Open access policy and practice: the view from the Wellcome Trust

Open Access Infrastructures: The Future of Scientific Communication

Athens, December 2008

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Overview of presentation

- Brief background to the Trust and the Trust's OA policy
- Summary of the Trust's OA policy and how researchers can comply with this policy
- Meeting the costs of OA
- Responses from publishers
- Thoughts on the author pays model
- Compliance
- What we are up to now

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The Wellcome Trust

- Independent charity; UK's largest non-governmental source of funds for biomedical research
- Spends £650 million p.a. in the UK & internationally on our mission; supporting and promoting research to improve human and animal health
- Seeks to improve understanding of the ways science & medicine have developed, & how research affects people and society today
- OA policy originates in 2001

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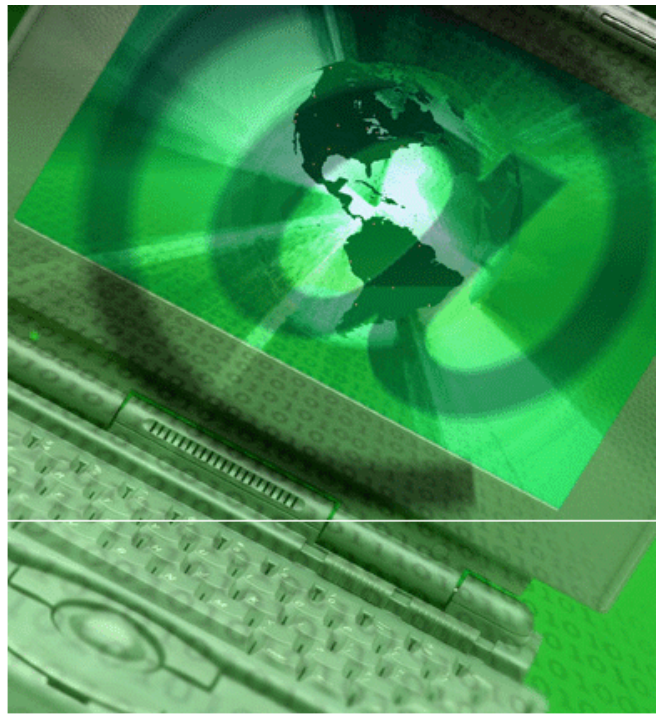
OA at the Wellcome Trust: policy

All research papers – funded in whole or in part by the Wellcome Trust – must be made freely accessible from the PubMed Central and UKPMC repositories as soon as possible, and in any event within six months of the journal publisher's official date of final publication



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How can Wellcome researchers comply?

- Route 1
  - Publish in a open access/hybrid journal – preferred route
- Route 2
  - Publish anywhere - but self-archive a version of the author manuscript (including changes from peer review process) and make that available from PMC/UKPMC within 6 months of publication
- If a publisher offers neither route then:
  - Author can suggest revision to the journal's copyright agreement – boilerplate language provided on our website – and see if the publisher will accept this [note: this is highly problematic]
  - Look for an alternative publisher

Route 1 – OA/hybrid journal

- When publisher offers a compliant ‘author pays’ option we encourage researchers to use this and will meet the cost
- In return for meeting these costs, the publisher must provide the following services:
  - deposit, on behalf of the author, the **final version** of the article in PMC, where it must be made **freely available at the time of publication**
  - license the article such that it can be **freely accessed and re-used**, subject to agreed limits
- Significant number of publishers offer “Wellcome-compliant” author-pays option
  - e.g. Elsevier, Wiley, BMJPG, PLoS, BMC, BMJPG, Springer, ASBMB, OUP, CUP, SfE, Am Psychol. Assoc, Am Physiol. Soc, ACS etc.

Route 1 – OA/hybrid journal: licence

- Articles published under an OA, author-pays model must have a licence that allows the world at large the right to access and re-use published content subject to agreed limits
  - e.g. correct attribution is essential
  - e.g. commercial rights reside with publisher
- Wellcome does not prescribe any particular licence
  - Examples of acceptable licences include:
    - The Creative Commons BY-NC (used by Oxford Open, Springer's Open Choice, Biophysical Society etc.)
    - Elsevier's Sponsored Documents licence: see http://www.elsevier.com/wps/find/authorsview.authors/supplementalterms - used by ACS, APA, Am Physiol Soc, SfE etc

