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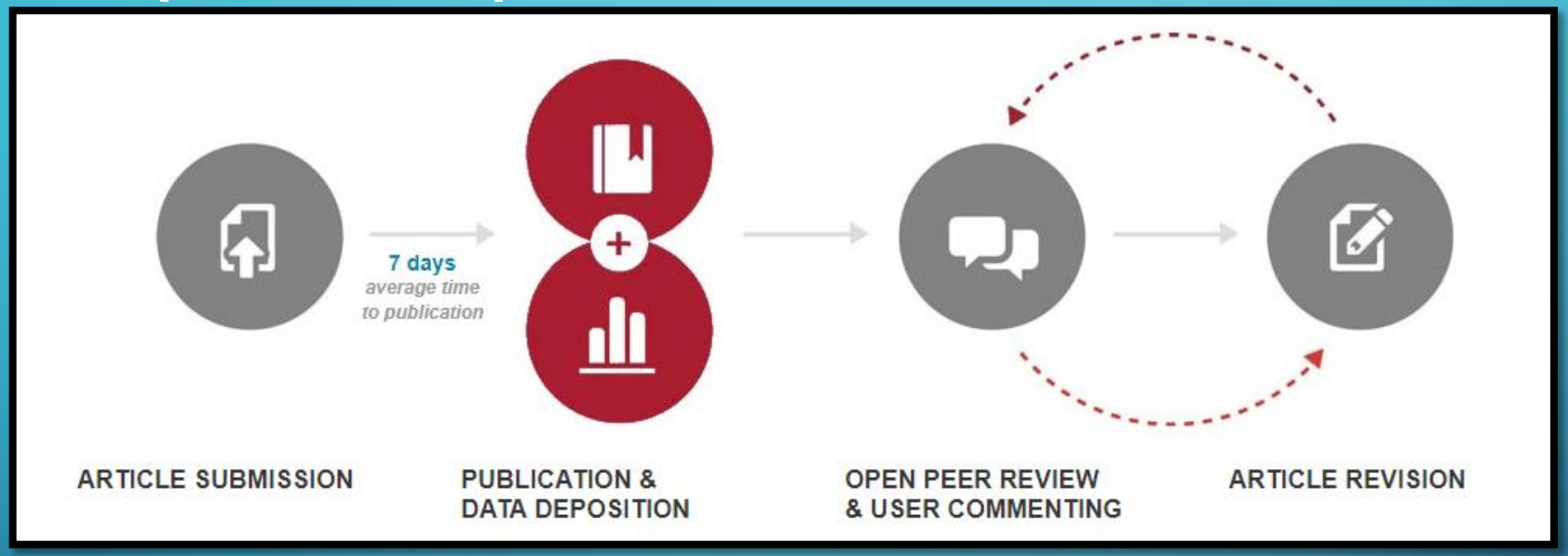

