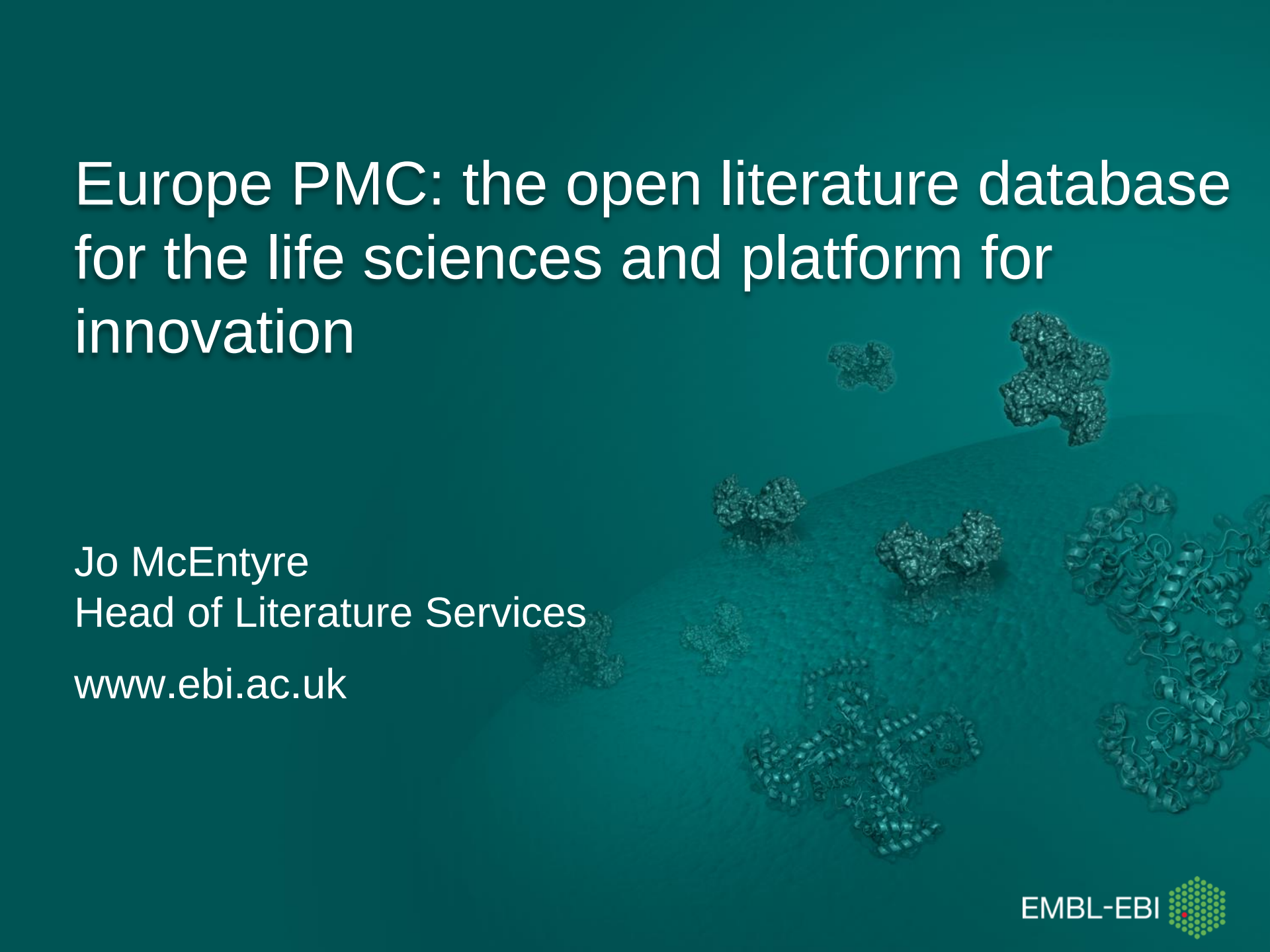
Europe PMC: the open literature database for the life sciences and platform for innovation



Jo McEntyre
Head of Literature Services

www.ebi.ac.uk

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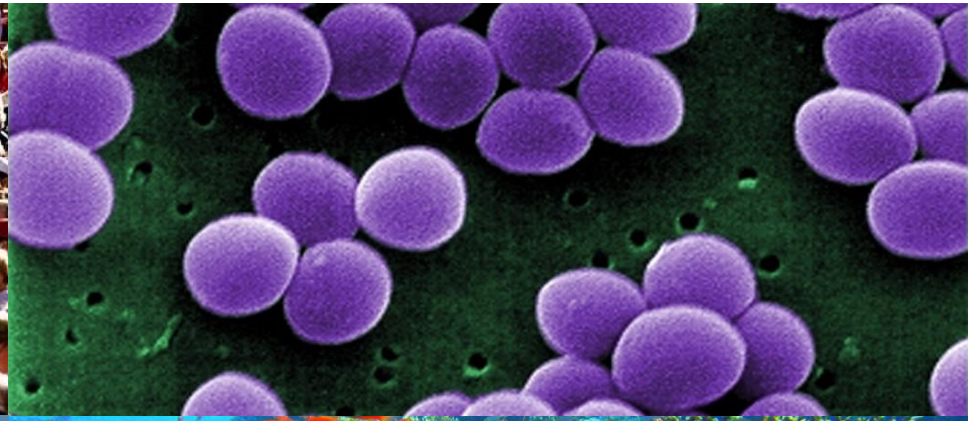
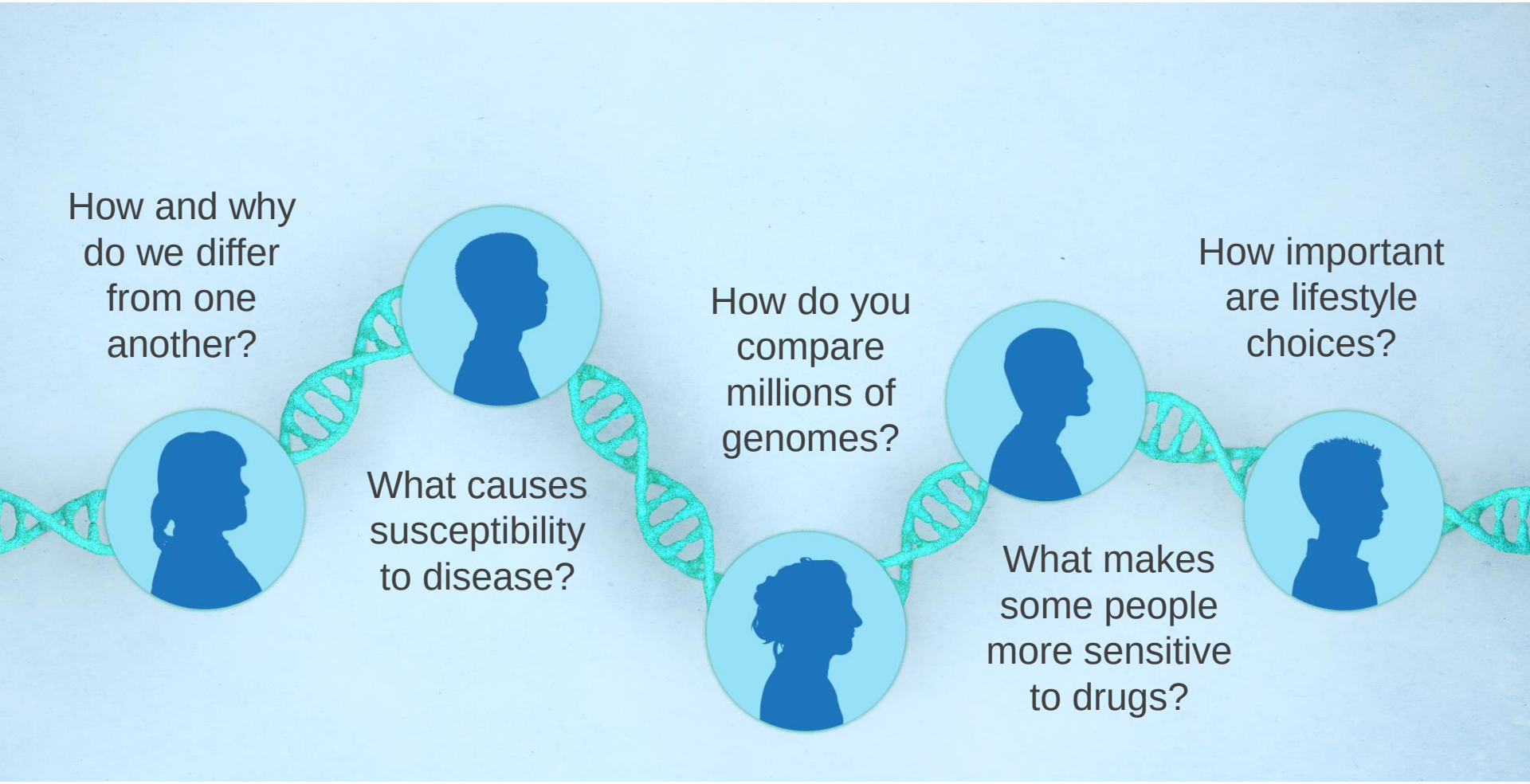
Life Sciences

