



## Space Biology Publications—Fiscal Year 2018

1

Almeida-Porada G, Rodman C, Kuhlman B, Brudvik E, Moon J, George S, Guida P, Sajuthi SP, Langefeld CD, Walker SJ, Wilson PF, Porada CD.

**Exposure of the bone marrow microenvironment to simulated solar and galactic cosmic radiation induces biological bystander effects on human hematopoiesis.**

Stem Cells Dev. 2018 Sep 15;27(18):1237-56.

<https://www.ncbi.nlm.nih.gov/pubmed/29698131>

*Journal Impact Factor:* 3.562

2

Alwood JS, Tran LH, Schreurs AS, Shirazi-Fard Y, Kumar A, Hilton D, Tahimic CGT, Globus RK.

**Dose- and ion-dependent effects in the oxidative stress response to space-like radiation exposure in the skeletal system.**

Int J Mol Sci. 2017 Oct 10;18(10):E2117.

<https://www.ncbi.nlm.nih.gov/pubmed/28994728>

*Journal Impact Factor:* 3.226

3

Angelos E, Brandizzi F.

**NADPH oxidase activity is required for ER stress survival in plants.**

Plant J. 2018 Sep 15. [Epub ahead of print]

<https://www.ncbi.nlm.nih.gov/pubmed/30218537>

*Journal Impact Factor:* 5.775

4

Aseyev N, Vinarskaya AK, Roshchin M, Korshunova TA, Malyshev AY, Zuzina AB, Ierusalimsky VN, Lemak MS, Zakharov IS, Novikov IA, Kolosov P, Chesnokova E, Volkova S, Kasianov A, Uroshlev L, Popova Y, Boyle RD, Balaban PM.

**Adaptive changes in the vestibular system of land snail to a 30-day spaceflight and readaptation on return to Earth.**

Front Cell Neurosci. 2017 Nov 1;11:348.

<https://www.ncbi.nlm.nih.gov/pubmed/29163058>

*Journal Impact Factor:* 4.555

5

Barker R, Gilroy S.

**Life in space isn't easy, even if you are green.**

The Biochemist. 2017 Dec;39(6):10-3.

[www.biochemist.org/bio/03906/0010/039060010.pdf](http://www.biochemist.org/bio/03906/0010/039060010.pdf)

*Journal Impact Factor:* Not available for this journal

6

Barrila J, Crabbé A, Yang J, Franco K, Nydam SD, Forsyth RJ, Davis RR, Gangaraju S, Ott CM, Coyne CB, Bissell MJ, Nickerson CA.

**Modeling host-pathogen interactions in the context of the microenvironment: 3-D cell culture comes of age.**

Infect Immun. 2018 Sep 4. [Epub ahead of print]

<https://www.ncbi.nlm.nih.gov/pubmed/30181350>

Journal Impact Factor: 3.256

7

Beheshti A, Cekanaviciute E, Smith DJ, Costes SV.

**Global transcriptomic analysis suggests carbon dioxide as an environmental stressor in spaceflight: A systems biology GeneLab case study.**

Sci Rep. 2018 Mar 8;8(1):4191.

<https://www.ncbi.nlm.nih.gov/pubmed/29520055>

Journal Impact Factor: 4.259

8

Beheshti A, Miller J, Kidane Y, Berrios D, Gebre SG, Costes SV.

**NASA GeneLab Project: Bridging space radiation omics with ground studies.**

Radiat Res. 2018 Jun;189(66):553-9.

<https://www.ncbi.nlm.nih.gov/pubmed/29652620>

Journal Impact Factor: 2.539

9

Beheshti A, Ray S, Fogle H, Berrios D, Costes SV.

**A microRNA signature and TGF- $\beta$ 1 response were identified as the key master regulators for spaceflight response.**

PLoS One. 2018 Jul 25;13(7):e0199621.

<https://www.ncbi.nlm.nih.gov/pubmed/30044882>

Journal Impact Factor: 2.806

10

Bilbao A, Patel AK, Rahman M, Vanapalli SA, Blawzdiewicz J.