Route 2: Self-archiving option

- Authors self-archive the author's final manuscript
  - freely available from PMC/UKPMC within 6 months
- No fee to the publisher is payable [by us] for this option
- It is our least preferred option, because
  - no immediate access
  - re-use rights are less clear
  - additional burden on researchers
- Publishers which allow author self-archiving include AAAS, AAI, AACR [though note re-use rights] AMA.
  - Note: NPG will deposit author manuscript in UKPMC on authors behalf

Meeting the cost of OA - Wellcome

- Publication costs are legitimate research costs
- Trust estimates that to provide OA to all the research papers it will fund will cost between 1-2% of its annual research budget
  - Over £1m budgeted for in 2008-09
- Two mechanisms for meeting OA costs:

  The top 30 Trust-funded institutions have been awarded block grants to cover OA publishing costs – we will continue to provide block awards for 2008/09

  Where block awards are not available we will continue to supplement individual research grants

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Author pays model: some thoughts (1)

- The Trust believes the publisher adds value to the research process
  - These costs, therefore, have to be met
  - Wellcome only meet OA costs if publisher provides the full suite of services (outlined above)
- The author pays model is one model
  - Makes researchers aware of publication costs
  - Other business models may develop

Author pays model: some thoughts (2)

- Is there risk of "double payment" – subscriptions and author fees?
  - Yes – but the evidence thus far seems to suggest that subscription costs are sensitive to OA payments
    - OUP: The average price increase (2007 to 2008) across all Oxford Journals titles was **6.9%**, whereas the average price increase for *Oxford Open* titles (with open access uptake in 2006) was **1.7%.**

      Eight *Oxford Open* titles saw an absolute reduction in price from 2007 to 2008
    - Elsevier: Press released stated that prices increase less than industry average – author-side payments one reason for this
    - Am Physiological Society. Press release stated that the "nominal increase of 2.5 percent for 2009 subscriptions is due to income from new Author's Choice Program"

Issues still to be resolved

- Improving compliance with the OA mandate
- Improving mechanisms for researchers to meet author-side payments
- Clarifying publishers' OA policy
- Clarifying re-use rights (especially author manuscripts)

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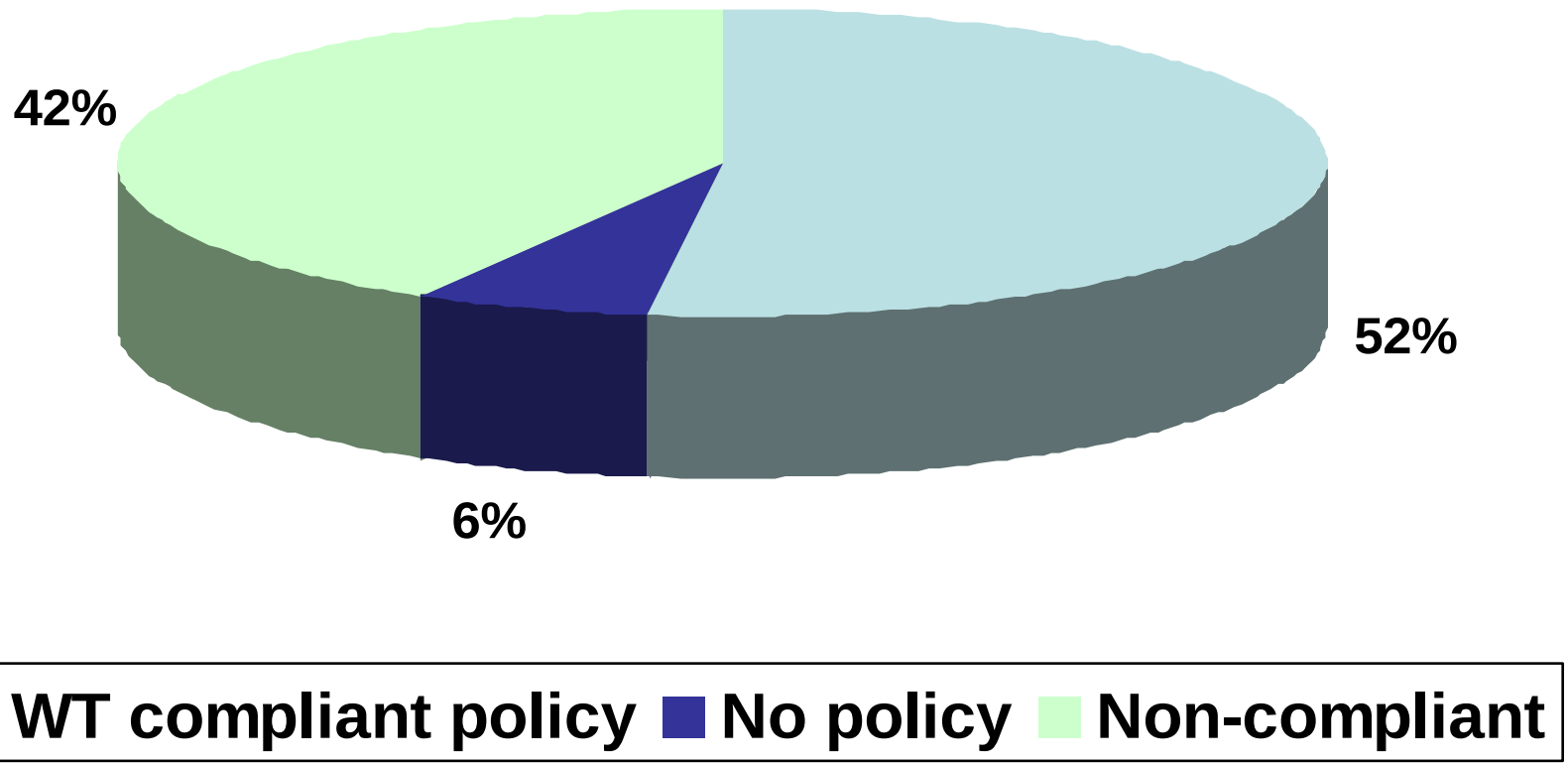
Improving compliance with mandate

