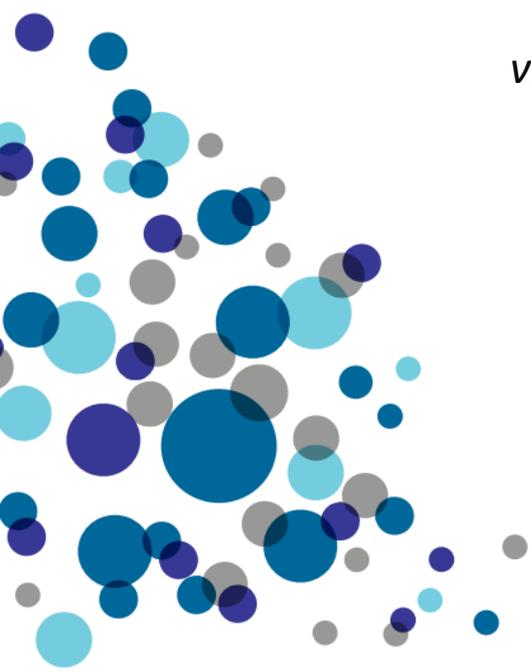


# Ресурсы Elsevier для науки и образования: Эффективный процесс управления и оценки научной деятельности

***Вадим Александрович Соболев***

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# Новые времена требуют новых решений



## Принцип Чёрной Королевы

— У нас, — сказала Алиса — когда долго бежишь со всех ног, непременно попадёшь в другое место.

— Какая медлительная страна! — вскричала Королева. — Ну а здесь, знаешь ли, приходится бежать со всех ног, чтобы только остаться на том же месте, а **чтобы попасть в другое место нужно бежать вдвое быстрее.**

# Новые ресурсы Elsevier

**Pure**

Эффективное управление процессом научных исследований

SciVal

Эффективная оценка научных исследований



Эффективное сохранение и обмен данными научных исследований



The background of the slide is a dense, repeating pattern of the hexagonal ends of various colored pencils. The colors include red, blue, green, yellow, purple, orange, and black, creating a vibrant and textured visual field.

## **Проблема – Эффективное управление процессом научных исследований**

**Информация о научных исследованиях и об ученых университета разбросана в разных несвязанных друг с другом системах**

**Часть информации лежит в головах людей или в отдельных электронных таблицах, что делает невозможным полностью полагаться на полноту доступных данных**

**Pure** – это Система Управления Научными Исследованиями для академических и государственных организаций, предоставляющая единый источник всех данных о научном процессе в организации:

- Объединяет научные проекты, публикации, данные об ученых, о факультетах, о коллаборациях, гранты, отчеты, финансовую информацию, и многое другое
- Интегрируется с внутренними системами организации и с внешними базами данных

Благодаря интеграции внутренних и внешних источников данных в единой системе, **Pure** поддерживает полный процесс мониторинга и обоснованного принятия решений в области научных исследований организации.



# Какие данные поступают в Pure?



## Внутренние системы

- Отдел кадров - Студенты и преподаватели
- Бухгалтерия и финансы - Грантовый департамент



## Архивные данные

- Старые системы со списками публикаций, репозитории, данные о завершённых проектах, и т.п.



## Внешние данные

- Scopus, Web of Knowledge (Web of Science), InCites, SciVal, ArXiv, PubMed, etc.
- EU's FP7 project database, DFG's GEPRIIS, RCUK's award database (in planning)



## Ручной ввод данных

- Actual data input
- Enrichment of synchronized or imported data
- Quality assurance of synchronized or imported data

# Международные стандарты



## The European Organisation for International Research Information

**EuroCRIS** - Некоммерческая организация, осуществляющая стандартизацию научно-исследовательских информационных систем и их взаимодействие.

Стандарт **CERIF**: Common European Research Information Format. Формат обязателен для отчетности по грантам EU. Согласован с методиками стат-наблюдения OECD.

# REF2014

Research Excellence Framework (**REF**) – система аттестации качества научных исследований в Великобритании



## Snowball Metrics

GLOBAL STANDARDS FOR INSTITUTIONAL BENCHMARKING

Стандартизованные метрики для оценки научных исследований

# Импорт данных о публикациях из внешних источников

## Choose submission

Submission guide

**Research output**

Create from template

**Import from online source**

Import from file

Activity

Impact

Application

Award

Project

### Scopus

#### Scopus

Scopus, an abstract and citation database, covers 20,500 titles from more than 5,000 international publishers. It contains over 49 million records from peer-reviewed research literature in the scientific, technical, medical, social sciences, and arts and humanities fields.

### WEB OF KNOWLEDGE™

#### Web of Science

Web of Science cover a wide range of databases, which together holds more than 40 million records. The subject areas are primarily within the scope of natural sciences, though social sciences and arts and humanities also are covered, in a lesser scale.

### PubMed

#### PubMed

Contains more than 19 million records from MEDLINE and from medical scientific journals, dating back from 1948. PubMed contains links to full-texts, either from other databases or the journals' publishers. Content must be "E-pub ahead of print", before imported into Pure.



#### JournalTOCs

JournalTOCs is a free collection of scholarly journals Tables of Contents (TOCs) from a more than 15,000 journals and 700 publishers. Covers a wide range of subjects. References can be fetched from these TOCs.

### arXiv.org

#### ArXiv

arXiv is an open access database with full-text access and contains more than 650,000 e-prints. It covers the domains of physics, mathematics, computer science, quantitative biology, quantitative economy and statistics.



#### CrossRef

A system developed by publishers in 2000, to ease linking between references in fulltext documents in online scholarly literature, on the publishers' websites. CrossRef uses DOI to transmit link information.



