

## Literature list about the MELiSSA project and connected research (1988-2018) preceded by seminal proceedings of 1987-1988

### Legend of paper topics/MELiSSA compartments:

**LSS** : Life Support Systems

**SP**: Space flight experiments and related studies (biocontamination, confined or extreme environments, space simulations (radiation, microgravity, low shear) ,

**Mo**: modelling

**MELiSSA first compartment** (thermophilic, anaerobic, waste degradation)

**MELiSSA second compartment** (anaerobic photosynthetic)

**MELiSSA third compartment** (nitrifying)

**MELiSSA fourth compartment** (microbial food production (spirulines (*Arthrospira*))

**MELiSSA fourth compartment** (plant food production)

**Consumers compartment**

**MELiSSA Pilot Plant** .

**C1:**

**C2:**

**C3:**

**C4a :**

**C4b:**

**C5:**

**MPP:**

	Authors	Topic/MELiSSA Compartment	Title	Journal	Volume	Pages
1987	DUBERTRET G., LEFORT-TRAN M., CHIPAUX C.	SP/LSS The Chinese flight experiment	Ecological algal system in microgravity conditions – Preliminary results	3 <sup>rd</sup> European Symposium on Life Sciences Research in Space (ESA SP271) Graz (Austria)		
1988	MERGEAY M., VERSTRAETE W., DUBERTRET G., LEFORT-TRAN M., CHIPAUX C. BINOT R.	LSS First expression of the MELiSSA concept	MELISSA - a microorganisms based model for CELSS development	Proceedings 3rd Symposium on Space Thermal Control & Life Support Systems Noordwijk (NL)	288	65-68

1988	Lasseur Ch., Chipaux C. André M. Cote FX, J. Massimino,	LSS	Possible use of a gas monitoring system in space respirometry studies.	Space thermal control and life support systems. Oct.88 ESA.		69-72
1989	Lasseur Ch, D. Massimino, Renou JL, Richaud Ch,.	LSS	The C23A system. First step for a monitoring system of CELSS in flight.	Advances in Space Research	9	741-746
1992	Cornet, J. F.; Dussap, C. G.; Dubertret, G.	C4a	A structured model for simulation of cultures of the cyanobacterium <i>Spirulina platensis</i> in photobioreactors: I. Coupling between light transfer and growth kinetics	Biotechnology and Bioengineering	7	817-825
1992	Cornet, J. F.; Dussap, C. G.; Cluzel, P.; Dubertret, G.	C4a	A structured model for simulation of cultures of the cyanobacterium <i>Spirulina platensis</i> in photobioreactors: II. Identification of kinetic parameters under light and mineral limitations	Biotechnology and Bioengineering	7	826-83
1993	Filali Mouhim, R.; Cornet, J. F.; Fontane, T.; Fournet, B.; Dubertret, G.	C4a	Production, isolation and preliminary characterization of the exopolysaccharide of the cyanobacterium <i>Spirulina platensis</i>	Biotechnology Letters	15	567-572
1993	Kerstens, I.; Houwen, F.; Verstraete, W.	C1	Thermophilic, anaerobic degradation of gelatin by <i>Thermobacteroides proteolyticus</i>	Biotechnology Letters	15	931-936
1994	Binot, R. A.; Tamponnet, C.; Lasseur, C.	LSS	Biological life support for manned missions by ESA	Advances in Space Research	14	71-74
1994	Cornet, J. F.; Dussap, C. G.; Gros, J. B.	C4a	Conversion of radiant light energy in photobioreactors	AIChE Journal	40	1055-1066
1994	Tranquille, N.; Emeis, J. J.; de Chambure, D.; Binot, R.; Tamponnet, C.	C4a/C5	<i>Spirulina</i> acceptability trials in rats. A study for the "MELISSA" life-support system	Advances in Space Research	14	167-170
1994	Kerstens, I.; Maestrojuan, G. M.; Torck, U.; Vancanneyt, M.; Kersters, K.; Verstraete, W.	C1	Isolation of <i>Coprothermobacter proteolyticus</i> from an Anaerobic Digest and Further Characterization of the Species	Systematic and Applied Microbiology	17	289-295
1995	Cornet, J. F.; Dussap, C. G.; Gros, J. B.; Binois, C.; Lasseur, C.	Mo/C4a	A simplified monodimensional approach for modeling coupling between radiant light transfer and growth kinetics in photobioreactors	Chemical Engineering Science	50	1489-1500
1995	Marty, A.; Cornet, J. F.; Djelveh, G.; Larroche, C.; Gros, J. B.	C2/C3/C4a	A gas phase chromatography method for determination of low dissolved CO <sub>2</sub>	Biotechnology Techniques	9	787-792

