



2013

ONCOLOGY INTELLIGENCE

A Comprehensive Report for Decision Making

Oncology
COMPANIES

Cancer
MOLECULES

Cancer
INDICATIONS

Oncology
MANAGEMENT

Profile
CLINICAL

Profile
PRECLINICAL

ONCOLOGY INTELLIGENCE

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Sample Pages from each Sections

WORLDWIDE DISTRIBUTION OF CANCER CLINICAL PIPELINE COMPANIES

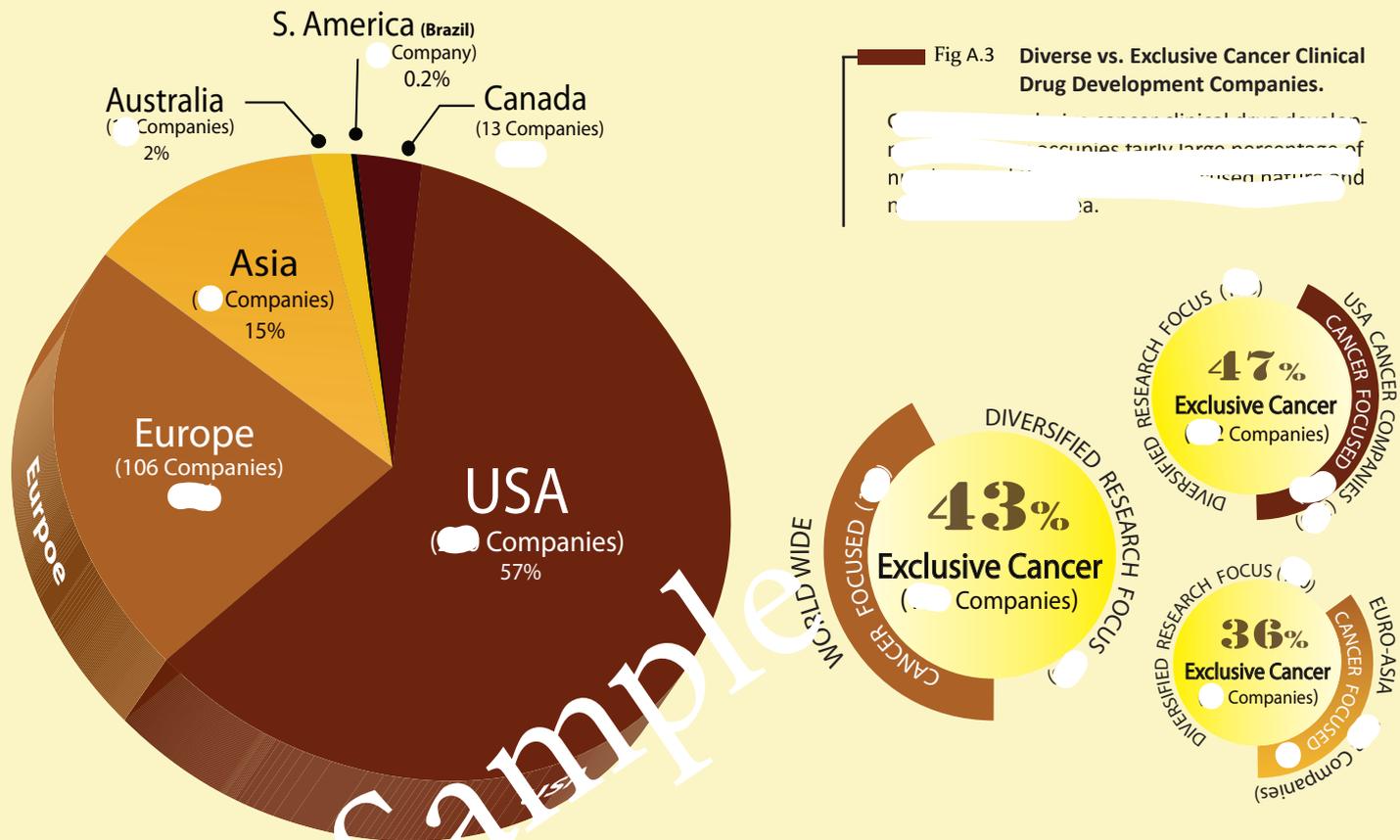
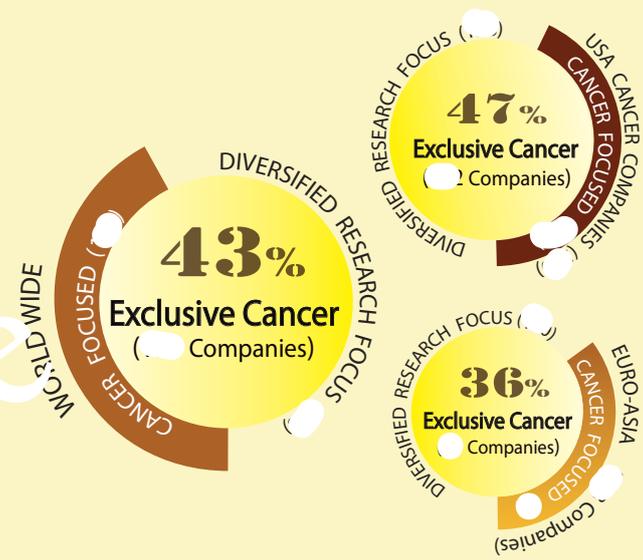


Fig A.1 Global Distribution of Cancer Companies (with active clinical pipeline).

Fig A.3 Diverse vs. Exclusive Cancer Clinical Drug Development Companies.



...diversified research focus... occupies fairly large percentage of... nature and...

...457... later for Cancer... found... and... used early drug discovery companies

