

## Calithera Biosciences

### 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 I, 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i.e. where the development status for the drug(s) is one of the following: No Development Reported, Discontinued, or Withdrawn.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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# Calithera Biosciences

## COMPANY OVERVIEW

Company Name	Calithera Biosciences
Parent Company Name	Calithera Biosciences
Website	<a href="http://www.calithera.com/">http://www.calithera.com/</a>
Country	US
Number of Drugs in Active Development	3
Number of Inactive Drugs	2
Number of Patents as Owner	8
Number of Patents as Third Party	0
Number of Deals	4
Key Indications	Cancer,Advanced solid tumor,Hematological neoplasm,Autoimmune disease,Cardiovascular disease,Gastrointestinal disease,Infectious disease,Lung disease,Wound healing,Autoimmune hemolytic anemia,Crohns disease,Erectile dysfunction,Hodgkins disease,Leukemia,Multiple myeloma,Multiple sclerosis,Sexual dysfunction,Thalassemia
Key Target-based Actions	Mcl-1 differentiation protein inhibitor,Arginase-I inhibitor,Arginase-II inhibitor,Mitochondrial kidney glutaminase inhibitor
Key Technologies	Small molecule therapeutic,Oral formulation,Drug combination

## COMPANY PROFILE

### SUMMARY

Calithera Biosciences, founded in 2010 with technology licensed from the University of California, San Francisco, is focused on the development of cancer therapies based on the activation of caspase and other enzymes.

### FINANCIAL

In October 2014, the company priced its initial public offering of 8 million shares of common stock at \$10 per share. The underwriters were granted a 30-day option to purchase up to 1.2 million additional shares of common stock. At that time, the common stock of the company began trading on the NASDAQ global select market, under the ticker symbol "CALA".

In October 2013, Calithera raised \$35 million in series D financing.

In July 2010, Calithera raised \$40 million in a series A financing.

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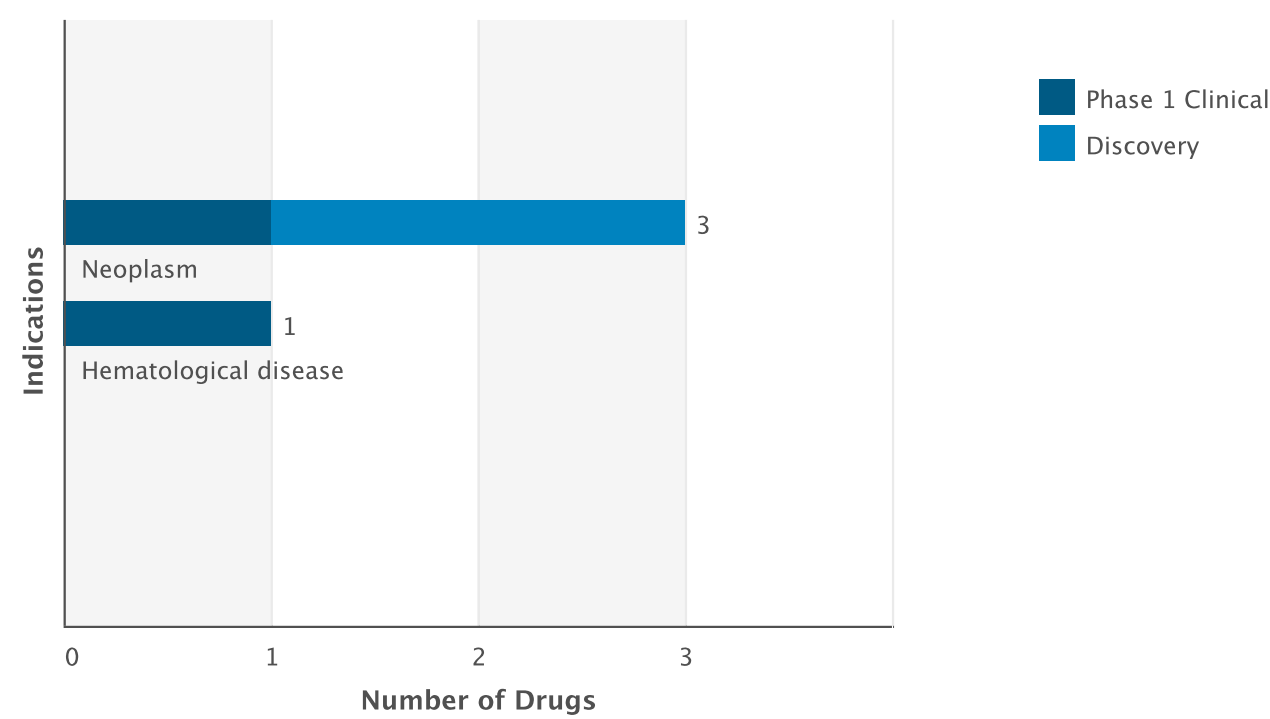