EMBL-EBI

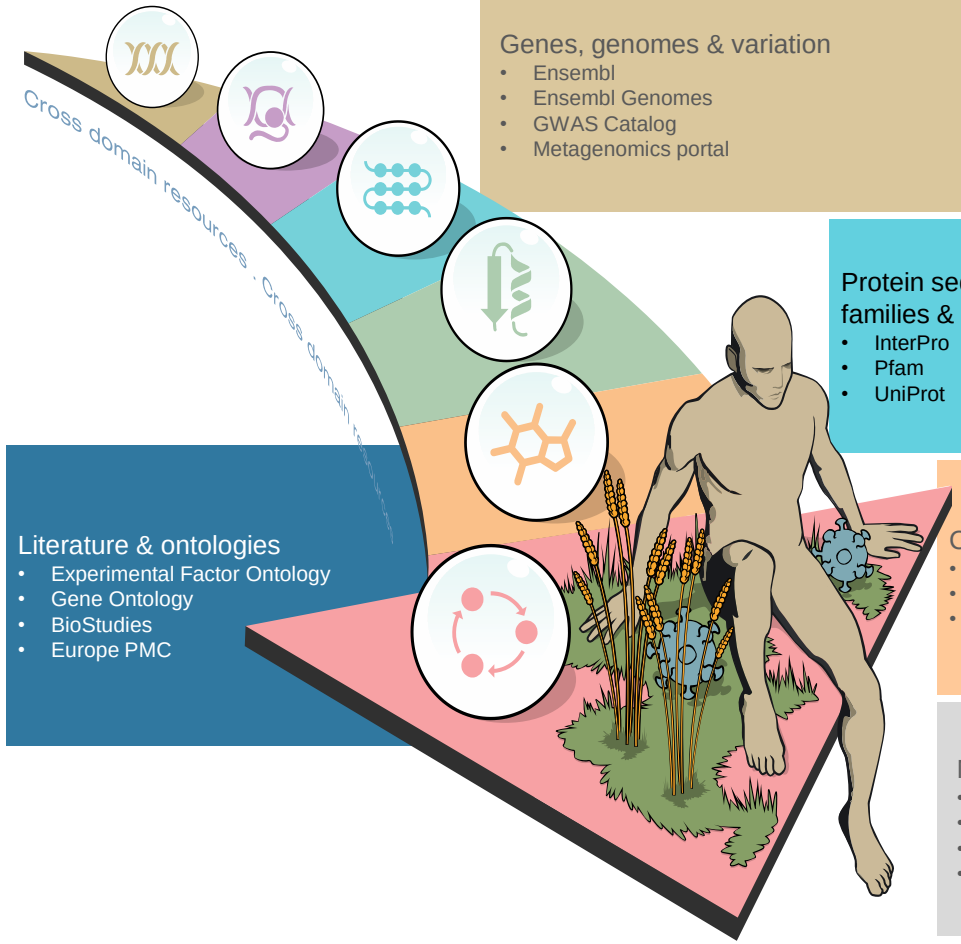
All living things are made from the same stuff



Interpreting human variation



Data resources at EMBL-EBI



Genes, genomes & variation
- Ensembl
- Ensembl Genomes
- GWAS Catalog
- Metagenomics portal

Gene, protein & metabolite expression
- Expression Atlas
- Metabolights
- PRIDE
- RNA Central

Protein sequences, families & motifs
- InterPro
- Pfam
- UniProt

Molecular structures
- Protein Data Bank in Europe
- Electron Microscopy Data Bank

Literature & ontologies
- Experimental Factor Ontology
- Gene Ontology
- BioStudies
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Chemical biology
- ChEBI
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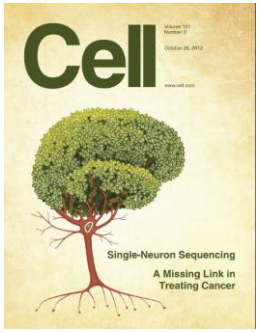
Systems
- BioModels
- BioSamples
- Enzyme Portal
- IntAct
- Reactome

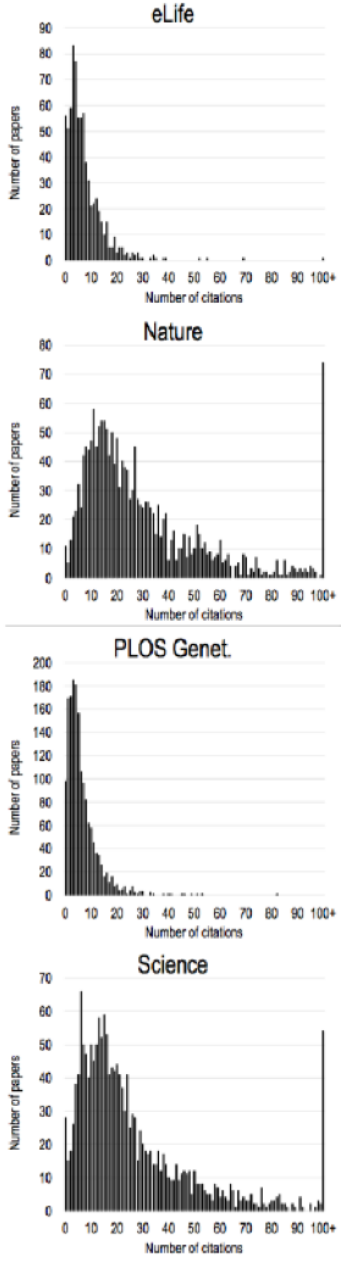
Molecular Archives
- European Nucleotide Archive
- European Variation Archive
- European Genome-phenome Archive
- ArrayExpress

Publishing, credit and attribution in the life sciences

- Journal publishing (not monographs, preprints or conf proc)
- Impact factors



- *Cutting edge*
  - *Article level metrics*
  - *Alternative forms of credit e.g. for data sets*
  - *Emerging interest in preprints*