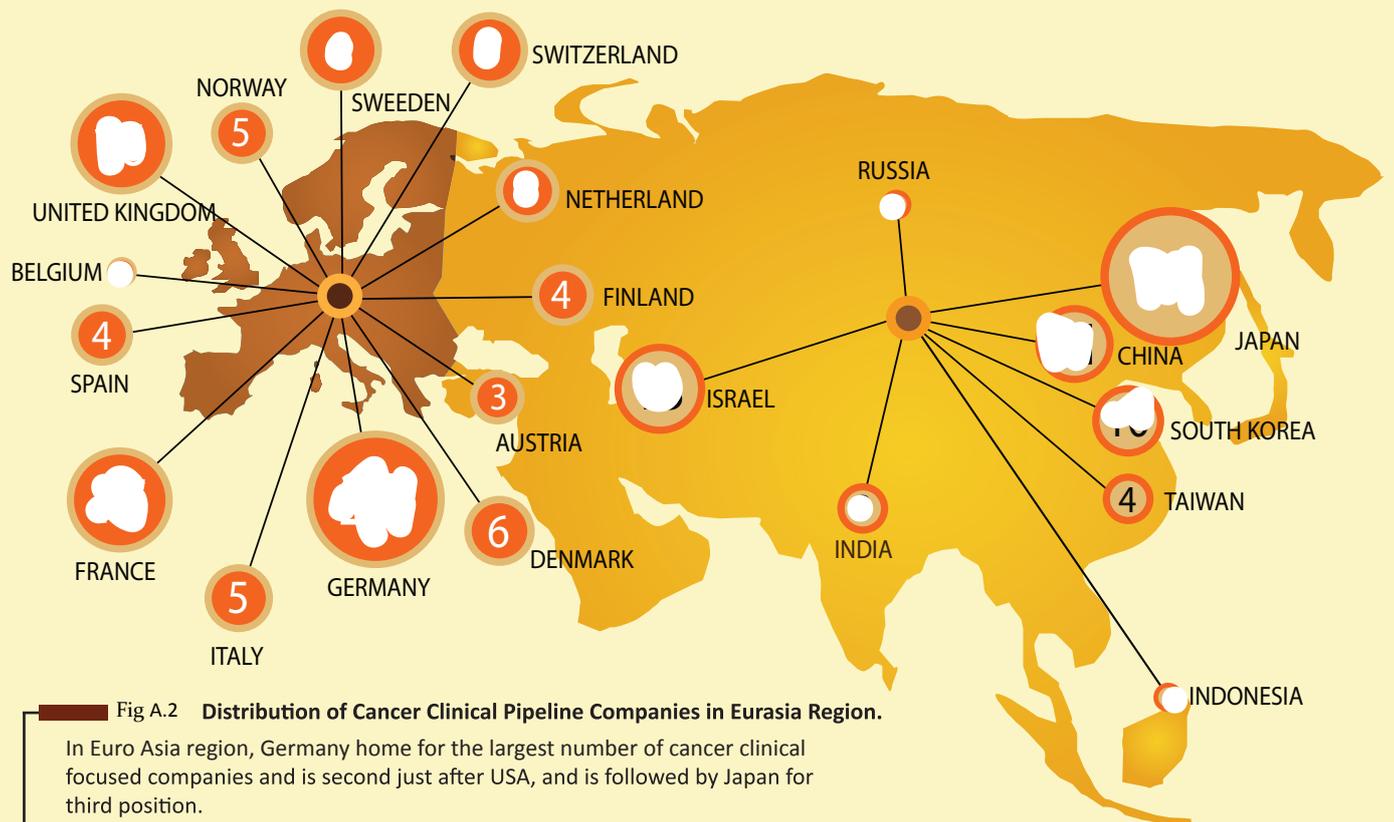
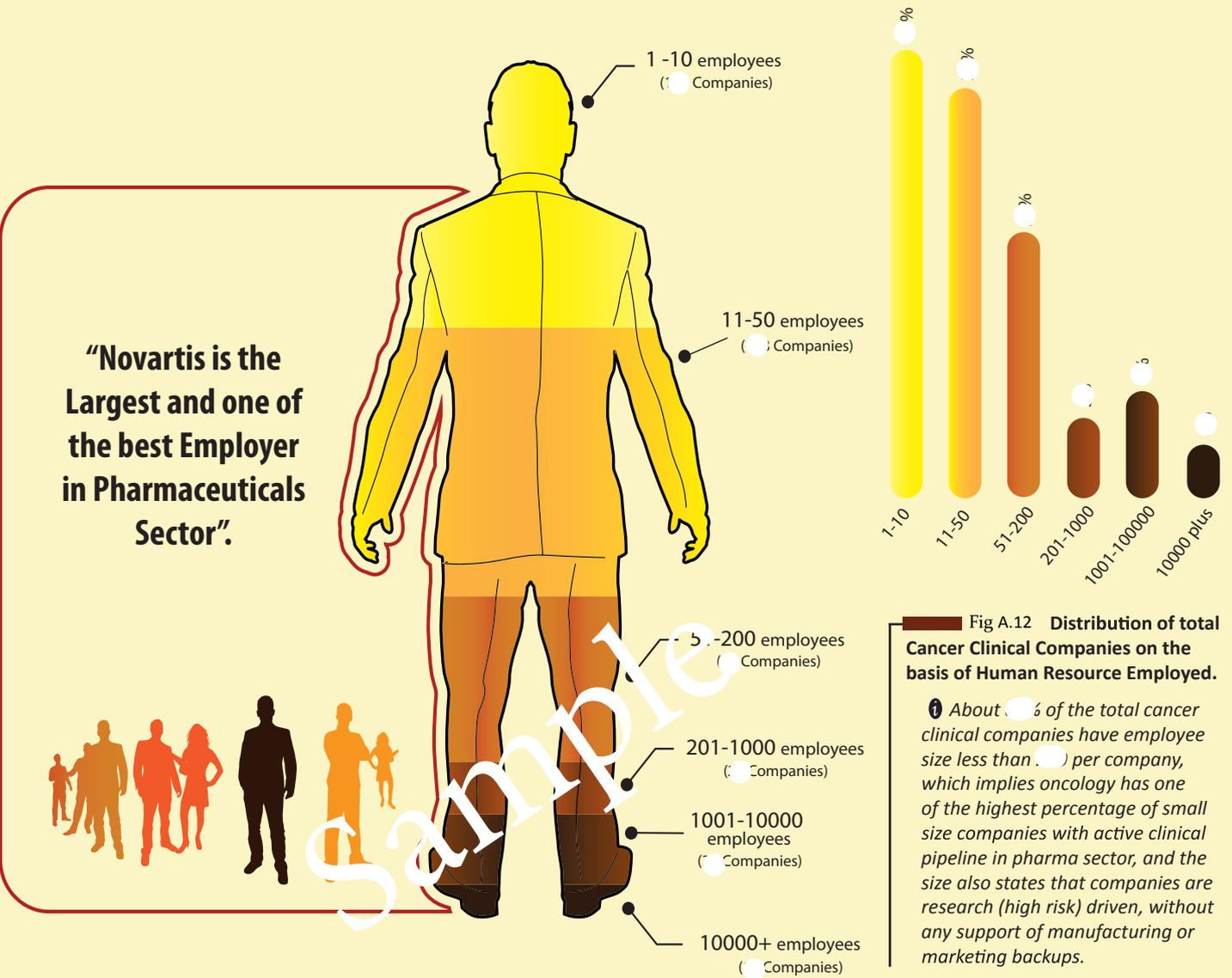


Fig A.2 Distribution of Cancer Clinical Pipeline Companies in Eurasia Region.

In Euro Asia region, Germany home for the largest number of cancer clinical focused companies and is second just after USA, and is followed by Japan for third position.

DIVISION OF CANCER CLINICAL COMPANIES ON THE BASIS OF HUMAN RESOURCE



➤ Top 10 cancer drug development companies (in terms of employee numbers)

Table No. A.1

RANK	COMPANY NAME	TOTAL NUMBER OF EMPLOYEE			TOTAL NUMBER OF R&D STAFFS	
		2011	2010	2009	2011	2010
1.	Novartis	123,686	119,418	99,834	11,852	11,852
2.	Sanofi SA	113,719	101,575	104,867	11,852	11,852
3.	Bayer AG	111,800	111,400	111,400	11,852	11,852
4.	Pfizer	103,700	110,000	110,000	11,852	11,852
5.	GlaxoSmithKline	97,380	110,000	110,000	11,852	11,852
6.	Abbott Laboratories	97,380	110,000	110,000	11,852	11,852
7.	Merck & Co.	97,380	110,000	110,000	11,852	11,852
8.	Hoffmann-La Roche	97,380	110,000	110,000	11,852	11,852
9.	Amgen	97,380	110,000	110,000	11,852	11,852
10.	Novartis	97,380	110,000	110,000	11,852	11,852

