

# **Fate Therapeutics Inc**

## **CORTELLIS COMPANY DETAILED PIPELINE REPORT**

A comprehensive coverage of the the company's drug pipeline portfolio including detailed product records.

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## ABOUT CORTELLIS COMPANY DETAILED PIPELINE REPORT

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## **GLOSSARY**

## **Number of Drugs in Active Development**

Number of drugs associated with the company or subsidiary that are currently in active development, i.e. the development status for the drug(s) is one of the following: Discovery, Clinical, Phase II, Phase III, Pre-registration, Registered, Launched, or Suspended.

## **Number of Inactive Drugs**

Number of drugs associated with the company or subsidiary that are currently classified as inactive, i.e. where the development status for the drug(s) is one of the following: No Development Reported, Discontinued, or Withdrawn.

#### **Number of Patents as Owner**

Number of patents associated with the company where the company is listed as owner; i.e. the relationship type (or way the patent refers to the company) is: Patent Assignee/Owner, Patent owner (not assignee), Licensee for development and marketing, Licensee – marketing only (Distributor), Patent assignee of family member, Inferred assignee.

## **Number of Patents as Third Party**

Number of patents associated with the company where the company is listed as third party; i.e. the relationship type (or way the patent refers to the company) is: Patent assignee (not owner), Ex-Licensee for development and marketing, Ex-Licensee marketing only (Distributor), Customer of technology, Ex-Customer of technology, Patent opponent or infringer, Affiliate organization of inventor, Owner of underlying technology.

#### Patents summary table

This table represents a summary of the core patent coverage for this company covering Therapeutic EP, US and WO patents since 1990 only.

#### **Number of Deals**

A count of deals where the company or one of its subsidiaries is the primary company.

#### **Key Indications**

Displays top ten key indications for the company and its subsidiaries based on frequency (indications occurring with high and identical frequency are always included, and this may result in more than ten Key Indications being listed). Includes both indications associated with patents where the company is patent owner and indications associated with drugs in active development. A drug is classified as 'active' if it features on a row (or rows) in the current development status table where the status is one of the following: Discovery, Clinical, Phase I, Phase II, Phase III, Pre-registration, Registered, Launched, or Suspended.

#### **Key Target-based Actions**

Displays top ten key target-based actions for the company and its subsidiaries based on frequency (actions occurring with high and identical frequency are always included, and this may result in more than ten Key Target-based Actions being listed). Includes both target-based actions associated with patents where the company patent owner and target-based actions associated with drugs in active development. A drug is classified as 'active' if it features on a row (or rows) in the current development status table where the status is one of the following: Discovery, Clinical, Phase I, Phase II, Phase III, Pre-registration, Registered, Launched, or Suspended. A target-based action is one that is associated with a target.

#### **Key Technologies**

Displays top ten key technologies for the company and its subsidiaries based on frequency (technologies occurring with high and identical frequency are always included, and this may result in more than ten Key Technologies being listed). Includes both key technologies associated with patents where the company relationship is patent owner and key technologies associated with drugs in active development. A drug is classified as 'active' if it features on a row (or rows) in the current development status table where the status is one of the following: Discovery, Clinical, Phase I, Phase II, Phase III, Pre-registration, Registered, Launched, or Suspended.

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# **Fate Therapeutics Inc**

#### COMPANY OVERVIEW

Company Name	Fate Therapeutics Inc
Parent Company Name	Fate Therapeutics Inc
Website	http://fatetherapeutics.com/
Country	US
Number of Drugs in Active Development	4
Number of Inactive Drugs	8
Number of Patents as Owner	26
Number of Patents as Third Party	2
Number of Deals	7
Key Indications	Stem cell transplantation, Muscular dystrophy, Muscle wasting disease, Genetic disorder, Hearing loss, Cardiovascular disease, Myocardial infarction, Obesity, Stroke, Alopecia, Bone disease, Bone injury, Osteoarthritis, Osteoporosis, Peripheral vascular disease
Key Target-based Actions	Hedgehog protein stimulator,GLI gene stimulator,Osteocalcin stimulator,Wnt 7A ligand,Wnt inhibitory factor 1 stimulator,Wnt ligand,Cardiotrophin-1 ligand,Glucocorticoid agonist,POU domain 5 transcription factor 1 stimulator,Prostanoid receptor agonist
Key Technologies	Small molecule therapeutic, Haematopoietic stem cell therapy, Allogenic stem cell therapy, Biological therapeutic, Umbilical cord stem cell therapy, Systemic formulation unspecified, Pluripotent stem cell therapy, Peptide, Polynucleotide sequence, Adult stem cell therapy, Cell culture technique