			concentration and/or CO <sub>2</sub> solubility in microbial culture media			
<b>1996</b>	Lasseur, C.; Verstraete, W.; Gros, J. B.; Dubertret, G.; Rogalla, F.	LSS	MELISSA: a potential experiment for a precursor mission to the Moon	Advances in Space Research	18	111-117
<b>1997</b>	Cornet, J. F.; Marty, A.; Gros, J. B.	C4a	Revised Technique for the Determination of Mean Incident Light Fluxes on Photobioreactors	Biotechnology Progress	13	408-415
<b>1997</b>	Filali, R., Lasseur, C. & Dubertret, G.	C4a	MELISSA: nitrogen sources for growth of the cyanobacterium <i>Spirulina</i>	Proc. Sixth European Symp. on Space Environmental Control Systems, Noordwijk, The Netherlands		909-912
<b>1998</b>	Stasiak MA, Cote R, Dixon M, Grodzinski B	C4b	Increasing plant productivity in closed environments with inner canopy illumination	Life Support & Biosphere Science:	5	175-181
<b>1999</b>	Paille, C.; Curwy, R.; Filali, R.; Lehman, B.; Dubertret, G.; Foing, B.; Lasseur, C.	LSS	FEMME: A precursor ecosystem on the Moon	Advances in Space Research	23	1857-1860
<b>1999</b>	Dixon MA, Grodzinski B, Cote R, Stasiak M.	C4b	Sealed environment chamber for canopy light interception and trace hydrocarbon analyses	Advances in Space Research	24	271-280
<b>1999</b>	Fulget, N.; Poughon, L.; Richalet, J.; Lasseur, C.	Mo/LSS	MELISSA: global control strategy of the artificial ecosystem by using first principles models of the compartments	Advances in Space Research	24	397-405
<b>1999</b>	Poughon, L.; Dussap, C. G.; Gros, J. B.	Mo	Dynamic model of a nitrifying fixed bed column: Simulation of the biomass distribution of <i>Nitrosomonas</i> and <i>Nitrobacter</i> and of transient behaviour of the column	Bioprocess Engineering	20	209-221
<b>2000</b>	Cornet, J. F.; Albiol, J.	Mo/C2	Modeling photoheterotrophic growth kinetics of <i>Rhodospirillum rubrum</i> in rectangular photobioreactors	Biotechnology Progress	16	199-207
<b>2000</b>	Paille, C.; Albiol, J.; Curwy, R.; Lasseur, C.; Godia, F.	LSS	FEMME: a precursor experiment for the evaluation of bioregenerative life support systems	Planetary and Space Science	48	515-521
<b>2001</b>	Poughon, L.; Dussap, C. G.; Gros, J. B.	Mo/C3	Energy model and metabolic flux analysis for autotrophic nitrifiers	Biotechnology and Bioengineering	72	416-433

2001	Savage, C. J.; Tan, G. B.; Lasseur, C.	LSS	ESA developments in life support technology: achievements and future priorities	Acta Astronautica	49	331-344
2001	Vernerey, A.; Albiol, J.; Lasseur, C.; Gòdia, F.	C4a	Scale-up and design of a pilot-plant photobioreactor for the continuous culture of <i>Spirulina platensis</i>	Biotechnology Progress	17	431-438
2001	Morist, A.; Montesinos, J. L.; Cusidó, J. A.; Gòdia, F.	C4a	Recovery and treatment of <i>Spirulina platensis</i> cells cultured in a continuous photobioreactor to be used as food	Process Biochemistry	37	535-547
2002	Gòdia, F.; Albiol, J.; Montesinos, J. L.; Pérez, J.; Creus, N.; Cabello, F.; Mengual, X.; Montras, A.; Lasseur, C.	LSS/MPP	MELISSA: a loop of interconnected bioreactors to develop life support in space	Journal of Biotechnology	99	319-330
2002	Waters, G. C. R.; Olabi, A.; Hunter, J. B.; Dixon, M. A.; Lasseur, C.	C4b	Bioregenerative food system cost based on optimized menus for advanced life support	Life Support & Biosphere Science: International Journal of Earth Space	8	199-210
2003	Horneck, G.; Facius, R.; Reichert, M.; Rettberg, P.; Seboldt, W.; Manzey, D.; Comet, B.; Maillet, A.; Preiss, H.; Schauer, L.; Dussap, C. G.; Poughon, L.; Belyavin, A.; Reitz, G.; Baumstark-Khan, C.; Gerzer, R.	LSS	HUMEX, a study on the survivability and adaptation of humans to long-duration exploratory missions, part I: lunar missions	Advances in Space Research	31	2389-2401
2003	Cogne, G.; Lehmann, B.; Dussap, C. G.; Gros, J. B.	C4a	Uptake of macrominerals and trace elements by the cyanobacterium <i>Spirulina platensis</i> ( <i>Arthrospira platensis</i> PCC 8005) under photoautotrophic conditions: culture medium optimization	Biotechnology and Bioengineering	81	588-593
2003	Cornet, J. F.; Favier, L.; Dussap, C. G.	Mo/C4a	Modeling stability of photoheterotrophic continuous cultures in photobioreactors	Biotechnology Progress	19	1216-1227
2003	Favier-Teodorescu, L.; Cornet, J. F.; Dussap, C. G.	Mo/C2	Modelling continuous culture of <i>Rhodospirillum rubrum</i> in photobioreactor under light limited conditions	Biotechnology Letters	25	359-364
2003	Gros, J. B.; Poughon, L.; Lasseur, C.; Tikhomirov, A. A.	LSS	Recycling efficiencies of C, H, O, N, S, and P elements in a Biological Life Support System based on microorganisms and higher plants	Advances in Space Research	31	195-199
2003	Tikhomirov AA, Ushakova SA, Manukovsky NS, Lisovsky GM, Kudenko YA, Kovalev VS,	LSS /C4b	Synthesis of biomass and utilization of plants wastes in a physical model of biological life-support system.	Acta Astronautica	53	249-257 PMID: 146492 54

