

South Africa - A publisher's perspective

STM/PASA conference

11 June, 2012, Cape Town

Mayur Amin, SVP Research & Academic Relations



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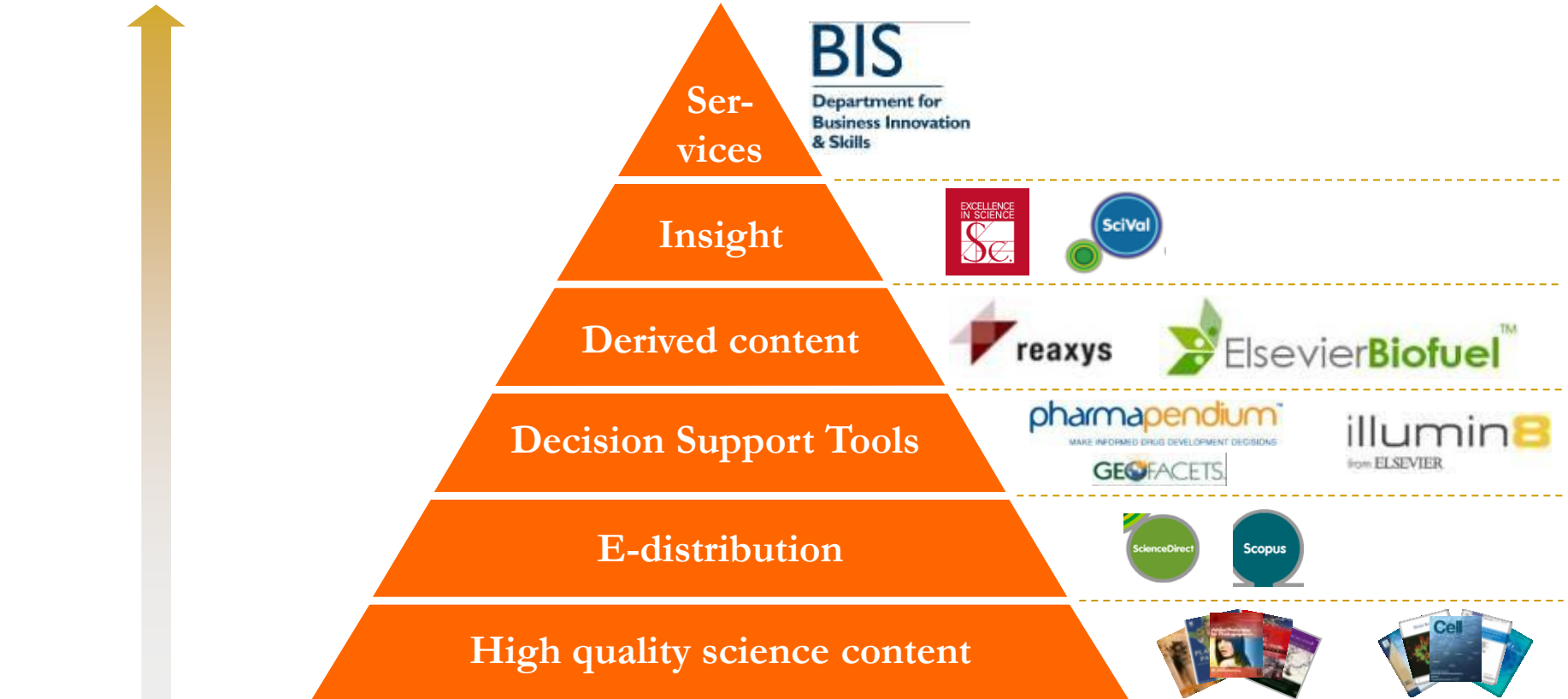
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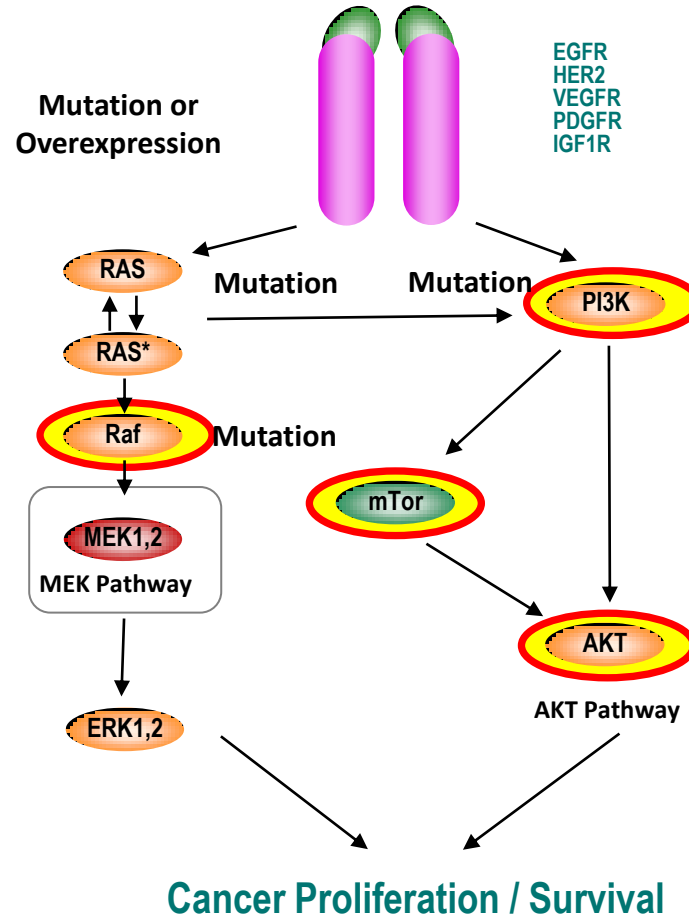
1. Broad changes in the research landscape

2. South Africa's research

- Research outputs
- Quality of research outputs
- Collaboration

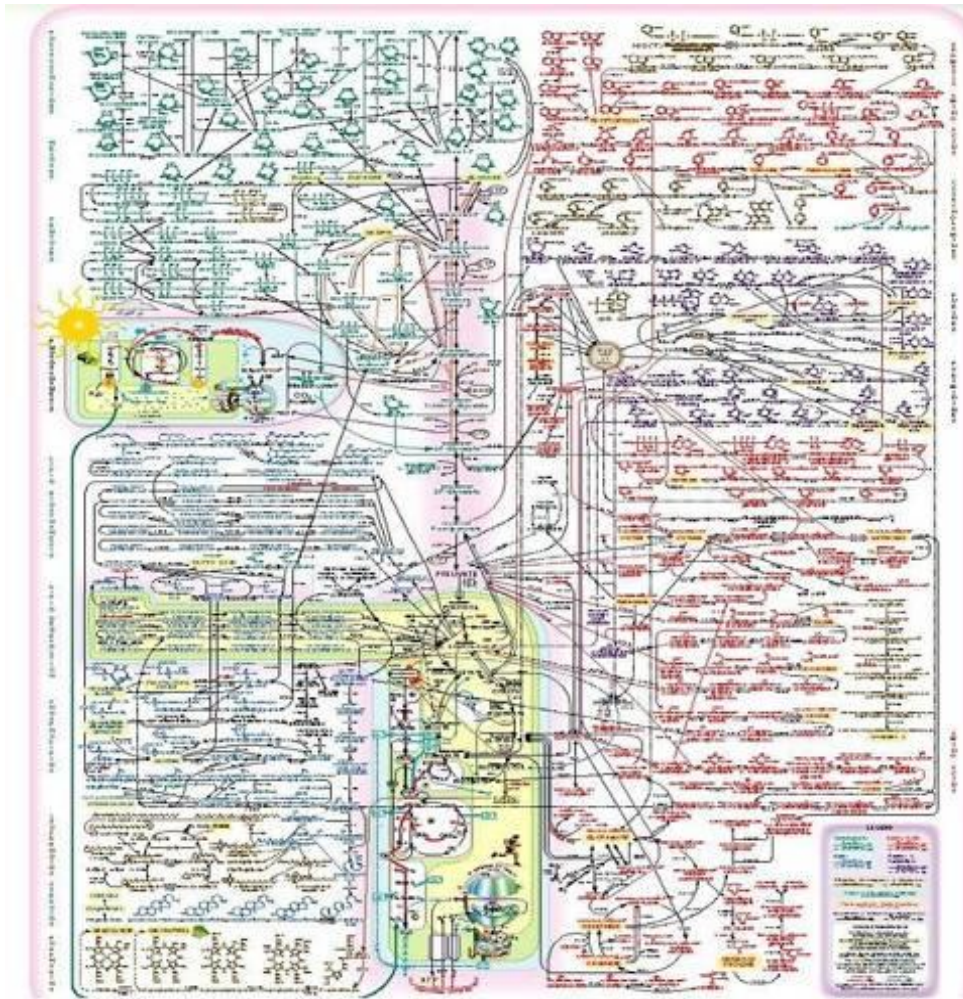


Research has become complex and interlinked



From the simple ...

Research has become complex and interlinked



... to the very complex

Collaboration has become important



From individual research ...