## **COMPANY PROFILE**

#### **SUMMARY**

Fate Therapeutics Inc, formed in November 2007 by Harvard University, Stanford University, University of Washington, the Scripps Research Institute (TSRI) and the Massachusetts General Hospital, is a biotechnology company that aims to develop small-molecules and biologicals to activate the body's existing stem cells and to create and differentiate induced pluripotent stem (iPS) cells.

## **COMPANY LOCATION**

By November 2007, Fate had facilities in Seattle and planned to have locations in California and Massachusetts 'soon'.

#### **ACQUISITIONS AND SPIN-OFFS**

In April 2010, Fate entered into a definite agreement to acquire Verio Therapeutics. The acquisition had been approved buy the boards of both companies. Under the terms of the agreement, Fate would establish a Canadian subsidiary to continue to work on Verio's programs. At that time, no financial terms had been disclosed.

#### LICENSING AGREEMENTS

In July 2009, Fate Therapeutics entered into an agreement with the Regents of the University of California for exclusive intellectual property rights covering osteogenic agents, and small molecule compositions and techniques for inducing bone formation. The patents would be used to augment Fate's stem cell modulators (SCM).

#### **EARLY R&D/TECHNOLOGY UPDATES**

In October 2009, Fate and TSRI announced that they had developed a novel method of generating human induced pluripotent stem cells. The method using a combination of small molecules and was found to improve programming efficiency 200-fold and decrease time spent reprogramming.

In July 2009, preclinical data were presented at the 7th Annual Meeting of the International Society for Stem Cell



Research in Barcelona, Spain, showing that Wnt activators induced mesenchymal stem cells to differentiate into mature bone-forming osteoblasts.

By May 2009, Fate was investigating small molecule stem cell modulators (SCM), developed using the company's adult stem cell biology engine and induced pluripotent stem (iPS) cell technology, with broad therapeutic potential in areas including regenerative medicine, hematological diseases, metastatic cancer, traumatic injury and degenerative diseases.

In April 2009, Fate and Stemgent launched the Catalyst program to provide pluripotent stem cell platform for drug discovery and development.

#### **FINANCIAL**

In August 2013, the company filed a registration statement on Form S-1 with the US Securities and Exchange Commission regarding its planned IPO of shares. In October 2013, Fate reported the IPO would consist of 6,666,667 shares priced at \$6.00 per share. Underwriters would be granted a 30-day option to buy 1 million additional shares. At that time, the shares began trading on the NASDAQ Global Market under the ticker symbol 'FATE'. Later that month, the company raised net proceeds of \$40.4 million from closing the IPO of 7,666,667 shares of its common stock, including 1 million shares issued upon the exercise in full by the underwriters of their option to purchase additional shares.

In May 2001, Fate received an equity investment from Takeda Ventures.

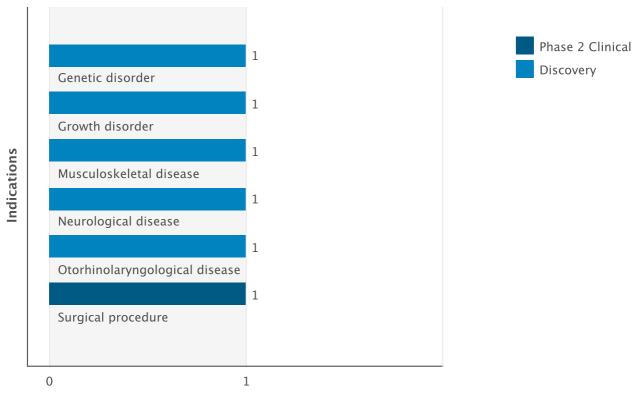
In November 2009, the company raised \$30 million in a series B financing round.

