

Monitoring Access and Benefit Sharing in Practice

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One World Analytics &
United Nations University, Institute for the Advanced Study of
Sustainability

Monitoring in Practice

- I am going to discuss how to do monitoring in practice and suggest a phased approach:
- a) Ensure that the landscape for research permissions in India is fully understood.
- b) Start with commercial database and analysis tools
- c) At the same time, start to collect scientific literature, patent literature and taxonomic data for large scale text mining and analysis (collaborations required)
- d) Train staff with Handbook
- e) On the basis of experience and lessons learned push forward into monitoring biodiversity based product information

ABS monitoring: two aspects

- Monitoring access and benefit-sharing where a researcher or company has sought permission and entered into an access and benefit-sharing agreement (administrative data)
- Monitoring cases where no attempt has been made to secure permission and no ABS agreement exists (commonly described as biopiracy) (external data)

What data do we need for monitoring? Administrative data

- Names of researchers and applicants
- Researcher identifiers (e.g. ORCID)
- Species names (targets of research)
- Geographic locations (preferably geocoded)
- Community names (TK related)
- Electronic administrative information is the key to success because it can be used to construct automatic searches of other data sources

Monitoring Starts with
the online Application
Form

Postal / Zip Code Country

Your Institutional Email

Email of the Institution's Legal Representative

Phone Number of the Institutions's Legal Representative
 - -
#####

Institutional Website

What is the purpose of your research?
 Non-Commercial
 Commercial
 Both
 Other

Describe the environment where the research will take place
 Marine
 Terrestrial
 Both
 Other

Administrative data is based on a simple web form that triggers actions including notifications.

A Simple Web Form

The system uses a web form with choices, such as the environment where research will take place. Choices trigger actions such as searching literature and patent databases.

File kws_test.Rmd x kws_permits x R orcid_lookup.R x kws_works x

← → Filter

Search

project_title	principal_investigator_raw	research_institution
1 Population ecology of Maasai giraffe (G.c. tippelskirc...	Mr. Thadeus Obari	University of Nairobi
2 Domestication and application of biodiversity related...	Ms. Parita Shah	University of Nairobi
3 A case study on the successful management of wildli...	Ms. Clio Maggi	University of London
4 Characterization of tsetse-endosymbiont interaction...	Ms. Florence Wamwiri	Egerton University
5 Meru Cheetah Project	Dr. Elena Chelysheva	Action for Cheetahs in Keny...
6 Investigating the dynamics of infectious diseases wit...	Ms. Juliet Kinyua	Texas Tech University
7 Gamma Ray Spectroscopy Analysis of Sedimental Dep...	Mr. William Langat	Kenyatta University
8 Developing a new tooth wear-based dietary analysis ...	Mr. Juha Saarinen	Taita Research Station
9 Land Use and Land Tenure Changes and their impact ...	Mr. Joseph Ogoonoum Mbane	University of London
10 Ecological Impact of the invasive lantana camara L. o...	Mr. Simba Yusuf	Jomo Kenyatta University of...
11 Assessment of forage availability and quality for the ...	Mr. Obiet Lenard Okumu	Masinde Muliro University o...
12 Bio-geography and conservation of small mammals i...	Mr. Bernard Agwanda	
13 Effects of constructions of hospitality facilities in the ...	Ms. Stella Wanjiru Mwangi	
14 Concept for re-introduction of roan antelope to Masa...	Mr. Nick Cowell	
15 ASSESSMENT OF HUMAN WILDLIFE CONFLICT IN KITE...	Ms. Sera Njahira Waitara	
16 Effects of territoriality on parasitism and parasitism o...	Dr. Las Stefan Ekernas	
17 Genomics of tsetse and trypanosomiasis research	Dr. Grace Murila	

Showing 1 to 18 of 478 entries

Console

An illustration.
478 Kenya Wildlife Service permits

Secure | <https://orcid.org/my-orcid>

Search           

English

FOR RESEARCHERS FOR ORGANIZATIONS ABOUT HELP SIGN OUT

MY ORCID RECORD INBOX ACCOUNT SETTINGS DEVELOPER TOOLS LEARN MORE

4,423,280 ORCID IDs and counting. See more...

Paul Oldham

Biography

ORCID ID

 <https://orcid.org/0000-0002-1013-4390> 

 United Kingdom

 Social Anthropology, Science and Technology Studies, Biological Diversity, Biodiversity, Intellectual

Education (3)

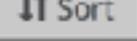
 

London School of Economics and Political Science: London, London, United Kingdom
to 1996-05-01 | PhD (Social Anthropology)
Source: Paul Oldham  

University of Cambridge: Cambridge, Cambridgeshire, United Kingdom
1989-09-01 to 1990-09-01 | MPhil (Social Anthropology)
Source: Paul Oldham  

Lancaster University: Lancaster, Lancashire, United Kingdom
1985-10-01 to 1988-06-01 | BA(Hons) (Religious Studies)
Source: Paul Oldham  

Employment (3)

The screenshot shows the RStudio interface with the following details:

- File tabs:** kws_test.Rmd, kws_permits, orcid_lookup.R, kws_works.
- Toolbar:** Source on Save, Run, Source.
- Code Area:** The script content is as follows:

```
19 #' # retrieve a data table with the researcher works
20 #' oldham_works <- orcid_lookup(given = "paul", family = "oldham",
21 # country = "GB", retrieve_works = TRUE)}
21 - orcid_lookup <- function(given = NULL, family = NULL, affiliation =
22 # keyword = NULL, country = NULL, retrieve_works = NULL){
23   # for build_query, iterate and get_works see zzz
24   query <- build_query(given, family, affiliation, keyword)
25   res <- iterate(query, rorcid::orcid, timer = 3) %>%
26     dplyr::bind_rows()
27   # regularize column names
28   names(res) <- stringr::str_replace_all(names(res), "[.]", "_") %>%
29     stringr::str_replace_all(., "-", "_")
30   res
31
32   # test if more than one entry for a name
33   nrow <- nrow(res)
34   # null country cases
35   if (nrow > 1 && is.null(country)) {
36     message("More than one entry found. No country code provided.
37     Returning raw data frame")
```

Status Bar: 22:28, orcid_lookup(given, family, affiliation, keyword, country, retrieve_works) ▾, R Script ▾.

Console: Console

work_title_value	journal_title_value
Evaluation of the use of Ocimum suave Willd. (Lamiaceae), Plectranthus barbatus Andrews (Lamiaceae) and Erythrina abyssinica (Fabaceae) in the treatment of malaria in Kakamega County, Kenya	J Ethnopharmacol
A systematic review of Rift Valley Fever epidemiology 1931–2014	Infect Ecol Epidemiol
Effects of anticancer drug docetaxel on the structure and function of the rabbit olfactory mucosa	Tissue Cell
Erythrina abyssinica prevents meningoencephalitis in chronic Trypanosoma brucei brucei infected mice	Metab Brain Dis
Medicinal plants used in treatment and management of cancer in Kakamega County, Kenya	J Ethnopharmacol
Anticancer drug vinblastine sulphate induces transient morphological changes on the olfactory mucosa of the rabbit	Anat Histol Embryol
Morphofunctional adaptations of the olfactory mucosa in postnatally developing rabbits	Anat Rec (Hoboken)
Skin shedding and tissue regeneration in African spiny mice (<i>Acomys</i>)	Nature
Ethnodiagnostic skills of the digo community for malaria: a lead to traditional bioprospecting	Front Pharmacol
Medicinal plants used in the management of chronic joint pains in Machakos and Makueni counties, Kenya	J Ethnopharmacol
Antimalarial herbal remedies of Msambweni, Kenya	J Ethnopharmacol
Effects of opioids in the formalin test in the Speke's hinged tortoise (<i>Kinixys spekii</i>)	J Vet Pharmacol Ther
Recent advances into understanding some aspects of the structure and function of mammalian aorta	Physiol Biochem Zool
Regional differences in aorta of goat (<i>capra hircus</i>)	Folia Morphol (Warsz)
Structural organisation of tunica intima in the aorta of the goat	Folia Morphol (Warsz)
Traditional antimalarial phytotherapy remedies used by the South Coast community, Kenya	J Ethnopharmacol
Comparative in vitro study of interactions between particles and respiratory surface macrophages	J Anat

Showing 1 to 18 of 27 entries (filtered from 693 total entries)

Console

What data do we need for monitoring? External Data

- Taxonomic information (if you don't know what you've got you can't monitor it)
- Scientific literature (open access and commercial sources)
- Patent data (open access and commercial)
- Business intelligence data
 - Product information
 - Market and valuation information
 - Licensing and litigation information (patent data)
- Other data sources? Suggestions are always welcome

Methods

- Databases
- Web services (Application Programming Interfaces to databases)
- Text mining (interrogate texts)
- Analytics (descriptive statistics with a preference for interactive analytics)
- Network analysis (map the relationships between people or things)
- Landscape analysis
- Future methods
 - Parallel processing in the cloud to address issues of scale (Apache Spark/Hadoop)
 - Machine learning/artificial intelligence (but important to look beyond the hype)

The Taxonomic Data Challenge

If we don't know what the biodiversity of India is, it can't be monitored.
This is likely to be an iterative process of identifying data sources and
progressively improving the availability of taxonomic and related data
over time to service monitoring



India



An associate participant from Asia

Names of countries and areas are based on the [ISO 3166-1 standard](#)

[SUMMARY](#)[DATA ABOUT](#)[DATA PUBLISHING](#)[RESEARCH](#)[PARTICIPATION](#)[NEWS](#)[COUNTRY REPORT](#)

