

2016 바이오 미래포럼

지속성장 바이오경제 실현을 위한 생태계 진단

2016. 11. 8

유승준
한국바이오경제연구센터



주력산업의 위기

한국 주력산업 글로벌 경쟁력 비교



한·중 주력산업 세계시장 점유율 비교 (단위: %)

	한국	중국	2003년	→ 2013년
자동차 (생산량)	한 5.4	중 4.7	9.8	12.5
조선·해양 (수주량)	한 42.9	중 13.9	30.8	35.0
석유화학 (에틸렌생산능력)	한 5.34	중 5.27	5.4	12.2
정유 (석유정제능력)	한 2.8	중 6.6	3.0	13.3
철강 (조강생산량)	한 4.8	중 22.9	4.1	48.5
스마트폰 (판매량)	한 34.8	중 14.6	30.1	31.3

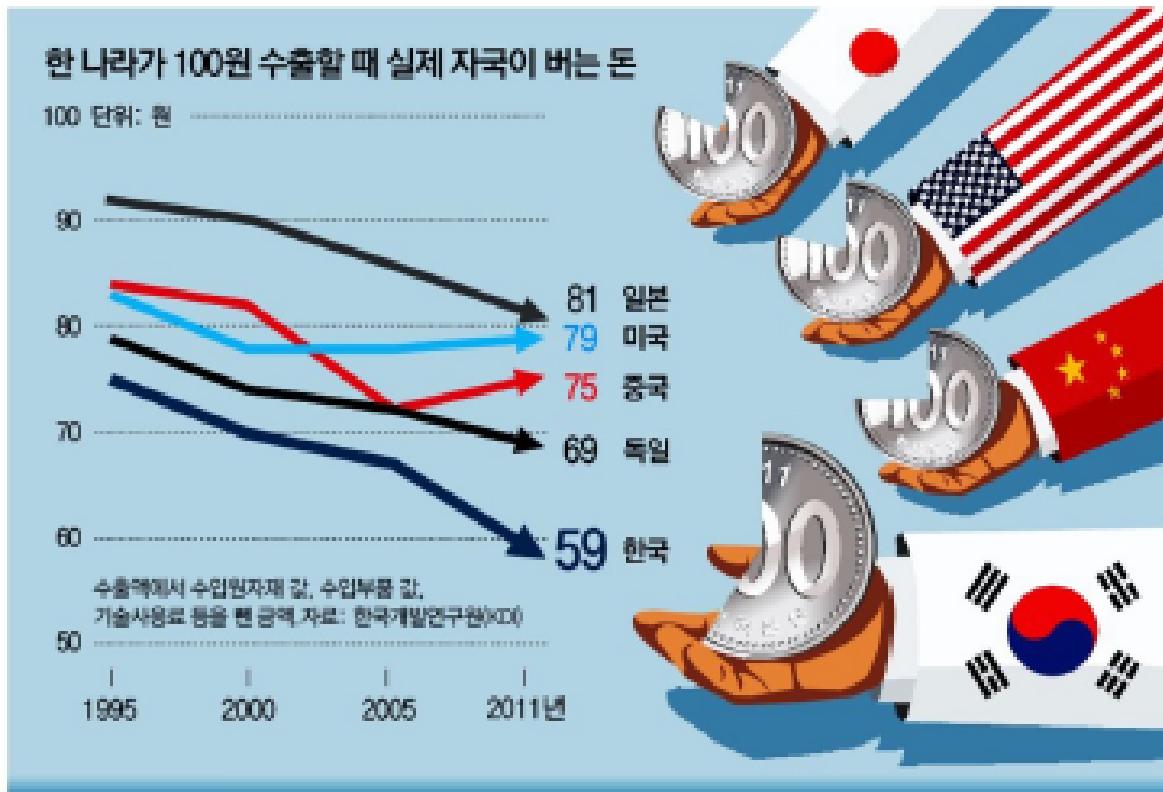
*스마트폰은 2012년 2분기와 2014년 2분기 비교

자료: 전경련

중국에 추월당한 한국의 수출 경쟁력



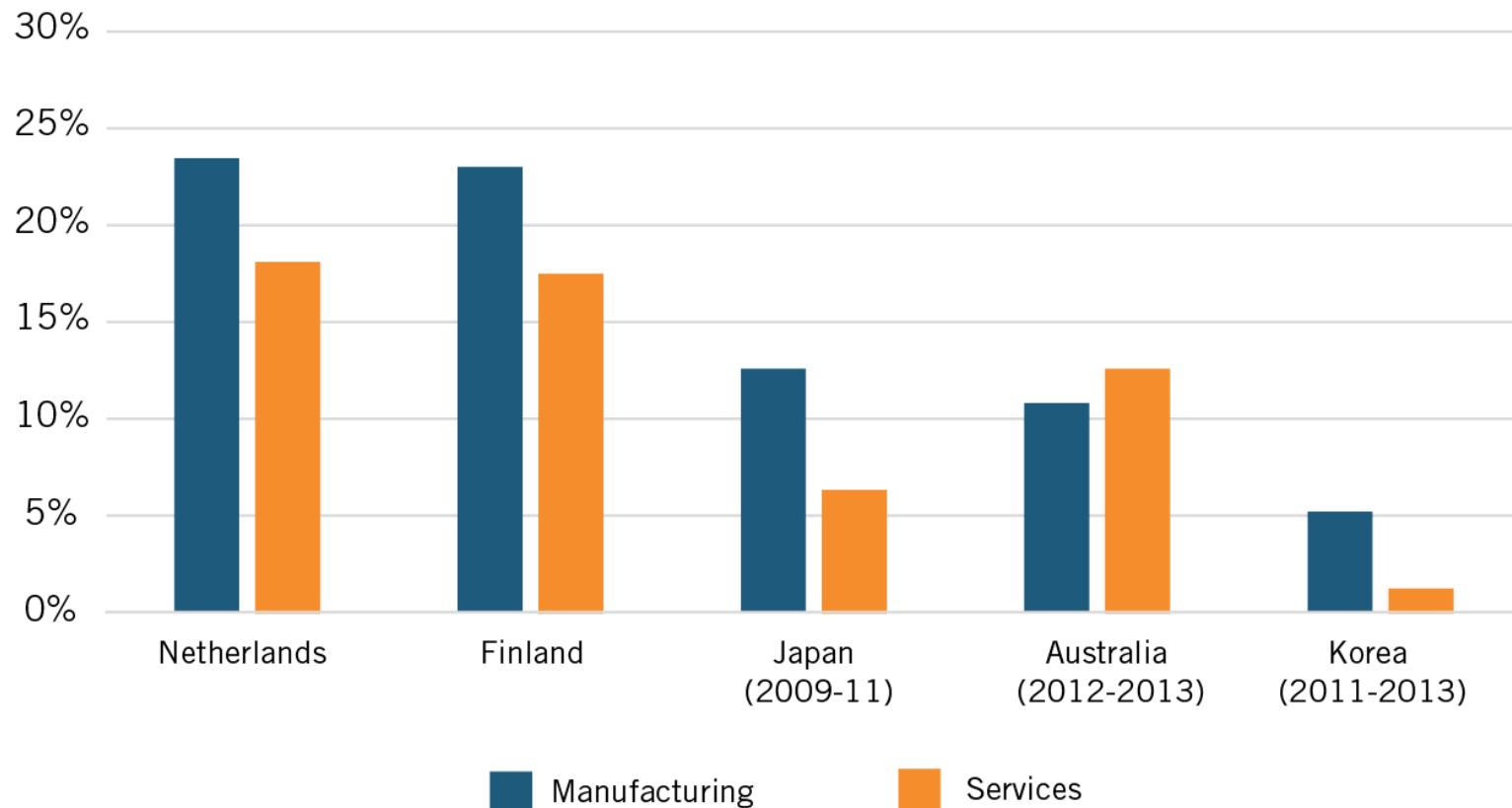
제조업의 위기



한국 산업의 진화



Nations Risk “Innovation Dualism”



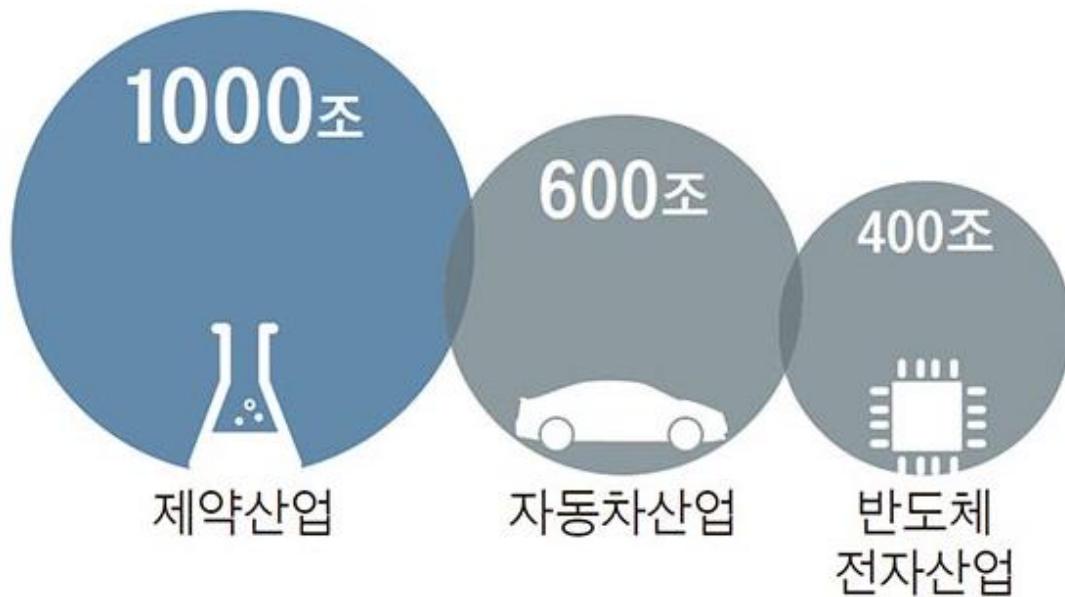
Source: OECD Science, Technology and Industry Scoreboard 2015 (by Robert D. Atkinson @ ITIF)

바이오 인식의 변화 (현장)



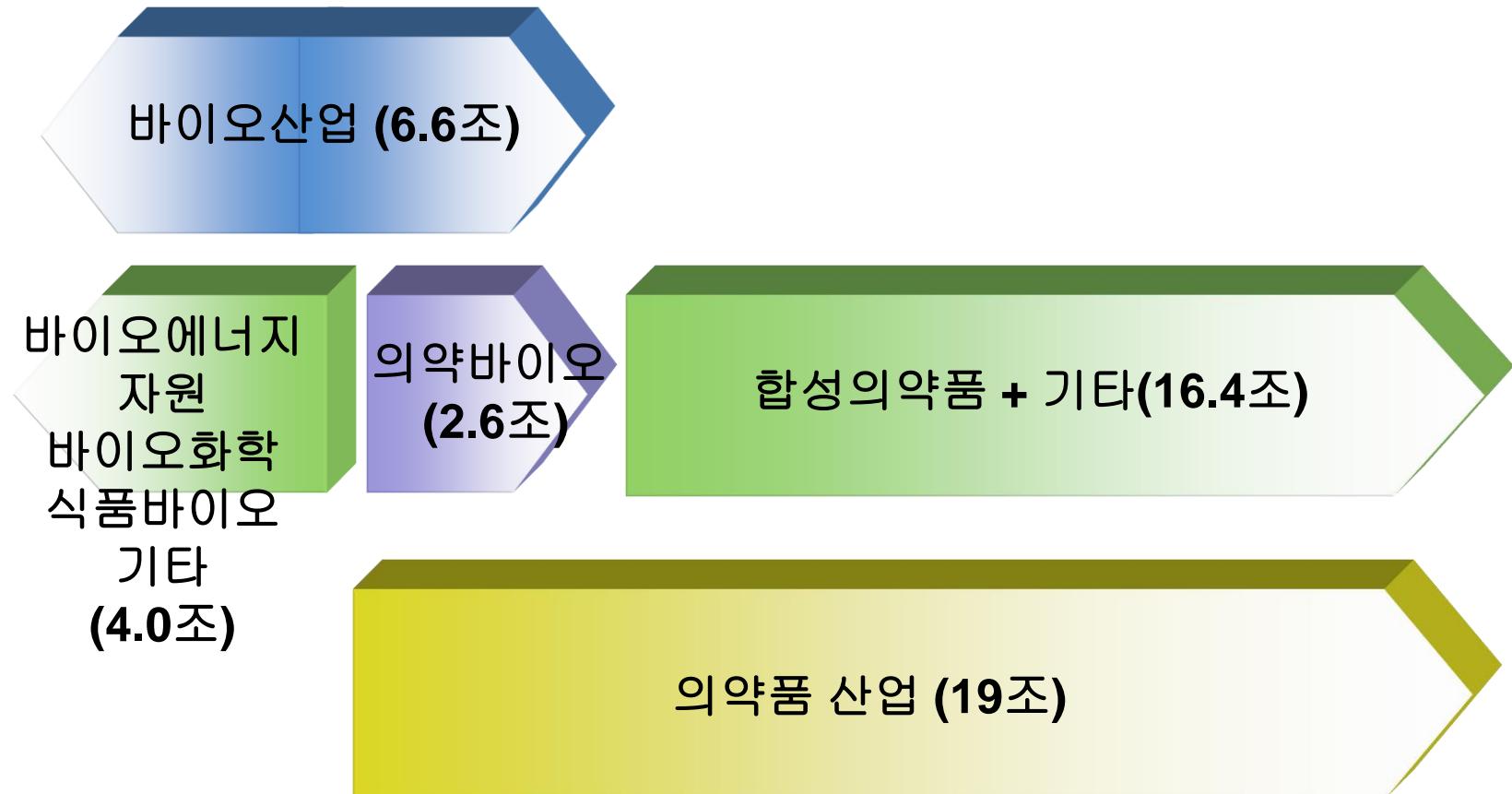
세계 제약산업 1000조원

세계 제약산업 규모 단위:원, 2014년 기준



자료: 산업통상자원부·CV소스(차이나벤처투자컨설팅)

