



**Strain identifier**

**BacDive ID:** 7589      **DOI:** 10.13145/bacdive7589.20190402.4  
**Type strain:** yes      **Designation:** A 1-3  
**Culture col. no.:** DSM 14555, GTC 863

**Sections**

- [Name and taxonomic classification](#)
- [Morphology and physiology](#)
- [Culture and growth conditions](#)
- [Isolation, sampling and environmental information](#)
- [Application and interaction](#)
- [Molecular biology](#)
- [Strain availability](#)
- [References](#)

**Name and taxonomic classification**

<a href="#">Ref.: 5296</a>	<b>Domain</b>	Bacteria
<a href="#">Ref.: 5296</a>	<b>Phylum</b>	Actinobacteria
<a href="#">Ref.: 5296</a>	<b>Class</b>	Actinobacteria
<a href="#">Ref.: 5296</a>	<b>Order</b>	Actinomycetales
<a href="#">Ref.: 5296</a>	<b>Family</b>	Micrococcaceae
<a href="#">Ref.: 5296</a>	<b>Genus</b>	Arthrobacter
<a href="#">Ref.: 5296</a>	<b>Species</b>	Arthrobacter russicus
<a href="#">Ref.: 5296</a>	<b>Full Scientific Name</b>	Arthrobacter russicus Li et al. 2004
<a href="#">Ref.: 5296</a>	<b>Designation:</b>	A 1-3
<a href="#">Ref.: 5296</a>	<b>Type strain:</b>	yes

**Prokaryotic Nomenclature Up-to-date (PNU)**

<a href="#">Ref.: 20215</a>	<b>Domain</b>	Bacteria
<a href="#">Ref.: 20215</a>	<b>Phylum</b>	Actinobacteria
<a href="#">Ref.: 20215</a>	<b>Class</b>	Actinobacteria
<a href="#">Ref.: 20215</a>	Literature reference	Int. J. Syst. Bacteriol. 47:483*
<a href="#">Ref.: 20215</a>	<b>Family</b>	Micrococcaceae
<a href="#">Ref.: 20215</a>	Literature reference	Int. J. Syst. Bacteriol. 30:236
<a href="#">Ref.: 20215</a>	<b>Genus</b>	Arthrobacter



Ref.: 20215	Taxonomical status	genus (AL)
Ref.: 20215	Literature reference	Int. J. Syst. Bacteriol. 30:225
Ref.: 20215	<b>Species</b>	Arthrobacter russicus
Ref.: 20215	Taxonomical status	sp. nov. (VP)
Ref.: 20215	Literature reference	Int. J. Syst. Evol. Microbiol. 54:827*
Ref.: 20215	<b>Full Scientific Name</b>	Arthrobacter russicus Li et al. 2004

**Morphology and physiology**

Ref.: 30012	<b>Gram stain</b>	positive
Ref.: 30012	<b>Cell length</b>	2.45 µm
Ref.: 30012	<b>Cell width</b>	0.7 µm
Ref.: 30012	<b>Cell shape</b>	rod-shaped
Ref.: 30012	<b>Motility</b>	no
Ref.: 18384	<b>Cultivation medium used</b>	ISP 2
Ref.: 18384	<b>Colony color</b>	Beige (1001)
Ref.: 18384	<b>Incubation period</b>	10-14 days
Ref.: 18384	<b>Cultivation medium used</b>	ISP 3
Ref.: 18384	<b>Colony color</b>	Beige (1001)
Ref.: 18384	<b>Incubation period</b>	10-14 days
Ref.: 18384	<b>Cultivation medium used</b>	ISP 4
Ref.: 18384	<b>Colony color</b>	Beige (1001)
Ref.: 18384	<b>Incubation period</b>	10-14 days
Ref.: 18384	<b>Cultivation medium used</b>	ISP 5
Ref.: 18384	<b>Colony color</b>	Beige (1001)
Ref.: 18384	<b>Incubation period</b>	10-14 days
Ref.: 18384	<b>Cultivation medium used</b>	ISP 6
Ref.: 18384	<b>Colony color</b>	Beige (1001)
Ref.: 18384	<b>Incubation period</b>	10-14 days

Ref.: 18384      **Cultivation medium used**      ISP 7

Ref.: 18384      **Colony color**      Beige (1001)

Ref.: 18384      **Incubation period**      10-14 days

Ref.: 18384

**API coryne**

API ID	71
NIT	n.d.
PYZ	+
PYRA	+
PAL	+
betaGUR	-
betaGAL	+
alphaGLU	-
betaNAG	-
ESC	+/-
URE	+
GEL	+
Control	n.d.
GLU	n.d.
RIB	n.d.
XYL	n.d.
MAN	n.d.
MAL	n.d.
LAC	n.d.
SAC	-
GLYG	n.d.
CAT	n.d.