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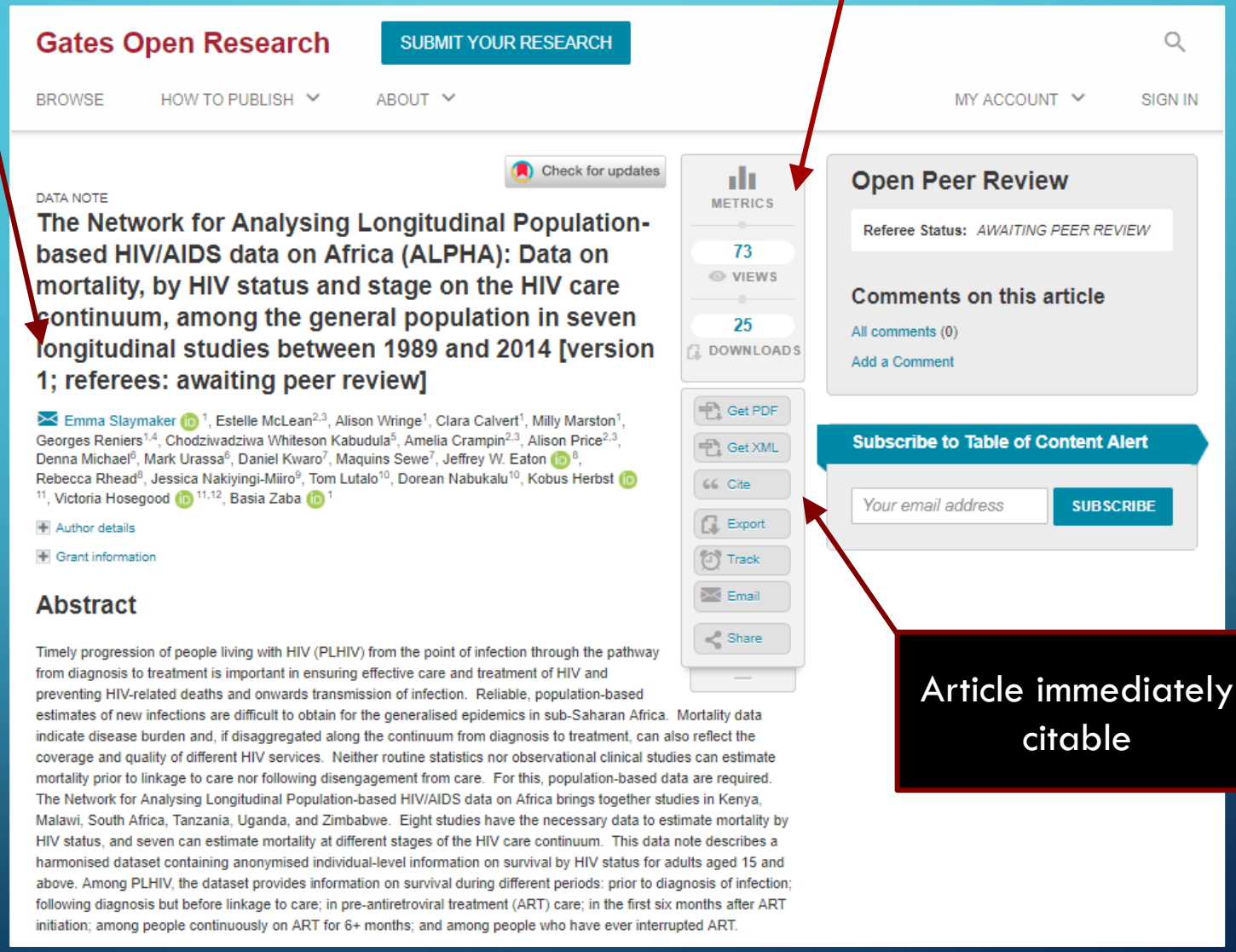

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RESEARCH ARTICLE

REVISED **Scaled deployment of *Wolbachia* to protect the community from dengue and other *Aedes* transmitted arboviruses [version 2; peer review: 2 approved]**

Previously titled: Scaled deployment of *Wolbachia* to protect the community from *Aedes* transmitted arboviruses

Scott L. O'Neill [1], Peter A. Ryan[1], Andrew P. Turley[1], Geoff Wilson[1], Kate Retzki[1], Inaki Iturbe-Ormaetxe[1], Yi Dong[1], Nichola Kenny[1], Christopher J. Paton[2], Scott A. Ritchie[2], Jack Brown-Kenyon[1], Darren Stanford[1], Natalie Wittmeier[1], Katherine L. Anders [1], Cameron P. Simmons[1]

Author details

Abstract

Background: A number of new technologies are under development for the control of mosquito transmitted viruses, such as dengue, chikungunya and Zika that all require the release of modified mosquitoes into the environment. None of these technologies has been able to demonstrate evidence that they can be implemented at a scale beyond small pilots. Here we report the first successful citywide scaled deployment of *Wolbachia* in the northern Australian city of Townsville.

Methods: The *w*Mel strain of *Wolbachia* was backcrossed into a local *Aedes aegypti* genotype and mass reared mosquitoes were deployed as eggs using mosquito release containers (MRCs). In initial stages these releases were undertaken by program staff but in later stages this was replaced by direct community release including the development of a school program that saw children undertake releases. Mosquito monitoring was undertaken with Biogents Sentinel (BGS) traps and individual mosquitoes were screened for the presence of *Wolbachia* with a Taqman qPCR or LAMP diagnostic assay. Dengue case notifications from Queensland Health Communicable Disease Branch were used to track dengue cases in the city before and after release.