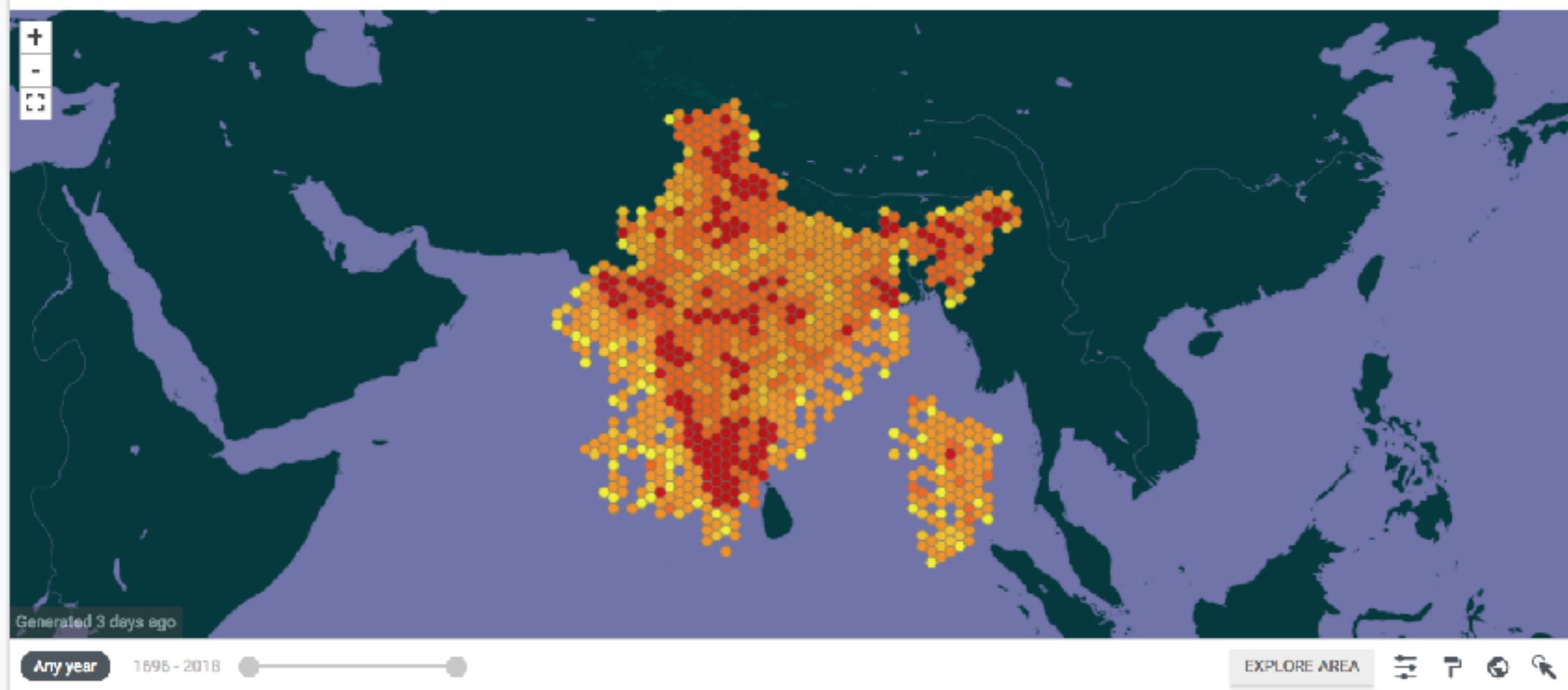
DATA ABOUT INDIA

6,070,423

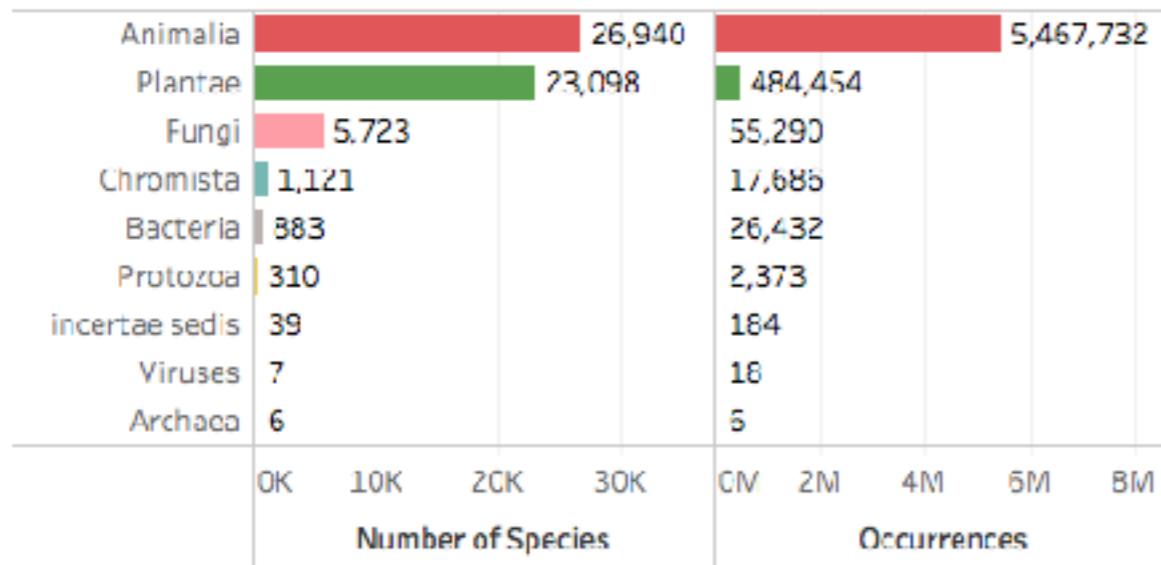
Occurrences

1206

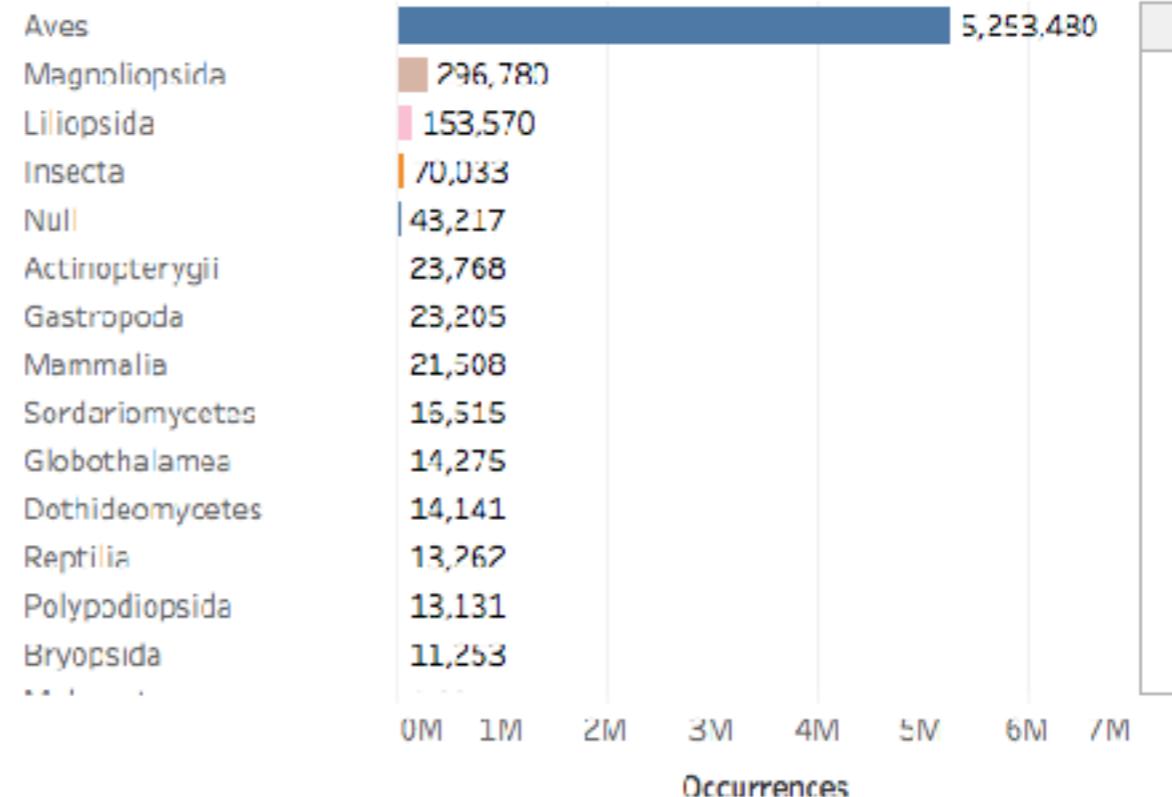
Datasets

38countries and areas contribute
data

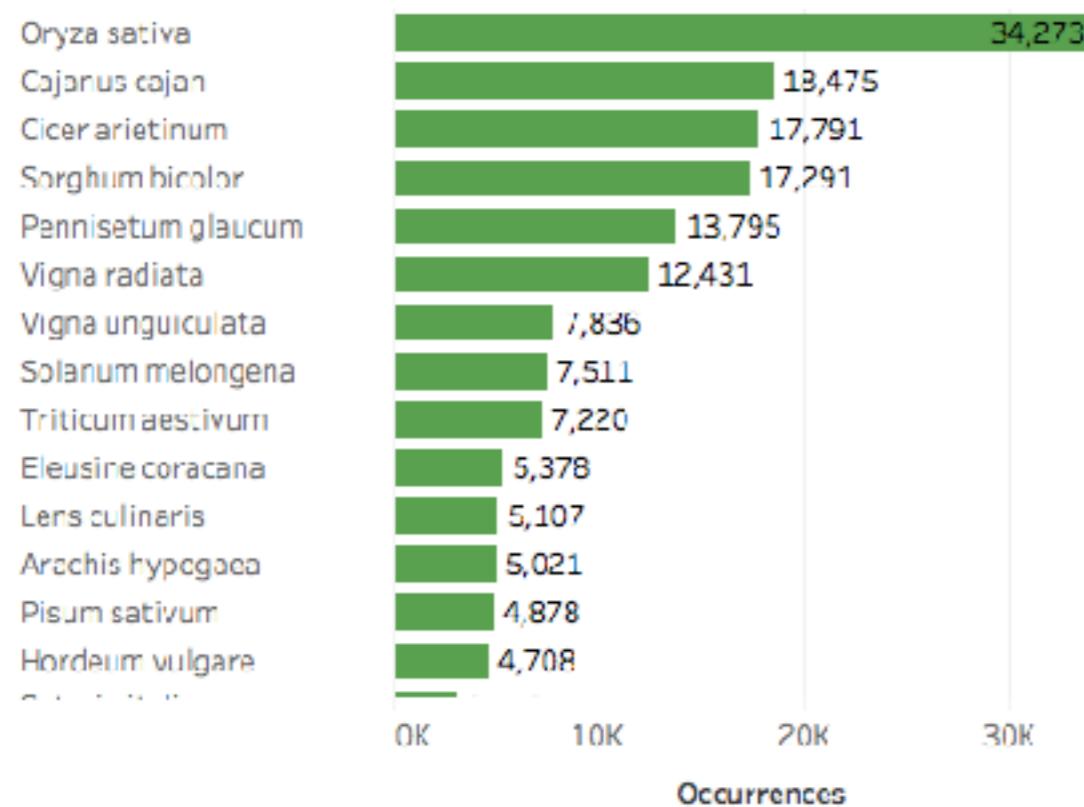
Kingdom



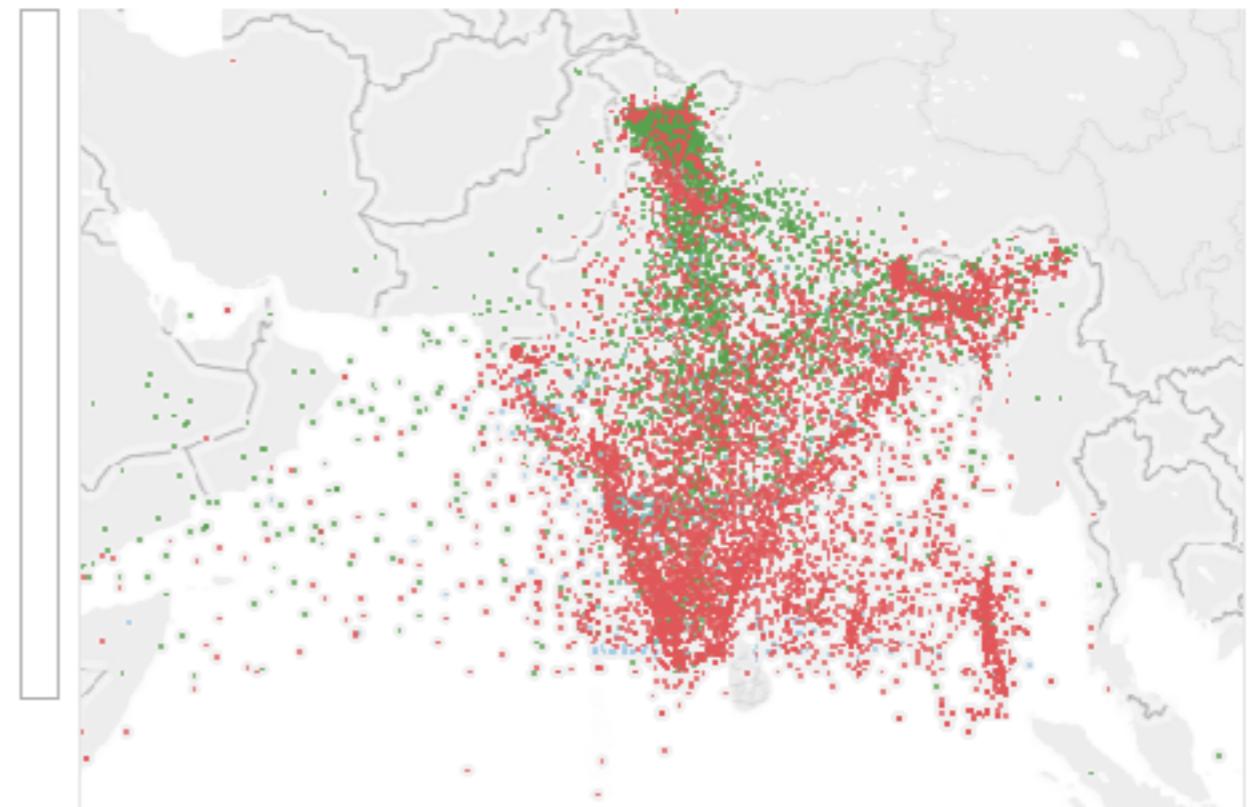
Class



Species



Occurrence Map



GBIF India, 6 million occurrence records, 58122 species names. Data is dominated by birds

Taxonomic data challenges

- At present we only have a very limited view of biodiversity from India in GBIF (although the addition of 3 million records last year is a big achievement)
- For ABS monitoring we need access to species lists with the taxonomic hierarchy and if possible georeference and other useful information.
- The scoping challenge is to identify the relevant data sources here in India and to discuss how to access the data.
- I will suggest below that improving the availability of electronic taxonomic data can be linked with the scientific and patent literature to create a wider open access resource.

The Scientific Literature

Scientific literature is housed in silos (journals). There are high quality commercial databases (e.g. Web of Science) and increasing access to metadata (crossref) and open access full texts. The challenge with India is the scale of the scientific literature and identifying the biodiversity literature.

Web of Science (v5.27) - Web X

https://apps.webofknowledge.com/Search.do?product=WOS&SID=D4jbr4lWkHOYFFxGkZm&search_mode=GeneralSearch&prID=2cce4d8...

Web of Science InCites Journal Citation Reports Essential Science Indicators EndNote Publons Sign In Help English

Web of Science

Clarivate Analytics

Search My Tools Search History Marked List

Results: 1,546,062 (from Web of Science Core Collection)

You searched for: TOPIC: (India) OR ADDRESS: (India) ...More

Create Alert

Refine Results

Search within results for...

Filter results by:

Open Access (173,981)

Publication Years

2016 (133,675)
 2015 (125,016)
 2017 (110,282)
 2014 (98,193)
 2013 (83,707)

more options / values...

Web of Science Categories

ENGINEERING ELECTRICAL ELECTRONIC (115,038)
 MATERIALS SCIENCE MULTIDISCIPLINARY (85,817)
 CHEMISTRY MULTIDISCIPLINARY (85,811)
 PHYSICS APPLIED (58,234)
 CHEMISTRY PHYSICAL (58,189)

more options / values...

Sort by: Date Times Cited Usage Count Relevance More Page 1 of 10,000

Select Page 5K Save to EndNote online Add to Marked List Citation Report feature not available [?]

