



AMERICAN
SOCIETY FOR
MICROBIOLOGY

Life Sciences Data Resources

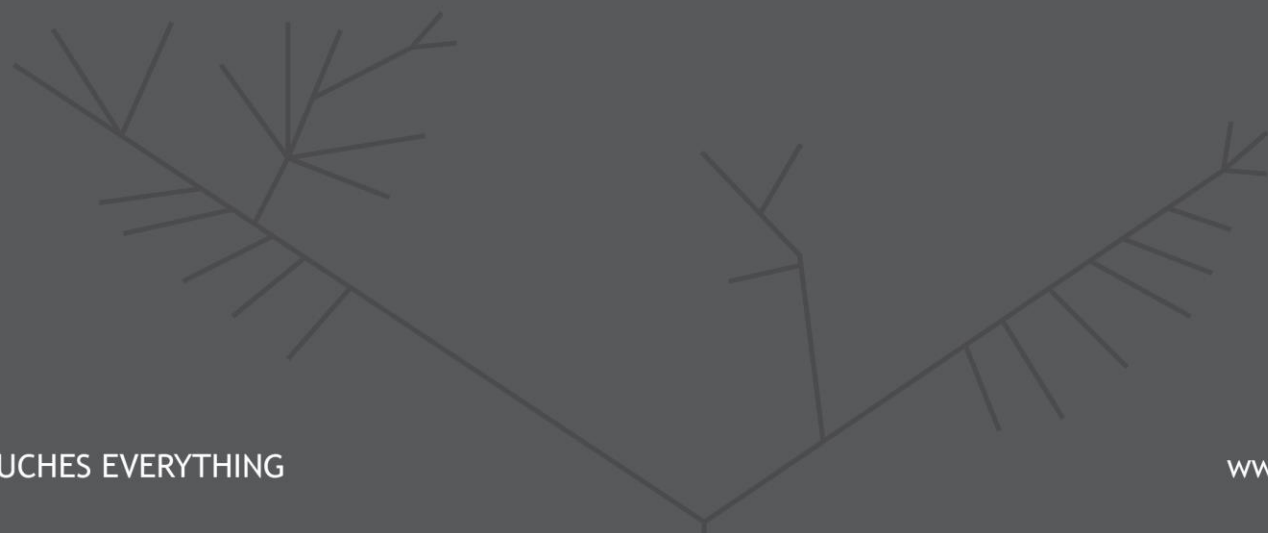
Tim Donohue

Secretary, American Society for Microbiology

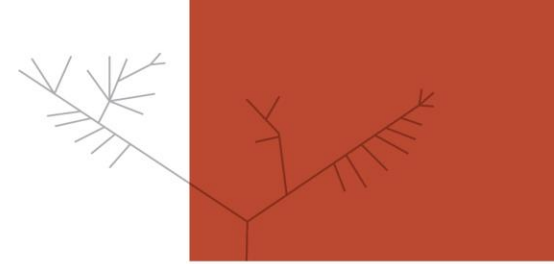
Professor of Bacteriology, University of Wisconsin-Madison