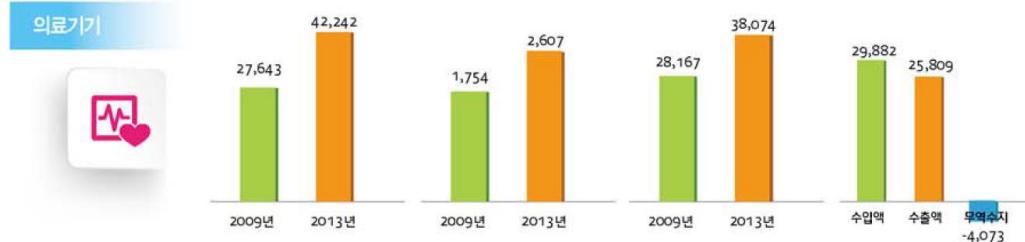
국내 바이오/제약산업 시장 (2013년)



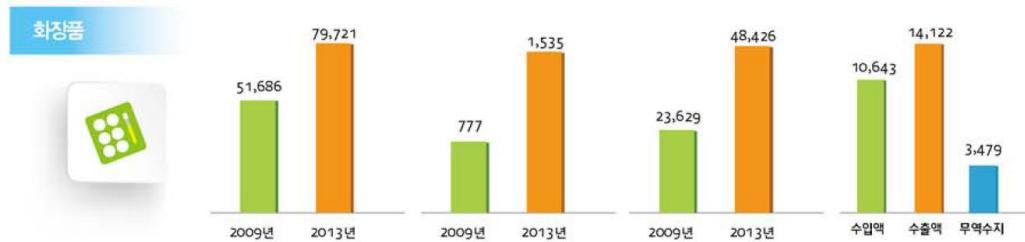
바이오산업의 특징(1)



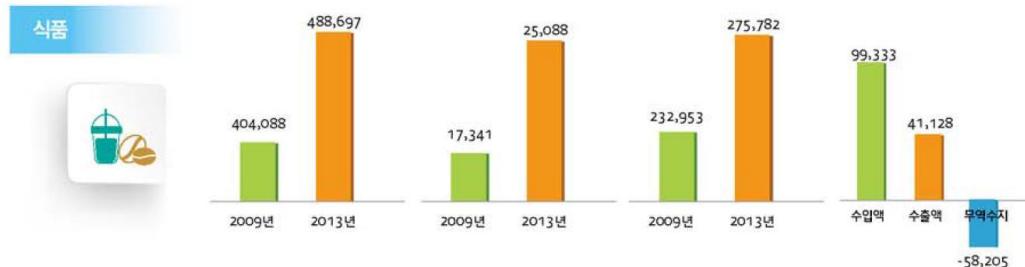
상위 20개 기업 매출(8조 7,417억원)이 전체의 47.0%
 - 생산실적 5,000억원 이상 3개사 (총 생산액의 12.0%)
 - 생산실적 100억원 미만 132개사(46.8%) (총 생산액의 2.2%)
 ↪ 무역수지 적자 지속, 최근 감소 (2013년 2조 8,373억원)



국내 시장규모는 4조 6,315억원 (전년 대비 0.9% 증가)
 - 생산실적 100억원 이상 86개사 (총 생산액의 62.9%)
 - 생산실적 10억원 미만 2,113개사(81.1%) (총 생산액의 7.3%)
 ↪ 무역수지 적자 감소 추세 (2013년 4,074억원)



상위 15개 기업 매출(8조 7,417억원)이 전체의 75.5%
 - (주)아모레퍼시픽 2조 6,677억원
 - (주)LG생활건강 2조 2,382억원
 ↪ 2012년부터 무역수지 흑자 전환(2013년 3,479억원)

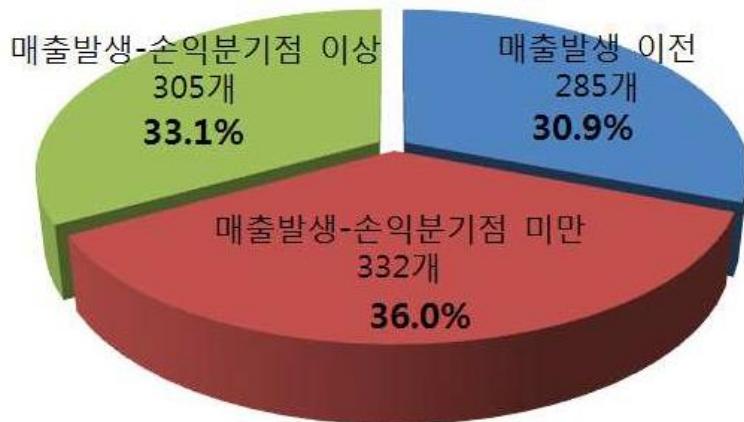


국내 식품시장 규모는 총 54.7조원
 - 매출액 1조원 이상 8개사 (총 매출액의 25.2%)
 - 매출액 5억원 미만 19,765개사 (총 매출액의 3.0%)
 ↪ 무역수지 적자 지속 (2013년 5조 8205억원)

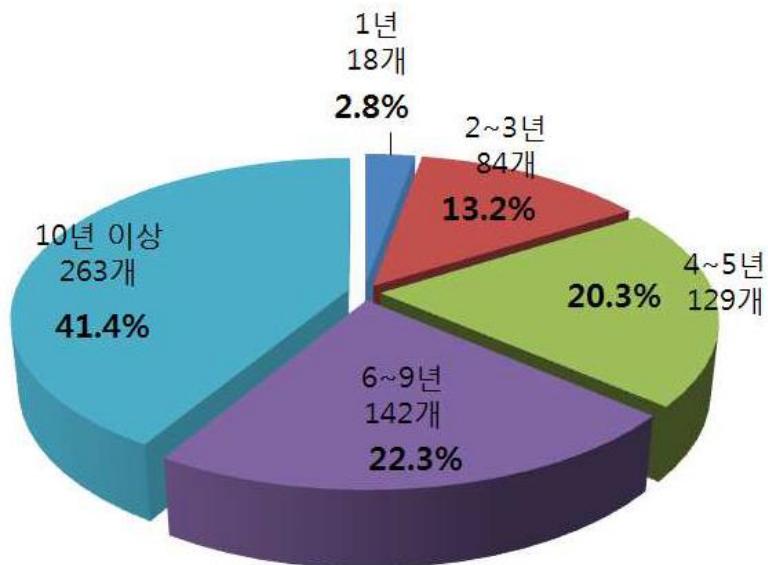
바이오산업의 특징(2)

▶ 매출 손해 66.9%, 매출발생 기간 6년 이상 63.7%

바이오 비즈니스 추진 유형



바이오분야 매출발생 기간



자료 : 2014년 국내 바이오산업 실태조사 (한국바이오협회)

기초연구(1)

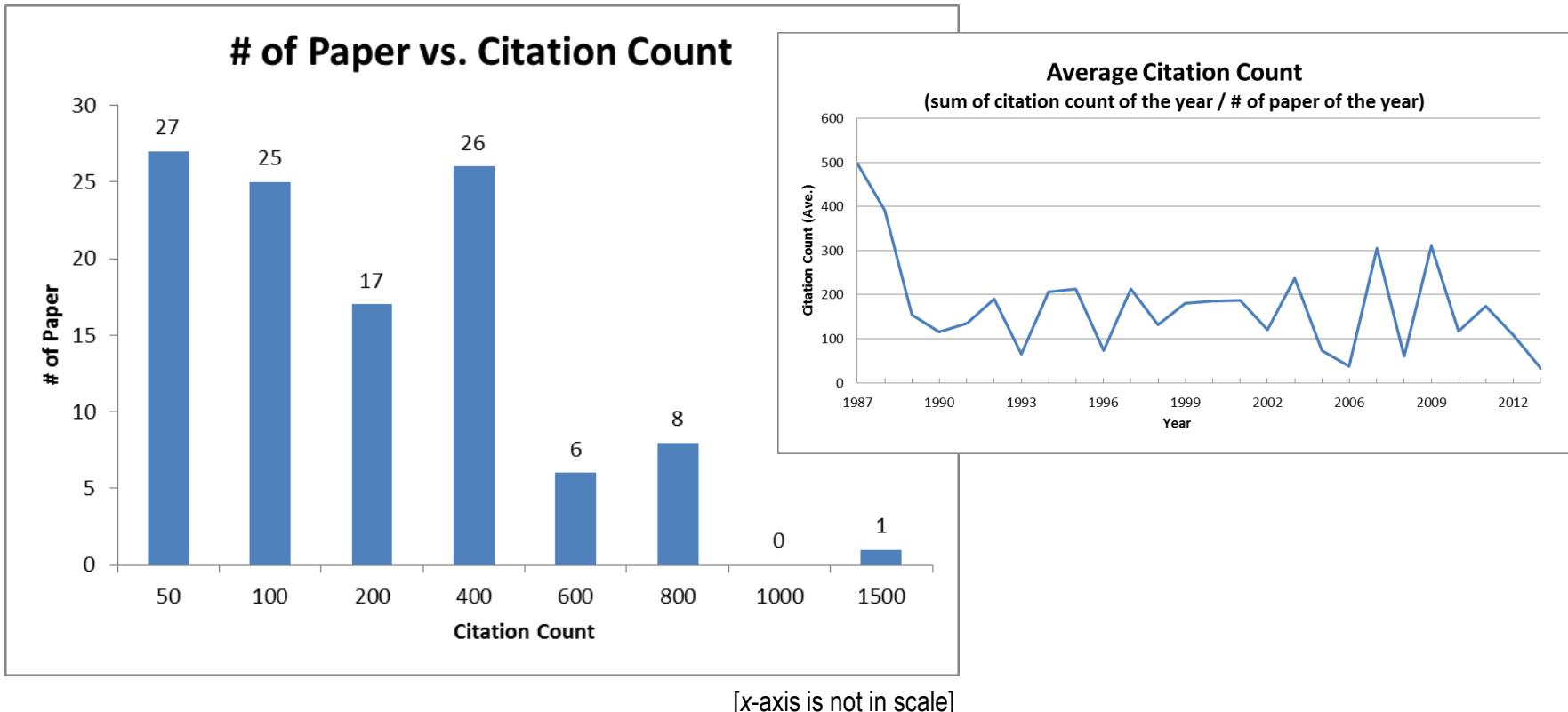
1949

341,834

2,483

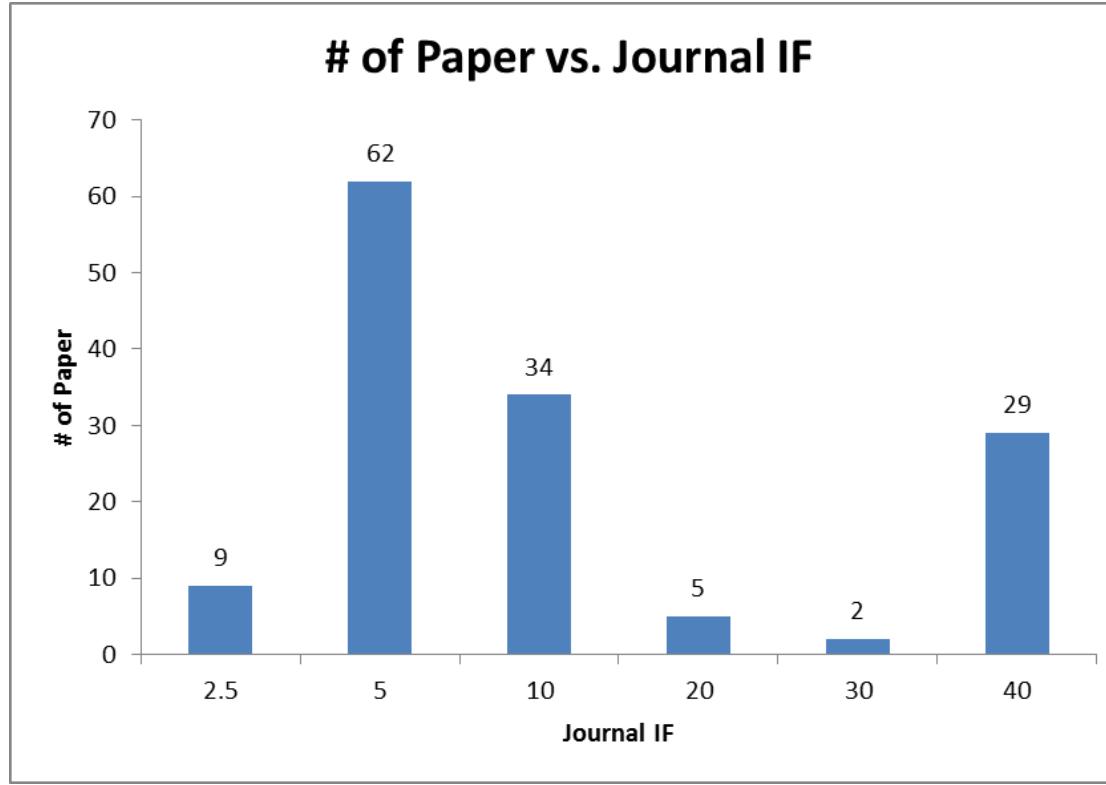
기초연구(2)