# PRODUCT PORTFOLIO SUMMARY

## DRUGS

### Drugs by Indication

Active Drugs by Indication Chart



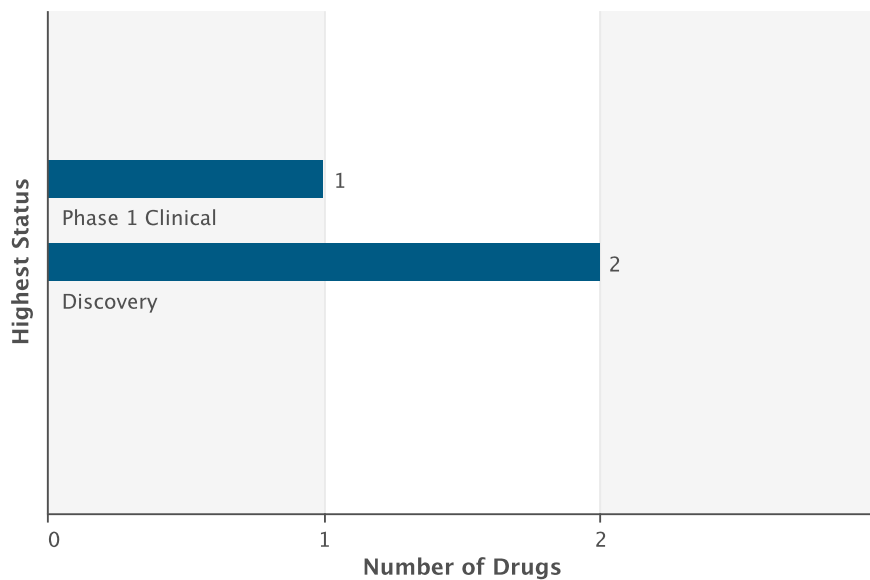
Drugs by Indication Table

Indication	Active	Inactive	Total
Neoplasm	3	2	5
Hematological disease	1	0	1

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## Drugs by Highest Status

Active Drugs by Highest Status Chart



Drugs by Highest Status Table

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

## DEALS

Deal Type	Principal		Partner		Total
	Active	Inactive	Active	Inactive	
Drug - Development/Commercialization License	0	0	3	0	3
Drug - Early Research/Development	0	0	1	0	1

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## CLINICAL TRIALS

### Trials by Condition Studied

Condition Studied	Ongoing	All
Neoplasm	3	3
Immune disorder	2	2
Hematological disease	2	2
Gynecology and obstetrics	1	1
Endocrine disease	1	1
Genitourinary disease	1	1
Respiratory disease	1	1
Gastrointestinal disease	1	1

### Trials by Phase

Phase	Ongoing	All
Phase 1	3	3

### 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
Immune disorder	7	0	7
Neoplasm	3	0	3
Genetic disorder	2	0	2
Metabolic disorder	2	0	2
Neurological disease	6	0	6
Respiratory disease	6	0	6
Infectious disease	4	0	4
Injury	3	0	3

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Cardiovascular disease	4	0	4
Endocrine disease	2	0	2
Gastrointestinal disease	6	0	6
Genitourinary disease	5	0	5
Hematological disease	5	0	5
Andrology	2	0	2
Dermatological disease	1	0	1
Gynecology and obstetrics	1	0	1
Inflammatory disease	4	0	4

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

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## PRODUCT PORTFOLIO DRUG PIPELINE DETAIL