Director, DOE Great Lakes Bioenergy Research Center

18 November 2017



Case Studies: Opportunities & Needs

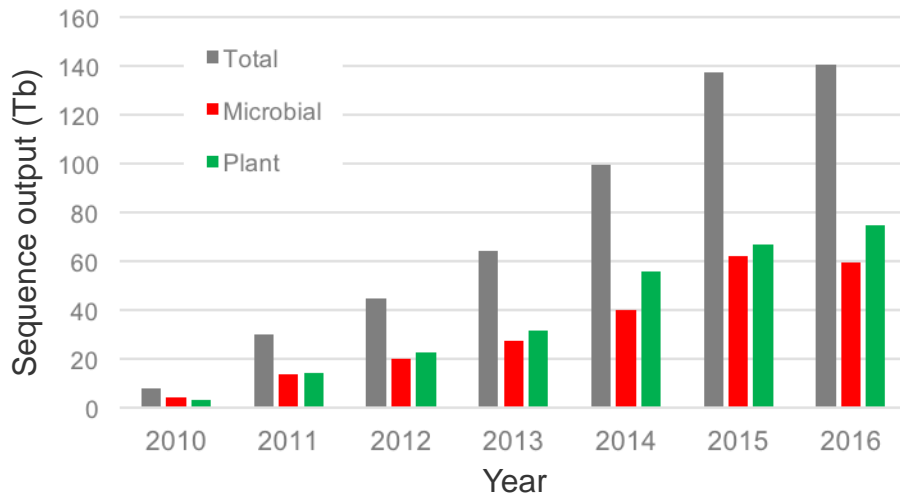
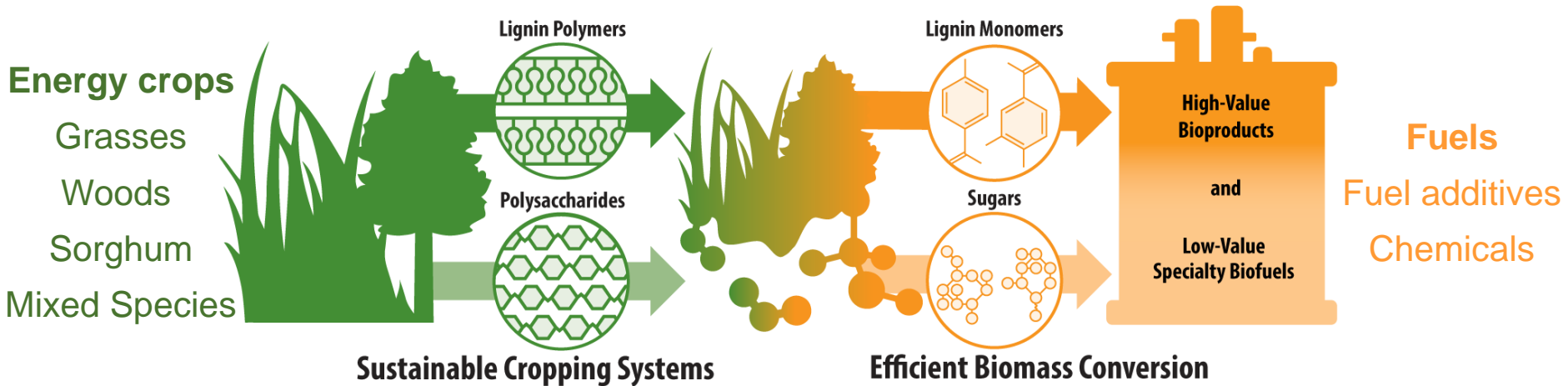


- Ever Growing Data Sets
- New Clients for Multiple Data Sets
- Partner in Data Mobilization



