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SECURITIES AND EXCHANGE COMMISSION  
Washington, D.C. 20549

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**Schedule 13G/A**

UNDER THE SECURITIES EXCHANGE ACT OF 1934

(Amendment No. 5)\*

**GTx, Inc.**

(Name of Issuer)

Common Stock, \$ 0.001 par value

(Title of Class of Securities)

**40052B108**

(CUSIP Number)

**December 31, 2009**

(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 PERSON			
	I.R.S. IDENTIFICATION NO. OF ABOVE PERSON (ENTITIES ONLY)			
	Mitchell S. Steiner, M.D., F.A.C.S.			
<b>2</b>	CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP (SEE INSTRUCTIONS)			
	(a)	<input type="radio"/>		
	(b)	<input type="radio"/>		
<b>3</b>	SEC USE ONLY			
<b>4</b>	CITIZENSHIP OR PLACE OF ORGANIZATION			
	United States of America			
NUMBER OF SHARES BENEFICIALLY OWNED BY EACH REPORTING PERSON WITH	<b>5</b>	SOLE VOTING POWER		
		2,064,132		
	<b>6</b>	SHARED VOTING POWER		
		741,284		
	<b>7</b>	SOLE DISPOSITIVE POWER		
		2,064,132		
	<b>8</b>	SHARED DISPOSITIVE POWER		
		741,284		
<b>9</b>	AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON			
	2,805,416			
<b>10</b>	CHECK IF THE AGGREGATE AMOUNT IN ROW (9) EXCLUDES CERTAIN SHARES (SEE INSTRUCTIONS)			
	(a)	<input checked="" type="checkbox"/>		
	2,064,131(1)			
<b>11</b>	PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW 9			
	7.7%			
<b>12</b>	TYPE OF REPORTING PERSON (SEE INSTRUCTIONS)*			
	IN			

(1) Shares owned by Dr. Steiner's spouse, as to which Dr. Steiner disclaims beneficial interest

Item 1(a). Name of Issuer: GTX, Inc.

Item 1(b). Address of Issuer's Principal Executive Offices: 175 Toyota Plaza, 7th Floor,  
Memphis, Tennessee 38103

Item 2(a). Name of Person Filing: Mitchell S. Steiner, M.D., F.A.C.S.

Item 2(b). Address of Principal Business Office or, if none, Residence: 175 Toyota Plaza, 7th Floor,  
Memphis, Tennessee 38103

Item 2(c). Organization/Citizenship: United States of America

Item 2(d). Title of Class Of Securities: Common Stock, \$0.001 par value

Item 2(e). CUSIP Number: **40052B108**

Item 3. Inapplicable.

Item 4. Ownership.

<u>Person</u>	<u>Total Shares of Common Stock Beneficially Owned</u>	<u>Percent of Class(1)</u>	<u>Sole Voting Power</u>	<u>Shared Voting Power</u>	<u>Sole Power to Dispose</u>	<u>Shared Power to Dispose</u>
Mitchell S. Steiner, M.D., F.A.C.S.	<b>2,805,416</b>	7.7%	2,064,132	741,284	2,064,132	741,284

(1) Based on **36,420,901** shares of Common Stock outstanding as of December 31, 2009.

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

Inapplicable

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

Inapplicable

Item 7. Identification and Classification of the Subsidiary Which Acquired the Security Being Reported on by the Parent Holding Company.

Inapplicable

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

Inapplicable

Item 9. Notice of Dissolution of Group.

Inapplicable

Item 10. Certification.

Inapplicable

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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.

2/12/2010

Date

/s/ Mitchell S. Steiner, M.D., F.A.C.S.

(Signature)

Mitchell S. Steiner, M.D., F.A.C.S.

Chief Executive Officer and Vice Chairman of the Board  
of Directors of GTx, Inc.