WorldCat.org



SAO/NASA Astrophysics Data System

🇩🇰

## VBN - RESEARCHER



**Overview** | Publications | Projects | Activities | Press clippings | Journals | Publishers



**Lisbeth Fajstrup**  
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Department of Mathematical Sciences  
Fredrik Bajers Vej 7, Building G, 2-117  
9220, Aalborg Ø  
Denmark  
fajstrup@math.aau.dk  
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Phone: 9940 8848  
Fax: 9815 8129  
[Show full person profile »](#)



 [View graph of relations](#)  [Share](#)

### Publications (53)

**Behøver rigtige drenge ikke at lave lektier?** [Published](#)  
Comment/debate

**Ditipology : a short tutorial** [Published](#)  
Report chapter

**Preface : Proceedings of the workshop on Geometric and Topological Methods in Computer Science (GETCO) 2010** [Published](#)  
Editorial

[View all »](#)

### Research projects (5)

**Structures of time directions**  
Project

**Directed lifting properties**  
Project

**Geometric analysis of mutual exclusion models**  
Project

### Activities (1)

**Matematisk krimi : Numb3rs: Aalborg-lektor glæder sig over tv-serie, hvor matematikken kommer frem i lyset**  
Participation in Interview for Printed Media  
[View all »](#)

### Press clippings (14)

**Primalssætningen er fundamental for det moderne ...**  
Press clipping

**En ud af fem piger dumper matematik**  
Press clipping

**Folkeskolen taber matematik-talenter**  
Press clipping

[View all »](#)

### Most frequent publishers

Hindawi Publishing Corporation, 977-5945  
United States

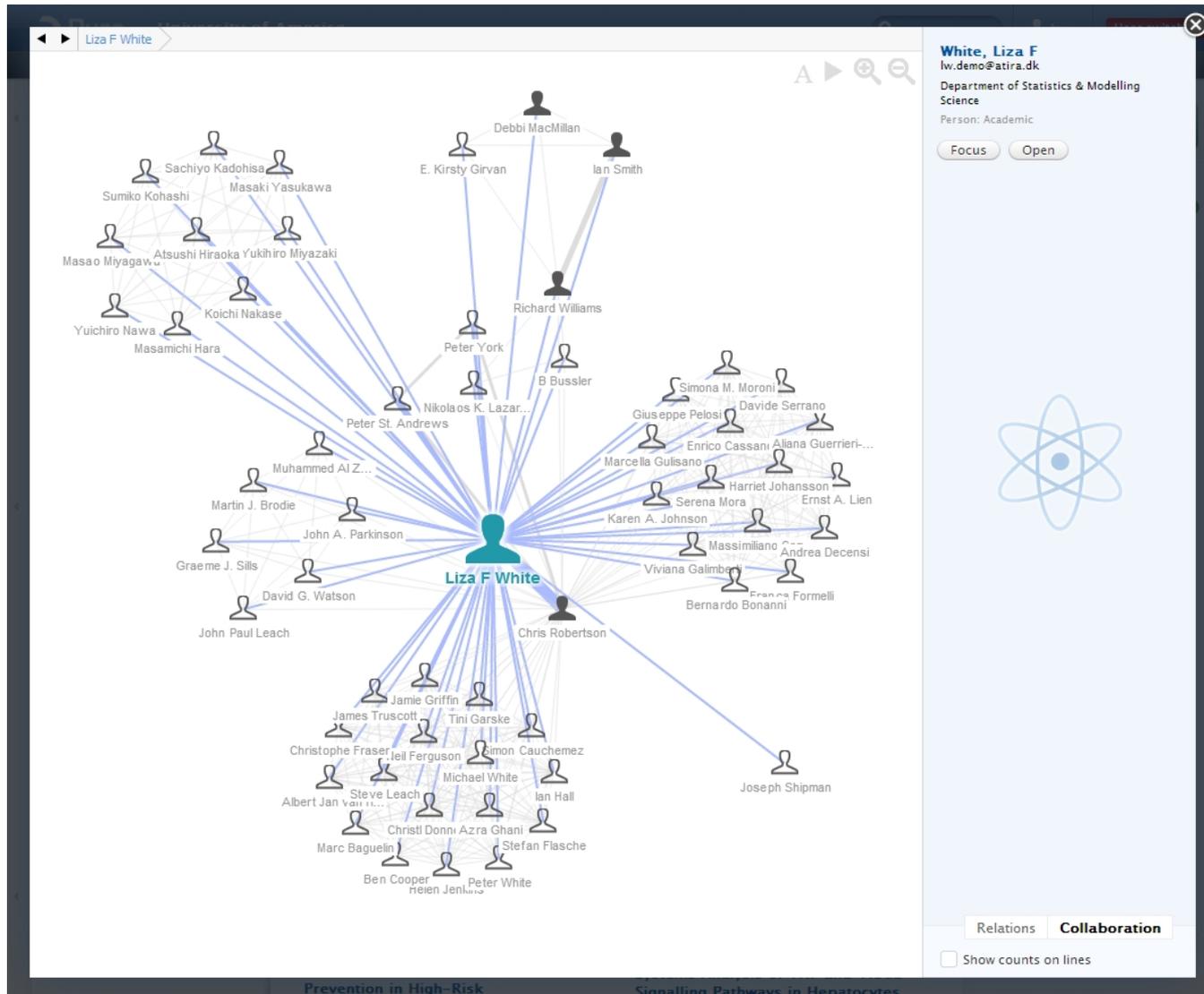
### FRONT PAGE

**RESEARCHERS**

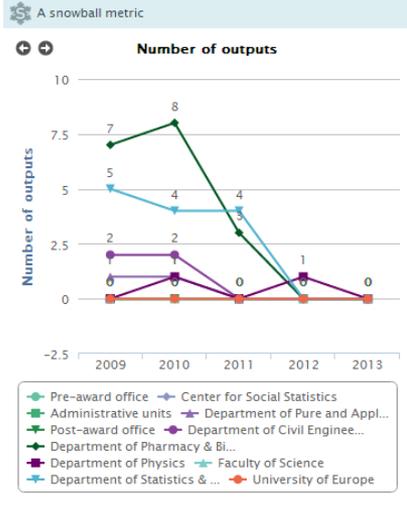
- PUBLICATIONS
- RESEARCH PROJECTS
- ACTIVITIES
- PRESS CLIPPINGS
- RESEARCH UNITS
- STATISTICS
- ABOUT VBN



# Взаимосвязи ученого



### Scholarly Output



### Performance Indicators by calendar year

| Year | Organisation         | Value | Goal | Deviation |
|------|----------------------|-------|------|-----------|
| 2009 | University of Europe | 15    | 0    | 15        |
| 2010 | University of Europe | 15    | 12   | 3         |
| 2011 | University of Europe | 7     | 0    | 7         |
| 2012 | University of Europe | 1     | 8    | -7        |
| 2013 | University of Europe | 0     | 26   | -26       |

