Pharma

More expensive development

Less new drugs in the pipeline

The rise of generic drugs

Companies

Very large

And depend on exports

Global corporate performance (worldwide)

RANK	1990	2005
1	Merck & Co (US)	Pfizer (US)
2	Glaxo (UK)	GlaxoSmithKline (UK)
3	Bristol-Myers Squibb (US)	Sanofi-Aventis (F)
4	Bayer (DE)	Novartis (CH)
5	Hoechst (DE)	Johnson & Jonhson (US)
6	Eastman Kodak (US)	AstraZeneca (SE/UK)
7	Ciba-Geigy (CH)	Merck & Co (US)
8	SmithKline Beecham (UK)	Roche (CH)
9	Sandoz (CH)	Abbott (US)
10	American Home Prod. (US)	Bristol-Myers Squibb (US)
11	Takeda (J)	Wyeth (US)
12	Eli Lilly (US)	Eli Lilly (US)
13	Abbott (US)	Amgen (US)
14	Warner-Lambert (US)	Boehringer Ingelheim (DE)
15	Pfizer (US)	Takeda (J)

Source: IMS Health MIDAS December 2005

PHARMACEUTICAL RESULTS

The arrival of the patent cliff translated into big sales losses for many drug firms

	FOURTH-QUARTER 2012						FULL-YEAR 2012					
	SALES ($ MILLIONS)	EARNINGS[a] ($ MILLIONS)	CHANGE FROM 2011 SALES	CHANGE FROM 2011 EARNINGS	PROFIT MARGIN[b] 2012	PROFIT MARGIN[b] 2011	SALES ($ MILLIONS)	EARNINGS[a] ($ MILLIONS)	CHANGE FROM 2011 SALES	CHANGE FROM 2011 EARNINGS	PROFIT MARGIN[b] 2012	PROFIT MARGIN[b] 2011
Abbott Laboratories	$10,837	$2,421	4.4%	5.5%	22.3%	22.1%	$39,874	$8,119	2.6%	10.7%	20.4%	18.9%
AstraZeneca	7,287	1,943	-15.8	-7.6	26.7	24.3	27,973	8,085	-16.7	-18.4	28.9	29.5
Bristol-Myers Squibb	4,191	777	-23.2	-14.2	18.5	16.6	17,621	3,364	-17.1	-14.2	19.1	18.5
Eli Lilly & Co.	5,957	945	-1.5	-2.5	15.9	16.0	22,603	3,784	-6.9	-23.0	16.7	20.2
GlaxoSmithKline	10,988	2,641	-2.5	nm	24.0	def	42,695	9,322	-3.5	-3.9	21.8	21.9
Johnson & Johnson	17,558	3,376	8.0	7.9	19.2	19.2	67,224	14,345	3.4	3.4	21.3	21.3
Merck & Co.	11,738	2,540	-4.5	-14.7	21.6	24.2	47,267	11,743	-1.6	0.4	24.8	24.3
Novartis	14,828	3,102	0.3	3.0	20.9	20.4	56,673	12,811	-3.2	-5.0	22.6	23.0
Pfizer	15,068	3,512	-6.6	-7.2	23.3	23.4	58,986	16,476	-9.6	-7.6	27.9	27.3
Roche	12,917	na	na	na	na	na	49,784	12,997	7.0	11.2	26.1	25.1
Sanofi	11,267	2,077	0.2	-24.3	18.4	24.4	46,182	10,808	4.7	-7.0	23.4	26.3
TOTAL BIG PHARMA[c]	$122,636	$23,334	-1.6%	-4.7%	21.0%	19.6%	$476,882	$111,854	-2.6%	-3.6%	23.5%	23.7%
Amgen	$4,421	$1,088	11.3%	4.7%	24.6%	26.2%	$17,265	$5,119	10.8%	5.4%	29.6%	31.2%
Biogen Idec	1,418	335	6.9	-9.5	23.6	27.9	5,516	1,567	9.2	8.4	28.4	28.6
Celgene	1,447	572	12.7	20.9	39.5	36.8	5,507	2,162	13.7	23.3	39.3	36.2
Gilead Sciences	2,588	823	17.6	10.8	31.8	33.8	9,703	3,084	15.7	1.5	31.8	36.2
Vertex Pharmaceuticals	334	9	-40.7	-95.1	2.7	32.9	1,527	256	8.2	nm	16.8	1.1
TOTAL BIOTECH[c]	$10,208	$2,827	9.2%	0.6%	27.7%	30.1%	$39,518	$12,188	12.0%	9.7%	30.8%	31.5%

NOTE: European company results are converted at Dec. 31, 2012, exchange rates, except for AstraZeneca and Novartis, which report in U.S. dollars. **a** After-tax earnings from continuing operations, excluding significant extraordinary and nonrecurring items. **b** After-tax earnings as a percentage of sales. **c** For companies reporting. Percentages are calculated from combined sales and earnings. **def** = deficit. **na** = not available. **nm** = not meaningful.

PHARMACEUTICAL RESULTS

Biotech rose in the first half of 2015, while big pharma sales and earnings fell

	SALES	EARNINGS[a]	CHANGE FROM 2014		PROFIT MARGIN[b]	
	($ MILLIONS)		SALES	EARNINGS	2015	2014
AbbVie	$10,515	$3,300	10.8%	33.1%	31.4%	26.1%
AstraZeneca	12,364	2,888	-6.5	-7.2	23.4	23.5
Bristol-Myers Squibb	8,204	2,083	6.5	33.2	25.4	20.3
Eli Lilly & Co.	9,623	1,879	0.0	17.7	19.5	16.6
GlaxoSmithKline	18,107	2,629	3.0	-13.3	14.5	17.3
Johnson & Johnson	35,161	9,230	-6.5	-6.1	26.3	26.1
Merck & Co.	19,210	4,866	-9.4	-4.5	25.3	24.0
Novartis	24,629	6,273	-5.7	-5.9	25.5	25.5
Pfizer	22,717	6,721	-5.8	-9.6	29.6	30.8
Roche	25,423	6,826	2.5	-4.8	26.8	28.9
Sanofi	20,412	4,002	14.3	15.6	19.6	19.4
TOTAL BIG PHARMA	**$206,365**	**$50,697**	**-1.4%**	**-1.4%**	**24.6%**	**24.6%**
Amgen	$10,403	$3,888	7.2%	19.2%	37.4%	33.6%
Biogen	5,147	1,895	13.1	33.8	36.8	31.1
Celgene	4,359	1,910	21.0	31.5	43.8	40.3
Gilead Sciences	15,838	9,449	37.3	47.2	59.7	55.6
Vertex Pharmaceuticals	305	-279	18.7	nm	def	def
TOTAL BIOTECH	**$36,052**	**$16,863**	**21.6%**	**37.6%**	**46.8%**	**41.3%**

NOTE: European company results are converted at June 30 exchange rates, except for AstraZeneca and Novartis, which report in U.S. dollars. **a** After-tax earnings from continuing operations, excluding significant extraordinary and nonrecurring items. **b** After-tax earnings as a percentage of sales. **nm** = not meaningful. **def** = deficit.