Collaboration has become important



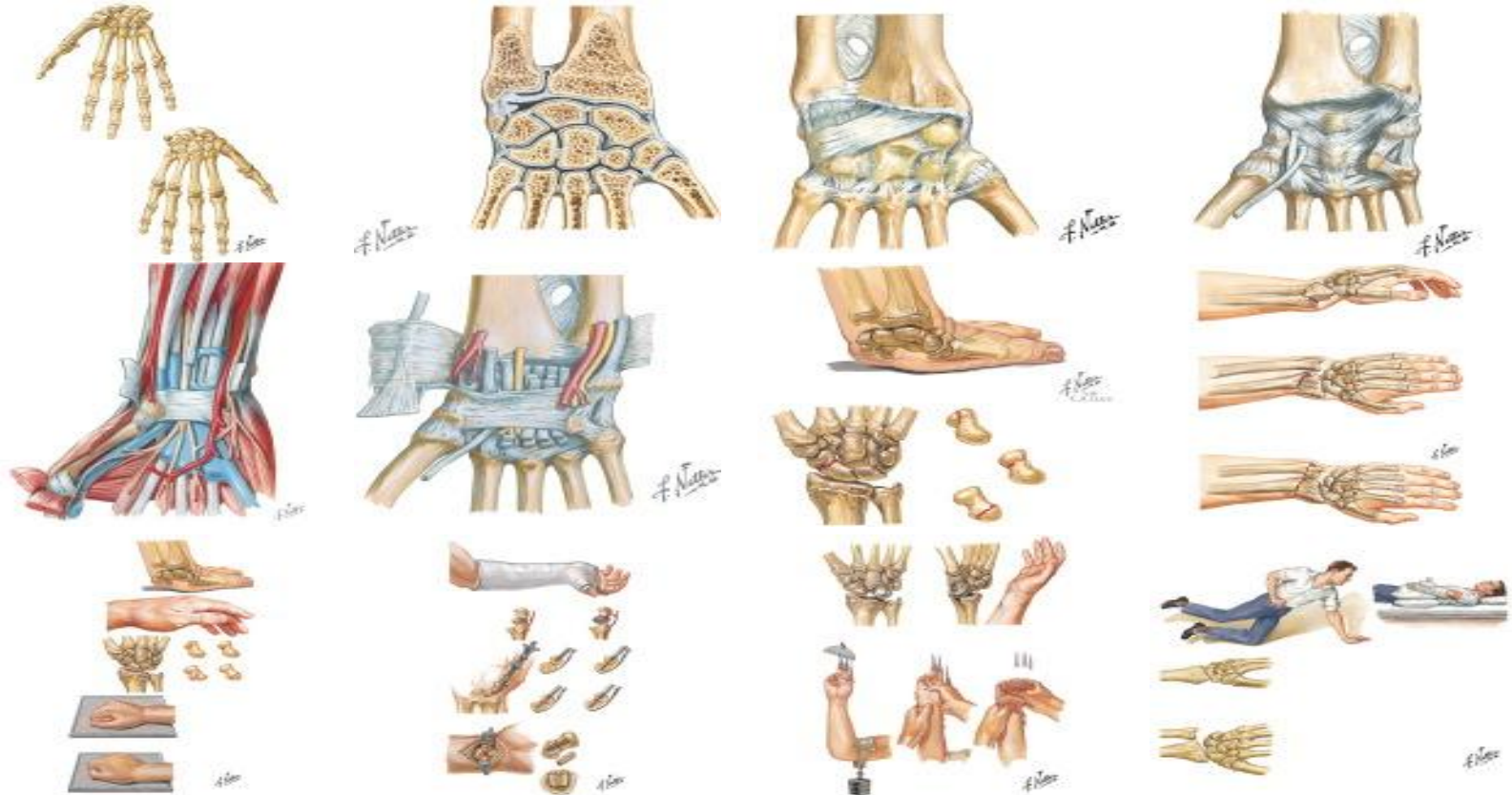
... to co-working ...

Collaboration has become important



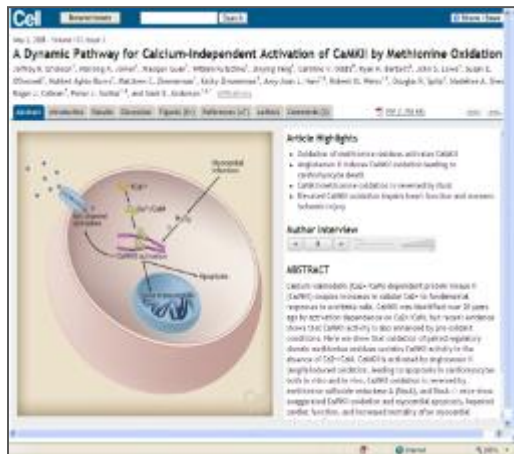
... to hyper-collaboration

Content has become interactive and actionable



From static ...

Content has become interactive and actionable



Cell
May 19, 2005, Volume 122, Issue 2
A Dynamic Pathway for Calcium-Independent Activation of CaMKII by Methionine Oxidation
Shihua Li, Andrew J. Manning, Daniel F. Shapiro, Scott J. Mizuno, Richard L. Armstrong, Ryan K. Bevilacqua, John L. Cantrell, Jason C. Chinnai, Robert Agles-Born, Richard C. Desimone, Emily Brownson, Amy-Jane L. Cook, Robert D. Hunt, Douglas J. Klapper, Matthew A. Slevin, Roger C. Colbran, Peter J. Holtzman, and David S. Andersen

Article Highlights

- Oxidation of methionine residues, with the CaMKIIε phosphorylation-induced CaMKII activation leading to cytoskeletal death.
- CaMKIIε activation is induced by methionine oxidation.
- Methionine oxidation targets both function and access to the nucleus.

Author Interview

ABSTRACT
Calcium-independent (Ca²⁺-indep) activation of calcium/calmodulin-dependent kinase II (CaMKII) involves increases in cellular Ca²⁺ for fundamental responses to extrinsic stimuli. CaMKII was identified over 20 years ago by activation responses to Ca²⁺-CaM, but recent evidence shows that CaMKII activity is also induced by pro-oxidant conditions. Here we show that oxidant-induced regulatory domain methionine oxidation controls CaMKII activity in the absence of Ca²⁺-CaM. CaMKII is essential for hippocampal long-term potentiation (LTP), and its expression is upregulated in models of Alzheimer's disease. We show that methionine oxidation increases CaMKII activity in the absence of Ca²⁺-CaM, and that this increase is necessary for LTP. Methionine oxidation also increases CaMKII activity in the nucleus, and this increase is necessary for LTP. Methionine oxidation increases CaMKII activity in the nucleus, and this increase is necessary for LTP. Methionine oxidation increases CaMKII activity in the nucleus, and this increase is necessary for LTP.



PhosphoPlex
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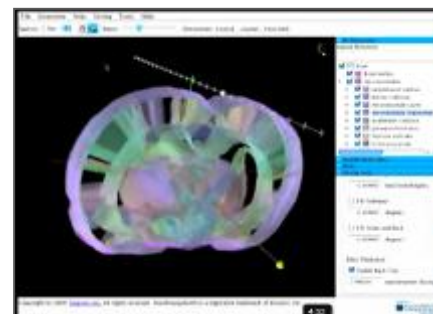
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2	Lee M, Kim S	Structure and function of the enzyme	Biochemistry	2000
3	Chen W, Zhang L	Properties of the enzyme from a thermophilic bacterium	Extremophiles	2002
4	Wang Y, Li X	Characterization of a novel enzyme	Journal of Molecular Biology	2003
5	Miller R, Brown T	Evolutionary relationships of the enzyme	Molecular Biology and Evolution	2004



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3. Chen W, Zhang L. Properties of the enzyme from a thermophilic bacterium. *Extremophiles*. 2002;6(4):300-310.
4. Wang Y, Li X. Characterization of a novel enzyme. *Journal of Molecular Biology*. 2003;325(1):1-10.
5. Miller R, Brown T. Evolutionary relationships of the enzyme. *Molecular Biology and Evolution*. 2004;21(12):2300-2310.



3D molecular model of a protein structure. The model shows the protein backbone in green and red, with side chains in various colors. The structure is shown in a perspective view, highlighting its complex, multi-domain architecture. The background is black, making the protein stand out.