### SNOWBALL - Number of scholarly outputs - Research output

| Year | Organisation         | Value | Goal | Deviation |
|------|----------------------|-------|------|-----------|
| 2009 | University of Europe | 15    | 0    | 15        |
| 2010 | University of Europe | 15    | 12   | 3         |
| 2011 | University of Europe | 7     | 0    | 7         |
| 2012 | University of Europe | 1     | 8    | -7        |
| 2013 | University of Europe | 0     | 26   | -26       |

### Collaboration between people

View as graph

|                  | Liza F White | Chris Robertson | Richard Williams | Ian Smith | Michael Cousin | Debbi MacMillan | Helen Keenan | Patrick Becker | Peter Cormack | Edmund Cussen | Christine Dufés | Bob Kalin | Elizabeth Ellis | Jim Smith | Mary Ann Wright |
|------------------|--------------|-----------------|------------------|-----------|----------------|-----------------|--------------|----------------|---------------|---------------|-----------------|-----------|-----------------|-----------|-----------------|
| Liza F White     |              |                 |                  |           |                |                 |              |                |               |               |                 |           |                 |           |                 |
| Chris Robertson  | 10           |                 |                  |           |                |                 |              |                |               |               |                 |           |                 |           |                 |
| Richard Williams | 2            | 1               |                  |           |                |                 |              |                |               |               |                 |           |                 |           |                 |
| Ian Smith        | 1            | 5               |                  |           |                |                 |              |                |               |               |                 |           |                 |           |                 |
| Michael Cousin   |              |                 |                  |           |                |                 |              |                |               |               |                 |           |                 |           |                 |
| Debbi MacMillan  |              |                 |                  |           |                |                 |              |                |               |               |                 |           |                 |           |                 |
| Helen Keenan     |              |                 |                  |           |                |                 |              |                |               |               |                 |           |                 |           |                 |
| Patrick Becker   |              |                 |                  |           |                |                 |              |                |               |               |                 |           |                 |           |                 |
| Peter Cormack    |              |                 |                  |           |                |                 |              |                |               |               |                 |           |                 |           |                 |
| Edmund Cussen    |              |                 |                  |           |                |                 |              |                |               |               |                 |           |                 |           |                 |
| Christine Dufés  |              |                 |                  |           |                |                 |              |                |               |               |                 |           |                 |           |                 |
| Bob Kalin        |              |                 |                  |           |                |                 |              |                |               |               |                 |           |                 |           |                 |
| Elizabeth Ellis  |              |                 |                  |           |                |                 |              |                |               |               |                 |           |                 |           |                 |
| Jim Smith        |              |                 |                  |           |                |                 |              |                |               |               |                 |           |                 |           |                 |
| Mary Ann Wright  |              |                 |                  |           |                |                 |              |                |               |               |                 |           |                 |           |                 |

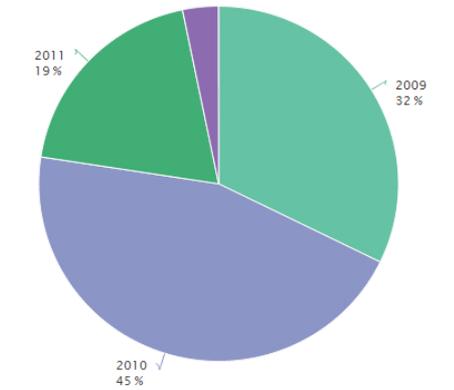
### Research Output Types



### Performance Indicators by academic year

| Year | Organisation         | Value | Goal | Deviation |
|------|----------------------|-------|------|-----------|
| 2009 | University of Europe | 0     | 0    | 0         |
| 2010 | University of Europe | 0     | 4    | -4        |
| 2011 | University of Europe | 0     | 0    | 0         |
| 2012 | University of Europe | 0     | 10   | -10       |
| 2013 | University of Europe | 0     | 12   | -12       |

### Peer Reviewed by year



# Подготовка отчетов

### Choose a content type

**EDITORIAL**

- Activities
- Applications / Funding C
- Impacts
- Press clippings
- Projects C
- Funded Projects
- Non-funded Projects
- Research output
- Student theses

**REF2014**

- REF1 a/c (Staff REF2014) C
- REF1 b (ISC REF2014)
- REF2 (Outputs REF2014)
- REF3a (Impact template)
- REF3b (Impact case study)
- REF5 (Environment template)
- Units of assessment C

**MASTER DATA**

- Equipment/facilities
- Events
- External organisations

#### Matrix (analysis)

| Organisation                             | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
|--|------|------|------|------|------|------|
| Faculty Of Science                       | 386  | 350  | 339  | 817  | 784  | 125  |
| Faculty Of Engineering                   | 311  | 376  | 331  | 663  | 712  | 231  |
| Professional Services                    | 69   | 73   | 63   | 39   | 49   | 12   |
| Faculty Of Law, Arts And Social Sciences | 134  | 119  | 100  | 202  | 216  | 164  |
| Faculty Of                               | 78   | 70   | 104  | 198  | 274  | 69   |

#### Combined content

|                         | Articles |       | Chapter in book | Activities | Awards | Total awards |
|-------------------------|----------|-------|-----------------|------------|--------|--------------|
|                         | Count    | Count | Count           | Count      |        |              |
| Aerospace Engineering   | 807      | 259   | 38              | 28,126,12  |        |              |
| Pharmacology            | 82       | 3     | 0               | n/a        |        |              |
| Mathematics             | 93       | 10    | 0               | n/a        |        |              |
| Institute Of Photonics  | 395      | 50    | 90              | 21,003,20  |        |              |
| Bioscience              | 5        | 0     | 0               | n/a        |        |              |
| Pure Chemistry          | 1624     | 56    | 509             | 42,114,60  |        |              |
| Pharmaceutical Sciences | 53       | 1     | 0               | n/a        |        |              |
| Chemical Engineering    | 388      | 27    | 110             | 6,552,30   |        |              |
| Information Sciences    | 374      | 121   | 80              | 5,226,20   |        |              |

#### Table (analysis)

| Organisation           | Author's gender | Research output year | Count |
|------------------------|-----------------|----------------------|-------|
| Faculty Of Science     | Female          | 2008                 | 291   |
|                        |                 | 2009                 | 265   |
|                        | Male            | 2008                 | 702   |
|                        |                 | 2009                 | 647   |
| Faculty Of Engineering | Female          | 2008                 | 165   |
|                        |                 | 2009                 |       |
|                        |                 |                      | 2010  |

#### Chart (analysis)

#### Table

| Title  | Type    | pages | F |
|--|---------|-------|---|
| RAG Test   | Article | n/a   |   |
| An experimental and finite element study of the low-cycle fatigue failure of a galvanised steel lightning column | Paper   | n/a   |   |
| Temperature gradient effects on moisture transport in porous building materials                                  | Article | 11    |   |
| An optimal gains matrix for time-delay feedback control  | Paper   | n/a   |   |

\*This table is an offshoot of the main table. Please refer to the main table for more details.