**Roll maneuvers are essential for active reorientation of *Caenorhabditis elegans* in 3D media.**

Proc Natl Acad Sci U S A. 2018 Apr 17;115(16):E3616-E3625.

<https://www.ncbi.nlm.nih.gov/pubmed/29618610>

Journal Impact Factor: 9.661

11

Bouyanif A, Liyanage S, Hewitt JE, Vanapalli SA, Moustaid-Moussa N, Hequet E, Abidi N.

**FTIR imaging detects diet and genotype-dependent chemical composition changes in wild type and mutant *C. elegans* strains.**

Analyst. 2017 Dec 4;142(24):4727-36.

<https://www.ncbi.nlm.nih.gov/pubmed/29139484>

Journal Impact Factor: 3.885

12

Boyle R, Ehsanian R, Mofrad A, Popova Y, Varelas J.

**Morphology of the utricular otolith organ in the toadfish, *Opsanus tau*.**

J Comp Neurol. 2018 Jun 15;526(9):1571-88.

<https://www.ncbi.nlm.nih.gov/pubmed/29524209>

Journal Impact Factor: 3.266

13

Brillada C, Zheng J, Kruger F, Rovira-Diaz E, Askani JC, Schumacher K, Rojas-Pierce M.

**Phosphoinositides control the localization of HOPS subunit VPS41, which together with VPS33 mediates vacuole fusion in plants.**

Proc Natl Acad Sci U S A. 2018 Aug 28;115(35):E8305-E8314.

<https://www.ncbi.nlm.nih.gov/pubmed/30104351>

Journal Impact Factor: 9.661

14

Carr CE, Bryan NC, Saboda KN, Bhattacharjee SA, Ruvkun G, Zuber MT.

**Acceleration profiles and processing methods for parabolic flight.**

npj Microgravity. 2018 Aug 7;4:14.

<https://www.ncbi.nlm.nih.gov/pubmed/30109261>

Journal Impact Factor: 2.00

15

Çelen I, Doh JH, Sabanayagam CR.

**Effects of liquid cultivation on gene expression and phenotype of *C. elegans*.**

BMC Genomics. 2018 Jul 31;19(1):562.

<https://www.ncbi.nlm.nih.gov/pubmed/30064382>

Journal Impact Factor: 3.729

16

Cortese F, Klokov D, Osipov A, Stefaniak J, Moskalev A, Schastnaya J, Cantor C, Aliper A, Mamoshina P, Ushakov I, Sapetsky A, Vanheaelen Q, Alchinova I, Karganova M, Kovalchuk O, Wilkins RC, Shtemberg A, Moreels M, Baatout S, Izumchenko E, de Magalhães JP, Artemov AV, Costes SV, Beheshti A, Mao XW, Pecaut MJ, Kaminskiy D, Ozerov IV, Scheibye-Knudsen M, Zhavoronkov A.

**Vive la radiorésistance!: Converging research in radiobiology and biogerontology to enhance human radioresistance for deep space exploration and colonization.**

Oncotarget. 2018 Mar 6;9(18):14692-722.

<https://www.ncbi.nlm.nih.gov/pubmed/29581875>

Journal Impact Factor: 5.168

17

Cromer WE, Zawieja DC.

**Acute exposure to space flight results in evidence of reduced lymph transport, tissue fluid shifts, and immune alterations in the rat gastrointestinal system.**

Life Sci Space Res. 2018 May;17:74-82.

<https://www.ncbi.nlm.nih.gov/pubmed/29753416>

Journal Impact Factor: 1.97

18

Cromer WE, Zawieja SD, Doersch KM, Stagg H, Hunter F, Tharakan B, Childs E, Zawieja DC.  
**Burn injury-associated MHCII(+) immune cell accumulation around lymphatic vessels of the mesentery and increased lymphatic endothelial permeability are blocked by doxycycline treatment.**

Lymphat Res Biol. 2018 Feb;16(1):56-64.