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Open Access

Europe PMC

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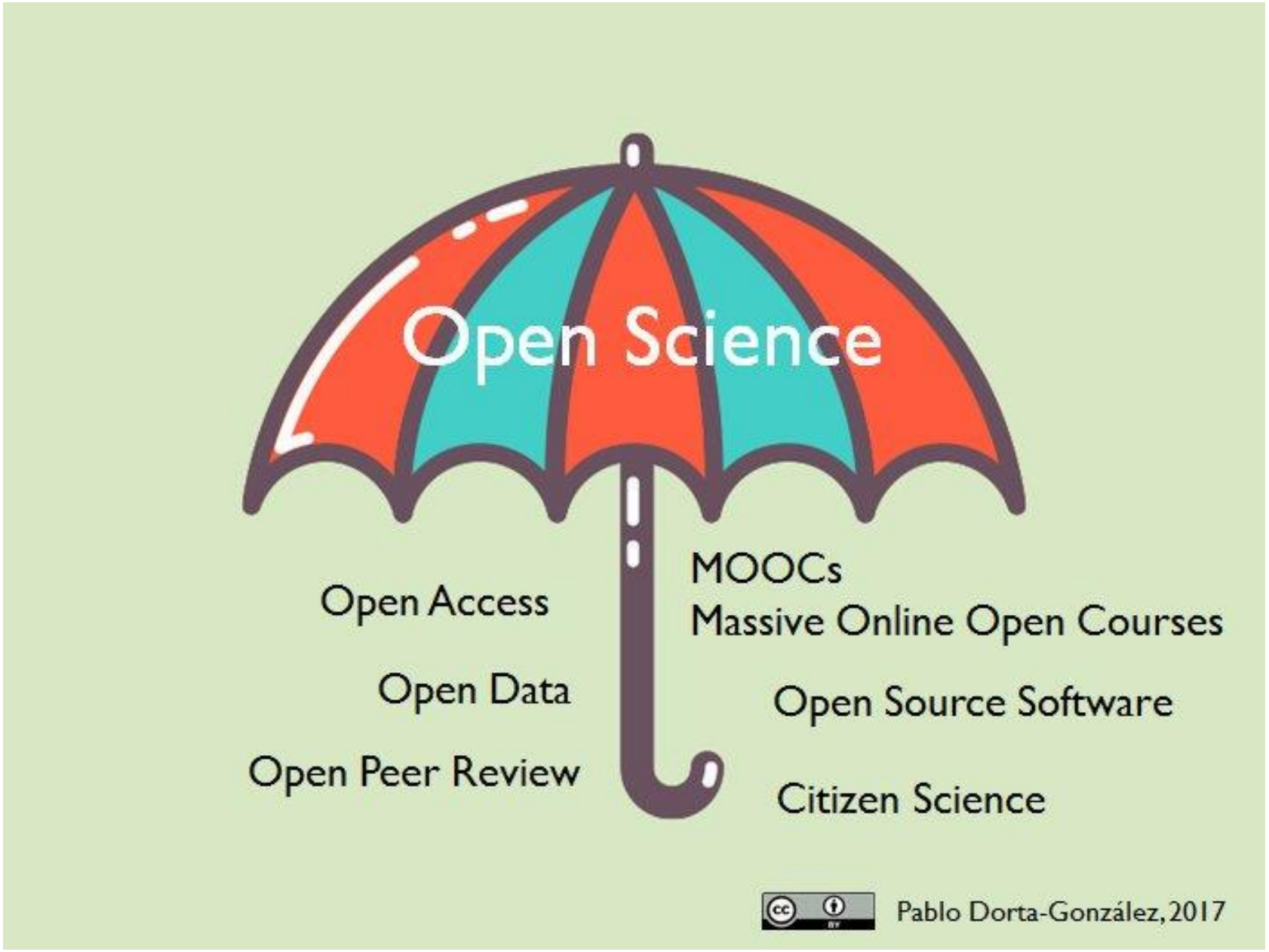
Open Access

- Funder and institutional policies
- read (green) → reuse (gold)
- Fully open vs. hybrid journals: relative APC costs
- Europe PMC funders recommend/require Europe PMC
- Why? Trust and discoverability through standard formats and aggregation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Pablo Dorta-González, 2017

Europe PMC

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The blood cancer research charity


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FNSNF
Swiss National Science Foundation


breast cancer
now


BBSRC
bioscience for the future


The Academy of
Medical Sciences


wellcome trust
DBT
INDIA ALLIANCE


NC
3Rs
National Centre
for the Replacement
Refinement & Reduction
of Animals in Research


FWF
Der Wissenschaftsfonds.


ACTION ON
HEARING
LOSS


mnda
motor neurone disease
association


CHIEF
SCIENTIST
OFFICE


worldwide
cancer research


Marie
Curie
Care and support
through terminal illness


British Heart
Foundation


The
Dunhill
Medical
Trust


W
wellcome


PARKINSON'S UK
CHANGE ATTITUDES.
FIND A CURE.
JOIN US.


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Medical
Research
Council


ARTHRITIS
RESEARCH UK


CANCER
RESEARCH
UK


World Health
Organization


PROSTATE
CANCER UK


Telethon


MS
Multiple Sclerosis Society


NHS
National Institute for
Health Research


erc
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Alzheimer's
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dementia


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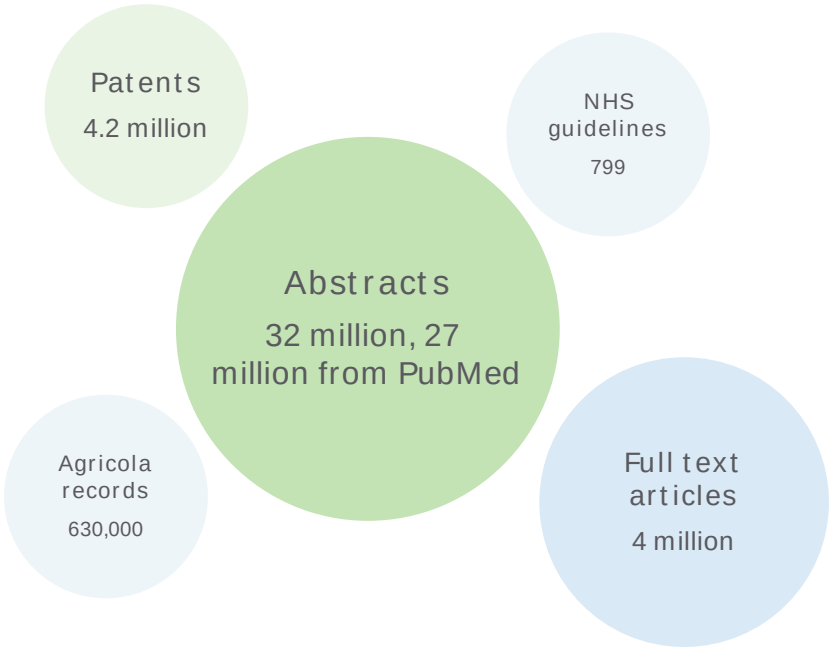
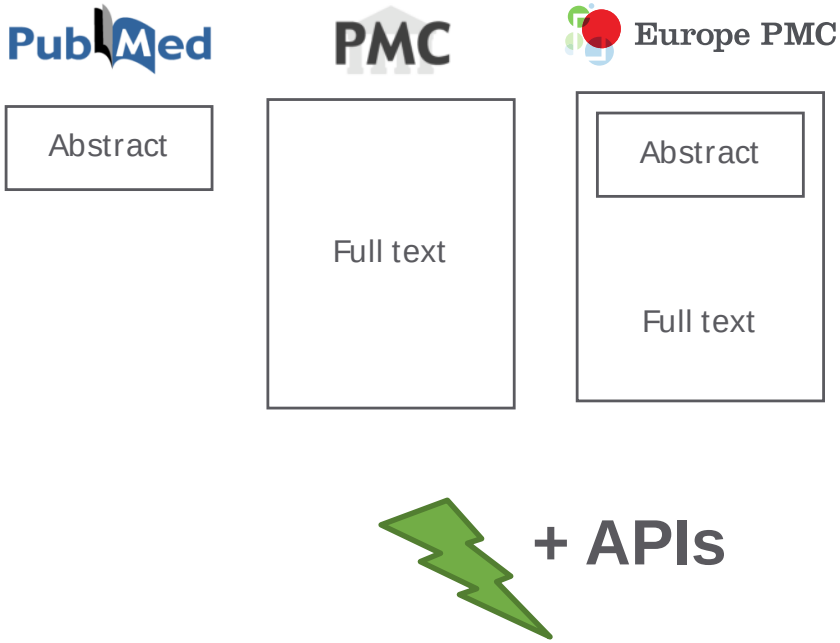
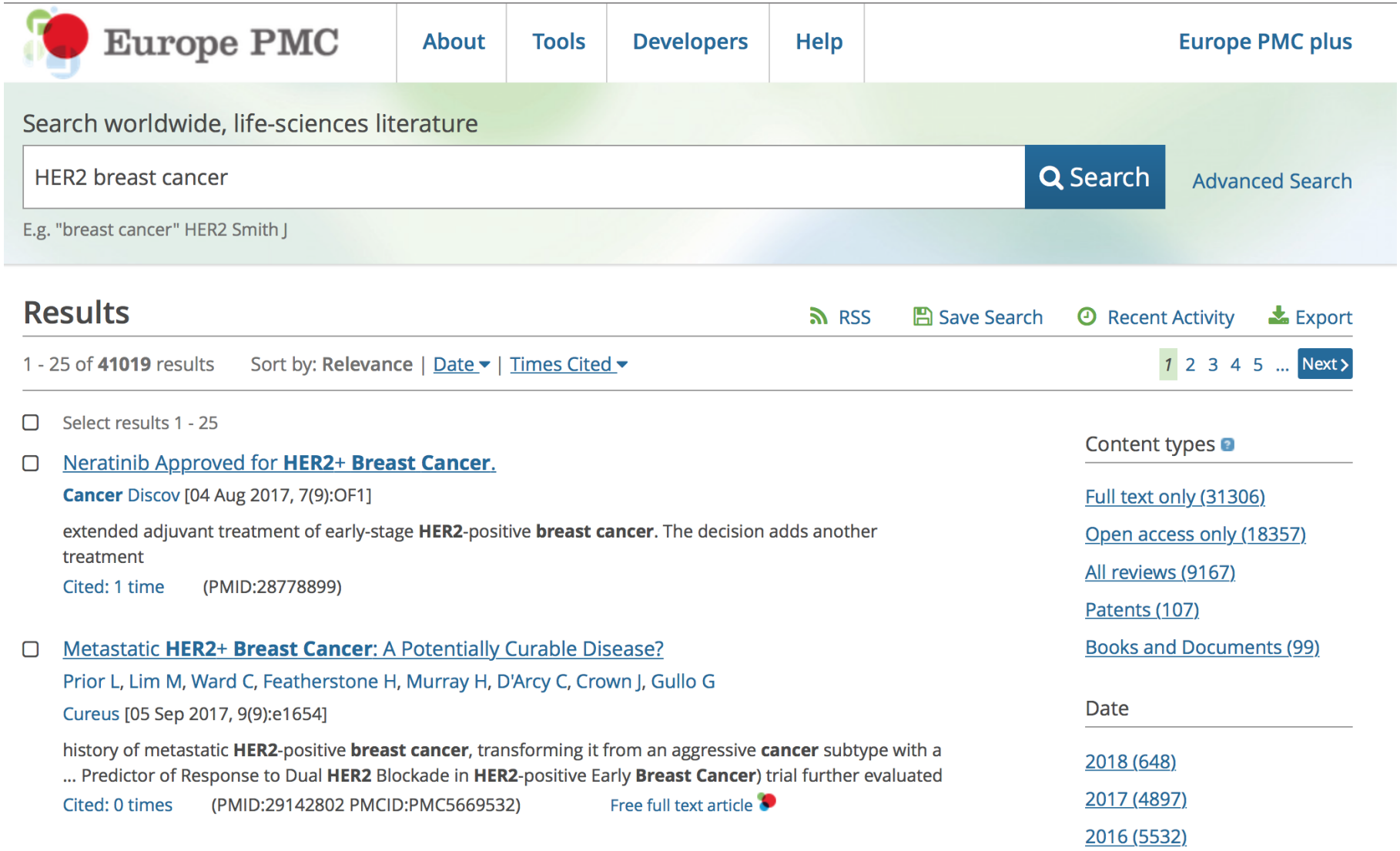