#### Raw data spreadsheet

#### Scheduled execution

Interval: Quarterly

Language: English

Output format:

PDF

Word

Excel

HTML

Recipient email addresses:

cd.james@elsevier.com

Ok

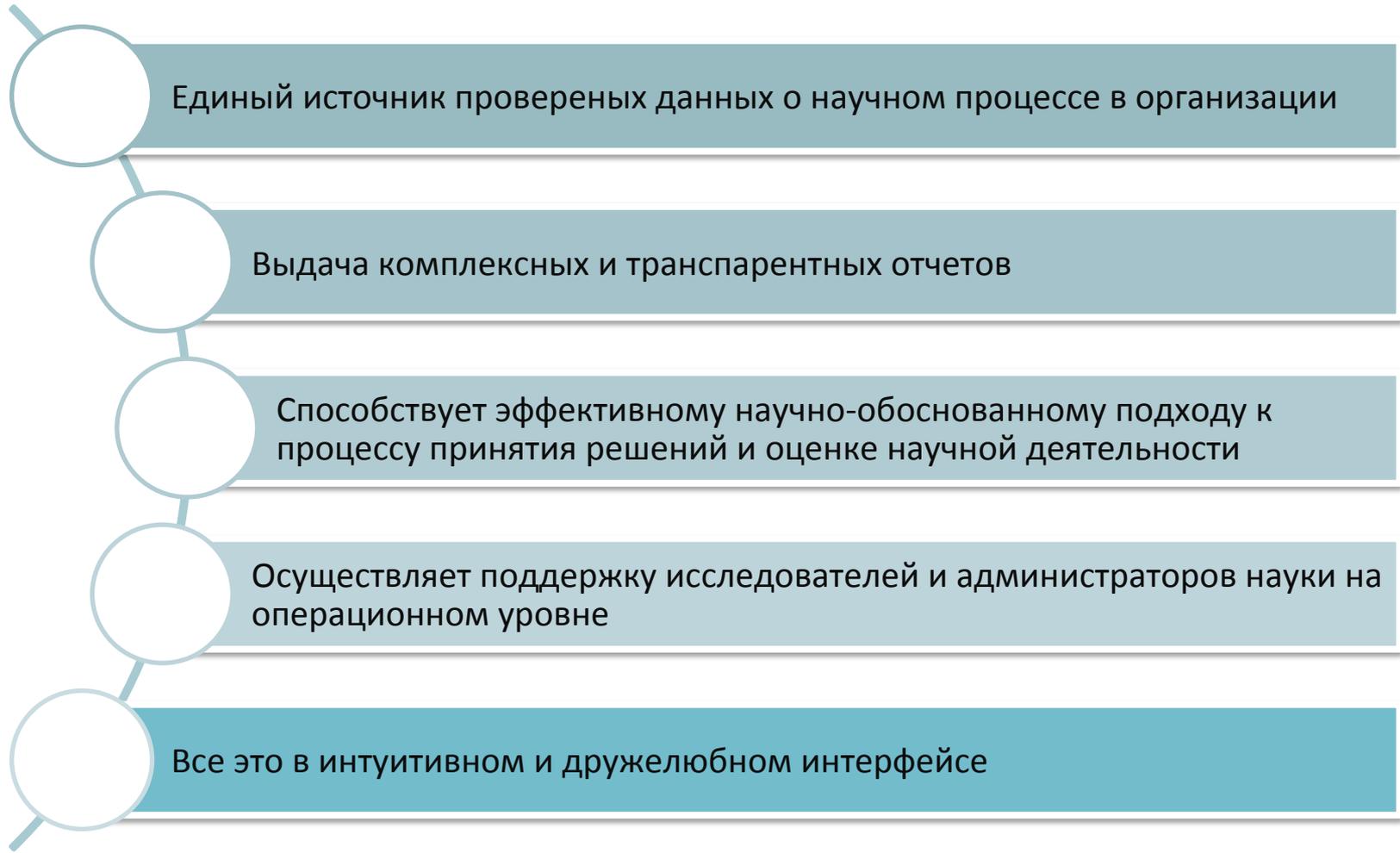
# Основные группы пользователей Pure

## Pure позволяет администраторам науки:

- **Проводить мониторинг и управление всем жизненным циклом исследований**, от получения грантов и практического осуществления, до получения наград и смежных проектов
- **Устанавливать цели выполнения** проектов с помощью настраиваемых показателей и отслеживать прогресс их выполнения
- **Просматривать аналитику высокого уровня** или перейти к детальным данным по отдельным исследователям или проектам
- **Создавать и распространять отчеты** по любым данным Pure в режиме реального времени
- Поддержка национальных систем оценки научных исследований (EuroCRIS, REF2014 и т.п. )

## Pure позволяет ученым:

- **Легко управлять своими авторскими профилями и резюме** с помощью автоматического добавления публикаций, а также предоставлять их как дополнение к заявке на грант
- **Повышать свою персональную видимость**, автоматически публикуя свои достижения онлайн
- **Создавать отчеты о своей деятельности** для продвижения по службе и для заявок на доп. финансирование
- **Автоматическое заполнение институционального репозитория** данными из персонального профиля (например **DSpace**, ePrints, FEDORA, Equella и др.)



