Class

Actinobacteria

Subclass

Actinobacteridae

Order

Actinomycetales

Suborder

Micromonosporineae

Family

Micromonosporaceae

Genus

Pilimelia

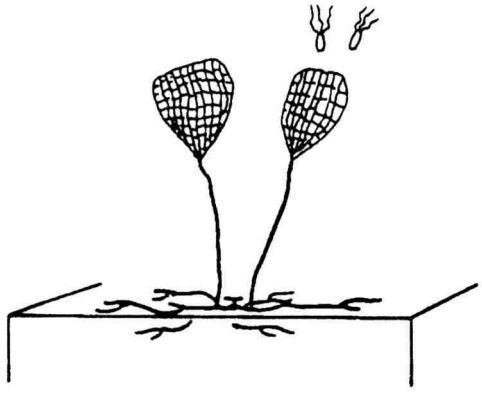
The Genus Pilimelia

To the genus *Pilimelia* belong 3 species *Pilimelia anulata, columellifera* and *terevasa.*

Sporangia are produced on the surface of the substrate on sporangiophores. Sporangia are spherical, ovoid, pyriform, campanulate, or cylindrical and are approximately 10-15 µm in size. Sporangia contain numerous spores in chains that are arranged in parallel or irregularly swirl-like rows. Spores (zoospores) are rod shaped (0,4 x 1,2 µm) and motile by means of a laterally inserted tuft of flagella. Nonmotile spores are developed in free chains arranged similarly to the zoospores. Colonies grow only on complex media. They are small, compact, soft pasty, or solid. Substrate mycelia are pale lemon yellow, golden yellow, orange, or pale brown, turning brown to dark with age. Hyphae of substrate mycelium are 0,2-0,8 µm in diameter, branched, and septate. True aerial mycelium is not developed.

The peptidoglycan of the cell walls contains meso-diaminopimelic acid (meso-DAP) and glycine, with xylose and arabinose as characteristic sugars of whole-cell hydrolysates. Phospholipids are represented by phosphatidylethanolamine. There are iso- branched saturatet and unsaturatet fatty acids with odd numbers of carbon atoms and no anteiso- fatty acids.

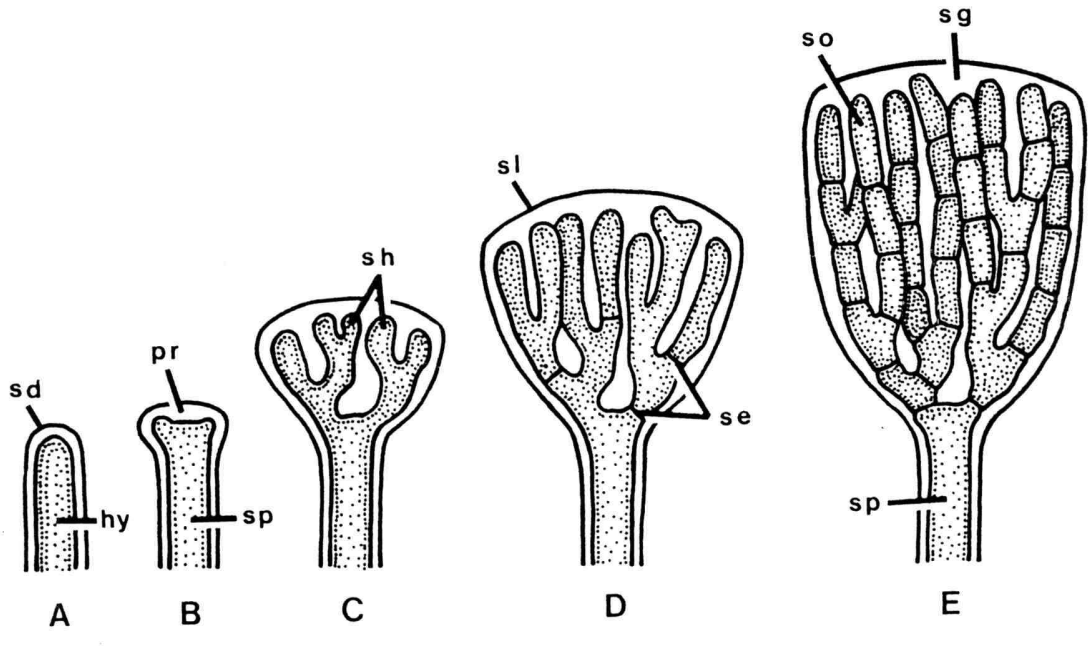
Optimal growth temperature is 20-30℃ (minimum 10℃ , maximum 38℃) and the pH optimum is 6,5-7,5. Inhabit soil. Strains decompose keratinic substances (hair of mammals)