Results: *Wolbachia* was successfully established into local *Ae. aegypti* mosquitoes across 66 km^2 in four stages over 28 months with full community support. A feature of the program was the development of a scaled approach to community engagement. *Wolbachia* frequencies have remained stable since deployment and to date no local dengue transmission has been confirmed in any area of Townsville after *Wolbachia* has established, despite local transmission events every year for

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1. **Gregor J. Devine**, QIMR Berghofer Medical Research Institute, Australia
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To Fight Mosquito-Borne Dengue, Scientists Are Re Modified Insects

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Science NOW

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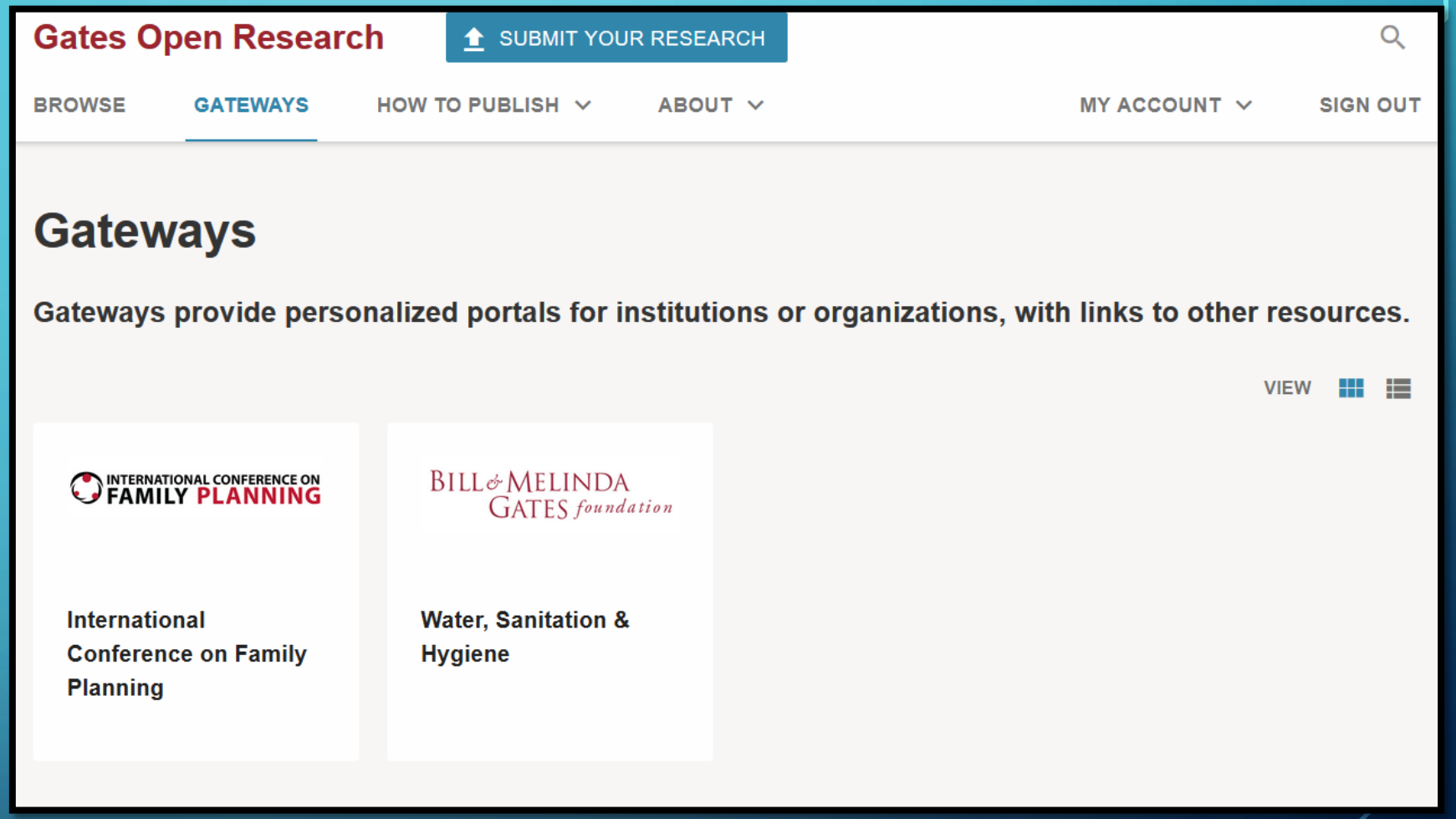