Ever Growing Data Sets

DOE-relevant commodities (petroleum replacements) & environments



2016 Output

137 Tb Total
(40,000 Human Genomes)

75 Tb Plant

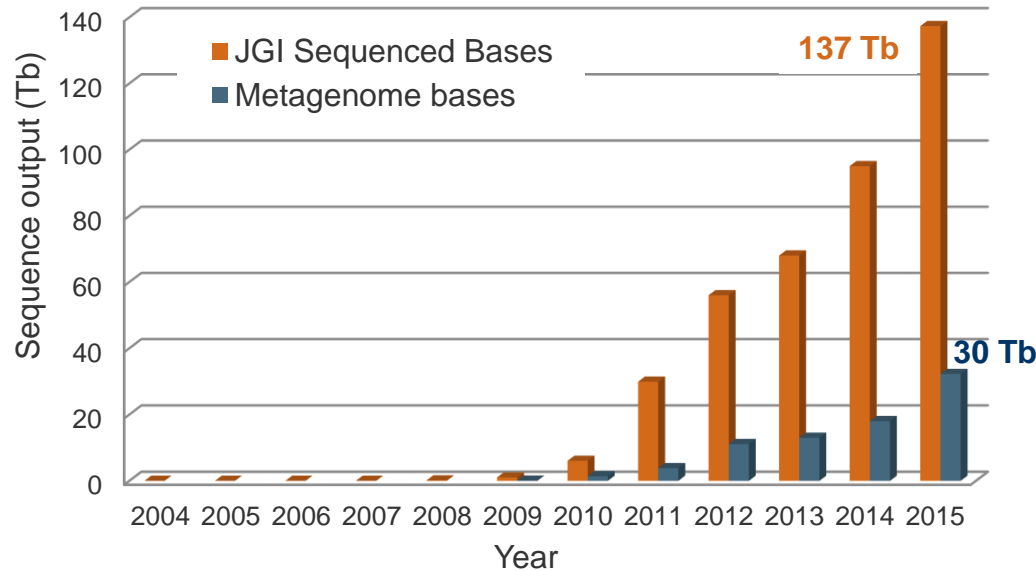
60 Tb Microbial

High genome diversity across crops & microbes

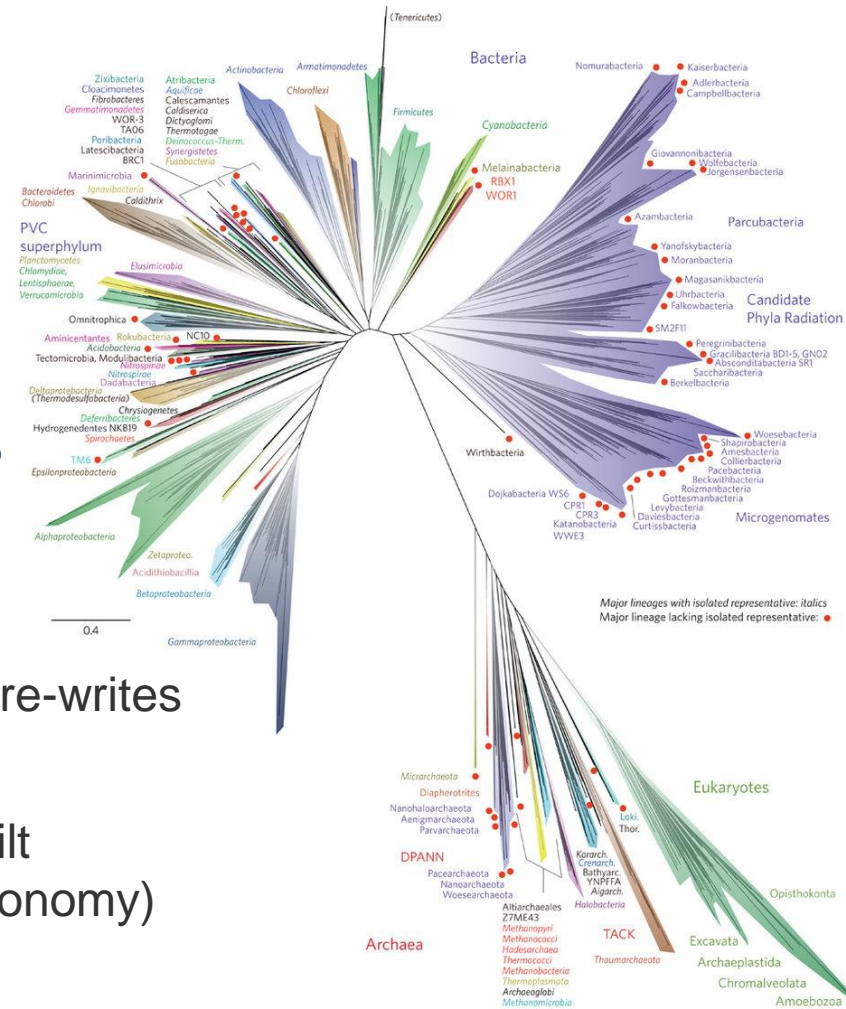


Ever Growing Data Sets

DOE-relevant metagenomes



- Metagenome (community/microbiome) data re-writes view of life (prokaryotic, eukaryotic, viral)
- Spans human, animal, soil, aquatic, air & built environments (health, food, environment, economy)
- Challenges in annotation & function.
- Challenges amplified by microbial gene transfer



