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# IDENTIFICATION OF IRON-MANGANESE OXIDISING BACTERIA FROM URBAN WETLAND WATER IN KIGALI, RWANDA*

**Keywords:** bacteria**,** identification, iron-manganese oxidation, wastewater.

Accessibility to clean water supplies is one the most pressing global challenges in the face of the ever-growing world's population. Billions of people still lack safe water and sanitation; relying on surface water, groundwater, and rainwater as main sources for public consumption [1]. Poor quality water and wastewater from various sources such as pharmaceutical, petroleum refinery, pet food and cooking harbor not only pathogenic microorganisms, but also those with beneficial uses [2]. Some microorganisms produce iron (Fe)- or manganese (Mn)-oxides that effectively remove pharmaceuticals and other recalcitrant compounds from wastewater [3]. Moreover, Fe and Mn themselves constitute the most common form of contamination in surface and groundwater, and they should be removed as well [4]. Fe- and Mn oxidizing microorganisms are conventionally isolated from the ecosystem where Fe- and Mn-oxidation process is naturally observed [5].

Here, we isolated and identified Fe and Mn oxidizing bacteria from surface wastewater. Reddish-brown and black colored water samples were collected, and bacteria were isolated on selective media. Genomic DNA was extracted from the bacterial pure and used as a template for the amplification of the 16 S rDNA. PCR products PCR products were purified and directly sequenced using Sanger sequencing.

Results showed that isolated bacterial colonies were similar to two distinct species. One group clustered with *Ralstonia pickettii,* while the other clustered with

*Pseudomonas sp*. with high homology to *Pseudomonas selenii praecipitans*. These results suggested that isolated bacterial strain could have potential to be developed into inoculums for improved Fe and Mn simultaneous removal in water treatment systems.

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## METABOLIC ENGINEERING OF SECONDARY METABOLITE PATHWAY IN HIGHER PLANTS AND MICRO-ALGAE FOR THE PRODUCTION OF DESIRABLE METABOLITE- PROFILES OF COMMERCIAL VALUE


**Keywords:** RNAi technology, *N*-methyltransferase, *cyanobacterium* – *Spirulina*, astaxanthin.


Secondary metabolites are of great commercial importance for food, medicines, health care products, and as chemicals of multiple utilities. The advancement of the understanding of the pathway of secondary metabolites and the aspects of functional genomics of specific steps have enhanced our ability to manipulate the production of metabolites in the desired manner. It also provides opportunities to produce novel metabolites through gene regulation and synthetic biology approaches to produce new and novel compounds of commercial importance. Our studies on the pathway engineering of coffee plants though antisense gene or RNAi technology have led to the