Some of the pharma mergers

PATH TO DOMINANCE

Mergers and acquisitions have affected virtually every pharmaceutical company

CURRENT ENTITY	HISTORICAL COMPANIES
Aventis	Fisons, Hoechst, Marion Merrell Dow, May & Baker, Rhône-Poulenc, Rorer, Roussel Uclaf
GlaxoSmithKline	Allen & Hanburys, Beckman, Beecham, Burroughs Wellcome, Glaxo, Smith Kline & French
Novartis	Biochemie, Ciba, Geigy, Sandoz
Pfizer[a]	Agouron, Kabi, Monsanto (Searle), Pfizer, Pharmacia, Upjohn, Warner-Lambert
Wyeth (formerly American Home Products)	American Cyanamid, Ayerst, Genetics Institute, Lederle, Whitehall, Wyeth

a Assuming Pharmacia merger is completed.

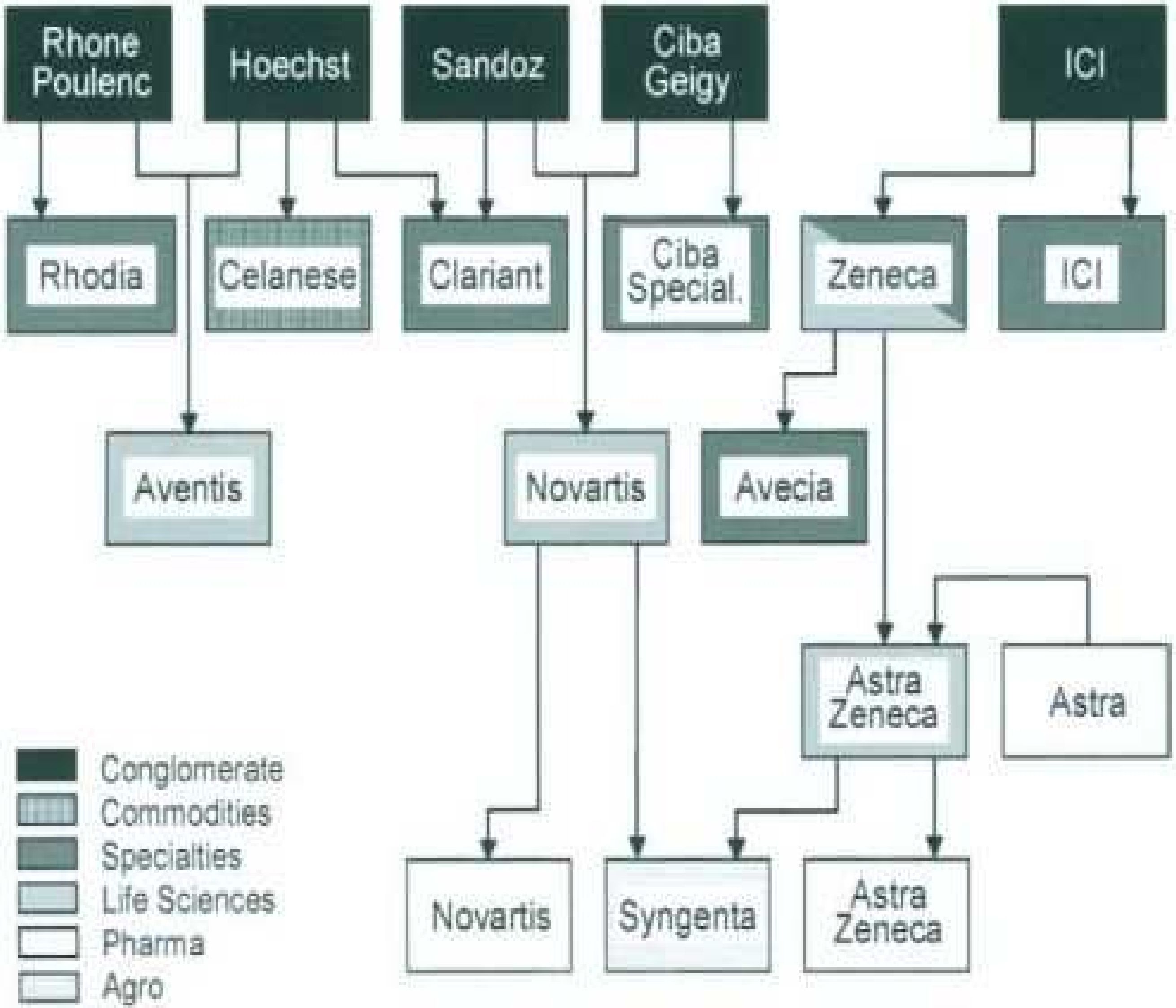
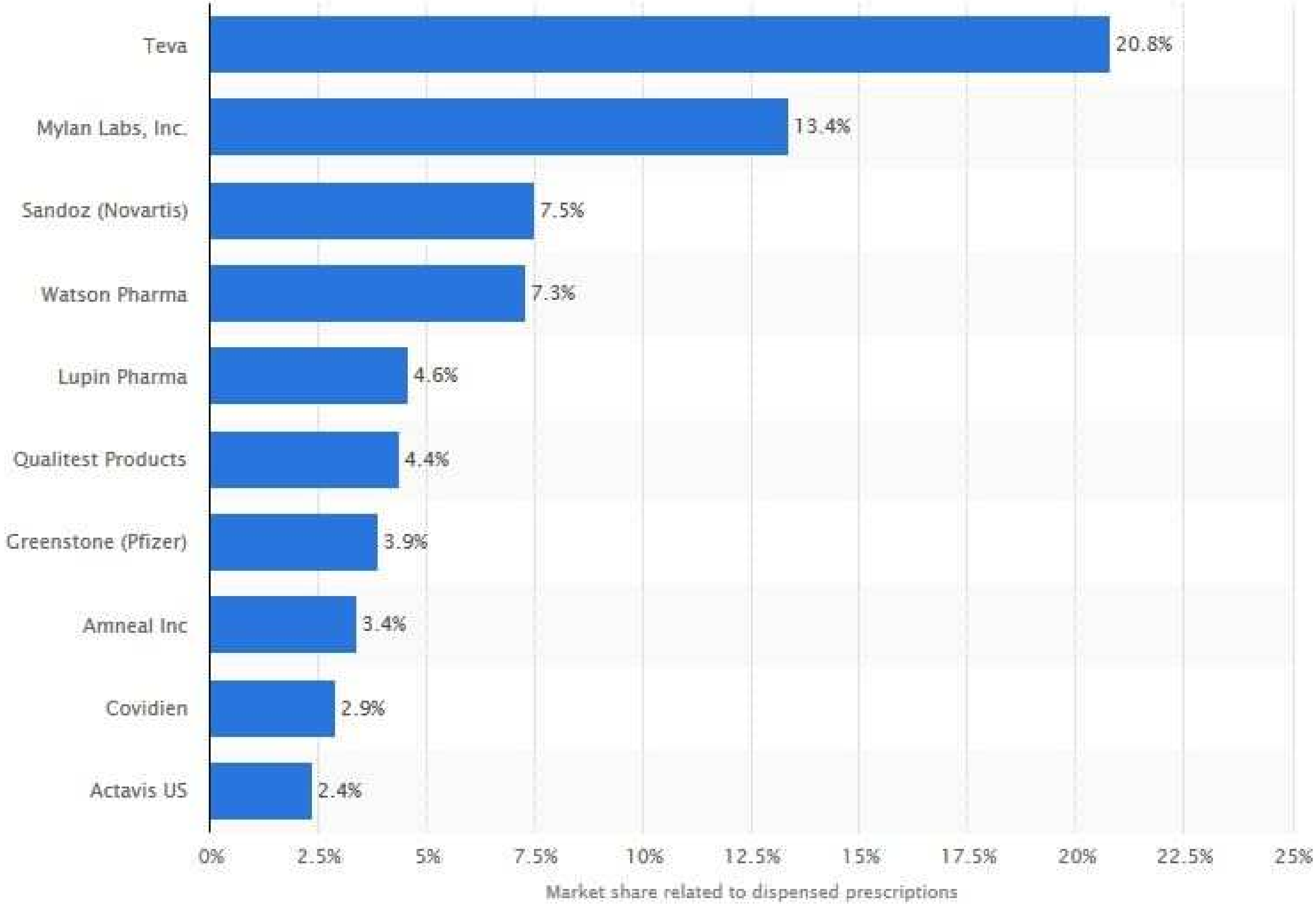