- Brian K. Kobilka, Chemistry, 2012: “*G-protein coupled receptor*”
 - Stanford University School of Medicine
 - paper survey from 1986 to 2013 (154 papers)



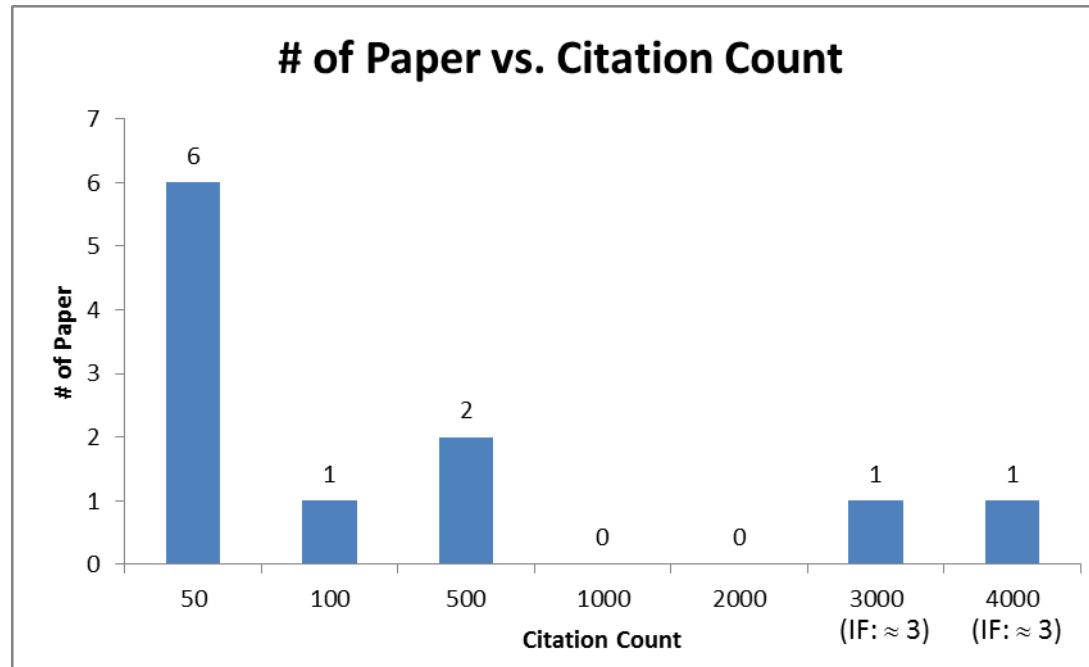
기초연구(3)

- Brian K. Kobilka, Chemistry, 2012: “*G-protein coupled receptor*”
 - *Stanford University School of Medicine*
 - *paper survey from 1986 to 2013 (154 papers) ⇒ High IF, High & Steady Citation*



기초연구(4)

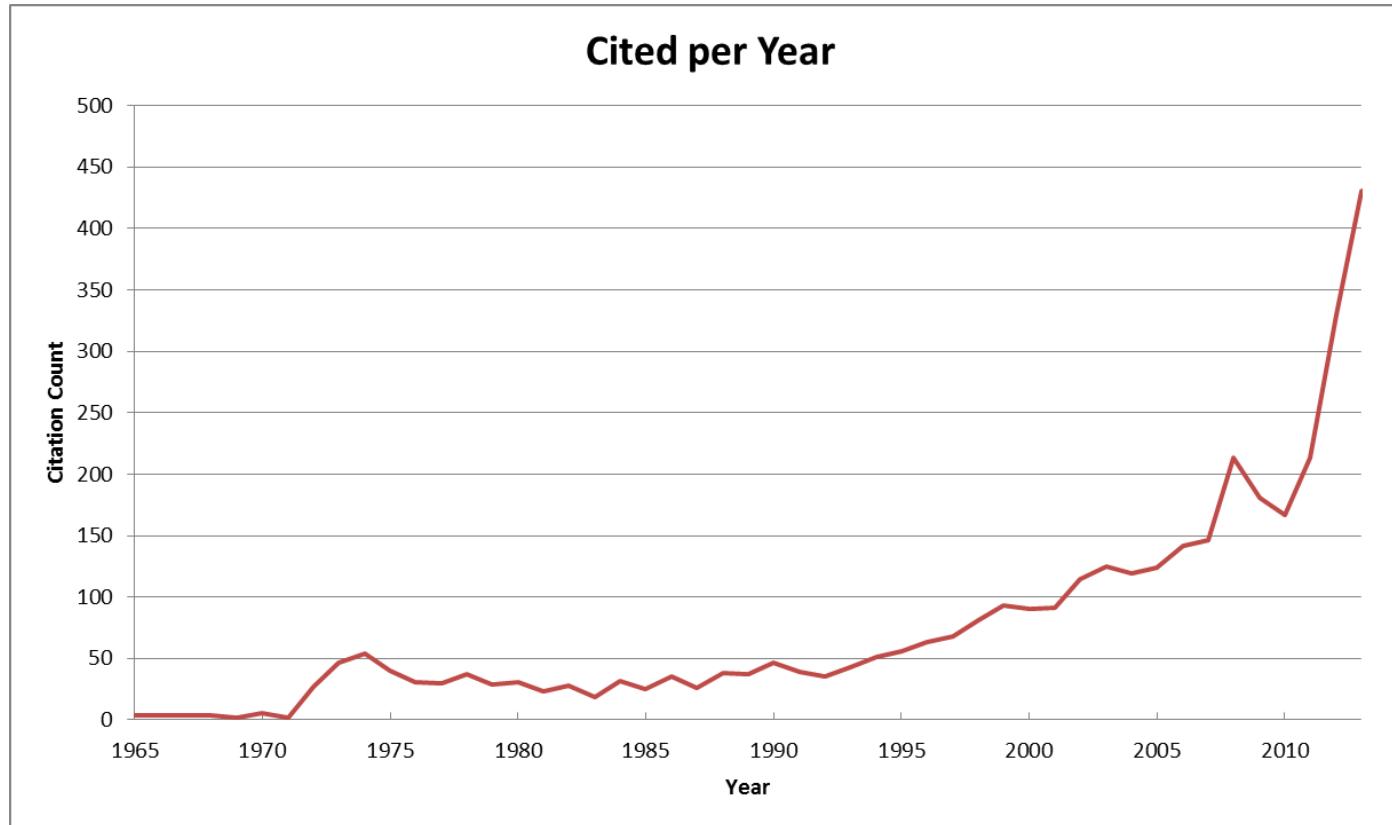
- Peter W. Higgs, Physics, 2013: “Higgs Particle”
 - University of Edinburgh
 - Paper survey from 1951 to 1979 (11 papers out of 19 papers)



[x-axis is not in scale]

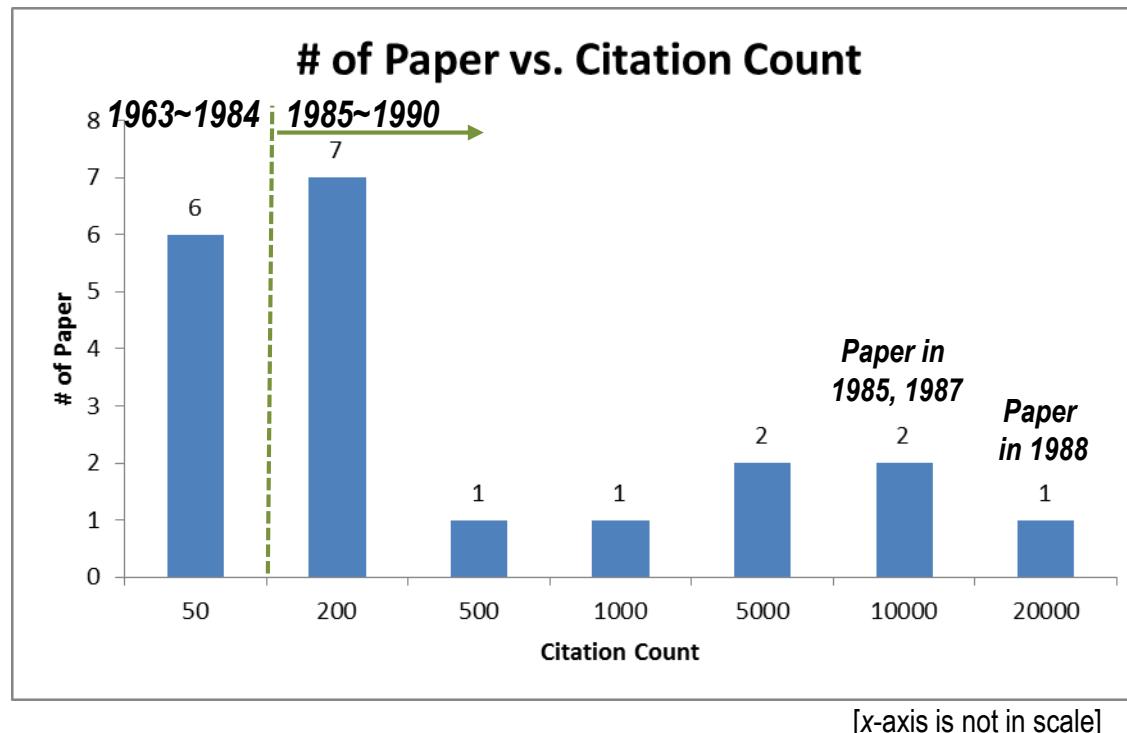
기초연구(5)

- Peter W. Higgs, Physics, 2013: “Higgs Particle” \Rightarrow Late Recognition of the Impact
“*Broken Symmetries, Massless Particles and Gauge Fields*” Physics Letter 12 132 (1964)



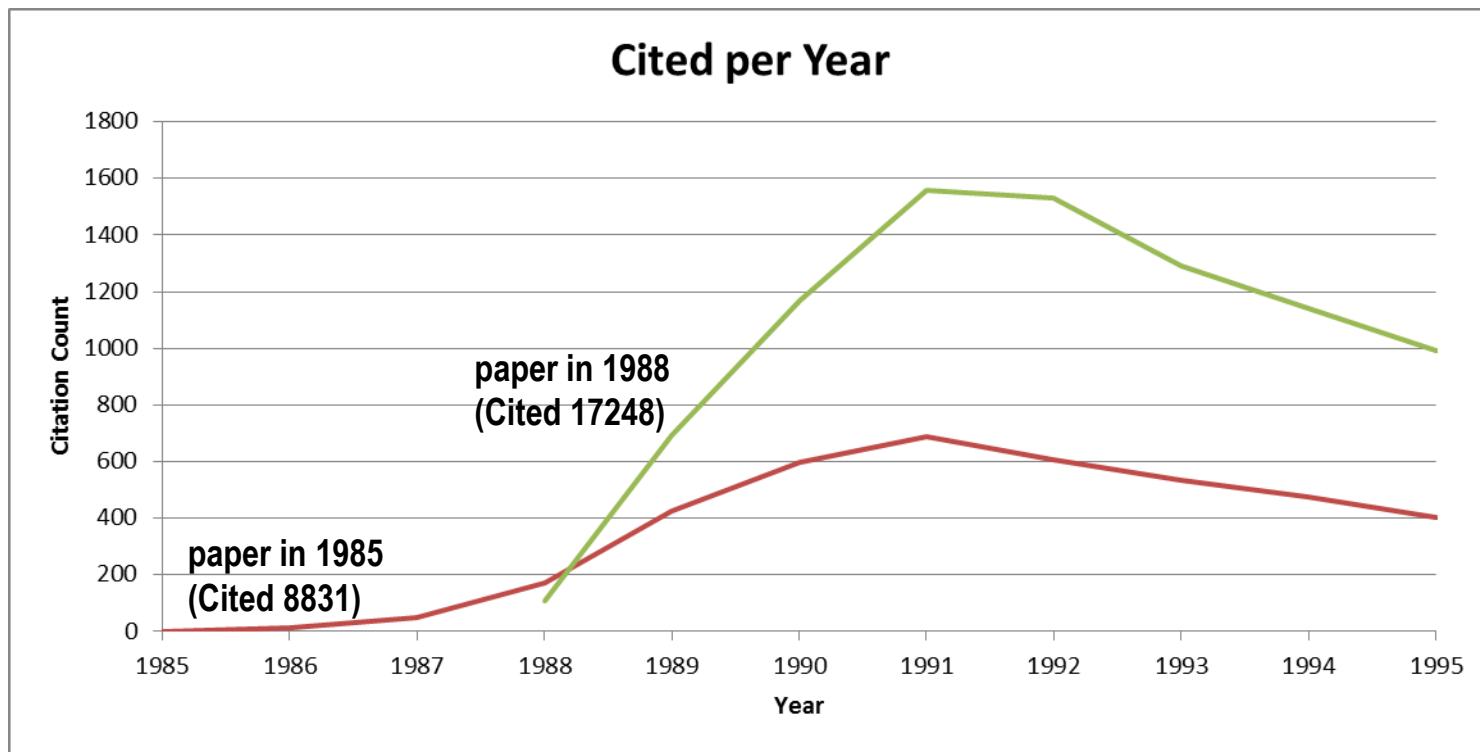
기초연구(6)

- Kary B. Mullis, Chemistry, 1993: “PCR (Polymerase Chain Reaction)”
 - No Affiliation at the time of the award
 - paper survey from 1963 to 1990 (20 papers)
 - ⇒ Major Achievement after 20 years of Research