# Проблема – Эффективная оценка научных исследований





## *SciVal*

революционный продукт,  
который помогает организациям  
идентифицировать и **оценить**  
свои текущие **силы**, а так же  
**определить** и **выполнить**  
**перспективную стратегию**  
**развития**

# Что такое SciVal 2?

**Единый инструмент**, соблюдающий баланс между **простотой** в использовании и **передовые** аналитические возможности

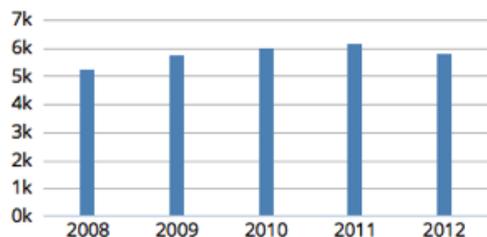
**Полная гибкость**: возможность создавать любую желаемую группу исследователей и организаций, и сравнивать их с любой референтной группой.

Предлагая широкий спектр общепринятых в отрасли и простых в интерпретации метрик, **SciVal** позволяет пользователю делать всестороннюю оценку научной эффективности

Welcome, Vadim Sobolev!

## Let SciVal help you put your research performance in perspective

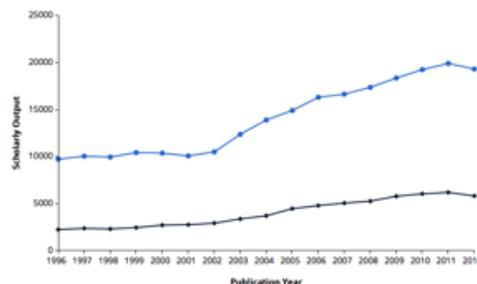
### Performance Overview



Get a high-level overview of the research performance of your Institution, other Institutions, Countries and Groups of Researchers.

[Performance Overview >](#)

### Benchmarking



Benchmark any Institutions, Research Areas, Countries, and Researchers using a wide variety of metrics.

[Benchmarking >](#)

### Collaboration Analysis



Explore the collaboration network of your Institution, other Institutions and Researchers.

[Collaboration Analysis >](#)

# Гибкие инструменты для оценки научной производительности

Home

Performance Overview

Benchmarking

Collaboration Analysis

My Stuff

Performance overview for:

## Institutions and Groups

- Kazan Volga Region Federal University
- Ural Federal University
- St. Petersburg State University

+ Add Institutions and Groups

## Researchers and Groups

## Countries and Groups

## Research Areas and Groups

## Ural Federal University

 Russian Federation | Scopus affiliation ID: 60022287... [Show all](#)

Source: Scopus data up to 11 Sep 2013

2008 to 2013

no filter selected

Year: 2012

### Competencies of Ural Federal University

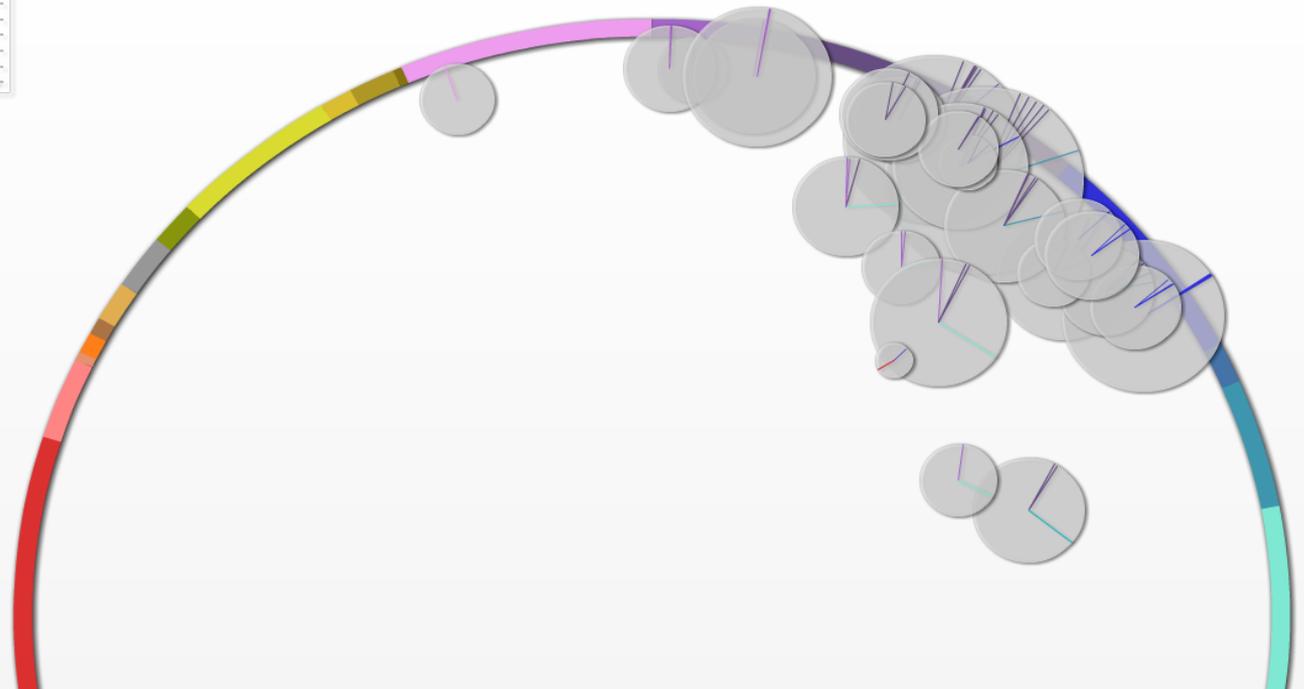
Competencies of Ural Federal University in 2012, based on an analysis of publications over the period 2008-2012

Filter competencies by

Table

Circle

Matrix



# Сравнение различных метрик на уровне ученых, организаций, стран, предметных областей и т.п.

SciVal

Home

Performance Overview

Benchmarking

Collaboration Analysis

View performance for:

Institutions and Groups

Kazan Volga Region Federal

- Citation Count
- Citations per Publication
- Cited Publications
- Collaboration
- Collaboration Impact
- Field-Weighted Citation Impact
- h*-indices**
- Journal Category
- Count
- Journal Count
- Number of Citing Countries
- Outputs in Top Percentiles

***h*-indices** ⚙️

*h*-indices reflect both productivity and citations received.