SECTION - A
INFOGRAPHICS

CLINICAL ONCOLOGY COMPANIES DISTRIBUTION IN UNITED STATES OF AMERICA

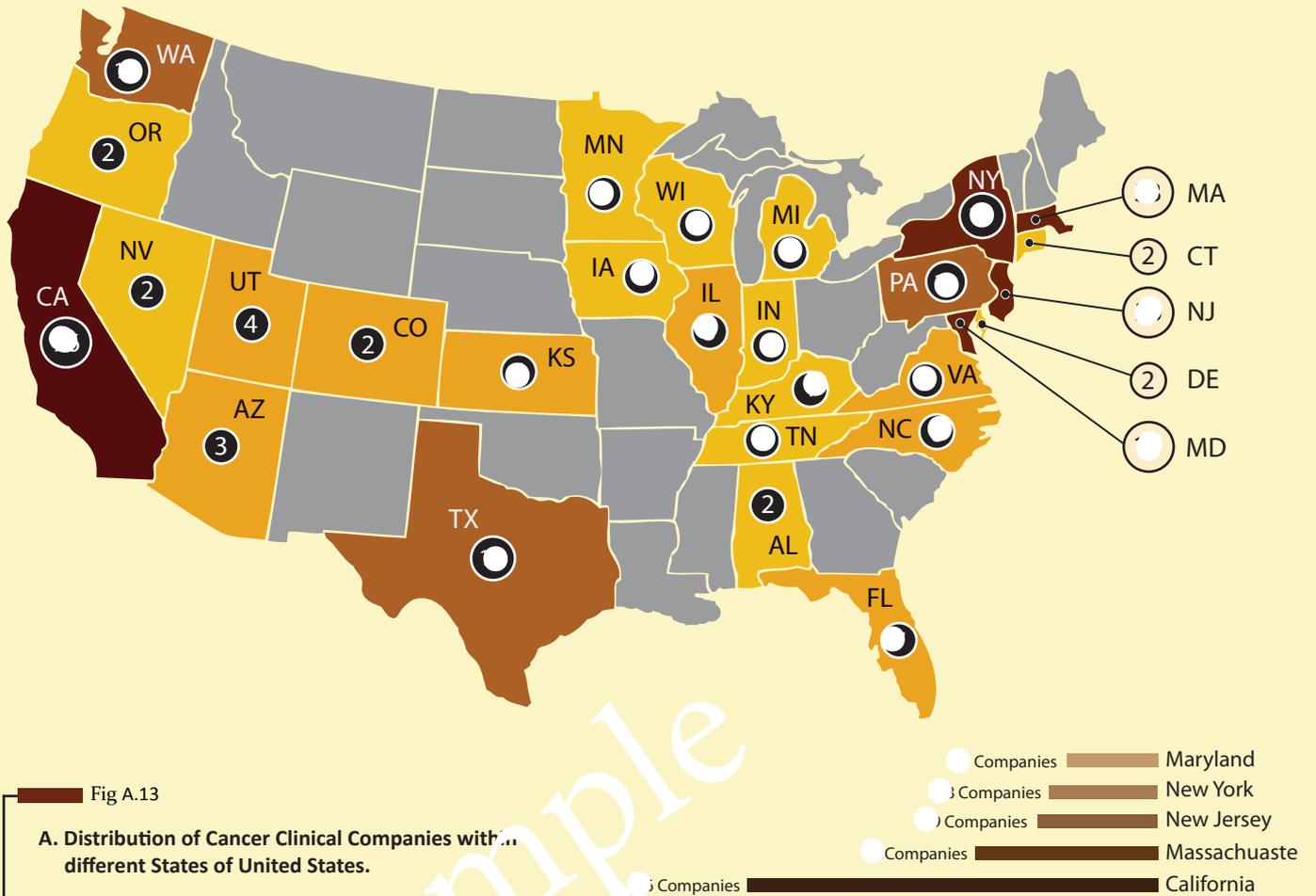
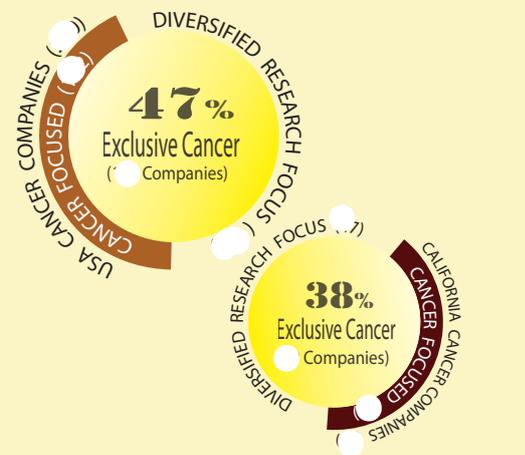


Fig A.13

A. Distribution of Cancer Clinical Companies with in different States of United States.

B. Top Five U.S.A States, with highest number of cancer clinical companies.

C. Exclusive/Diversified Cancer Clinical companies in U.S.A and California State.



SECTION - A

INFOGRAPHICS

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DISTRIBUTION OF ONCOLOGY MOLECULES IN CLINICAL DEVELOPMENT (1037 MOLECULES)

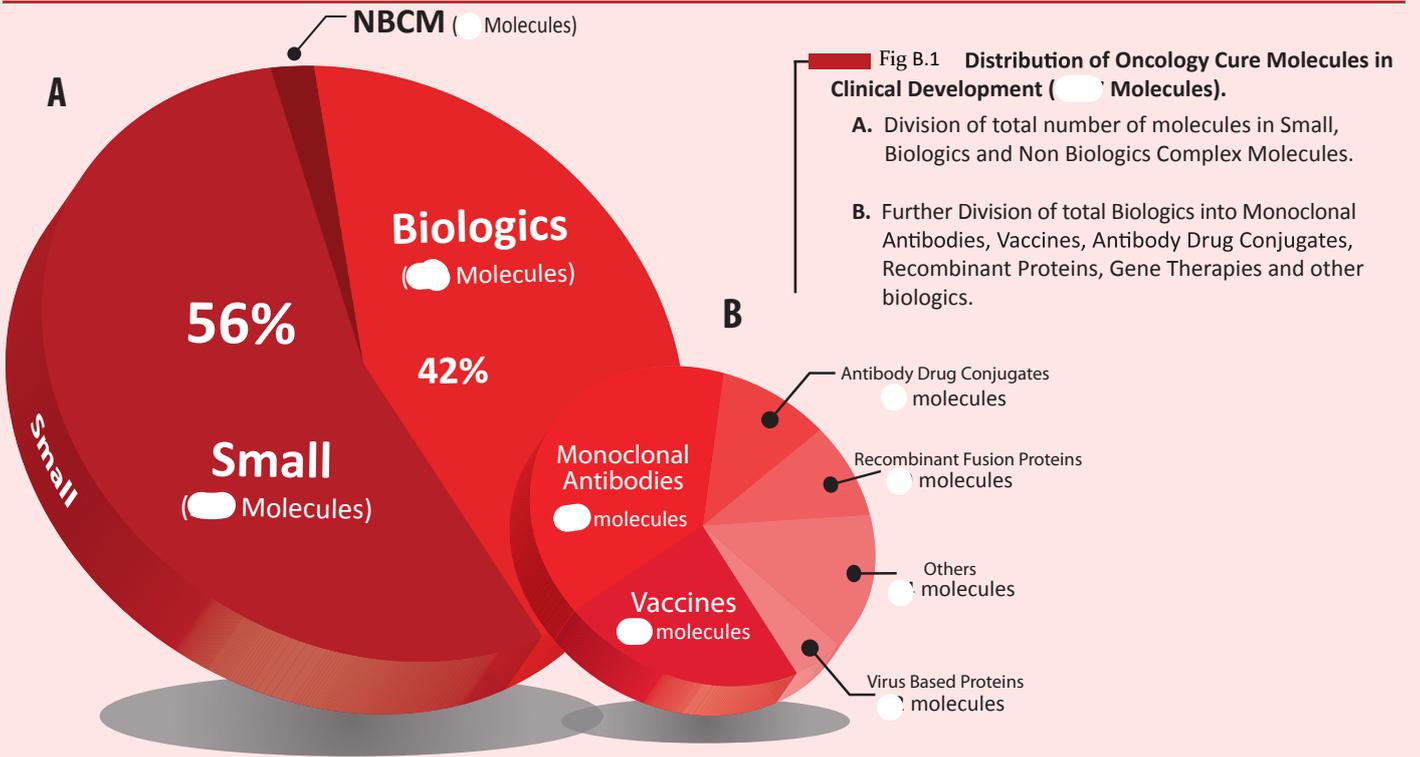


Fig B.2 Total number of cancer molecules in development in USA, Europe, Asia and Rest of the World.