<https://www.ncbi.nlm.nih.gov/pubmed/29359999>

Journal Impact Factor: 1.551

19

Dagdeviren D, Beallias J, Khan I, Mednieks MI, Hand AR.  
**Response of the mouse sublingual gland to spaceflight.**

Eur J Oral Sci. 2018 Oct;126(5):373-81. Epub 2018 Jul 9.

<https://www.ncbi.nlm.nih.gov/pubmed/29984852>

Journal Impact Factor: 1.54

20

Dagdeviren D, Kalajzic Z, Adams DJ, Kalajzic I, Lurie A, Mednieks MI, Hand AR.

**Responses to spaceflight of mouse mandibular bone and teeth.**

Arch Oral Biol. 2018 Sep;93:163-76.

<https://www.ncbi.nlm.nih.gov/pubmed/29929058>

Journal Impact Factor: 1.748

21

Elefteriou F.

**Impact of the autonomic nervous system on the skeleton.**

Physiol Rev. 2018 Jul 1;98(3):1083-112. Review.

<https://www.ncbi.nlm.nih.gov/pubmed/29717928>

Journal Impact Factor: 27.312

22

Espinosa-Jeffrey A.

**Physiologically-relevant cellular models for biomarkers and drug discovery.**

Ann Stem Cell Res Ther. 2018 Apr 26;2(2):1014.

[http://www.remedypublications.com/annals-of-stem-cell-research-and-therapy/articles/pdfs\\_folder/ascrt-v2-id1014.pdf](http://www.remedypublications.com/annals-of-stem-cell-research-and-therapy/articles/pdfs_folder/ascrt-v2-id1014.pdf)

Journal Impact Factor: Not available for this journal

23

Fajardo-Cavazos P, Leehan JD, Nicholson WL.

**Alterations in the spectrum of spontaneous rifampicin-resistance mutations in the *Bacillus subtilis rpoB* gene after cultivation in the human spaceflight environment.**

Front Microbiol. 2018 Feb 14;9:192.

<https://www.ncbi.nlm.nih.gov/pubmed/29491852>

Journal Impact Factor: 4.076

24

Farris M, McTyre ER, Okoukoni C, Dugan G, Johnson BJ, Blackstock AW, Munley MT, Bourland JD, Cline JM, Willey JS.

**Cortical thinning and structural bone changes in non-human primates after single-fraction whole-chest irradiation.**

Radiat Res. 2018 Jul;190(1):63-71.

<https://www.ncbi.nlm.nih.gov/pubmed/29738279>

Journal Impact Factor: 2.539

25

Gibbs NM, Rouhana LV, Masson PH.

**Quantitative trait loci for root growth response to cadaverine in *Arabidopsis*.**

Methods Mol Biol. 2018;1694:233-56.

<https://www.ncbi.nlm.nih.gov/pubmed/29080172>

Journal Impact Factor: 0.79

26

Hammond TG, Allen PL, Gunter MA, Chiang J, Giaevers G, Nislow C, Birdsall HH.

**Physical forces modulate oxidative status and stress defense mediated metabolic adaptation of yeast colonies: Spaceflight and microgravity simulations.**

Microgravity Sci Technol. 2018 May;30(3):195–208.

<https://link.springer.com/article/10.1007%2Fs12217-017-9588-z>

Journal Impact Factor: 1.188

27

Harding SM, Singh NJ, Walton KD.

**A sensitive period for the development of motor function in rats: A microgravity study.**

Gravit Space Res. 2017 Dec;5(2):57-79.

<http://gravitationalandspacebiology.org/index.php/journal/article/view/767>

Journal Impact Factor: Not available for this journal

28

Hilleary R, Choi WG, Kim SH, Lim SD, Gilroy S.

**Sense and sensibility: The use of fluorescent protein-based genetically encoded biosensors in plants.**

Curr Opin Plant Biol. 2018 Dec;46:32-8. Review. Epub 2018 Jul 21.

<https://www.ncbi.nlm.nih.gov/pubmed/30041101>

Journal Impact Factor: 7.357

29

Hilleary R, Gilroy S.