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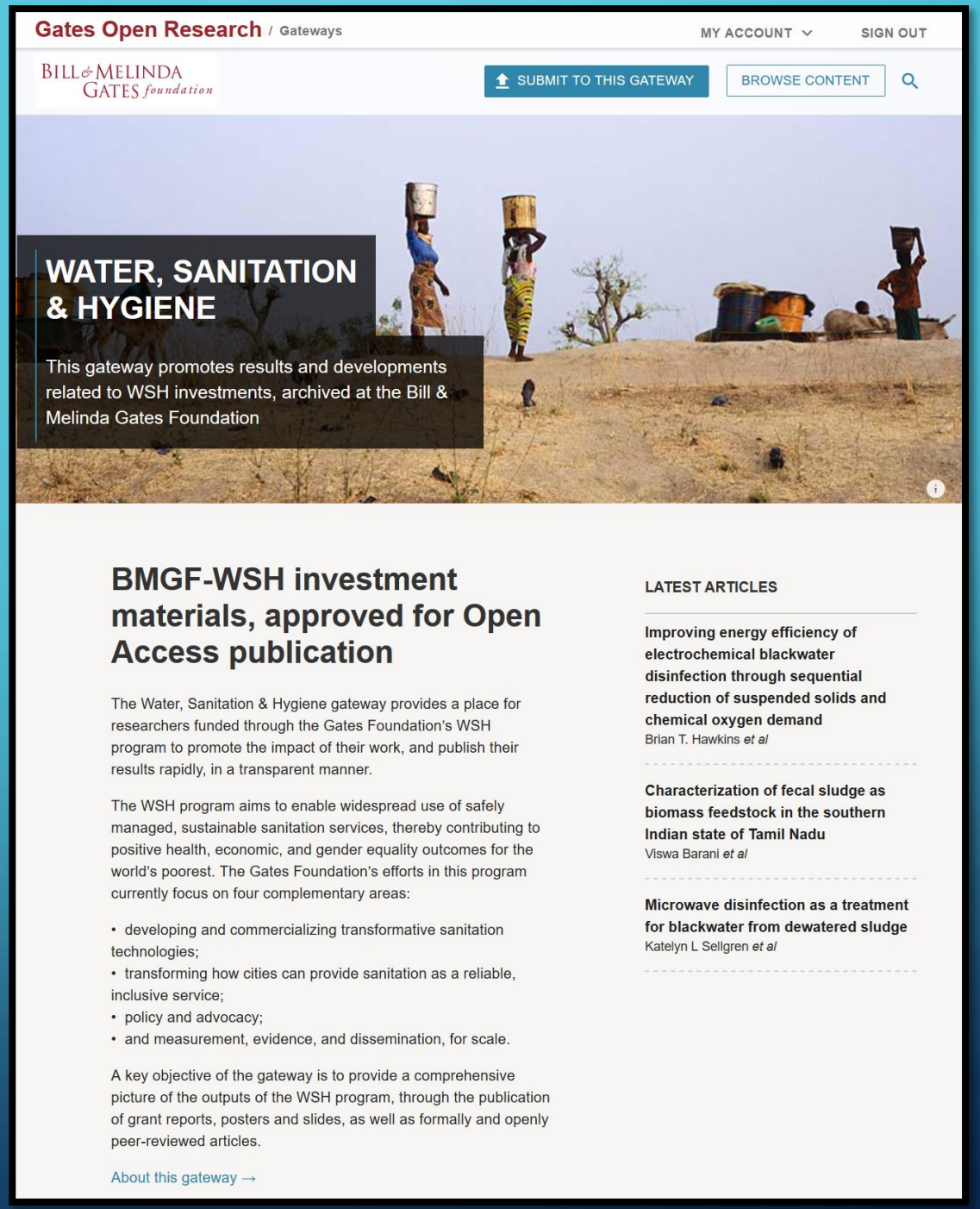

