

## **Dicerna Pharmaceuticals Inc**

### **COMPANY AND PIPELINE OVERVIEW REPORT**

Coverage of the company and a summary of the drug pipeline portfolio.

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### ABOUT COMPANY AND PIPELINE OVERVIEW 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i.e. where the development status for the drug(s) is one of the following: No Development Reported, Discontinued, or Withdrawn.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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### **Dicerna Pharmaceuticals Inc**

#### **COMPANY OVERVIEW**

Company Name	Dicerna Pharmaceuticals Inc
Parent Company Name	Dicerna Pharmaceuticals Inc
Website	http://www.dicerna.com/
Country	US
Number of Drugs in Active Development	14
Number of Inactive Drugs	2
Number of Patents as Owner	15
Number of Patents as Third Party	1
Number of Deals	4
Key Indications	Cancer,Inflammatory disease,Prostate tumor,Hepatocellular carcinoma,Viral infection,Cardiovascular disease,Colorectal tumor,Hematological disease,Hepatitis C virus infection,Immune disorder,Liver disease,Lung tumor,Metabolic disorder
Key Target-based Actions	Androgen receptor modulator, Epidermal growth factor receptor modulator, TNF gene inhibitor, Beta-catenin modulator, E6 gene inhibitor, E7 gene inhibitor, Hypoxia inducible factor-1 alpha modulator, Hypoxia inducible factor-2 alpha inhibitor, K-Ras GTPase inhibitor, MYC gene inhibitor, Myc proto-oncogene protein inhibitor
Key Technologies	Small molecule therapeutic,Oligonucleotide,Biological therapeutic,Parenteral formulation unspecified,PEGylated formulation,Liposome formulation,Nanoparticle formulation,Gene expression regulation,Oligonucleotide conjugated,Peptide,Polynucleotide sequence,RNA

#### **COMPANY PROFILE**

#### **SUMMARY**

Dicerna Pharmaceuticals is a private, venture-backed company that develops RNAi-based therapies based on its dicer substrate technology platform.

#### **LICENSING AGREEMENTS**

In July 2009, Dicerna and Archemix entered into a cross-license agreement for their respective platforms, combining Dicerna's Dicer Substrate RNAi (DsiRNA) gene-silencing technology, and Archemix's intracellular delivery-enabling apatmer technology, with the aim of generating aptamer-DsiRNA therapeutics. The two companies would codevelop the technologies, and any emergent candidate drugs would be exclusively developed by Dicerna.

In March 2009, Dicerna Pharmaceuticals secured the exclusive, worldwide right to grant sublicenses to the Dicer Substrate RNAi (DsiRNA) intellectual property estate which it in licensed from the technology's inventor, and Dicerna cofounder, Dr John Rossi of City of Hope and Integrated DNA Technologies.

#### **EARLY R&D**

In March 2010, Dicerna Pharmaceuticals and Ipsen entered an exclusive research collaboration to develop novel conjugates of Dicerna's DsiRNA molecules and Ipsen's peptide targeting vectors for oncology and endocrinology therapy areas. The companies could then collaborate further to advance the programs discovered into development and commercialization. Financial details were undisclosed.

#### **FINANCIAL**

In August 2010, the company closed a \$25 million series B financing round. In October 2010, the company raised an additional \$4 million from a second round of series B financing.

In July 2008, the company raised \$8.4 million in series A financing. By that time, Dicerna had raised \$21.4 million in series A financing.

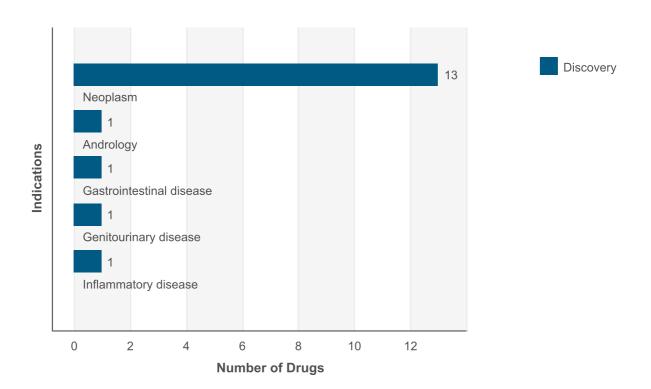


#### PRODUCT PORTFOLIO SUMMARY

### **DRUGS**

### Drugs by Indication

Active Drugs by Indication Chart



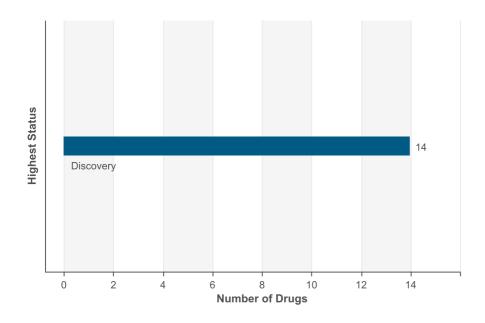
### Drugs by Indication Table

Indication	Active	Inactive	Total
Neoplasm	13	1	14
Gastrointestinal disease	1	1	2
Inflammatory disease	1	1	2
Andrology	1	0	1
Genitourinary disease	1	0	1
Infectious disease	0	1	1