	Gribovskaya IV, Tirrannen LS, Zolotukhin IG, Gros JB, Lasseur Ch.					
2003	Tikhomirov AA, Ushakova SA, Gribovskaya IA, Tirrannen LS, Manukovsky NS, Zolotukhin IG, Karnachuk RA, Gros JB, Lasseur C	LSS/C4b	Light intensity and production parameters of phytocenoses cultivated on soil-like substrate under controlled environment conditions.	Adv Space Res.	31	1775- 1780 PMID: 145035 17
2003	Tikhomirov AA, Ushakova SA, Manukovsky NS, Lisovsky GM, Kudenko YA, Kovalev VS, Gubanov VG, Barkhatov YV, Gribovskaya IV, Zolotukhin IG, Gros JB, Lasseur Ch.	LSS/C4b	Mass exchange in an experimental new- generation life support system model based on biological regeneration of environment.	Adv Space Res.	31	1711- 1720 PMID 145035 09
2003	Poughon, L.; Duchez, D.; Cornet, J. F.; Dussap, C. G.	Mo/LSS	KLa determination: comparative study for a gas mass balance method	Bioprocess and Biosystems Engineering	25	341-348
2003	Seon, J.; Creuly, C.; Duchez, D.; Pons, A.; Dussap, C. G.	C1	Degradation of plant wastes by anaerobic process using rumen bacteria	Water Science and Technology	48	213-216
2003	Cogne G, Gros JB, Dussap CG.	C4a	Identification of a metabolic network structure representative of <i>Arthrospira</i> ( <i>Spirulina</i> ) <i>platensis</i> metabolism.	Biotechnology and Bioengineering	84	667-678
2004	Gòdia, F.; Albiol, J.; Pérez, J.; Creus, N.; Cabello, F.; Montràs, A.; Masot, A.; Lasseur, C.	LSS/MPP	The MELISSA pilot plant facility as as integration test-bed for advanced life support systems	Advances in Space Research	34	1483- 1493
2004	Brauns, E.; Van Hoof, V.; Dotremont, C.; De Wever, H.; Lens, P.; Van Hoof, E.; Thomas, G.; Molenbergh, B.; De Mey, D.	C4a	The desalination of an <i>Arthrospira platensis</i> feed solution by electrodialysis and reverse osmosis	Desalination	170	123-136
2004	Pérez, J.; Montesinos, J. I.; Albiol, J.; Gòdia, F.	C3	Nitrification by immobilized cells in a micro- ecological life support system using packed- bed bioreactors: an engineering study	Journal of Chemical Technology & Biotechnology	79	742-754

2004	Lissens G, Verstraete W, Albrecht T, Brunner G, Creuly C, Seon J, Dussap G, Lasseur C.	C1	Advanced anaerobic bioconversion of lignocellulosic waste for bioregenerative life support following thermal water treatment and biodegradation by <i>Fibrobacter succinogenes</i> .	Biodegradation.	15	173-183 PMID: 15228075
2005	WATERS G., GIDZINSKI D., ZHENG Y., DIXON M.	C4b	Empirical relationships between light intensity and crop net carbon exchange rate at the leaf and full canopy scale: Towards integration of a Higher Plant Compartment in MELISSA	ICES-2005-01-3071		
2005	Pérez, J.; Poughon, L.; Dussap, C. G.; Montesinos, J. L.; Gòdia, Francesc	C3	Dynamics and steady state operation of a nitrifying fixed bed biofilm reactor: mathematical model based description	Process Biochemistry	40	2359-2369
2005	Baatout, S.; De Boever, P.; Mergeay, M.	SP	Temperature-induced changes in bacterial physiology as determined by flow cytometry	Annals of Microbiology	55	73-80
2005	Cogne G, Cornet JF, Gros JB.	C4a	Design, operation, and modeling of a membrane photobioreactor to study the growth of the Cyanobacterium <i>Arthrospira platensis</i> in space conditions	Biotechnology Progress	21	741-750
2006	Baatout, S.; De Boever, P.; Mergeay, M.	SP	Physiological changes induced in four bacterial strains following oxidative stress	Prikladnaia Biokhimiia I Mikrobiologiia	42	418-427
2006	Goossens, O.; Vanhavere, F.; Leys, N.; De Boever, P.; O'Sullivan, D.; Zhou, D.; Spurny, F.; Yukihara, E. G.; Gaza, R.; McKeever, S. W. S.	SP	Radiation dosimetry for microbial experiments in the International Space Station using different etched track and luminescent detectors	Radiation Protection Dosimetry	120	433-437
2006	Horneck, G.; Facius, R.; Reichert, M.; Rettberg, P.; Seboldt, W.; Manzey, D.; Comet, B.; Mailliet, A.; Preiss, H.; Schauer, L.; Dussap, C. G.; Poughon, L.; Belyavin, A.; Reitz, G.; Baumstark-Khan, C.; Gerzer, R.	LSS	HUMEX, a study on the survivability and adaptation of humans to long-duration exploratory missions, part II: Missions to Mars	Mercury, Mars and Saturn	38	752-759
2006	Mergeay, M	SP/LSS	Editorial of a special issue about Space microbiology	Research in Microbiology	157	1-4
2006	Novikova N, De Boever P, Poddubko S, Deshevaya E, Polikarpov N, Rakova N, Coninx I, Mergeay M .	SP	Survey of environmental biocontamination on board the International Space Station	Research in Microbiology	157	5-12

