sharp decreasing of these algae resources in Vietnam. This project provides for the development of methods for the restoration of *Sargassum* beds in the coastal zone of central Vietnam.

**The head of project -  
Eduard A. Titlyanov**



## Applied projects of the Laboratory:

- Recovery of damage coral reefs in the Nha Trang Bay.
- Isolation of biologically active oxylipins from cultured algae.





Several **scientific projects**, which were supported by the Russian Foundation of Basic Research (**RFBR**) and **VANT**, are performing with the **participation of the Laboratory**:

- **09-04-90304** The study of biochemical resistance factors of the bleaching of Vietnamese coral reefs”
- **09-04-01040** “The study of lipid transport from symbionts to the host cells in corals”
- **09-04-98542** “Trophic diversity and sources of polyunsaturated fatty acids of boreal and tropical corals”
- **11-04-98505** “The study of lipid transport between the host and their symbionts (zooxanthellae) in corals”
- **12-04-93003** “Stress-stability of symbiotic corals of Vietnam under temperature fluctuation: the role of lipid compositions of the host and his symbionts”
- **12-04-93003** “Study of the transport of lipids between symbionts (zooxanthellae) and their host in corals”
- **14-04-93002** “Studies of molecular diversity of lipids of Vietnam corals as the indices of symbiotic and trophic relationships of marine invertebrates”
- **16-003** “Comparative study of molecular diversity of polar lipids of coral and hydrocorals from Vietnam and the Far Eastern Region of Russia”
- **19-54-54002** “Study of the seasonal changes of the polar lipidome of the hydrocorals *Millepora*”

# The results obtained in the Laboratory were included in several scientific papers and books

