

Photo from: Dr. Jed Fuhrman

SAGs as references for meta-omics

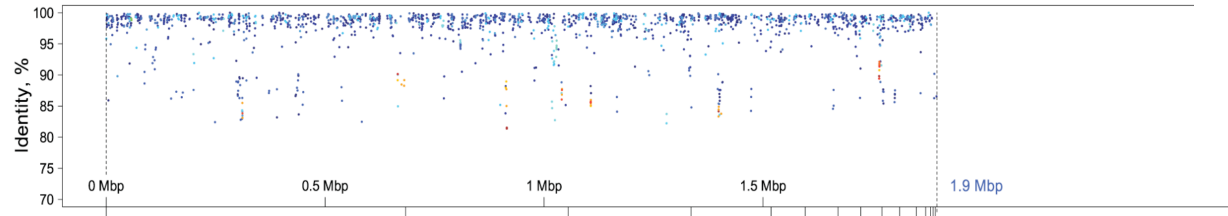
Metagenome fragment recruitment

The MOMICS logo features the word 'MOMICS' in a large, stylized font. The letters 'M' and 'I' are rendered in a dark red, glossy, 3D-like style, while the letters 'O', 'M', 'I', 'C', and 'S' are in a solid black, cursive-like font. The background is a light gray with a subtle gradient.

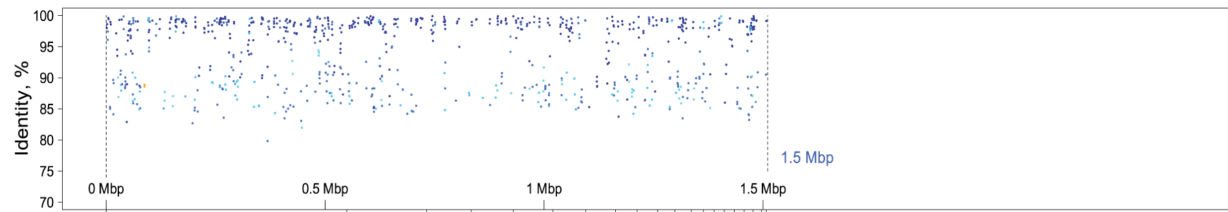
**‘Recruiting’ reads from
a metagenome**