<b>2006</b>	Hendrickx, L.; De Wever, H.; Hermans, V.; Mastroleo, F.; Morin, N.; Wilmotte, A.; Janssen, P.; Mergeay, M.	LSS	Microbial ecology of the closed artificial ecosystem MELiSSA (Micro-Ecological Life Support System Alternative): reinventing and compartmentalizing the Earth's food and oxygen regeneration system for long-haul space exploration missions	Research in Microbiology	157	77-86
<b>2007</b>	De Boever P, Ilyin V, Forget-Hanus D, Van der Auwera G, Mahillon J, Mergeay M	SP	Conjugation-mediated plasmid exchange between bacteria grown under space flight conditions	Microgravity science & technology	19	138-144
<b>2007</b>	Chaerle, L.; Leinonen, I.; Jones, H. G.; Van Der Straeten, D.	C4b	Monitoring and screening plant populations with combined thermal and chlorophyll fluorescence imaging	Journal of Experimental Botany	58	773-784
<b>2007</b>	Chaerle, L.; Lenk, S.; Hagenbeek, D.; Buschmann, C.; Van Der Straeten, D	C4b	Multicolor fluorescence imaging for early detection of the hypersensitive reaction to tobacco mosaic virus	Journal of Plant Physiology	164	253-262
<b>2007</b>	Hendrickx, L.; Mergeay, M.	LSS	From the deep sea to the stars: human life support through minimal communities	Current Opinion in Microbiology	10	231-237
<b>2007</b>	Lenk, S.; Chaerle, L.; Pfündel, E. E.; Langsdorf, G.; Hagenbeek, D.; Lichtenthaler, H. K.; Van Der Straeten, D.; Buschmann, Claus	C4b	Multispectral fluorescence and reflectance imaging at the leaf level and its possible applications	Journal of Experimental Botany	58	807-814
<b>2007</b>	Baatout, S.; Leys, N.; Hendrickx, L.; Dams, A.; Mergeay, M.	SP	Physiological changes induced in bacteria following pH stress as a model for space research	Acta Astronautica	60	451-459
<b>2007</b>	Chaerle, L.; Hagenbeek, D.; Vanrobaeys, X.; Van Der Straeten, D.	C4b	Early detection of nutrient and biotic stress in <i>Phaseolus vulgaris</i>	International Journal of Remote Sensing	28	3479-3492
<b>2007</b>	Chaerle, L.; Hagenbeek, D.; De Bruyne, E.; Van Der Straeten, D.	C4b	Chlorophyll fluorescence imaging for disease-resistance screening of sugar beet	Plant Cell, Tissue and Organ Culture	91	97-106
<b>2007</b>	Quanten, L.; Chaerle, L.; Noben, J. P.; Van Onckelen, H.; Prinsen, E.; Van Der Straeten, D.; Valcke, R.	C4b	Effects of tetracycline on wild-type and inducible P35So IPT-5/TETR transgenic tobacco plants	Physiologia Plantarum	130	290-300
<b>2008</b>	Crabbé, A.; De Boever, P.; Van Houdt, R.; Moors, H.; Mergeay, M.; Cornelis, P.	SP	Use of the rotating wall vessel technology to study the effect of shear stress on growth behaviour of <i>Pseudomonas aeruginosa</i> PAO1	Environmental Microbiology	10	2098-2110
<b>2008</b>	Farges, B.; Poughon, L.; Creuly, C.; Cornet, J. F.; Dussap, C. G.; Lasseur, C.	Mo/LSS	Dynamic aspects and controllability of the MELiSSA project: a bioregenerative system to provide life support in space	Applied Biochemistry and Biotechnology	151	686-699

2008	Montràs, A.; Pycke, B.; Boon, N.; Gòdia, F.; Mergeay, M.; Hendrickx, L.; Pérez, J.	C3	Distribution of <i>Nitrosomonas europaea</i> and <i>Nitrobacter winogradskyi</i> in an autotrophic nitrifying biofilm reactor as depicted by molecular analyses and mathematical modelling	Water Research	42	1700-1714
2008	Wilson JW, Ott CM, Quick L, Davis R, Honer zu Bentrup K, Crabbe A, Richter E, Sarker S, Barrila J, Porwollik S, Cheng P, McClelland M, Tsaprailis G, Radabaugh T, Hunt A, Shah M, Nelman-Gonzalez M, Hing S, Parra M, Dumars P, Norwood K, Bober R, Devich J, Ruggles A, CdeBaca A, Narayan S, Benjamin J, Goulart C, Rupert M, Catella L, Schurr MJ, Buchanan K, Morici L, McCracken J, Porter MD, Pierson DL, Smith SM, Mergeay M, Leys N, Stefanyshyn-Piper HM, Gorie D, Nickerson CA	SP	Media ion composition controls regulatory and virulence response of <i>Salmonella</i> in spaceflight.	PLoS One	3	e3923
2009	Christophe, G.; Guiavarch, E.; Creuly, C.; Dussap, C. G.	C1/Mo	Growth monitoring of <i>Fibrobacter succinogenes</i> by pressure measurement	Bioprocess and Biosystems Engineering	32	123-128
2009	Farges B, Laroche C, Cornet JF, Dussap CG.	C1/Mo	Spectral kinetic modeling and long-term behavior assessment of <i>Arthrospira platensis</i> growth in photobioreactor under red (620 nm) light illumination.	Biotechnol Prog.	25	151-162 doi: 10.1002/ /btp.95 .  PMID: 192245 72
2009	Cornet, J. F.; Dussap, C. G.	Mo/C4a	A simple and reliable formula for assessment of maximum volumetric productivities in photobioreactors	Biotechnology Progress	25	424-435
2009	De Gussemme, B.; Pycke, B.; Hennebel, T.; Marcoen, A.; Vlaeminck, S. E.; Noppe, H.; Boon, N.; Verstraete, W.	C3	Biological removal of 17alpha-ethinylestradiol by a nitrifier enrichment culture in a membrane bioreactor	Water Research	43	2493-2503