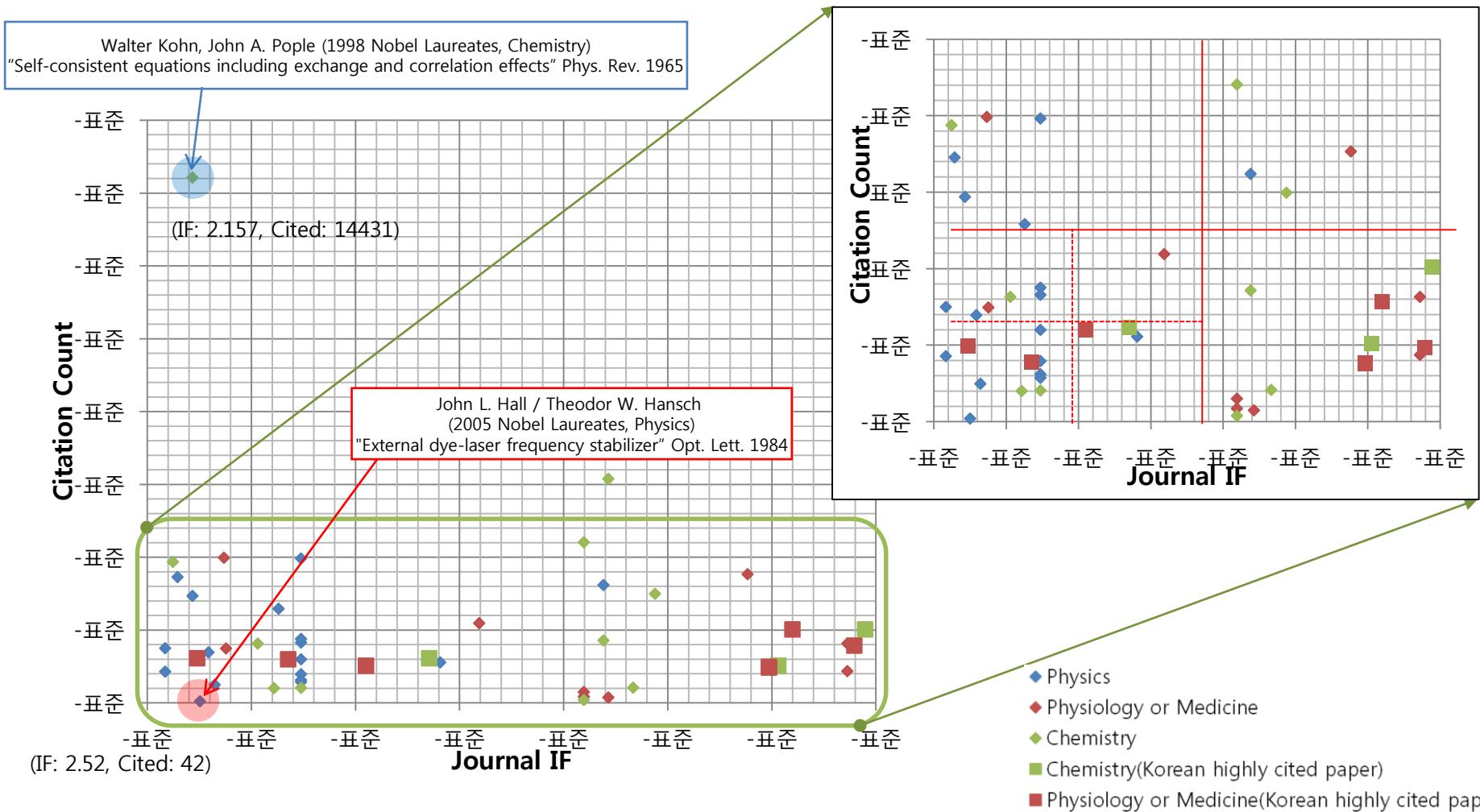
기초연구(7)

- Kary B. Mullis, Chemistry, 1993 : “PCR (Polymerase Chain Reaction)”
 - *“Enzymatic Amplification of Beta-Globin Sequences and Restriction Site Analysis for Diagnosis for Sickle Cell Anemia,” Science 230 : 1350 (1985)*
 - *“Primer-Directed Enzymatic Amplification of DNA with a Thermostable DNA Polymerase,” Science 239 : 484 (1988) papers)*



기초연구(8)

- 30 papers of Nobel Laureates (3 fields) and 10 Korean papers (2 fields):
Distribution of Journal IF and Citation Count



* Source: Kyoung-Soon Lim, Analysis of Nobel Prize in Science and Study on Strategic Approach, Final Report (2008)

기초연구(9)



"Papers should not be the only measure to assess the scientific excellence. **Social impact** which stems from the research is also an important factor for the evaluation of research."

"Overcome the stress of the publishing and be more creative. Especially for the young researchers, **enough time** is essential to make a creative research."

- Philip Campbell, Editor-in-Chief of Nature

@ Panel Discussion on Research Assessment (April 9, 2014)

기초연구(10)

Duration of budget support (enough time) for basic research is more important than the size of budget to develop to further stages, such as early commercialization or more **concrete topic with impact**, especially for young scientist.
(0.1 mUSD for 3 years better than 0.3 mUSD for 1 year)

- ☞ To increase the **Diversity** and **Creativity** of the research agenda

* Source : Seung Jun Yoo, et al., *Survival Analysis of Basic Research Performance of Excellence to Commercialization (Issue Paper 2010-10, KISTEP)*

기술이전/상업화(I)

[표 1] 기술이전/상업화 지수 측정방법

측정 항목	절대 건수	투입 대비 건수 ⁶⁾	가중치 (MILKEN) ⁷⁾	가중치 (K-MILKEN II) ⁸⁾
특허 등록	50%	50%	15%	15%
기술이전	50%	50%	15%	15% ⁹⁾
기술료	50%	50%	35%	35%
창업	50%	50%	35%	—
제품화	50%	50%	—	35% ¹⁰⁾

6) 생산성(productivity) 또는 효율성(efficiency) 수치를 각각 50% 적용

7) 美MILKEN 연구소에서 미국대학을 대상으로 상업화 역량을 측정하기 위해 도입한 지수

8) 상업화 역량을 측정하기 위하여 MILKEN 연구소에서 제안한 상업화 지수(특허/기술이전/기술료/창업)를 보완하여 K-MILKEN II(특허/기술이전/기술료/제품화) 지수를 제안

9) 무상 기술이전 건수는 제외

10) 창업 및 기존 기업에서 발생한 모든 제품화를 포함(MILKEN의 경우, 대학을 대상으로 하여 창업만을 포함시켰음)

기술이전/상업화(2)

<표2-3> 상용화지수의 실제 적용 사례(MILKEN 보고서)¹⁷⁾

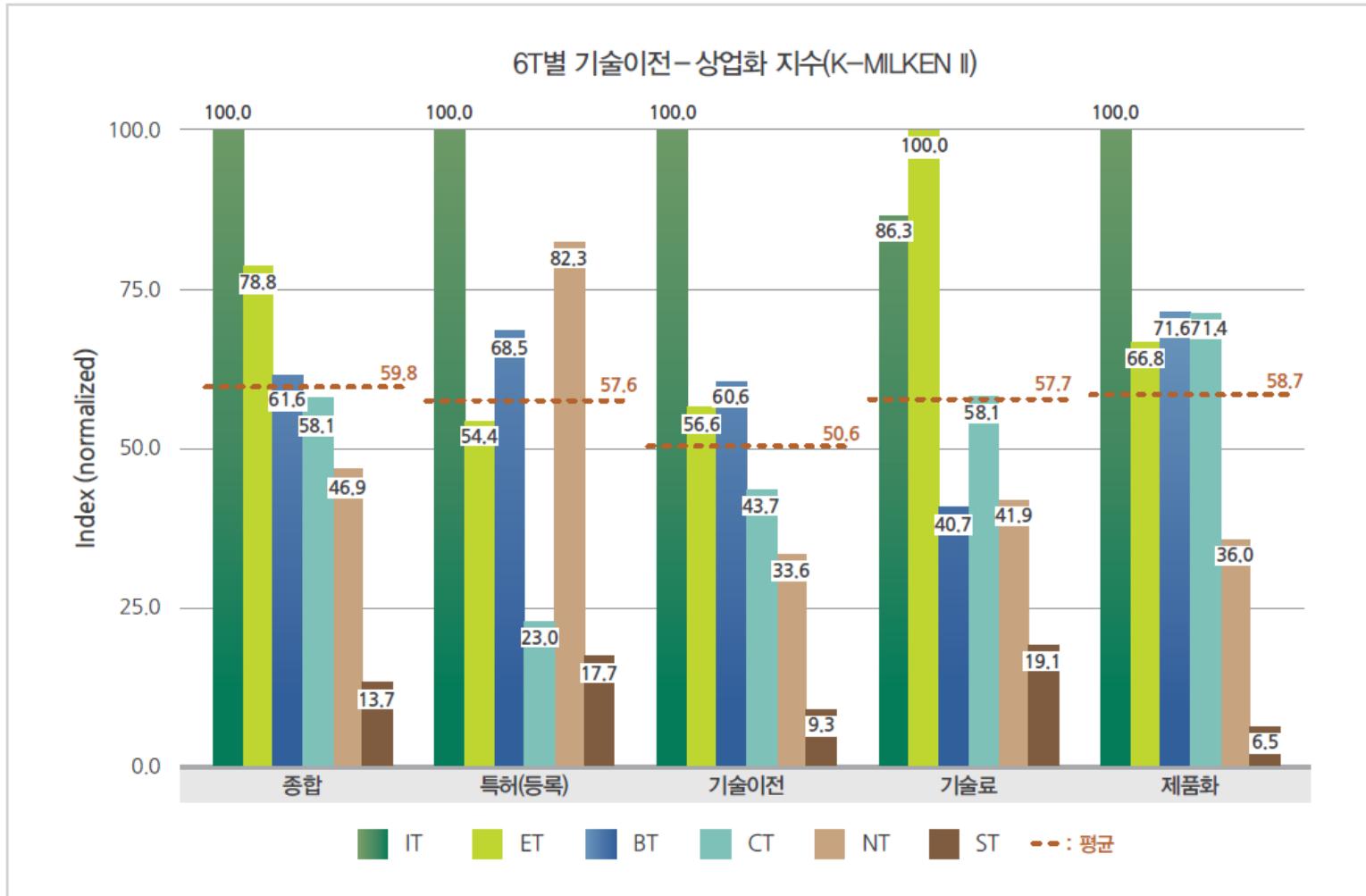
Rank	Institution Name	Patents	Licenses	Licensing		Overall Score
		Issued Score	Executed Score	Income Score	Startups Score	
1	Massachusetts Inst. of Technology (MIT)	95.17	79.89	90.64	100.00	100.00
2	University of California System	97.26	85.25	95.16	83.24	96.59
3	California Institute of Technology	100.00	70.77	87.12	86.60	92.94
4	Stanford University	91.56	84.28	93.76	77.02	92.65
5	University of Florida	84.82	71.41	92.57	69.26	86.11
6	University of Minnesota	78.92	77.46	91.02	69.24	85.55
7	Brigham Young University	66.87	80.60	86.13	77.57	85.41
8	University of British Columbia	74.36	74.09	82.73	77.42	84.23
9	University of Michigan	82.70	72.25	77.98	74.89	82.54
10	New York University	73.68	63.30	100.00	58.16	81.63
11	Georgia Institute of Technology	76.80	60.51	72.79	83.41	80.95
12	University of Pennsylvania	76.41	72.05	83.95	67.15	80.83
13	University of Illinois, Chicago, Urbana-Champaign	72.80	74.55	77.60	72.72	80.35
14	University of Utah	77.08	70.80	81.56	66.01	79.40
15	University of Southern California	70.77	79.81	70.37	75.72	79.28
16	Cornell Research Fdn., Inc.	86.31	75.99	77.99	61.51	78.69
17	University of Virginia Patent Fndtn.	66.53	75.11	79.41	68.48	78.52
18	Harvard University	78.82	76.06	87.54	52.45	77.68
19	University of California, San Francisco	88.60	11.63	99.73	62.39	77.19
20	North Carolina State University	78.41	73.80	74.40	64.77	76.94
21	SUNY Research Foundation	79.51	64.36	84.63	58.01	76.90
22	W.A.R.F./University of Wisconsin	87.59	86.65	90.52	38.99	76.86
23	McGill University	77.47	68.76	72.12	69.24	76.80
24	University of Washington/Wash. Res. Fdn.	75.11	76.10	88.49	50.03	76.54
25	University of North Carolina, Chapel Hill	78.48	76.86	71.14	64.21	76.00

Sources: AUTM, Milken Institute

17) Ross DeVol, et al., "Mind to Market: A Global Analysis of University Biotechnology Transfer and Commercialization," Milken Institute, 2006