Analyze Results

1. Performance of different density functionals for the calculation of vibrational frequencies with vibrational coupled cluster method in bosonic representation
By: Revichandran, Lalitha; Banik, Subrata
THEORETICAL CHEMISTRY ACCOUNTS Volume: 137 Issue: 1 Article Number: 1 Published: DEC 6 2018

Times Cited: 0 (from Web of Science Core Collection)

Usage Count

View Abstract

2. Elegy for India's Daughter
By: Eusuf, Naushawn
AMERICAN SCHOLAR Volume: 87 Issue: 1 Pages: 60-60 Published: WIN 2018

Times Cited: 0 (from Web of Science Core Collection)

Usage Count

View Abstract

3. Task-Sharing Approaches to Improve Mental Health Care in Rural and Other Low-Resource Settings: A Systematic Review
By: Hecht, Theresa J.; Forney, John C.; Patel, Vikram; et al.
JOURNAL OF RURAL HEALTH Volume: 34 Issue: 1 Pages: 46-62 Published: WIN 2018

Times Cited: 1 (from Web of Science Core Collection)

Usage Count

View Abstract

4. Securitizing Women: Gender, Precaution, and Risk in Indian Finance
By: Kar, Suhini
SIGNS Volume: 43 Issue: 2 Pages: 301-325 Published: WIN 2018

Times Cited: 0 (from Web of Science Core Collection)

Usage Count

View Abstract

5. Exhibition of veiled features in diffusion bonding of titanium alloy and stainless steel via copper
By: Thirunavukarasu, Gopinath; Kundu, Sekumar; Laha, Tapas; et al.
METALLURGICAL RESEARCH & TECHNOLOGY Volume: 115 Issue: 1 Article Number: 115 Published: NOV 27 2018

Times Cited: 0 (from Web of Science Core Collection)

Usage Count

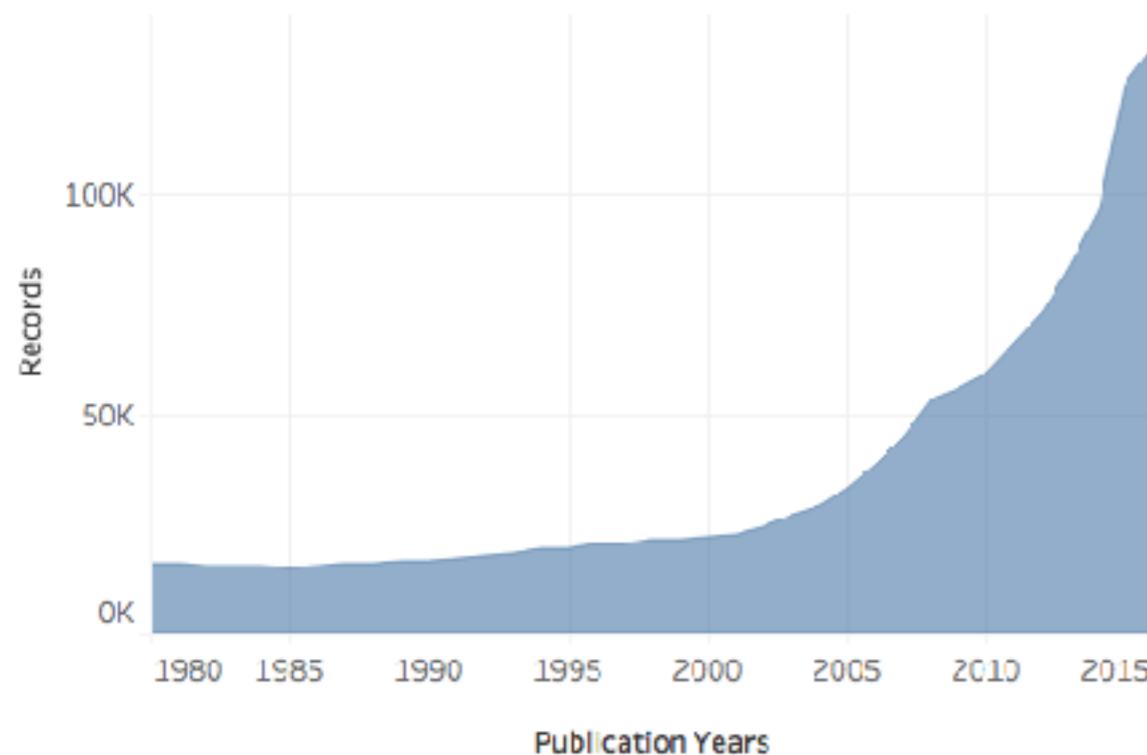
View Abstract

6. A Novel Zone Division Approach for Power System Fault Detection Using ANN-Based Pattern Recognition Technique

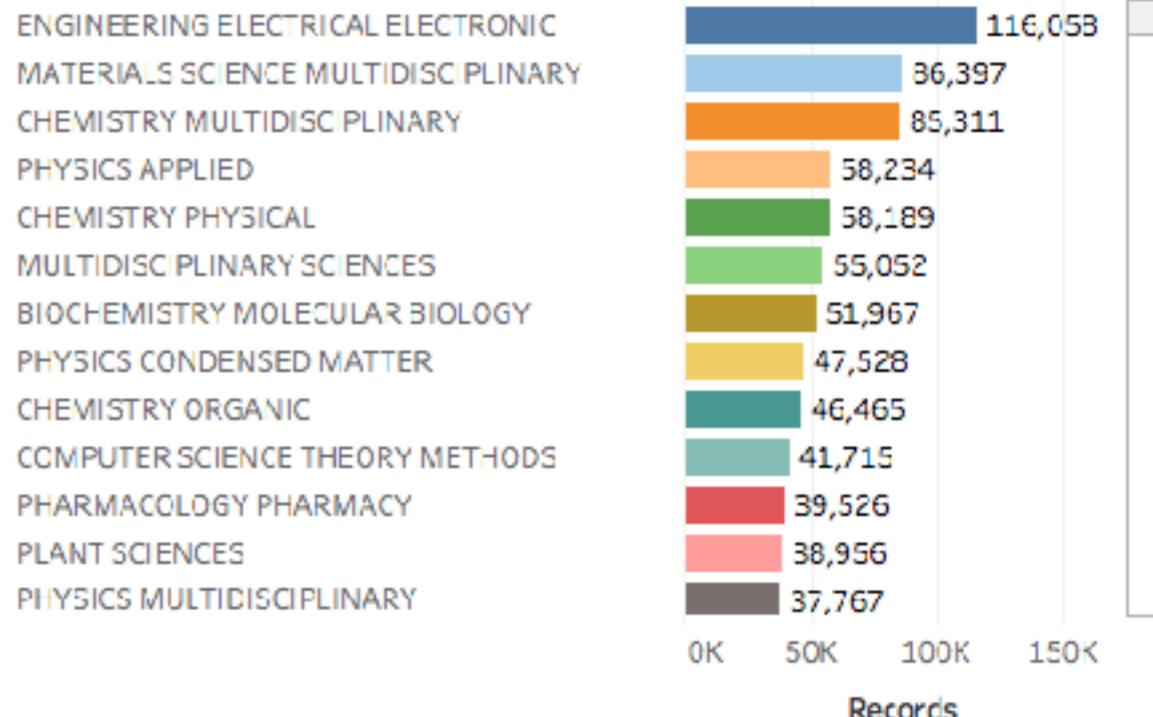
Times Cited: 0 (from Web of Science Core Collection)

1.5 million publications in Web of Science reference India in the author address or title, abstract or keywords

Trends



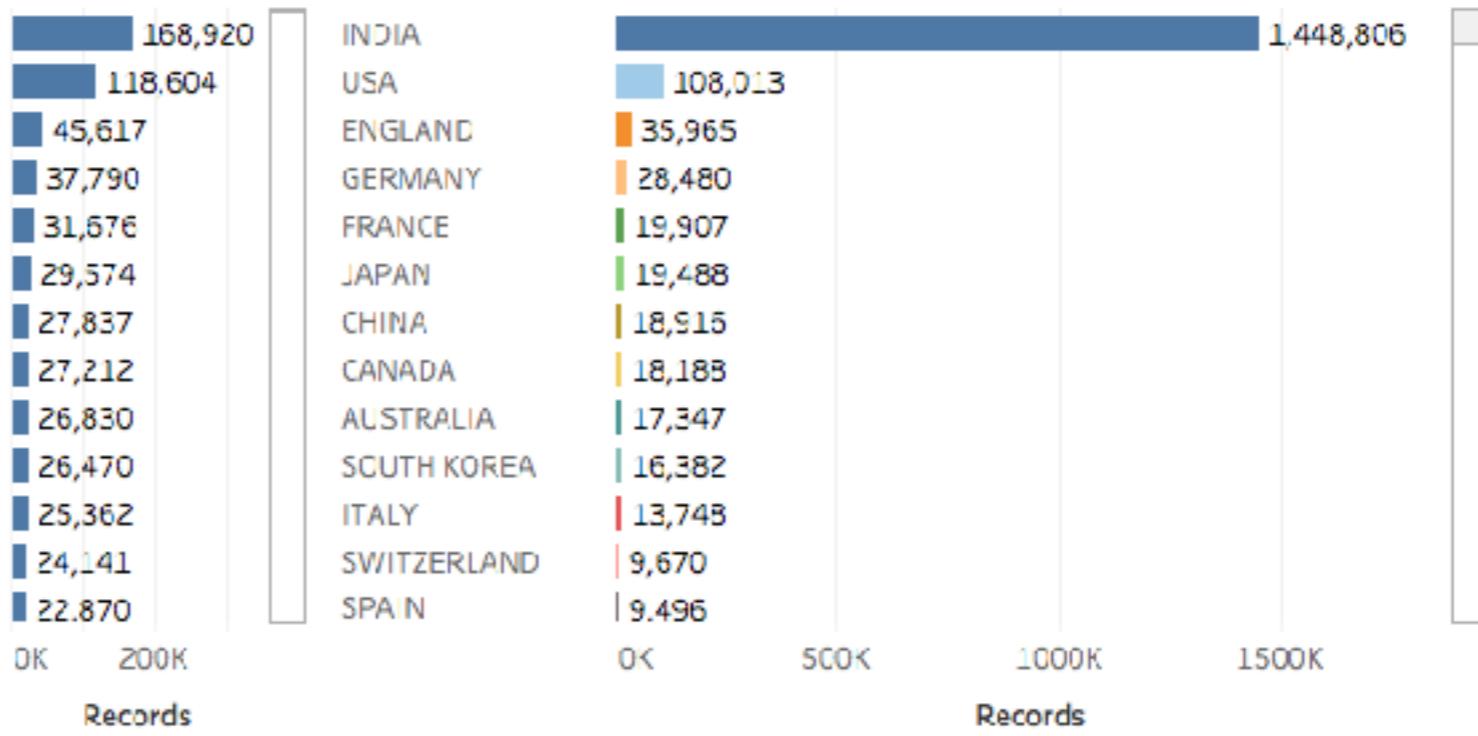
Subject Areas



Organisations

INDIAN INSTITUTE OF TECHNOLOGY IIT	168,920
COUNCIL OF SCIENTIFIC INDUSTRIAL RESEARCH CSIR INDIA	118,604
INDIAN INSTITUTE OF SCIENCE IISC BANGALORE	45,617
INDIAN COUNCIL OF AGRICULTURAL RESEARCH ICAR	37,790
BHABHA ATOMIC RESEARCH CENTER	31,576
INDIAN INSTITUTE OF TECHNOLOGY IIT KHARAGPUR	29,574
INDIAN INSTITUTE OF TECHNOLOGY IIT DELHI	27,837
BANARAS HINDU UNIVERSITY	27,212
INDIAN INSTITUTE OF TECHNOLOGY IIT MADRAS	26,830
UNIVERSITY OF DELHI	26,470
INDIAN INSTITUTE OF TECHNOLOGY IIT BOMBAY	25,362
ALL INDIA INSTITUTE OF MEDICAL SCIENCES	24,141
INDIAN INSTITUTE OF TECHNOLOGY IIT KANPUR	22,870

Countries



1,546,142 results for India (topic or address) in Web of Science core collection.

For biodiversity and TK records I think we would need to start the search in around 600,000 records that are closer to biodiversity subjecty (chemistry, biochemistry, plant sciences etc.).

Title

47 Titles, 0 Selected

- An ethnopharmacological study from the Coimbatore District, Tamil Nadu, India: Traditional knowledge com...
- Anti-diarrhoeal and ulcer-protective effects of violacein isolated from Chromobacterium violaceum in Wistar ...
- Anti-inflammatory, analgesic and antipyretic effects of friedelin isolated from Azima tetracantha Lam. in mou...
- Antidiabetic activity of ethanolic extract of tubers of Dioscorea alata in alloxan induced diabetic rats
- Antimalarial activities of medicinal plants traditionally used in the villages of Dharmapuri regions of South India
- Assessment of prescribing practices among urban and rural general practitioners in Tamil Nadu
- Comparative efficacy of peste des petits ruminants (PPR) vaccines
- Consensus analysis of sastric formulations used by non-institutionally trained siddha medical practitioners of ...
- Consensus of local knowledge on medicinal plants among traditional healers in Mayiladumparai block of The...
- Documentation and quantitative analysis of local ethnozoological knowledge among traditional healers of Th...
- Documentation and quantitative analysis of the local knowledge on medicinal plants among traditional Sidd...