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

### CB-839

#### CB-839 SNAPSHOT

<b>Drug Name</b>	CB-839
<b>Key Synonyms</b>	
<b>Originator Company</b>	Calithera Biosciences
<b>Active Companies</b>	Calithera Biosciences;Sanford-Burnham Medical Research Institute
<b>Inactive Companies</b>	
<b>Highest Status</b>	Phase 1 Clinical
<b>Active Indications</b>	Advanced solid tumor;Hematological neoplasm
<b>Target-based Actions</b>	
<b>Other Actions</b>	Anticancer;Apoptosis stimulator;Cell cycle inhibitor;Glutaminase inhibitor;Synergist
<b>Technologies</b>	Oral formulation;Small molecule therapeutic
<b>Last Change Date</b>	11-Aug-2015

#### CB-839 DEVELOPMENT PROFILE

#### SUMMARY

Calithera, in collaboration with Sanford-Burnham is developing CB-839, a lead from a program of glutaminase inhibitors for the potential oral treatment of cancer,. In February 2014, three phase I trials were initiated in patients with advanced solid tumors and hematological cancers including advanced multiple myeloma and non-Hodgkin's lymphoma. In September 2014, two phase Ib trials were planned to begin in late 2014 . In November 2014, the company was planning to initiate phase II trials in late 2015 or in early 2016.

#### CB-839 DEVELOPMENT STATUS

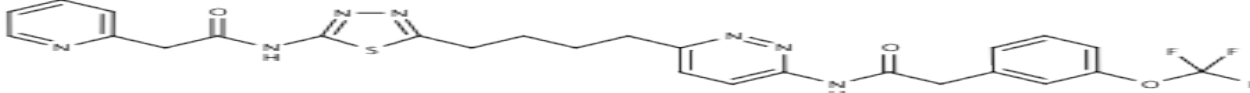
##### CURRENT DEVELOPMENT STATUS

Company	Indication	Country	Development Status	Date
Calithera Biosciences	Advanced solid tumor	US	Phase 1 Clinical	24-Feb-2014
Calithera Biosciences	Hematological neoplasm	US	Phase 1 Clinical	24-Feb-2014
Sanford-Burnham Medical Research Institute	Advanced solid tumor	US	Phase 1 Clinical	24-Feb-2014
Sanford-Burnham Medical Research Institute	Hematological neoplasm	US	Phase 1 Clinical	24-Feb-2014

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## CB-839 CHEMICAL STRUCTURES

CAS Registry Number:	Confidence Level:
	3
	
Name	Type
CB-839	Research Code

## CB-839 DRUG NAMES

Names	Type
CB-839	Research Code
glutaminase inhibitors (oral, cancer), Calithera Bioscience	

## CB-839 CLINICAL TRIALS

### Trials by Phase and Condition Studied

Phase 4 Clinical		Phase 3 Clinical		Phase 2 Clinical		Phase 1 Clinical		Phase Unspecified		Total	
On-going	All	On-going	All	On-going	All	On-going	All	On-going	All	On-going	All
Multiple myeloma											
0	0	0	0	0	0	2	2	0	0	2	2
Mesothelioma											
0	0	0	0	0	0	1	1	0	0	1	1
Hematological neoplasm											
0	0	0	0	0	0	1	1	0	0	1	1
Gastrointestinal stromal tumor											
0	0	0	0	0	0	1	1	0	0	1	1

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Non-small-cell lung cancer											
0	0	0	0	0	0	1	1	0	0	1	1
Acute myelogenous leukemia											
0	0	0	0	0	0	1	1	0	0	1	1
Breast tumor											
0	0	0	0	0	0	1	1	0	0	1	1
Advanced solid tumor											
0	0	0	0	0	0	1	1	0	0	1	1
Non-Hodgkin lymphoma											
0	0	0	0	0	0	1	1	0	0	1	1
Acute lymphoblastic leukemia											
0	0	0	0	0	0	1	1	0	0	1	1
Renal cell carcinoma											
0	0	0	0	0	0	1	1	0	0	1	1

### Total Trials by Phase and Status

Phase 4 Clinical		Phase 3 Clinical		Phase 2 Clinical		Phase 1 Clinical		Phase Unspecified		Total	
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	3	3	0	0	3	3

