

The Estimation on the Number of World-class Researchers

Abstract

1. Introduction

This report presents the number of world-class researchers in the world using by 3 type of the index. 1) World-class awards and prizes, 2) Foreign members of world-class science academy, and 3) Top 20 of the Citation ranking in 20 fields of S&T.

2. The number of researchers in world-class awards and prizes

We selected 8 world-class awards and prizes for counting the number of world-class researchers.

The Nobel Prize

Albert Lasker Award for Basic Medical Research

Gairdner Foundation Award

Wolf Prize

The Fields Medal

A.M. Turing Award

The Japan Prize

The Koyto Prizes

3. Number of researcher with world-class science academies

We chose 5 world-class science academies for counting the number of world-class researchers.

National Academy of Sciences(USA),

Institute of Medicine(USA),

Royal Society(UK),

Académie des Sciences(France),

Royal Society of Canada(Canada).

The number of the foreign members is also counted.

4. The number of researchers in the top 20 of the citation ranking

We chose 20 S&T fields from 'ESI' provided by ISI-Thomson Scientific as the subjects of our study. 'ESI' is one of the online databases, and the citation ranking of researchers can be counted by every field. The scope of the search covers papers released from Jan. 1991 to Jun. 2001.

Table4-1 The number of researchers in the citation ranking (top 20 in 20 fields)

	Agriculture	Biology	Chemistry	Clinical medicine	Computer	Engineering	Environmental science	Geoscience	Immunology	Material science	Mathematics	Microbiology	Molecularbiology&Genetics	Multidisciplinary	Neuroscience	Pharmacology	Physics	Space science	Psychiatry/Psychology	Plant& Animal science	20 Fields Total
USA	11	9	7	14	4	12	13	15	17	11	12	17	16	16	9	3	4	16	17	12	235
Japan		5	6	5		4	2		2	5			2	1	1	7					40
UK	1	3	2	1	4		2	4			3	1	1		6	6		2	2	1	39
German	1	3			2	1					1	1	3		1		1	2	1	2	19
Italy			1		3				1						1	1	2				9
France	1		1				1				2	1		1	1						8
Canada	1		1		1		2	1		1											7
Swiss					4	1										2				3	10
Sweden			1												1	3					5
NewZealand	1															3					4
Nederland			1							1						1					3
SouthAfrica	3																				3
Bergium																				2	2
Spain																	2				2
Others	1				2	2				1	2			1			2				11

Notice: This analysis is based on Essential Science Indicators Nov.1, 2001version(provided by Thomson-ISI)

5. Results

The indexes of the top 20 of citation ranking gives Japan the highest evaluation in the 3 indexes. These results show that top 20 of the citation ranking reflects to some extent the current level of the research capability.

Table5-1 The comparison between Japan and Western countries

	The ratio		
	Awards	Academies	Citation top 20
Japan	1	1	1
USA	10.4	9.5	5.9
UK	1.7	2.5	1.0
France	0.9	1.3	0.2
German	0.8	1.0	0.4

Table5-2 The comparison between Japan and Western countries(per population)

	The ratio normalized by population		
	Awards	Academies	Citation top 20
Japan	1	1	1
USA	4.9	4.5	2.8
UK	3.7	5.4	2.1
France	1.9	2.8	0.4
German	1.3	1.5	0.6