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June 2013 COGR Meeting Thursday Afternoon Presentation - Alan Leshner

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Published Date: 06/10/2013

“Open Access”: A Publisher’s Perspective

COGR

June 6, 2013



“Open access” is in the eyes of the beholder

- **GOLD OPEN ACCESS**

- Freely accessible immediately upon publication

- **GREEN OPEN ACCESS**

- Freely accessible at some point in time
 - When?

- What's accessible?

- Final version of manuscript
- Actual pdf of published version

- Freely accessible where?

- Repository
- Author's/institution's website
- Publisher's site



There are publishers and there are publishers....

- Not all publishers are alike or think the same way
 - For-profit vs not-for-profit
 - Their policies vary greatly
- Core issue is always the “business model”
 - Different publishers (and journals) can have vastly different costs



What about Science?



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- On our site
 - Since 1996
- Not all journals offer this



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- All genome papers are made freely available immediately
- Research articles are made freely available immediately to the worlds poorest countries (WHO) through HINARI, AGORA, OARE
- Also participate in other nonprofits where content is made available such as Patient Inform and SciDevNet



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Sample Referral Link- Free access immediately upon publication

Research interests - Trevor Lithgow - Microsoft Internet Explorer

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Trevor Lithgow

Molecular cell biology

About 10-20% of the proteins expressed in a given eukaryote are targeted to mitochondria. Early work on the pathway for the importation of these proteins into mitochondria relied heavily on the model organism *Saccharomyces cerevisiae*. This yeast provides an excellent experimental system for genetics, cell biology and biochemical assays and is the basis of continued studies into details of cellular pathways for protein transport. A set of molecular machines - referred to as the TOM, SAM and TIM complexes - drives the transport pathways that lead proteins to mitochondria.

Our current research is directed toward identification of the components of these machines in species other than yeast, including animals, plants and unicellular protists, and the search for related proteins in bacteria. Our aim is to understand how the molecular machines evolved, and thereby contribute to a deeper understanding of how they function.

Bioinformatics, genetics and biochemistry have revealed that the outer membranes of mitochondria are assembled by a machine derived from the bacterial progenitor of the organelle: the bacterial Omp85 and the mitochondrial SAM complex are related in function and through common ancestry. In addition, we have recently found several candidate transporters encoded in the genomes of alpha-proteobacteria. We are commencing new projects to study these bacterial transporters.

In collaboration with [Paul Gooley's group](#), we showed that the receptor Tom20, known for some time in fungi and in animals, has a counterpart in plants to which it is not ancestrally related. The animal and plant proteins are functionally and structurally equivalent, but the plant protein is coded in reverse - an extraordinary example of convergent evolution at the molecular level.

Protein import machinery

Legend: Bacteria (black), Eukaryote (TOM and TIM) (grey), Fungi and animals (light blue)

Diagram showing the protein import machinery in mitochondria of yeast. The diagram illustrates the flow of protein substrates from the cytosol through the outer membrane (TOM, SAM), intermembrane space (TIM23, TIM22), and inner membrane (TIM23, TIM22) into the matrix (MPP, PAM). Arrows indicate the directional flow of protein substrates. Shaded grey components are found in fungi and animals, and stars indicate essential yeast proteins.

The protein import machinery in mitochondria of yeast. Arrows indicated the directional flow of protein substrates from their site of synthesis to each of the sub-mitochondrial compartments. Subunits of the protein import machinery have been color-coded according to their ancestry. Shaded grey are components of the import machinery that are only found in fungi and animals, suggesting they might be modules added to the machinery relatively recently. Stars depict the essential yeast proteins. (Dolezal et al 2006 "Evolution of the molecular machines for protein import into mitochondria" *Science* 313, 314-318) [Abstract Full text of Science paper](#)

These same protein transport machines are also found in protists, many of which were previously thought to lack mitochondria. We are currently

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Start | Microsoft PowerPoint - [...] | Research interests - ... | 3:26 PM



And....

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“Open access” and its proponents and opponents have evolved

- Fundamental argument:
 - Public already paid for research so the public should have free access to the results
 - Publishers contribute value so are entitled to reimbursement and profits



“Open access” and its proponents and opponents have evolved

- Open access journals came on the scene
 - Typically “author pays” business model
- NIH requested and then required posting to PubMed Central
 - Only the final version of the manuscript
- Other funders followed
 - Some didn’t have their own repositories
- Typically 6-12 month embargoes



“Open access” and its proponents and opponents have evolved

- RCUK is requiring publishing in “open access” journals and will pay for open-ness
 - Timing varies by field
 - Block grants to universities
 - Very controversial and not fully resolved

“Open access” and its proponents and opponents have evolved

- OSTP has issued orders that US agencies shall move in an “open access direction”
 - 6-12 months
 - Details to be worked out
- Global Research Council
 - Framing an Action Plan to move to, at least, “green open access”



“Open access” and its proponents and opponents have evolved

- And now there’s CHORUS
 - Publishers’ attempts to deal with “who stores the articles”



Open access in some form is inevitable

- Will it be in force before or after a total revamp of scientific communication?