- Around 30% of Trust-funded research papers are being added to PMC/UKPMC
  - but…94% of journals used by Wellcome-funded authors have a "Wellcome-compliant" publishing option.
- Problem in part – authors not self-archiving
  - Mitigated by awareness raising, and articulating consequences of non-compliance…
    - Services like the NPG Manuscript deposition service will help
- but ..in part, publishers not having workflows to support "author pays" model.
  - Only between 10%-20% of Elsevier papers had been routed via author-pays model.
    - Elsevier have introduced a new workflow to increase compliance. Other publishers encouraged to follow suit

STM publishers (all) – Wellcome compliant policy



Source = RoMEO database (Jan 2008)

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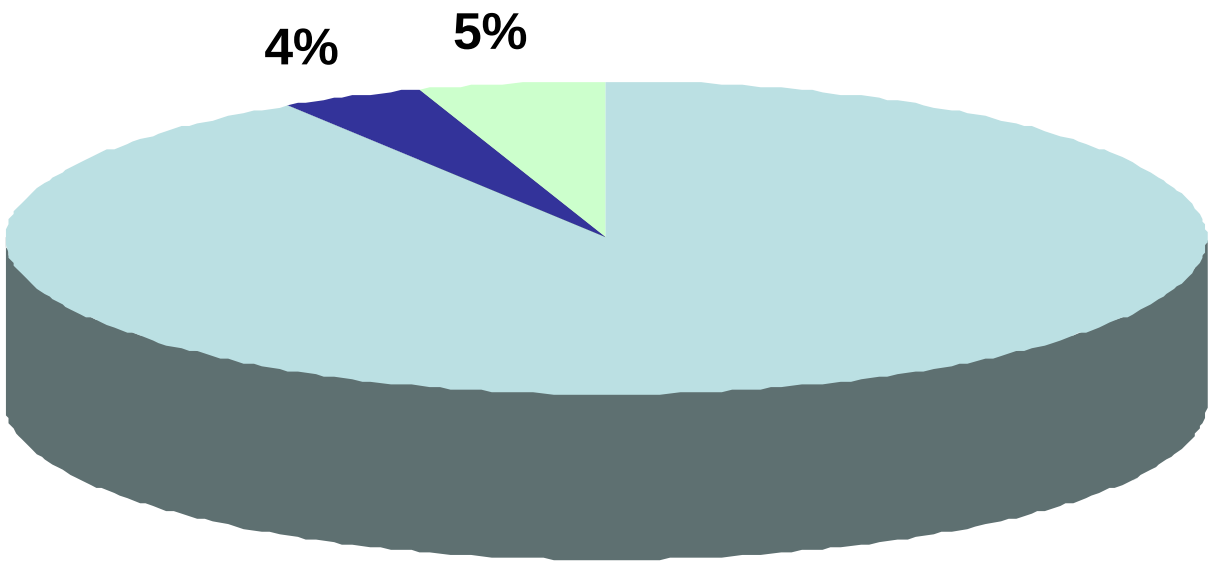
STM publishers used by Wellcome-funded authors



Source = Wellcome analysis based on cohort of papers published in May 2007.

