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UNITED STATES  
SECURITIES AND EXCHANGE COMMISSION  
Washington, D.C. 20549

**SCHEDULE 13G**

**(Amendment No. 2)\***

**X4 Pharmaceuticals, Inc.**  
**(Name of Issuer)**

Common Stock, \$0.001 par value  
**(Title of Class of Securities)**

98420X103  
**(CUSIP Number)**

December 31, 2020  
**(Date of Event Which Requires Filing of this Statement)**

Check the appropriate box to designate the rule pursuant to which this Schedule is filed:

Rule 13d-1(b)

Rule 13d-1(c)

Rule 13d-1(d)

\*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 the disclosures provided in a prior cover page.

The information required in 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).

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<b>1</b>	NAME OF REPORTING PERSONS Moshe Arkin		
<b>2</b>	CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP (See instructions) (a) <input type="checkbox"/> (b) <input checked="" type="checkbox"/>		
<b>3</b>	SEC USE ONLY		
<b>4</b>	CITIZENSHIP OR PLACE OF ORGANIZATION Israel		
NUMBER OF SHARES BENEFICIALLY OWNED BY EACH REPORTING PERSON WITH	<b>5</b>	SOLE VOTING POWER ---	
	<b>6</b>	SHARED VOTING POWER ---	
	<b>7</b>	SOLE DISPOSITIVE POWER ---	
	<b>8</b>	SHARED DISPOSITIVE POWER ---	
<b>9</b>	AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON ---		
<b>10</b>	CHECK IF THE AGGREGATE AMOUNT IN ROW (9) EXCLUDES CERTAIN SHARES (See instructions) <input type="checkbox"/>		
<b>11</b>	PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW 9 0.00% (*)		
<b>12</b>	TYPE OF REPORTING PERSON (See instructions) IN		

(\*) Reflects updated holdings as of the date of this filing. The beneficial ownership of the securities reported herein is described in Item 4(a).

<b>1</b>	NAME OF REPORTING PERSONS Sphera Funds Management Ltd.		
<b>2</b>	CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP (See instructions) (a) <input type="checkbox"/> (b) <input checked="" type="checkbox"/>		
<b>3</b>	SEC USE ONLY		
<b>4</b>	CITIZENSHIP OR PLACE OF ORGANIZATION Israel		
NUMBER OF SHARES BENEFICIALLY OWNED BY EACH REPORTING PERSON WITH	<b>5</b>	SOLE VOTING POWER ---	
	<b>6</b>	SHARED VOTING POWER 250,000 (*)	
	<b>7</b>	SOLE DISPOSITIVE POWER ---	
	<b>8</b>	SHARED DISPOSITIVE POWER 250,000 (*)	
<b>9</b>	AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON 250,000 (*)		
<b>10</b>	CHECK IF THE AGGREGATE AMOUNT IN ROW (9) EXCLUDES CERTAIN SHARES (See instructions) <input type="checkbox"/>		
<b>11</b>	PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW 9 1.51% (*) (**)		
<b>12</b>	TYPE OF REPORTING PERSON (See instructions) CO		

(\*) Reflects updated holdings as of the date of this filing. The beneficial ownership of the securities reported herein is described in Item 4(a).

(\*\*) Based on (i) 16,286,645 shares of Common Stock outstanding as of November 2, 2020 (as provided in the Issuer's Form 10-Q filed with the Securities and Exchange Commission (the "SEC") on November 5, 2020) and (ii) certain warrants held by the Reporting Persons that are currently exercisable into shares of Common Stock.

<b>1</b>	NAME OF REPORTING PERSONS Sphera Global Healthcare GP Ltd.		
<b>2</b>	CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP (See instructions) (a) <input type="checkbox"/> (b) <input checked="" type="checkbox"/>		
<b>3</b>	SEC USE ONLY		
<b>4</b>	CITIZENSHIP OR PLACE OF ORGANIZATION Israel		
NUMBER OF SHARES BENEFICIALLY OWNED BY EACH REPORTING PERSON WITH	<b>5</b>	SOLE VOTING POWER ---	
	<b>6</b>	SHARED VOTING POWER 250,000 (*)	
	<b>7</b>	SOLE DISPOSITIVE POWER ---	
	<b>8</b>	SHARED DISPOSITIVE POWER 250,000 (*)	
<b>9</b>	AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON 250,000 (*)		
<b>10</b>	CHECK IF THE AGGREGATE AMOUNT IN ROW (9) EXCLUDES CERTAIN SHARES (See instructions) <input type="checkbox"/>		
<b>11</b>	PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW 9 1.51% (*) (**)		
<b>12</b>	TYPE OF REPORTING PERSON (See instructions) CO		

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<b>1</b>	NAME OF REPORTING PERSONS Sphera Global Healthcare Management LP		
<b>2</b>	CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP (See instructions) (a) <input type="checkbox"/> (b) <input checked="" type="checkbox"/>		
<b>3</b>	SEC USE ONLY		
<b>4</b>	CITIZENSHIP OR PLACE OF ORGANIZATION Israel		
NUMBER OF SHARES BENEFICIALLY OWNED BY EACH REPORTING PERSON WITH	<b>5</b>	SOLE VOTING POWER ---	
	<b>6</b>	SHARED VOTING POWER 250,000 (*)	
	<b>7</b>	SOLE DISPOSITIVE POWER ---	
	<b>8</b>	SHARED DISPOSITIVE POWER 250,000 (*)	
<b>9</b>	AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON 250,000 (*)		
<b>10</b>	CHECK IF THE AGGREGATE AMOUNT IN ROW (9) EXCLUDES CERTAIN SHARES (See instructions) <input type="checkbox"/>		
<b>11</b>	PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW 9 1.51% (*) (**)		
<b>12</b>	TYPE OF REPORTING PERSON (See instructions) CO		

(\*) Reflects updated holdings as of the date of this filing. The beneficial ownership of the securities reported herein is described in Item 4(a).