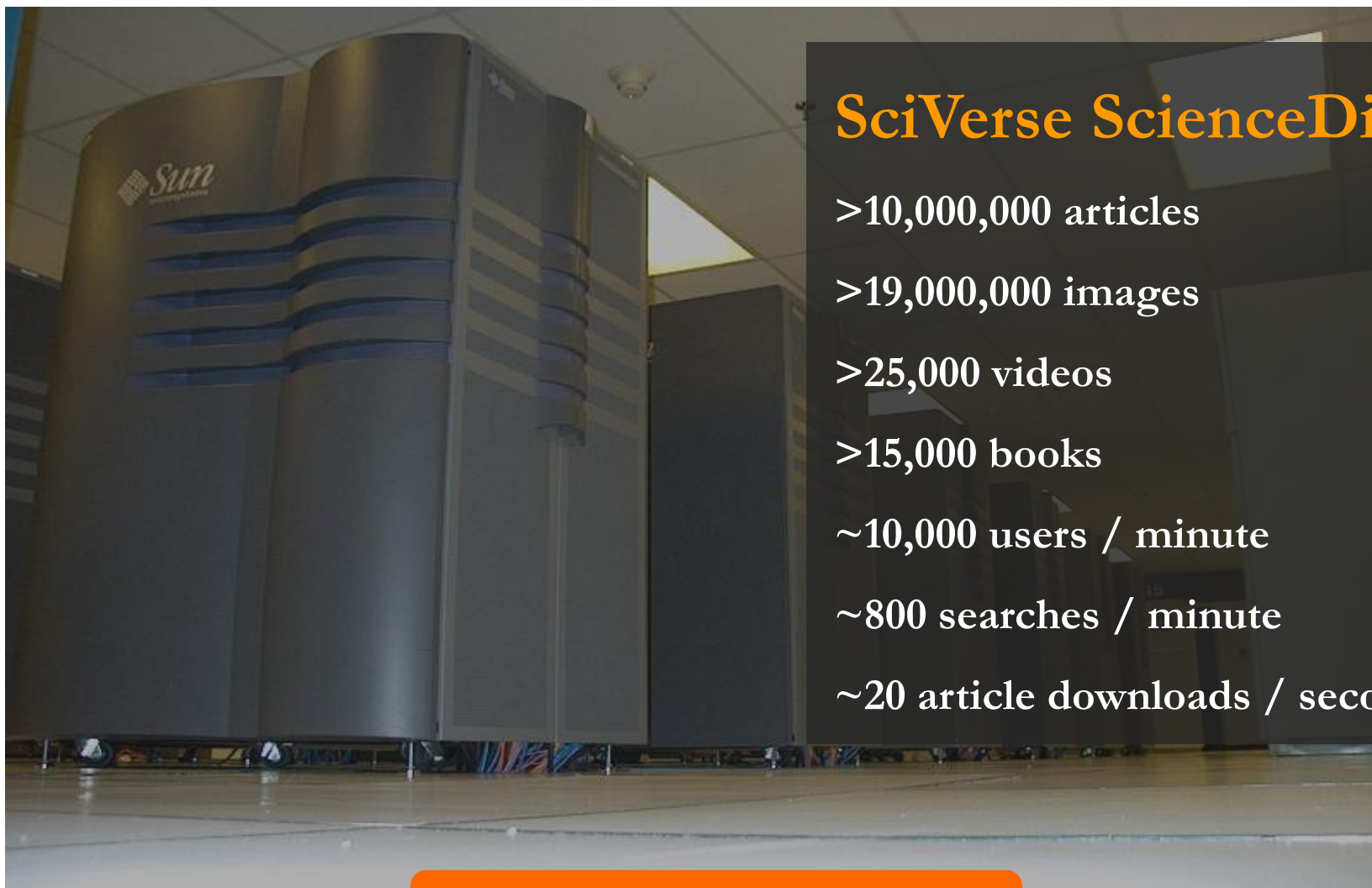
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Chemical Structure
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Molecular Formula
Molecular Weight
Molecular Formula
Molecular Weight
Molecular Formula

... to very interactive

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Today's discussion

1. Broad changes in the research landscape

2. South Africa's research

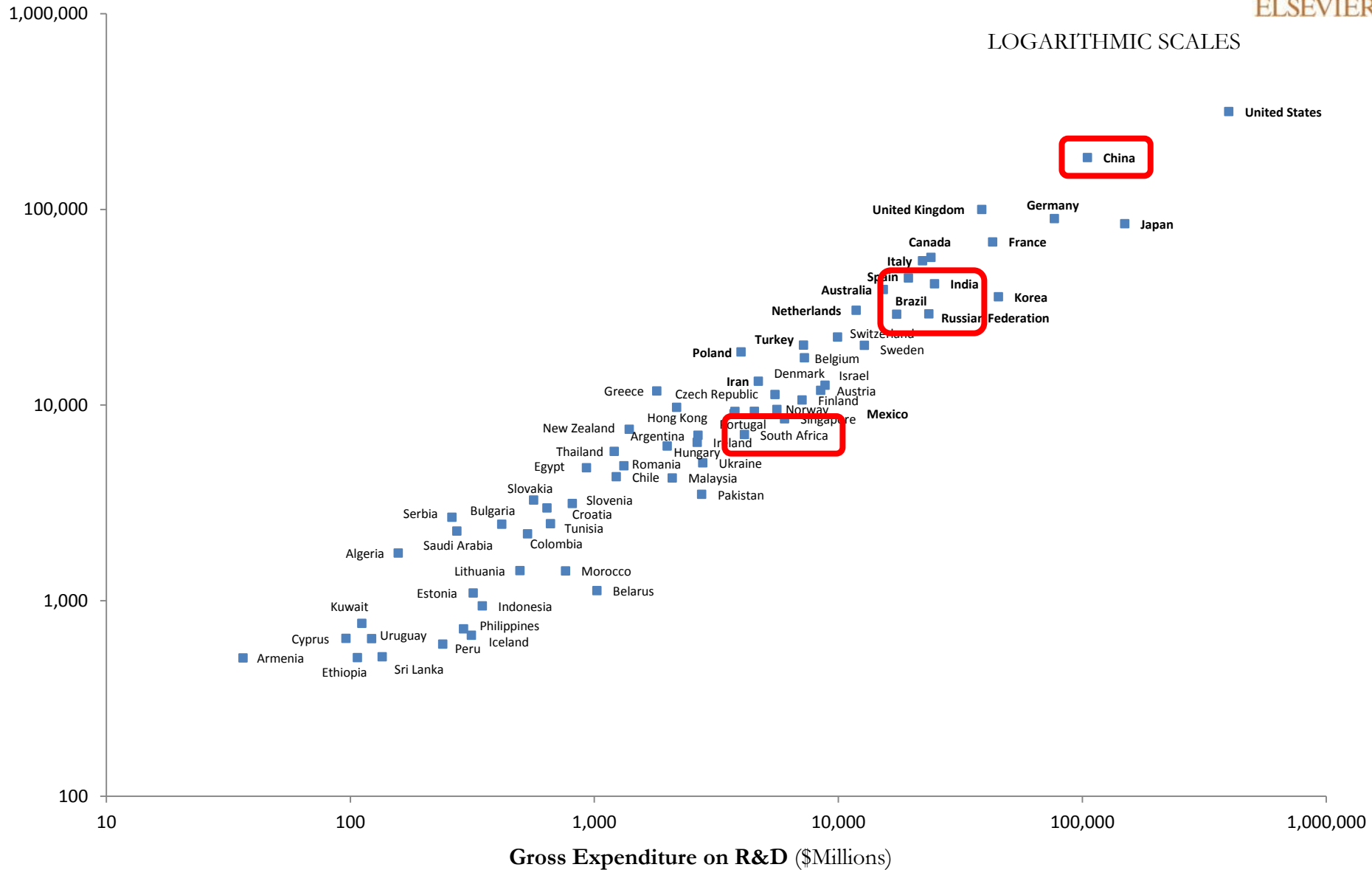
- Research outputs
- Quality of research outputs
- Collaboration



R&D funding vs. outputs

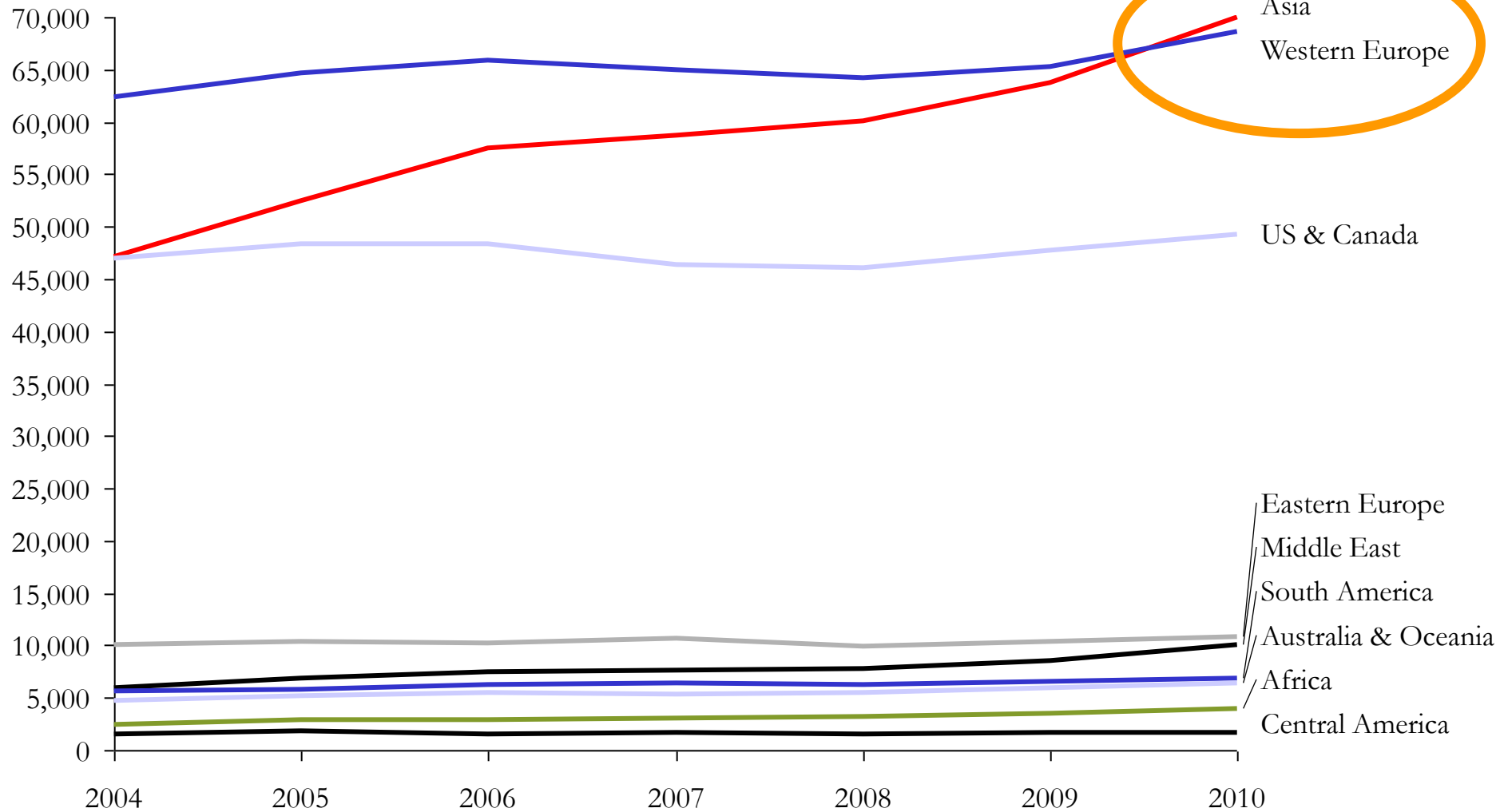
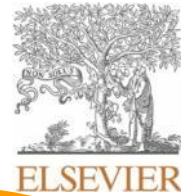
Articles published, 2008