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Elsevier workflow

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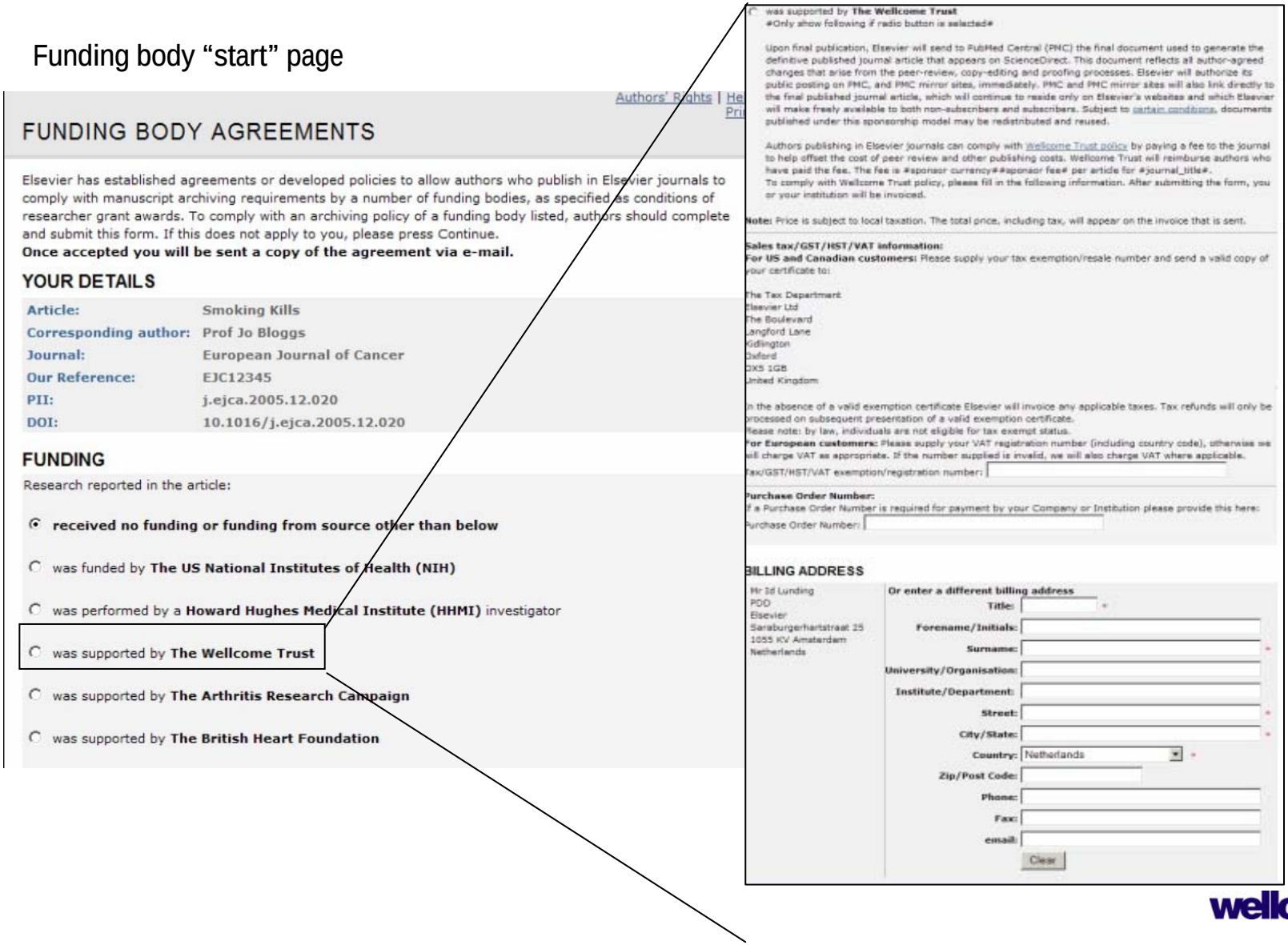
Funding body “start” page