Author Affiliations (Organization Only)

15		Loyola Coll
3		JSS Coll Pharm
3		King Saud Univ
3		Univ Madras
2		Anna Univ
2		Bharathiar Univ
2		Univ Guelph
1		Alagappa Univ
1		All India Shri Shivaji Mem Soc Coll Pharm
1		Annamalai Univ
1		Asthaqiri Herbal Res Fdn

Countries

45		India
4		Canada
3		Saudi Arabia
1		Norway

List:Web of Science Category

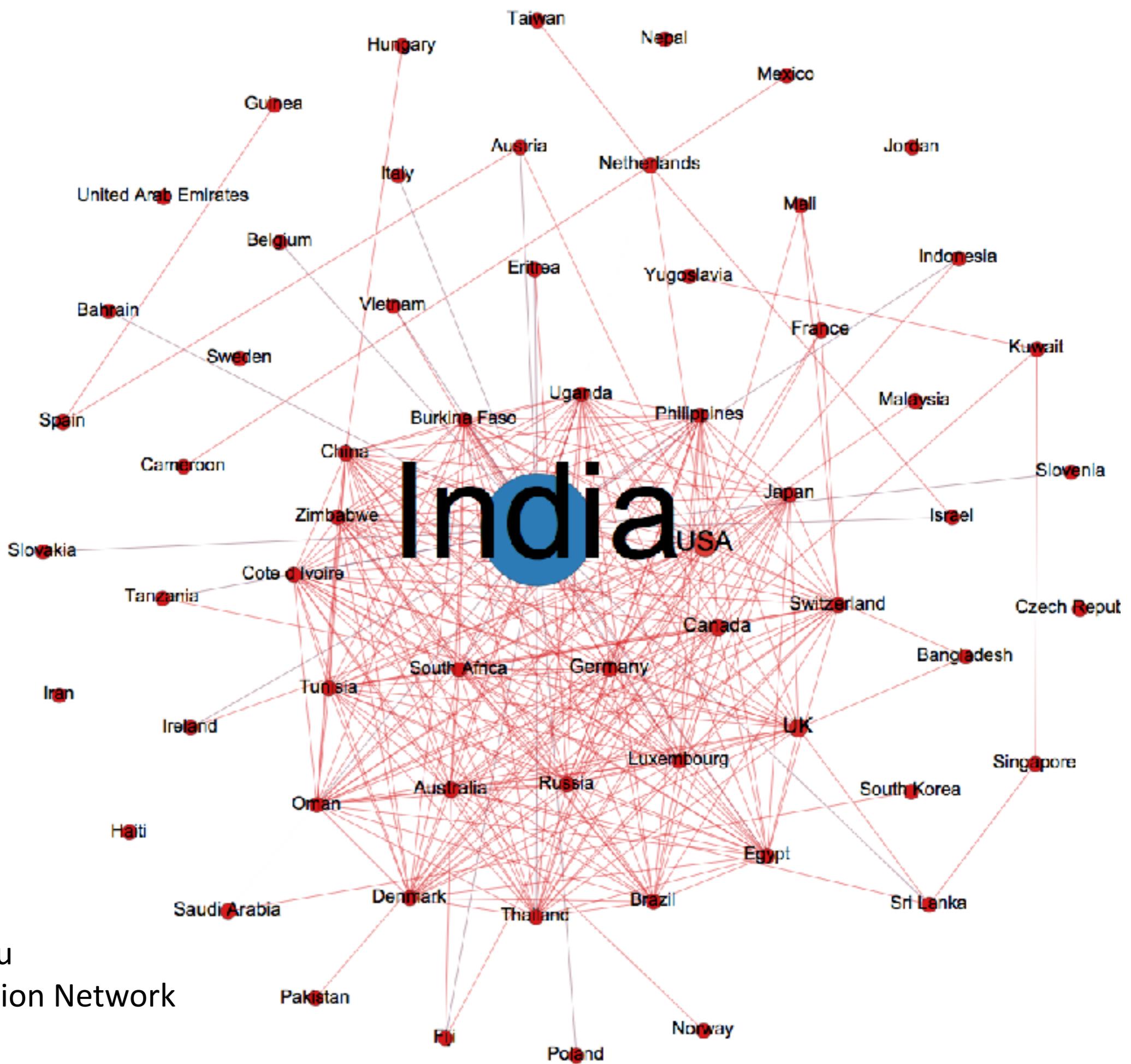
	# Records	# Instances	Web of Science Category
1	191	191	Plant Sciences
2	168	168	Immunology
3	142	142	Veterinary Sciences
4	118	118	Medicine, General & Internal
5	117	117	Medicine, Research & Experimental
6	98	98	Agriculture, Dairy & Animal Science
7	98	98	Tropical Medicine
8	79	79	Biotechnology & Applied Microbiology
9	76	76	Public, Environmental & Occupational He...
10	70	70	Infectious Diseases
11	69	69	Entomology
12	68	68	Microbiology
13	61	61	Agriculture, Multidisciplinary
14	61	61	Genetics & Heredity
15	54	54	Agronomy
16	47	47	Pharmacology & Pharmacy
17	45	45	Parasitology
18	41	41	Zoology
19	34	34	Environmental Sciences
20	33	33	Chemistry, Medicinal
21	33	33	Virology
22	32	32	Marine & Freshwater Biology
23	28	28	Horticulture
24	27	27	Biology
25	27	27	Ecology
26	27	27	Toxicology
27	26	26	Forestry

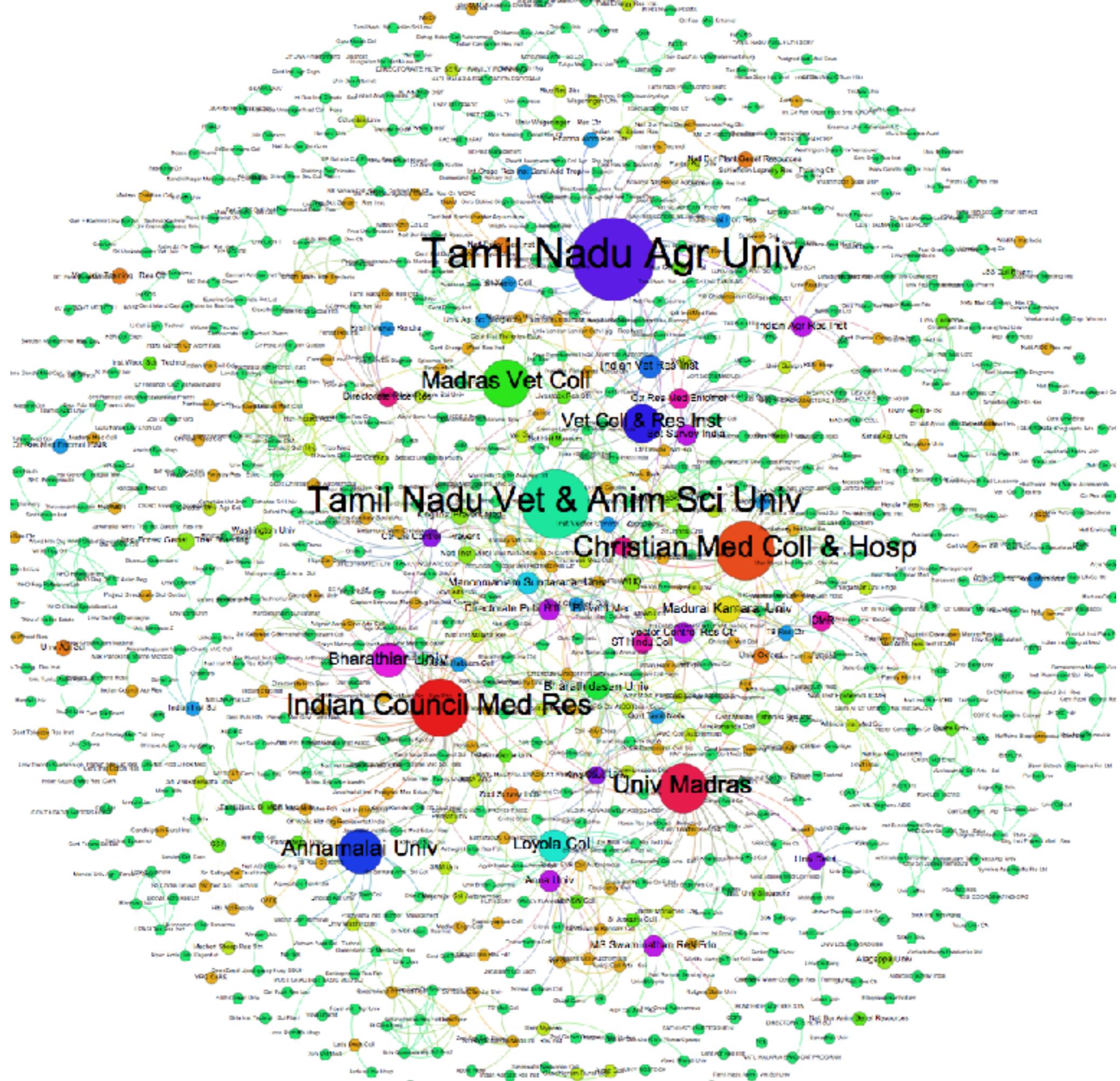
List:Author Affiliation

Done



Tamil Nadu Collaboration Network





Metadata enables connections ×

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We're a not-for-profit membership organization that exists to make
scholarly communications better.



94 million records, 65 million links to full texts,

TYPE

- Journal Article (209,001)
- Chapter (29,264)
- Conference Paper (10,230)
- Dataset (2,557)
- Book (1,545)
- Component (1,412)
- Monograph (1,308)
- Reference (654)
- Other (425)
- Report (323)

YEAR

- 2017 (30,897)
- 2016 (28,402)
- 2015 (22,526)
- 2014 (21,496)
- 2013 (14,782)
- 2012 (14,219)
- 2011 (11,177)
- 2010 (8,194)
- 2009 (7,277)
- 2008 (5,583)

PUBLICATION

- Medical Journal Armed Forces India (3,962)
- India Quarterly: A Journal of International Affairs (3,587)
- Neurology India (3,186)
- SSRN Electronic Journal (2,642)
- The Lancet (1,907)
- Journal of the Geological Society of India (1,706)
- Nature India (1,684)
- International Journal of Advanced Research (1,640)
- The Journal of Asian Studies (1,492)
- BMJ (1,386)

CATEGORY

- General Medicine (20,460)
- History (8,822)
- Sociology and Political Science

SORT BY: RELEVANCE PUBLICATION YEAR

PAGE 1 OF 257,805 RESULTS

Whose India? Which India?

Chapter published in The Rediscovery of India

<https://doi.org/10.5040/9781549664288.ch-016> * Actions**IMRT AND VMAT COMMISSIONING FOR VERSA HD LINEAR ACCELERATOR USING AAPM TG-119.**

Journal Article published 30 Apr 2017 in International Journal of Advanced Research volume 5 issue 4 on pages 352 to 362

Authors: Seema Sharma, All India Institute of Medical Sciences, New Delhi, India., Subhash Chander, Velliyan Subramani, Pratik Kumar, Suman Bhaskar, Sushmita Pathy, Sanjay Thulkar, N. Gopishankar, Megha Sairem, Ashish Binjola, Chayanethi N, ...

<https://doi.org/10.2147/ijar01/3819> * Actions**Aerosol, clouds blocking sunlight over India**

Journal Article published 4 May 2010 in Nature India

<https://doi.org/10.1038/india.2010.58> * Actions**India marathon mapping TB bug**

Journal Article published 9 Apr 2010 in Nature India

<https://doi.org/10.1038/india.2010.43> * Actions**Indian post-docs for India**

Journal Article published 23 Aug 2008 in Nature India

<https://doi.org/10.1038/india.2008.262> * Actions**Not made in India**

Journal Article published 17 Sep 2008 in Nature India

<https://doi.org/10.1038/india.2008.284> * Actions**Hantavirus strikes India**

Journal Article published 23 Jan 2008 in Nature India

<https://doi.org/10.1038/india.2008.104> * Actions**India rues time lag in vaccine delivery**

Journal Article published 17 Jan 2008 in Nature India

<https://doi.org/10.1038/india.2008.78> * Actions**India woos its women scientists**

Journal Article published 14 Mar 2008 in Nature India

257,000 publication records
for India
accessible through crossers
and through its API e.g.
rcrossref