LOGARITHMIC SCALES

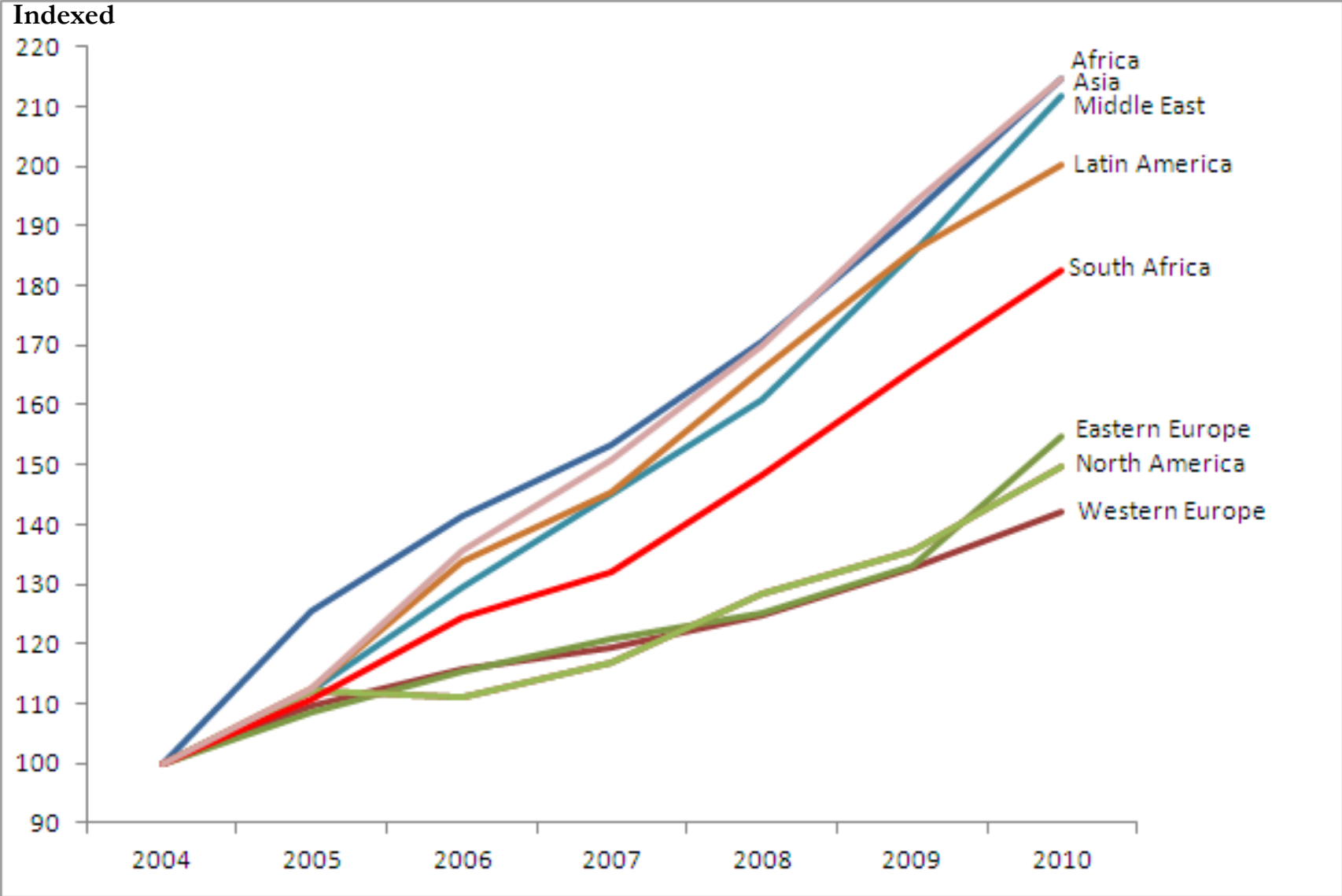
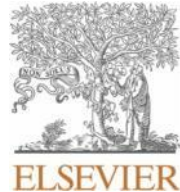