### 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

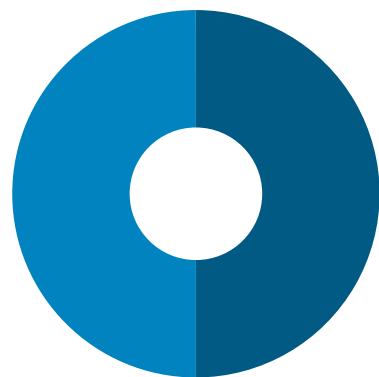
Includes Phase 1, Phase 1a, Phase 1, Phase 1/2 (where enrolment count is under 100 or not specified), Phase 0

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CB-839 DEALS AND PATENTS

DEALS

Deals by Parent Company Chart



Active Deals  
Total: 1

- Calithera Biosciences
- Sanford-Burnham Medical Research Institute

Deals by Parent Company Table

Company Name	Principal		Partner		Total
	Active	Inactive	Active	Inactive	
Sanford-Burnham Medical Research Institute	1	0	0	0	1
Calithera Biosciences	0	0	1	0	1

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Deals by Type Chart



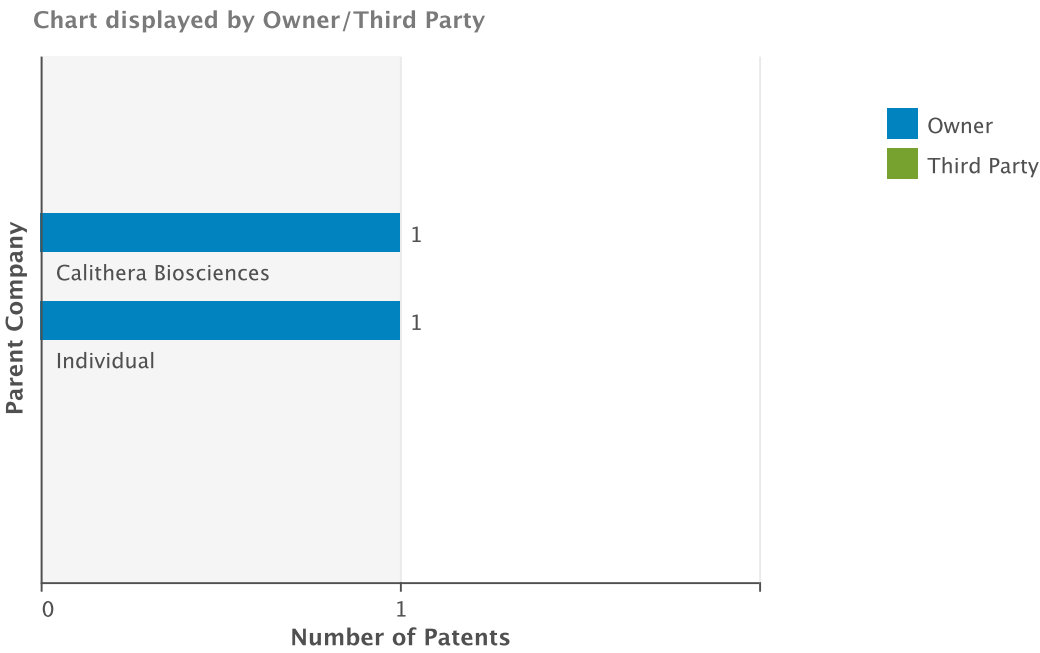
Deals by Type Table

Deal Type	Active	Inactive	Total
Drug - Early Research/Development	1	0	1

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PATENTS

Patents by Parent Company Chart

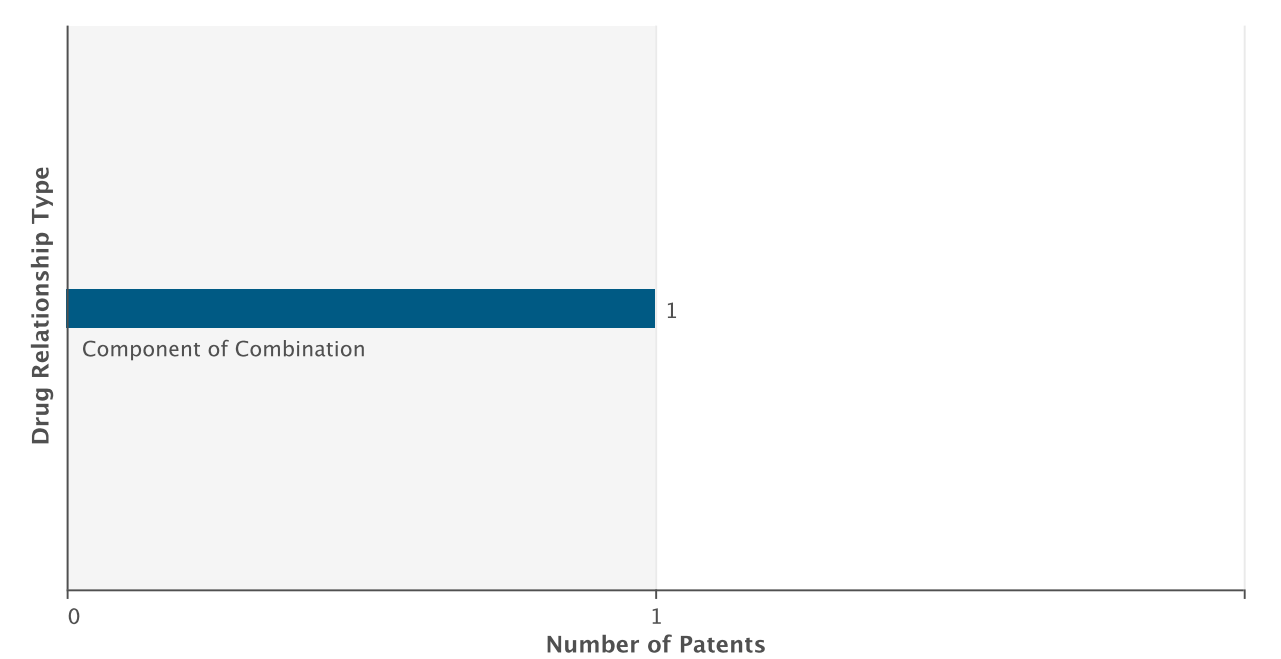


Patents by Parent Company Table

Company Name	As Owner	As Third Party	Total
Calithera Biosciences	1	0	1
Individual	1	0	1

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Patents by Drug Relationship Type Chart



Patents by Drug Relationship Type Table

Drug Relationship	Total
Component of Combination	1