doi:10.1038/nmicrobiol.2016.48

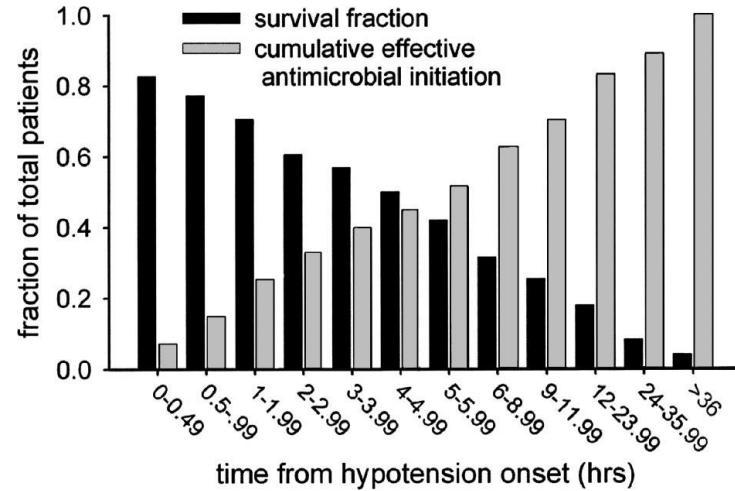
New Clients for Multiple Data Sets

Microbial Disease/Diagnosis

Sepsis

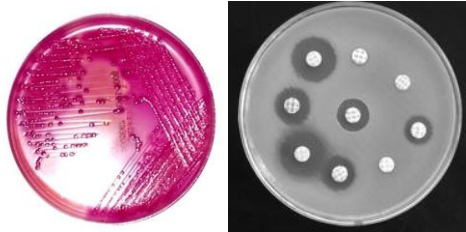
50% mortality, ~20B US in 2011

Early intervention improves survival
(~7.6%/hr)



Sequence (NA) & MS (proteins, others)

Current practice

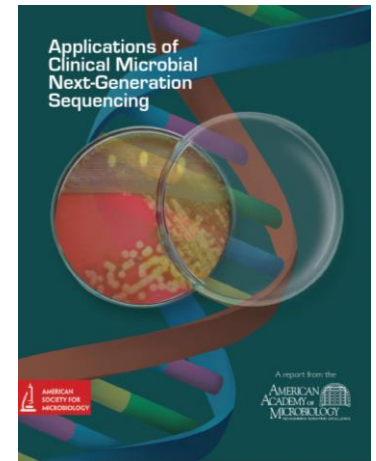


Culture, ID, & drug susceptibility (1-2 days @)