Articles accepted for publication

Elsevier



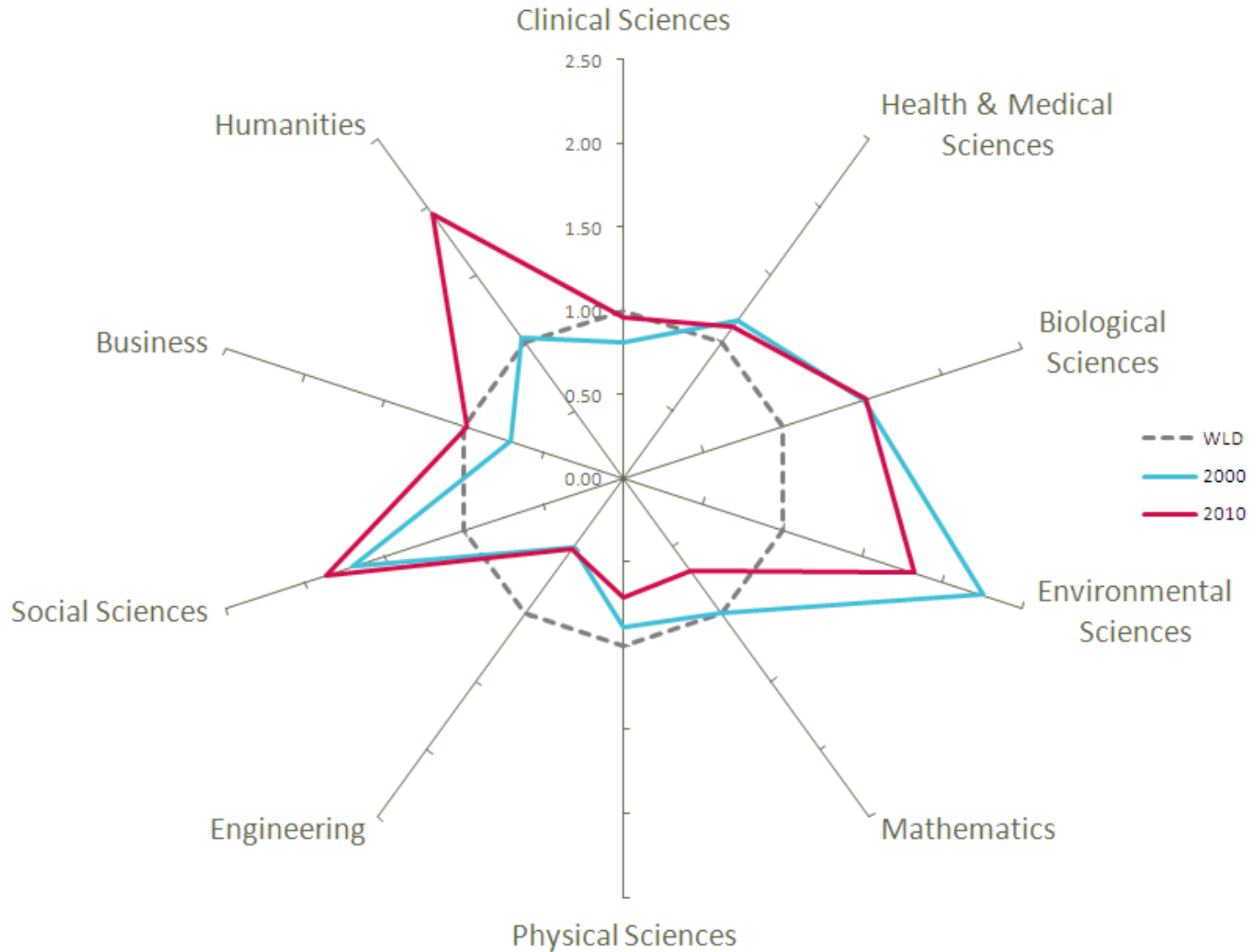
Growth in Research Articles published



Source: Scopus

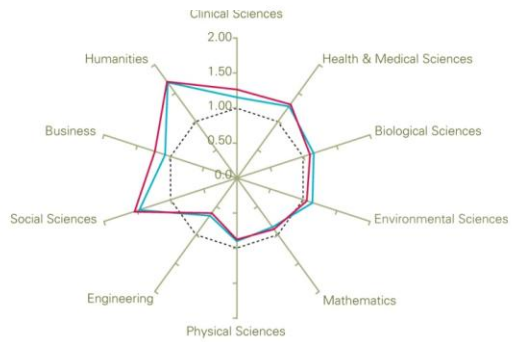
South Africa – Research Emphasis

Relative Activity Index

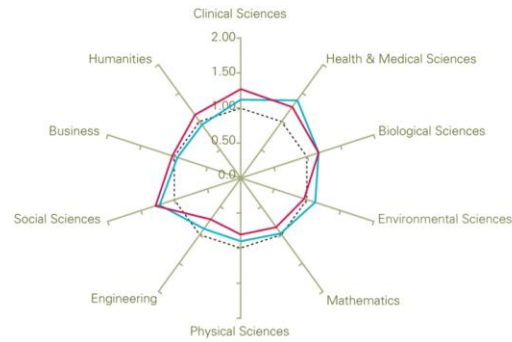


South Africa – Research Activity Index

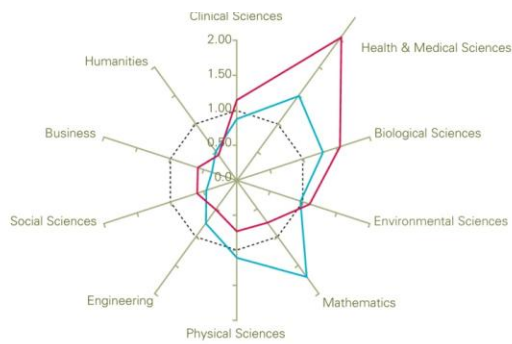