**Systemic signaling in response to wounding and pathogens.**

Curr Opin Plant Biol. 2018 Jan 16;43:57-62. Review.

<https://www.ncbi.nlm.nih.gov/pubmed/29351871>

Journal Impact Factor: 7.357

30

Höhner R, Marques JV, Ito T, Amakura Y, Budgeon AD, Weitz K, Hixson KK, Davin LB, Kirchhoff H, Lewis NG.

**Reduced arogenate dehydratase expression: Ramifications for photosynthesis and metabolism.**

Plant Physiol. 2018 May;177(1):115-31.

<https://www.ncbi.nlm.nih.gov/pubmed/29523714>

Journal Impact Factor: 6.456

31

John SP, Hasenstein KH.

**Biochemical responses of the desiccation-tolerant resurrection fern *Pleopeltis polypodioides* to dehydration and rehydration.**

J Plant Physiol. 2018 May 18;228:12-8.

<https://www.ncbi.nlm.nih.gov/pubmed/29803130>

Journal Impact Factor: 3.121

32

Ko FC, Li J, Brooks DJ, Rutkove SB, Bouxsein ML.

**Structural and functional properties of bone are compromised in amyotrophic lateral sclerosis mice.**

Amyotroph Lateral Scler Frontotemporal Degener. 2018 Aug;19(5-6):457-62.

<https://www.ncbi.nlm.nih.gov/pubmed/29569488>

Journal Impact Factor: 3.054

33

Ko FC, Van Vliet M, Ellman R, Grasso D, Brooks DJ, Spatz JM, Conlon C, Aguirre JI, Wronski TJ, Bouxsein ML.

**Treatment with a soluble bone morphogenetic protein type 1A receptor (BMPR1A) fusion protein increases bone mass and bone formation in mice subjected to hindlimb unloading.**

JBMR Plus. 2017 Oct;1(2):66-72.

<https://www.ncbi.nlm.nih.gov/pubmed/30283882>

Journal Impact Factor: Not available for this journal

34

Kuczmarski JM, Hord JM, Lee Y, Guzzoni V, Rodriguez D, Lawler MS, Garcia-Villatoro EL, Holly D, Ryan P, Falcon K, Garcia M, Janini Gomes M, Fluckey JD, Lawler JM.

**Effect of Eukarion-134 on Akt-mTOR signaling in the rat soleus during 7 days of mechanical unloading.**

Exp Physiol. 2018 Apr 1;103(4):545-58.

<https://www.ncbi.nlm.nih.gov/pubmed/29315934>

Journal Impact Factor: 2.912

35

Kwon T, Sparks JA, Liao F, Blancaflor EB.

**ERULUS is a plasma membrane-localized receptor-like kinase that specifies root hair growth by maintaining tip-focused cytoplasmic calcium oscillations.**

Plant Cell. 2018 Jun;30(6):1173-7.

<https://www.ncbi.nlm.nih.gov/pubmed/29802213>

Journal Impact Factor: 8.688

36

Lima F, Swift JM, Greene ES, Allen MR, Cunningham DA, Braby LA, Bloomfield SA.

**Exposure to low-dose X-ray radiation alters bone progenitor cells and bone microarchitecture.**

Radiat Res. 2017 Oct 1;188(4):433-42.

<https://www.ncbi.nlm.nih.gov/pubmed/28771086>

Journal Impact Factor: 2.539

37

Lionheart G, Vandenbrink JP, Hoeksema JD, Kiss JZ.

**The impact of simulated microgravity on the growth of different genotypes of the model legume plant *Medicago truncatula*.**

Microgravity Sci Technol. 2018 Aug;30(4):491-502.

<https://link.springer.com/article/10.1007%2Fs12217-018-9619-4>

Journal Impact Factor: 1.188

38

Low EK, Brudvik E, Kuhlman BM, Wilson PF, Almeida-Porada G, Porada CD.

**Microgravity impairs DNA damage repair in human hematopoietic stem/progenitor cells and inhibits their differentiation into dendritic cells.**

Stem Cells Dev. 2018 Sep 15;27(18):1257-67.