Type species is *Pilimelia terevasa.*

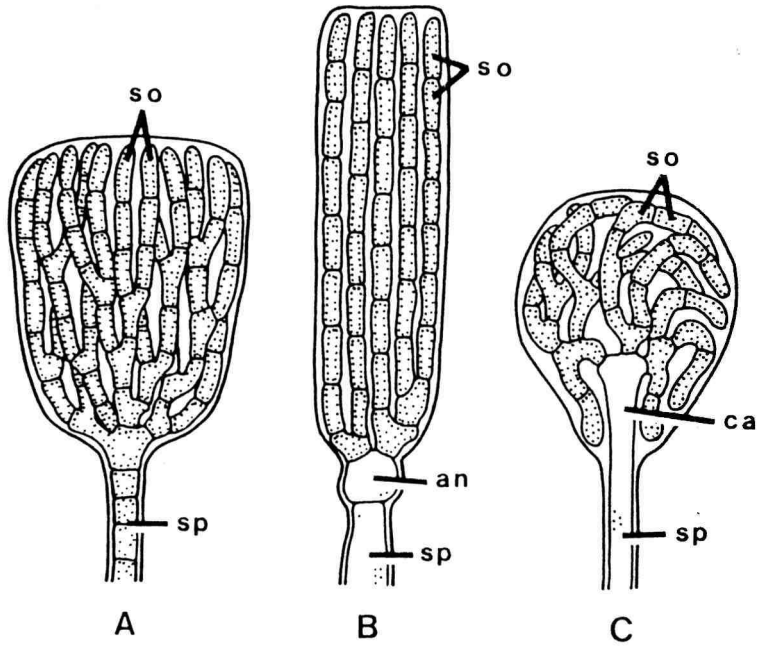
Lit.: Kane, W. D. 1966.
A new genus of *Actinoplanaceae*. *Pilimelia*, with a description of two species, *Pilimelia terevasa* and *Pilimelia anulata*.
J. Elisha Mitchell Sci. Soc. 82: 220-230