Europe accounts for nearly 13% of world's total cancer clinical companies, developing 26% of total cancer clinical molecules, while USA is a home for nearly 58% of total companies developing 58% of total cancer clinical molecules.

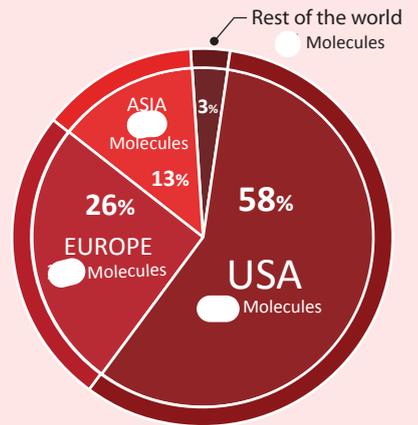


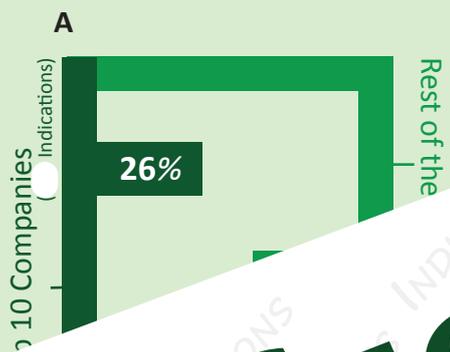
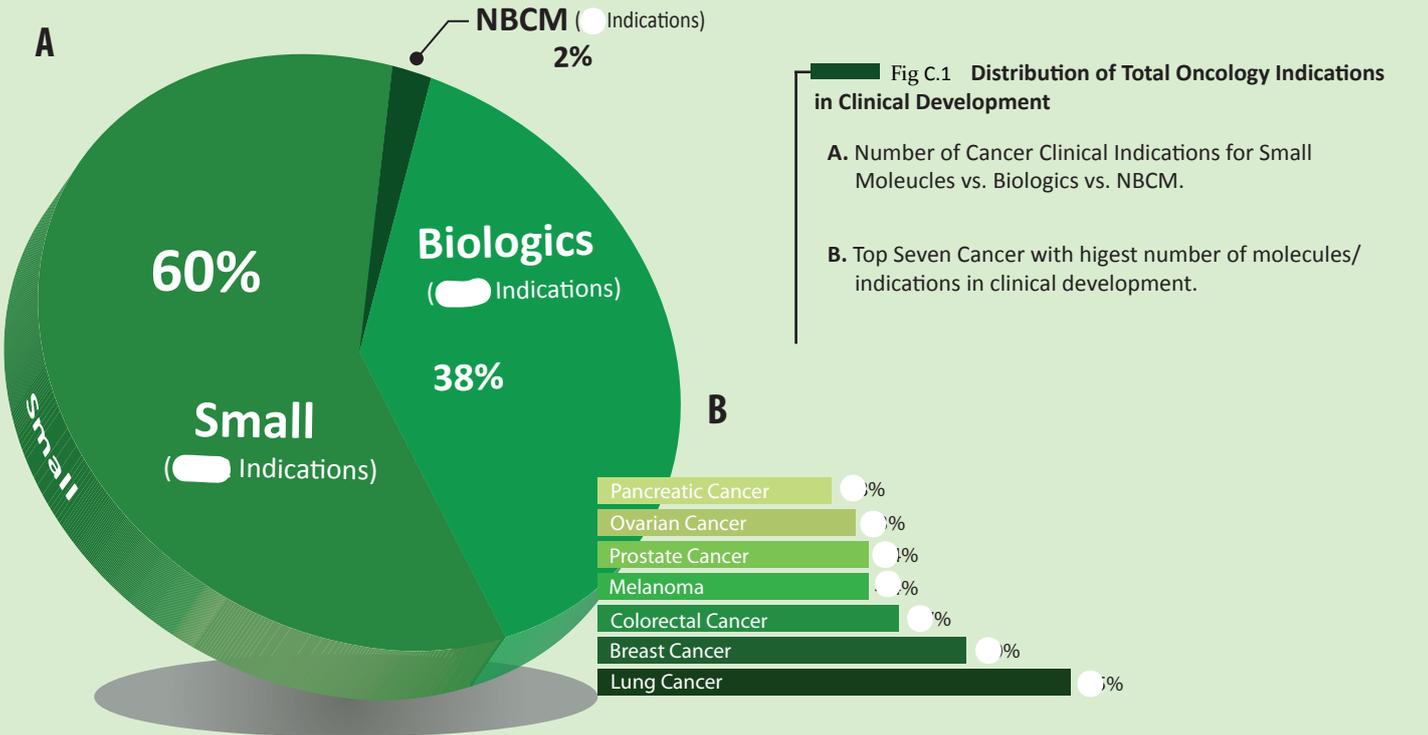
Fig B.3 Molecule Development Strategies - Top 10 companies vs. remaining companies.

Total molecules in development – Top 10 companies (in terms of numbers of cancer molecules in clinical development) vs. remaining companies.