Select metric:

*h*-index  *g*-index  *m*-index

Include self-citations

Include:

All publication types

Choose as y-axis

## Benchmarking

Source: Scopus data up to 11 Sep 2013

1996 to >2013

no filter selected

Table

Export

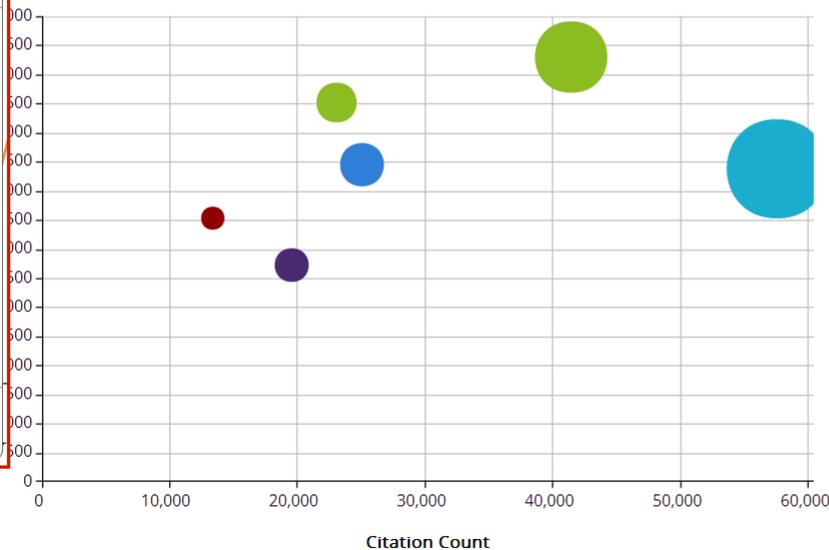
Early Output ⚙️

x-axis

Bubble size

Citation Count ⚙️

Citation Count ⚙️



- Kazan Volga Region Federal University
- Tomsk State University
- Moscow Institute of Physics and Technology
- Ural Federal University
- Novosibirsk State University
- Moscow Engineering Physics Institute

# Интерактивные карты научных коллабораций

View collaboration for:

## Institutions and Groups

- Kazan Volga Region Federal University
- Ural Federal University**
- St. Petersburg State University
- St. Petersburg State University
- Moscow State University
- Novosibirsk State University
- Tomsk State University
- Moscow Engineering Physics Institute
- Moscow Institute of Physics and Technology

+ Add Institutions and Groups

## Researchers and Groups

## Countries and Groups

## Research Areas and Groups

## Collaboration analysis for Ural Federal University

 Russian Federation | Scopus affiliation ID: 60022287... [Show all](#)

Source: Scopus data up to 11 Sep 2013

2010 to 2012 ▾

no filter selected ▾



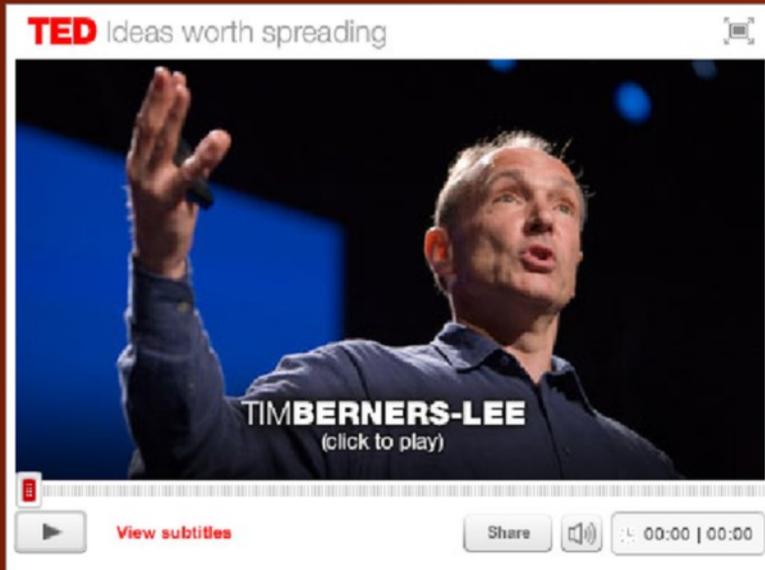
# Основные направления использования SciVal

- Определение своих сильных и слабых позиций
- Определение приоритетных направлений развития научной деятельности
- Определение направлений финансирования
- Поиск партнеров для сотрудничества

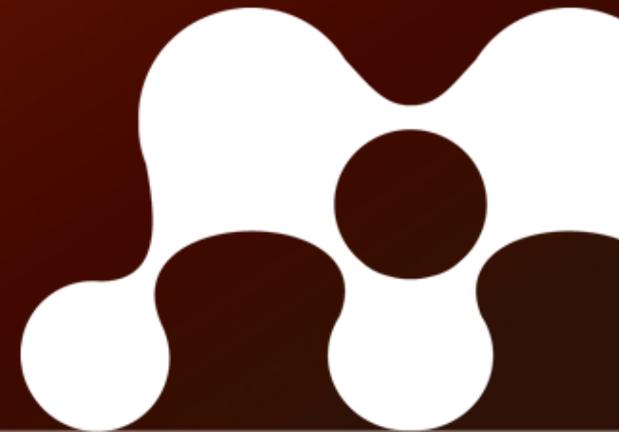
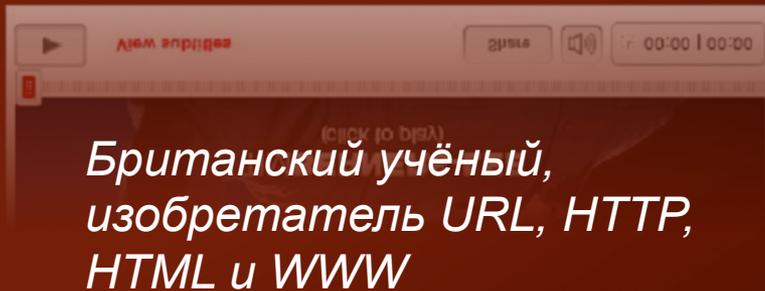