## PRODUCT PORTFOLIO SUMMARY

## **DRUGS**

#### Drugs by Indication

Active Drugs by Indication Chart



**Number of Drugs** 

Discovery

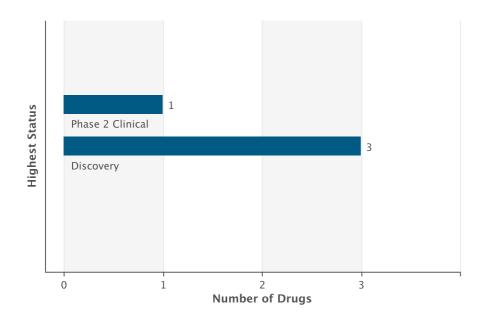


## Drugs by Indication Table

Indication	Active	Inactive	Total
Musculoskeletal disease	1	3	4
Neurological disease	1	2	3
Growth disorder	1	1	2
Surgical procedure	1	1	2
Gastrointestinal disease	0	1	1
Metabolic disorder	0	1	1
Endocrine disease	0	1	1
Injury	0	1	1
Neoplasm	0	1	1
Genetic disorder	1	0	1
Otorhinolaryngological disease	1	0	1
Cardiovascular disease	0	1	1

## **Drugs by Highest Status**

Active Drugs by Highest Status Chart





## Drugs by Highest Status Table

Development Status	Number of Drugs
Phase 2 Clinical	1
Discovery	3
Discontinued	3
No Development Reported	5

## **DEALS**

Deal Type	Principal		Par	Total	
	Active	Inactive	Active	Inactive	
Patent - Exclusive Rights	0	0	3	0	3
Drug - Funding	1	0	0	0	1
Drug - Development/Commercialization License	1	0	2	0	3

## **CLINICAL TRIALS**

## Trials by Condition Studied

Condition Studied	Ongoing	All
Hematological disease	0	2
Neoplasm	0	2
Surgical procedure	1	1
Immune disorder	0	1

## Trials by Phase

Phase	Ongoing	All
Phase 2	1	1
Phase 1	0	2

## **Phase Definitions**

#### Phase 3 Clinical

Includes Phase 3, Phase 3b, Phase 3a, Phase 2/3 (where enrolment count is 300 or over)

#### Phase 2 Clinical

Includes Phase 2, Phase 2a, Phase 2b, Phase 1/2 (where enrolment count is 100 or over), Phase 2/3 (where enrolment count is under 300 or not specified)

## Phase 1 Clinical

Includes Phase 1, Phase 1a, Phase 1, Phase 1/2 (where enrolment count is under 100 or not specified), Phase 0



## **PATENTS** \*

Indication	As Owner	As Third Party	Total
Cardiovascular disease	11	0	11
Endocrine disease	10	0	10
Gastrointestinal disease	5	0	5
Genitourinary disease	2	0	2
Growth disorder	4	1	5
Hematological disease	6	0	6
Degeneration	10	0	10
Immune disorder	3	0	3
Musculoskeletal disease	13	1	14
Neoplasm	8	0	8
Ocular disease	1	0	1
Genetic disorder	2	0	2
Metabolic disorder	5	0	5
Mouth disease	1	0	1
Neurological disease	14	1	15
Nutritional disorder	6	1	7
Respiratory disease	2	0	2
Infectious disease	1	0	1
Injury	8	1	9
Inflammatory disease	7	0	7
Otorhinolaryngological disease	1	0	1
Dermatological disease	6	0	6
Surgical procedure	8	1	9

<sup>\*</sup> This table represents a summary of the core patent coverage for this company covering Therapeutic EP, US and WO patents since 1990 only.