SECTION - B

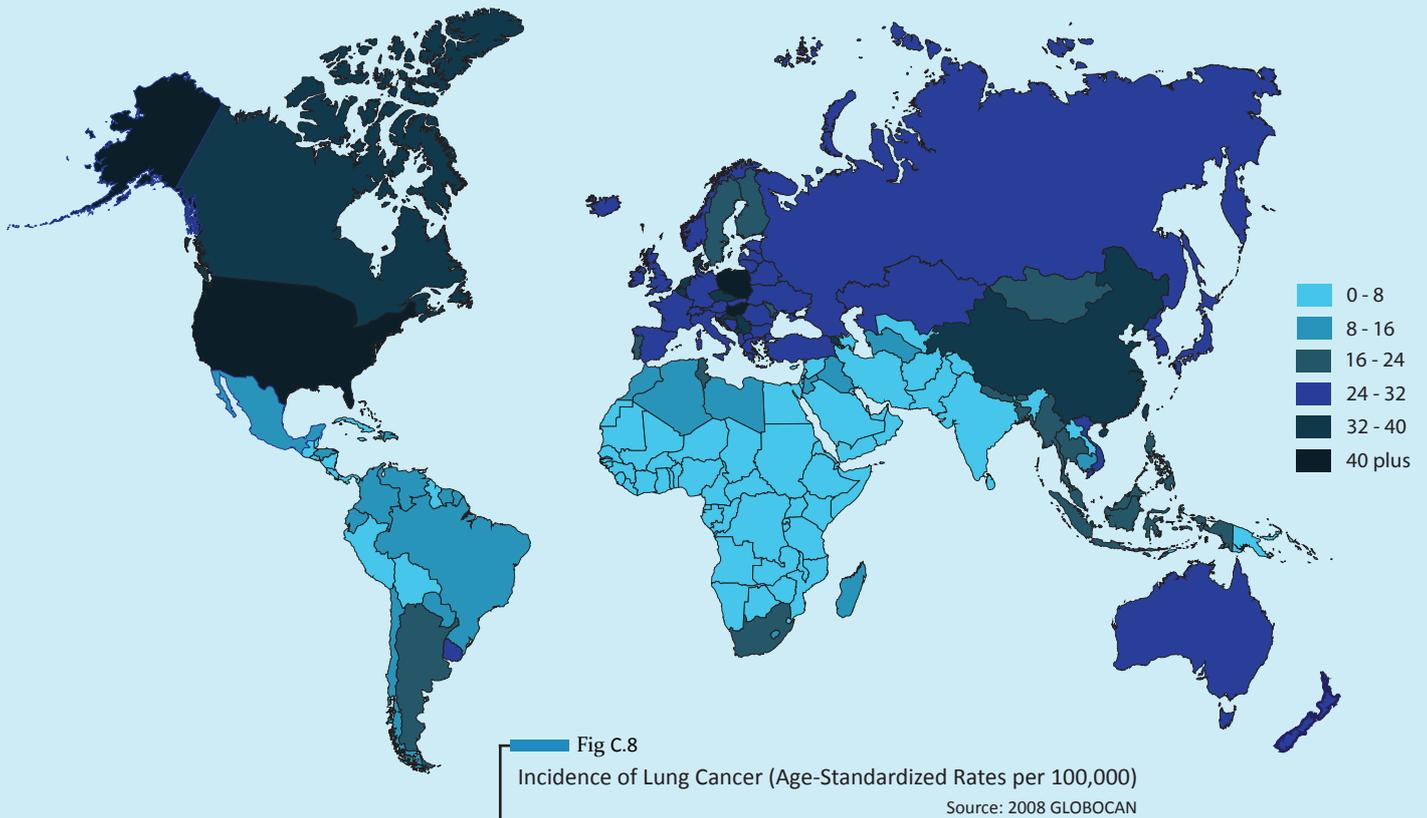
INFOGRAPHICS

DISTRIBUTION OF ONCOLOGY INDICATIONS IN CLINICAL DEVELOPMENT



SECTION - C INFOGRAPHICS

CLINICAL DEVELOPMENT PROFILE – LUNG CANCER



➔ An Overview to Lung Cancer

Box No. C.1

Lung cancer is a disease characterized by uncontrolled cell growth in tissues of the lung. It can be broadly classified into two main types (based on the cancer's appearance under a microscope): non-small cell lung cancer and small cell lung cancer. Non-small cell lung cancer (NSCLC) accounts for 80% of lung cancers, while small cell lung cancer (SCLC) accounts for the remaining 20%.

Non-small cell lung cancer (NSCLC) is further divided into three sub types:

- **Adenocarcinoma:** Develops in phlegm (mucus producing) cells, lies in the lining of the airways and is most common subtype.
- **Squamous Cell Carcinoma:** Develops in the cells which line the airways, and is the second common (20-25%) subtype of NSCLC.
- **Large Cell Carcinoma:** It grows at an accelerated rate near the surface of Lung.

Small cell lung cancer (SCLC) originates in large, thinning cells and grows rapidly. NSCLC and SCLC generally present differently.

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Current & Forecast Epidemiology, United States of America

Lung cancer (NSCLC+SCLC) is the second most common cancer in both men and women (not counting skin cancer) and accounts for about

World Estimates:- According to GLOBOCAN 2008, an estimated 1.61 million new cases of lung cancer were diagnosed worldwide, accounting for about 13 per cent of total cancer cases diagnosed. It is the leading cause of cancer death world-wide in both men and women, with an estimated 1.4 million death each year.

Current Market Size & Forecast:

In Oct 2012 Abraxane was approved for NSCLC, and together with Xalkori (approved last year) can lift NSCLC market in 2013 which was subdued in 2011-12, due to patent expiry of two key drugs Gemzar and Taxotere. The NSCLC drug market was estimated at \$4.2 billion USD

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➔ Top Selling Chemotherapies for Lung Cancer

Table No. C.2

1.	Pemetrexed/Altima® <i>Eli-lilly</i>	A folate antimetabolite drug against NSCLC generated \$2.46 billion USD compare to \$2.20 Billion USD in 2010 (11% increase yoy).
2.	Gemcitabine/Gemzar® <i>Eli-lilly</i>	A nucleoside analog used as chemotherapy, achieved \$452 Mn USD sales in 2011 compare to \$1,149 Mn USD in 2010 due to patent expiry.

2. Pemetrexed/Altima® is a folate antimetabolite drug against NSCLC, which was approved in Oct 2011. It is a combination of pemetrexed and leucovorin. The drug was estimated at \$1.5 billion USD in 2011.

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Top Selling Targeted Therapies for Lung Cancer

Table No. C.3

1. **Bevacizumab/Avastin®** Genentech/Roche humanized mAb that inhibits VEGF-A, and is used in first-line advanced nonsquamous NSCLC treatment in combination with chemotherapy. Total revenue generated by Bevacizumab for the year 2011 is \$5.7 Bn USD.

2. **Erlotinib/Iressa®** is an EGFR-TK inhibitor that acts to block signals for cancer cell growth and survival in NSCLC. Iressa achieved

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Molecules in PH III Clinical Development for Lung Cancer (NSCLC)

Table No. C.4

	NAME OF DRUG	INDICATIONS	COMBINATION DRUG	LINE	COMPANY	PARTNERS	TARGET	LAUNCH
1.	Teysuno/TS-1*	Advanced NSCLC	Docetaxel + Cisplatin	1 st	Taiho Pharm	-		Mid 2013
2.	Cetuximab/Erbitux®	EGFR-expressing Advanced NSCLC	Cisplatin/Vinorelbine	1 st	ImClone	BMS & Merck KGaA	EGFR	Late 2013

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Monoclonal Antibodies in Development

Table No. C.5

	MOLECULE	TARGET	PHASE		MOLECULE	TARGET	PHASE		MOLECULE	TARGET	PHASE
1	Ipilimumab	CTLA4	III	13	RG7414	EGFL7	II	25	MM-121	ErbB3	I/II
2	Ipilimumab	Met	III	14	Ipilimumab	EGFL7	II	26	Veliparib	VEGFR-1 integrin	I

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Vaccines in Development

Table No. C.6

	MOLECULE	TARGET	PHASE		MOLECULE	TARGET	PHASE		MOLECULE	TARGET	PHASE
1	TeloVac	-	III	5	HS-110	-	II	9	Hyper Acute lung	-	I/II
2	Stimuvax	MUC-1	III	6	PT 107	-	II	10	GSK2302032A	PRAME	
3	Stimuvax	VEGF-β	III	7	Stimuvax	-	II	11	Stimuvax	PRAME	

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Biologic in Development

	MOLECULE	TYPE	PH		MOLECULE	TYPE	PH		MOLECULE	TYPE	PH
1	Talactoferrin	Recombinant Protein	III	10	REOLYSIN	Reovirus	II	10	REOLYSIN	Reovirus	II
2	GSK1572932A	Antigen-Specific Cancer Vaccine	III	11	ADI-PEG 20	Pegylated arabinoside	II	11	ADI-PEG 20	Pegylated arabinoside	II