2009	Leys, N.; Baatout, S.; Rosier, C.; Dams, A.; s'Heeren, C.; Wattiez, R.; Mergeay, M.	SP	The response of <i>Cupriavidus metallidurans</i> CH34 to spaceflight in the international space station	Antonie Van Leeuwenhoek	96	227-245
2009	Mastroleo, F.; Leroy, B.; Van Houdt, R.; s' Heeren, C.; Mergeay, M.; Hendrickx, L.; Wattiez, R.	C2	Shotgun proteome analysis of <i>Rhodospirillum rubrum</i> S1H: integrating data from gel-free and gel-based peptides fractionation methods	Journal of Proteome Research	8	2530-2541
2009	Mastroleo, F.; Van Houdt, R.; Leroy, B.; Benotmane, M. A.; Janssen, A.; Mergeay, M.; Vanhavere, F.; Hendrickx, L.; Wattiez, R.; Leys, N.	C2	Experimental design and environmental parameters affect <i>Rhodospirillum rubrum</i> S1H response to space flight	The ISME journal	3	1402-1419
2009	Van Houdt, R.; De Boever, P.; Coninx, I.; Le Calvez, C.; Dicasillati, R.; Mahillon, J.; Mergeay, M.; Leys, N.	SP	Evaluation of the airborne bacterial population in the periodically confined Antarctic base Concordia	Microbial Ecology	57	640-648
2009	Poughon, L.; Farges, B.; Dussap, C. G.; Godia, F.; Lasseur, C.	LSS/MPP/Mo	Simulation of the MELiSSA closed loop system as a tool to define its integration strategy	Advances in Space Research	44	1392-1403
2010	TIKHOMIROVA N., LAWSON J., STASIAK M., DIXON M., PAILLE C., PEIRO E., FOSSEN A., GODIA F	C4b/MPP	Production characteristics of lettuce <i>Lactuca sativa</i> L. in the frame of the first crop tests in the higher plant chamber integrated into the MELiSSA Pilot Plant	COSPAR, Bremen		
2010	Crabbé, A.; Pycke, B.; Van Houdt, R.; Monsieurs, P.; Nickerson, C.; Leys, N.; Cornelis, P.	SP	Response of <i>Pseudomonas aeruginosa</i> PAO1 to low shear modelled microgravity involves AlgU regulation	Environmental Microbiology	12	1545-1564
2010	Janssen, P. J.; Morin, N.; Mergeay, M.; Leroy, B.; Wattiez, R.; Vallaeys, T.; Waleron, K.; Waleron, M.; Wilmotte, A.; Quillardet, P.; de Marsac, N.; Talla, E.; Zhang, C. C.; Leys, N.	C4a	Genome sequence of the edible cyanobacterium <i>Arthrospira</i> sp. PCC 8005	Journal of Bacteriology	192	2465-2466
2010	Morin, N.; Vallaeys, T.; Hendrickx, L.; Leys, N.; Wilmotte, A.	C4a	An efficient DNA isolation protocol for filamentous cyanobacteria of the genus <i>Arthrospira</i>	Journal of Microbiological Methods	80	148-154
2010	Pycke, B. F. G.; Crabbé, A.; Verstraete, W.; Leys, N.	C2	Characterization of triclosan-resistant mutants reveals multiple antimicrobial resistance mechanisms in <i>Rhodospirillum rubrum</i> S1H	Applied and Environmental Microbiology	76	3116-3123

2010	Pycke BF, Vanermen G, Monsieurs P, De Wever H, Mergeay M, Verstraete W, Leys N	C2	Toxicogenomic response of <i>Rhodospirillum rubrum</i> S1H to the micropollutant triclosan.	Applied and Environmental Microbiology	76	3503-3513
2010	Cornet, J. F.	Mo/C4a	Calculation of optimal design and ideal productivities of volumetrically lightened photobioreactors using the constructal approach	Chemical Engineering Science	65	985-998
2010	Lasseur, C.; Brunet, J.; De Wever, H.; Dixon, M.; Dussap, C. G.; Godia, F.; Leys, N.; Mergeay, M.; Van Der Straeten, D.	LSS	MELiSSA: The European project of closed life support system	Gravitational and Space Research	23	3-12
2011	Crabbé, A.; Sarker, S. F.; Van Houdt, R.; Ott, C. M.; Leys, N.; Cornelis, P.; Nickerson, C. A.	SP	Alveolar epithelium protects macrophages from quorum sensing-induced cytotoxicity in a three-dimensional co-culture model	Cellular Microbiology	13	469-481
2011	Crabbé, A.; Schurr, M. J.; Monsieurs, P.; Morici, L.; Schurr, J.; Wilson, J. W.; Ott, C. M.; Tsapraillis, G.; Pierson, D. L.; Stefanyshyn-Piper, H.; Nickerson, Cheryl A.	SP	Transcriptional and proteomic responses of <i>Pseudomonas aeruginosa</i> PAO1 to spaceflight conditions involve Hfq regulation and reveal a role for oxygen	Applied and Environmental Microbiology	77	1221-1230
2012	Farges, B.; Poughon, L.; Roriz, D.; Creuly, C.; Dussap, C. G.; Lasseur, C.	C3	Axenic cultures of <i>Nitrosomonas europaea</i> and <i>Nitrobacter winogradskyi</i> in autotrophic conditions: a new protocol for kinetic studies	Applied Biochemistry and Biotechnology	167	1076-1091
2012	De Micco V., Paradiso R., Aronne G., Fogliano V., De Pascale S.	C4b	Agronomical and nutritional characterization of soybean for BLSS: lessons learned from the MELiSSA project – Food characterization phase I	Proceedings 63rd International Astronautical Congress (IAC), Naples, Italy, 1-5 October 2012	Vol2	1354-60
2012.	Palermo M., Paradiso R., De Pascale S., Fogliano V	C4b	Hydroponic cultivation improves the nutritional quality of soybean and its products.	Journal of Agricultural and Food Chemistry	60	250-255
2012	De Micco, V.; Buonomo, R.; Paradiso, R.; De Pascale, S.; Aronne, G.	C4b	Soybean cultivar selection for Bioregenerative Life Support Systems (BLSS) – Theoretical selection	Advances in Space Research	49	1415-1421
2012	Paradiso, R.; Buonomo, R.; De Micco, V.; Aronne, G.; Palermo, M.; Barbieri, G.; De Pascale, S.	C4b	Soybean cultivar selection for Bioregenerative Life Support Systems (BLSSs) – Hydroponic cultivation	Advances in Space Research	50	1501-1511