Single search interface



Powerful search



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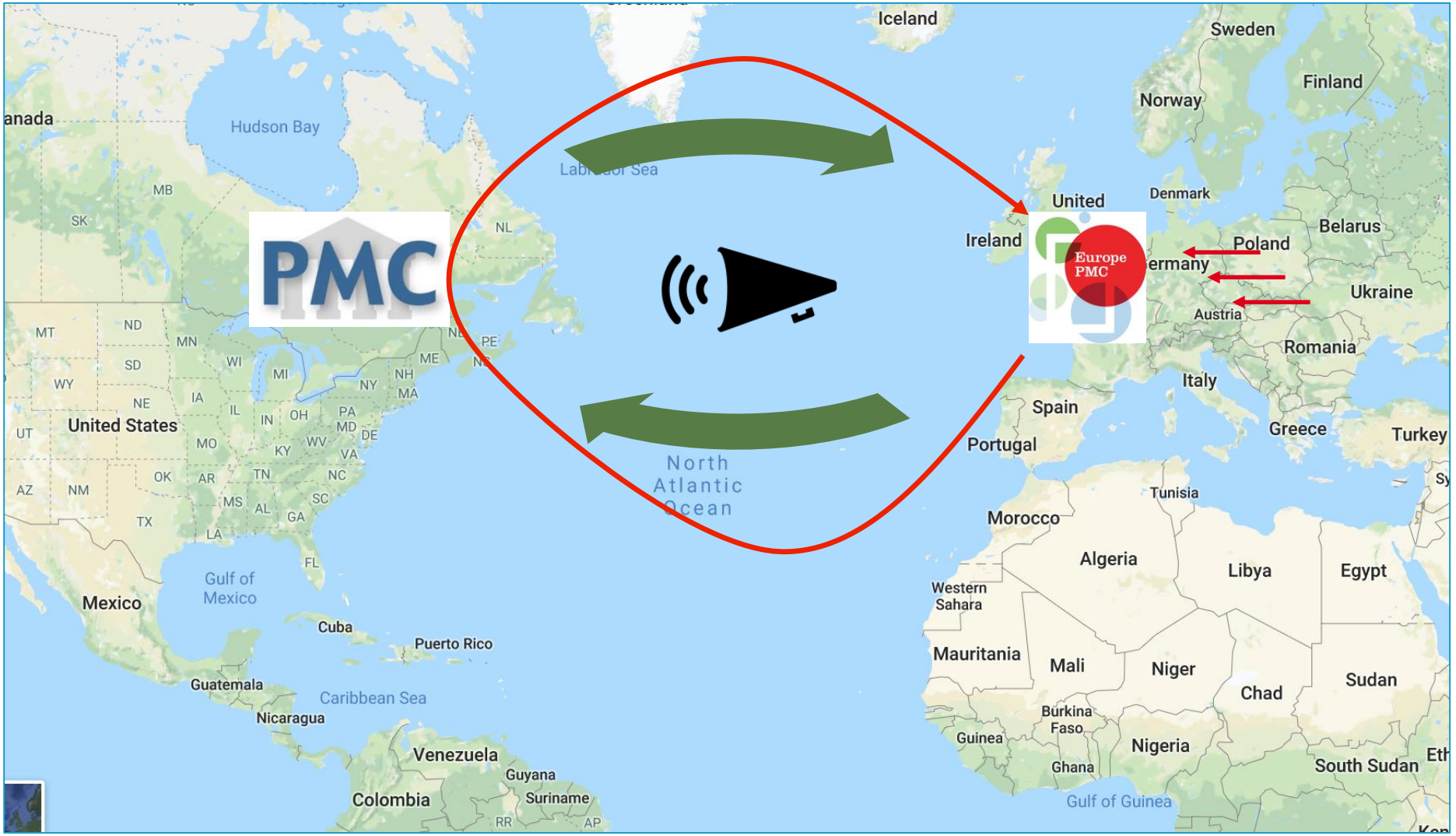
Collaboration with USA, and dependencies



Sub-minute Phosphoregulation of Cell Cycle Systems during Plasmodium Gamete Formation.