Metagenome recruitment on first two SAGs sequenced

Flavobacteria bacterium MS024-2A



Flavobacteria bacterium MS024-3C

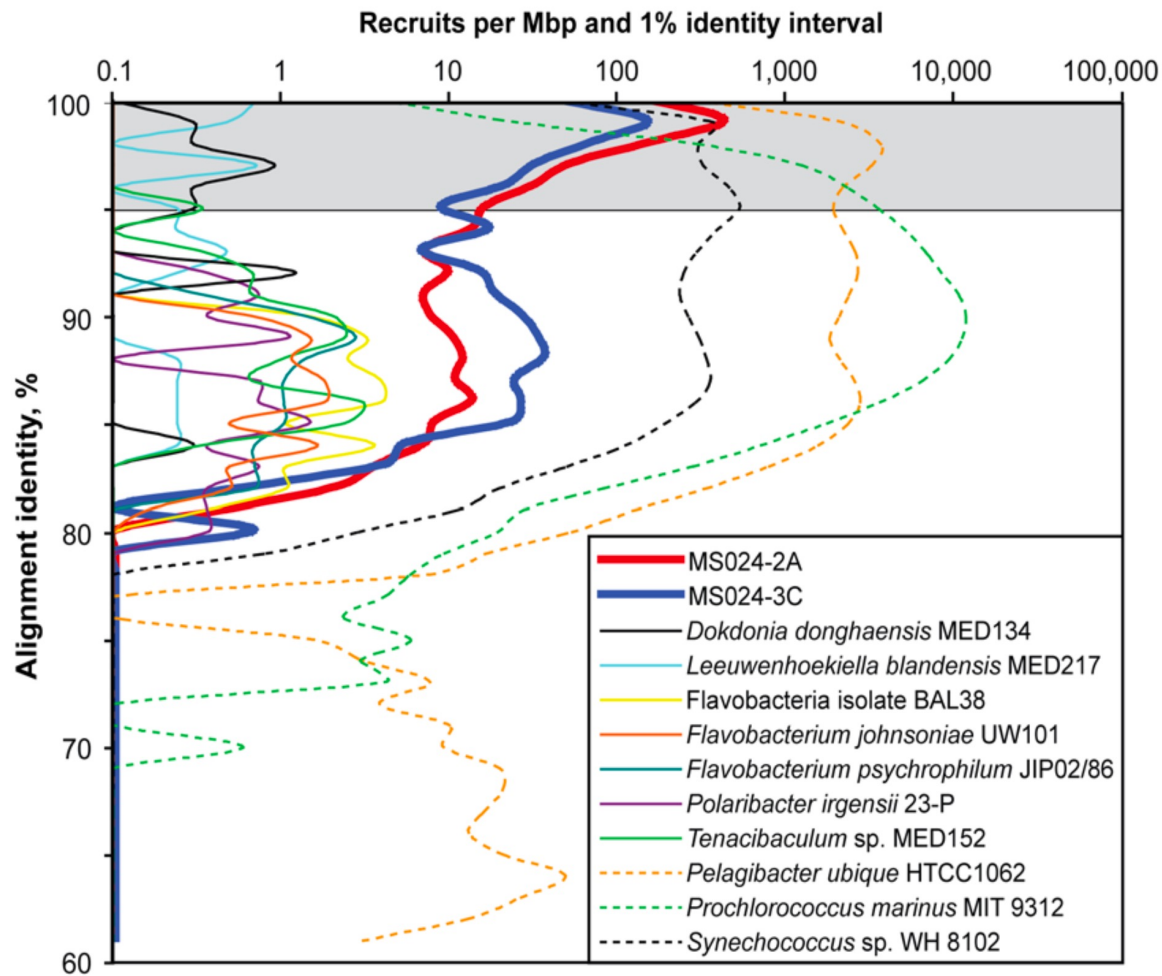


Sample Metadata Color Coding

45°07'N, 64°57'W; GOS-06; Bay of Fundy, Nova Scotia	32°10'N, 64°30'W; GOS-00; Sargasso Stations 3, 11 & 13	01°23'N, 91°49'W; GOS-32; Wolf Island
44°41'N, 63°38'W; GOS-05; Bedford Basin, Nova Scotia	31°11'N, 64°19'W; GOS-01; Hydrostation S	01°16'N, 90°18'W; GOS-26; 134 miles NE of Galapagos
44°08'N, 63°39'W; GOS-04; Off Halifax, Nova Scotia	24°29'N, 83°04'W; GOS-15; Off Key West, FL	00°16'N, 91°38'W; GOS-31; Warm seep, Roca Redonda
43°38'N, 66°51'W; GOS-07; Northern Gulf of Maine	24°10'N, 84°21'W; GOS-16; Gulf of Mexico	00°01'S, 91°12'W; GOS-30; Cabo Marshall, Isabella Island
42°51'N, 66°13'W; GOS-03; Browns Bank, Gulf of Maine	20°31'N, 85°25'W; GOS-17; Yucatan Channel	00°12'S, 90°50'W; GOS-33; North James Bay, Santiago Island
42°30'N, 67°14'W; GOS-02; Gulf of Maine	18°02'N, 83°47'W; GOS-18; Rosario Bank	00°18'S, 91°39'W; GOS-36; Upwelling, Fernandina Island
41°29'N, 71°21'W; GOS-08; Newport Harbor, RI	10°43'N, 80°15'W; GOS-19; Northeast of Colon	00°23'S, 90°17'W; GOS-37; North Seamore Island
41°05'N, 71°36'W; GOS-09; Block Island, NY	09°10'N, 79°50'W; GOS-20; Lake Gatun	00°36'S, 91°04'W; GOS-34; Mangrove on Isabella Island
39°25'N, 75°30'W; GOS-11; Delaware Bay, NJ	08°08'N, 79°41'W; GOS-21; Gulf of Panama	01°13'S, 90°19'W; GOS-28; Coastal Flor-ana
38°57'N, 76°25'W; GOS-12; Chesapeake Bay, MD	06°30'N, 82°54'W; GOS-22; 250 miles from Panama City	01°13'S, 90°25'W; GOS-35; Devil's Crown, Floreana Island
38°56'N, 74°41'W; GOS-10; Cape May, NJ	05°38'N, 86°34'W; GOS-23; 30 miles from Cocos Island	01°14'S, 90°26'W; GOS-27; Punta Cormorant, hypersaline lagoon, Floreana Island
36°00'N, 75°24'W; GOS-13; Off Nags Head, NC	05°33'N, 87°05'W; GOS-25; Dirty Rock, Island	01°58'S, 95°01'W; GOS-29; Equatorial Pacific, TAO buoy
32°30'N, 79°16'W; GOS-14; South of Charleston, SC		