2012	Molders, K.; Quinet, M.; Decat, J.; Secco, B.; Dulière, E.; Pieters, S.; van der Kooij, T.; Lutts, S.; Van Der Straeten, D.	C4b	Selection and hydroponic growth of potato cultivars for bioregenerative life support systems	Advances in Space Research	50	156-165
2012	Stasiak, M.; Gidzinski, D.; Jordan, M.; Dixon, M..	C4b	Crop selection for advanced life support systems in the ESA MELiSSA program: Durum wheat ( <i>Triticum turgidum</i> var <i>durum</i> )	Advances in Space Research	49	1684-1690
2012	Van Houdt, R.; Mijndonckx, K.; Leys, Natalie	SP	Microbial contamination monitoring and control during human space missions	Planetary and Space Science	60	115-120
2012	Crabbé A, Leroy B, Wattiez R, Aertsen A, Leys N, Cornelis P, Van Houdt R.	SP	Differential proteomics and physiology of <i>Pseudomonas putida</i> KT2440 under filament-inducing conditions	BMC Microbiology	12:282.	doi: 10.1186/1471-2180-12-282
2013	Mastroleo, F.; Van Houdt, R.; Atkinson, S.; Mergeay, M.; Hendrickx, L.; Wattiez, R.; Leys, N.	C2	Modelled microgravity cultivation modulates N-acylhomoserine lactone production in <i>Rhodospirillum rubrum</i> S1H independently of cell density	Microbiology	159	2456-2466
2013	Poughon, L.; Creuly, C.; Farges, B.; Dussap, C. G.; Schiettecatte, W.; Jovetic, S.; De Wever, H.	C1	Test of an anaerobic prototype reactor coupled with a filtration unit for production of VFAs	Bioresource Technology	145	240-247
2013	Page, V.; Feller, U.	C4b	Selection and hydroponic growth of bread wheat cultivars for bioregenerative life support systems	Advances in Space Research	52	536-546
2013	Schiwon K, Arends K, Rogowski KM, Fürch S, Prescha K, Sakinc T, Van Houdt R, Werner G, Grohmann E.	SP	Comparison of antibiotic resistance, biofilm formation and conjugative transfer of <i>Staphylococcus</i> and <i>Enterococcus</i> isolates from International Space Station and Antarctic Research Station Concordia.	Microb Ecol.	65	638-651 doi: 10.1007/s00248-013-0193-4 PMID: 23411852
2013	Van Houdt R, Deghorain M, Vermeersch M, Provoost A, Lo	SP	Characterization of culturable <i>Paenibacillus</i> spp. from the snow surface on the high	Extremophiles	17	565-73.

	Giudice A, Leys N, Perez-Morga D, Van Melder L, Michaud L.		Antarctic Plateau (DOME C) and their dissemination in the Concordia research station.			
2013	Matallana-Surget S, Wattiez R	SP/LSS	Impact of Solar Radiation on Gene Expression in Bacteria	Proteomes	1	70-86
2013	Mijnendonckx K, Provoost A, Ott CM, Venkateswaran K, Mahillon J, Leys N, Van Houdt R.	SP	Characterization of the survival ability of <i>Cupriavidus metallidurans</i> and <i>Ralstonia pickettii</i> from space-related environments.	Microbial Ecology	65	347-360 PMID: 23212653
2014	Deschoenmaeker, F.; Facchini, R.; Leroy, B.; Badri, H.; Zhang, C. C.; Wattiez, R.	C4a	Proteomic and cellular views of <i>Arthrospira</i> sp. PCC 8005 adaptation to nitrogen depletion	Microbiology	160	1224-1236
2014	Janssen, P. J.; Lambreva, M. D.; Plumeré, N.; Bartolucci, C.; Antonacci, A.; Buonasera, K.; Frese, Raoul N.; Scognamiglio, V.; Rea, G.	C4a	Photosynthesis at the forefront of a sustainable life	Frontiers in Chemistry	2	doi 10.3389
2014	Matallana-Surget, S.; Derock, J.; Leroy, B.; Badri, H.; Deschoenmaeker, F.; Wattiez, R.	C4a	Proteome-wide analysis and diel proteomic profiling of the cyanobacterium <i>Arthrospira platensis</i> PCC 8005	PLoS One	9	e99076
2014	De Micco V., De Pascale S., Paradiso R., Aronne G	SP /C4b	Microgravity effects on different stages of higher plant life cycle and completion of the seed-to-seed cycle.	Plant Biology	16	31-38
2014	Paradiso, R.; De Micco, V.; Buonomo, R.; Aronne, G.; Barbieri, G.; De Pascale, S.	C4b	Soilless cultivation of soybean for Bioregenerative Life-Support Systems: a literature review and the experience of the MELISSA Project - Food characterisation Phase I	Plant Biology	16	69-78
2014	Wolff, S. A.; Coelho, L. H.; Karoliussen, I.; Jost, A. I.	C4b/SP	Effects of the Extraterrestrial Environment on Plants: Recommendations for Future Space Experiments for the MELISSA Higher Plant Compartment	Life	4	189-204
2014	Paradiso, R.; Buonomo, R.; Dixon, M. A.; Barbieri, G.; De Pascale, S.	C4b	Soybean cultivation for Bioregenerative Life Support Systems (BLSSs): The effect of hydroponic system and nitrogen source	Advances in Space Research	53	574-584