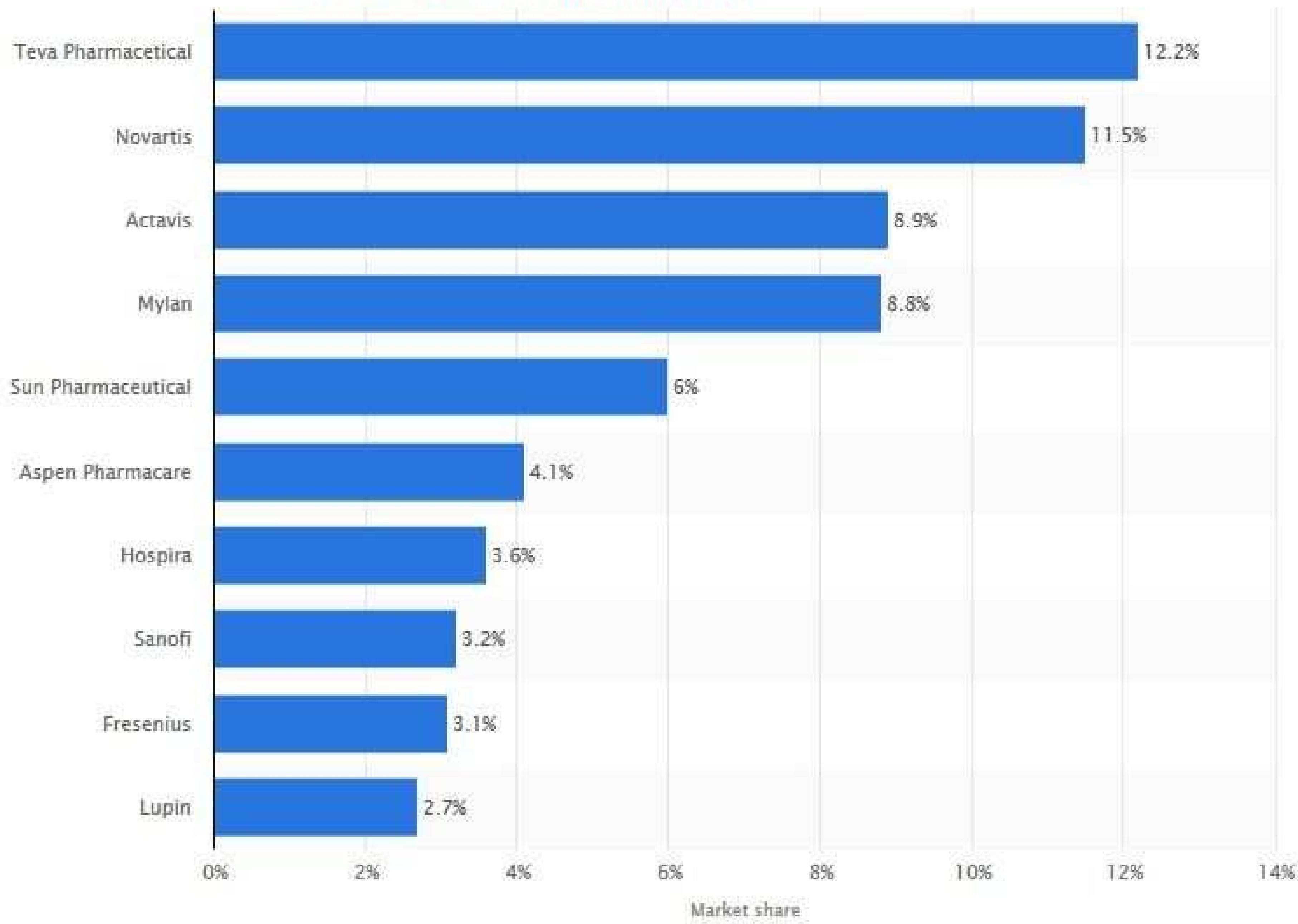
Fig. 1. Development of some major companies in the chemical industry [1].

name of Accordis. In Germany the restructuring of Hoechst had far-reaching effects

Top 10 generic drugs producing pharmaceutical companies by U.S. prescription market share in 2010*