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NON SMALL CELL LUNG CANCER (CLINICAL PIPELINE)

Table No. C.7

	NAME OF DRUG	PH	COMPANY	PARTNER	TARGET
1	Ganetespib	II/III	Synta Pharma	-	Hsp90
2	TG4010	II/III	Transgene	Novartis	-
3	Ipilimumab	II	Abbvott	Genentech	VEGF

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SIMILAR PROFILES OF 19 CANCER INDICATIONS WHICH VIRTUALLY COVERS COMPLETE CANCER CLINICAL PROFILE

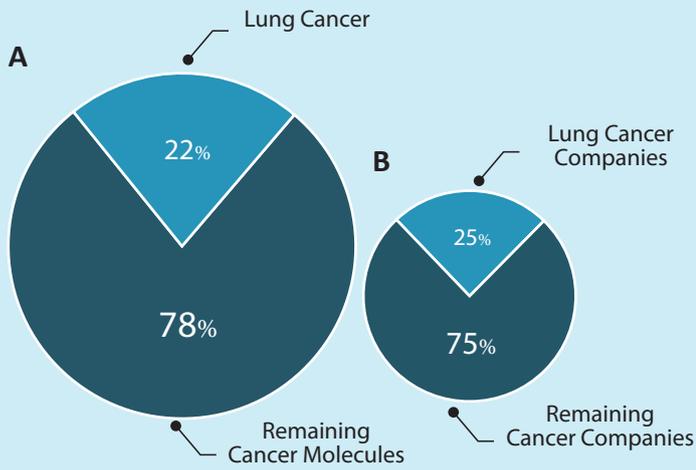


Fig C.9

- A.** Lung Cancer Cure Molecules in clinical development Vs. Total number of Molecules in Clinical development for cancer treatment, with defined indications.
- B.** Companies with active clinical development pipeline for Lung Cancer Treatment Vs. Total number of companies Worldwide, with active cancer cure clinical pipeline.

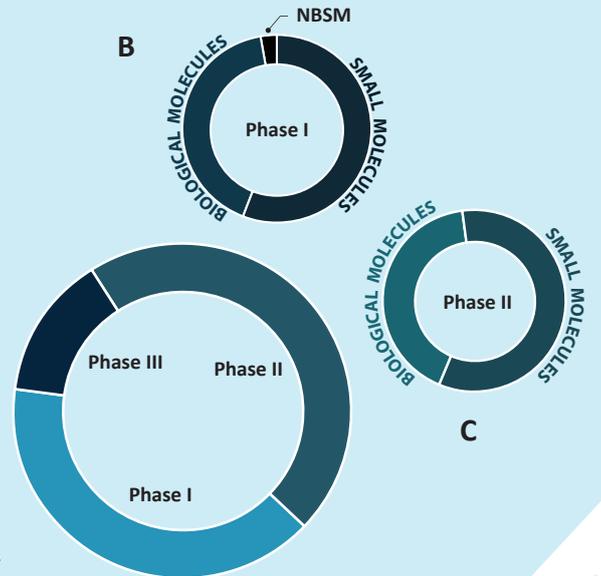


Fig C.11

- A.** Comparison between Top 10 Companies, Lung Cancer clinical pipeline vs. remaining companies
- B.** Percentage of molecules in development between USA vs. Europe vs. RoW
- C.** Distribution of Lung Cancer cure molecules by companies valuation size