### **Drugs by Highest Status**

Active Drugs by Highest Status Chart



### Drugs by Highest Status Table

Development Status	Number of Drugs
Discovery	14
No Development Reported	2

### **DEALS**

Deal Type	Prin	cipal	Par	tner	Total
	Active	Inactive	Active	Inactive	
Drug - Development/Commercialization License	1	0	0	0	1
Drug - Early Research/Development	0	0	1	0	1
Drug - Funding	1	0	0	0	1
Technology - Delivery/Formulation	0	0	1	0	1

### PATENTS \*

Indication	As Owner	As Third Party	Total
Cardiovascular disease	2	0	2
Endocrine disease	2	0	2



Gastrointestinal disease	6	1	7
Genitourinary disease	2	0	2
Hematological disease	2	0	2
Andrology	2	0	2
Immune disorder	3	0	3
Musculoskeletal disease	2	0	2
Neoplasm	22	1	23
Neoplasm  Metabolic disorder	22	0	23
Metabolic disorder	2	0	2
Metabolic disorder  Respiratory disease	2	0	2

 $<sup>^{\</sup>star}$  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 DRUGS

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

### DsiRNAs (inflammation), Dicerna/Kyowa Hakko Kirin

Drug Name	DsiRNAs (inflammation), Dicerna/Kyowa Hakko Kirin
Key Synonyms	
Originator Company	Dicerna Pharmaceuticals Inc
Active Companies	Dicerna Pharmaceuticals Inc, Kyowa Hakko Kirin Co Ltd
Inactive Companies	
Highest Status	Discovery
Active Indications	Inflammatory disease
Target-based Actions	TNF gene inhibitor
Other Actions	Anti-inflammatory, siRNA agent
Technologies	Oligonucleotide, Biological therapeutic, Small molecule therapeutic, Parenteral formulation unspecified
Last Change Date	30-Jan-2013

#### KHK-1

Drug Name	KHK-1
Drug Name	ra ira- i
Key Synonyms	
Originator Company	Dicerna Pharmaceuticals Inc
Active Companies	Kyowa Hakko Kirin Co Ltd, Dicerna Pharmaceuticals Inc
Inactive Companies	
Highest Status	Discovery
Active Indications	Cancer
Target-based Actions	K-Ras GTPase inhibitor
Other Actions	Oncogene inhibitor, siRNA agent
Technologies	Oligonucleotide, Biological therapeutic, Small molecule therapeutic
Last Change Date	15-Jan-2013

## androgen receptor modulator (castration-resistant prostate cancer), Dicerna Pharmaceuticals

Drug Name	androgen receptor modulator (castration-resistant prostate cancer), Dicerna Pharmaceuticals
Key Synonyms	
Originator Company	Dicerna Pharmaceuticals Inc
Active Companies	Dicerna Pharmaceuticals Inc
Inactive Companies	
Highest Status	Discovery
Active Indications	Prostate tumor
Target-based Actions	Androgen receptor modulator
Other Actions	Anticancer
Technologies	Small molecule therapeutic
Last Change Date	12-Apr-2012

#### DCR-M1711

Drug Name	DCR-M1711
Key Synonyms	
Originator Company	Dicerna Pharmaceuticals Inc
Active Companies	Dicerna Pharmaceuticals Inc
Inactive Companies	
Highest Status	Discovery
Active Indications	Hepatocellular carcinoma
Target-based Actions	Myc proto-oncogene protein inhibitor
Other Actions	siRNA agent, Anticancer
Technologies	Oligonucleotide, Nanoparticle formulation, Biological therapeutic, Small molecule therapeutic, Parenteral formulation unspecified
Last Change Date	30-Jan-2013



### KHK-1

Drug Name	KHK-1
Key Synonyms	
Originator Company	Dicerna Pharmaceuticals Inc
Active Companies	Kyowa Hakko Kirin Co Ltd, Dicerna Pharmaceuticals Inc
Inactive Companies	
Highest Status	Discovery
Active Indications	Cancer
Target-based Actions	
Other Actions	Anticancer, Unspecified drug target
Technologies	Small molecule therapeutic
Last Change Date	06-Dec-2012

### KHK-2

Drug Name	KHK-2
Key Synonyms	
Originator Company	Dicerna Pharmaceuticals Inc
Active Companies	Kyowa Hakko Kirin Co Ltd, Dicerna Pharmaceuticals Inc
Inactive Companies	
Highest Status	Discovery
Active Indications	Cancer
Target-based Actions	
Other Actions	Unspecified drug target, Anticancer, siRNA agent
Technologies	Oligonucleotide, Biological therapeutic, Small molecule therapeutic
Last Change Date	30-Jan-2013