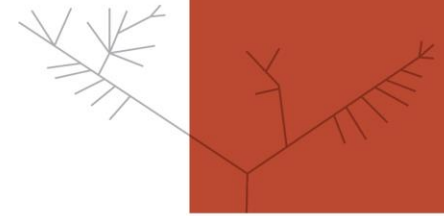


Sample, process & analyze data (min – hrs) save \$\$ & lives

Partner with health, omics industry, philanthropy & databases



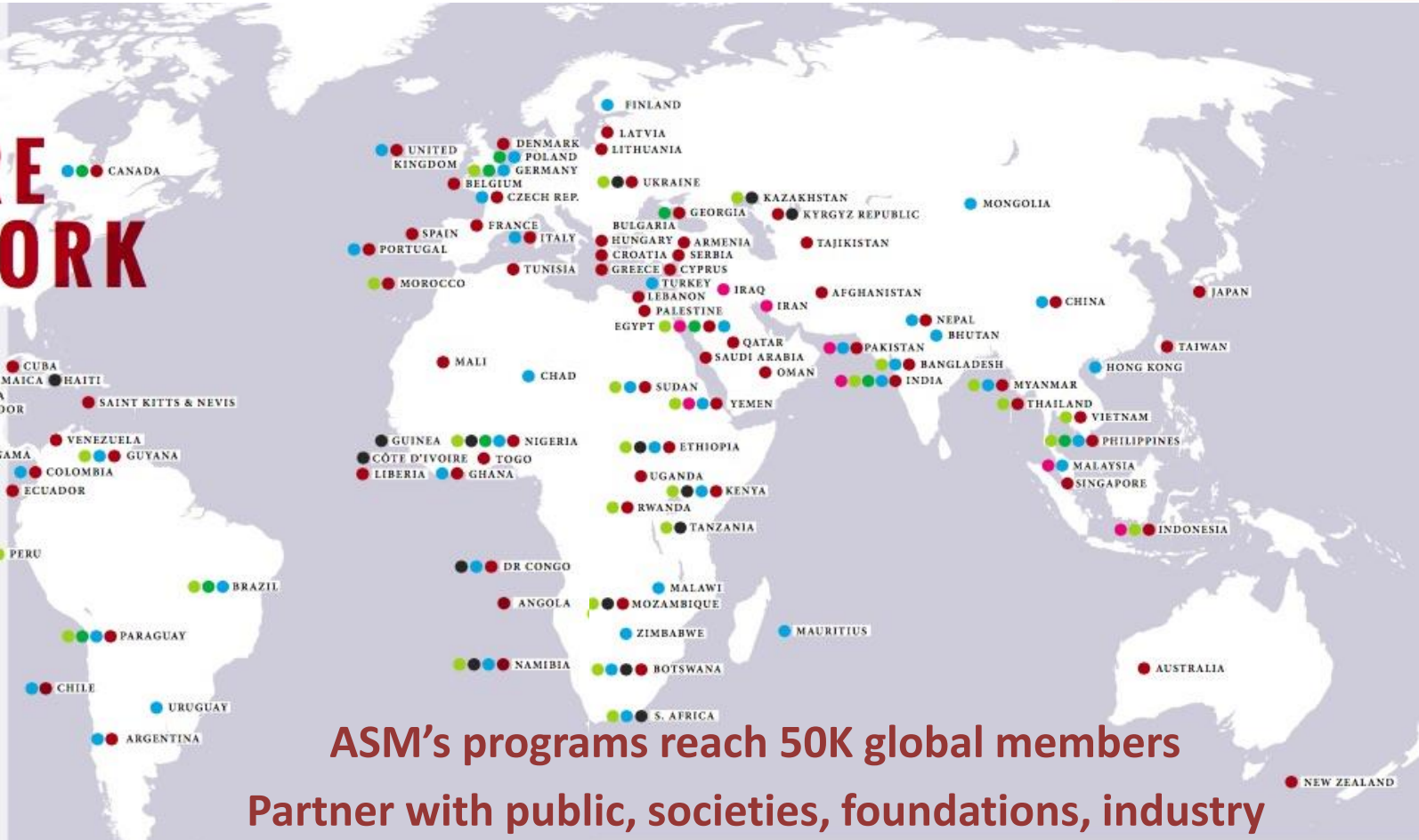
Partner in data mobilization



WHERE WE WORK

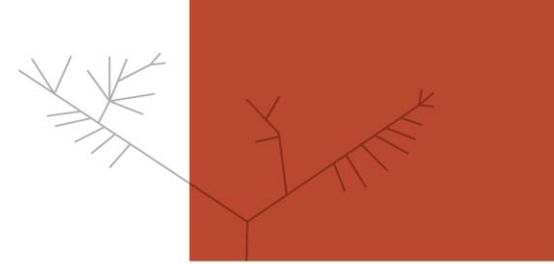
MAP KEY

- COUNTRY AMBASSADOR
- YOUNG AMBASSADOR
- INTERNATIONAL STUDENT CHAPTER
- LABORATORY CAPACITY BUILDING PROGRAM
- GLOBAL SCIENCE ENGAGEMENT PROGRAM
- BIORESOURCE CENTER