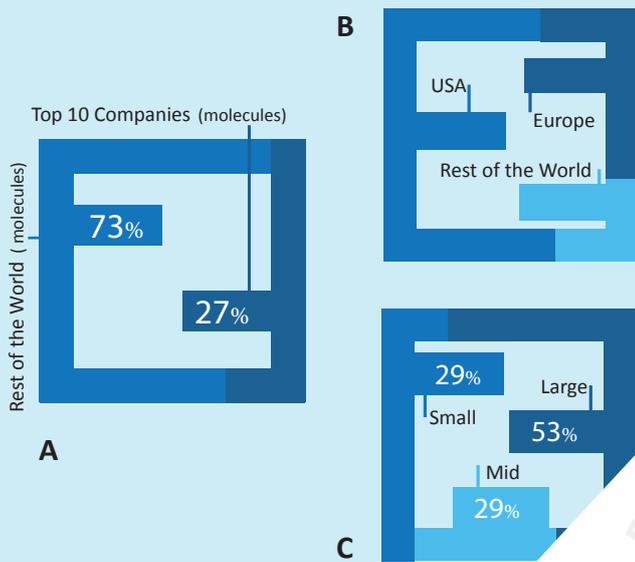


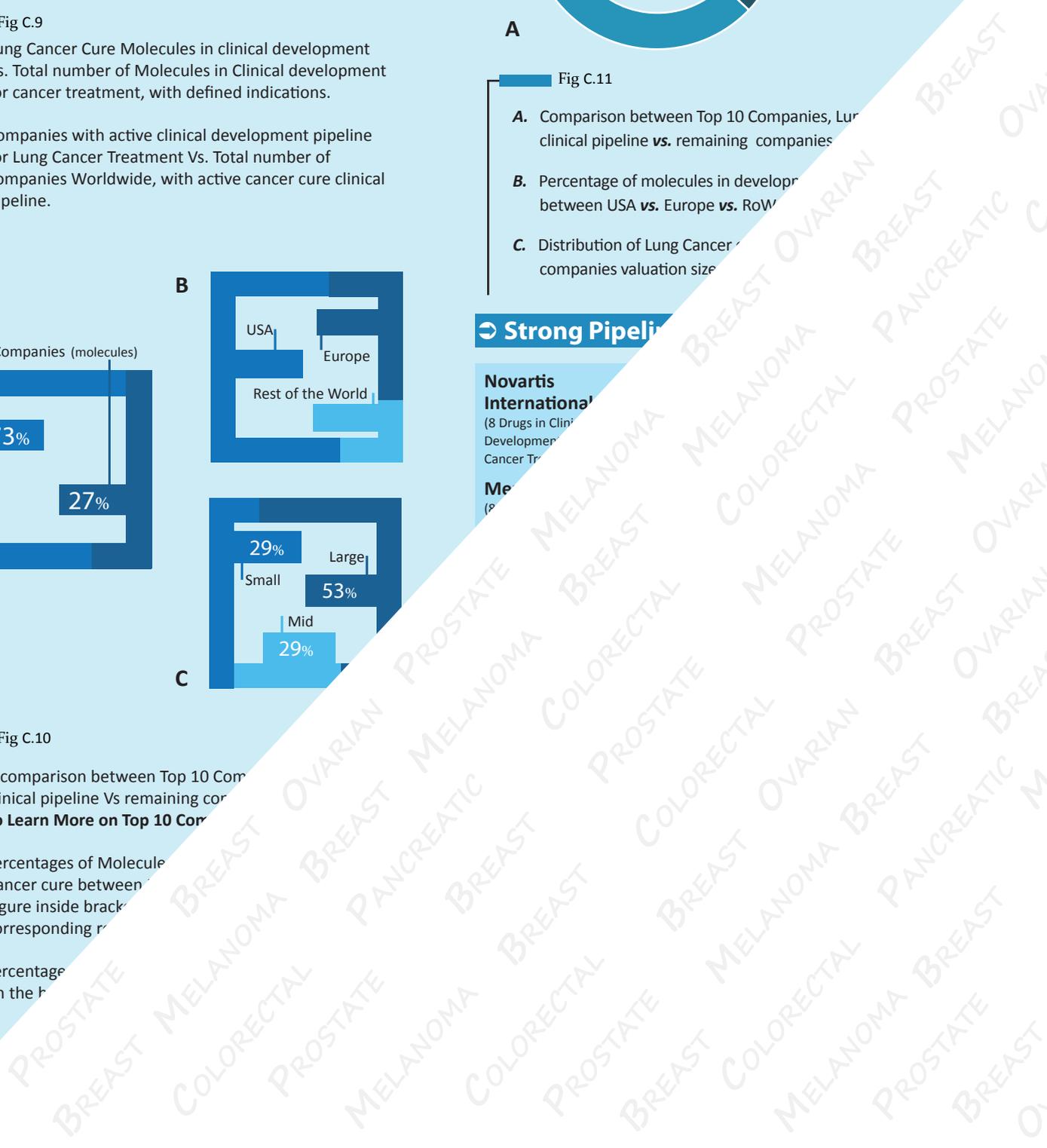
Fig C.10

- A.** A comparison between Top 10 Companies Lung Cancer clinical pipeline Vs remaining companies
- B.** Percentages of Molecules in Lung Cancer cure between USA vs. Europe vs. Rest of the World
- C.** Percentage of Lung Cancer cure molecules on the pipeline by companies valuation size

Strong Pipeline

Novartis International
 (8 Drugs in Clinical Development)
 Cancer Treatment

Melanoma
 (8 Drugs in Clinical Development)



LIST OF ORPHAN DRUG STATUS

Table No. C.88

Drug Name	Phase	Indications	Developer	Narrations
NRC-AN-019	I	Glioma	NATCO Pharma Limited	US FDA
Mibefradil	I	Glioblastoma multiforme	Tau Therapeutics LLC	US FDA
SEPREHVIR®/HSV1716	I	Malignant Brain tumours	VIRTU Biologics	EMEA
VAL-083	I/II	Glioma	DelMar Pharmaceuticals Ltd.	US FDA
Trans Sodium Crocetinate (TSC)	I/II	Glioblastoma multiforme	Diffusion Pharmaceuticals LLC	US FDA
01	I/II	Glioma	tr... ..	US FDA

BRAIN TUMORS

GLIOMA

ONCOLOGY CLINICAL PIPELINE - NEW ENTRANTS 2012

➔ Molecules

Table No. C.89

	NAME OF DRUG	MONTH	COMPANY NAME	PHASE	CLINICAL TRIAL NO.	NARRATIONS
1.	Ensituximab/NEO-101	January	Neogenix Oncology	I/II	NCT01040000	Metastatic Pancreatic and Metastatic Colorectal Cancer
2.	CBLB502	January	Cleveland BioLabs	I	NCT01527136	Unspecified Adult Solid Tumor
3.	Pexanabinol/FTS2101	January	...-Therapeutic Inc	I	NCT01489826	Advanced Solid Tumors

ONCOLOGY CLINICAL PIPELINE - MAJOR FAILURES 2012

➔ Molecules

Table No. C.90

	NAME OF DRUG	MONTH	COMPANY NAME	PH	CLINICAL TRIAL	INDICATIONS	NARRATIONS
1.	Forodesine Hydrochloride/Immucillin	January	Mundipharma International	II	NCT01507467	Relapsed precursor T-Lymphoblastic Leukemia/Lymphoma.	Due to manufacturing issues.
2.	AFP464	January	Kirax Corporation	II	NCT01456325	ER+ Breast Cancer patients who had progressed on aromatase inhibitor therapy.	Recruiting or enrolling participants was halted prematurely.
3.	Saridegib/IPI-926	January	Infinity Pharmaceutical	II	NCT01522443	Previously untreated, metastatic Pancreatic Cancer.	Following preliminary analysis showing trial would not meet primary endpoint of overall survival.
4.	Trabedersen/AP 12009	January	Antisense Pharma	III	NCT01546571	Recurrent Anaplastic Astrocytoma/Glioblastoma	Due to slow patient recruitment (no safety or efficacy issues).
5.	ZYBRESTAT/Fosbretabulin	January	OxIGENE	II/III	NCT01579188	Anaplastic Thyroid Carcinoma	Due to inadequate funding.

ONCOLOGY CLINICAL PIPELINE - MAJOR ADVANCES 2012

➔ Oncology Drug Molecules which Advances to Phase III during 2012

Table No. C.91

	NAME OF DRUG	MONTH	COMPANY NAME	PHASE	CLINICAL TRIAL NO.	NARRATIONS
1.	Nimoral/Nimorazole	January	Azanta A/S	III	NCT01507467	Squamous Cell Carcinoma of the Head and Neck
2.	Onartuzumab/MetMab/RG3638/PRO143966	January	Genentech	III	NCT01456325	Met Diagnostic-Positive Non-Small Cell Lung Cancer Who Have Received Standard Chemotherapy for Advanced/Metastatic Disease
3.	Cabozantinib/COMETRIQ™	January	Exelixis Inc	III	NCT01522443	Previously Treated Symptomatic Castration-resistant Prostate Cancer
4.	03A	April	III	54657	Post-resection Melanoma Patients with a High

NEW DRUG APPROVALS - 2012

UNITED STATE FOOD AND DRUG ADMINISTRATION APPROVALS

Table No. D.1

	COMPANY	MONTH	COLLABORATION	PROPRIETARY NAME	ESTABLISHED NAME	INDICATIONS/COMMENTS
1.	Genentech/Roche	January	Curis	Erivedge	Vismodegib	Treatment of adults with metastatic Basal Cell Carcinoma or with locally advanced basal cell carcinoma that has recurred following surgery or who are not candidates for surgery and radiation.
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CORPORATE ACTIONS - 2012

MERGERS & ACQUISITIONS

Table No. D.2

	ACQUIRER	MONTH	COUNTRY	TARGET	COUNTRY	DEAL TYPE	DEAL VALUE (USD MN)	PRINCIPAL FOCUS / DESCRIPTION
1	Amgen	January	U.S.A	Micromet	U.S.A	Subsidiary	1,160	Phase 2/Biopharmaceuticals
2	Celgene	January	U.S.A	Avila Therapeutics	U.S.A	Merger	925	Phase 1/Biopharmaceuticals
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PARTNERING & COLLABORATIONS

Table No. D.3

	COMPANY / LICENSEE	MONTH	COMPANY / LICENSER	DEAL TYPE	DEAL VALUE (USD MN)	UPFRONT (USD MN)	PRINCIPAL FOCUS / DEVELOPMENT STAGE
1	Boehringer Ingelheim	January	FORMA Therapeutics	Collaboration	815	65	Discovery/Cancer
2	Janssen Biotech	January	FORMA Therapeutics	Collaboration	700	-	Discovery/Cancer
3	Boehringer Ingelheim	January	Priaxon	Collaboration	113	-	Discovery/Cancer
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ONCOLOGY MOLECULE / ASSET ACQUISITION

Table No. D.4

	ACQUIRER	MONTH	SELLER	DEAL TYPE	DEAL VALUE (USD MN)	UPFRONT (USD MN)	COMMENTS
1	Kadmon Corporation	January	Concordia Pharma	Asset Purchase Agreement	Not Disclosed	Not Disclosed	Kadmon entered into an asset purchase agreement with Concordia Pharmaceuticals, under which Kadmon acquired all rights to Salirasib/ KD032, in PH II trial for the treatment of Non-Small Cell Lung Cancer.
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VENTURE FINANCING