2014	Monsieurs P, Mijnendonckx K, Provoost A, Venkateswaran K, Ott CM, Leys N, Van Houdt R.	SP	Draft Genome Sequences of <i>Ralstonia pickettii</i> Strains SSH4 and CW2, Isolated from Space Equipment.	Genome Announcement	pii: e00887-14.	doi: 10.1128/genomeA.00887-14.
2014	Monsieurs P, Mijnendonckx K, Provoost A, Venkateswaran K, Ott CM, Leys N, Van Houdt R.	SP	Genome Sequences of <i>Cupriavidus metallidurans</i> Strains NA1, NA4, and NE12, Isolated from Space Equipment.	Genome Announcement	pii: e00719-14.	doi: 10.1128/genomeA.00719-14.
2014	Michaud L, Lo Giudice A, Mysara M, Monsieurs P, Raffa C, Leys N, Amalfitano S, Van Houdt R.	SP	Snow surface microbiome on the High Antarctic Plateau (DOME C)	PLoS One	9(8):e104505.	doi: 10.1371/journal.pone.0104505.
2014	Yamaguchi N, Roberts M, Castro S, Oubre C, Makimura K, Leys N, Grohmann E, Sugita T, Ichijo T, Nasu M.	SP	Microbial monitoring of crewed habitats in space-current status and future perspectives	Microbes Environ.	29	250-260 PMID: 25130885
2015	Badri H, Monsieurs P, Coninx I, Wattiez R, Leys N	C4a/SP	Molecular investigation of the radiation resistance of edible cyanobacterium <i>Arthrospira</i> sp. PCC 8005	Microbiology Open	mbo3.229	doi:10.1002/
2015	Depraetere O, Deschoenmaeker F, Badri H, Monsieurs P, Foubert I, Leys N, Wattiez R, Muylaert K.	C4a	Trade-Off between Growth and Carbohydrate Accumulation in Nutrient-Limited <i>Arthrospira</i> sp. PCC 8005 Studied by Integrating Transcriptomic and Proteomic Approaches.	PLoS One. 2015	10(7):e0132461..	doi: 10.1371/journal.pone.0132461
2015	Depraetere O, Pierre G, Deschoenmaeker F, Badri H, Foubert I, Leys N, Markou G, Wattiez R, Michaud P, Muylaert K	C4a	Harvesting carbohydrate-rich <i>Arthrospira platensis</i> by spontaneous settling	Bioresource technology	180	16-21
2015	Badri H, Monsieurs P, Coninx I, Nauts R, Wattiez R, Leys N.	SP/C4a	Temporal Gene Expression of the Cyanobacterium <i>Arthrospira</i> in Response to Gamma Rays.	PLoS One.	10(8):e0135565.	doi: 10.1371/journal.

						pone.0135565.
2015	Leroy B, De Meur Q, Moulin C, Wegria G, Wattiez R	C2	New insight in the photoheterotrophic growth of the icl- purple bacterium <i>Rhodospirillum rubrum</i> on acetate.	Microbiology	161	1061-72
2015	Paradiso, R.; Buonomo, R.; Dixon, M. A.; Barbieri, G.; De Pascale, S.	C4b	Effect of bacterial root symbiosis and urea as source of nitrogen on performance of soybean plants grown hydroponically for Bioregenerative Life Support Systems (BLSSs)	Frontiers in Plant Science	6:888	doi:10.3389/fpls.2015.00888
2016	Condori S, Atkinson S, Leys N, Wattiez R, Mastroleo F.	C2	Construction and phenotypic characterization of M68, an Rrul quorum sensing knockout mutant of the photosynthetic alphaproteobacterium <i>Rhodospirillum rubrum</i> .	Research in Microbiology	167	380-92
2016	Deschoenmaeker F, Facchini R, Cabrera Pino JC, Bayon-Vicente G, Sachdeva N, Flammang P, Wattiez R.	C4a	Nitrogen depletion in <i>Arthrospira</i> sp. PCC 8005, an ultrastructural point of view.	Journal of Structural Biology	196	385-93
2016	Cruvellier N, Poughon L, Creuly C, Dussap CG, Lasseur C.	C3/Mo	Growth modelling of <i>Nitrosomonas europaea</i> ATCC® 19718 and <i>Nitrobacter winogradskyi</i> ATCC® 25391: A new online indicator of the partial nitrification	Bioresource Technology	220	369-77
2016	Bryce CC, Le Bihan T, Martin SF, Harrison JP, Bush T, Spears B, Moore A, Leys N, Byloos B, Cockell CS	SP	Rock geochemistry induces stress and starvation responses in the bacterial proteome	Environmental Microbiology	18	1110-21
2016	Buysschaert B, Byloos B, Leys N, Van Houdt R, Boon N.	SP	Reevaluating multicolor flow cytometry to assess microbial viability	Applied Microbiology & Biotechnology	100	9037-51

2016	Coppens J, Lindeboom R, Muys M, Coessens W, Alloul A, Meerbergen K, Lievens B, Clauwaert P, Boon N, Vlaeminck SE.	C3,C4a	Nitrification and microalgae cultivation for two-stage biological nutrient valorization from source separated urine.	Bioresource Technology	211	41-50
2016	Verstraete W1, Clauwaert P1, Vlaeminck SE2.	LSS/SP	Used water and nutrients: Recovery perspectives in a 'panta rhei' context.	Bioresource Technology	215	199-208
2016	Poulet L, Fontaine J-P, Dussap C-G	Mo/ C4b	Plant's response to space environment: a comprehensive review including mechanistic modelling for future space gardeners	Botany Letters	163	337-347
2017	Sheridan C, Depuydt P, De Ro M, Petit C, Van Gysegem E, Delaere P, Dixon M, Stasiak M, Aciksöz SB, Frossard E, Paradiso R, De Pascale S, Venterino V, De Meyer T, Sas B, Geelen D.	C4b	Microbial Community Dynamics and Response to Plant Growth-Promoting Microorganisms in the Rhizosphere of Four Common Food Crops Cultivated in Hydroponics.	Microbial Ecology	73	378-393
2017	Deschoenmaeker F, Bayon-Vicente G, Sachdeva N, Depraetere O, Cabrera Pino JC, Leroy B, Muylaert K, Wattiez R.	C4a	Impact of different nitrogen sources on the growth of <i>Arthrospira</i> sp. PCC 8005 under batch and continuous cultivation - A biochemical, transcriptomic and proteomic profile.	Bioresource Technology		doi: http://dx.doi.org/10.1016/j.biortech.2017.03.145
2017	Paradiso R, Arena C, De Micco V, Giordano M, Aronne G, De Pascale S.	C4b	Changes in Leaf Anatomical Traits Enhanced Photosynthetic Activity of Soybean Grown in Hydroponics with Plant Growth-Promoting Microorganisms.	Frontiers in Plant Science	8:674	doi: 10.3389/fpls.2017.00674. eCollection 2017. PMID: 28529515
2017	Byloos B, Coninx I, Van Hoey O, Cockell C, Nicholson N, Ilyin V, Van Houdt R, Boon N, Leys N	SP	The Impact of Space Flight on Survival and Interaction of <i>Cupriavidus metallidurans</i> CH34 with Basalt, a Volcanic Moon Analog Rock	Frontiers in Microbiology		doi: 10.3389/fmicb.2017.00671