TOP GENERIC COMPANIES 2014

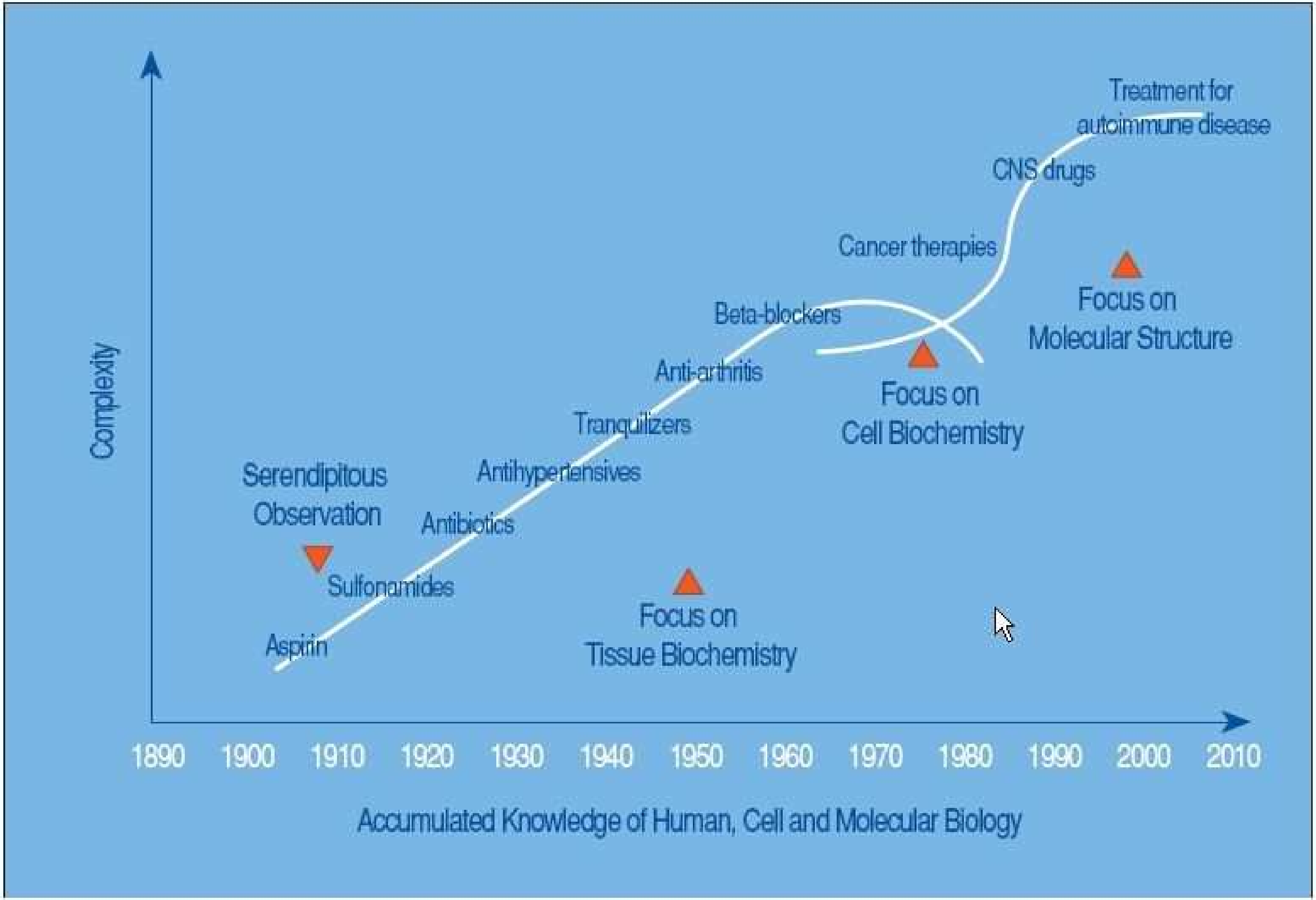


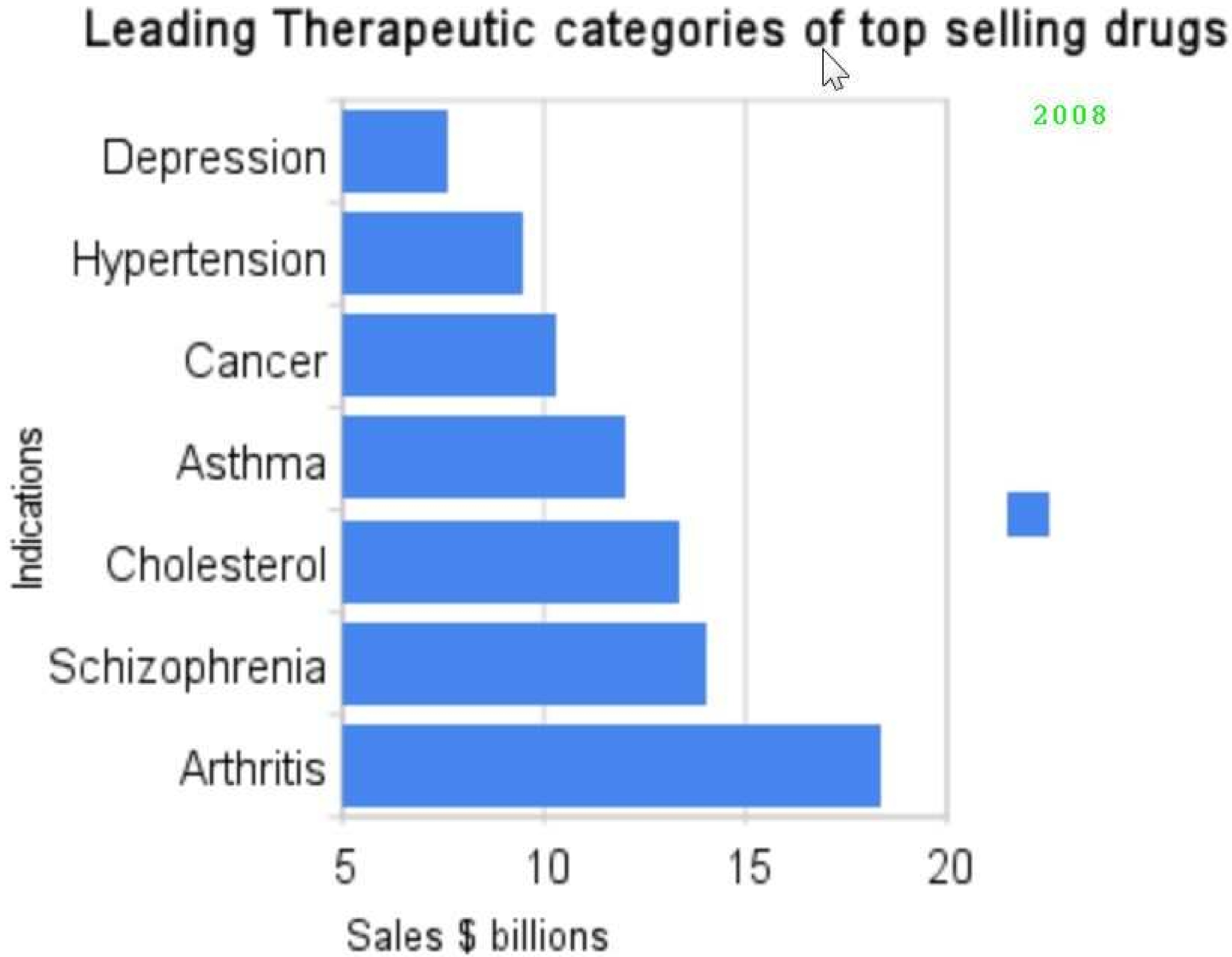
TEVA data by YCharts

Drugs

Many blockbusters

CHRONOLOGY OF DRUG INNOVATION




Leading Therapeutic categories of top selling drugs
2008
Indications
Depression
Hypertension
Cancer
Asthma
Cholesterol
Schizophrenia
Arthritis
5
10
15
20
Sales $ billions

2014 | 2013 | 2012

TOP SELLING DRUGS

#	Product	2014 ($m)	2013 ($m)	Growth ($m)	Growth (%)
1	Humira	13021	11105	1916	17
2	Sovaldi/Harvoni	12410	139	12271	8828
3	Remicade	10151	9900	251	3
4	Enbrel	9120	8894	226	3
5	Lantus	8152	7343	809	11
6	MabThera/Rituxan	7356	7410	-54	-1
7	Avastin	6841	6667	174	3
8	Seretide/Advair	6700	8356	-1656	-20
9	Herceptin	6690	6481	209	3
10	Crestor	6617	6960	-343	-5
11	Abilify	6416	9502	-3086	-32
12	Lyrica	5435	4838	597	12
13	Revlimid	4980	4280	700	16
14	Gleevec/Glivec	4746	4693	53	1
15	Spiriva	4722	4564	158	3
16	Neulasta	4596	4392	204	5
17	Prevnar 13	4464	3974	490	12
18	Nexium	4442	4551	-109	-2
19	Symbicort	4262	3929	333	8
20	Lucentis	4254	4184	70	2
21	Copaxone	4237	4328	-91	-2
22	Januvia	3931	4004	-73	-2

List of largest selling pharmaceutical products

From Wikipedia, the free encyclopedia

The following is a list of the top 100 pharmaceutical products ranked by sales in U.S. dollars for April 2014 through March 2015.