## PRODUCT PORTFOLIO DRUG PIPELINE DETAIL

PLEASE NOTE: Highest status refers to highest development of that drug for one of the active companies

#### **ProHema**

#### **ProHema SNAPSHOT**

Drug Name	ProHema
Key Synonyms	ProHema
Originator Company	Fate Therapeutics Inc
Active Companies	Fate Therapeutics Inc
Inactive Companies	
Highest Status	Phase 2 Clinical
Active Indications	Stem cell transplantation
Target-based Actions	
Other Actions	Stem cell modulator;Anticancer;Hematopoietic stimulant
Technologies	Systemic formulation unspecified;Biological therapeutic;Allogenic stem cell therapy;Umbilical cord stem cell therapy;Haematopoietic stem cell therapy
Last Change Date	15-Nov-2013

## **ProHema DEVELOPMENT PROFILE**

## **SUMMARY**

Fate Therapeutics is developing ProHema, a program comprising of allogeneic umbilical cord stem cells that have been treated ex vivo with FT-1050 (dmPGE2), a small-molecule stem cell prostaglandin E2 modulator developed using the company's adult stem cell biology engine and induced pluripotent stem (iPS) cell technology, for the potential restoration of hematopoiesis following myeloablative chemotherapy for hematological malignancies,. In February 2012, a phase I/II trial began. In November 2012, a phase II trial was initiated; by November 2013, enrollment was expected to resume in the first half of 2014 with full data expected in mid-2015.

Fate Therapeutics is also investigating FT-1050-treated bone marrow stem cells for the same indication.

#### **ProHema DEVELOPMENT STATUS**

## **CURRENT DEVELOPMENT STATUS**

Company	Indication	Country	<b>Development Status</b>	Date
Fate Therapeutics Inc	Stem cell transplantation	US	Phase 2 Clinical	06-Feb-2012



#### **ProHema DRUG NAMES**

Names	Туре
FT-1050-treated umbilical cord stem cell therapy (hematopoietic stem cell engraftment), Fate Therapeutics	
ProHema	Trade Name

## **ProHema CLINICAL TRIALS**

## Trials by Phase and Condition Studied

	se 4 lical		se 3 nical		se 2 iical		se 1 nical		ase ecified	То	tal
On- going	All	On- going	All	On- going	All	On- going	All	On- going	All	On- going	All
Myelodys	splastic sy	ndrome									
0	0	0	0	0	0	0	1	0	0	0	1
Hematolo	gical neop	olasm									
0	0	0	0	0	0	0	1	0	0	0	1
Chronic I	ymphocyti	c leukemia	a								
0	0	0	0	0	0	0	1	0	0	0	1
Non-Hod	gkin lympl	noma									
0	0	0	0	0	0	0	1	0	0	0	1
Acute myelogenous leukemia											
0	0	0	0	0	0	0	1	0	0	0	1

## Total Trials by Phase and Status

	se 4 nical		se 3 nical		se 2 nical		se 1 nical		ase ecified	To	tal
On- going	All	On- going	All	On- going	All	On- going	All	On- going	All	On- going	All
Total by Phase and Status											
0	0	0	0	0	0	0	2	0	0	0	2

## **Phase Definitions**

## Phase 3 Clinical

Includes Phase 3, Phase 3b, Phase 3a, Phase 2/3 (where enrolment count is 300 or over)

#### Phase 2 Clinical

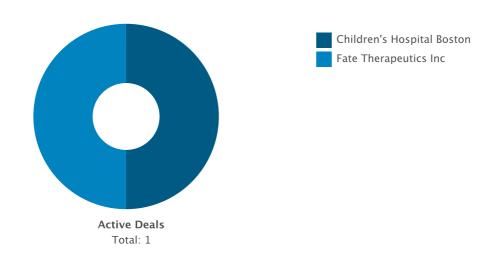
Includes Phase 2, Phase 2a, Phase 2b, Phase 1/2 (where enrolment count is 100 or over), Phase 2/3 (where enrolment count is under 300 or not specified)