(PMID:29141230 PMCID:PMC5700370)

Cell Rep. 2017 Nov 14; 21(7): 2017–2029. PMCID: PMC5700370
Published online 2017 Nov 14. doi: 10.1016/j.celrep.2017.10.071

Sub-minute Phosphoregulation of Cell Cycle Systems during *Plasmodium* Gamete Formation

Brandon M. Invergo,[1,2,6] Mathieu Brochet,[2,4,6] Lu Yu,[3,5] Jyoti Choudhary,[3,5,*] Pedro Beltrao,[1,**] and Oliver Billker[2,7,***]

Author information ▶ Article notes ▶ Copyright and License information ▶

Summary

Go to:

The transmission of malaria parasites to mosquitoes relies on the rapid induction of sexual reproduction upon their ingestion into a blood meal. Haploid female and male gametocytes become activated and emerge from their host cells, and the males enter the cell cycle to produce eight microgametes. The synchronized nature of gametogenesis allowed us to investigate phosphorylation signaling during its first minute in *Plasmodium berghei* via a high-resolution time course of the phosphoproteome. This revealed an unexpectedly broad response, with proteins related to distinct cell cycle events undergoing simultaneous phosphoregulation. We implicate several protein kinases in the process, and we validate our analyses on the plant-like calcium-dependent protein kinase 4 (CDPK4) and a homolog of serine/arginine-rich protein kinases (SRPK1). Mutants in these kinases displayed distinct phosphoproteomic disruptions, consistent with differences in their phenotypes. The results reveal the central role of protein phosphorylation in the atypical cell cycle regulation of a divergent eukaryote.

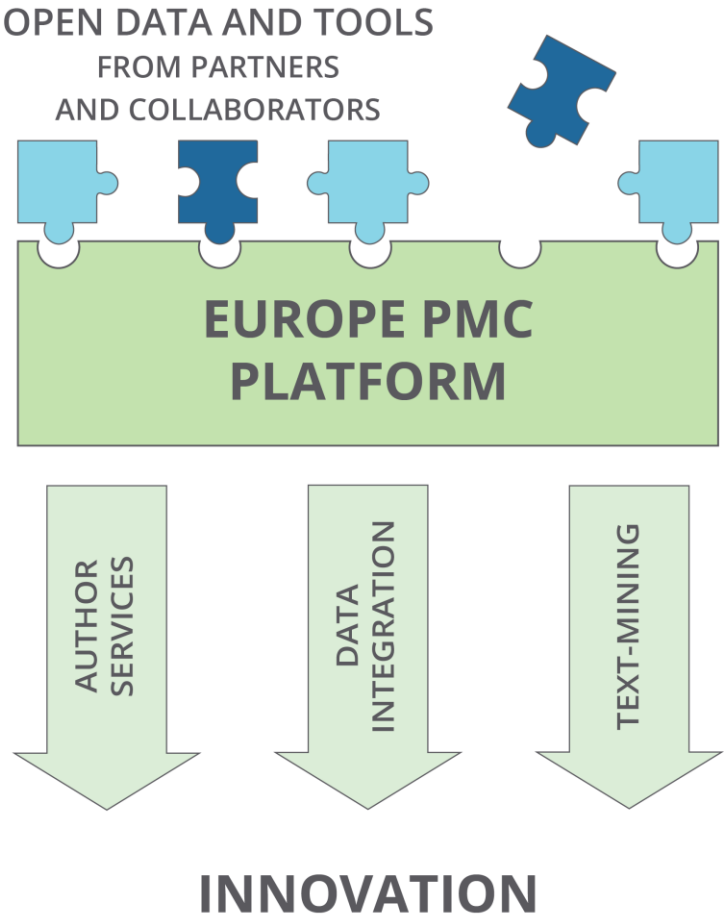
Keywords: gametogenesis, proteomics, signal transduction, ARK2, CRK5

Graphical Abstract

Go to:

Maximizing reuse of research

- Europe PMC is an open community platform
- Specialist scientific knowledge allows rich services and community engagement
- European science context



Beyond the PDF

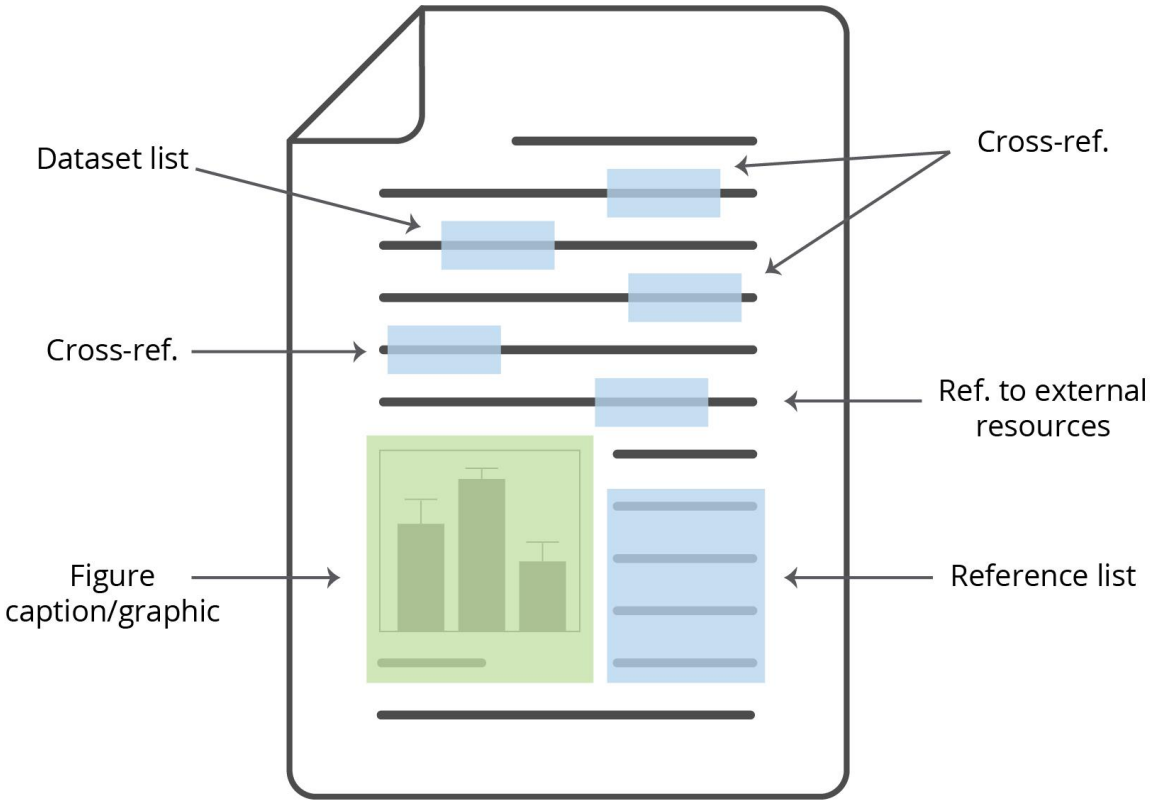


Fig. source data:
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file, URL|DOI

Data/institutional repositories;
author database:
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Integrating Open Data

Salt-inducible kinase 3, SIK3, is a new gene associated with hearing.
(PMID:25060954 PMCID:PMC4222365)

Abstract | Citations | BioEntities | Related Articles | External Links

Wolber LE , Girotto G , Buniello A , Vuckovic D , Pirastu N , Lorente-Cánovas B , Rudan I , Hayward C , Polasek O , Ciullo M , Mangino M , Steves C , Concas MP , Cocca M , Spector TD , Gasparini P , Steel KP , Williams FM

Department of Twin Research and Genetic Epidemiolc EH, UK.

Human Molecular Genetics [2014, 23(23):6407-6418]

Type: Journal Article, Meta-Analysis, Research Support
DOI: 10.1093/hmg/ddu346

Frances Williams
Imperial College London
Author Profile
ORCID
Search articles by ORCID
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Abstract

Hearing function is known to be heritable, but ssociations of genetic variants have been identified to date in the adult populatior iation results of hearing function from the G-EAR consortium and TwinsUK were used for meta-analysis. Hearing ability in eight population samples of Northern and Southern European ancestry (n = 4591) and the Silk Road (n = 348) was measured using pure-tone audiometry and summarized using principal component (PC) analysis. Genome-wide association analyses for PC1-3 were conducted separately in each sample assuming an additive model adjusted for age, sex and relatedness of subjects. Meta-analysis was performed using 2.3 million single-nucleotide polymorphisms (SNPs) tested against each of the three PCs of hearing ability in 4939 individuals. A single SNP lying in intron 6 of the salt-inducible kinase 3 (SIK3) gene was found to be associated with hearing PC2 (P = 3.7×10(-8)) and further supported by whole-genome sequence in a subset. To determine the relevance of this gene in the ear, expression of the Sik3 protein was studied in mouse cochlea of different ages. Sik3 was expressed in murine hair cells during early development and in cells of the spiral ganglion during early development and adulthood. Our results suggest a developmental role of Sik3 in hearing and may be required for the maintenance of adult auditory function.

