

1. FNC Pearl Nucleus (patent acquired, patent No.62-309272)

The FNC nucleus differs from existing bio-coated nuclei. The FNC nucleus contains a unique mixture of a variety of components and uses the highest quality natural shellfish from America (Kentucky Lake). This product offers a superlative nucleus surface produced under our company's strict product quality-control, with coating strength provided by our ionized integrated coating process. These unique components continually work within the reproductive area to provide high-quality pearls and a healthy long life for the mother of pearl.

Difference between cellular adhesion in the surface of the FNC nucleus and an ordinary nucleus

(10 minutes after dripping the blood of pearl oysters onto the nucleus, seen under a microscope at 100X)

- (1) Using countless fibronectins on the surface of the nucleus, the cells adhere more rapidly.
- (2) Less cellular adhesion occurs on an ordinary nucleus.

(photo)
(1) FNC nucleus

(photo)
(2) Ordinary nucleus

A comparison was made in the number of cells for each of the conditions set in A, B, and C.

Pearl nucleus cross-section	A	B	C
FNC ratio	2059 (+37%)	1345 (+59%)	2060 (+49%)
Untreated	1499	844	1380

FNC Untreated
A
B
C
Pearl nucleus cross-section

What are fibronectins?

Natural fibronectins are substances produced within the bodies of animals, and the types of shellfish used for pearl cultivation also produce these substance. Fibronectins are used in medical treatments all around the world, and serve mainly as bonding agents promoting adhesion between cells. Fibronectins are a type of protein obtained from the blood and bone marrow and occur in fluid form as a sugar protein promoting cellular adhesion. In recent years this substance has become essential in medical treatments worldwide.

What is the concept and purpose of coating the nuclei with fibronectins?

This sugar protein promoting cellular adhesion is widely used in medicine to promote rapid recovery from surgery. In pearl cultivation as well, transferring control of cellular adhesion makes it possible to control such factors as scratching and waste, and to produce a superlative quality pearl. This protein also has a major impact on the mortality of mother of pearl.

Fibronectins effectively make superlative pearl sac in a shorter time. The primary purpose is to accelerate the formation of pearl layers by making countless footholds on the surface of the pearl.

2. Long Life Piece (cellular activation agent)

From the moment that the sections (“pieces”) are cut out of the mantle lobe of an oyster, the pieces weaken and die, and then begin to decay. However, Long Life Piece now uses the power of bio-technology as the main component of the energy source to promote the survival of the pieces. The most important means of preventing this process of decay is to suppress the inflammation caused by bacteria proliferating on the pieces that have been cut out. In addition, when Long Life Piece that has been dripped onto the pieces enters the reproductive area, this cellular activation agent actively continues to promote growth (activating cellular division) to rapidly enclose the surface of the nucleus with a pearl layer. Research has shown that the pieces can survive a full week in the Long Life Piece solution. In addition, the wounds caused on the pearl sac by the operation heal more rapidly than with conventional methods (using cellular activation agents from other companies).

Usage Results

Usage conditions: Mother of pearl used, hybrid oyster 10 monme (37.5g) mother of pearl
Size of inserted nucleus: 1 nucleus inserted, 2.2 to 2.3 (0.67 to 0.70 mm)
Type of nucleus used: FNC nucleus, 2.3 (0.70 mm)
Ordinary nucleus
Type of cellular activation agent used: Long Life Piece (Liquid, Powder)
Ordinary cellular activation agent

Date: Operation, July 10, 1998

Collection, December 21 (164 days)

Ocean regions used: The ocean region in Mie Prefecture including Gokasho Gulf, Matoya Gulf, Toba, Hamajina, and the ocean around Funakoshi in Daiocho

Participants: 28 members of the Mie Prefecture Funakoshi in Daiocho pearl research society

Report presentation: From “Creating pearls in hybrid oysters” by the above- mentioned 28 committee members

(A “hybrid oyster” is a cross between a Japanese oyster and a Chinese oyster)

1. Comparison of nuclei

(1) Using FNC nuclei and Long Life Piece (cellular activation agent: powder)

Mortality results

	Number of oysters distributed	Number of nuclei inserted	Number of oysters put off-shore	Number of oysters collected
Number of items	320	284	276	262
Ratio	100%	89%	86%	82%

Pearl creation results

Peeled weight (T)	Product pearl weight (A)	Second class pearl weight (B)	Bottom pearl weight (C)
39.2 monme (147g)	22.6 monme (84.75g)	9.4 monme (35.25g)	7.2 monme (27g)
Ratio of pearls	A/T 58%	B/T 24%	C/T 18%

produced			
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(2) Using ordinary nuclei and ordinary cellular activation agents

Mortality results

	Number of oysters distributed	Number of nuclei inserted	Number of oysters put off-shore	Number of oysters collected
Number of items	400	385	320	231
Ratio	100%	96%	80%	58%

Pearl creation results

Peeled weight (T)	Product pearl weight (A)	Second class pearl weight (B)	Bottom pearl weight (C)
29.8 monme (111.75g)	10.2 monme (38.25g)	4.2 monme (15.75g)	15.4 monme (57.75g)
Ratio of pearls produced	A/T 34%	B/T 14%	C/T 52%

2. A comparison of cellular activation agents

(1) Using ordinary nucleus and Long Life Piece (Liquid, L)

(2) Using ordinary nucleus and Long Life Piece (Powder, P)

(3) Using ordinary nucleus and ordinary cellular fluid, brands A and B

Mortality results

	Number of oysters distributed	Ratio of nuclei inserted	Ratio of oysters put off-shore	Ratio of oysters collected
Long Life Piece, L	100%	95%	80%	71%
Long Life Piece, P	100%	95%	85%	71%
Ordinary cellular fluid, A	100%	96%	80%	58%
Ordinary cellular fluid, B	100%	89%	63%	57%

How to order FNC nuclei and Long Life Piece

Please order from your pearl association or your fishery association.

We are also accepting FNC handling consignments.

The handling period will vary depending on the amount, but after we receive your nuclei, it will take about 10 to 20 days. When reselection and reproduction are necessary, more time will be required, so please order well in advance of the date the products are needed.

Usage instructions

1. FNC nuclei

These should be used exactly as you use ordinary nuclei. When stored in a cool place, the nuclei will retain their quality for about 3 years with no problems. When handling FNC nuclei that have been in use, rinse lightly with pure water, drain on a dry cloth, return to the original bag with a desiccant, and store until the next use. There is no danger of washing off the fibronectins coating the surface of the nuclei. However, do not wash roughly.

2. Long Life Piece, liquid type (cellular activation agent)

Instructions for use are clearly detailed on the side of the box. Please follow these instructions.

3. Long Life Piece, powder type (cellular activation agent)

This product has been developed especially for the overseas market (South Seas black pearls and white pearls), and is not offered on the domestic market.

* From Jan. 1, 1999, existing FNC nuclei and Long Life Piece powder have been offered in a joint package. In addition, we are now marketing the more powerful FNC- α , which features ease of use, so please have a look at our new product line.

We would like to express our deep gratitude to the many experts who have offered their guidance, and especially to Mr. Kiyotsugu Yamamoto, a technical expert who has made his expertise available to us. Mr. Yamamoto has done testing at the actual cultivation sites and has provided invaluable advice on a great number of matters.