UK



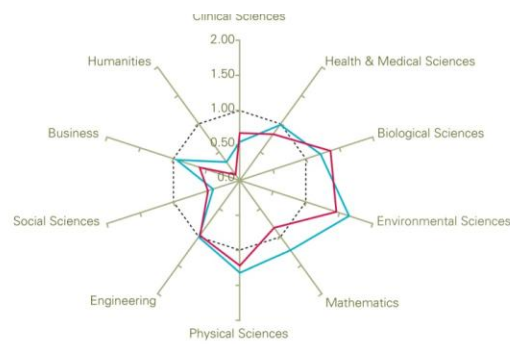
USA



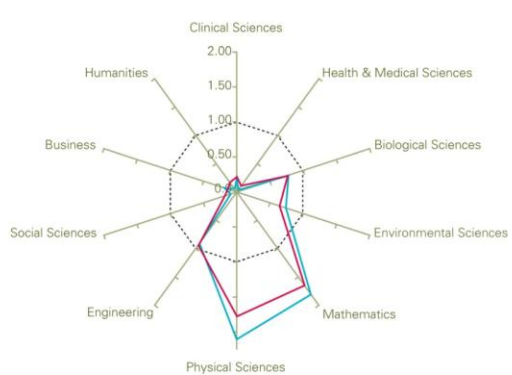
Brazil



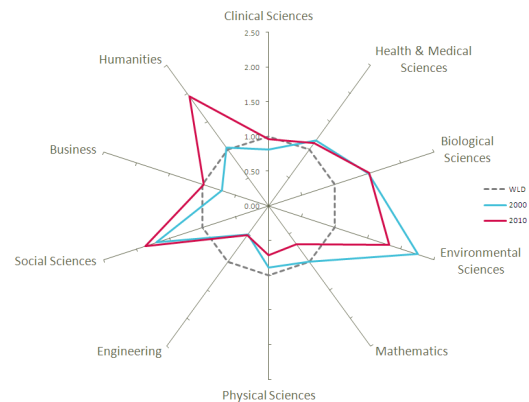
India



Russia

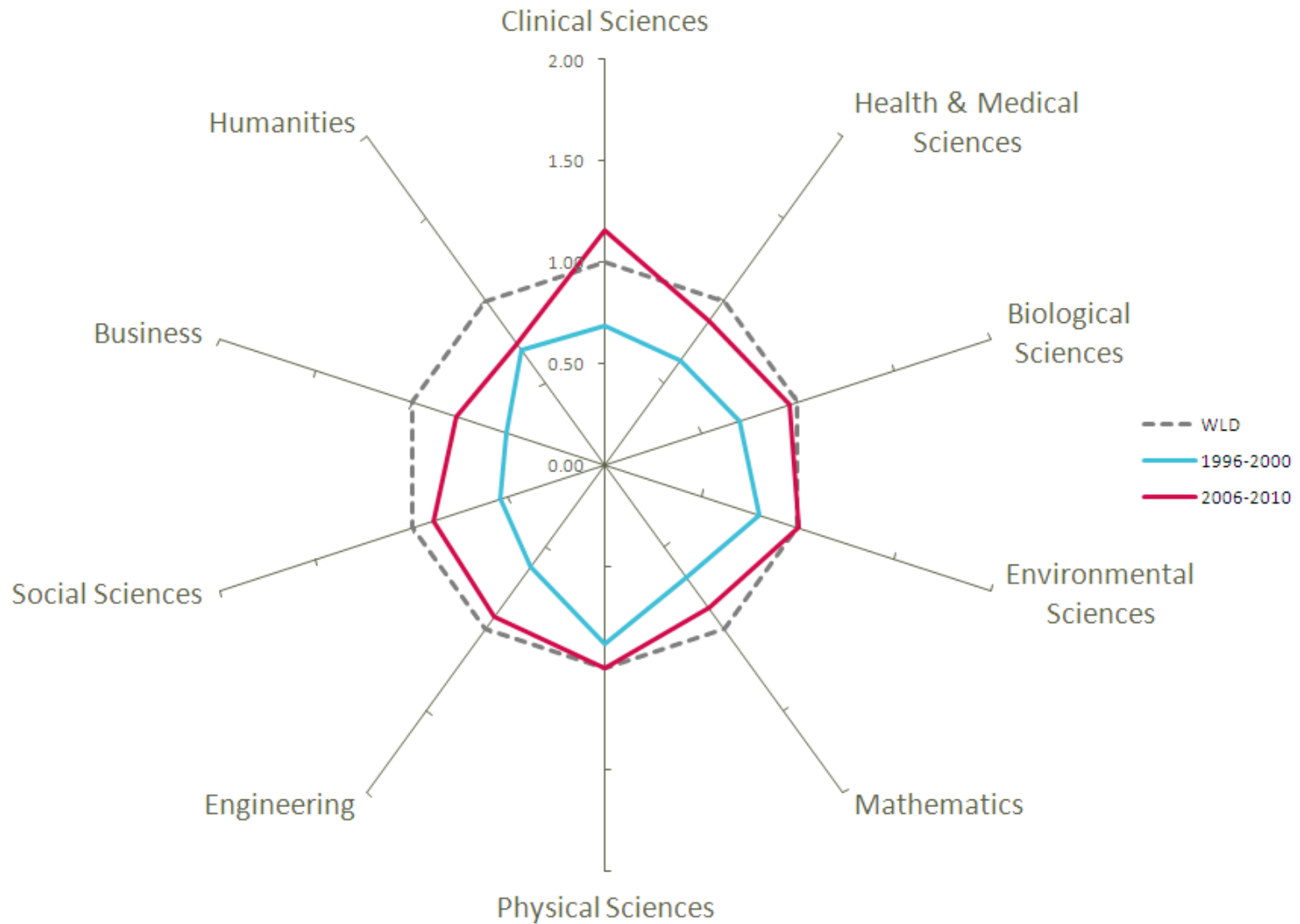


South Africa

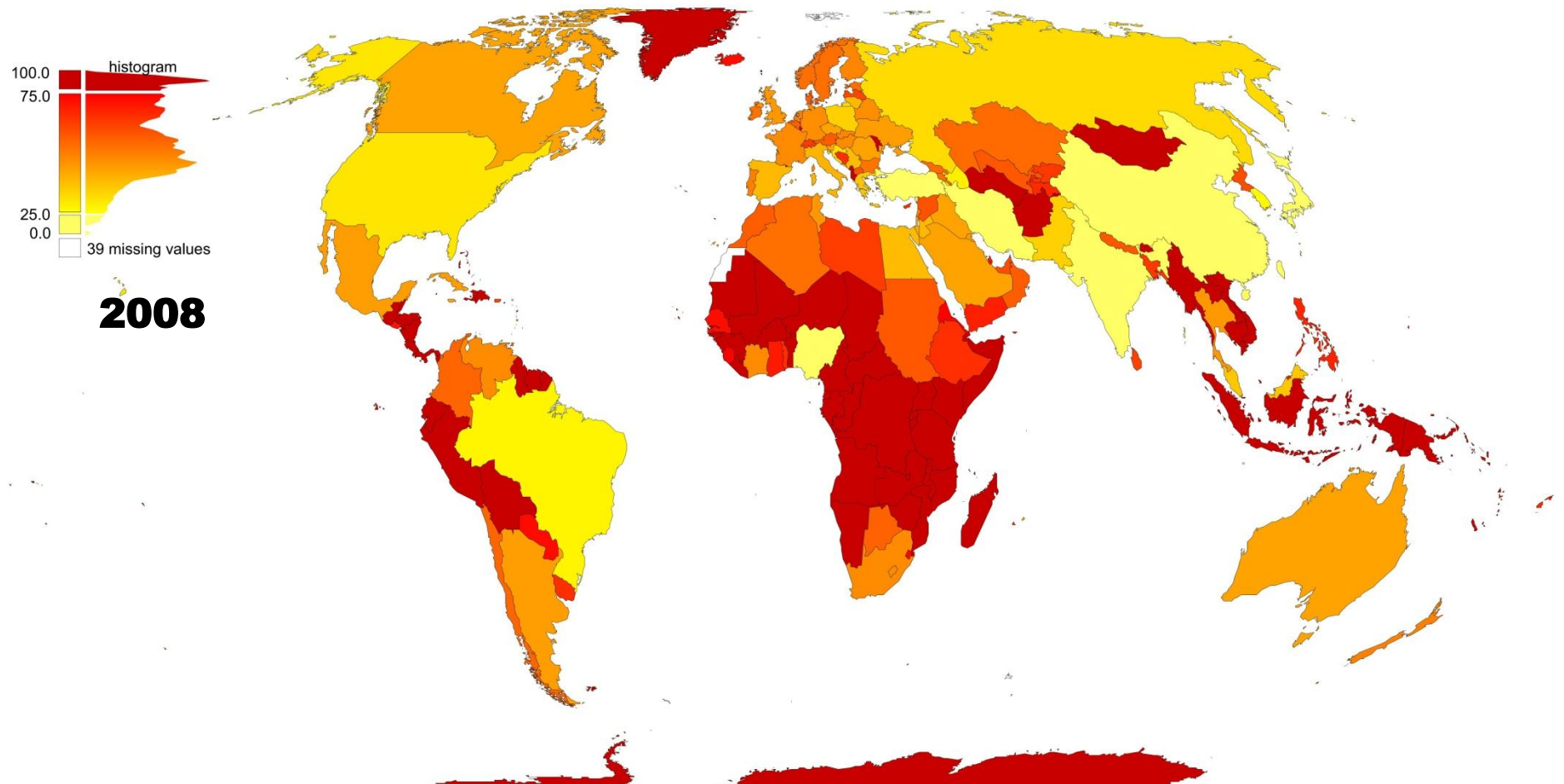


South Africa – Quality of research papers

Citation trends (FWCI)