Ref.: 18384

**API zym**

API ID	94
Control	n.d.
Alkaline phosphatase	+
Esterase (C 4)	+
Esterase Lipase (C 8)	+
Lipase (C 14)	+
Leucine arylamidase	+

Valine arylamidase	-
Cystine arylamidase	-
Trypsin	+
Alpha-chymotrypsin	-
Acid phosphatase	+
Naphthol-AS-BI-phosphohydrolase	-
Alpha-galactosidase	+
Beta-galactosidase	+
Beta-glucuronidase	-
Alpha-glucosidase	-
Beta-glucosidase	+
N-acetyl-beta-glucosaminidase	-
Alpha-mannosidase	+
Alpha-fucosidase	+

	<b>Metabolite utilization</b>	<b>Chebi ID</b>	<b>Metabolite</b>	<b>Utilization activity</b>	<b>Kind of utilization tested</b>
Ref.: 18384		22599	Arabinose	-	
Ref.: 18384		62968	Cellulose	+	
Ref.: 18384		28757	Fructose	+	
Ref.: 18384		17234	Glucose	+	
Ref.: 30012		17234	Glucose	+	carbon source
Ref.: 18384		17268	Inositol	+	
Ref.: 18384		29864	Mannitol	+	
Ref.: 18384		16634	Raffinose	-	
Ref.: 18384		26546	Rhamnose	-	
Ref.: 18384		17992	Sucrose	+	
Ref.: 30012		53426	Tween 80	+	carbon source
Ref.: 18384		18222	Xylose	-	

Ref.: 18384      **Medium Name (multicellularity)**      ISP 2

Ref.: 18384      **Multicellular complex forming ability**      no

Ref.: 18384      **Medium Name (multicellularity)**      ISP 3

Ref.: 18384      **Multicellular complex forming ability**      no



Ref.: 18384	<b>Medium Name (multicellularity)</b>	ISP 4
Ref.: 18384	<b>Multicellular complex forming ability</b>	no
Ref.: 18384	<b>Medium Name (multicellularity)</b>	ISP 5
Ref.: 18384	<b>Multicellular complex forming ability</b>	no
Ref.: 18384	<b>Medium Name (multicellularity)</b>	ISP 6
Ref.: 18384	<b>Multicellular complex forming ability</b>	no
Ref.: 18384	<b>Medium Name (multicellularity)</b>	ISP 7
Ref.: 18384	<b>Multicellular complex forming ability</b>	no
Ref.: 30012	<b>Oxygen tolerance</b>	aerobe

**Culture and growth conditions**

Ref.: 5296	<b>Culture medium</b>	TRYPTICASE SOY YEAST EXTRACT MEDIUM (DSMZ Medium 92), 28°C
Ref.: 5296	<b>Culture medium growth</b>	yes
Ref.: 5296	<b>Culture medium link</b>	<a href="https://www.dsmz.de/microorganisms/medium/pdf/DSMZ_Medium92.pdf">https://www.dsmz.de/microorganisms/medium/pdf/DSMZ_Medium92.pdf</a>
Ref.: 18384	<b>Culture medium</b>	ISP 2
Ref.: 18384	<b>Culture medium growth</b>	yes
Ref.: 18384	<b>Culture medium composition</b>	Name: ISP 2 / Yeast Malt Agar (5265); 5265 Composition Malt extract 10.0 g/l Yeast extract 4.0 g/l Glucose 4.0 g/l Agar 15.0 g/l Preparation: Sterilisation: 20 minutes at 121°C pH before sterilisation: 7.0 Usage: Maintenance and Taxonomy Organisms: All Actinomycetes
Ref.: 18384	<b>Culture medium</b>	ISP 3
Ref.: 18384	<b>Culture medium growth</b>	yes