~/Desktop/open_source_master/India_r - RStudio

crossref_india.Rmd*

Go to file/function Addins india_r

```
22 ````{r}
23 india_data <- cr_works(query = "india", cursor = "*", cursor_max = 200,
24 .progress = "text")
25 india_data$data
````
```

title  
<chr>

State of the art in polymer science & engineering in India

Book review: Decentralised Production in India: Industrial Districts, Flexible Special...

Reinventing India: liberalization, Hindu nationalism and popular democracy, by Stua...

?-Thalassemia gene flow from India to Mauritius

Book review: Ecology and Equity: The Use and Abuse of Nature in Contemporary Indi...

BOOK REVIEW: New Farmers' Movements in India by Tom Brass. London, Frank Cass,...

The New Cambridge History of India. Vol.IV.4: An Agrarian History of South Asia, by...

The New Cambridge History of India III.5: Science, Technology and Medicine in Colo...

Man-land relationships during palaeolithic times in the kaladgi basin, karnataka. Ra...

The process of financial liberalisation in India

24:16 Chunk 3 R Markdown

Console

CORE

Secure | https://core.ac.uk

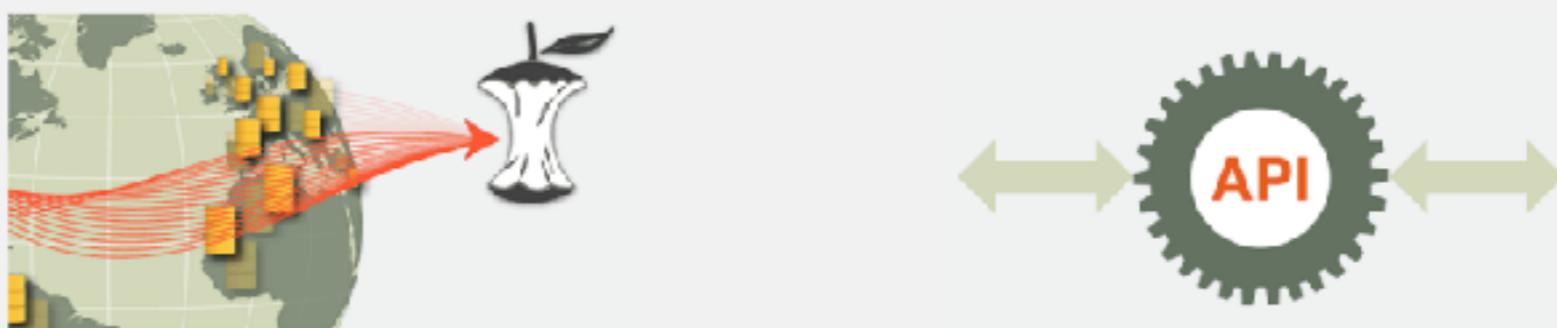
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**Publication type**

with fulltext only

**Year**

**Languages**

|                                     |         |
|-------------------------------------|---------|
| <input type="checkbox"/> English    | 100,150 |
| <input type="checkbox"/> Spanish    | 2,122   |
| <input type="checkbox"/> Indonesian | 1,866   |
| <input type="checkbox"/> Portuguese | 735     |
| <input type="checkbox"/> Italian    | 594     |
| <input type="checkbox"/> German     | 570     |
| <input type="checkbox"/> French     | 456     |
| <input type="checkbox"/> Dutch      | 232     |
| <input type="checkbox"/> Czech      | 217     |
| <input type="checkbox"/> Hungarian  | 134     |

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By Santosh Mehrotra

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# Scientific Literature: An Index

- Publications are a key aspect of benefit-sharing from providing permission to conduct research
- Capturing the scientific literature provides the opportunity to build up the electronic knowledge base about biodiversity in India.
- As a first step it should be possible to download the open access literature for India and its biodiversity.
- That data can then be made publicly available as a resource for anyone interested in biodiversity in India
- For new applicants data on publications can be retrieved through ORCID
- Later publications by permit holders can be retrieved through ORCID and Crossref

# Patent Data

Patent data is a key to understanding research and development involving Biodiversity and TK.

The problem is text mining patent data for thousands or millions of species names.

Biological Diversity in the Patent System

journals.plos.org/pone/article?id=10.1371/journal.pone.0078737

Dictionaries Compute Engine - ta... Programming in Go ... Travel Synthetic Biology As... SelectorGadget pauloldham.net/user... Login | Thomson Inn... Other Bookmarks

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# Biological Diversity in the Patent System

Paul Oldham, Stephen Hall, Oscar Forero

Published: November 12, 2013 • <https://doi.org/10.1371/journal.pone.0078737>

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Subject Areas

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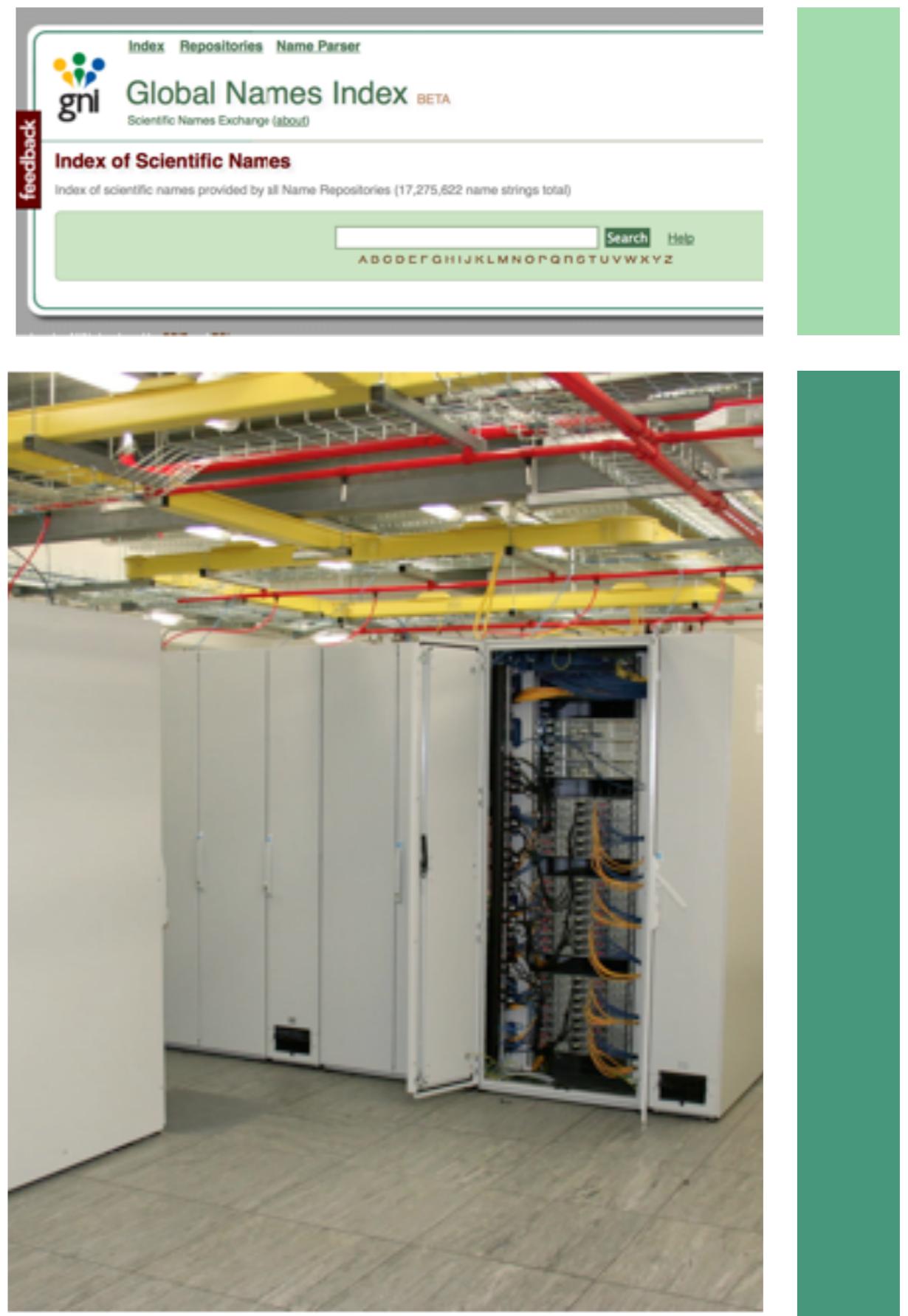
## Abstract

Biological diversity in the patent system is an enduring focus of controversy but empirical analysis of the presence of biodiversity in the patent system has been limited. To address this problem we text mined 11 million patent documents for 6 million Latin species names from the *Global Names Index* (GNI) established by the Global Biodiversity Information Facility (GBIF) and Encyclopedia of Life (EOL). We identified 76,274 full Latin species names from 23,882 genera in 767,955 patent documents. 25,595 species appeared in the claims section of 136,880 patent documents. This reveals that human innovative activity involving biodiversity in the patent system focuses on approximately 4% of taxonomically described species and between 0.8–1% of predicted global species. In this article we identify the major features of the patent landscape for biological diversity by focusing on key areas including pharmaceuticals, neglected diseases, traditional medicines, genetic engineering, foods, biocides, marine genetic resources and Agriculture. We conclude that the narrow focus of human innovative activity and

metatetranychus ulmi:EP0000014A1//19781220:  
tetranychus urticae:EP0000014A1//19781220:  
tetranychus urticae:EP0000014A1//19781220:  
fusarium dendriticum:EP0000017A1//19781220:  
erysiphe graminis:EP0000017A1//19781220:des  
erysiphe graminis:EP0000017A1//19781220:des  
erysiphe graminis:EP0000017A1//19781220:des  
Podosphaera leucotricha:EP0000017A1//19781220:  
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podosphaera leucotricha:EP0000018A1//19781220:  
alternaria mali:EP0000019A1//19781220:desc  
alternaria solani:EP0000019A1//19781220:desc  
alternaria kikuchiana:EP0000019A1//19781220:  
botrytis cinerea:EP0000019A1//19781220:desc  
cochliobolus miyabeanus:EP0000019A1//19781220:  
colletotrichum lagenarium:EP0000019A1//19781220:  
erwinia aroideae:EP0000019A1//19781220:desc  
glomerella cingulata:EP0000019A1//19781220:  
diaporthe citri:EP0000019A1//19781220:desc  
mycosphaerella musicola:EP0000019A1//19781220:  
pellicularia sasakii:EP0000019A1//19781220:  
pellicularia filamentosa:EP0000019A1//19781220:  
plasmopara viticola:EP0000019A1//19781220:  
podosphaera leucotricha:EP0000019A1//19781220:

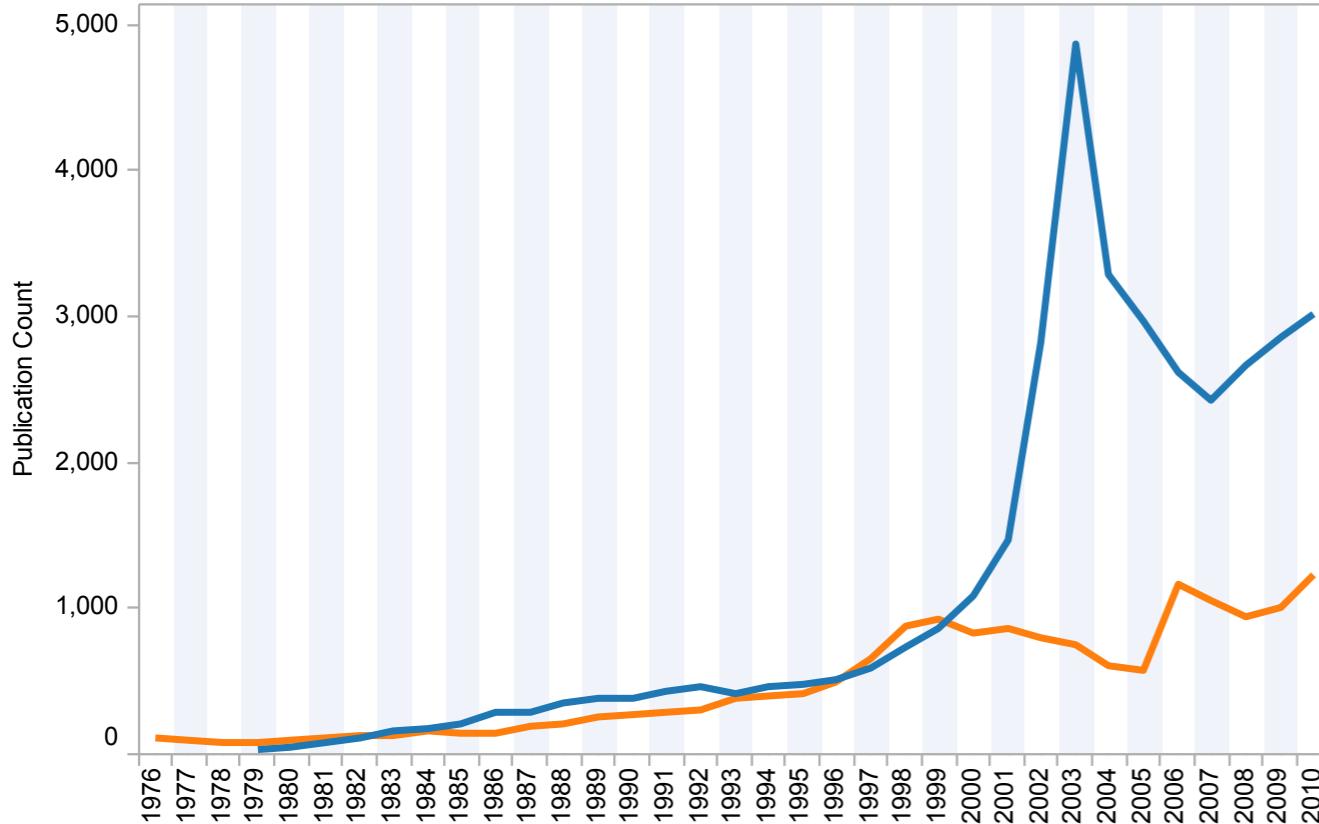
Species Match

Patent Identifier



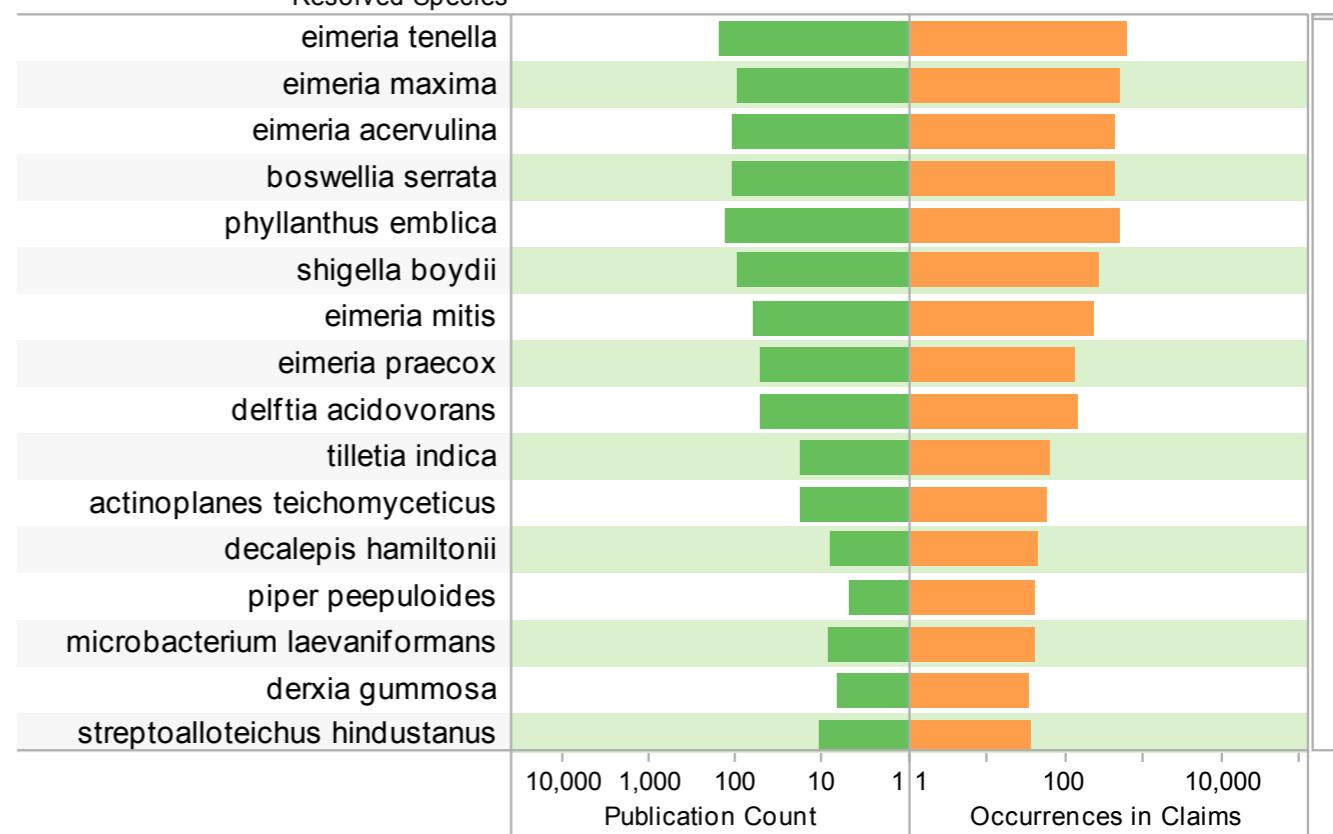
## Publication Trends

Publication Year



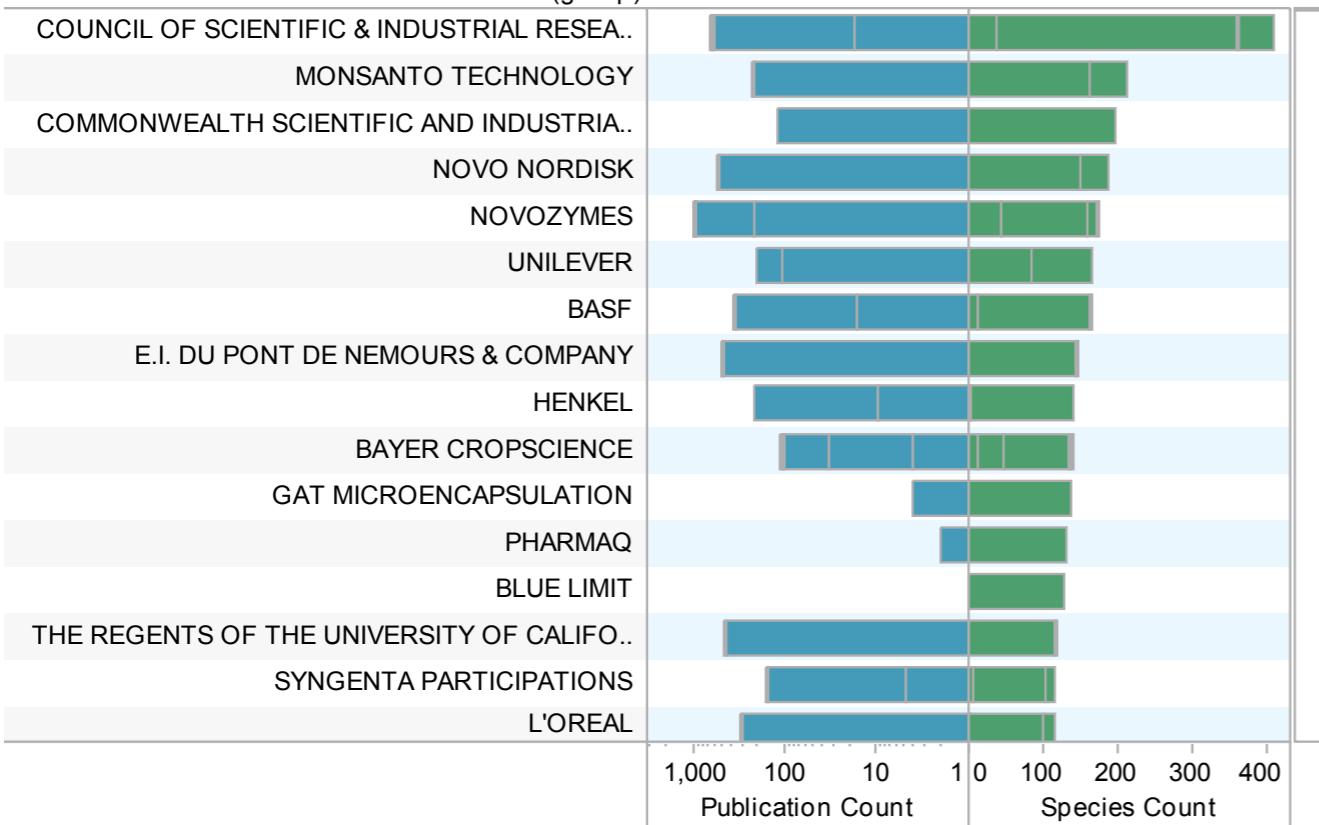
## Species

Resolved Species



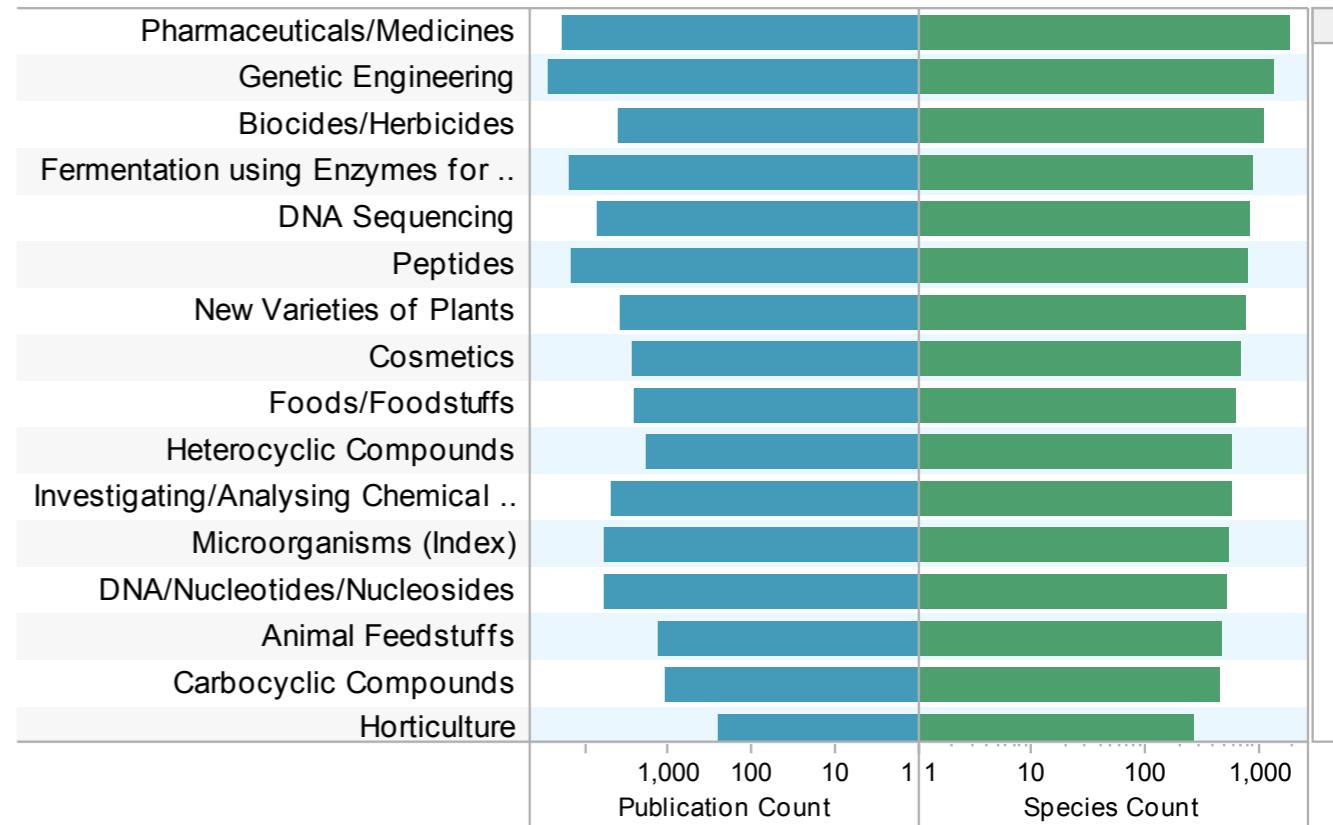
## Who?

Person Name (group)



## Classification

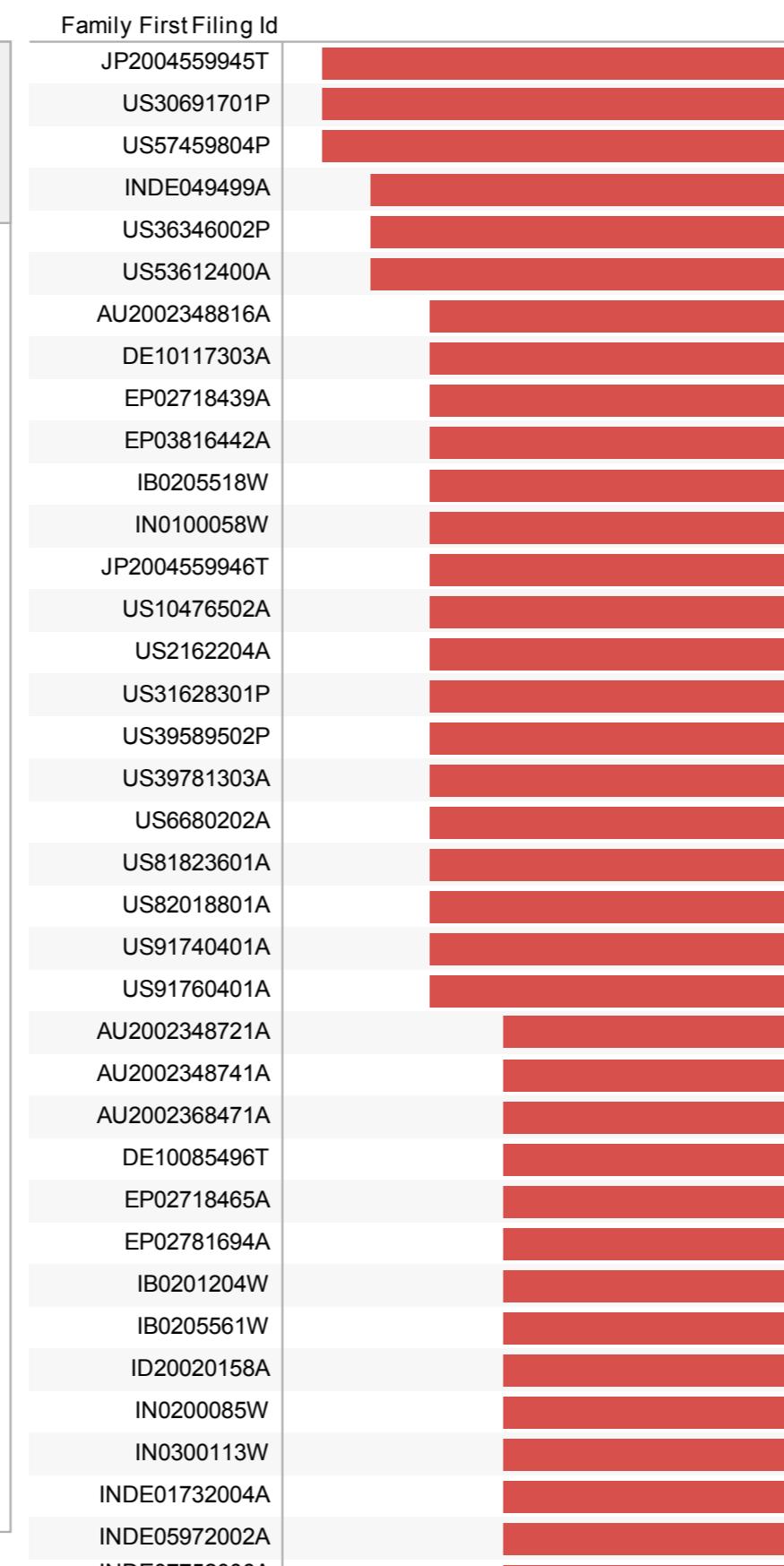
IPC Subclass



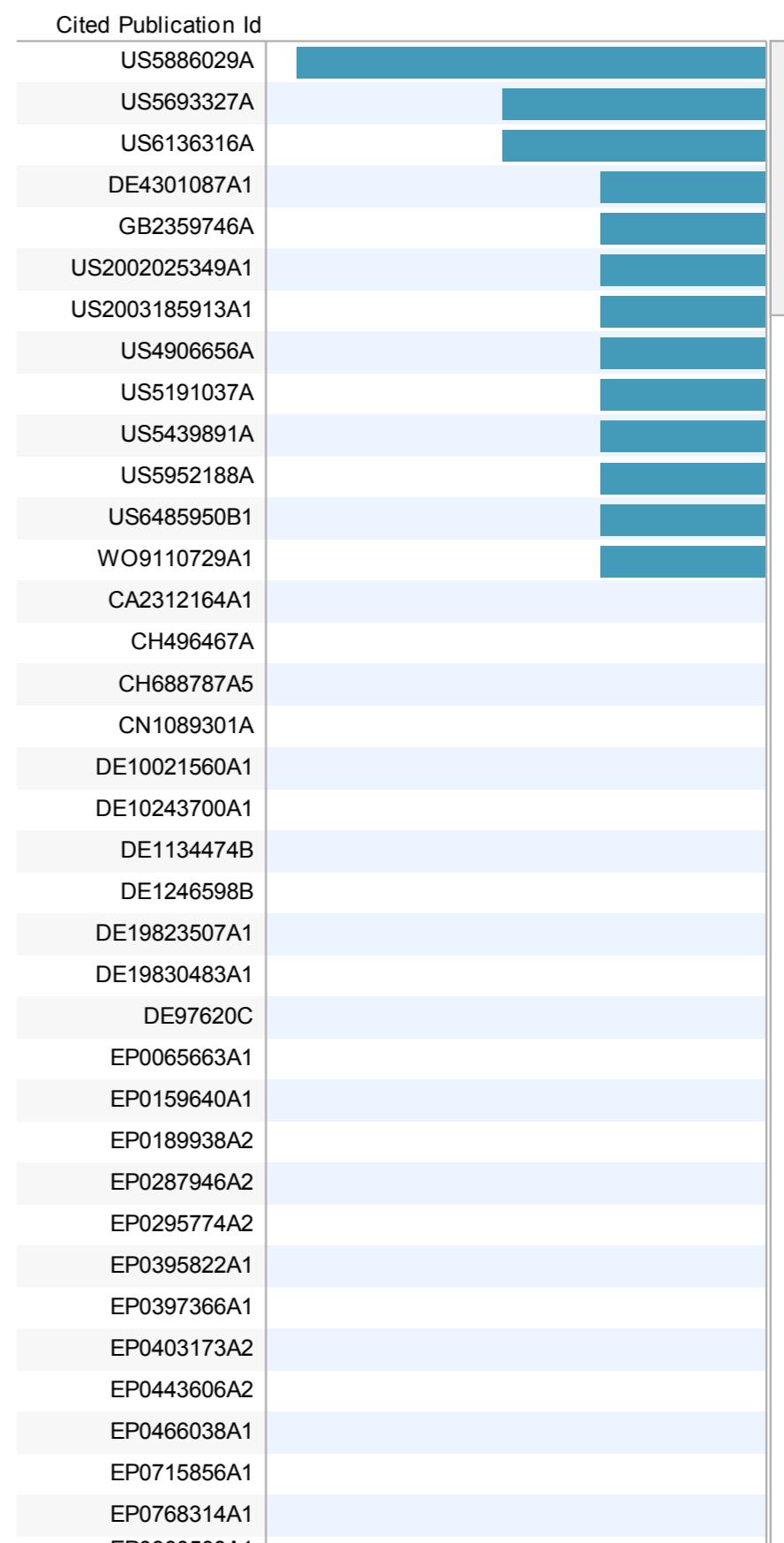
## Who & what?

| Person Name                                   | Resolved Species                |
|-----------------------------------------------|---------------------------------|
| COUNCIL OF SCIENTIFIC AND INDUSTRIAL RESEARCH | <i>escherichia coli</i>         |
|                                               | <i>withania somnifera</i>       |
|                                               | <i>centella asiatica</i>        |
|                                               | <i>zingiber officinale</i>      |
|                                               | <i>mentha arvensis</i>          |
|                                               | <i>piper longum</i>             |
|                                               | <i>terminalia chebula</i>       |
|                                               | <i>asparagus racemosus</i>      |
|                                               | <i>aspergillus niger</i>        |
|                                               | <i>bacillus subtilis</i>        |
|                                               | <i>azadirachta indica</i>       |
|                                               | <i>andrographis paniculata</i>  |
|                                               | <i>artemisia gmelinii</i>       |
|                                               | <i>carum carvi</i>              |
|                                               | <i>cuminum cyminum</i>          |
|                                               | <i>murraya koenigii</i>         |
|                                               | <i>piper nigrum</i>             |
|                                               | <i>aspergillus flavus</i>       |
|                                               | <i>curcuma longa</i>            |
|                                               | <i>glycine max</i>              |
|                                               | <i>mentha spicata</i>           |
|                                               | <i>acorus calamus</i>           |