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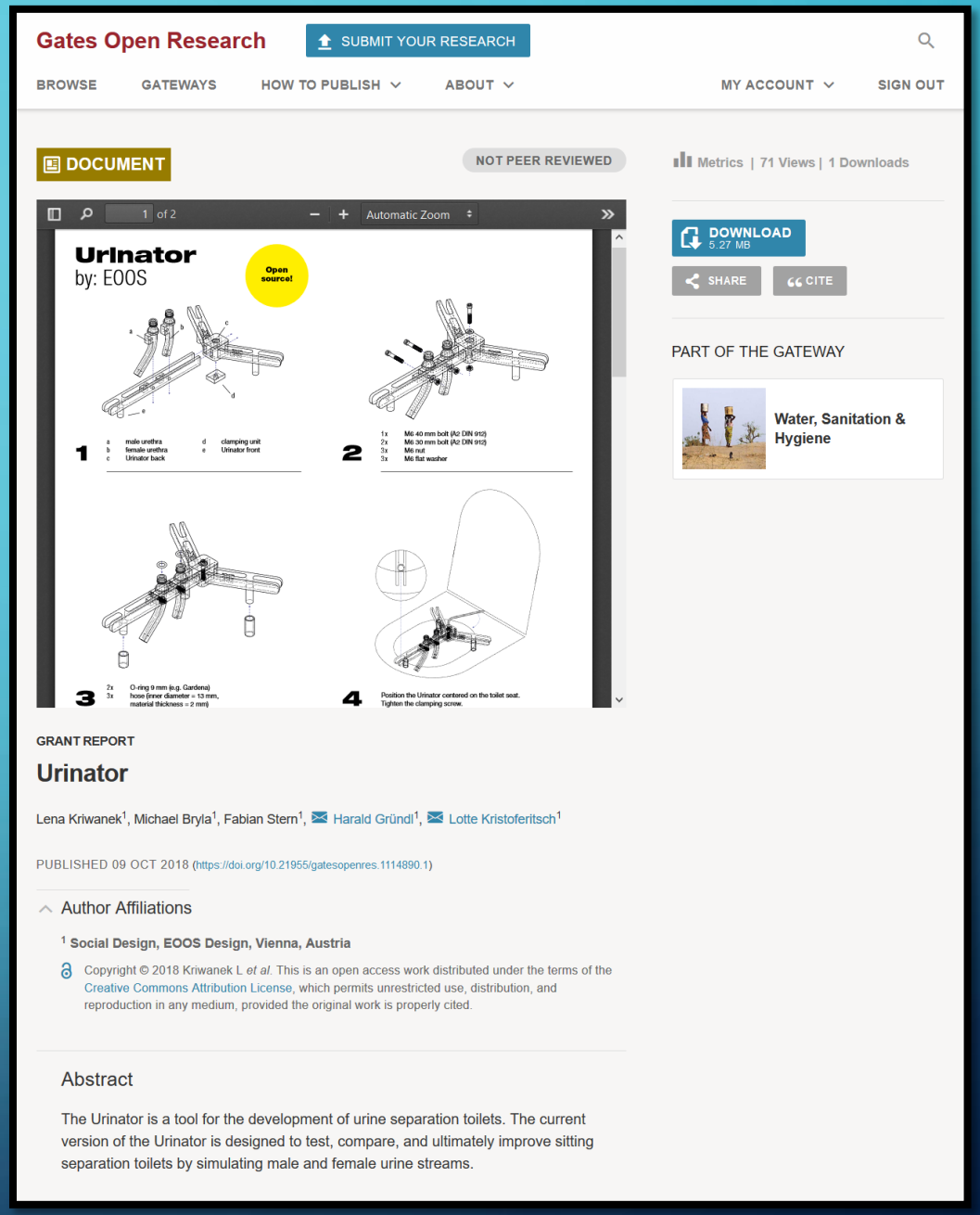

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