Table No. D.8

	COMPANY	MONTH	RAISED (US MN)	FINANCING ROUND	INVESTORS
1	Apogenix	January	9.6	-	dievini Hopp BioTech; German Cancer Research Center; Apogenix's founders and management.
2	BerGenBio	January	8.8	Series A	Sarsia Seed; Investor; Norsk Innoasjonkapital II; Birk Ventures; Meteva; Profond; Ro Invest; Sarsia Development
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SECTION - E

**INDIVIDUAL 457 ONCOLOGY
CLINICAL COMPANY PROFILES
COVERED IN 520 PAGES.**

4SC AG

Cancer/Autoimmune Diseases

4SC AG

Am Klopferspitz 19a
82152 Planegg-Martinsried
Germany

www.4sc.de
manfred.groepfel@4sc.com
+49 897007630

Founded: 1997
Employee: 51-200
Ownership: Public
Valuation Size: Small

HIGHLIGHTS

- ★ 4SC AG is a biopharma company that discovers and develops targeted therapies for autoimmune and cancer indications.
- ★ 4SC uses chemoinformatic based technological platform (combining chemistry, biology with virtual High Throughput Screening technology, 4SCan®) for the development of new drug candidates.
- ★ In Jun 2008, 4SC AG acquired Nycomed's eight oncology projects (\$19.7Mn USD) in preclinical and clinical developmental stages.
- ★ In Apr 2011, 4SC out-licensed developmental and marketing rights of Resminostat to Yakult Honsha Co for Japan.
- ★ In Dec 2011, 4SC forms subsidiary, 4SC Discovery GmbH to commercialise innovative early-stage drug research programmes.
- ★ In Jul 2012, 4SC AG entered into a research collaboration with Crelux GmbH and Ribological GmbH for the discovery and optimisation of anti-cancer drugs.

PRODUCTS

Name	Target	Phase	Indication	Last Update	Molecule Type
Resminostat / 4SC-201	HDAC	I/II	Advanced Colorectal Cancer †	Mar 2012	Small Molecule
		II	Hodgkin's Lymphoma *	Feb 2012	
		II	Hepatocellular Carcinoma *	Jun 2012	
4SC-203	FLT3/STK1, VEGFRs	I	Acute Myeloid Leukemia #	Jan 2011	Small Molecule
4SC-205	Eg5	I	Advanced Solid Tumors †	Apr 2012	Small Molecule
		I	Malignant Lymphomas †	Apr 2012	
4SC-202	class I HDAC	I	Advanced Hematological Malignancies †	Jul 2012	Small Molecule

KEY HIGHLIGHTS OF MOLECULES

- ★ Resminostat is an oral pan-histone-deacetylase inhibitor that modifies DNA structure of tumor cells to cause apoptosis.
- ★ Resminostat has been granted for Orphan Drug status from US FDA and EMA for hodgkin's lymphoma.
- ★ 4SC-203 is a multi target kinase inhibitors (including FLT3, FLT3 mutants and VEGF- receptors).
- ★ 4SC-203 was jointly developed with ProQinase GmbH, a company based in Freiburg, Germany.
- ★ 4SC-205 is an oral inhibitor of kinesin spindle protein Eg5 (kinesin-5, KIF11), motor protein important for cell division (mitosis).
- ★ 4SC-202 is a benzamide type selective inhibitor of human class I HDAC isoenzymes 1, 2 and 3.
- ★ 4SC-207, a cell cycle blocker, is being evaluated in preclinical stage for the treatment of tumors resistance to chemotherapy.
- ★ 4SC acquired 4SC-201, 4SC-203, 4SC-202, 4SC-205 & 4SC-207 along with a portfolio of cancer compounds from Nycomed.

CORPORATE PROFILE

Thomas Werner, <i>Chairman</i>	Listed / Not Listed:	Listed
Ulrich Dauer, <i>Chief Executive Officer</i>	Stock Code:	VSC
Daniel Vitt, <i>Chief Scientific Officer</i>	Stock Exchange:	Xetra
Bernd Hentsch, <i>Chief Development Officer</i>	Market Capitalization:	146.19 (Mn USD) as on 14/12/12

† Active, Recruiting * Active, Non-Recruiting # Completed Trial status as on Dec 2012

SECTION - F

**INDIVIDUAL 137 EXCLUSIVE
ONCOLOGY PRECLINICAL
COMPANY PROFILES COVERED
IN 83 PAGES.**

Armour Therapeutics Inc.

Cancer

124 Orchard View Blvd.,
Toronto, ON M4R 1C2,
Canada

www.armourtherapeutics.com
info@armourtherapeutics.com
+1 647-205-4402

Founded: NA
Employee: 1-10
Ownership: Private

HIGHLIGHTS

- ★ Armour is a biopharma company developing therapies targeting hormonal pathway for the treatment of cancer.
- ★ Its drug discovery is based on creating *first-in-class* relaxin receptor antagonists that block relaxin stimulated tumor and blood vessel growth and function as an anti-relaxin therapy.
- ★ Armour's lead candidate AT-001 targets a new hormonal (non-androgen) pathway and suppresses tumor growth like a cytostatic and as an anti-angiogenic agent.
- ★ AT-012 and AT-027 are in discovery phase for treatment of breast and ovarian cancer respectively.

PRODUCTS

Name	Target	Phase	Indication	Molecule Type
AT-001	Relaxin	Preclinical	Prostate Cancer	Small Molecule

CORPORATE PROFILE

Josh Silvertown, Founder & Chief Executive Officer	Listed / Not Listed:	Not Listed
George N. Nikopoulos, Director, Business Development	Stock Code/Exchange:	NA
Anton Neschadim, Director, Drug Development	Market Capitalization:	NA

Ascepcion Pharmaceuticals, Inc.

Diversified

2nd Floor, Building C,
68 Xinqing Road,
Suzhou Industrial Park, China

www.ascepcion.com
ascepcionhr@ascepcion.com
+86 512 62956001

Founded: 2007
Employee: 11-50
Ownership: Private

HIGHLIGHTS

- ★ Ascepcion is a biopharmaceutical company, developing molecular targeted therapies for the treatment of cancer.
- ★ In Jun 2012, Ascepcion and Debio Group entered into an exclusive worldwide license agreement, for the development and commercialisation of ASP-08126/Debio 1144.
- ★ ASP-08126, ASP-502D & ASP-08112 are small molecule tyrosine kinase inhibitors, currently in preclinical stage of development for various cancer treatment.
- ★ Key investors include: Kai-Feng Venture Capital and China-Singapore Suzhou Industrial Park Ventures Co., Ltd. (CSVC).

PRODUCTS

Name	Target	Phase	Indication	Molecule Type
ASP-08126 / Debio 1144	Multikinase	Preclinical	Solid Tumors	Small Molecule
ASP-502D	Tyrosine Kinase	Preclinical	Cancer	Small Molecule
ASP-08112	Tyrosine Kinase	Preclinical	Cancer	Small Molecule

CORPORATE PROFILE

Shan Jiang, Chairman & Chief Executive Officer	Listed / Not Listed:	Not Listed
Max Qian, Chief Biologist	Stock Code/Exchange:	NA
Shirley S. Lei, Chief Operating Officer	Market Capitalization:	NA



DEVELOPED & MARKETING BY:

HH BIOTECHNOLOGIES PRIVATE LIMITED
BioTech Park
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