

Class

*Actinobacteria*

Subclass

*Actinobacteridae*

Order

*Actinomycetales*

Suborder

*Frankineae*

Family

*Microsphaeraceae*

Genus

*Microsphaera*

## **The Genus *Microsphaera***

To the genus *Microsphaera* belongs one species *Microsphaera multipartita*.

Gram positive, non-acid-fast, aerobic small coccoid microorganism. Cells are spherical (diameter, 0,8 to 3,0 µm) and occur single or in some cases in clusters. A cell wall structure occurs in the middle of each cell at the early logarithmic growth phase, and a number of septa are present at the late logarithmic phase. Nonmotile. Spores are not formed.

Chemoorganotroph, having a strictly respiratory type of metabolism with oxygen as the terminal electron acceptor. The growth rate is low. Visible colonies appear on agar media after 10 days of incubation. Catalase positive. Oxidase negative.

The cell wall peptidoglycan contains meso diaminopimelic acid. The major quinone is MK-8(H<sub>4</sub>). The major fatty acids are iso-C 16:0, iso-C 15:0 and C 18:1. The G + C content of the DNA is 67 mol%. The phylogenetic position is in the high-G + C-content group of gram-positive bacteria; the genus *Frankia* is the closest relative.

Type species is *Microsphaera multipartita*.

Lit.: Nakamura, K., Y. Yoshimi and A. Hiraishi. 1996.  
Isolation and Characterization of *Microsphaera multipartita* gen. nov., sp. nov., a Polysaccharide-Accumulating Gram-Positive Bacterium from Activated Sludge.  
Int. J. Syst. Bacteriol. 46: 519-525

## Genus Identity Card

<b>Genus</b>	<b><i>Microsphaera</i></b>
Wall chemotype	meso-DAP
Whole cell sugar pattern	
Fatty acid pattern	iso C 15:0, iso C 16:0, C 18:1
Major menaquinone (MK)	-8(H <sub>4</sub> )
Phospholipidtype	
Mol% G+C of DNA	67
Morphology	small coccoid microorganism, cells are sphaerical and occure single or in some cases in clusters

Name: MICROSPHAERA  
Authors: Yoshimi et al.1996  
Status: New Genus  
Type species: *M. multipartita*  
Literature: Int. J. Syst. Bacteriol. 46:524

Name: *Microsphaera multipartita* (**Type species**)  
Authors: Yoshimi et al.1996  
Status: New Species  
Literature: Int. J. Syst. Bacteriol. 46:524  
Risk group: 1 (German classification)  
Type strain: DSM 44233, JCM 9543, Y-104

**Genus:** *Microsphaera*

FH 6094

**Species:** *multipartita*

**Numbers in other collections:** DSM 44233

Morphology:

	G	R
<u>ISP 2</u>	good	cream
	A	SP
	none	none
	G	R
<u>5006</u>	good	cream
	A	SP
	none	none
	G	R
<u>5425</u>	good	cream
	A	SP
	none	none
	G	R
<u>5428</u>	good	cream
	A	SP
	none	none
	G	R
<u>5530</u>	good	cream
	A	SP
	none	none

Spore chains:

Spore surface:

Sporangia:

Fragmentation:

Melanoid pigment: - - - -

NaCl resistance:

Lysozyme resistance:

pH: Value- Optimum-

Temperature : Value- Optimum- 28°C

Carbon utilization:

Glu	Ara	Suc	Xyl	Ino	Man	Fru	Rha	Raf	Cel
					nd.				

Enzymes:

Gel	Cit	Ure	Arg	Onp	Trp	Lys	Odc	VP	Ind	H2S
-	-	-	-	+	-	-	-	-	-	-
2+	3-	4-	5-	6+	7-	8-	9-	10-	11+	
12-	13+	14-	15-	16+	17+	18-	19-	20-		
Nit	Pyz	Pyr	Pal	βGur	βGal	αGlu	βNag	Esc	Ure	Gel
+	-	-	-	-	-	+	-	+	-	-
Glu	Rib	Xyl	Man	Mal	Lac	Sac	Glyg			
-	-	-	-	-	-	-	-			

Comments:



***Microsphaera multipartita***

A and B – Agar plates medium 5006, 5265, 5425, 5428 and 5530