Sporangial development in *Pilimelia terevasa*

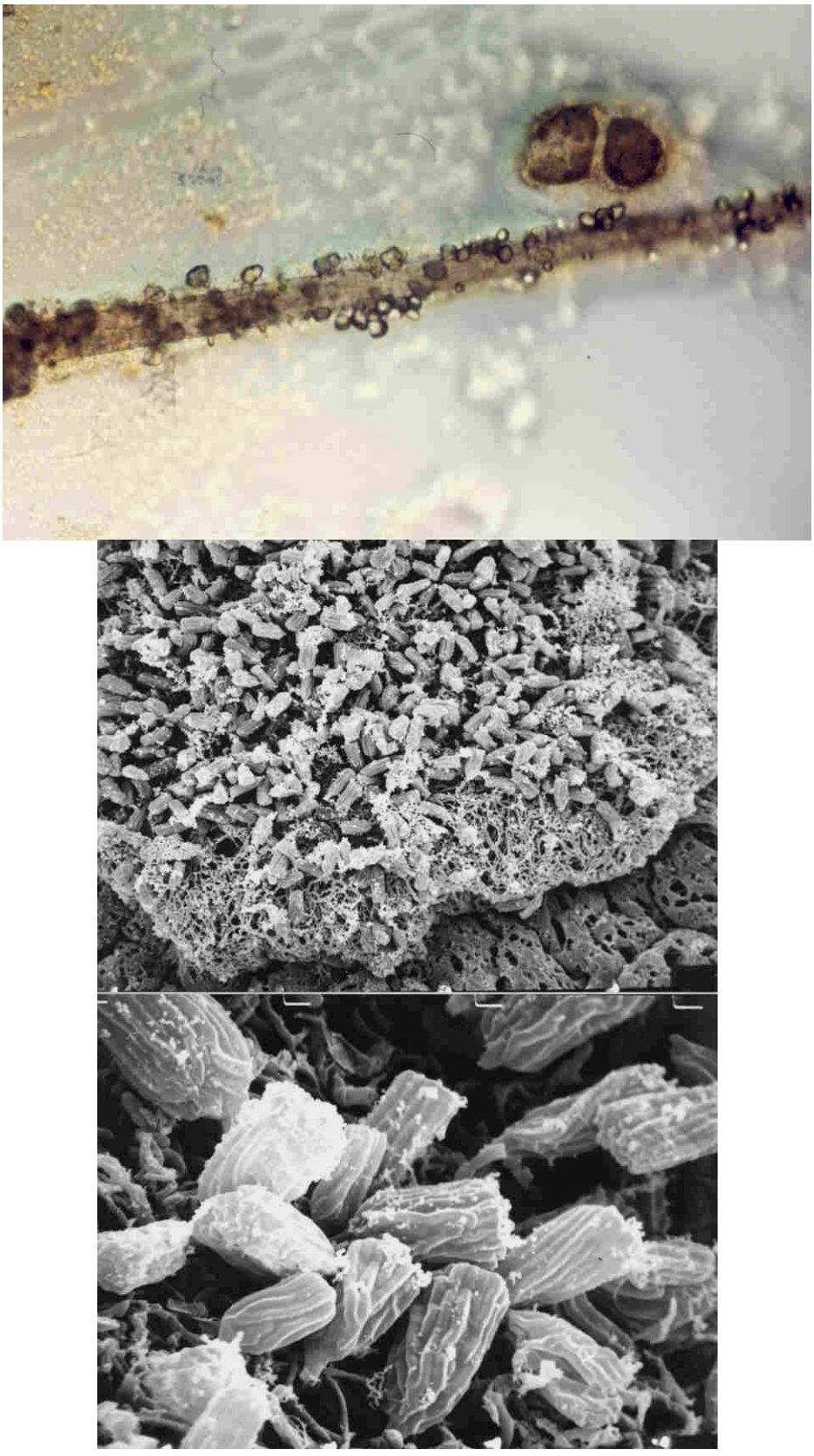


A thick hyphae (hy), covered by a sheath (sd), protrudes the surface of the substrate.
The sporangial primordium (pr) starts with subterminal outgrowths at the tip of the future sporangiophore (sp).
The newly formed sporogenous hyphae (sh) branch out and extend apically.
The sporogenous hyphae form septa (se) acropetally, the sporangial envelope (sl) swells.
The mature sporangium(sg), the parallely oriented sporogenous hyphae are divided in rod-shaped spores (so).
(Vobis 1986)

Types of sporangia in *Pilimelia*



Pilimelia terevasa: bell form sporangium with septated (se) sporangiophor (sp)
and branched, parallel spore chains (so).
Pilimelia anulata: cylindric sporangium with annulus (an) and parallel only at
the base branched spore chains (so).
Pilimelia columellifera: ovoid sporangium with columella (ca) and hair like spore chains (so).
(Vobis 1986)



Sporangia of *Pilimelia* species isolates from soil
Mice hair with sporangia (top) and Scanning Electron Microscopy (magnification x 500 and x 3.500 / from the top)