Rank	Brand Name(s)	Generic Name	Sales Q1 2014 Sales ($000)	Change from Q4 2013	Company(ies)	Disease/Medical Use	First Approval Date	Patent Expiration Date[1][2]
1	Synthroid	Levothyroxine	21,561,481	-2.50%	Abbott Laboratories	Hypothyroidism	May-1999	Mon-20XX
2	Crestor	Rosuvastatin	21,478,776	4.53%	AstraZeneca, Shionogi	Cholesterol	Nov-2002	Jul-2016
3	Ventolin HFA	Salbutamol	18,203,939	0.00%	GlaxoSmithKline	Asthma; chronic obstructive pulmonary disease	May-1981	Mon-20XX
4	Nexium	Esomeprazole	15,298,228	0.74%	AstraZeneca	Gastrointestinal disorders	Mar-2000	May-2014
5	Advair Diskus, Seretide	Fluticasone/salmeterol	13,776,325	2.65%	GlaxoSmithKline	Asthma	Aug-2000	Mar-2012
6	Lantus Solostar	Insulin glargine	10,939,840	9.39%	Sanofi-Aventis	Diabetes mellitus type 1 and 2	Apr-2000	Dec-2011
7	Vyvanse	Lisdexamfetamine	10,413,999	9.39%	Shire	Attention deficit hyperactivity disorder	Dec-1990	Mon-20XX
8	Lyrica	Pregabalin	10,022,365	2.82%	Pfizer	Neuropathic pain	Jul-2004	Jul-2019
9	Spiriva Handihaler	Tiotropium bromide	9,635,935	3.39%	Boehringer Ingelheim	Chronic obstructive pulmonary disease	Apr-2002	Jul-2018
10	Januvia	Sitagliptin	9,148,946	3.63%	Merck & Co., Inc.	Diabetes mellitus type 2	Dec-1996	Nov-2017
11	Lantus	Insulin glargine	9,145,153	5.84%	Sanofi-Aventis	Diabetes mellitus type 1 and 2	Apr-2000	Dec-2011
12	Abilify	Aripiprazole	9,099,978	2.23%	Bristol-Myers Squibb, Otsuka Pharmaceutical	Psychosis; depression	Nov-2002	Oct-2014
13	Symbicort	Budesonide/formoterol	8,265,594	9.63%	AstraZeneca	Asthma	Aug-2000	Mon-20XX
14	Tamiflu	Oseltamivir	8,025,275	0.00%	Chugai Pharmaceutical, Hetero Drugs, Roche	Influenza	Oct-1999	Mon-20XX
15	Cialis	Tadalafil	7,472,719	4.58%	Eli Lilly and Company, Lilly Icos	Erectile dysfunction	Nov-2002	Mon-20XX
16	Viagra	Sildenafil	7,104,074	3.26%	Pfizer	Erectile dysfunction	Mar-1998	Mar-2012