Ref.: 18384	<b>Culture medium composition</b>	Name: ISP 3; 5315 Composition Dog oat flakes 20.0 g/l Trace element solution (5314) 2.5 ml/l Agar 18.0 g/l Preparation: Oat flakes are cooked for 20 minutes, trace element solution and agar are added (in the case of non rolled oat flakes the suspension has to be filtered). Sterilisation: 20 minutes at 121°C pH before sterilisation: 7.8 Usage: Maintenance and taxonomy (e.g. SEM As liquid medium for metabolite production) Organisms: All Actinomycetes Trace element solution 5314 Name: Trace element solution 5314; 5314 Composition CaCl <sub>2</sub> x H <sub>2</sub> O 3.0 g/l Fe-III-citrate 1.0 g/l MnSO <sub>4</sub> 0.2 g/l ZnCl <sub>2</sub> 0.1 g/l CuSO <sub>4</sub> x 5 H <sub>2</sub> O 0.025 g/l Sodium tetra borate 0.2 g/l CoCl <sub>2</sub> x 6 H <sub>2</sub> O 0.004 g/l Sodium molybdate 0.01 g/l Preparation: Use double distilled water. Sterilisation: 20 minutes at 121°C pH before sterilisation: Usage: Trace element solution for different media Organisms:
Ref.: 18384	<b>Culture medium</b>	ISP 4
Ref.: 18384	<b>Culture medium growth</b>	yes
Ref.: 18384	<b>Culture medium composition</b>	Name: ISP 4; DSM 547 Solution I: Difco soluble starch, 10.0 g. Make a paste of the starch with a small amount of cold distilled water and bring to a volume of 500 ml. Solution II: CaCO <sub>3</sub> 2.0 g K <sub>2</sub> HPO <sub>4</sub> (anhydrous) 1.0 g MgSO <sub>4</sub> x 7 H <sub>2</sub> O 1.0 g NaCl 1.0 g (NH <sub>4</sub> ) <sub>2</sub> SO <sub>4</sub> 2.0 g Distilled water 500.0 ml Trace salt solution (see below) 1.0 ml The pH should be between 7.0 and 7.4. Do not adjust if it is within this range. Mix solutions I and II together. Add 20.0 g agar. Liquify agar by steaming at 100°C for 10 to 20 min. Trace element solution: FeSO <sub>4</sub> x 7 H <sub>2</sub> O 0.1 g MnCl <sub>2</sub> x 4 H <sub>2</sub> O 0.1 g ZnSO <sub>4</sub> x 7 H <sub>2</sub> O 0.1 g Distilled water 100.0 ml
Ref.: 18384	<b>Culture medium</b>	ISP 5
Ref.: 18384	<b>Culture medium growth</b>	yes
Ref.: 18384	<b>Culture medium composition</b>	Name: ISP 5 (5323) Composition L-Asparagine 1.0 g/l Glycerol 10.0 g/l K <sub>2</sub> HPO <sub>4</sub> 1.0 g/l Salt solution (see preparation) 1.0 ml/l Agar 20.0 g/l Preparation: Salt solution 1.0 g FeSO <sub>4</sub> x 7 H <sub>2</sub> O 1.0 g MnCl <sub>2</sub> x 4 H <sub>2</sub> O 1.0 g ZNSO <sub>4</sub> x 7 H <sub>2</sub> O in 100 ml water Sterilisation: 20 minutes at 121°C pH before sterilisation: 7.2 Usage: Maintenance and taxonomy Organisms: All Actinomycetes
Ref.: 18384	<b>Culture medium</b>	ISP 6
Ref.: 18384	<b>Culture medium growth</b>	yes
Ref.: 18384	<b>Culture medium composition</b>	Name: ISP 6 (5318) Composition Peptone 15.0 g/l Proteose peptose 5.0 g/l Ferric ammonium citrate 0.5 g/l Sodium glycerophosphate 1.0 g/l Sodium thiosulfate 0.08 g/l Yeast extract 1.0 g/l Agar 15.0 g/l Sterilisation: 20 minutes at 121°C pH before sterilisation: Usage: Production of melanoid pigments Organisms: All Actinomycetes
Ref.: 18384	<b>Culture medium</b>	ISP 7
Ref.: 18384	<b>Culture medium growth</b>	yes

