



Explanation of Responses:

- (1) The shares reported in this response are beneficially owned by BVF Partners L.P., a Delaware limited partnership ("Partners"), the designated filer of this joint filing on Form 4, and by its general partner, BVF Inc., a Delaware corporation ("BVF Inc."), which is also an investment advisor to Partners. Partners is the general partner of Biotechnology Value Fund, L.P., a Delaware limited partnership ("BVF, L.P.") and Biotechnology Value Fund II, L.P., a Delaware limited partnership ("BVF2, L.P."), both investment limited partnerships. Partners also is the manager of BVF Investments, L.L.C., a Delaware limited liability company ("Investments"). Pursuant to the operating agreement of Investments, Partners is authorized, among other things, to invest the funds of Ziff Asset Management, L.P., the majority member of Investments, in the shares of Common Stock reported in Table I as being beneficially owned by Investments. Mark N. Lampert is the sole shareholder and sole director of BVF Inc., and is an officer of BVF Inc. This joint filing on Form 4 shall not be deemed an admission that Mark N. Lampert is, for purposes of Section 16 of the Securities Exchange Act of 1934, as amended, or otherwise, the beneficial owner of any equity securities covered by this joint filing.
- (2) Shares beneficially owned by BVF, L.P.
- (3) Shares beneficially owned by BVF2, L.P.
- (4) Shares beneficially owned by Investments.

BVF Partners L.P.

By: BVF Inc., its general partner

By: /s/ MARK N. LAMPERT

January 10, 2003

\*\* Signature of Reporting Person

Date

\*\* Intentional misstatements or omissions of facts constitute Federal Criminal Violations.  
See 18 U.S.C. 1001 and 15 U.S.C. 78ff(a).

Note: File three copies of this Form, one of which must be manually signed.  
If space is insufficient, see Instruction 6 for procedure.

Potential persons who are to respond to the collection of information contained in this form are not required to respond unless the form displays a currently valid OMB Control Number.

**FORM 4 (Continued)**

**Listing of the names and addresses of other reporting persons:**

1. Biotechnology Value Fund, L.P.  
227 West Monroe Street, Suite 4800  
Chicago, Illinois 60606  

	BIOTECHNOLOGY VALUE FUND, L.P.	
	By: BVF Partners L.P., its general partner	
	By: BVF Inc., its general partner	
	By: /s/ MARK N. LAMPERT	January 10, 2003
	**Signature of Reporting Person Authorized Signatory	Date
2. Biotechnology Value Fund II, L.P.  
227 West Monroe Street, Suite 4800  
Chicago, Illinois 60606  

	BIOTECHNOLOGY VALUE FUND II, L.P.	
	By: BVF Partners L.P., its general partner	
	By: BVF Inc., its general partner	
	By: /s/ MARK N. LAMPERT	January 10, 2003
	**Signature of Reporting Person Authorized Signatory	Date
3. BVF Investments, L.L.C.  
227 West Monroe Street, Suite 4800  
Chicago, Illinois 60606  

	BVF INVESTMENTS, L.L.C.	
	By: BVF Partners L.P., its manager	
	By: BVF Inc., its general partner	
	By: /s/ MARK N. LAMPERT	January 10, 2003
	**Signature of Reporting Person Authorized Signatory	Date
4. BVF Inc.  
One Sansome Street, 31st Floor  
San Francisco, California 94104  

	BVF INC.	
	By: /s/ MARK N. LAMPERT	January 10, 2003
	**Signature of Reporting Person Authorized Signatory	Date
5. Mark N. Lampert  
One Sansome Street, 31st Floor  
San Francisco, California 94104  

	By: /s/ MARK N. LAMPERT	January 10, 2003
	**Signature of Reporting Person Authorized Signatory	Date

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