## **ProHema DEALS AND PATENTS**

DEALS

Deals by Parent Company Chart



## **Deals by Parent Company Table**

Company Name	Principal Active Inactive		Partner Active Inactive		Total
Children's Hospital Boston	1	0	0	0	1
Fate Therapeutics Inc	0	0	1	0	1



## **Deals by Type Chart**



# **Deals by Type Table**

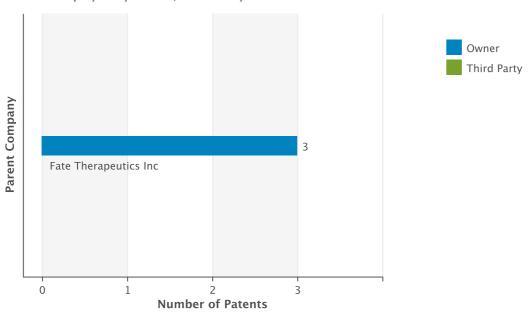
Deal Type	Active	Inactive	Total
Drug - Development/Commercialization License	1	0	1

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## **PATENTS**

## **Patents by Parent Company Chart**

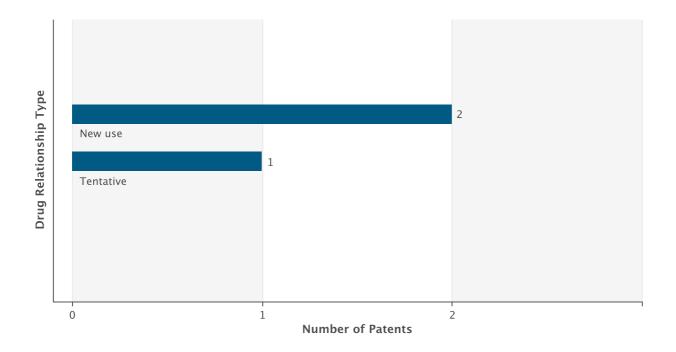
Chart displayed by Owner/Third Party



## **Patents by Parent Company Table**

Company Name	As Owner	As Third Party	Total
Fate Therapeutics Inc	3	0	3

## **Patents by Drug Relationship Type Chart**





# **Patents by Drug Relationship Type Table**

Drug Relationship	Total
New use	2
Tentative	1



# pharmacologically modified hematopoietic stem cell therapy (rare geneetic disorders), Fate Therapeutics

pharmacologically modified hematopoietic stem cell therapy (rare geneetic disorders), Fate Therapeutics SNAPSHOT

Drug Name	pharmacologically modified hematopoietic stem cell therapy (rare geneetic disorders), Fate Therapeutics
Key Synonyms	
Originator Company	Fate Therapeutics Inc
Active Companies	Fate Therapeutics Inc
Inactive Companies	
Highest Status	Discovery
Active Indications	Genetic disorder
Target-based Actions	
Other Actions	Stem cell modulator
Technologies	Haematopoietic stem cell therapy
Last Change Date	13-Aug-2013

pharmacologically modified hematopoietic stem cell therapy (rare geneetic disorders), Fate Therapeutics DEVELOPMENT PROFILE

#### **SUMMARY**

Fate Therapeutics is investigating pharmacologically modified hematopoietic stem cell therapy, for the potential treatment of rare genetic disorders. In August 2013, the therapy was in preclinical development.

pharmacologically modified hematopoietic stem cell therapy (rare geneetic disorders), Fate Therapeutics DEVELOPMENT STATUS

#### **CURRENT DEVELOPMENT STATUS**

Company	Indication	Country	<b>Development Status</b>	Date
Fate Therapeutics Inc	Genetic disorder US Discovery		Discovery	12-Aug-2013

pharmacologically modified hematopoietic stem cell therapy (rare geneetic disorders), Fate Therapeutics DRUG NAMES

Names	Туре
pharmacologically modified hematopoietic stem cell therapy (rare geneetic disorders), Fate Therapeutics	

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## stem cell modulator program (hearing restoration), Fate Therapeutics