Ref.: 18384      **Culture medium composition**      Name: ISP 7 (5322) Composition Glycerol 15.0 g/l L-Tyrosine 0.5 g/l L-Asparagine 1.0 g/l K<sub>2</sub>HPO<sub>4</sub> 0.5 g/l NaCl 0.5 g/l FeSO<sub>4</sub> x 7 H<sub>2</sub>O 0.01 g/l Trace element solution 5343 1.0 ml/l Agar 20.0 Sterilisation: 20 minutes at 121°C pH before sterilisation: 7.3 Usage: Production of melanoid pigments Organisms: All Actinomycetes

Ref.: 37387      **Culture medium**      MEDIUM 72- for trypto casein soja agar

Ref.: 37387      **Culture medium growth**      yes

Ref.: 37387      **Culture medium composition**      Distilled water make up to (1000.000 ml);Trypto casein soy agar (40.000 g)

**Temperatures**

Ref.: 5296

Ref.: 18384

Ref.: 30012

Ref.: 37387

Kind of temperature	Temperature
growth	28 °C
optimum	28 °C
optimum	30 °C
growth	30 °C

Ref.: 5296      **Temperature range**      mesophilic

Ref.: 18384      **Temperature range**      mesophilic

Ref.: 30012      **Temperature range**      mesophilic

Ref.: 37387      **Temperature range**      mesophilic

**Isolation, sampling and environmental information**

Ref.: 5296      **Sample type/isolated from**      air in the russian space laboratory Mir

Ref.: 5296      **Geographic location (country and/or sea, region)**      Space

**Isolation sources categories**

Cat1	Cat2	Cat3
#Engineered	#Laboratory	-
#Environmental	#Air	#Indoor Air

**Application and interaction**

Ref.: 18384      **Biosafety level**      2

Ref.: 5296      **Biosafety level**      1 Risk group (German classification)

**Molecular biology**

Ref.: 5296      **GC-content**                      65.5 mol%

Ref.: 30012      **GC-content**                      65.5 mol%

	Sequence database	Sequence accession description	Sequence accession number	Sequence length(bp)	Associated NCBI tax ID
Ref.: 5296	DDBJ EMBL Direct submission		AB071950		

### Strain availability

Ref.: 5296      **Culture collection no.**              DSM 14555, GTC 863

Ref.: 5296      **Strain history**                      <- T. Ezaki, GTC, Gifu University, Japan; A 1-3

#### **Associated Passport(s) in StrainInfo**

Ref.: 20218      377785 - <http://www.straininfo.net/strains/377785>

Ref.: 20218      377782 - <http://www.straininfo.net/strains/377782>

### References

Ref.: 5296      Leibniz Institut DSMZ-Deutsche Sammlung von Mikroorganismen und Zellkulturen GmbH; Curators of the DSMZ; DSM 14555

Ref.: 18384      Wink, J.: Compendium of Actinobacteria. HZI-Helmholtz-Centre for Infection Research, Braunschweig.

Ref.: 20215      D.Gleim, M.Kracht, N.Weiss et. al.: Prokaryotic Nomenclature Up-to-date - compilation of all names of Bacteria and Archaea, validly published according to the Bacteriological Code since 1. Jan. 1980, and validly published nomenclatural changes since.

Ref.: 20218      Verslyppe, B., De Smet, W., De Baets, B., De Vos, P., Dawyndt P. StrainInfo introduces electronic passports for microorganisms.. Syst Appl Microbiol. 37: 42-50 2014 (10.1016/j.syapm.2013.11.002, 24321274)

Ref.: 30012      Barberan A, Caceres Velazquez H, Jones S, Fierer N. Hiding in Plain Sight: Mining Bacterial Species Records for Phenotypic Trait Information. mSphere 2: None-None 2017 (10.1128/mSphere.00237-17, None) - **originally annotated from #26376**

Ref.: 26376      IJSEM 827 2004 (10.1099/ij.s.0.02828-0)

Ref.: 37387      None; Curators of the CIP; None

**\* These References are textmined**

[back to top](#)