|                                               | <i>bacillus cereus</i>          |
|                                               | <i>glycyrrhiza glabra</i>       |
|                                               | <i>taxus wallichiana</i>        |
|                                               | <i>candida albicans</i>         |
|                                               | <i>cochliobolus lunatus</i>     |
|                                               | <i>dichrostachys cinerea</i>    |
|                                               | <i>phyllanthus emblica</i>      |
|                                               | <i>pterocarpus marsupium</i>    |
|                                               | <i>stereospermum personat..</i> |
|                                               | <i>vitex negundo</i>            |
|                                               | <i>justicia adhatoda</i>        |
|                                               | <i>cicer arietinum</i>          |
|                                               | <i>cucumis sativus</i>          |

## Families



## Citations (Estimating Impacts)



Publication Count

Publication Count

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|    | country | publication_number | publication_date | section     | coordinates   | text                                                         | dataset |
|----|---------|--------------------|------------------|-------------|---------------|--------------------------------------------------------------|---------|
| 1  | india   | EP2149378A1        | 20100203         | description | 5755,5760     | ceae family which is native to the forests of some par...    | EP      |
| 2  | india   | EP0144019A2        | 19850612         | description | 8177,8182     | a streptococcal culture such capsule may be observe...       | EP      |
| 3  | india   | EP2149614A1        | 20100203         | description | 458,463       | of the present invention. Tuberculosis kills more peo...     | EP      |
| 4  | india   | EP2149614A1        | 20100203         | description | 583,588       | e than HIV, STD, malaria and tropical diseases combi...      | EP      |
| 5  | India   | EP2149614A1        | 20100203         | description | 4957,4962     | aring from sediment. In 3 studies performed In Ethio...      | EP      |
| 6  | India   | EP2149614A1        | 20100203         | description | 10706,10711   | y costly and out of place in disease-endemic countrie...     | EP      |
| 7  | india   | EP2149614A1        | 20100203         | description | 78859,78864   | PCR assays for the diagnosis of tuberculosis. DBT, Go...     | EP      |
| 8  | india   | EP2149614A1        | 20100203         | description | 110161,110166 | tients coming to the OPD of Safdarjung Hospital, Ne...       | EP      |
| 9  | india   | EP2149614A1        | 20100203         | description | 123698,123703 | ed to be missing in some proportion of clinical isolat...    | EP      |
| 10 | india   | EP1490397B1        | 20100526         | description | 97074,97079   | oassay: Insects were collected from rice fields in nort...   | EP      |
| 11 | india   | EP1490397B1        | 20100526         | description | 97881,97886   | oassay: Insects were collected from rice fields in nort...   | EP      |
| 12 | india   | EP1490410B1        | 20100526         | description | 1521,1526     | " the semi-dry region of tropical countries, particular...   | EP      |
| 13 | india   | EP0380367A1        | 19900801         | description | 14463,14468   | ed, gummy exudate of the acacia tree, indigenous to ...      | EP      |
| 14 | india   | EP0380367A1        | 19900801         | description | 14991,14996   | Near East. (9) Guar gum is obtained from the guar pl...      | EP      |
| 15 | india   | EP1467771B1        | 20080416         | description | 1727,1732     | other end of the spectrum, in the largest clinical trial ... | EP      |
| 16 | India   | EP1229918B1        | 20080326         | description | 7738,7743     | e and Hoechst's Suguan-M In Italy; Sun Pharma's Glu...       | EP      |
| 17 | India   | EP1229918B1        | 20080326         | description | 7780,7785     | rma's Glucored in India; Monsanto's (Searle's) Bencla...     | EP      |

Showing 1 to 18 of 59,357 entries

Console

Document Browser: US2009221622A1

1 US2009221622A1 2009-09-03 d  
 nothapodytes foetida china;india;united states CROSS-REFERENCE TO RELATED APPLICATIONS This application claims priority under 35 U.S.C. §119(e) to U.S. Provisional Patent Application No. 61/032,652, filed Feb. 29, 2008, entitled "TOPOTECAN READY TO USE SOLUTIONS," the disclosure of which is incorporated by reference herein in its entirety.

**BACKGROUND OF THE INVENTION**

Camptothecin is a water-insoluble, cytotoxic alkaloid produced by *Camptotheca acuminata* trees indigenous to <u>china</u> and <u>[http://eol.org/search?q=Nothapodytes foetida](http://eol.org/search?q=Nothapodytes%20foetida)</u> trees indigenous to <u>india</u>. Camptothecin and a few close congeners thereof are the only class of compounds known to inhibit topoisomerase I. Inhibition of topoisomerase II is the major target of important commercial oncolytic agents (e.g., etoposide) as well as other oncolytic agents still undergoing development. Camptothecin (and its known congeners) have no effect on topoisomerase II and none of the known topoisomerase II inhibitors has any significant effect on topoisomerase I. Camptothecin and its known topoisomerase I inhibiting congeners have not proven to be attractive for clinical drug development as cytotoxic agents due to unacceptable dose limiting toxicity, poor aqueous solubility, and/or unacceptable shelf life stability. Therefore, there is a need for topoisomerase I inhibiting agents which avoid the undesirable features of camptothecin and its known related topoisomerase I inhibiting congeners.

Topotecan is a water soluble conjugate of Camptothecin marketed under the trade name Hycamtin as a lyophilized powder for injection. The dosage strength is 4 mg free base per vial and is intended as a single use vial. The recommended dose is 1.5 mg/m<sup>2</sup> of intravenous infusion over 30 minutes daily for 5 consecutive days starting on day 1 of a 21-day cycle.

..Review India ..nothapodyte

Comment

- eugenia jambolana
- casuarina equisetifolia, eugenia ja...
- azadirachta indica,momordica char...
- santalum album; santalol Antibiotic...
- nothapodytes foetida: Extract for to...
- eleusine coracana; method for extr...
- evolvulus alsinoides, convolvulus pl...
- eletteria cardamomum, ocimum sa...
- evolvulus alsinoides, convolvulus pl...
- anogeissus latifolia; modification of...
- boswellia serrata; Use of boswellic...
- azadirachta indica; dental care pro...
- aegle marmelos; recovering galact...
- rubia cordifolia, symplocos cochinc...
- Mucuna pruriens; Pharmaceuticals,...
- Anogeissus latifolia; Gum used in d...
- trigonella foenum-graecum; extrac...
- Phyllanthus extract (claimed), wide...
- aeschynomene indica, Aeschynome...
- **Nothapodytes foetida (tree), Campt...**
- Picrorrhiza kurroa: Pharmaceutical...
- morinda ci
- Cinnamom
- salacia ret
- Mucuna pr
- azadiracht
- tophrosia,
- Mucuna pr
- azadiracht

**Tagging Patent Texts to Identify References to Origins from India**

# Large Scale Text Mining

- The approach above relies on:
  - Access to the patent collections (full text) such as the India collection, US (free), European Patent Office (charge) and Patent Cooperation Treaty (charge)
  - Access to cloud computing capacity (to scale up and scale down processors needed, probably 200 will do)
  - Dispatch software (e.g. Apache Spark/Hadoop)
  - Algorithm(s) for identifying and extracting texts (we used a dictionary with 1 million lines containing regular expressions). I now suggest a combined dictionary and machine learning approach.
  - Staff who know what they are doing and can interpret the results.

# Commercial Data Providers

- Commercial data providers are important in ABS monitoring because:
  - They provide access to a greater range of patent collections
  - They provide access to the full texts of patent documents (for text mining)