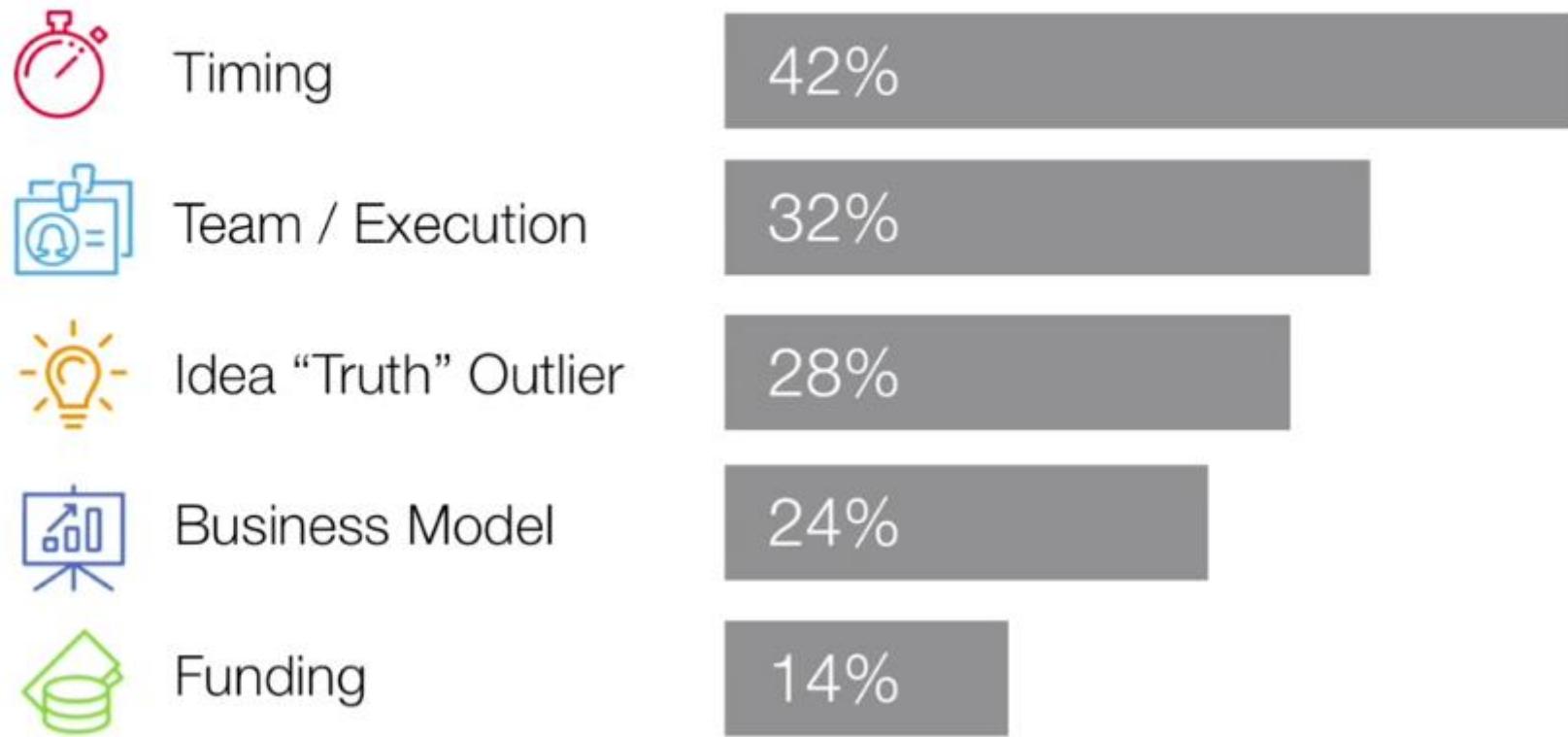
기술이전/상업화(3)

IT > ET > BT > CT > NT > ST



창업(1)

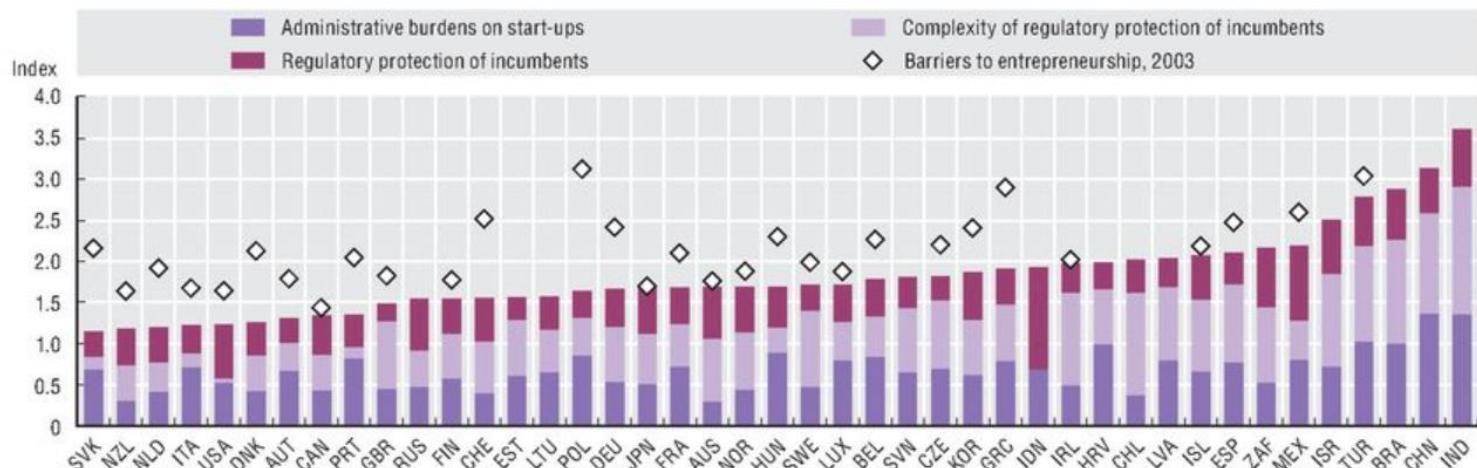
Top 5 Factors in Success Across More Than 200 Companies



창업(2)

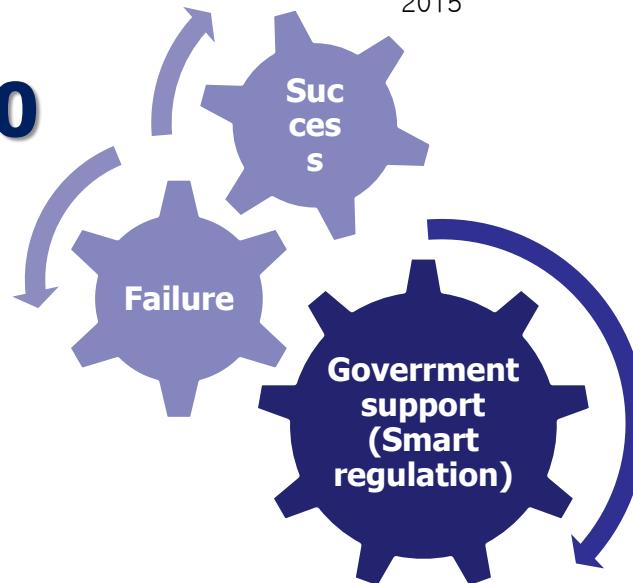
Barriers to entrepreneurship, 2013

Scale of 0 to 6 from least to most restrictive



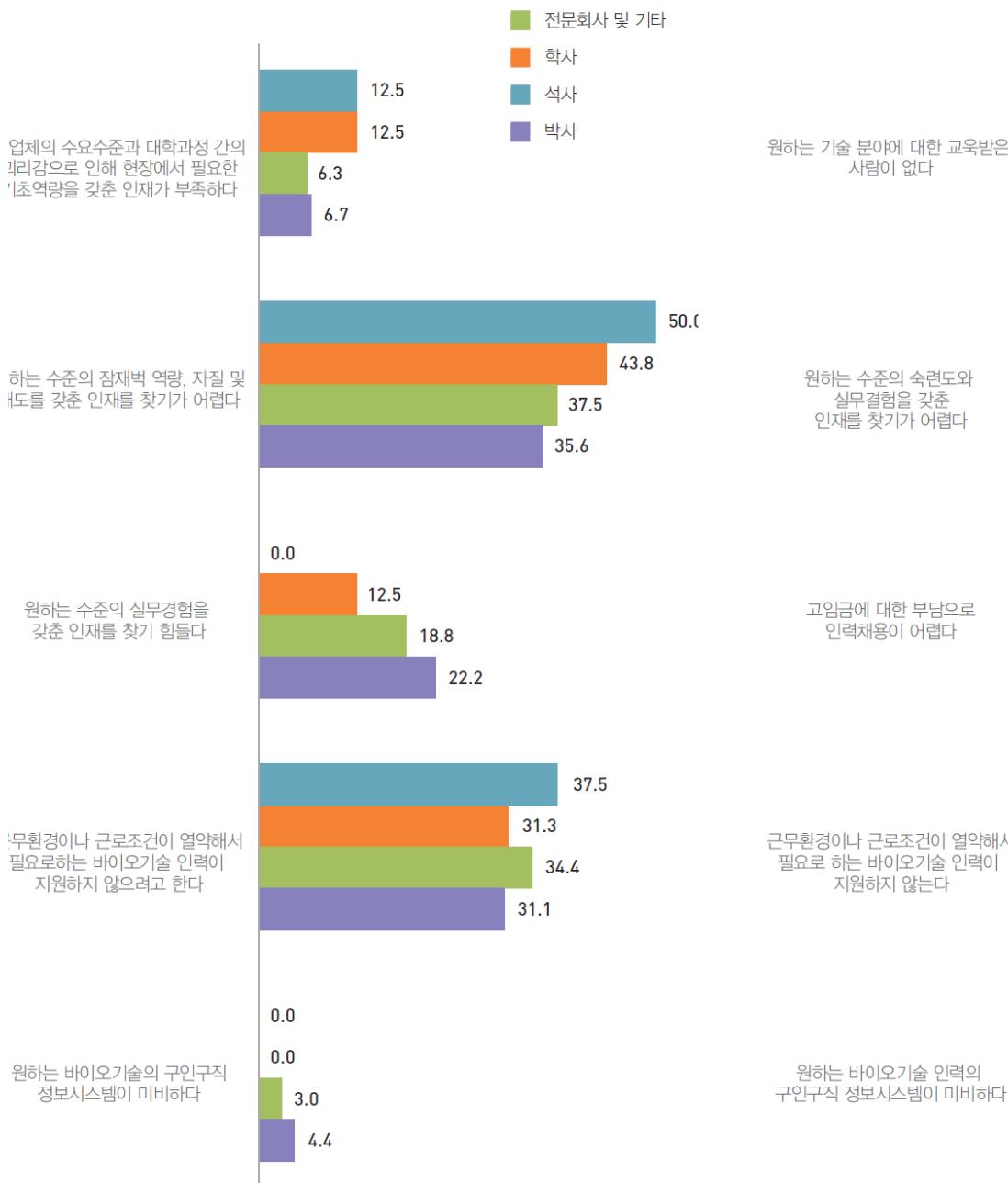
Source: OECD Science, Technology and Industry Scoreboard
2015

Bio Startup 1000

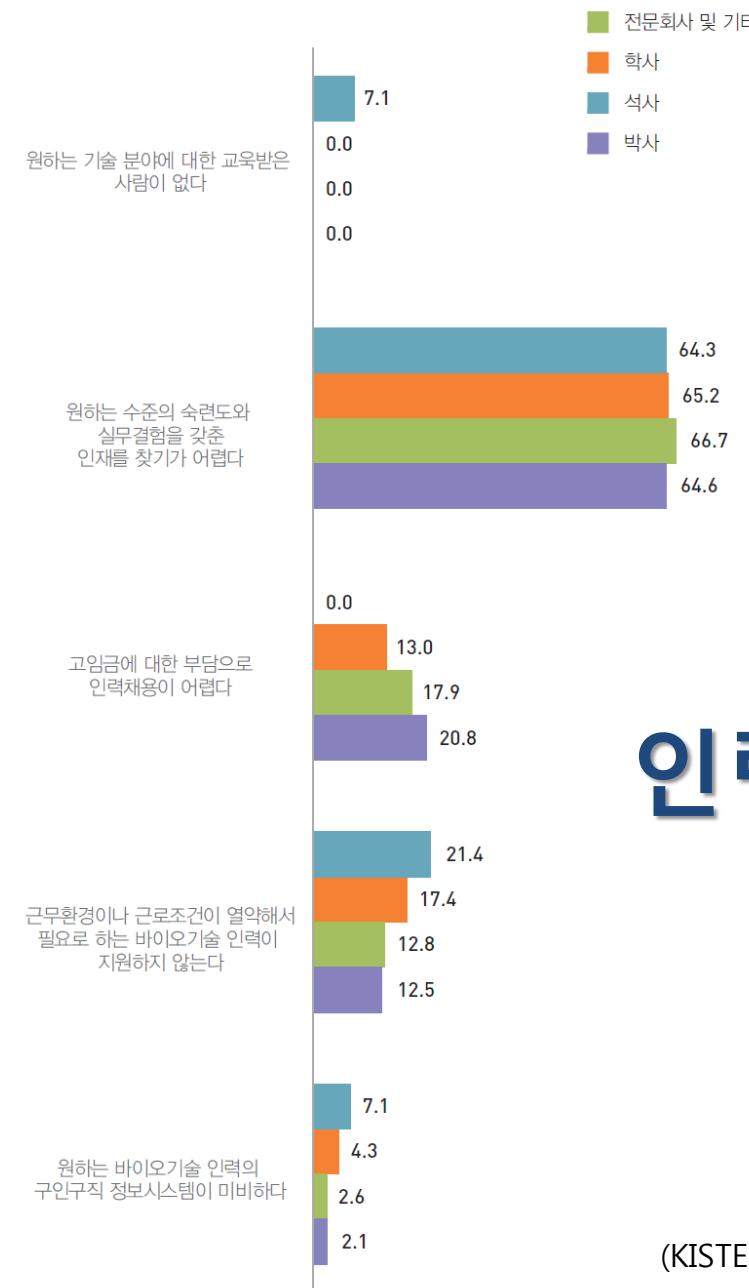


**Seed for
Sustainable
Bio-Economy**

〈그림 6〉 바이오의약 분야 학력별 신입 채용 애로사항 (단위: %)