Genus Identity Card

Genus	***Pilimelia***
Wall chemotype	meso-DAP, glycine (type I)
Whole cell sugar pattern	xylose, arabinose
Fatty acid pattern	iso branched saturated and unsaturated acids
Major menaquinone (MK)	-9(H_2,H_4)
Phospholipidtype	phosphatidylethanolamine
Mol% G+C of DNA	
Morphology	sporangia on the surface of the substrate mycelium on sporangiophores, sporangia are sphaerical, ovoid, pyriform, campanulate or cylindrical
Type species	*Pilimelia terevasa*

Pilimelia anulata

Pilimelia columellifera (ex Schäfer 1973) Vobis et al. 1986

(by G. Vobis)

Name:	PILIMELIA
Authors:	Kane 1966
Status:	Approved Lists
Type species:	P. terevasa
Literature:	Int. J. Syst. Bacteriol. 30:344 (AL)

Name:	*Pilimelia anulata*
Authors:	Kane 1966
Status:	Approved Lists
Literature:	Int. J. Syst. Bacteriol. 30:344 (AL)
Risk group:	1 (German classification)
Type strain:	ATCC 25604, DSM 43039, IMET 9269

Name:	*Pilimelia columellifera* subsp. *columellifera*
Authors:	Vobis et al. 1986
Status:	New Species
Literature:	Int. J. Syst. Bacteriol. 36:573
Risk group:	1 (German classification)
Type strain:	CBS 569.75, DSM 43797, MB-Sk6

Name:	*Pilimelia columellifera* subsp. *pallida*
Authors:	Vobis et al. 1986
Status:	New Subspecies
Literature:	Int. J. Syst. Bacteriol. 36:573 (validation list)
Risk group:	1 (German classification)
Type strain:	DSM 43799, MB-SK8

Name:	*Pilimelia terevasa* **(Type species)**
Authors:	Kane 1966
Status:	Approved Lists
Literature:	Int. J. Syst. Bacteriol. 30:344 (AL)
Risk group:	1 (German classification)
Type strain:	ATCC 25603, DSM 43040, IMET 9270

Genus: ***Pilimelia*** **FH 2194**
Species: ***anulata***
Numbers in other collections: ATCC 25604

Morphology:

	G	R
ISP 2	good	maize yellow
	A	SP
	none	none
	G	R
ISP 3	good	maize yellow
	A	SP
	none	none
	G	R
ISP 4	good	lemon yellow
	A	SP
	none	none
	G	R
ISP 5	good	lemon yellow
	A	SP
	none	none
	G	R
ISP 6	sparse	lemon yellow
	A	SP
	none	brown
	G	R
ISP 7	good	maize yellow
	A	SP
	none	none

Spore chains: Spore surface: smooth
Sporangia: + Fragmentation:

Melanoid pigment: - - - -
NaCl resistance: 0 - 2,5 %
Lysozyme resistance:
pH: Value- Optimum-
Temperature : Value- Optimum- 28 °C

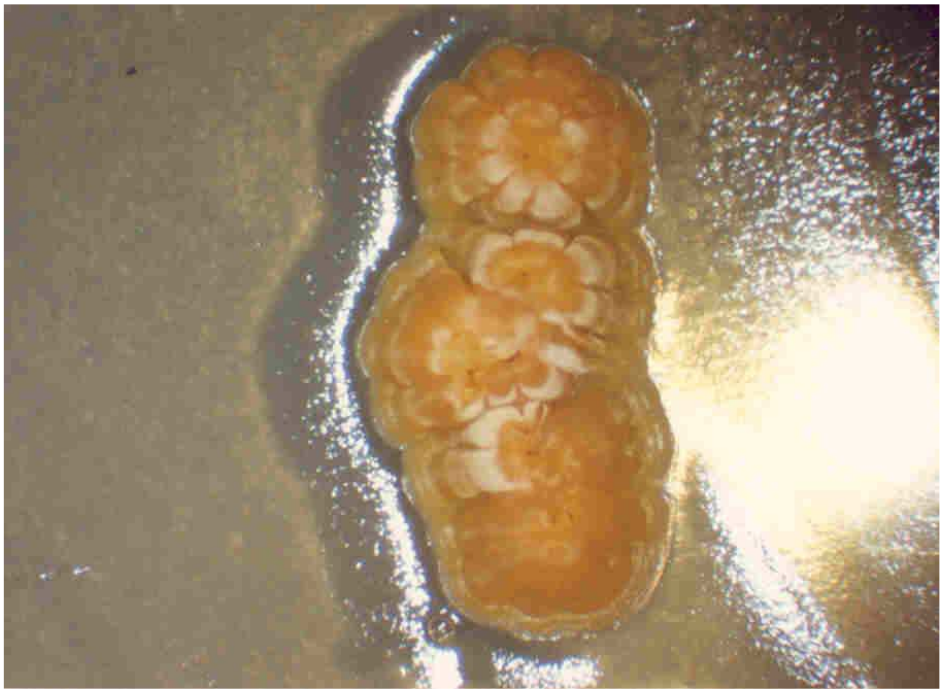
Carbon utilization:

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

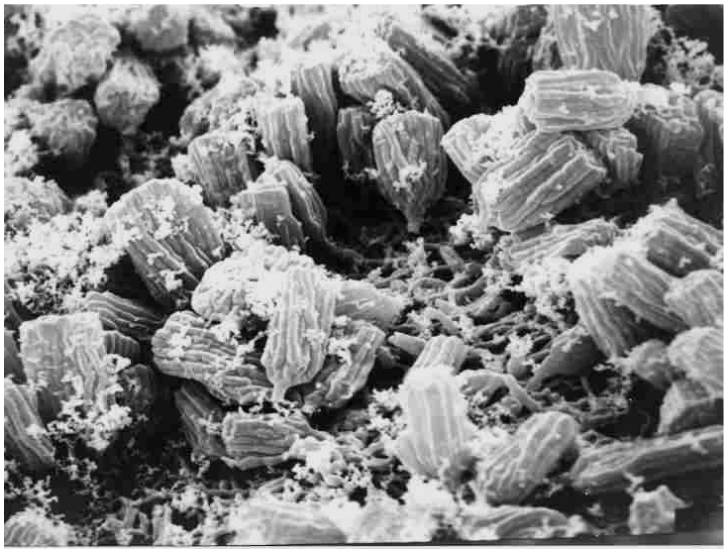
Enzymes:

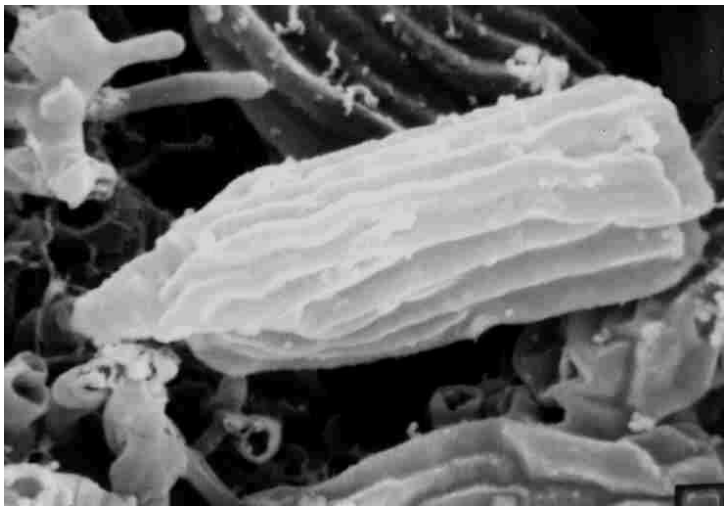
Gel	Cit	Ure	Arg	Onp	Trp	Lys	Odc	VP	Ind	H2S
				nd.						

Comments:



Pilimelia anulata
A and B – Colony surface on medium 5333





Pilimelia anulata
Sporangia in LM and SEM
C x 250 D x 2.000 E x 10.000