Biologic Drugs in Pipeline

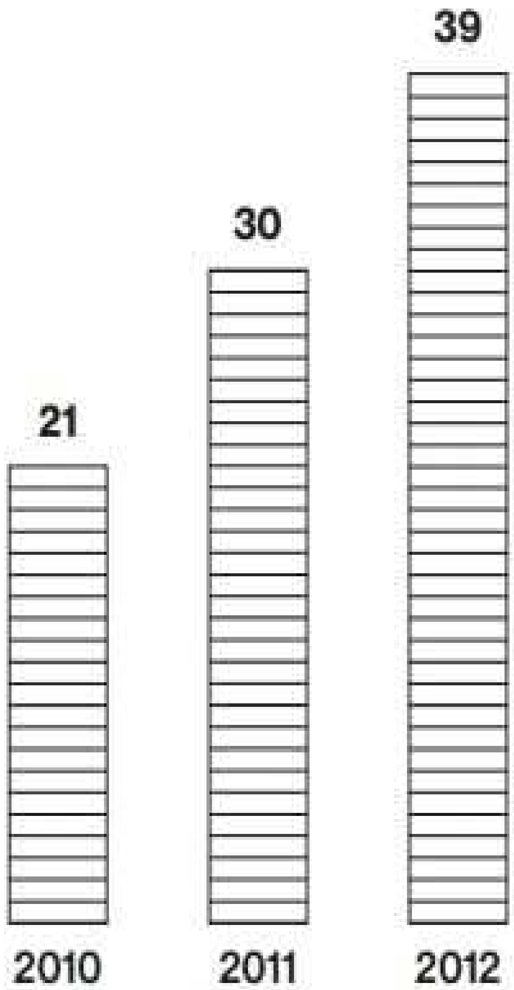
176
Infectious diseases

58
Cardiovascular disease

338
Cancers and related conditions

30
Genetic disorders

FDA New Drugs Approved



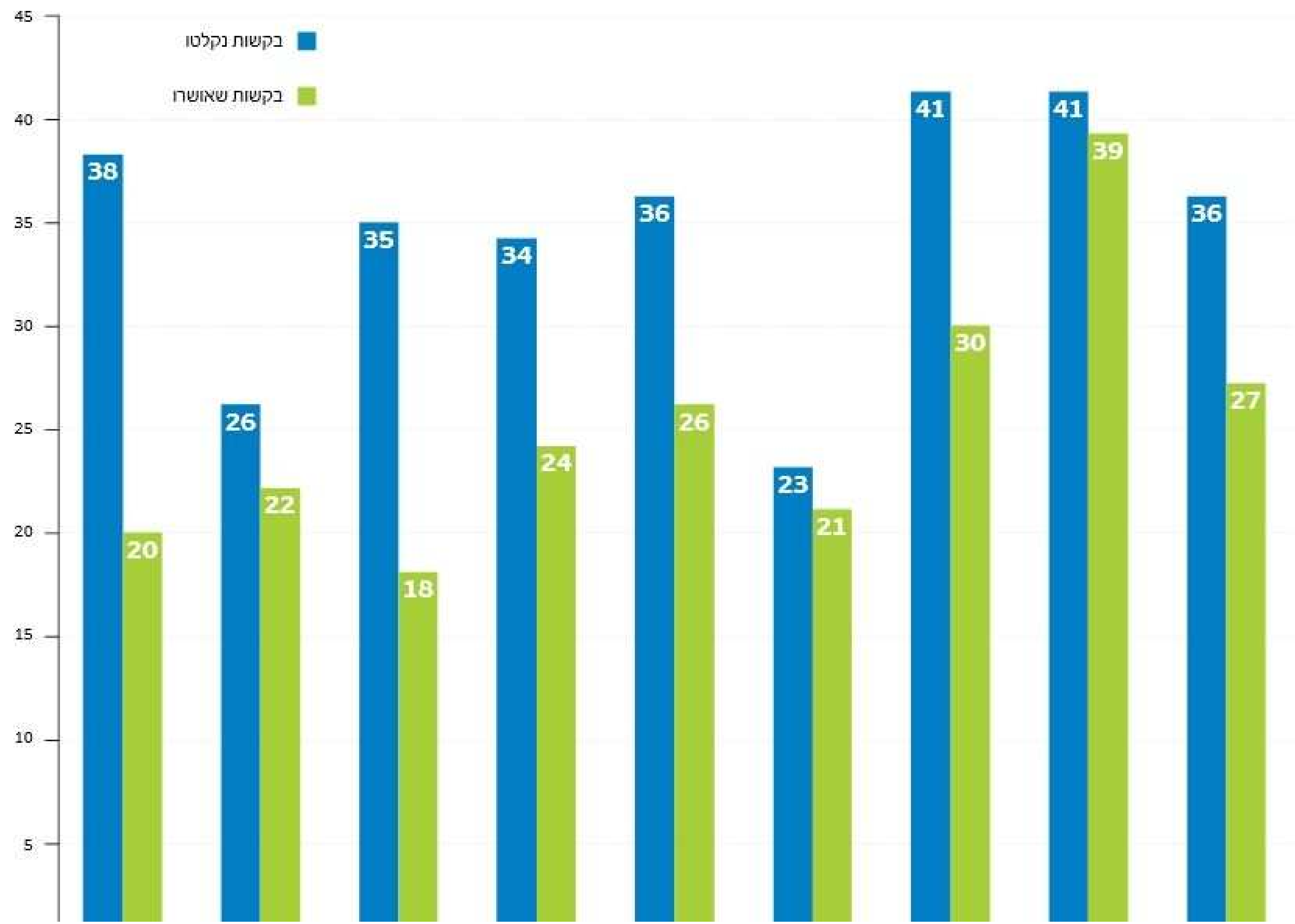
Drug Development Costs

early 2000s
$1.2
BILLION

late 1990s
$800
MILLION

mid-1980s
$320
MILLION

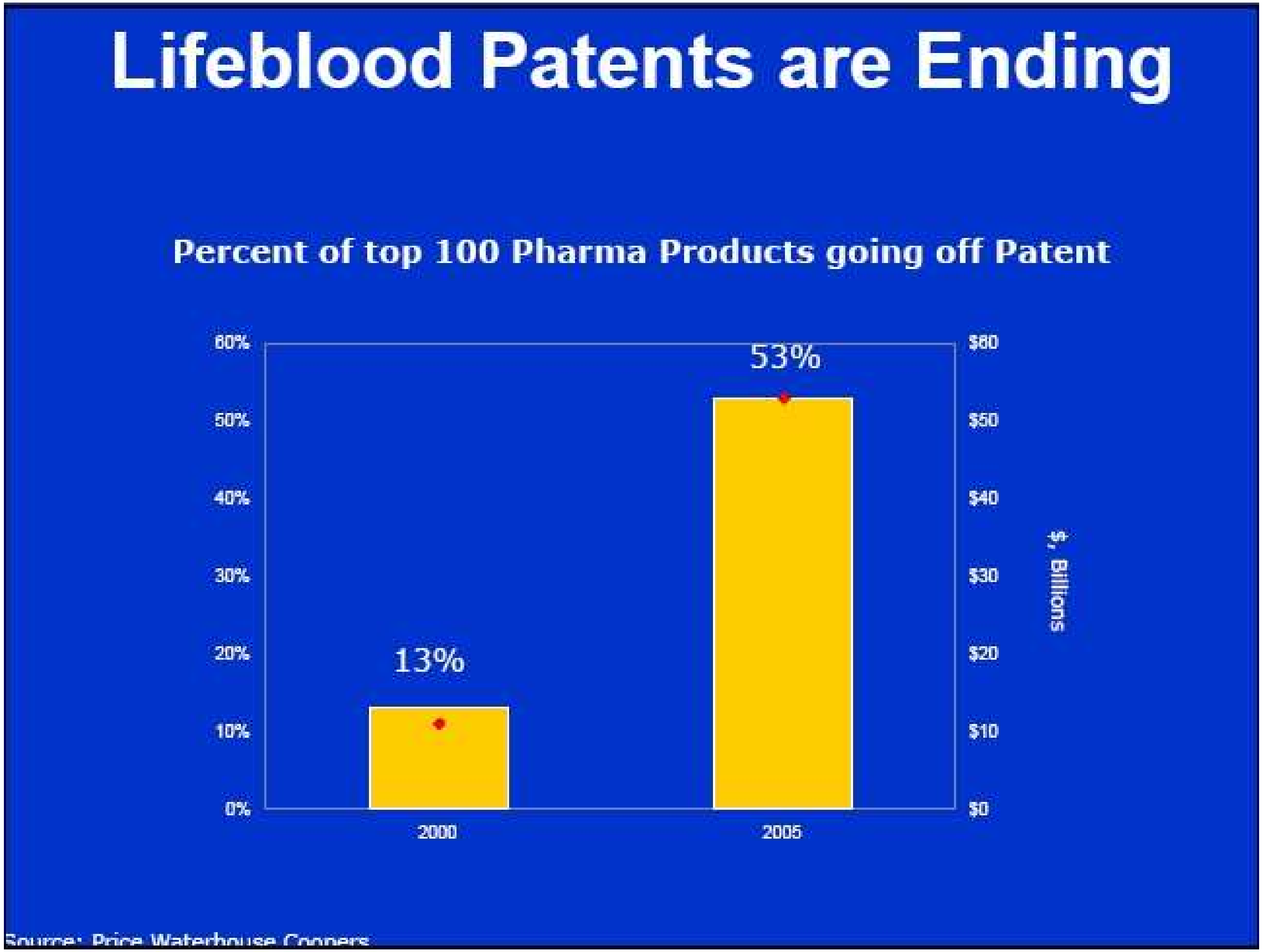
מספר תרופות המקור החדשות המאושרות ע"י ה-FDA, לפי שנים



Pharma future

Probably less profitable

Pharma's main problems -1



Top Drug Patent Expiration's 2011-2016

Antibody and other recombinant drugs expected to account for c.63% of the sales of the top 15 drugs

High unmet medical need of prescribed indications and resistance to genericisation

Worldwide Top 15 drugs – 2011

Company	Product	2011 ($bn)	Patent exp.
Pfizer	Lipitor	9.6	2011
GlaxoSmithKline	Seretide/Advair	8.1	2011
Bristol-Myers Squibb	Plavix	7.1	2012
Abbott Laboratories	Humira	7.9	2016
Roche	Avastin	6.0	2018
Roche	Rituxan	6.8	2018
Novartis	Diovan	5.7	2012
AstraZeneca	Crestor	6.6	2016
AstraZeneca	Seroquel	5.8	2012
Roche	Herceptin	5.9	2019
Eli Lilly	Zyprexa	4.6	2011
Merck & Co	Singulair	5.5	2012
AstraZeneca	Nexium	4.4	2014
Sanofi	Lantus	5.3	2015
Otsuka Holdings	Abilify	5.2	2015