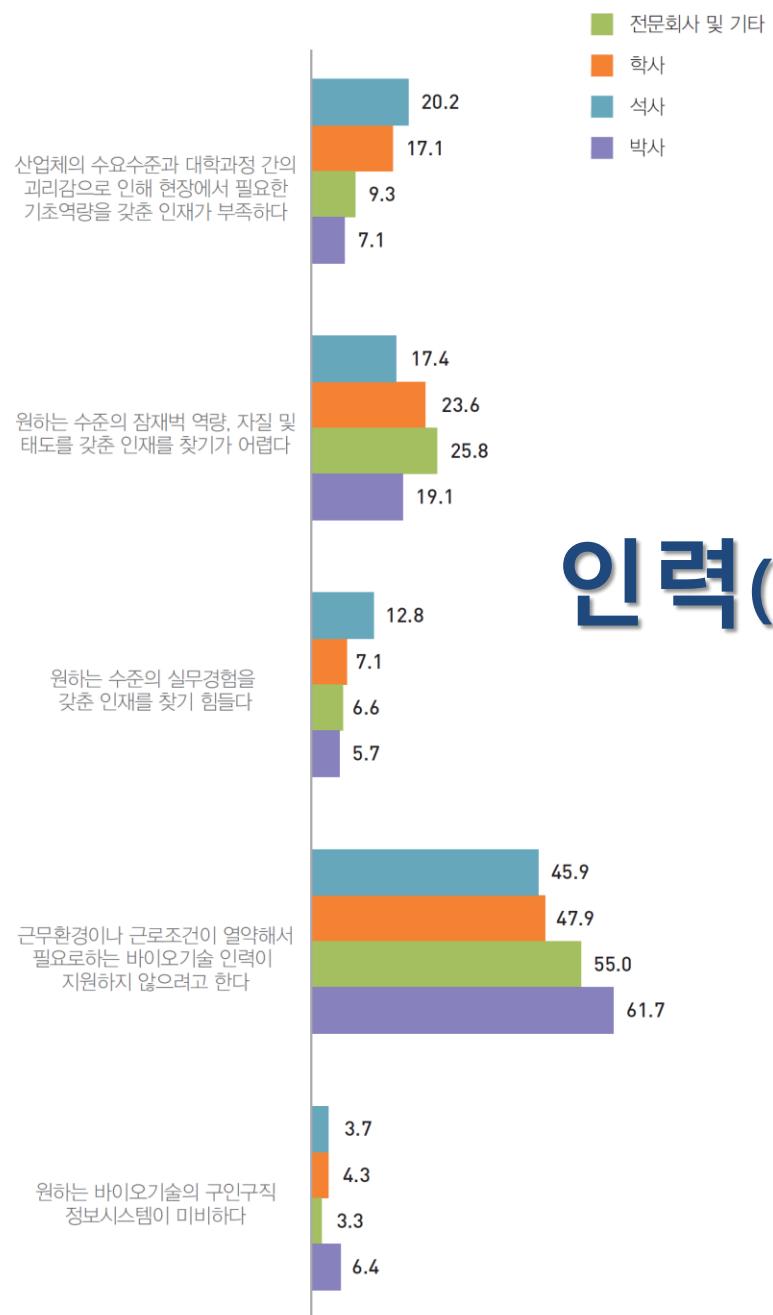
〈그림 7〉 바이오의약 분야 학력별 경력 채용 애로사항 (단위: %)



인력(1)

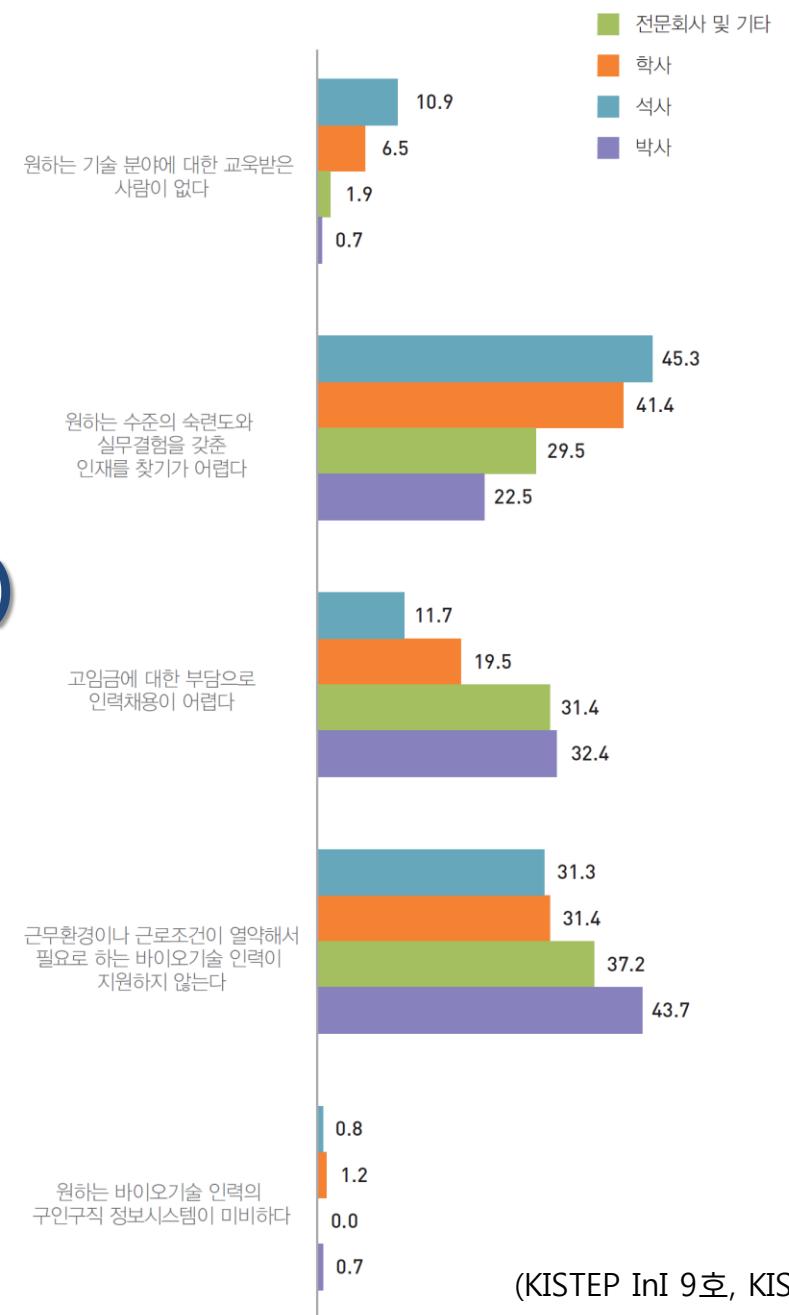
(KISTEP InI 9호, KISTEP)

〈그림 14〉 의료기기 분야 학력별 신입 채용 애로사항 (단위: %)

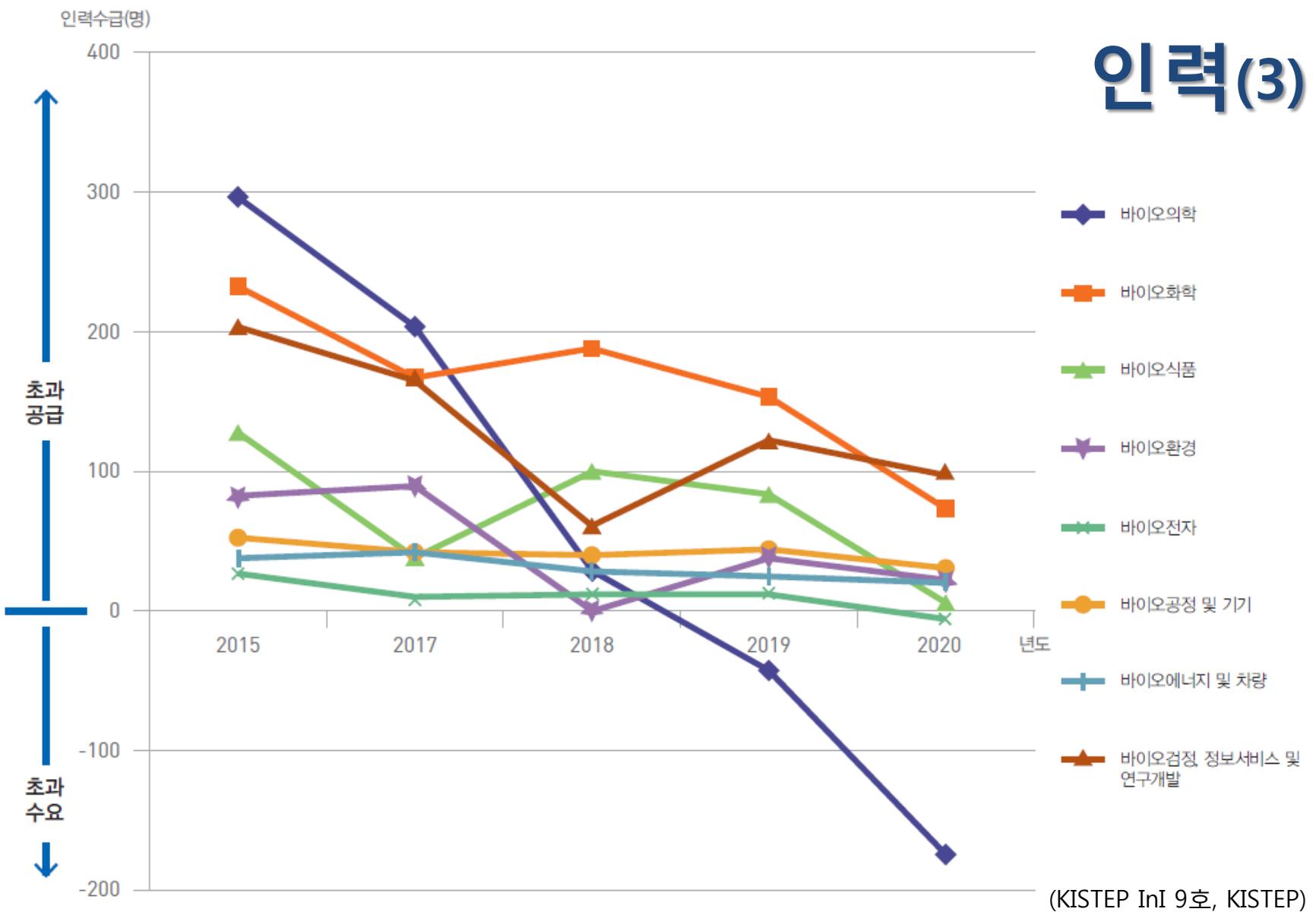


인력(2)

〈그림 15〉 의료기기 분야 학력별 경력 채용 애로사항 (단위: %)

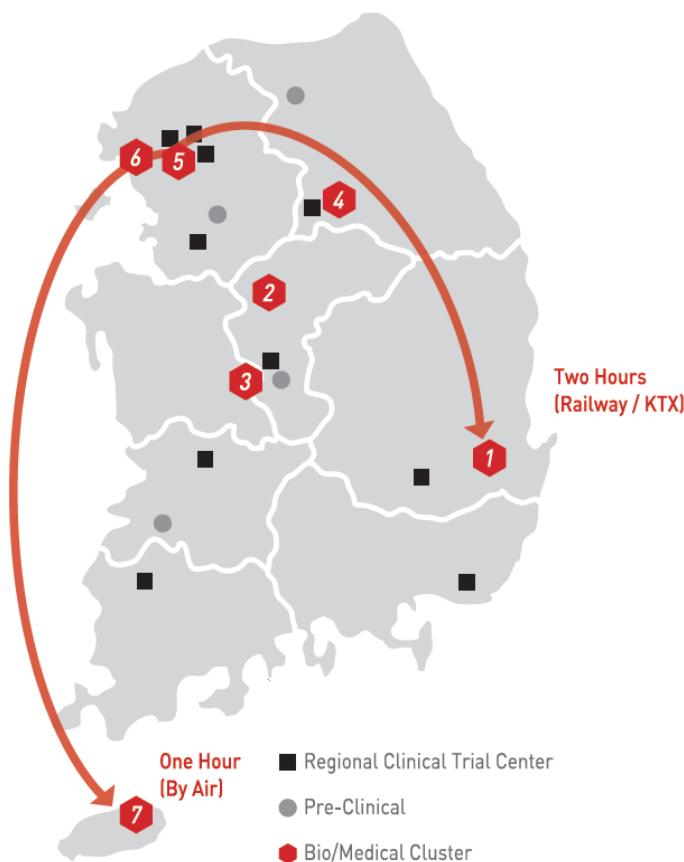


〈그림 17〉 바이오기술인력 초과공급 전망 (산업-연도별)



Bio-Clusters supporting R&D Growth

Synergistic relationship between Bio-Clusters, Regional Clinical Trial Centers (Hospitals) & Pre-Clinical Facilities



