

**UNITED STATES
SECURITIES AND EXCHANGE
COMMISSION**

Washington, D.C. 20549

SCHEDULE 13D

(Rule 13d-101)

**INFORMATION TO BE INCLUDED IN STATEMENTS FILED PURSUANT TO RULE 13d-1(a) AND AMENDMENTS
THERE TO FILED PURSUANT TO RULE 13d-2(a)**

**Under the Securities Exchange Act of 1934
(Amendment No.)***

MacroPore Biosurgery, Inc.

(Name of Issuer)

Common Stock, \$.001 par value

(Title of Class of Securities)

U55396 10 2

(CUSIP Number)

**Masaaki Terada
Director / Corporate R&D Center
Shinjuku Monolith
3-1 Nishi-Shinjuku 2-chome
Shinjuku-ku, Tokyo 163-0914
JAPAN**

**with a copy to:
Hironobu Kawamata
General Manager, Accounting Department
Shinjuku Monolith
3-1 Nishi-Shinjuku 2-chome
Shinjuku-ku, Tokyo 163-0914
JAPAN**

(Name, Address and Telephone Number of Person
Authorized to Receive Notices and Communications)

May 31, 2005

(Date of Event which Requires Filing of this Statement)

If the filing person has previously filed a statement on Schedule 13G to report the acquisition that is the subject of this Schedule 13D, and is filing this schedule because of §§240.13d-1(e), 240.13d-1(f) or 240.13d-1(g), check the following box.

Note: Schedules filed in paper format shall include a signed original and five copies of the schedule, including all exhibits. See §240.13d-7 for other parties to whom copies are to be sent.

* The remainder of this cover page shall be filled out for a reporting person's initial filing on this form with respect to the subject class of securities, and for any subsequent amendment containing information which would alter disclosures provided in a prior cover page.

The information required on the remainder of this cover page shall not be deemed to be "filed" for the purpose of Section 18 of the Securities Exchange Act of 1934 ("Act") or otherwise subject to the liabilities of that section of the Act but shall be subject to all other provisions of the Act (however, see the Notes).

CUSIP No. U55396 10 2

1. Names of Reporting Persons. I.R.S. Identification Nos. of above persons (entities only)
Olympus Corporation I.D. No. 98-0374407

2. Check the Appropriate Box if a Member of a Group (See Instructions)

(a)

(b)

3. SEC Use Only

4. Source of Funds (See Instructions)
WC

5. Check if Disclosure of Legal Proceedings Is Required Pursuant to Items 2(d) or 2(e)

6. Citizenship or Place of Organization
Japan

7. Sole Voting Power
3,300,000

Number of
Shares
Beneficially
Owned by
Each
Reporting
Person With

8. Shared Voting Power
0

9. Sole Dispositive Power
3,300,000

10. Shared Dispositive Power
0

11. Aggregate Amount Beneficially Owned by Each Reporting Person
3,300,000

12. Check if the Aggregate Amount in Row (11) Excludes Certain Shares (See Instructions)

13. Percent of Class Represented by Amount in Row (11)
19.0%

14. Type of Reporting Person (See Instructions)
CO

Item 1. Security and Issuer

This Schedule 13D relates to the common stock, \$.001 par value per share, of MacroPore Biosurgery, Inc., a Delaware corporation (“MacroPore”). The principal executive offices of MacroPore are located at 6740 Top Gun Street, San Diego, California 92121.

Item 2. Identity and Background

This Schedule 13D is filed by Olympus Corporation, a Japanese corporation (“Olympus”). Its principal business address and principal office address are Shinjuku Monolith, 3-1 Nishi-Shinjuku 2-chome, Shinjuku-ku, Tokyo 163-0914, Japan. Its principal business is to manufacture and sell precision machines and instruments, including cameras and medical devices.

During the last five years, Olympus has not been (a) convicted in a criminal proceeding (excluding traffic violations or similar misdemeanors); or (b) a party to a civil proceeding of a judicial or administrative body of competent jurisdiction and as a result of such proceeding was or is subject to a

judgment, decree or final order enjoining future violations of, or prohibiting or mandating activities subject to, federal or state securities laws or finding any violation with respect to such laws.

Item 3. Source and Amount of Funds or Other Consideration

The source of the \$11,000,000 used by Olympus to buy 1,100,000 shares of MacroPore common stock on May 31, 2005 was Olympus' working capital. If Olympus were to exercise in the future its option to purchase another 2,200,000 shares of MacroPore common stock for \$22,000,000, it is expected that the source of the \$22,000,000 would be Olympus' working capital.

Item 4. Purpose of Transaction

Olympus believes there is substantial value in MacroPore's regenerative cell technology business. Olympus' purpose in acquiring MacroPore common stock is to participate in the future realization of that value by acquiring a significant equity position in MacroPore, with an option to acquire an even larger position (i.e., 2,200,000 more shares) – while at the same time providing MacroPore with funding which is essential for continuing the development of the regenerative cell technology and ultimately realizing the commercial value of the technology.

Olympus and MacroPore are also seeking to enter into a strategic business alliance relating to MacroPore's regenerative cell technology. Olympus and MacroPore are now engaged in good-faith negotiations toward establishing such an alliance, and are sharing technical information on a preliminary basis.

Olympus has been granted the right to have its designee appointed to MacroPore's Board of Directors and (so long as it continues to hold the initial 1,100,000 shares) to have its designee included on the Board-recommended slate of director nominees at future MacroPore annual meetings of stockholders. Olympus has not yet exercised this right of designation.

See also Item 6 below.

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Otherwise, Olympus does not currently have any plans or proposals which relate to or would result in any of the effects described in Item 4(a)-(j).

Item 5. Interest in Securities of the Issuer

(a) Olympus beneficially owns 3,300,000 shares of the Issuer's common stock, representing beneficial ownership of approximately 19.0% of MacroPore's common stock. Of the 3,300,000 shares, 2,200,000 shares are subject to a right-to-acquire. Applying the beneficial-ownership-percentage rules, the 1,100,000 shares actually owned would (if one assumed there were no 2,200,000-share right-to-acquire) represent beneficial ownership of 7.3% of MacroPore's common stock.

(b) Olympus has sole power as to both the voting and the disposition of the MacroPore shares that Olympus beneficially owns.

(c) Except as described herein, Olympus has not effected any transactions in MacroPore's common stock during the past 60 days.

(d) Not applicable.

(e) Not applicable.

Item 6. Contracts, Arrangements, Understandings or Relationships with Respect to Securities of the Issuer

There are at present no contracts, arrangements, understandings or relationships (legal or otherwise) between Olympus and any person with respect to any securities of MacroPore, except for the Common Stock Purchase Agreement dated April 28, 2005, which provided for the sale on May 31, 2005 by MacroPore of 1,100,000 shares to Olympus, the grant by MacroPore to Olympus of a call option (expiring December 31, 2006) to purchase up to an additional 2,200,000 shares, and the right to a Board appointee/nominee as described in Item 4 above.

Item 7. Material to Be Filed as Exhibits

None

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Signature

After reasonable inquiry and to the best of my knowledge and belief, I certify that the information set forth in this statement is true, complete and correct.
OLYMPUS CORPORATION

June 9, 2005

Date

/s/ Masaaki Terada

Signature

Masaaki Terada/Director / Corporate R&D Center

Name/Title

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