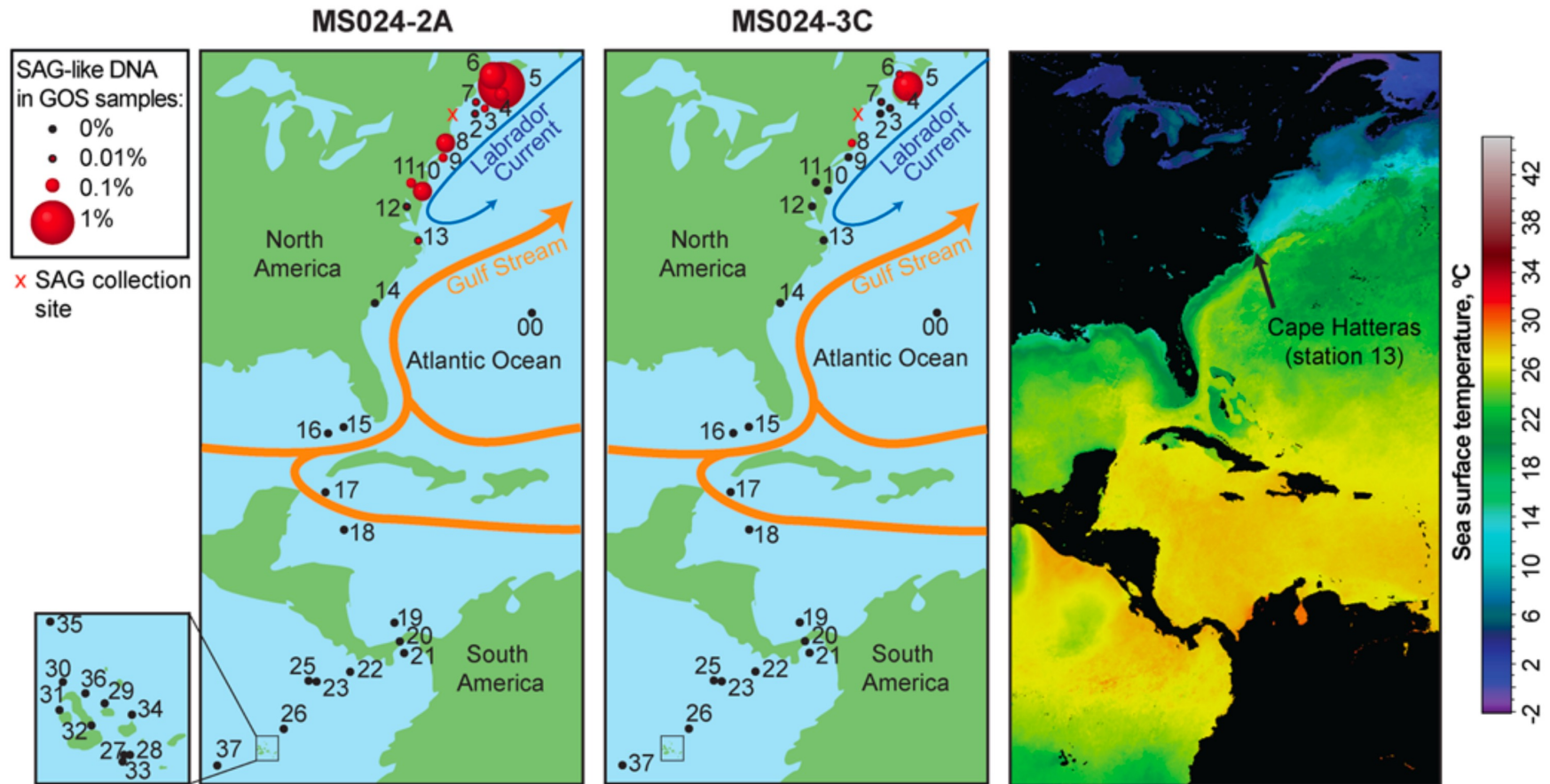
From: Woyke et al. 2009

Metagenome recruitment on first two SAGs sequenced

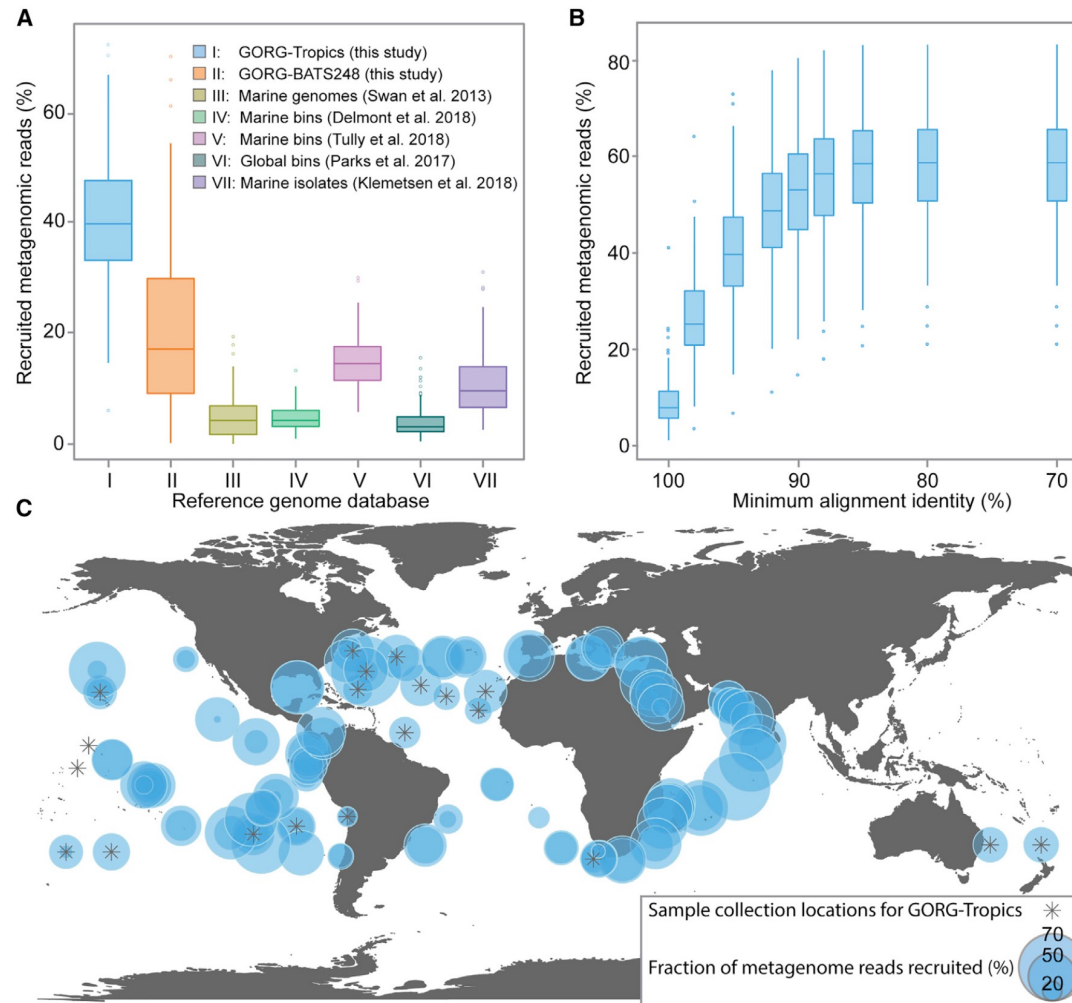


From: Woyke et al. 2009

Metagenome recruitment on first two SAGs sequenced



Recruitment on GORG-Tropics



From: Pachiadaki et al. 2019

Read classifiers

Wood and Salzberg *Genome Biology* 2014, **15**:R46
<http://genomebiology.com/2014/15/3/R46>