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## hexokinase 2 inhibitors (cancer), Calithera

### hexokinase 2 inhibitors (cancer), Calithera SNAPSHOT

Drug Name	hexokinase 2 inhibitors (cancer), Calithera
Key Synonyms	
Originator Company	vTv Therapeutics LLC
Active Companies	Calithera Biosciences
Inactive Companies	vTv Therapeutics LLC
Highest Status	Discovery
Active Indications	Cancer
Target-based Actions	Hexokinase 2 inhibitor
Other Actions	Anticancer;Cell cycle inhibitor
Technologies	Small molecule therapeutic
Last Change Date	06-Mar-2015

### hexokinase 2 inhibitors (cancer), Calithera DEVELOPMENT PROFILE

#### SUMMARY

Calithera Biosciences, under license from TransTech Pharma, is investigating hexokinase 2 inhibitors, for the potential treatment of cancer,. In February 2012, the program was listed as being in preclinical testing ; in November 2013, preclinical studies were ongoing. In February 2015, this was still the case.

### hexokinase 2 inhibitors (cancer), Calithera DEVELOPMENT STATUS

#### CURRENT DEVELOPMENT STATUS

Company	Indication	Country	Development Status	Date
Calithera Biosciences	Cancer	US	Discovery	05-Mar-2015
vTv Therapeutics LLC	Cancer	US	Discontinued	05-Mar-2015

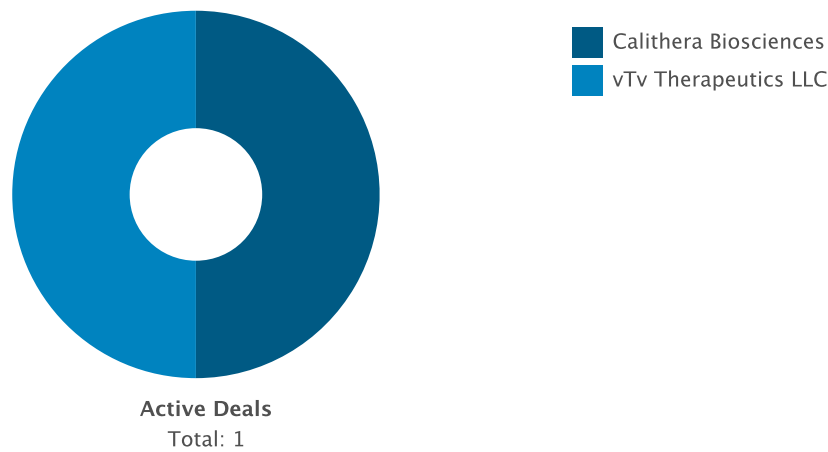
### hexokinase 2 inhibitors (cancer), Calithera DRUG NAMES