  - Commercial databases can be used for validation of large scale text mining
  - They add useful information (Derwent World Patent Innovation Index)
  - Some link to company information databases (e.g. financial reports) and licensing information (business intelligence)
- The key determinants are whether a commercial tool meets needs (and they all have particular strengths) and cost

Patent Search - Patsnap

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Dictionaries Compute Engine - te... Programming in Go ... Travel Synthetic Biology As... SelectorGadget pauloldham.net/user... Login | Thomson Inn... Other Bookmarks

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| Assignee                                                             | 75,074 simple; 137,225 total | <a href="#">Copy query</a>                    | INPADOC Family Count                                          | 100                      | <a href="#">☰</a>      |
|----------------------------------------------------------------------|------------------------------|-----------------------------------------------|---------------------------------------------------------------|--------------------------|------------------------|
| <input type="checkbox"/> COUNCIL OF SCIENTIFIC & INDUSTRIAL RESEARCH | 1632                         |                                               |                                                               |                          |                        |
| <input type="checkbox"/> HINDUSTAN UNILEVER LIMITED                  | 1039                         | <input type="checkbox"/> # Publication Number | Title                                                         | Assignee Name            | Inventor Name          |
| <input type="checkbox"/> TATA CONSULTANCY SERVICES LIMITED           | 920                          | <input type="checkbox"/> 1 EP2972768A1        | OCCUPANT SHARING OF DISPLAYED CONTENT IN VEHICLES             | AUTOCONNECT HOLDINGS LLC | RICCI, CHRISTOPHER, P. |
| <input type="checkbox"/> LARSEN & TOUBRO LIMITED                     | 720                          | <input type="checkbox"/> 2 EP2972180A1        | DUPLICATED PROCESSING IN VEHICLES                             | AUTOCONNECT HOLDINGS LLC | RICCI, CHRISTOPHER, P. |
| <input type="checkbox"/> CROMPTON GREAVES LIMITED                    | 457                          | <input type="checkbox"/> 3 EP2834598A1        | VIRTUAL PERSONALITY VEHICLE COMMUNICATIONS WITH THIRD PARTIES | FLEXTRONICS AP, LLC      | SWARTZ, DOUGLAS, W.    |
| <input type="checkbox"/> CADILA HEALTHCARE LIMITED                   | 353                          |                                               |                                                               |                          |                        |
| <input type="checkbox"/> HINDUSTAN LEVER LIMITED                     | 306                          |                                               |                                                               |                          |                        |
|                                                                      | <a href="#">More</a>         |                                               |                                                               |                          |                        |
| IPC                                                                  |                              |                                               |                                                               |                          |                        |
| Application Year                                                     |                              |                                               |                                                               |                          |                        |
| Standardized Assignee                                                |                              |                                               |                                                               |                          |                        |
| Grouped Assignee Name                                                |                              |                                               |                                                               |                          |                        |
| Std. Assignee Type                                                   |                              |                                               |                                                               |                          |                        |
| Authority                                                            |                              |                                               |                                                               |                          |                        |
| Patent Type                                                          |                              |                                               |                                                               |                          |                        |
| CPC                                                                  |                              |                                               |                                                               |                          |                        |
| LOC                                                                  |                              |                                               |                                                               |                          |                        |
| UPC                                                                  |                              |                                               |                                                               |                          |                        |

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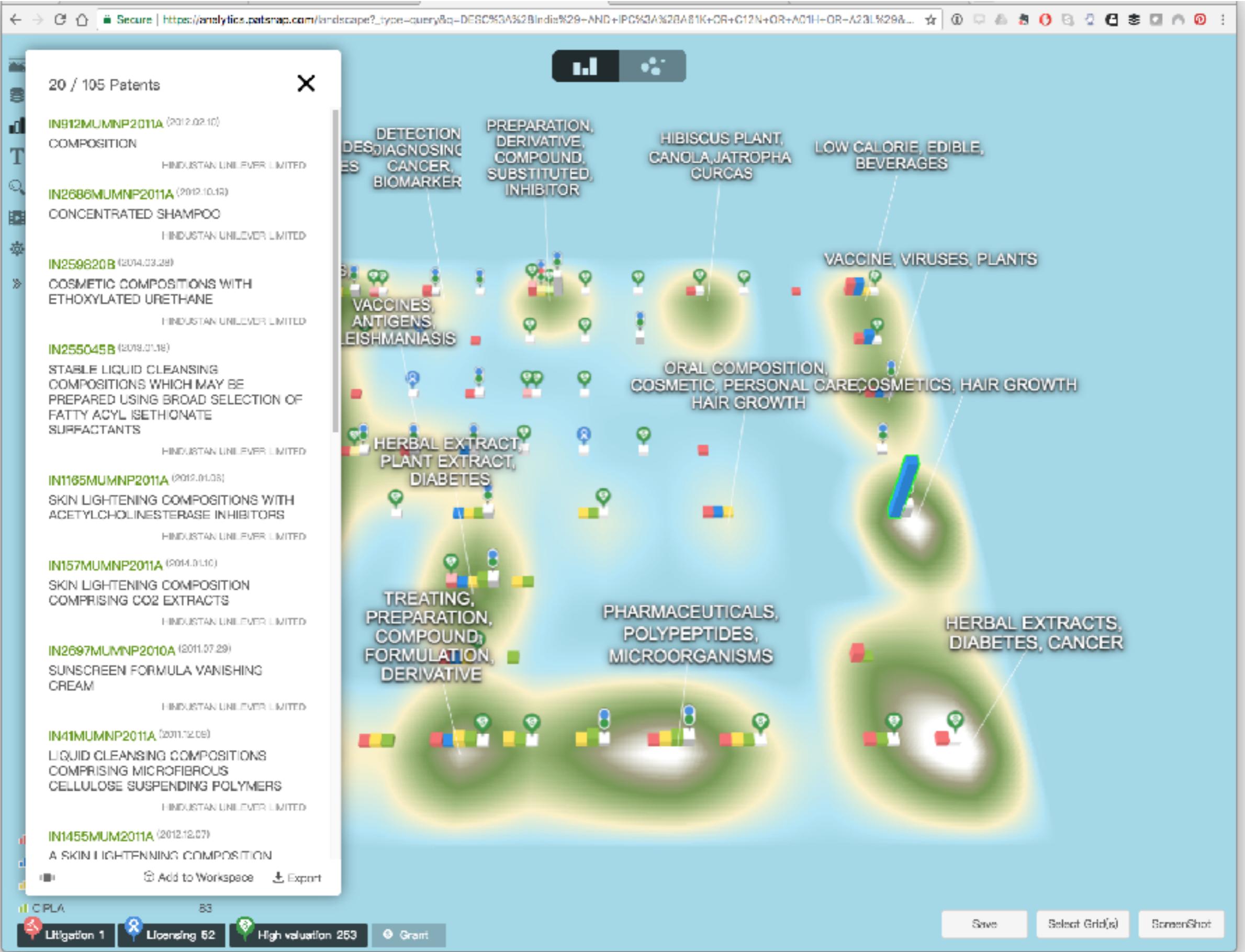
Publication Year 4,803 simple; 11,011 total INPADOC Family Count 100

| Publication Year | #                                   | Publication Number | Title                                                                                  | Assignee Name                                        | Inventor Name                                               | Application Date | Publication Date | INPADOC Family Count |
|------------------|-------------------------------------|--------------------|----------------------------------------------------------------------------------------|------------------------------------------------------|-------------------------------------------------------------|------------------|------------------|----------------------|
| 2011             | <input type="checkbox"/>            | US20110223168A1    | LIGAND THAT HAS BINDING SPECIFICITY FOR IL-4 AND/OR IL-13                              | WINTER GREG<br>TOMLINSON IAN<br>IGNATOVICH OLGA +2   | WINTER, GREG<br>TOMLINSON, IAN<br>IGNATOVICH, OLGA +2       | 19 May 2011      | 15 Sep 2011      | 595                  |
| 2012             | <input checked="" type="checkbox"/> | US8791258          | Rebeucloside A composition and method for purifying rebeucloside A                     | THE COCA-COLA COMPANY                                | PRAKASH, INDRA<br>DUBCIS, GRANT, E.<br>KING, GEORGE, A. +1  | 21 May 2007      | 29 Jul 2014      | 591                  |
| 2013             | <input checked="" type="checkbox"/> | DE60110616T3       | PYRAZOLVERBINDUNGEN ALS PROTEIN-KINASEHEMMER                                           | VERTEX PHARMACEUTICALS INCORPORATED                  | BERRINGTON DAVID<br>BINCH HAYLEY<br>CHARRIER JEAN-DAMIEN +9 | 14 Sep 2001      | 06 Jul 2012      | 511                  |
| 2014             | <input checked="" type="checkbox"/> | US8006252          | Factor VII: remodeling and glycoconjugation of Factor VII                              | NOVO NORDISK A/S                                     | DEFREES, SHAWN<br>ZOPF, DAVID<br>BAYER, ROBERT +3           | 09 Apr 2008      | 30 Aug 2011      | 485                  |