### KHK-3

Drug Name	KHK-3
Key Synonyms	
Originator Company	Dicerna Pharmaceuticals Inc
Active Companies	Kyowa Hakko Kirin Co Ltd, Dicerna Pharmaceuticals Inc
Inactive Companies	
Highest Status	Discovery
Active Indications	Cancer
Target-based Actions	
Other Actions	Unspecified drug target, siRNA agent, Anticancer
Technologies	Oligonucleotide, Biological therapeutic, Small molecule therapeutic
Last Change Date	30-Jan-2013

## **DsiRNAs** targeting MYC gene (cancer), Dicerna

Drug Name	DsiRNAs targeting MYC gene (cancer), Dicerna
Key Synonyms	
Originator Company	Dicerna Pharmaceuticals Inc
Active Companies	Dicerna Pharmaceuticals Inc
Inactive Companies	
Highest Status	Discovery
Active Indications	Cancer
Target-based Actions	MYC gene inhibitor
Other Actions	Oncogene inhibitor, siRNA agent
Technologies	
Last Change Date	06-Dec-2012

# DsiRNAs-targeting beta catenin (cancer), Dicerna

Drug Name	DsiRNAs-targeting beta catenin (cancer), Dicerna
Key Synonyms	
Originator Company	Dicerna Pharmaceuticals Inc
Active Companies	Dicerna Pharmaceuticals Inc
Inactive Companies	
Highest Status	Discovery
Active Indications	Cancer
Target-based Actions	Beta-catenin modulator
Other Actions	siRNA agent, Anticancer
Technologies	Oligonucleotide, Biological therapeutic, Small molecule therapeutic
Last Change Date	30-Jan-2013

### DsiRNAs-targeting HIF1a (cancer), Dicerna

Drug Name	DsiRNAs-targeting HIF1a (cancer), Dicerna
Key Synonyms	
Originator Company	Dicerna Pharmaceuticals Inc
Active Companies	Dicerna Pharmaceuticals Inc
Inactive Companies	
Highest Status	Discovery
Active Indications	Cancer
Target-based Actions	Hypoxia inducible factor-1 alpha modulator
Other Actions	Anticancer, siRNA agent
Technologies	Oligonucleotide, Biological therapeutic, Small molecule therapeutic
Last Change Date	30-Jan-2013

### **DsiRNAs-targeting androgen receptor (cancer), Dicerna**

Drug Name	DsiRNAs-targeting androgen receptor (cancer), Dicerna
Key Synonyms	
Originator Company	Dicerna Pharmaceuticals Inc
Active Companies	Dicerna Pharmaceuticals Inc
Inactive Companies	
Highest Status	Discovery
Active Indications	Cancer
Target-based Actions	Androgen receptor modulator
Other Actions	siRNA agent, Anticancer
Technologies	Oligonucleotide, Biological therapeutic, Small molecule therapeutic
Last Change Date	30-Jan-2013

### DsiRNAs targeting HIF2a (cancer), Dicerna

Drug Name	DsiRNAs targeting HIF2a (cancer), Dicerna
Key Synonyms	
Originator Company	Dicerna Pharmaceuticals Inc
Active Companies	Dicerna Pharmaceuticals Inc
Inactive Companies	
Highest Status	Discovery
Active Indications	Cancer
Target-based Actions	Hypoxia inducible factor-2 alpha inhibitor
Other Actions	siRNA agent, Anticancer
Technologies	Oligonucleotide, Biological therapeutic, Small molecule therapeutic
Last Change Date	30-Jan-2013

## **DsiRNAs targeting HER2 (cancer), Dicerna**

Drug Name	DsiRNAs targeting HER2 (cancer), Dicerna
Key Synonyms	
Originator Company	Dicerna Pharmaceuticals Inc
Active Companies	Dicerna Pharmaceuticals Inc
Inactive Companies	
Highest Status	Discovery
Active Indications	Cancer
Target-based Actions	Epidermal growth factor receptor modulator
Other Actions	siRNA agent, Anticancer
Technologies	Oligonucleotide, Biological therapeutic, Small molecule therapeutic
Last Change Date	30-Jan-2013

### DsiRNAs targeting HER3 (cancer), Dicerna

Drug Name	DsiRNAs targeting HER3 (cancer), Dicerna
Key Synonyms	
Originator Company	Dicerna Pharmaceuticals Inc
Active Companies	Dicerna Pharmaceuticals Inc
Inactive Companies	
Highest Status	Discovery
Active Indications	Cancer
Target-based Actions	Epidermal growth factor receptor modulator
Other Actions	siRNA agent, Anticancer
Technologies	Oligonucleotide, Biological therapeutic, Small molecule therapeutic
Last Change Date	30-Jan-2013

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