METHOD

Open Access

Kraken: ultrafast metagenomic sequence classification using exact alignments

ARTICLE

Derrick E Wood^{1,2*} and Steven

Received 26 Nov 2015 | Accepted 7 Mar 2016 | Published 13 Apr 2016

DOI: 10.1038/ncomms11257

OPEN

Fast and sensitive taxonomic classification for metagenomics with Kaiju

Genome Biology

Peter Menzel¹, Kim Lee Ng¹ & Anders Krogh¹

SHORT REPORT

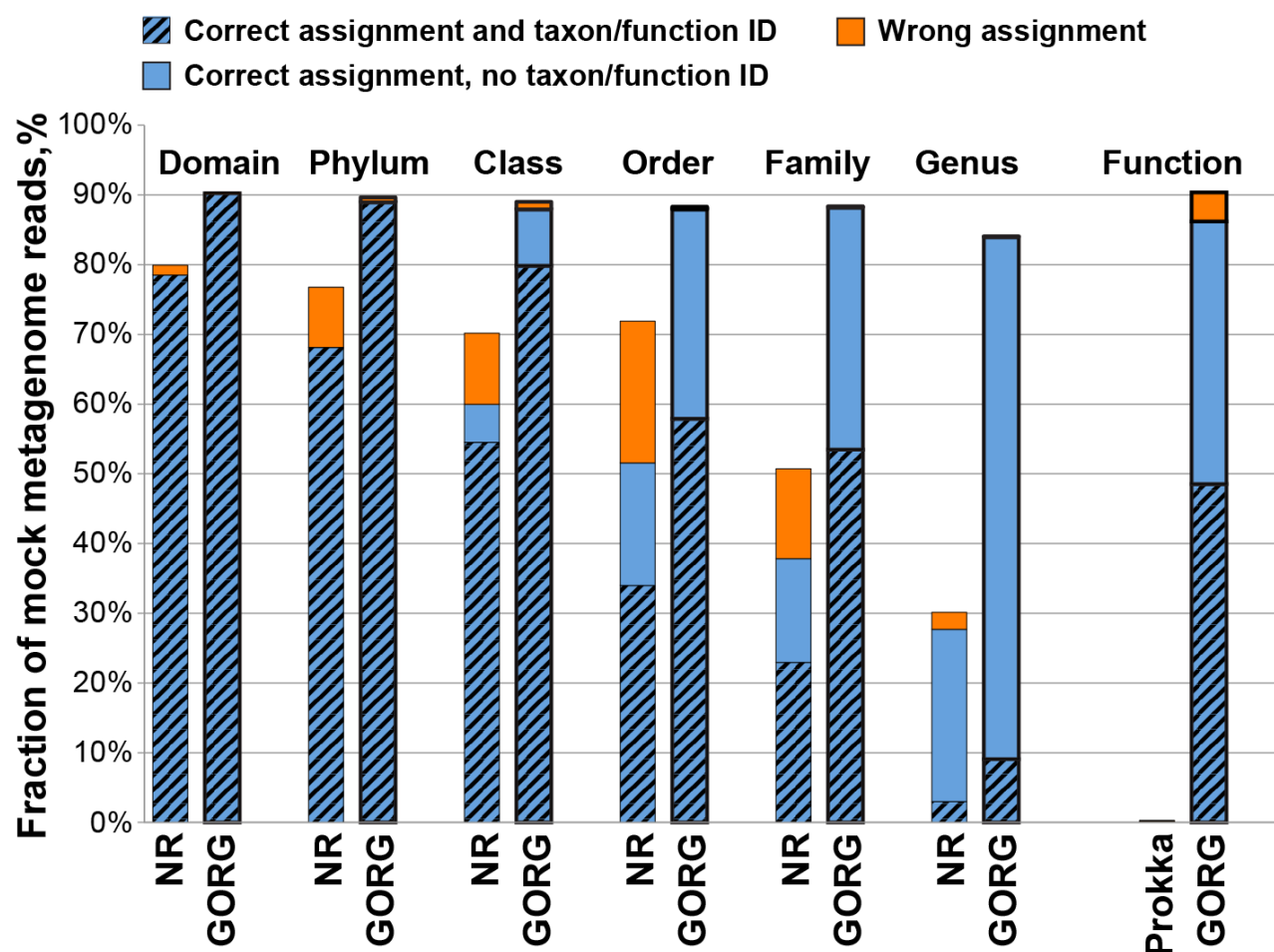
Open Access

Improved metagenomic analysis with Kraken 2

Derrick E. Wood^{1,2}, Jennifer Lu^{2,3} and Ben Langmead^{1,2*} 



Accuracy of Kaiju, default versus GORG-Tropics databases



Use of GORG Classifier to quantify per-genus gene expression