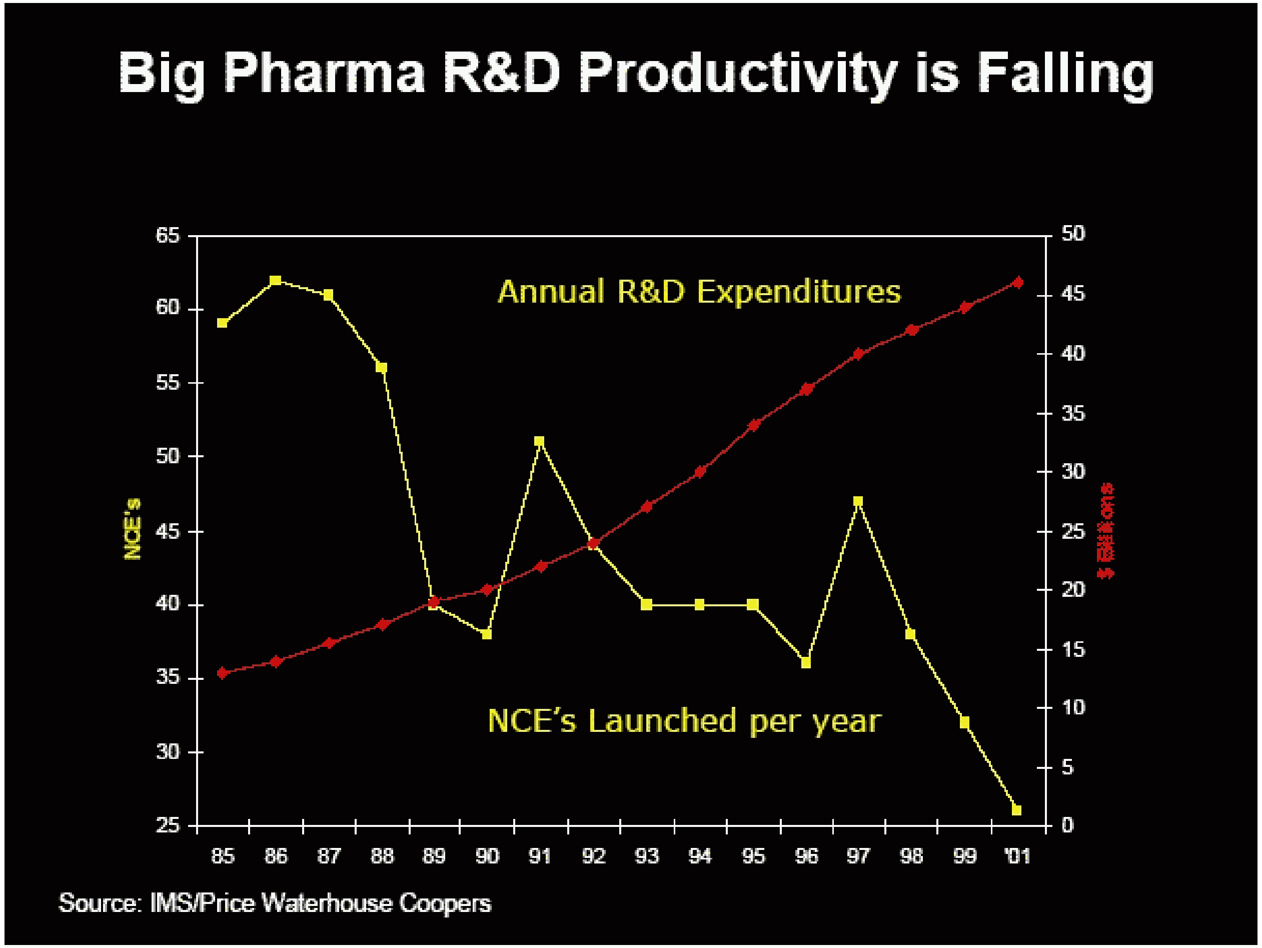
Worldwide Top 15 drugs – 2016

Company	Product	2016 ($bn)	Patent exp.
Abbott Laboratories	Humira	10.3	2016
Roche	Avastin	7.3	2018
Roche	Rituxan	7.1	2018
GlaxoSmithKline	Seretide/Advair	6.7	2011
Pfizer	Prevnar 13	6.3	n/a
Roche	Herceptin	6.2	2019
Celgene	Revlimid	5.9	2026
Sanofi	Lantus	5.7	2015
Merck & Co	Januvia	5.5	2022
AstraZeneca	Crestor	5.4	2016
Boehringer Ingelheim	Spiriva	4.4	2018
Johnson & Johnson	Remicade	4.1	2018
Pfizer	Lyrica	3.8	2018
Pfizer	Enbrel	3.8	2012
Novo Nordisk	NovoRapid	3.8	2014