Names	Type
hexokinase 2 inhibitors (cancer), Calithera	
hexokinase 2 inhibitors (cancer), TransTech Pharma	

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DEALS

Deals by Parent Company Chart

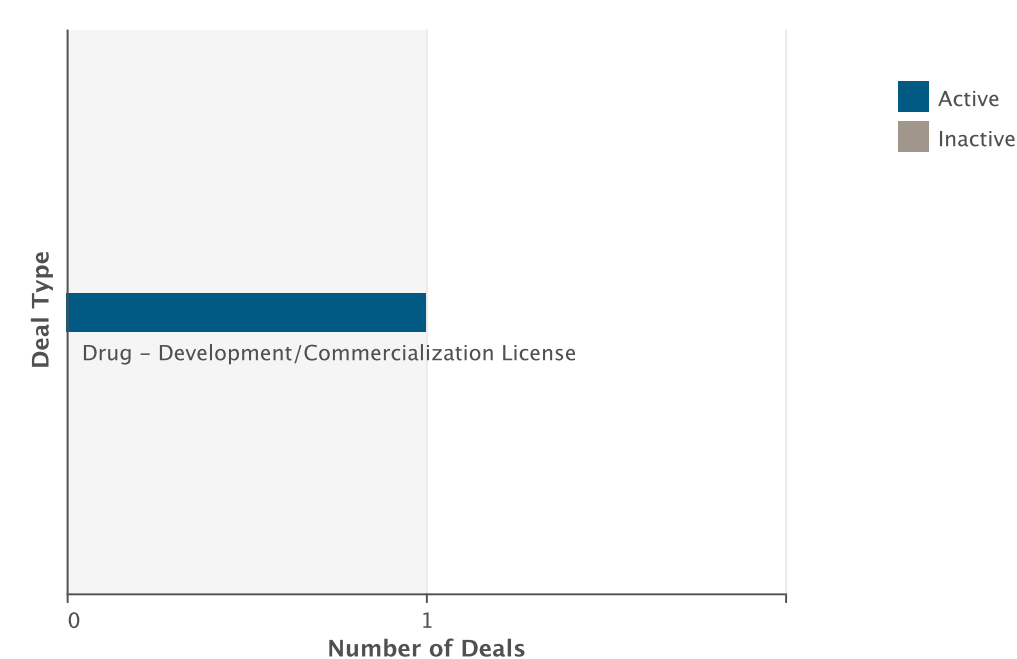


Deals by Parent Company Table

Company Name	Principal		Partner		Total
	Active	Inactive	Active	Inactive	
Calithera Biosciences	0	0	1	0	1
vTv Therapeutics LLC	1	0	0	0	1

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Deals by Type Chart



Deals by Type Table

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

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## CB-1158

### CB-1158 SNAPSHOT

Drug Name	CB-1158
Key Synonyms	
Originator Company	Mars Symbioscience
Active Companies	Calithera Biosciences
Inactive Companies	Mars Symbioscience
Highest Status	Discovery
Active Indications	Cancer
Target-based Actions	Arginase inhibitor
Other Actions	Anticancer
Technologies	Oral formulation;Small molecule therapeutic
Last Change Date	24-Jun-2015

### CB-1158 DEVELOPMENT PROFILE

#### SUMMARY

Calithera Biosciences, under license from Mars Symbioscience, is investigating CB-1158, the lead from arginase inhibitor program, for the potential oral treatment of cancer. In September 2014, Calithera planned to file an IND application in the US by the end of 2015 to initiate a phase I trial in 2016 ; in June 2015, the company planned to file an IND near the end of the first quarter of 2016.