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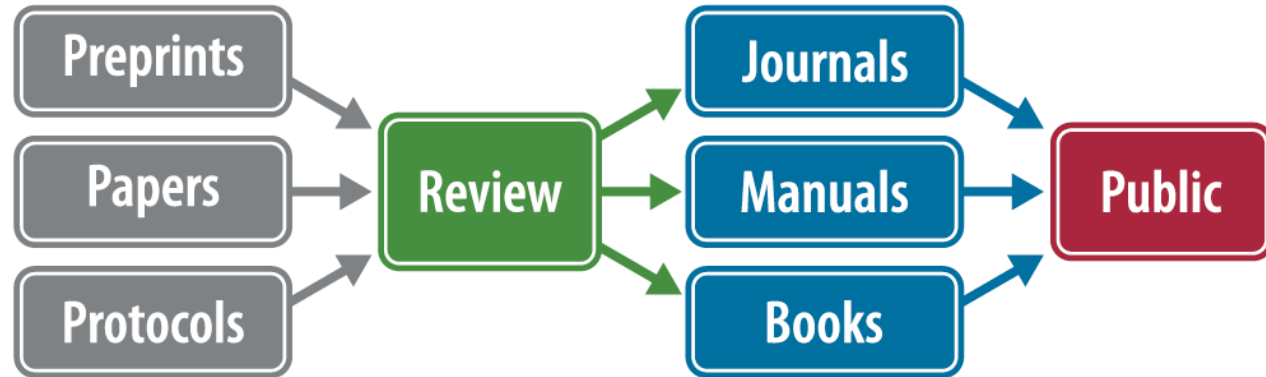
Partner in data mobilization



Select a Journal

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- Applied and Environmental Microbiology®
- Clinical and Vaccine Immunology
- Clinical Microbiology Reviews
- EcoSal Plus
- Eukaryotic Cell®
- Genome Announcements™
- Infection and Immunity®
- Journal of Bacteriology®
- Journal of Clinical Microbiology®
- Journal of Microbiology & Biology Education
- Journal of Virology®
- mBio®
- Microbiology and Molecular Biology Reviews
- Microbiology Spectrum
- Molecular and Cellular Biology
- **NEW:** mSphere®
- **NEW:** mSystems®

NextGen Content



Link data, models, and analytics



Microbe, Second Edition



Molecular Microbiology, Third Edition



Diagnostic Microbiology of the Immunocompromised Host, Second Edition

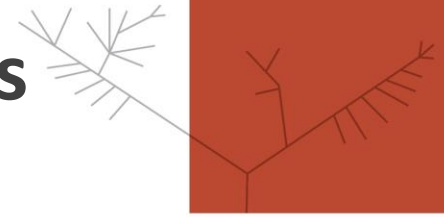


Clinical Microbiology Procedures Handbook, Fourth Edition



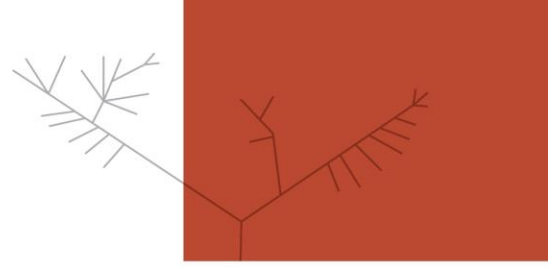
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Case Studies: Opportunities & Needs



- Ever Growing Data Sets (methods, tools, access)
- New Clients for Multiple Data Sets (public/private)
- Partner in Data Mobilization (seamless, secure & vetted)





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