Recombinant product / monoclonal antibody

Pharma main problems - 2

NCE= new chemical entity

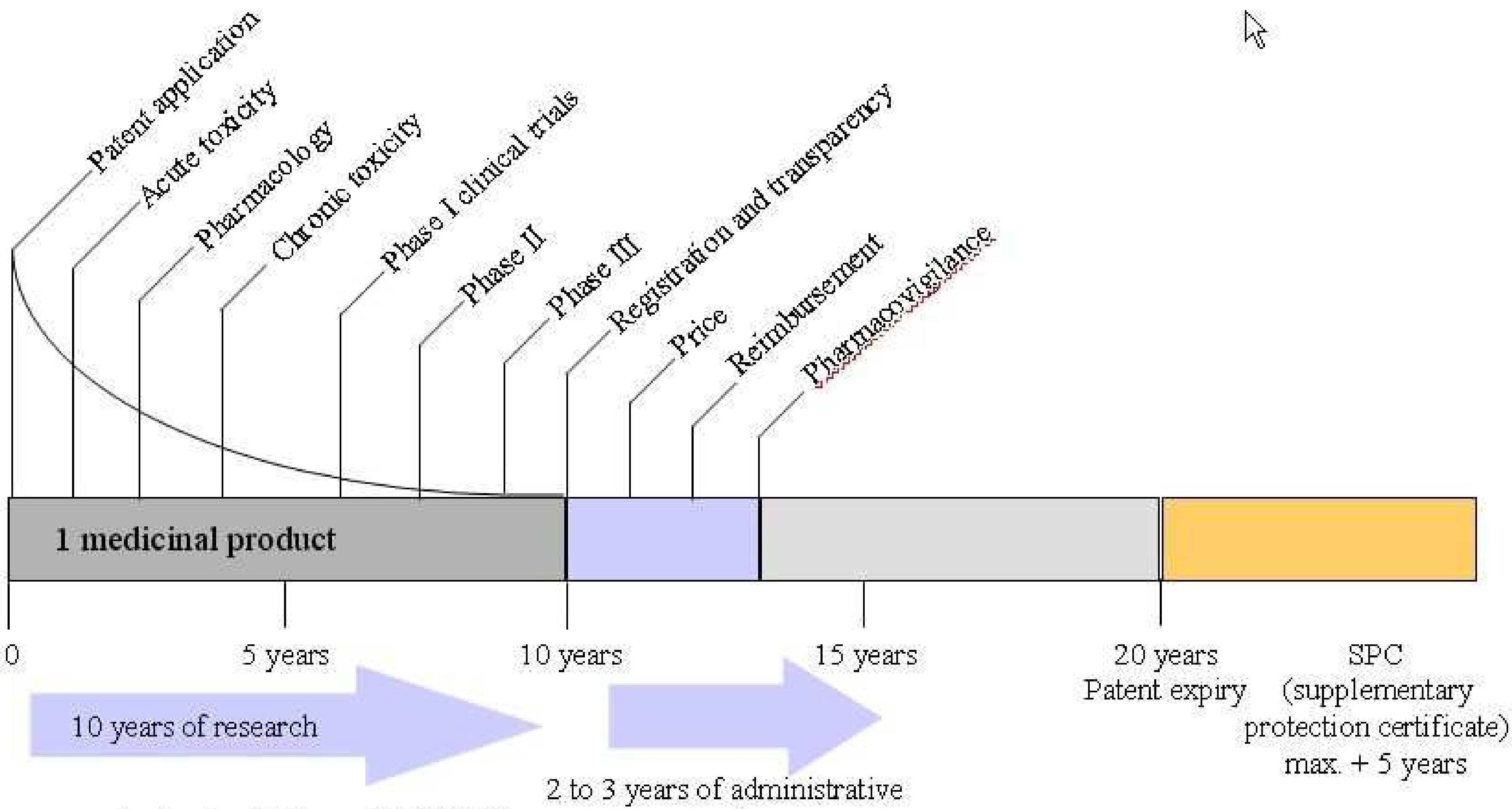


Drugs development process

Becomes more complicated

And costlier

ROUTE OF A NEW SUBSTANCE FROM DISCOVERY TO PATIENT'S ACCESS



Source : « Recherche & Vie », LIM (AGIM)

COSTS

Development

Promotion

BIOTECHNOLOGY

Top biotechnology companies 2006

2006	Company	Country	2006 (USD millions)	R&D in 2006 (USD millions)	(loss) in 2006 (USD millions)	Employees in 2006
1	Amgen	USA	14,268.0	3,366.0	2,950.0	20,100
2	Shantha Biotech	Hyderabad	9,284.0	1,773.0	2,13.0	850
3	Genzyme	USA	3,187.0	650.0	(16.8)	9,000+
4	UCB	Belgium	3,169.6	772.6	461.1	8,477
5	Gilead Sciences	USA	3,026.1	383.9	(1,190.0)	7,575
6	Serono	Switzerland	2,804.9	560.5	735.4	4,775
7	Biogen Idec	USA	2,683.0	718.4	217.5	3,750
8	CSL	Australia	2,148.3	119.1	86.8	2,895
9	Cephalon	USA	1,764.1	403.4	144.8	2,515
10	MedImmune	USA	1,276.8	448.9	48.7	2,359
11	Celgene	USA	898.9	258.6	69.0	1,864
12	Abraxis BioScience	USA	765.5	96.9	(46.9)	1,734
13	Actelion	Switzerland	754.6	169.0	192.4	1,550

Independent biotechnology companies [edit]

- The following is a list of the **top 25 independent biotechnology companies listed on a stock exchange** ranked by Market Capitalization as of June 2015
- Note that it does not include biotechnology companies that are now owned by, or part of, larger pharmaceutical groups - such as Genentech (owned by Roche MedImmune (AstraZeneca).

Rank	Change	Company	Country	Highest Market Cap ever (historical) (USD billions)	Market Cap in Q2 2015 (USD billions)[3]	Market Cap in 2014 (USD billions)[4]	Market Cap in 2013 (USD billions)
1	–	Johnson & Johnson	USA	306.4 September 2014	276.9	277.8	258.3
2	▲	Novartis	SUI	275.2 July 2015	272.6	229.8	195.0
3	▼	Roche	SUI	263.6 February 2014	240.4	258.5	240.3
4	–	Pfizer	USA	310.5 July 2000	211.7	205.4	196.0
5	–	Merck	USA	178.9 January 2015	162.3	166.9	146.5
6	▲	Novo Nordisk	DEN	153.8 June 2015	147.0	125.4	19.6
7	▼	Gilead Sciences	USA	179.6 June 2013	145.1	109.0	78.4
8	▼	Sanofi	FRA	151.3 September 2014	136.0	138.1	142.0
9	▼	Amgen	USA	130.6 December 2014	117.7	93.1	78.7
10	▲	Allergan	USA	122.6 July 2015	116.7	38.2	15.0
11	▼	GlaxoSmithKline	GBR	174.9 May 2006	114.1	128.9	129.6
12	▼	Bayer	GBR	129 March 2015	111.2	113.2	117.4
13	–	Bristol-Myers Squibb	USA	115.3	105.0	97.6	87.2

Agrochemicals

Israel is in top ten

	COMPANY	2004	2003	% Change	Market Share 2004
1	Bayer	7000	6207	12.8%	19.8%
2	Syngenta	6030	5421	11.2%	17.0%
3	BASF	4166	3589	16.1%	11.8%
4	Dow	3143	2800	12.3%	8.9%
5	Monsanto	2864	2784	2.9%	8.1%
6	DuPont	2210	2010	10.0%	6.2%
7	MAKHTESHIM-AGAN	1358	1035	31.2%	3.8%
8	Sumitomo	1358	1235	10.0%	3.8%
9	Nufarm	1170	859	36.2%	3.3%
10	Arysta	791	604	31.0%	2.2%
11	FMC	704	640	10.0%	2.0%
12	Cheminova	492	374	31.6%	1.4%

Source: *Phillips McDougall (March 2005)*

Total Agrochemical Market = $ 35.4 billion

Conventional Crop Protection Market = $ 30.7 billion

Sales of top 20 global agrochemicals in 2013				
2013(2012) ranking	Company	2013 Sales (million)[1]	2012 Sales (million)[2]	% change[3]
1 (1)	Syngenta[4]	10,923	10,318	+5.9
2 (2)	Bayer CropScience[4]	10,420	9,535	+9.3
3 (3)	BASF	6,943	6,012	+15.5
4 (4)	Dow AgroSciences[4]	5,544	5,041	+10.0
5 (5)	Monsanto[4,5]	4,521	3,715	+21.7
6 (6)	DuPont[4]	3,557	3,173	+12.1
7 (7)	Adama (formerly Makhteshim-Agan Industries)	2,876	2,649	+8.6
8 (8)	Nufarm[6]	2,183	2,260	-3.4
9 (10)	FMC	2,146	1,764	+21.6
10 (9)	Sumitomo Chemical[7]	2,052	1,958	+4.8
11 (11)	UPL (formerly United Phosphorus)[7]	1,715	1,585	+8.2
12 (12)	Arysta LifeScience	1,503	1,524	-1.3
13 (13)	Cheminova	1,101	1,027	+7.2
14 (17)	Wynca Chemical	578	449	+28.7
15 (-)	Zhejiang Jinfanda Biochemical	575.5	356.6	+61.3
16 (16)	Huapont-Nutrichem	574	479	+19.8
17 (-)	Sichuan Leshan Fuhua Tongda Agro-chemical Technology	552.7	436.8	+23.9
18 (15)	Kumiai Chemical[8]	506	551	-8.2
19 (14)	Ishihara Sangyo Kaisha[7]	503	540	-6.9
20 (-)	Sipcam-Oxon	501	433	+15.5