## stem cell modulator program (hearing restoration), Fate Therapeutics SNAPSHOT

Drug Name	stem cell modulator program (hearing restoration), Fate Therapeutics
Key Synonyms	
Originator Company	Fate Therapeutics Inc
Active Companies	Fate Therapeutics Inc
Inactive Companies	
Highest Status	Discovery
Active Indications	Hearing loss
Target-based Actions	
Other Actions	Stem cell modulator
Technologies	Small molecule therapeutic
Last Change Date	17-Apr-2012

## stem cell modulator program (hearing restoration), Fate Therapeutics DEVELOPMENT PROFILE

## **SUMMARY**

Fate Therapeutics was investigating small molecule stem cell modulators which act via regeneration of cochlear hair cells, for the potential treatment of hearing loss. In June 2011, the drug was listed as being in research, and hits—were to be identified later. In March 2012, the program was listed as being in discovery and at that time, the company was seeking to outlicense the program; however, by August 2013, the program was no longer listed as being under development.

## stem cell modulator program (hearing restoration), Fate Therapeutics DEVELOPMENT STATUS

#### **CURRENT DEVELOPMENT STATUS**

Company	Indication	Country	<b>Development Status</b>	Date
Fate Therapeutics Inc	Hearing loss	aring loss US Discovery		23-Jun-2011

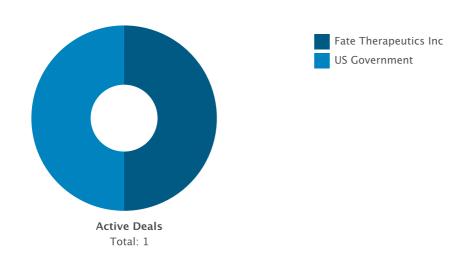
## stem cell modulator program (hearing restoration), Fate Therapeutics DRUG NAMES

Names	Type
undisclosed compound (hearing restoration), Fate Therapeutics	
stem cell modulator program (hearing restoration), Fate Therapeutics	



DEALS

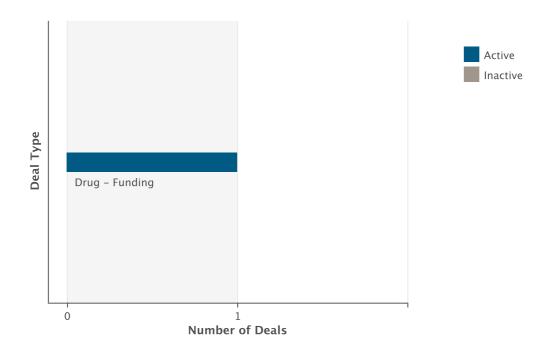
Deals by Parent Company Chart



## **Deals by Parent Company Table**

Company Name	Principal Active Inactive		Partner Active Inactive		Total
US Government	0	0	1	0	1
Fate Therapeutics Inc	1	0	0	0	1

## **Deals by Type Chart**



# **Deals by Type Table**

Deal Type	Active	Inactive	Total
Drug - Funding	1	0	1

## FT-301

#### FT-301 SNAPSHOT

Drug Name	FT-301
Key Synonyms	
Originator Company	Ottawa Hospital Research Institute
Active Companies	Fate Therapeutics Inc
Inactive Companies	Ottawa Hospital Research Institute;Verio Therapeutics Inc
Highest Status	Discovery
Active Indications	Muscle wasting disease;Muscular dystrophy
Target-based Actions	Wnt 7A ligand
Other Actions	Stem cell stimulator
Technologies	Biological therapeutic;Parenteral formulation unspecified;Protein recombinant
Last Change Date	14-Nov-2013

#### FT-301 DEVELOPMENT PROFILE

## **SUMMARY**

Fate Therapeutics, following its acquisition of Verio Therapeutics, which developed technology originated at Ottawa Hospital Research Institute, is investigating FT-301 (presumed to be VT-301), a human recombinant protein therapeutic program based on Wnt7A, a protein that stimulates satellite muscle stem cells, for the potential treatment of muscular dystrophy and muscle-wasting diseases such as sarcopenia and cachexia,,. In February 2010, the drug was listed as being in preclinical development; in June 2011, lead identification studies were underway; in April 2013, preclinical data were reported. In June 2011, the company expected to initiate in vivo proof-of-concept studies with the lead molecule. By October 2013, two Wnt7A protein analogs have been identified for advancement into IND-enabling activities out of which one was expected to advance into phase I studies planned for 2015.