Formats

Abstract | Full Text | PDF

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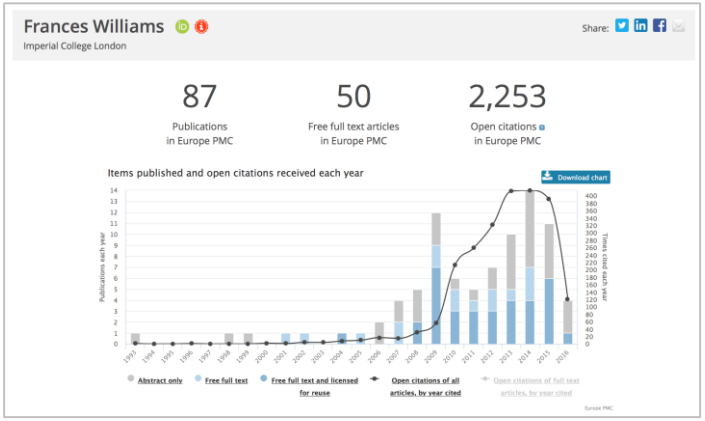
- Gene Ontology (8)
- Genes/Proteins (6)
- Organisms (2)



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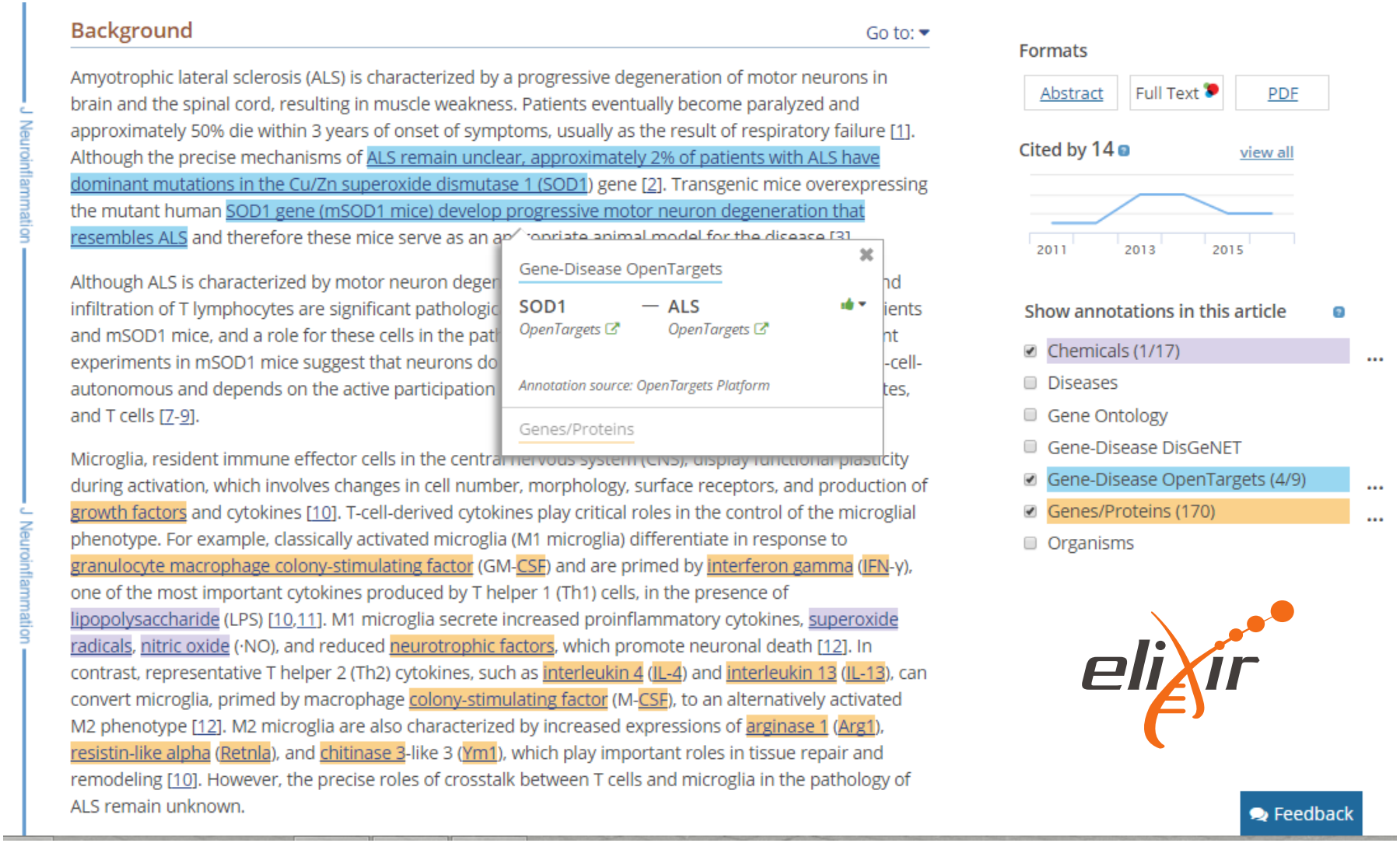
Text mining in Europe PMC



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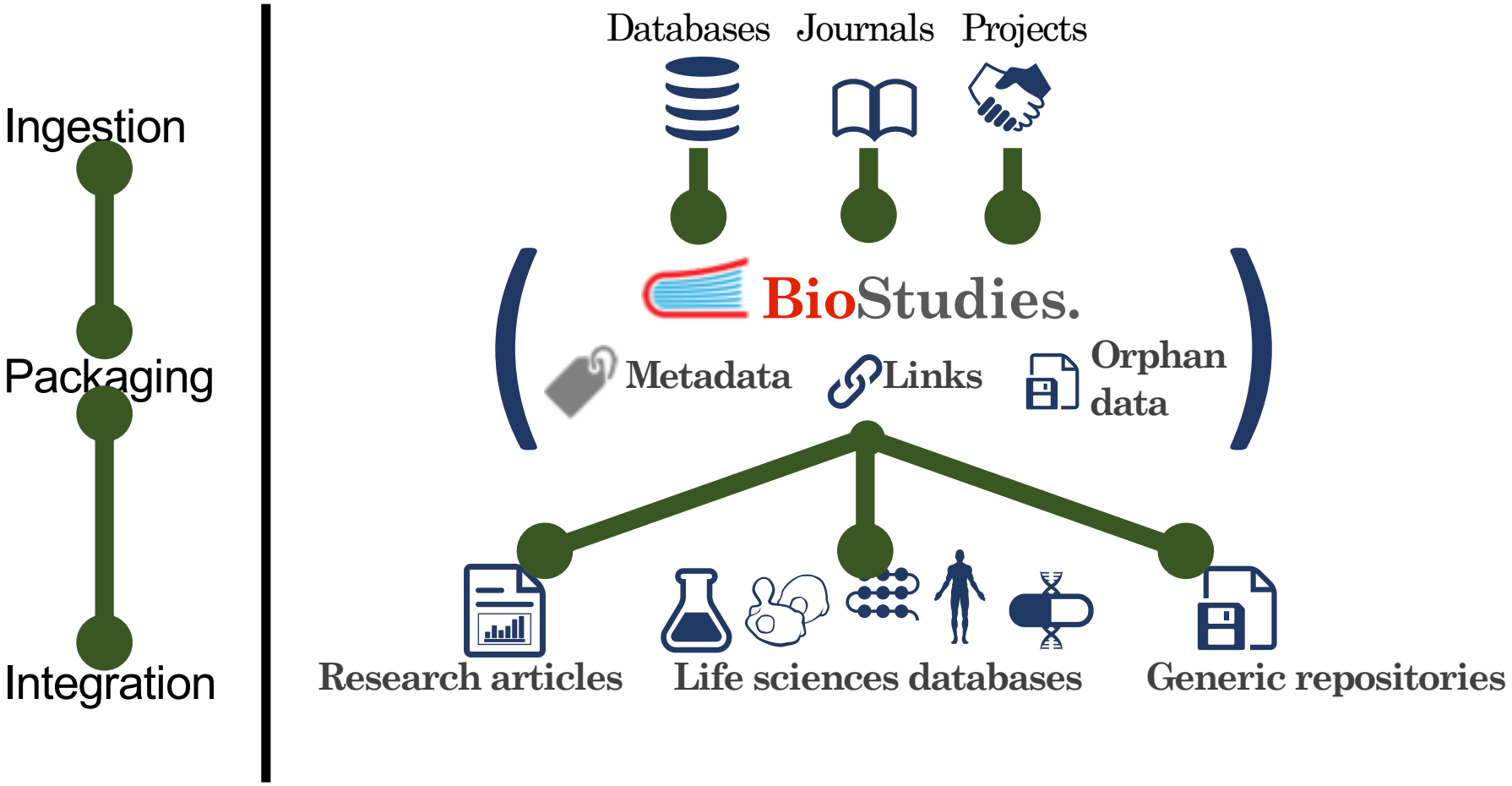
Open Targets: Target Validation Platform