International Collaboration



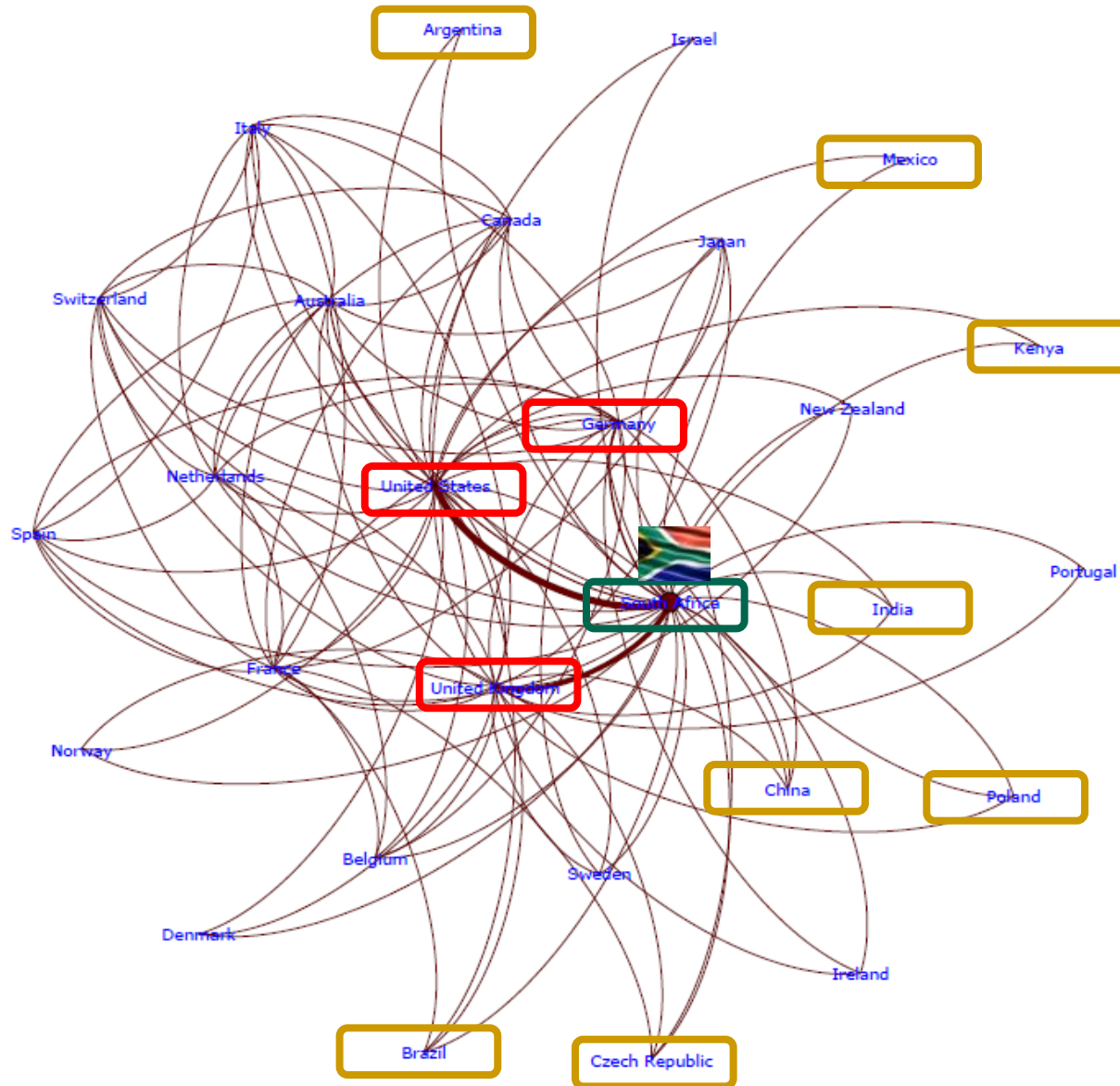
Papers with International Collaboration

1996 – 26%

2008 – 35%

Source: Scopus data

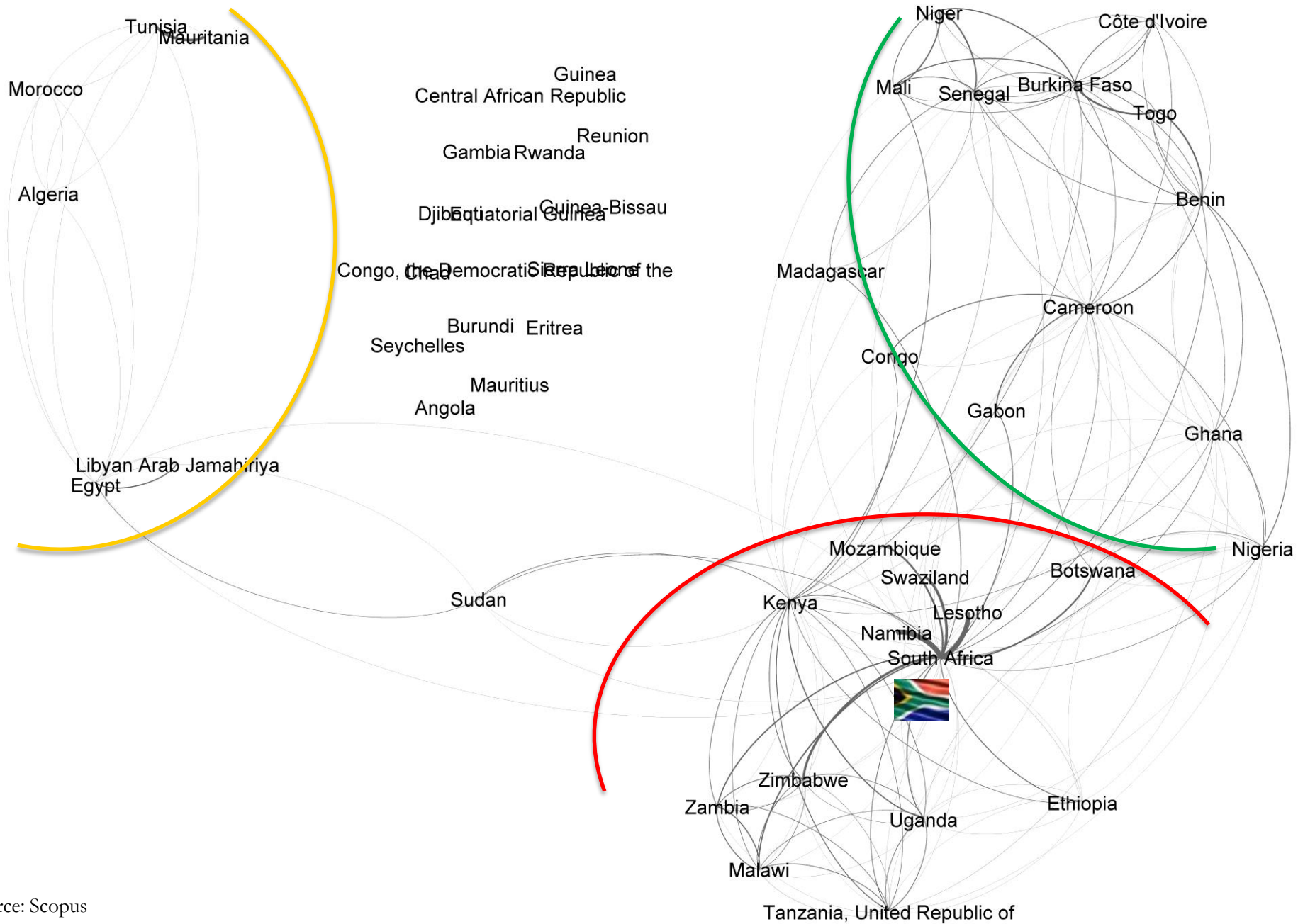
Global research collaboration – South Africa



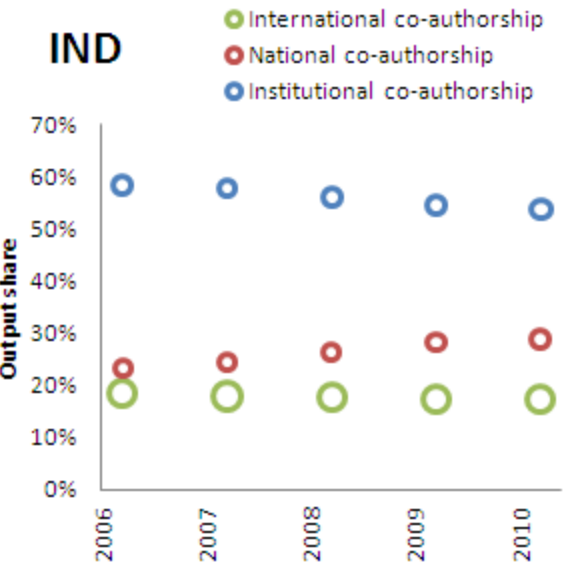
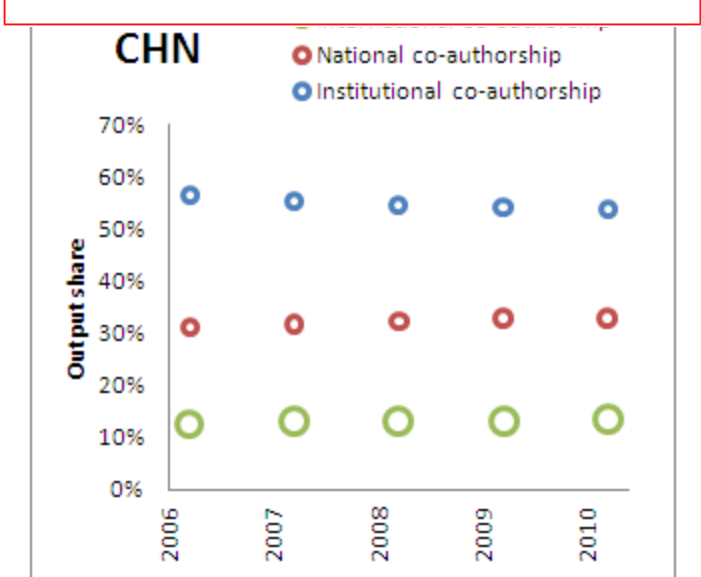
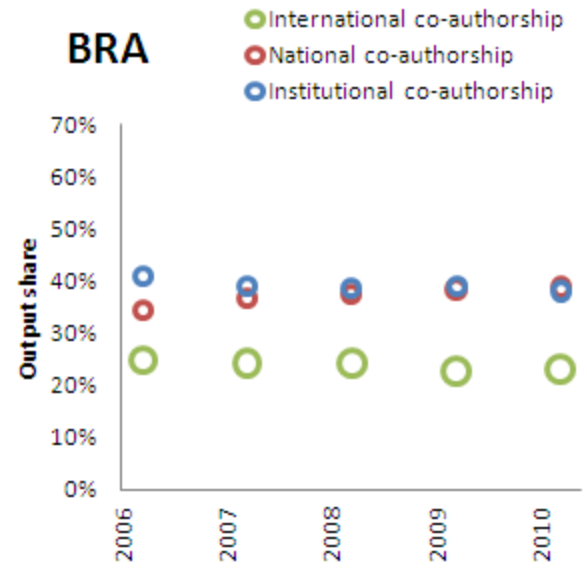
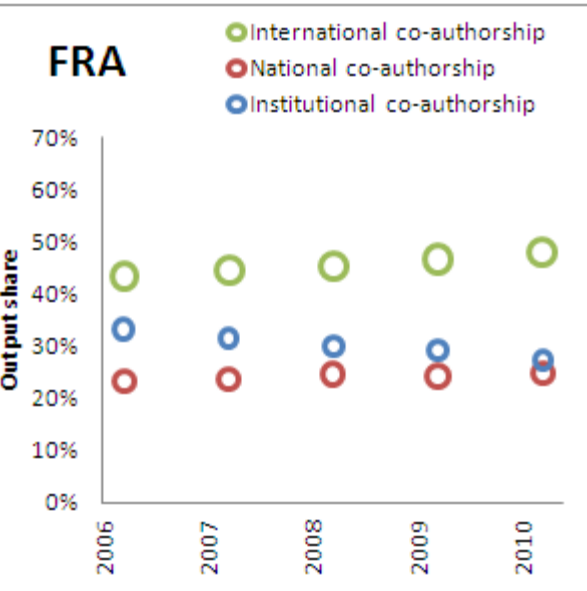
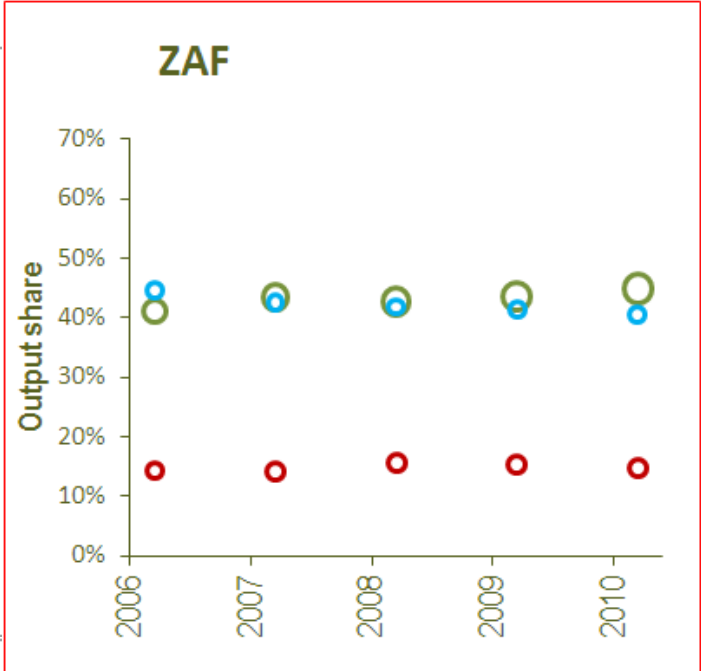
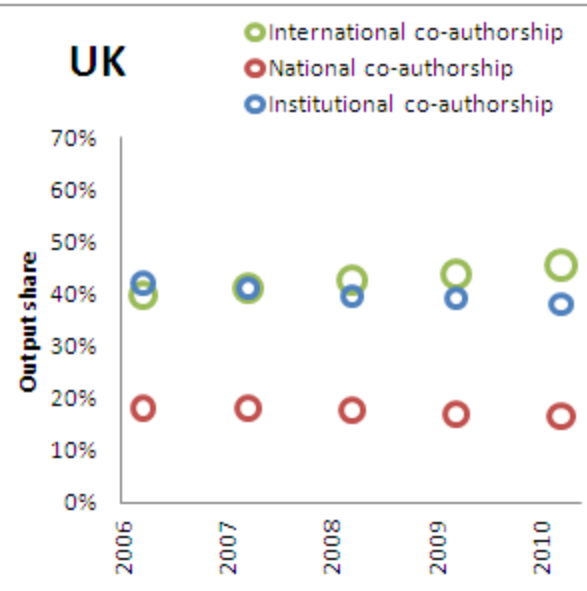
- Collaboration threshold = 100 publications
- Collaboration is mapped only on papers authored by South African researchers in the period 2005-2009 (> 40K publications)