### CB-1158 DEVELOPMENT STATUS

#### CURRENT DEVELOPMENT STATUS

Company	Indication	Country	Development Status	Date
Calithera Biosciences	Cancer	US	Discovery	30-Sep-2014
Mars Symbioscience	Cancer	US	Discontinued	09-Dec-2014

### CB-1158 DRUG NAMES

Names	Type
CB-1158	Research Code
arginase inhibitors (oral, cancer), Calithera Biosciences	

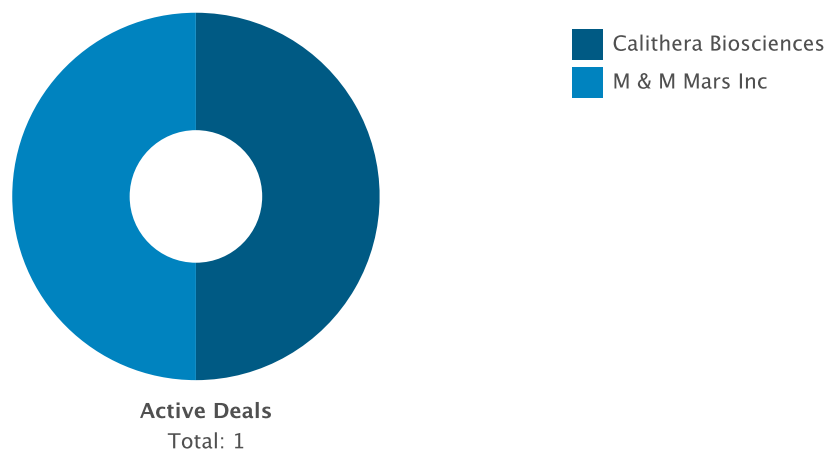
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CB-1158 DEALS AND PATENTS

DEALS

Deals by Parent Company Chart

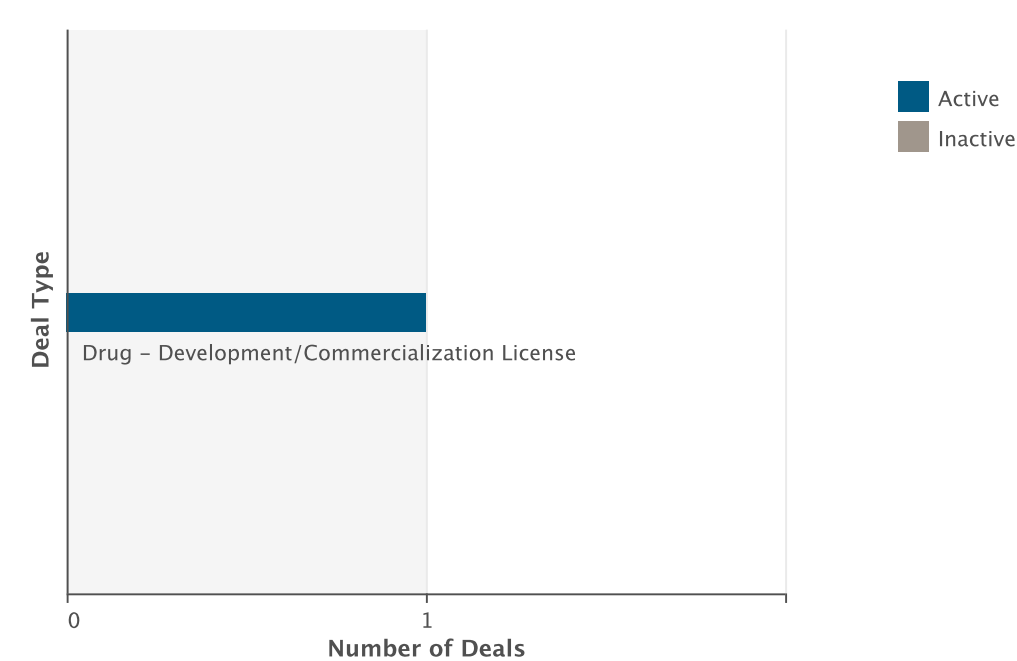


Deals by Parent Company Table

Company Name	Principal		Partner		Total
	Active	Inactive	Active	Inactive	
M & M Mars Inc	1	0	0	0	1
Calithera Biosciences	0	0	1	0	1

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Deals by Type Chart



Deals by Type Table

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

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