www.targetvalidation.org

Open Targets

Anon, DANS

BioStudies and Europe PMC –reproducible science



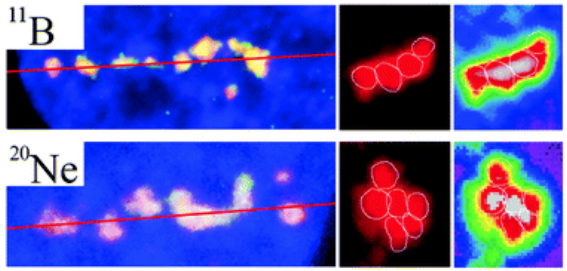
Widening distribution and reuse

Paper

Particles with similar LET values generate DNA breaks of different complexity and reparability: a high-resolution microscopy analysis of γH2AX/53BP1 foci

Lucie Jezkova, Mariia Zadneprianetc, Elena Kulikova, Elena Smirnova, Tatiana Bulanova, Daniel Depes, Iva Falkova, Alla Boreyko, Evgeny Krasavin, Marie Davidkova, Stanisl Olga Valentova and Martin Falk

Different particles with similar LET and energy may generate different t DNA damage with consequences for DNA double-strand break repair.



The article was first published on 12 Dec 2017
Nanoscale, 2018, **10**, 1162-1179
http://dx.doi.org/10.1039/C7NR06829H

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£1,600 (+ tax if applicable)

Feasibility and constraints of particle targeting using the antigen-antibody interaction.
(PMID:24170264 PMCID:PMC4047836)

Abstract | Citations | Related Articles | Data | BioEntities | External Links

Tokárová V[1], Pittermannová A, Král V, Řezáčová P, Štěpánek F

Affiliations

Nanoscale [29 Oct 2013, 5(23):11490-11498]

Type: Research Support, Non-U.S. Gov't, research-article, Journal Article
DOI: 10.1039/c3nr04340a

Abstract

This work is concerned with the surface modification of fluorescent silica nanoparticles by a monoclonal antibody (M75) and the specific bioadhesion of such particles to surfaces containing the PG domain of carbonic anhydrase IX (CA IX), which is a trans-membrane protein specifically expressed on the surfaces of several tumor cell lines. The adhesion strength of antibody-bearing silica nanoparticles to antigen-bearing surfaces was investigated under laminar flow conditions in a microfluidic cell and compared to the adhesion of unmodified silica nanoparticles and nanoparticles coupled with an unspecific antibody. Adhesion to cancer cells using flow cytometry was also investigated and in all cases the adhesion strength of M75-modified nanoparticles was significantly stronger than for the unmodified or unspecific nanoparticles, up to several orders of magnitude in some cases. The specific modification of nano- and microparticles by an antibody-like protein therefore appears to be a feasible approach for the targeting of tumor cells.