#### FT-301 DEVELOPMENT STATUS

## **CURRENT DEVELOPMENT STATUS**

Company	Indication	Country	<b>Development Status</b>	Date
Fate Therapeutics Inc	Muscle wasting disease	Canada	Discovery	08-Apr-2010
Fate Therapeutics Inc	Muscular dystrophy	Canada	Discovery	30-Nov-2012
Ottawa Hospital Research Institute	Muscle wasting disease	Canada	Discontinued	04-Jun-2009
Verio Therapeutics Inc	Muscle wasting disease	Canada	Discontinued	08-Apr-2010



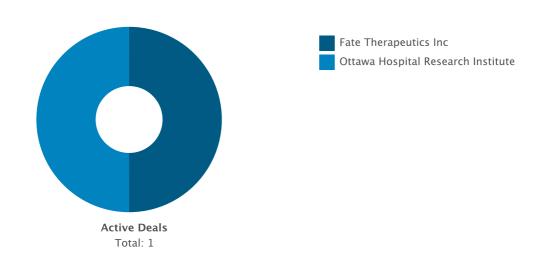
#### **FT-301 DRUG NAMES**

Names	Туре
VT-301, Ottawa Hospital	Research Code
FT-301	Research Code

## **FT-301 DEALS AND PATENTS**

DEALS

Deals by Parent Company Chart



## **Deals by Parent Company Table**

Company Name		<b>cipal</b> Inactive		tner Inactive	Total
Ottawa Hospital Research Institute	1	0	0	0	1
Fate Therapeutics Inc	0	0	1	0	1

## **Deals by Type Chart**



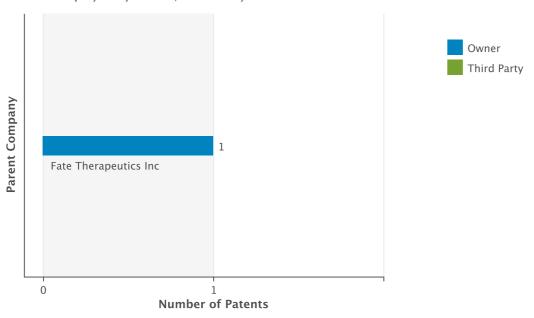
# **Deals by Type Table**

Deal Type	Active	Inactive	Total
Drug - Development/Commercialization License	1	0	1

## **PATENTS**

## **Patents by Parent Company Chart**

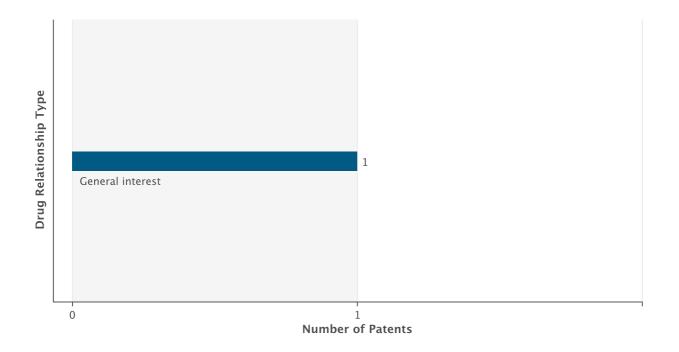
Chart displayed by Owner/Third Party



## **Patents by Parent Company Table**

Company Name	As Owner	As Third Party	Total
Fate Therapeutics Inc	1	0	1

## **Patents by Drug Relationship Type Chart**





# **Patents by Drug Relationship Type Table**

Drug Relationship	Total
General interest	1



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