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Journal:	European Journal of Cancer
Our Reference:	EJC12345
PII:	j.ejca.2005.12.020
DOI:	10.1016/j.ejca.2005.12.020

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Improving mechanism to meet OA fees

- Funders
  - Clarify how they will provide financial support for researchers to meet author-side payments
    - Good examples include NIH, Wellcome Trust, and MRC
- Institutions
  - Single, senior person to coordinate management of publication fees
  - Establish dedicated budgets to meet OA costs
    - Institutions can then include publications costs within the indirect costs for grant applications
- Publishers
  - Improve workflows – to make it easier to select author-side option
  - Commit to reviewing subscription costs in light of take-up of the author-pays model

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Clarifying publishers' OA policy

- Large number of publishers still have no OA policy; this remains a time-consuming part of the WT advocacy effort
- Nuances of policy – bewildering to the researcher
  - No fee, no embargo – full OA (e.g. BMJ)
  - Author-side payment – fully WT compliant (e.g. Elsevier, Wiley)
  - Author side payments – NOT WT compliant (e.g. ASH)
  - Self-archiving – must archive author version (e.g. AAAS)
  - Self-archiving – must archive publisher version (e.g. NEJM))

Re-use rights – author manuscripts

- When an author-side payment is made – re-use rights are clear and explicit (at least when Wellcome meets the cost)
  - See examples from OUP, Elsevier, APS
  - Included on the PMC OA subset (e.g. APS article; Elsevier article)
- Author manuscripts, in contrast, typically have no rights information [Exception are the author mss. for AACR journals for UK authors]
  - Can author-manuscripts be text and data-mined?
  - Working with NPG to try to define a suitable licence
- Rights information – supporting non-commercial re-use – should be attached to all author manuscripts

Why are we so interested in re-use?

To improve the research process by ensuring greater integration between the research literature and its underlying data

- e.g. articles linked to gene and chemical compound datasets
- e.g. data mining and the semantic web - enables the extraction of new facts from the literature

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Nucleic Acids Res. 2006; 34(5): e39.
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Development and application of a positive–negative selectable marker system for use in reverse genetics in *Plasmodium*

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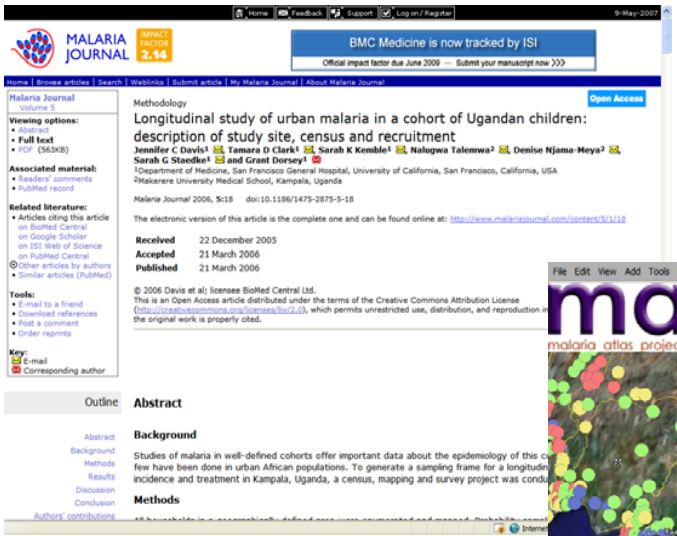
ABSTRACT