# Проблема – Эффективное сохранение и обмен данными научных исследований





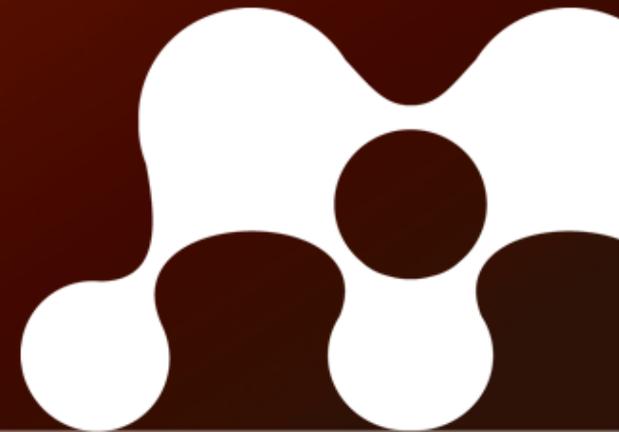
Огромное количество важных знаний хранится на компьютерах ученых и никому недоступны. Мы должны открыть эти знания для решения сложных проблем, стоящих перед человечеством...





**Бесплатная онлайн система менеджмента библиографических ссылок и социальная сеть общения ученых, которая помогает сохранять научные исследования и взаимодействовать ученым в сети.**

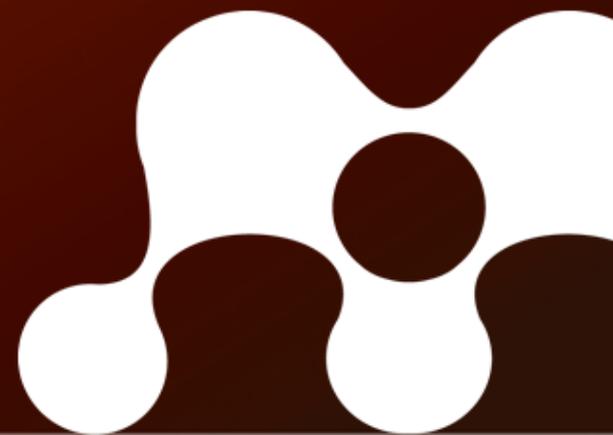
**2.3 миллиона пользователей**



# Основные компоненты Mendeleey

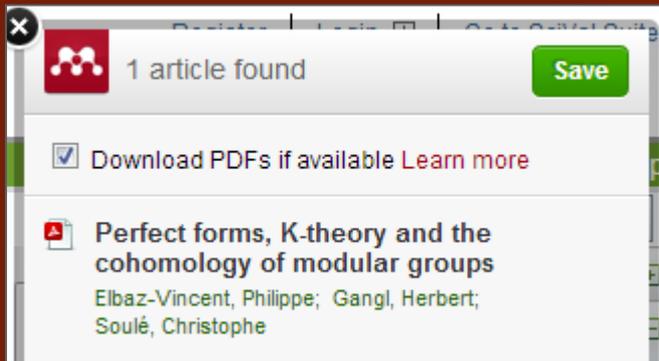


- Mendeleey Web: Научный каталог 150М+ уникальных документов от 2М+ ученых, 100К+ социальных групп, с открытыми API.
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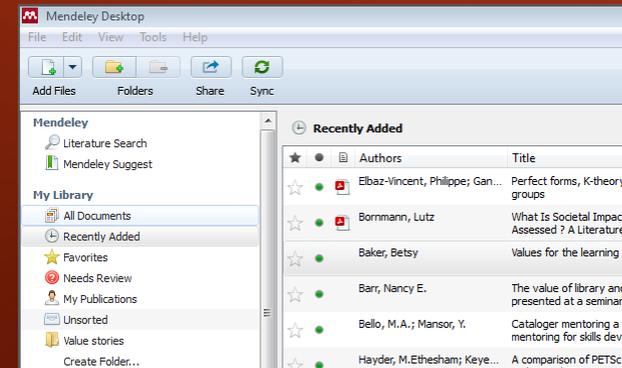


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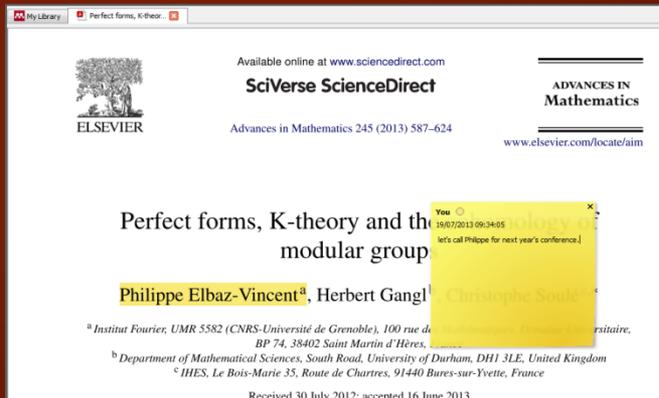
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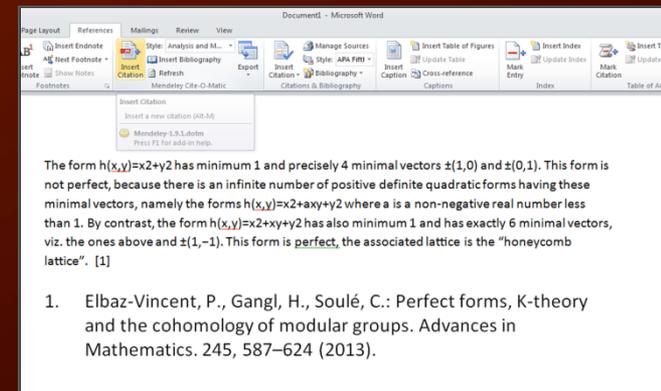
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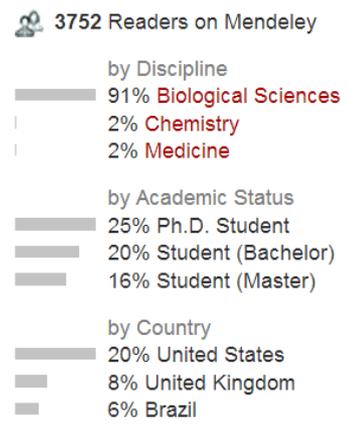
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**We report the design, synthesis and assembly of the 1.08-Mbp *Mycoplasma mycoides* (JCVI-syn1.0) genome starting from digital genome sequence information and its transplantation into a *Mycoplasma capricornum* recipient cell to create new *Mycoplasma mycoides* cells that are controlled solely by the synthetic chromosome. The only DNA in the cells is the designed synthetic DNA sequence, including "watermark" sequences and other designed gene features and polymorphisms, and mutations acquired during the building process. The new cells have expected phenotypic properties and are capable of continuous self-replication.**