2017	Clauwaert P., Muys M., Alloulb A., De Paepe J., Luther A., Sun X., Ilgrande C., Christiaens M., Hu X., Zhang D., Lindeboom R., Sas B., Rabaey K., Boon N., Frederik Ronsse F., Geelen D, Vlaeminck S.	C3, LSS	Nitrogen cycling in Bioregenerative Life Support Systems: Challenges for waste refinery and food production processes	Progress in aerospace sciences	91	87-98
2017	N. Cruvellier, L. Poughon, C. Creuly, C.-G. Dussap, and C. Lasseur	C3/Mo	High ammonium loading and nitrification modelling in a fixed-bed bioreactor	J. Water Process Eng	20	90-96
2017	Kyriacou MC, De Pascale S, Kyratzis A, Rouphael Y.	LSS	Microgreens as a Component of Space Life Support Systems: A Cornucopia of Functional Food.	Front Plant Sci.	8:1587	doi: 10.3389/fpls.2017.01587.7.
2017	Defoirdt T , Vlaeminck S, Sun X, Nico Boon N., and Clauwaert P.	C3	Ureolytic Activity and Its Regulation in <i>Vibrio campbellii</i> and <i>Vibrio harveyi</i> in Relation to Nitrogen Recovery from Human Urine	Environ. Sci. Technol.	51	13335-13343 doi : 10.1021/acs.est.7b03829
2017	Salmela A, Kokkonen E, Kulmala I, Veijalainen V, van Houdt R, Leys N, Berthier A, Ilyin V, Kharin S, Morozova J, Tikhomirov A, Pasanen P	SP	Production and characterization of bioaerosols for model validation in spacecraft environment	.J.Environ.Sci.	69	227-238 doi: <a href="https://doi.org/10.1016/j.jes.2017.10.016">10.1016/j.jes.2017.10.016</a> PMID: 29941258
2018	De Meur Q, Deutschbauer A, Koch M, Wattiez R, Leroy B.	C2	Genetic Plasticity and Ethylmalonyl Coenzyme A Pathway during Acetate Assimilation in <i>Rhodospirillum rubrum</i> S1H under Photoheterotrophic Conditions.	Appl Environ Microbiol.	84	doi: 10.1128/AEM.02038-17.



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2018	Van Houdt R, Kokkonen E, Lehtimäki M, Pasanen P, Leys N, Kulmala I	SP	Requirements for modeling airborne microbial contamination in space stations	Acta Astronautica	144	380-387	
2018	Zhang D, Clauwaert P, Luther A, López Barreiro D, Prins W, Wim Brillman DWF, Ronsse F.	LSS, C1	Sub- and supercritical water oxidation of anaerobic fermentation sludge for carbon and nitrogen recovery in a regenerative life support system	Waste Management	77	268-275 doi: 10.1016/j.wasman.2018.04.008. PMID 29685602	
2018	De Paepe J, Lindeboom REF, Vanoppen M, De Paepe K, Demey D, Coessens W, Lamaze B, Verliefde ARD, Clauwaert P, Vlaeminck SE.	C3	Refinery and concentration of nutrients from urine with electro dialysis enabled by upstream precipitation and nitrification.	Water Res.	144	76-86 doi: 10.1016/j.watres.2018.07.016. [Epub ahead of print]	
2018	Maarten M, Coppens J, Boon N, Vlaeminck SE	C3	Photosynthetic oxygenation for urine nitrification	Water Science & Technology	78	183-194	
2018	Lindeboom R, Ilgrande C, Carvajal-Arroyo J, Coninx I, Van Hoey O, Roume H, Morozova J, Udert K, Sas B, Paille C, Lasseur C, Ilyin V, Clauwaert P, Leys N, Vlaeminck SE	SP, C3	Nitrogen cycle microorganisms can be reactivated after Space exposure	Nature Scientific Reports		Epub ahead of print	

**Legend of paper topics & MELiSSA compartments:**

**LSS : Life Support Systems**

**SP: Space flight experiments and related studies (biocontamination, confined and extreme environments, space simulations (radiation, microgravity, low shear) )**

**Mo: Modelling**

**C1: MELiSSA first compartment (thermophilic, anaerobic, waste degradation)**

**C2:**

**MELiSSA second compartment (anaerobic photosynthetic)**

**C3:**

**MELiSSA third compartment (nitrifying)**

**C4a :**

**MELiSSA fourth compartment (microbial food production (spirulines (*Arthrospira*)))**

**C4b:**

**MELiSSA fourth compartment (plant food production)**

**C5:**

**Consumers compartment**

**MPP: MELiSSA Pilot Plant .**