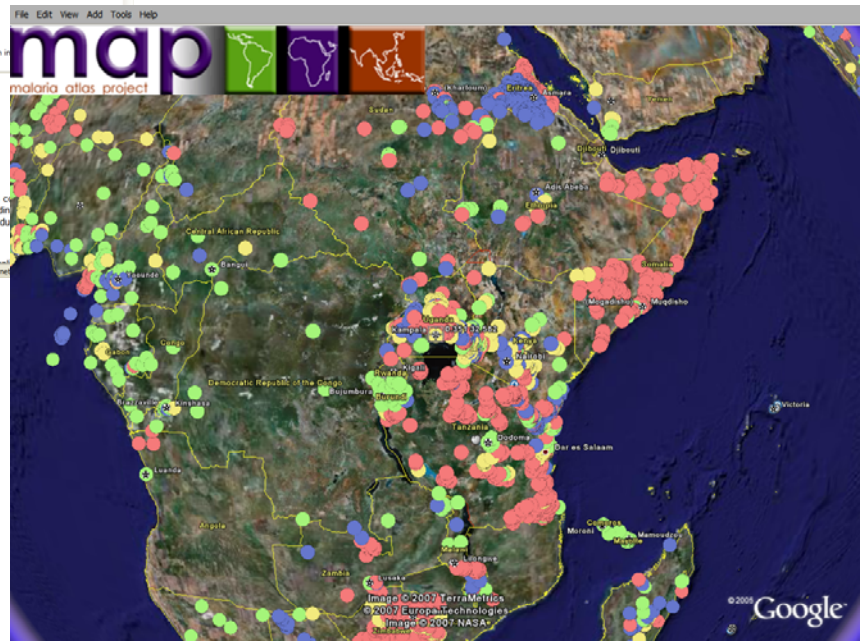
A limitation of transfection of malaria parasites is the availability of only a low number of positive selectable markers for selection of transformed mutants. This is exacerbated for the rodent parasite *Plasmodium berghei* as selection of mutants is performed *in vivo* in laboratory rodents. We here report the development and application of a negative selection system based upon transgenic expression of a bifunctional protein (yFCU) combining yeast cytosine deaminase and uridyl phosphoribosyl transferase (UPRT) activity in *P. berghei* followed by *in*

Text mining: some examples

- Textpresso new text-mining system for scientific literature
  - sites developed for literature relating to C. elegans, yeast, fungi etc
- iHOP – a network of 1500 organisms, 80,000 genes, 12 million sentences
- PubMeth – cancer methylation database
- PepBank – database of peptide sequences
- Most text-mined resources based on PubMed abstracts – not the full-text
  - Research in *Nature Review Genetics*, concluded that the lack of access to the full text of research papers was restricting the effectiveness of text-mining
  - The developers of Textpresso have shown full text access increases recall of biological data types from 45% to 95%
  - Cannot undertake new knowledge discovery with just abstracts

Text-mining and mash-ups





"Mashed-up" with Google earth

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- Service has been up-and running for 17 months
- Funding approved to develop the service to make it unique, attractive, and useful for the UK biomedical research community
  - Exposing UKPMC to text mining solutions with the aim of improving information retrieval and knowledge discovery
    - e.g. protein names, species, chemical entities, protein-protein interactions
  - Delivering additional content to UKPMC
    - e.g. guidelines; protocols, clinical trials etc
  - Providing additional search services and access points
    - e.g. making bibliographic databases (e.g. PubMed) via UKPMC

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Free archive of life sciences journals

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Pubmed id	10995464
Title	**An alternative pathway to** beta -carotene **formation in plant** chromoplasts **discovered by map-based cloning of** beta **and old-gold color mutations in** tomato **.**
Authors	Ronen G , Carmel-Goren L , Zamir D , Hirschberg J
Affiliation	Department of Genetics, The Life Sciences Institute, and Faculty of Agriculture, The Hebrew University of Jerusalem, Jerusalem, 91904 Israel.
Language	English
Journal	Proc. Natl. Acad. Sci. U.S.A. (ISSN: 0027-8424) (ESSN: 1091-6490) [2000 Sep; Volume: 97 (Issue: 20)] Page info: 11102-7
Publication type	Journal Article; Research Support, Non-U.S. Gov't;
Full text article	ABS doi
XML	XML

Abstract

Carotenoid pigments in plants fulfill indispensable functions in photosynthesis . Carotenoids that accumulate as secondary metabolites in chromoplasts provide distinct coloration to flowers and fruits . In this work we investigated the genetic mechanisms that regulate accumulation of carotenoids as secondary metabolites during ripening of tomato fruits . We analyzed two mutations that affect fruit pigmentation in tomato (Lycopersicon esculentum): Beta (B), a single dominant gene that increases beta-carotene in the fruit, and old-gold (og), a recessive mutation that abolishes beta-carotene and increases lycopene . Using a map-based cloning approach we cloned the genes B and og . Molecular analysis revealed that B encodes a novel type of lycopene beta-cyclase , an enzyme that converts lycopene to beta-carotene . The amino acid sequence of B is similar to capsanthin-capsorubin synthase, an enzyme that produces red xanthophylls in fruits of pepper (Capsicum annum) . Our results prove that beta-carotene is synthesized de novo during tomato fruit development by the B lycopene cyclase . In wild-type tomatoes B is expressed at low levels during the breaker stage of ripening , whereas in the Beta mutant its transcription is dramatically increased . Null mutations in the gene B are responsible for the phenotype in og, indicating that og is an allele of B . These results confirm that developmentally regulated transcription is the major mechanism that governs lycopene accumulation in ripening fruits . The cloned B genes can be used in various genetic manipulations toward altering pigmentation and enhancing nutritional value of plant foods .