In 1977, Singer and colleagues described the complete genome in order of phase of CTX1 (1), the first DNA genome to be completely sequenced. Eighteen years later, in 1995, our team was able to read the first complete genetic code of a self-replicating bacterium, *Mycoplasma mycoides* (2). Reading the genetic code of a wide range of species has increased exponentially from these early studies. The ability to rapidly digitize genomic information has increased by more than eight orders of magnitude over the past 20 years (3). Efforts to understand all life via genomic information have opened numerous new computational and experimental paradigms, yet our genomic knowledge remains very limited. No single cellular system has all of its genes contained in a form of their biological form. Even in simple bacteroid cells, do the chromosomes contain the entire genetic repertoire? If so, can a complete genetic system be reproduced by chemical synthesis starting with only the digitized DNA sequence contained in a computer?

Our interest in synthetic large DNA molecules and chromosomes grew out of our efforts over the past 15 years to build a minimal cell that contains only essential genes. This work was supported in 1994 when we sequenced the complete genome of *Mycoplasma genitalium*, a bacterium with the smallest complement of genes of any known organism.

capable of independent growth in the laboratory. More than 90% of the 487 genes encoding genes of *M. mycoides* are dispensable when the designed gene set is used.

We developed a strategy for assembling viral-sized plasmids containing large DNA molecules that, enabled us to assemble a synthetic *M. mycoides* genome in four stages. Here, we chemically synthesized DNA fragments averaging about 4 kb in size. This was accomplished through a combination of in vitro enzymatic methods and in vivo methods using *Saccharomyces cerevisiae*. The whole synthetic genome (1,082,373 bp) was stably grown as a yeast cosmids genomic plasmid (Fig. 1).

Several hurdles were overcome in transfecting and expressing a chemically synthesized chromosome in a recipient cell. We needed to improve methods for extracting intact chromosomes from yeast. We also needed to learn how to integrate these genomes into a recipient bacterial cell to establish a cell controlled only by a synthetic genome. Over the last two 3C genomes has an extremely slow growth rate, we turned to two faster growing *Mycoplasma* species, *M. mycoides* subspecies *mycoides* (JCVI-syn1.0), and *M. capricornum* subspecies *capricornum* (JCVI-syn2.0).

To establish conditions and procedures for transfecting the synthetic genome out of yeast, we developed methods for cloning our bacterial chromosomes as cosmids plasmids in yeast, including a suite of *M. mycoides* genomes (4, 5). However, initial attempts to transfer the full synthetic genome from yeast and transform it into *M. capricornum* failed. We discovered that the clone and recipient *Mycoplasma* share a common restriction enzyme. The donor genome was methylated in the recipient *M. mycoides* cells and was therefore protected against restriction during the transformation from a native donor cell (6). However, the bacterial genomes grown in yeast are unmethylated and are not protected from the single restriction enzyme of the recipient cell. We were able to overcome this restriction

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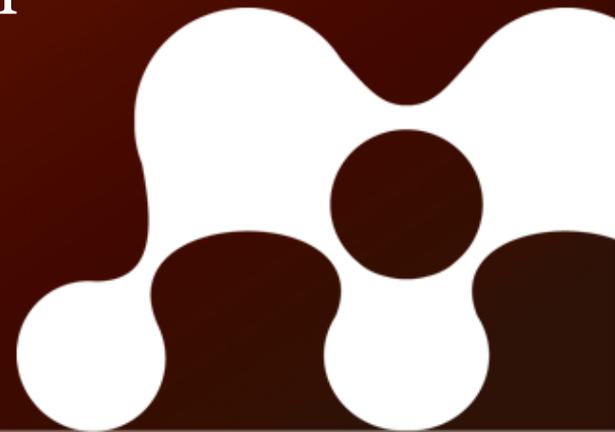
Gibson, D. G., Glass, J. I., Lartigue, C., Noskov, V. N., Chuang, R.-Y., Algire, M. A., Benders, G. A., et al. (2010). Creation of a bacterial cell controlled by a chemically synthesized genome. *Science*, 329(5987), 52-56. AAAS. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/20488990>

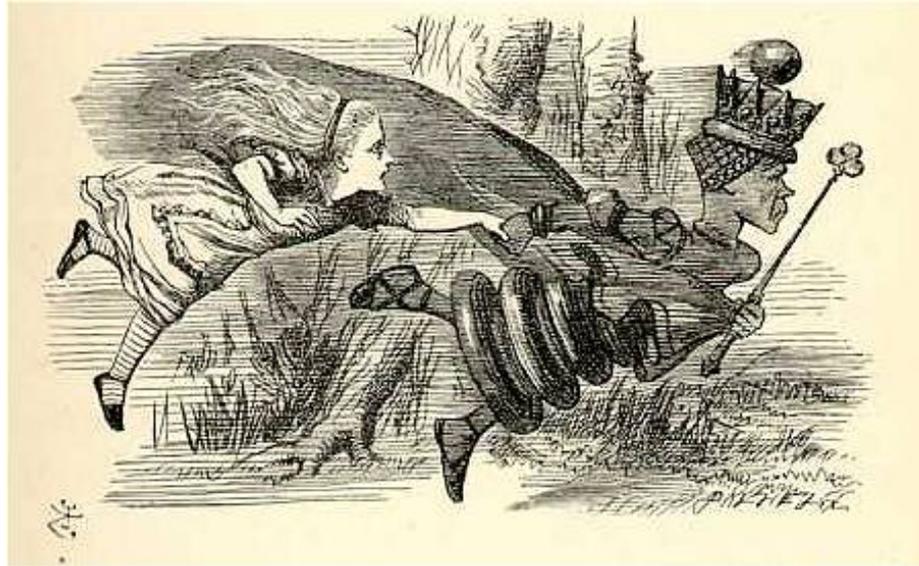


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