Supporting Data

BioStudies.
Data behind this article

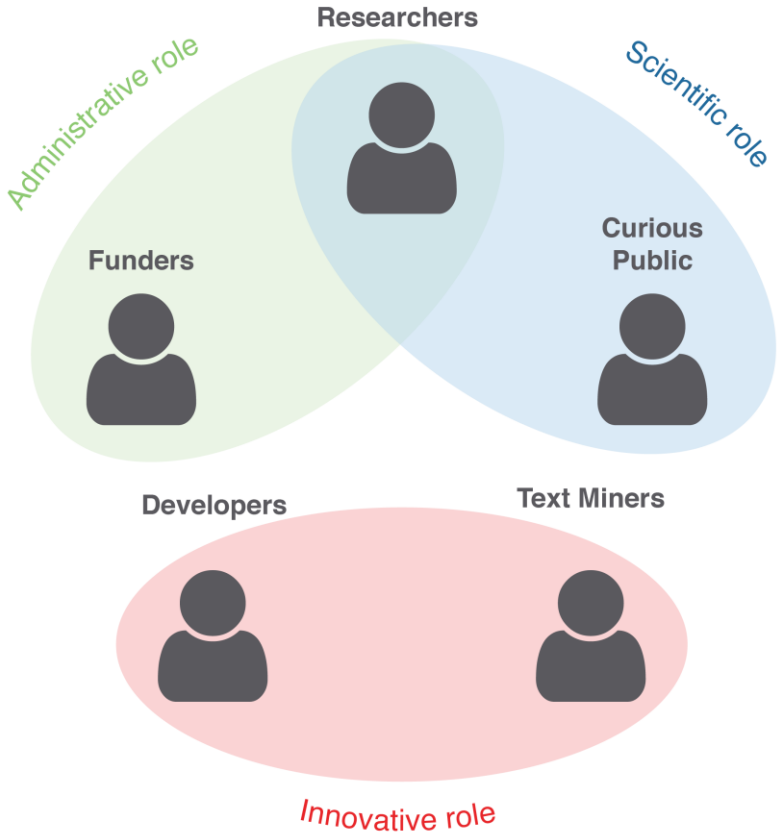
Funding

European Research Council

ORCIDs linked to this article

Řezáčová P, 0000-0001-9626-346X

Europe PMC Key Communities and user research



Preprints

Europe PMC

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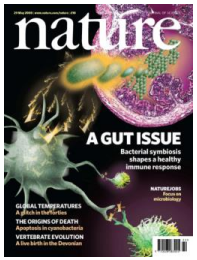
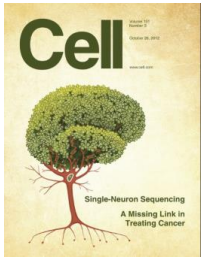
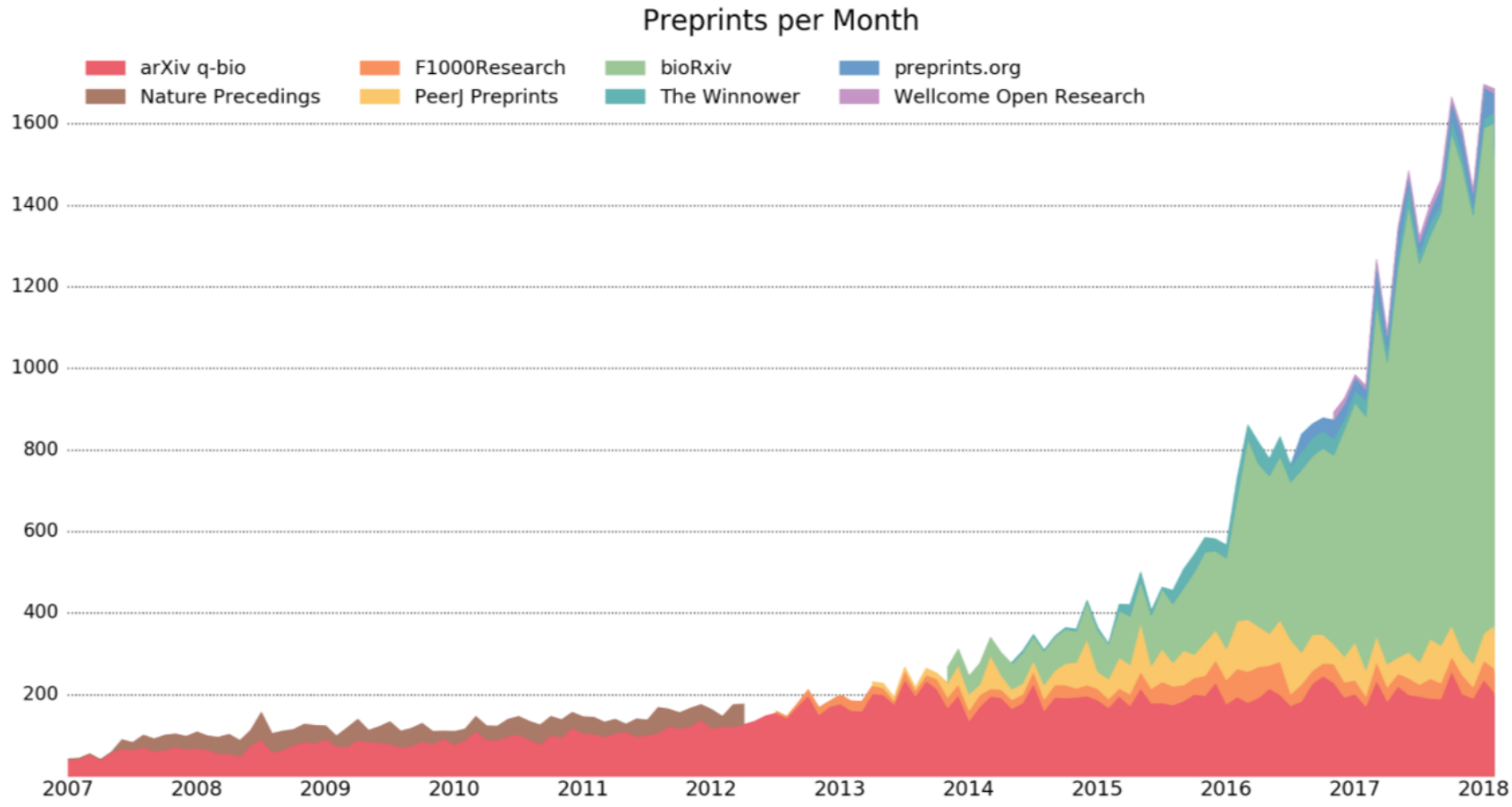
Preprints in Biology

~~Too much data!~~

- Competition to publish in very small number of journals







Jordan Anaya

EMBL-EBI

Preprints

Power Analysis of Single Cell RNA-Sequencing Experiments
(PPR:PPR7010)

This article is a preprint: it has not been peer-reviewed.

Abstract | Citations | BioEntities | Related Articles | External Links

Svensson V, Natarajan KN, Ly L, Miragaia RJ, Labalette C, Macaulay IC, Cvejic A, Teichmann SA

BioRxiv [08 Sep 2016]

Type: Preprint
DOI: 10.1101/073692

A later version of this preprint was published as "Power analysis of single-cell RNA-sequencing experiments." Nature methods. 2017 Apr;14(4):381-387.

Methods

Mouse embryonic stem (mES) cells culture

Wildtype E14 mouse ES cells (kindly provided by Pentao Liu, Wellcome Trust Sanger Institute) were cultured on gelatin coated dishes using Knockout DMEM (#10829; Gibco), 15% Fetal Calf Serum (FB-1001/500; batch tested from Labtech), 1x Penicillin-Streptomycin-Glutamine (#10378-016; Gibco), 1x MEM NEAA (11140-035; Gibco), 2-mercaptoethanol (31350-010; Gibco) and 1000U Leukemia Inhibitory Factor (LIF; #ESG1107). Mycoplasma -free tested mES cells were passaged every 2-3 days.

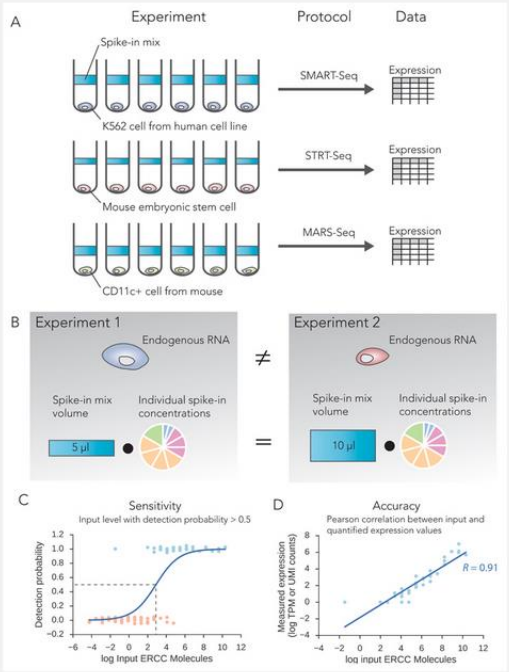
Figure 1: Open in new tab
Overview of protocol comparison strategy.

(A) The data we use are from different protocols and investigate diverse cell types.

(B) Comparing protocols by looking at properties relating to the cells would be distorted by the diverse cell types involved. Since the same standard spike-in mix has been used in all of them, albeit at different concentrations, we can base our assessment on these synthetic RNA molecules.

We define two global technical performance metrics based on these: **(C)** Spike-in sensitivity: the number of spike-in molecules which need to be present in a sample before there is at least 50% chance of detecting them. This is inferred by logistic regression.

(D) Spike-in quantification accuracy: How well preserved the log-linear relation between input spike-ins is when quantifying the measured expression. We formulate this as the Pearson correlation between input molecules and output expression.



$$E_{ij} = \sum_L w_L(f_{ijL} - P_L)$$
$$\mu_i = \sum_j E_{ij}/N$$
$$\sigma_i^2 = \sum_j (E_{ij}^2/N) - \mu_i^2$$

$$K_{Hij} = \frac{\sum_L w_L(f_{ijL} - \mu_L)}{\sigma_i \sigma_j}$$

7. Bond MR, Hanover JA. A little sugar goes a long way: the cell biology of O-GlcNAc. J Cell Biol, 2015; 208: 869-880 https://doi.org/10.1083/jcb.201501101 [Europe PMC Abstract] [Europe PMC Full Text]
8. Chepelianskii AD. Towards physical laws for software architecture. 2010
9. Choi I, Kim R, Lim H-W, Kaestner KH, Won K-J. 5-hydroxymethylcytosine represses the activity of enhancers in embryonic stem cells: a new epigenetic signature for gene regulation. BMC Genomics, 2014; 15: 670 https://doi.org/10.1186/1471-2164-15-670 [Europe PMC Abstract] [Europe PMC Full Text]
10. Doege CA, Inoue K, Yamashita T, Rhee DB, Travis S, Fujita R, Guarnieri P, Bhagat G, Vanti WB, Shih A, Levine RL, et al. Early-stage epigenetic modification during somatic cell reprogramming by Parp1 and Tet2. Nature, 2012; 488: 652-655 https://doi.org/10.1038/nature11333 [Europe PMC Abstract] [Europe PMC Full Text]

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The blood cancer research charity


DIABETES UK
CARE. CONNECT. CAMPAIGN.


FNSNF
Swiss National Science Foundation


breast cancer
now


BBSRC
bioscience for the future


The Academy of
Medical Sciences


wellcome trust
DBT
INDIA ALLIANCE


NC
3Rs
National Centre
for the Replacement
Refinement & Reduction
of Animals in Research


FWF
Der Wissenschaftsfonds.


ACTION ON
HEARING
LOSS


mnda
motor neurone disease
association


CHIEF
SCIENTIST
OFFICE


worldwide
cancer research


Marie
Curie
Care and support
through terminal illness


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The
Dunhill
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W
wellcome


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CHANGE ATTITUDES.
FIND A CURE.
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Alzheimer's
Society
Leading the
fight against
dementia


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