Proteins

Uniprot id	Q9FV32
Name	Chromoplast-specific lycopene beta-cyclase
Taxonomy	Solanum lycopersicum

Nucl. sequences

EMBL id	AF254793
Description	Lycopersicon esculentum chromoplast-specific lycopene beta-cyclase mRNA, complete

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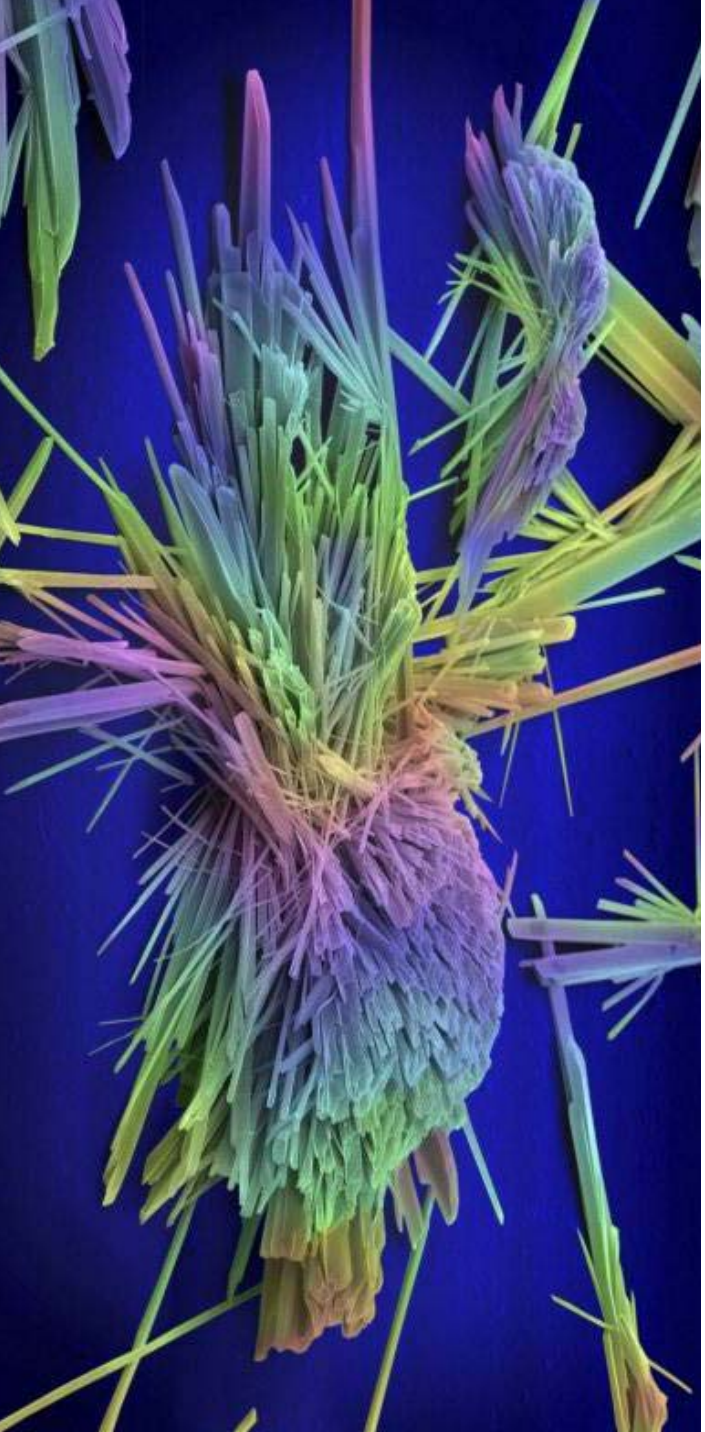
What are we working on now?

- OA policies and infrastructure (e.g. UKPMC) in place
- Need to build on these developments and take action on:
  - Improving compliance
  - Implementing better mechanisms to meet author-side payments
  - Ensuring research papers include licence information which allows others to text and data-mine and uncover new knowledge
- EU PMC?



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