Cluster	Value Chain	Area	Business Environment	Development Period
① Daegu Medivalley	Pharma / BT / Medical Device → R&D / Production	11,000,000	8 comprehensive hospitals with 5 qualified hospitals 50 ventures 106 general hospitals [13,273 beds] 7 R&D Institutes	2009-2038
② Osong Biohealth Technopolis	Bio-Pharma / Medical device → R&D	12,000,000	36 pharma, 18 medical device companies 6 government agencies [KFDA etc.]	2009-2038
③ Daedeok Innopolis	Bio-Pharma → R&D	760,000,000	898 ventures 448 R&D institutes 7 comprehensive hospitals	2006-2015
④ Wonju Medical Device Cluster	Medical device → R&D / Production	4,600,000	50+ medical device companies 35 ventures High-tech Medical Instrument Techno Valley	1998-2014
⑤ Gyeonggi-do Technovalley	BT, Pharma / Healthcare → R&D / Production	3,000,000	280 pharma companies, 300 bio-ventures 5 R&D institutes. University hospitals and 48 comprehensive hospitals	2004-2007 (Gwanggyo) 2009-2014 (Pangyo)
⑥ IFEZ Bio-Complex	Bio-healthcare → R&D / production	1,800,000,000	Bio companies Intl. business center & IT business Global campuses (Yeonsei Univ., etc.) Bio Research Complex (BRC)	2003-2020 (In Songdo Bio-medical Hub)
⑦ Jeju Healthcare Town	Healthcare → R&D / Leisure	16,600,000	Greenland Group (China) 6 comprehensive hospitals incl. SNU hospital National Institute on Antiaging, Korea Institute of Oriental Medicine, etc.	2008-2015

규제과학에 기반한 스마트 규제

“정부가 규제를 줄이는 것이 중요한 것이 아니라
‘스마트’한 규제개혁을 만드는 것이 핵심” (Melissa Johns, World Bank)



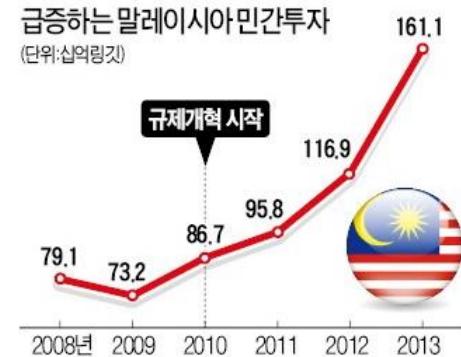
혁신적인 바이오·의료 기술, 제품 및 서비스에 대한 선제적이고 스마트 규제개혁

- 맞춤의료, 디지털 헬스케어, 원격진료 등 빠르게 진화하는 혁신적인 바이오·의료 기술, 제품, 서비스 창출을 위한 시범적·선제적 규제 대응
 - ✓ 미래 바이오·의료 기술발전을 조망하여 인허가 제도 신설, 규제 개혁 등 선제적 대응 병행
 - ✓ 임상시험 조기 완료 제도 검토 필요 (예, 간질환치료제 임상시험 조기완료, 미국 FDA)

애플은 뛰는데, 삼성은 제자리... 규제에 묶인 '모바일헬스케어' (아시아경제)

규제에 발목잡힌 국내 'IT+의료' (서울경제)

'규제개혁' 말뿐인 한국, 행동한 말레이시아 (한국경제)



★ 규제과학(Regulatory Science) 개선 필요!!

Biotechnology 분야 순위(1)

● 국가별 평가표⁴⁾

종합 순위	국가	내용비고												최종 점수		
		생산성 Productivity		지적재산권 보호 IP Protection		강도 Intensity		기업지원 Enterprise Support		교육/노동력 Education/Workforce		기반 Foundations		정책&안정성 Policy&Stability		
		점수	순위	점수	순위	점수	순위	점수	순위	점수	순위	점수	순위	점수	순위	
1	미국	10	1	9.2	2	6.4	2	8.9	2	6.6	1	7.1	9	7.5	19	39.8
2	싱가포르			8.3	14	3.8	5	9.2	1	4.5	7	6.6	14	9.6	1	30
3	덴마크	0.2	10	8.5	13	7.3	1	5	23	3.9	15	7.6	6	8.8	10	29.5
4	뉴질랜드	0	22	7.7	18	4.8	4	7.9	5	6.2	2	4.5	30	9.4	2	29
5	호주	1	2	7.6	19	5.1	3	5	22	5.3	4	6.4	15	8.7	12	28
6	스위스	0.3	9	8.6	11	3.6	6	5.3	17	3.7	18	8	3	9.4	4	27.7
7	핀란드	0	19	9.5	1	0.6	30	6.1	12	3.7	17	8.2	2	9.4	3	26.8
8	영국	0.7	3	8.8	6	2.2	12	6.2	11	5.4	3	5.6	20	8.2	16	26.5
9	스웨덴	0.3	8	8.5	12	2.4	10	5.8	14	3.1	23	7.9	4	8.9	6	26.3
10	캐나다	0.5	5	8.8	8	1.6	21	6.1	13	4.4	9	5.3	21	8.9	8	25.3
11	홍콩	0	16	7.1	23	1.6	20	8.6	3	1.6	45	6.7	12	9	5	24.7
12	독일	0.3	6	8.2	16	0.8	26	5	21	4.4	10	7.1	10	8.5	14	24.6
13	이스라엘	0.3	7	6.3	26	3.5	7	6.5	110	4.5	7	7.5	7	5.6	36	24.4
14	네덜란드	0.1	11	9.1	4	2.2	13	5	24	2.6	32	6.4	16	8.9	7	24.4
15	일본	0.1	12	9.2	3	0.6	30	4.5	28	3.6	19	7.9	5	8	17	24.3
16	아일랜드	0	16	8.9	5	2	15	4.8	26	4.2	13	5	24	8.5	15	23.9
17	프랑스	0.6	4	8.8	8	1.8	19	4.8	27	4.3	12	6.2	17	7	24	23.9
18	오스트리아	0	22	7.9	17	0.6	29	4.1	37	3.4	20	7.5	8	8.5	13	22.8
19	노르웨이	0	15	7.6	19	1.4	23	5.8	15	2.7	29	5.2	22	8.8	8	22.6
20	벨기에	0.1	12	8.6	10	2.2	14	4.4	32	2.6	31	5.8	18	7.4	20	22.2
21	룩셈부르크			8.3	15			3.9	39	4.6	5	5.2	22	8.8	11	22
22	아이슬란드			5.4	33			5.6	16	4.2	13	6.6	13	8	17	21.3
23	대만	0	19	5.8	29	0.1	37	7	6	2.6	35	6.9	11	7.2	22	21.1
24	대한민국			5.6	30	0.6	29	4.8	25	3.9	16	8.3	1	6.3	31	21
25	에스토니아			6.7	24			6.5	9	2.8	27	4.8	25	7.3	21	20.1
26	아랍에미리트			7.6	21	0.1	39	6.9	7	0.7	51	5.6	19	6.7	26	19.7

4) 색상별 안내 : (파랑색) Productivity Top5 / (빨강색) IP Protection Top5 / (녹색) Intensity Top5 / (보라색) Enterprise Support Top5 / (하늘색) Education/Workforce Top5 / (주황색) Foundations Top5 / (검정색) Policy&Stability Top5

Biotechnology 분야 순위(2)

● 국가별 순위표

국가명	〈국가별 순위 변동〉								전년대비 순위변동
	2009	2010	2011	2012	2013	2014	2015	2016	
미국	1	1	1	1	1	1	1	1	0
싱가포르	2	2	8	3	5	3	5	2	-3
덴마크	3	5	2	2	2	3	2	3	1
뉴질랜드	7	18	18	9	10	8	3	4	1
호주	10	17	5	10	7	4	4	5	1
스위스	6	10	6	6	3	6	7	6	-1
핀란드	8	6	7	4	4	7	6	7	1
영국	12	14	9	11	9	9	9	8	-1
스웨덴	4	4	3	5	6	5	8	9	1
캐나다	11	3	4	7	8	11	10	10	0
홍콩	-	-	17	13	20	12	11	11	0
독일	16	16	16	16	14	13	12	12	0
이스라엘	5	7	13	14	15	22	18	13	-5
네덜란드	19	12	12	17	12	14	14	14	0
일본	13	9	11	18	18	18	16	15	-1
아일랜드	14	13	14	8	11	16	13	16	3
프랑스	18	8	10	12	13	15	15	17	2
오스트리아	21	20	20	20	17	20	19	18	-1
노르웨이	17	21	21	19	22	19	17	19	2
벨기에	20	15	15	15	16	21	21	20	-1
룩셈부르크	-	25	29	25	19	10	20	21	1
아이슬란드	9	11	22	23	23	24	24	22	-2
대만	-	-	-	21	26	17	25	23	-2
대한민국	15	19	19	22	24	23	23	24	1
에스토니아	-	-	27	24	38	26	26	25	0
아랍에미리트	-	-	-	-	40	27	27	26	-1
말레이시아	-	-	28	29	37	29	29	27	-2

Biotechnology 분야 순위(3)

● 평가 참고 문헌 리스트

Productivity		EDUCATION/WORKFORCE	
publicly traded company revenues	Morrison, C., Lahteenmaki, R.Nat. Biotechnol. 33, 703–709(2015), and company disclosures	post-secondary science graduates per capita	UNESCO
publicly traded companies	Morrison, C., Lahteenmaki, R.Nat. Biotechnol. 33, 703–709(2015), and company disclosures	Ph.D. graduate in life sciences per capita	Organisation for Economic Co-operation and Development, Education database
IP		R&D personnel per thousand employment	
IP strength	Park, W.G. <i>Research Policy</i> 37, 761–766(2008)	talent retention	U.S. National Science Foundation's Survey of Earned Doctorates
perceived IP protection	Schwab, K. <i>The Global Competitiveness Report</i> , 2015–2016. World Economic Forum(2015)	brain gain	U.S. National Science Foundation
INTENSITY		FOUNDATIONS	
publicly traded companies per capita	Morrison, C., Lahteenmaki, R.Nat. Biotechnol. 33, 703–709(2015), and company disclosures and U.S. Census International database	business expenditures on R&D per GDP	Organisation for Economic Co-operation and Development, Biotechnology Statistics database
publicly traded company employees per capita	Morrison, C., Lahteenmaki, R.Nat. Biotechnol. 33, 703–709(2015), and company disclosures and U.S. Census International database	gross domestic expenditure on R&D per GDP	UNESCO
publicly traded company revenues per GDP	Morrison, C., Lahteenmaki, R.Nat. Biotechnol. 33, 703–709(2015), and company disclosures and IMF World Economic Outlook database	infrastructure quality	Schwab, K. <i>The Global Competitiveness Report</i> , 2015–2016. World Economic Forum(2015)
biotech patents per total patents	Organisation for Economic Co-operation and Development, Biotechnology Statistics database	POLICY & STABILITY	
value added of knowledge- and technology-intensive industries	U.S. National Science Foundation's Science and Development	entrepreneurship and opportunity	2015 Legatum Prosperity Index
business expenditures on biotechnology R&D	U.S. National Science Foundation's Science and Development	political stability and absence of violence/terrorism	World Bank's 2015 World Governance Indicators
ENTERPRISE SUPPORT		government effectiveness	World Bank's 2015 World Governance Indicators
business friendly environment	<i>Doing Business 2015</i> (World Bank and the International Finance Corporation)	regulatory quality	World Bank's 2015 World Governance Indicators
biotechnology venture capital	Organisation for Economic Co-operation and Development	rule of law	World Bank's 2015 World Governance Indicators
venture capital availability	Schwab, K. <i>The Global Competitiveness Report</i> , 2015–2016. World Economic Forum(2015)		
capital availability	Milken Capital Access Index		