(\*\*) Based on (i) 16,286,645 shares of Common Stock outstanding as of November 2, 2020 (as provided in the Issuer's Form 10-Q filed with the Securities and Exchange Commission (the "SEC") on November 5, 2020) and (ii) certain warrants held by the Reporting Persons that are currently exercisable into shares of Common Stock.

- Item 1.** (a) Name of Issuer:  
X4 Pharmaceuticals, Inc.
- (b) Address of Issuer's Principal Executive Offices:  
61 North Beacon Street, 4th Floor, Boston, Massachusetts 02134

- Item 2.** (a) Address of Principal Business Office:  
Moshe Arkin  
Sphera Funds Management Ltd.  
Sphera Global Healthcare GP Ltd.  
Sphera Global Healthcare Management LP
- (b) Address of Principal Business Office:  
Moshe Arkin – 6 Hachoshlim St., Herzelia, Israel  
Sphera Funds Management Ltd. – 21 Ha'arba'ah Street, Tel Aviv 64739, Israel  
Sphera Global Healthcare GP Ltd. – 21 Ha'arba'ah Street, Tel Aviv 64739, Israel  
Sphera Global Healthcare Management LP – 21 Ha'arba'ah Street, Tel Aviv 64739, Israel
- (c) Citizenship:  
Moshe Arkin – Israel  
Sphera Funds Management Ltd. – Israel  
Sphera Global Healthcare GP Ltd. – Israel  
Sphera Global Healthcare Management LP – Israel
- (d) Title of Class of Securities:  
Common Stock, \$0.001 par value
- (e) CUSIP Number:  
98420X103

**Item 3.** Not applicable.

**Item 4.** Ownership:

(a) Amount beneficially owned:

See row 9 of cover page of each reporting person.

The securities reported herein are beneficially owned as follows:

- 140,000 Warrants 15 currently exercisable into shares of Common Stock, representing a total of 0.85% of the total shares of Common Stock outstanding (including the warrants held by the Reporting Persons), are held directly by Sphera Global Healthcare Master Fund, which has delegated its investment management authority to Sphera Global Healthcare Management Ltd. (the "Management Company").
- 75,000 Warrants 13.2 and 35,000 Warrants 15, together currently exercisable into shares of Common Stock, representing a total of 0.66% of the total shares of Common Stock outstanding (including the warrants held by the Reporting Persons), are held directly by Sphera Biotech Master Fund, L.P., which has delegated its investment management authority to the Management Company.

The Management Company is managed, controlled, and operated by its general partner, Sphera Global Healthcare GP Ltd., which is controlled by Sphera Funds Management Ltd.

This Statement shall not be construed as an admission by any of the Reporting Persons that it is the beneficial owner of any of the securities covered by this Statement, and each Reporting Person disclaims beneficial ownership of any such securities. In addition, the Reporting Persons and other entities named in this Schedule 13G may be deemed to constitute a "group" for purposes of Section 13(d) of the Securities Exchange Act of 1934. Neither the filing of this Schedule 13G nor any of its contents shall be deemed to constitute an admission that a group exists for purposes of Section 13(d) of the Securities Exchange Act of 1934 or for any other purpose, and each of the Reporting Persons and other entities named in this Schedule 13G disclaims the existence of any such group.

(b) Percent of class:

See row 11 of cover page of each reporting person

(c) Number of shares as to which such person has:

(i) Sole power to vote or to direct the vote:

See row 5 of cover page of each reporting person

(ii) Shared power to vote or to direct the vote:

See row 6 of cover page of each reporting person and note in Item 4(a) above

(iii) Sole power to dispose or to direct the disposition of:

See row 7 of cover page of each reporting person

(iv) Shared power to dispose or to direct the disposition of:

See row 8 of cover page of each reporting person and note in Item 4(a) above

**Item 5.** Ownership of Five Percent or Less of a Class:

If this statement is being filed to report the fact that as of the date hereof the reporting person has ceased to be the beneficial owner of more than 5 percent of the class of securities, check the following .

**Item 6.** Ownership of More than Five Percent on Behalf of Another:

Not applicable.

**Item 7.** Identification and Classification of the Subsidiary Which Acquired the Security Being Reported on by the Parent Holding Company or Control Person:

Not applicable.

**Item 8.** Identification and Classification of Members of the Group:

Not applicable.

**Item 9.** Notice of Dissolution of Group:

Not applicable.



**Item 10.**      Certification:

By signing below I certify that, to the best of my knowledge and belief, the securities referred to above were not acquired and are not held for the purpose of or with the effect of changing or influencing the control of the issuer of the securities and were not acquired and are not held in connection with or as a participant in any transaction having that purpose or effect.

## 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.

February 10, 2021

**Moshe Arkin**

/s/ Moshe Arkin

By: Moshe Arkin

**Sphera Funds Management Ltd.**

/s/ Ori Goldfarb

By: Ori Goldfarb

Title: Chief Executive Officer

**Sphera Global Healthcare GP Ltd.**

/s/ Ori Goldfarb

By: Ori Goldfarb

Title: Chief Executive Officer

**Sphera Global Healthcare Management LP**

/s/ Doron Breen

By: Doron Breen

Title: Managing Partner

<b>EXHIBIT NO.</b>	<b>DESCRIPTION</b>
Exhibit 1	Joint Filing Agreement by and among the Reporting Persons, dated as of December 23, 2019 (incorporated herein by reference to Exhibit 1 to the Schedule 13G filed on December 23, 2019).