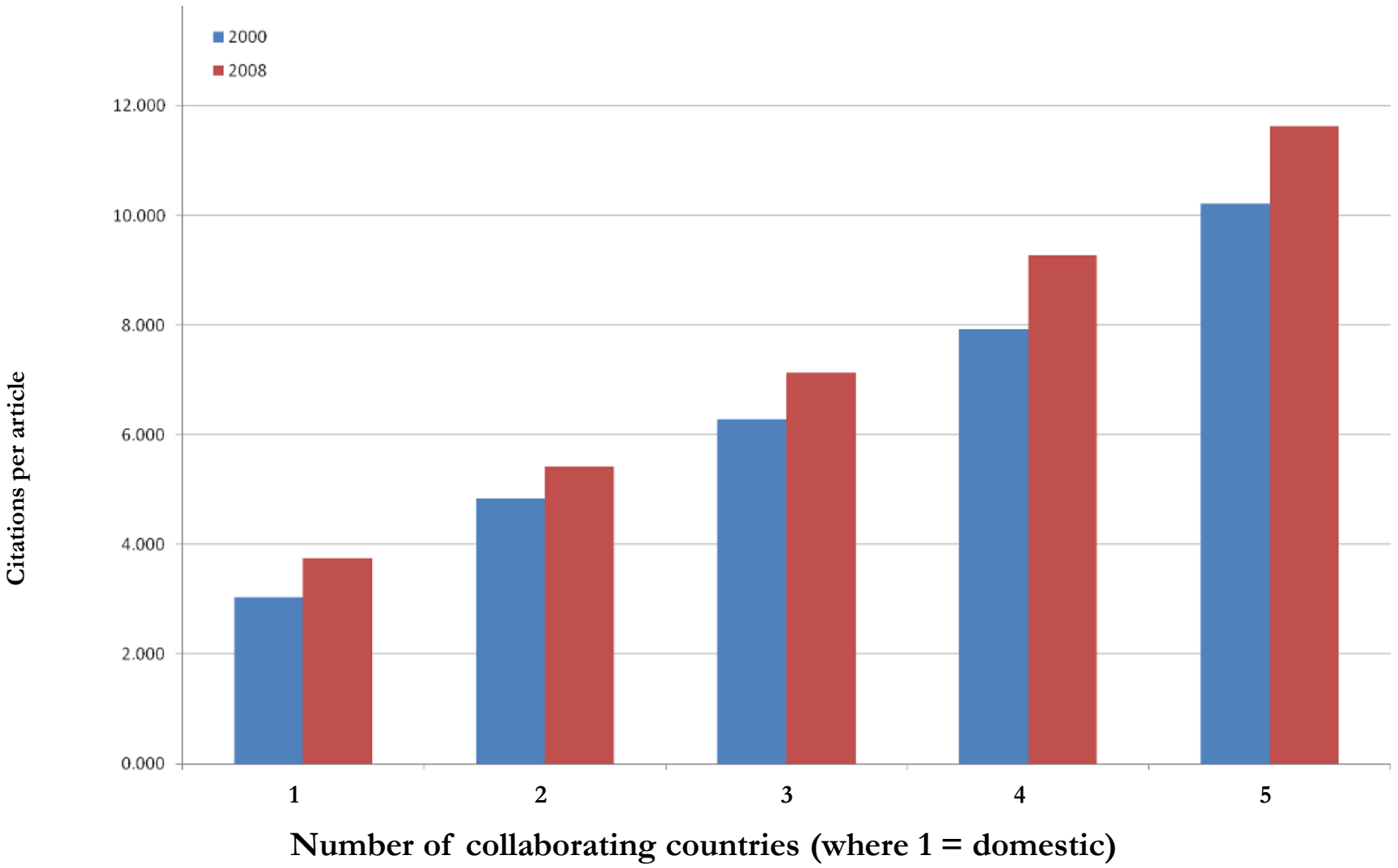
African research collaboration



International collaboration – Recent trends



International collaboration and citation impact



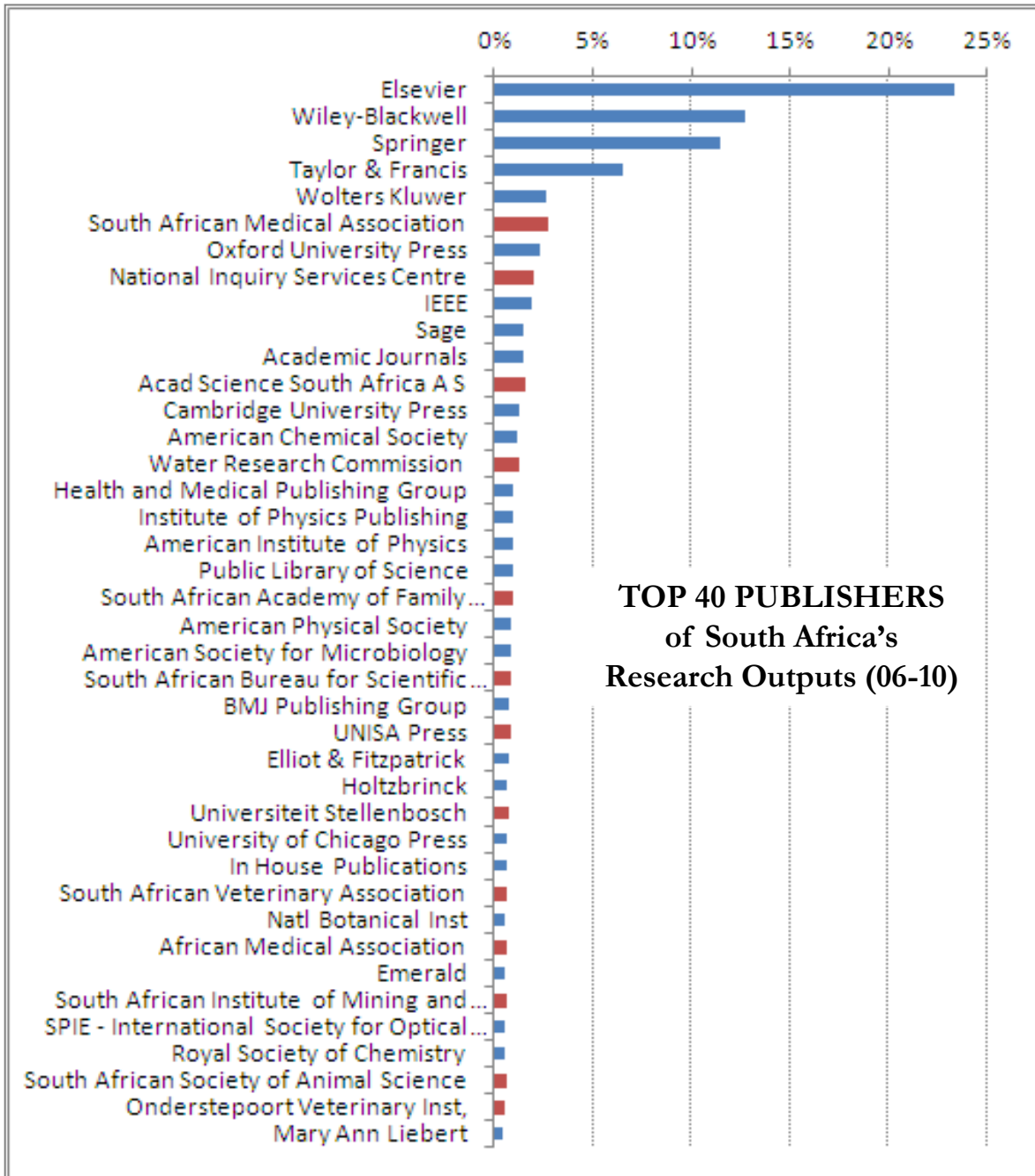
- International scientific collaboration is generally acknowledged as a positive force driving national impact and prestige
- Domestic articles have around 3 times fewer citations per article than those with five collaborating countries

International collaboration and citation impact

Citations per article fold increase over institutional co-authorship			
	Institutional	National	International
UK	1.0	1.4	2.0
CAN	1.0	1.4	2.1
DEU	1.0	1.2	2.0
FRA	1.0	1.5	2.3
ITA	1.0	1.4	2.4
JPN	1.0	1.4	2.4
USA	1.0	1.5	1.7
BRA	1.0	1.1	2.6
CHN	1.0	1.2	3.1
IND	1.0	0.8	1.8
RUS	1.0	1.2	5.9
ZAF	1.0	1.3	3.2



South Africa Research Outputs – Publishers



Top 40 publishers of South Africa's research outputs (2006-2010):

- accounted for 90% of all SA papers published
- include 13 South African publishers accounting for 13% of all SA papers



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