Collaborative Innovation

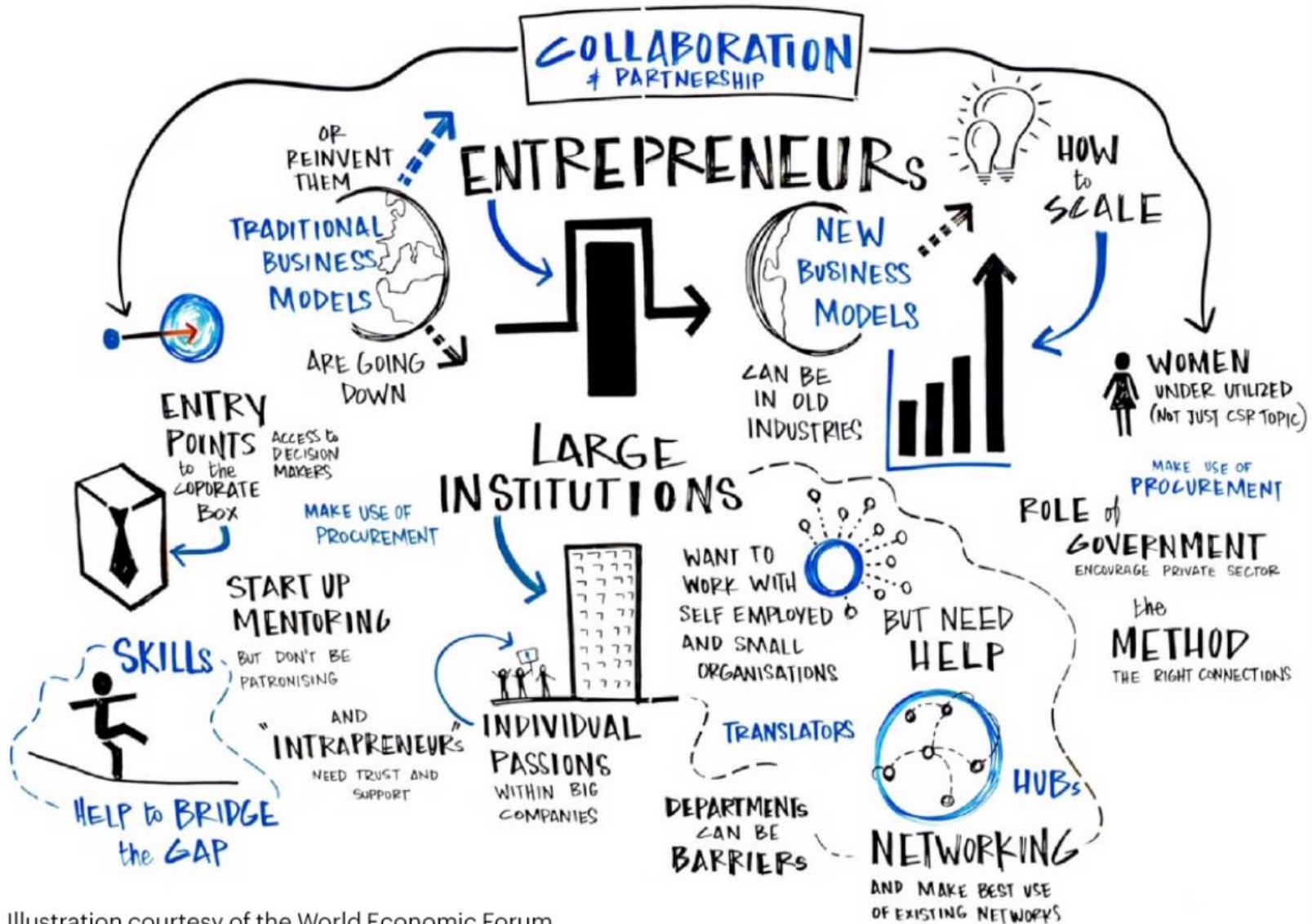
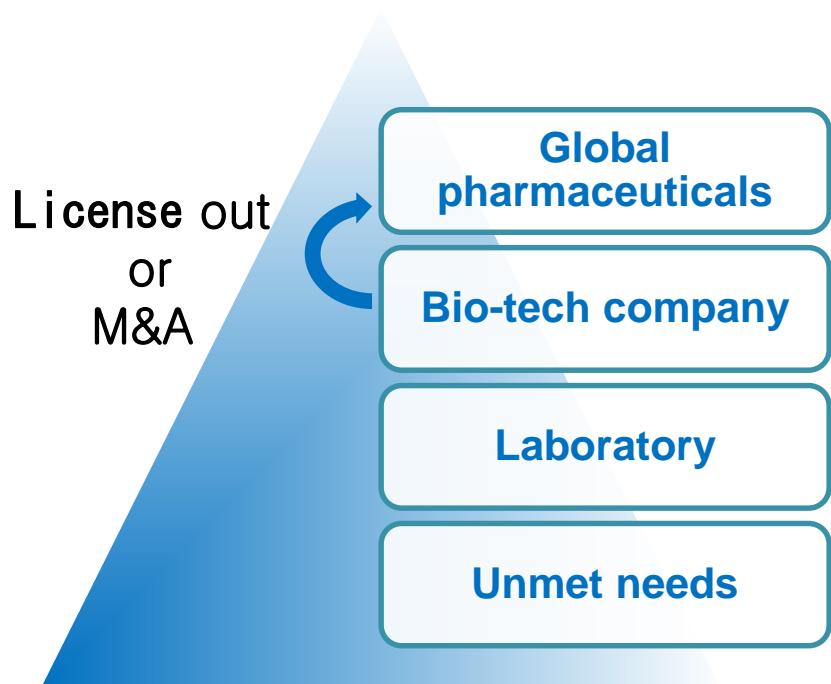


Illustration courtesy of the World Economic Forum

Open Innovation

Value Chain



Source: KDB Daewoo Security

Type	Korean	Global
M&A	SD	Inverness Medical Innovations (USA)
Cooperation	Binex	Nichi-Iko Pharmaceutical (Japan)
Joint Venture	Donga Pharm.	Meiji Seika Pharma (Japan)
	Genexine	Ajinomoto (Japan)
Tech. Transfer	Yuhan Corp.	Sorrento Therapeutics (USA)
	Meditox	Allergan (USA)

조인트 벤처



sorrento



AJINOMOTO

meiji
Meiji Seika Pharma Co., Ltd.



Ajinomoto
Genexine Co.,
Ltd.



Yuhan(51%) +
Sorrento(49%)
Immune checkpoint
Monoclonal Antibodies

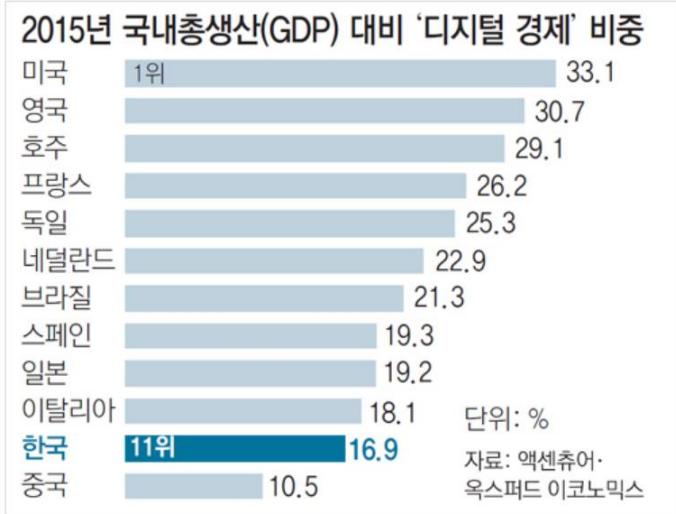
Northlad(51%)+Huons(45%)
+Interlim(4%)
eye bath drops

Ajimoto(75%) +
Genexine(25%)
Medium Business

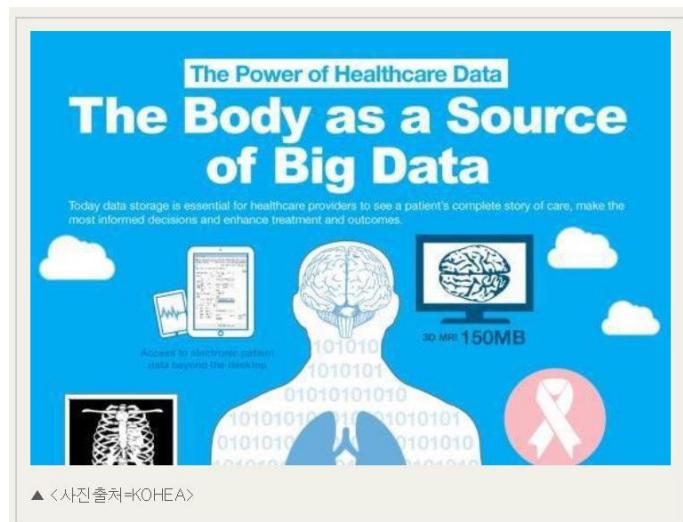
인천 송도 공장 준공
(2014)
Biosimilar(Korea,
Japan Market)

초기시장 형성? 획기적 변화!!

ICT 인프라 최강 한국, 활용은 바닥권



자료: 동아닷컴(2016.6.29)



부가가치 높은 의료관광 규제에 막혀 시름시름

한국 의료관광산업의 부문별 경쟁력지수와
경제협력개발기구(OECD) 내 순위(네모 안은 순위)
※ 경쟁력지수는 OECD 34개국 평균을 0으로 환산해 측정한 수치.
클수록 경쟁력이 높다는 의미



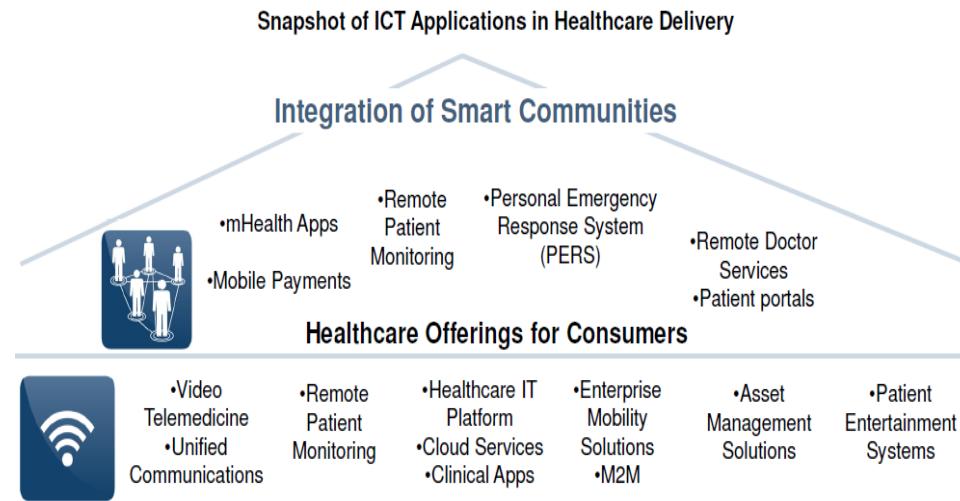
자료: 세계일보(2013.4.4)



Growth opportunity by shifting the focus from individual products to cross-industry value experiences

Sources:
Frost & Sullivan's Healthcare Outlook, 2014
Healthcare and Life Sciences Prediction 2020, Deloitte
Top health industry issues of 2015, PWC
Industry Convergence, Gartner, 2014

ICT players to healthcare industry



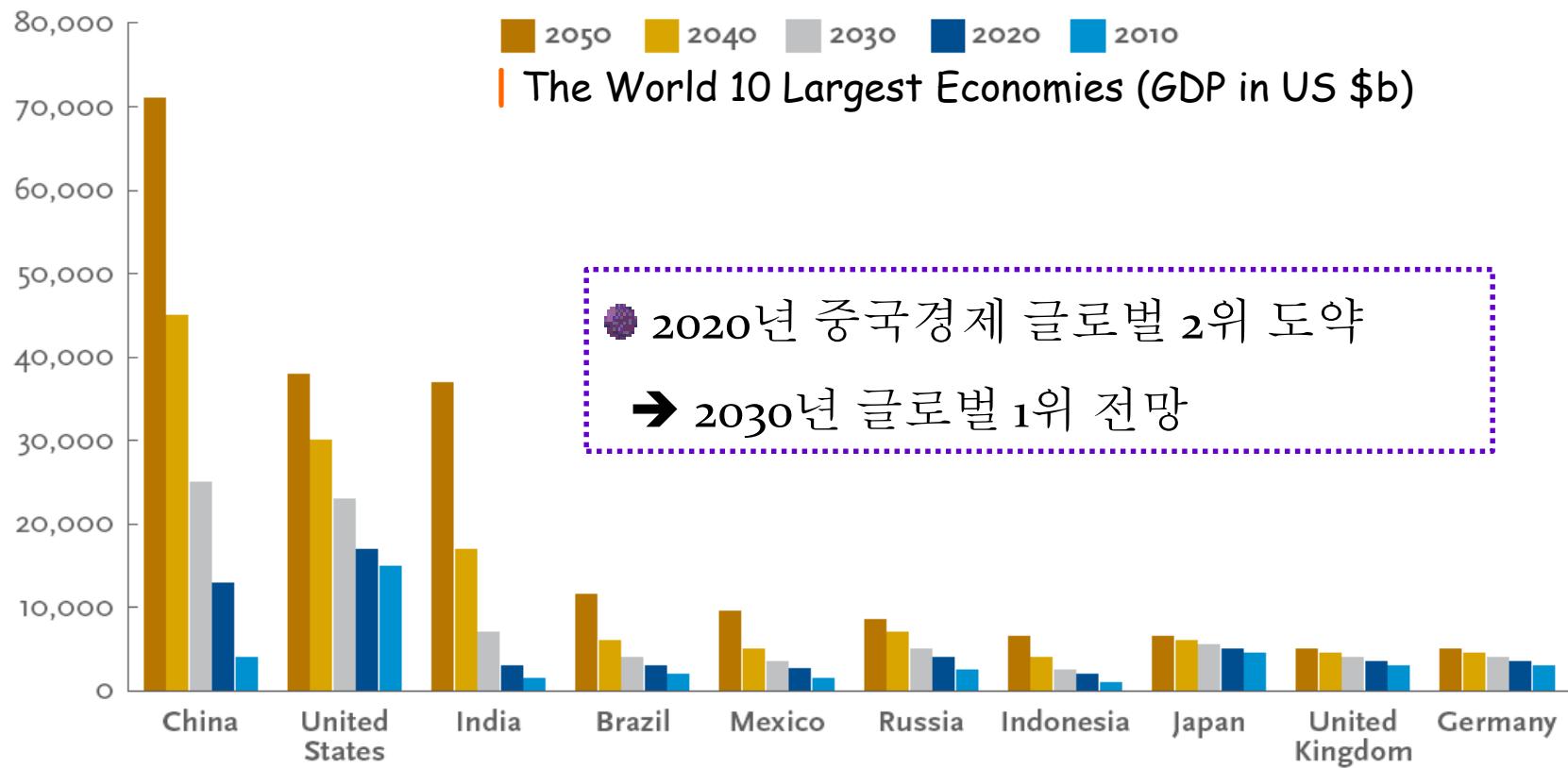
(USA) Google (Google Ventures, Bio-Health), IBM (Watson, Medical decision),
Qualcomm (Qualcomm Life, Medical device/Digital hospital)

(China) BAT to healthcare industry

(Korea) Samsung/SK/KT to Digital HealthCare

글로벌 비즈니스

| 아시아 경제 급성장



자료 : Goldman Sachs - BRICS and Beyond, 2007년

한국 바이오의 길을 열고 미래를 그린다



감사합니다!

biojun@koreabio.org

koreaBio
한국바이오협회