| 2015             | <input checked="" type="checkbox"/> | AU2011211397B2     | Remodelling and glycoconjugation of peptides                                           | BIOGENERIX AG<br>NOVO NORDISK A/S<br>PATIOPHARM GMBH | DEFREES, SHAWN<br>ZOPF, DAVID<br>BAYER, ROBERT +3           | 12 Aug 2011      | 23 Aug 2012      | 485                  |
| 2016             | <input checked="" type="checkbox"/> | US8076292          | Factor VIII: remodeling and glycoconjugation of factor VIII                            | NOVO NORDISK A/S                                     | DEFREES, SHAWN<br>ZOPF, DAVID A.<br>BAYER, ROBERT J. +3     | 21 Dec 2006      | 13 Dec 2011      | 485                  |
| 2017             | <input checked="" type="checkbox"/> | US8716289          | Granulocyte colony stimulating factor: remodeling and glycoconjugation G-CSF           | NOVO NORDISK A/S                                     | DEFREES, SHAWN<br>ZOPF, DAVID, A.<br>BAYER, ROBERT, J. +3   | 11 Jan 2007      | 06 May 2014      | 485                  |
| 2018             | <input checked="" type="checkbox"/> | US8718240          | Erythropoletin: remodeling and glycoconjugation of erythropoletin                      | NOVO NORDISK A/S                                     | DEFREES, SHAWN<br>ZOPF, DAVID, A.<br>BAYER, ROBERT, J. +3   | 02 Feb 2007      | 06 May 2014      | 485                  |
| 2019             | <input checked="" type="checkbox"/> | EP1832662B1        | DNA encoding chondroitin synthase from <i>Pasteurella multocida</i> and methods of use | THE BOARD OF REGENTS OF THE UNIVERSITY OF OKLAHOMA   | DEANGELIS, PAUL                                             | 01 Apr 1999      | 09 Mar 2011      | 264                  |
| 2020             | <input checked="" type="checkbox"/> | EP2173360B1        | HEPAROSAN-BASED BIOMATERIALS AND COATINGS AND METHODS OF PRODUCTION AND USE THEREOF    | THE BOARD OF REGENTS FOR THE UNIVERSITY OF OKLAHOMA  | DEANGELIS, PAUL, L.                                         | 31 Mar 2008      | 19 Nov 2014      | 264                  |
| 2021             | <input checked="" type="checkbox"/> | US89350093         | Methylated curcumin-resveratrol hybrid molecules for treating cancer                   | CODMAN & SHURTLEFF, INC.                             | DIMAUCO, THOMAS M.                                          | 13 May 2010      | 08 Jun 2013      | 192                  |
| 2022             | <input checked="" type="checkbox"/> | US8288444          | Iontophoretic delivery of curcumin and curcumin analogs for the treatment of           | CODMAN & SHURTLEFF, INC.                             | ULIENFELD, SEAN<br>DIMAUCO, THOMAS                          | 29 Jun 2011      | 16 Oct 2012      | 192                  |

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1 / 1 Patents

US8383690 (2013.02.26)  
Pharmaceutical composition useful for the treatment of peptic ulcer diseases  
COUNCIL OF SCIENTIFIC AND INDUSTRIAL RESEARCH

DETECT SPIAGNOSE CANCER BIOMARKERS VACCINE ANTIGEN EISHMAN HERPES PLATELETS PROSTATE CANCER FOR DISEASES

Value(USD): \$ 1,100,000

Assignee Name: COUNCIL OF SCIENTIFIC AND INDUSTRIAL RESEARCH  
Inventor Name: BANERJEE, SUKDEB, DAS, PRATAP K., GOSWAMI, SUCHANDRA, CHINNIAH, ANNALAKSHMI, PANDA, NILENDU, SAHU, NIRANJAN PRASAD, ACHARI, BASUDEB  
IPC Classification: IPC(8): A61K47/00 , A01N25/00

Abstract:  
The present invention deals with the pharmaceutical composition comprising the therapeutically effective amount of a compound oenotherin C obtained from the bioactive fraction of plant *Woodfordia fruticosa* optionally along with one or more pharmaceutically acceptable carriers, additives, lubricants and diluents. Further it also provides a method of treating peptic ulcer diseases in a subject using the said pharmaceutical composition. It also relates to the use of the compound oenotherin C in the treatment of peptic ulcer related diseases and a process for the isolation of the said compound.

Barcode: US8383690B2

(12) United States Patent  
Banerjee et al.  
(10) Patent No.: US 8,383,690 B2  
(45) Date of Patent: Feb. 26, 2013  
(54) PHARMACEUTICAL COMPOSITION USEFUL FOR THE TREATMENT OF PEPTIC ULCER DISEASES  
(75) Inventor: Sukdeb Banerjee, Jodhpur (IN); Pratap K. Das, Jodhpur (IN); Suchandra Goswami, Jodhpur (IN); Annalakshmi Chinniah, Jodhpur (IN); Nilendu Panda, Jodhpur (IN); Nirajjan Prasad Sahu, Jodhpur (IN); Basudeb Achary, Jodhpur (IN)  
(73) Assignee: Council of Scientific and Industrial Research, New Delhi (IN)  
(11) Int. Cl.  
A61K 47/00 (2006.01)  
A61N 25/00 (2006.01)  
(22) U.S. CL. .... 514/927; 514/925; 424/725; 424/778  
(38) Field of Classification Search. .... 514/925, 514/927; 424/778, 725  
See application file for complete search history.  
(56) References Cited  
U.S. PATENT DOCUMENTS  
7,326,232 B2 11/2007 Das et al.  
FOREIGN PATENT DOCUMENTS  
  
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Company Dashboard  
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SCIENTIFIC AND  
INDUSTRIAL  
RESEARCH

Technology Dashboard

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|-----------------|---------------------------|---------------------|------------------|--------------------|------------------|
| Annual Sales    | -                         | \$ 4,908,350,044    | \$ 2,101,791,073 | \$ 1,403,099,717   | \$ 2,177,896,302 |
| Portfolio Size  | 1,140                     | 410                 | 202              | 196                | 141              |
| Employee Number | -                         | 7,420               | 6,441            | 16,153             | 24,093           |
| Market Cap      | -                         | \$ 9,213,573,889    | \$ 9,102,898,221 | \$ 1,337,073,589   | \$ 4,483,135,292 |
| Portfolio Value | \$ 59,446,000             | \$ 0                | \$ 29,088,000    | \$ 39,614,000      | \$ 38,039,000    |
| R&D Expense     | -                         | \$ 5,524,797        | -                | -                  | \$ 17,934,964    |

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### Portfolio Analysis

**17,764** total simple families  
39% filed in United States of America

35% of portfolio in A61K31 (Medicinal preparations with organic active ingredients)

### Financial Analysis

**\$2.6B** Total Value

3,476 Simple Families within \$0 - \$25K

Simple Families

| Value Rating | Count  |
|--------------|--------|
| A            | 3,476  |
| B            | ~900   |
| C            | ~1,100 |
| D            | ~800   |
| E            | ~200   |

### Playbooks List

Patent Value    Litigation Threat

# Product Monitoring

- Tools such as Patsnap take us closer to the economic dimensions of ABS by identifying business information and licensing.
- Tracking into products will however be a longer term task and will require exploration of other possible databases (product approvals, company reports, licensing information etc.) A machine learning approach could contribute to making that work.

# Phased Approach

- Phase 1: Use commercial tools and train up staff (workshops and Handbook)
- Phase 2: Initiate the open source approach
  - Retrieving scientific literature (meta data and full texts) with available APIs
  - Initiate text mining of patent data and scientific literature (including experimental use of machine learning approaches)
- Phase 3:
  - Progressively integrate more taxonomic data into the text mining
  - Add new data sources

# Closing remarks

- In the course of the scoping workshop I hope that we can discuss ways forward in relation to data sources and cooperation.
- We can also hopefully discuss the extremely important issue of traditional knowledge and communities in India in terms both of monitoring and engagement.
- There is also considerably more to say about digital sequence information (sequence databases) but I will leave that for the discussion.
- Open source development is an important aspect of this project in providing practical assistance to the many countries seeking to develop monitoring capacity.
- I look forward to our discussions this afternoon and tomorrow and it is as always a real pleasure to be here in India.