<https://www.ncbi.nlm.nih.gov/pubmed/29901426>

Journal Impact Factor: 3.562

39

Mao XW, Byrum S, Nishiyama NC, Pecaut MJ, Sridharan V, Boerma M, Tackett AJ, Shiba D, Shirakawa M, Takahashi S, Delp MD.

**Impact of spaceflight and artificial gravity on the mouse retina: Biochemical and proteomic analysis.**

Int J Mol Sci. 2018 Aug 28;19(9):E2546.

<https://www.ncbi.nlm.nih.gov/pubmed/30154332>

Journal Impact Factor: 3.687

40

Mehta SK, Bloom DC, Plante I, Stowe R, Feiveson AH, Renner A, Dhummakupt A, Markan D, Zhang Y, Wu H, Scoles B, Cohen JI, Crucian B, Pierson DL.

**Reactivation of latent Epstein-Barr virus: A comparison after exposure to gamma, proton, carbon, and iron radiation.**

Int J Mol Sci. 2018 Sep 28;19(10):2961.

<https://www.ncbi.nlm.nih.gov/pubmed/30274169>

*Journal Impact Factor:* 3.687

41

Mickens MA, Skoog EJ, Reese LE, Barnwell PL, Spencer LE, Massa GD, Wheeler RM.

**A strategic approach for investigating light recipes for 'Outredgeous' red romaine lettuce using white and monochromatic LEDs.**

Life Sci Space Res. 2018 Sep 18. [Article in Press]

<https://www.sciencedirect.com/science/article/pii/S2214552418300683>

*Journal Impact Factor:* 1.97

42

Morrison MD, Nicholson WL.

**Meta-analysis of data from spaceflight transcriptome experiments does not support the idea of a common bacterial "spaceflight response."**

Sci Rep. 2018 Sep 26;8(1):14403.

<https://www.ncbi.nlm.nih.gov/pubmed/30258082>

*Journal Impact Factor:* 4.122

43

Mortreux M, Nagy JA, Ko FC, Bouxsein ML, Rutkove SB.

**A novel partial gravity ground-based analogue for rats via quadrupedal unloading.**

J Appl Physiol (1985). 2018 Jul 1;125(1):175-82.

<https://www.ncbi.nlm.nih.gov/pubmed/29565773>

*Journal Impact Factor:* 3.351

44

Muller-Delp JM, Hotta K, Chen B, Behnke BJ, Maraj JJ, Delp MD, Lucero TR, Bramy JA, Alarcon DB, Morgan HE, Cowan MR, Haynes AD.

**Effects of age and exercise training on coronary microvascular smooth muscle phenotype and function.**

J Appl Physiol (1985). 2018 Jan 1;124(1):140-9.

<https://www.ncbi.nlm.nih.gov/pubmed/29025901>

*Journal Impact Factor:* 3.351

45

Paez-Garcia A, Sparks JA, de Bang L, Blancaflor EB.

**Plant actin cytoskeleton: New functions from old scaffold.**

In: Sahi V, Baluška F, eds. Concepts in Cell Biology - History and Evolution. Plant Cell Monographs, vol 23. Chaum, Switzerland: Springer, 2018. p. 103-37.

[https://link.springer.com/chapter/10.1007%2F978-3-319-69944-8\\_6](https://link.springer.com/chapter/10.1007%2F978-3-319-69944-8_6)

*Journal Impact Factor:* Not applicable to this publication

46

Philbrick KA, Martin SA, Colagiovanni AR, Branscum AJ, Turner RT, Iwaniec UT.  
**Effects of hypothalamic leptin gene therapy on osteopetrosis in leptin-deficient mice.**  
J Endocrinol. 2018 Feb;236(2):57-68.  
<https://www.ncbi.nlm.nih.gov/pubmed/29191939>

*Journal Impact Factor:* 4.706

47

Rahman M, Hewitt JE, Van-Bussel F, Edwards H, Blawdziewicz J, Szewczyk NJ, Driscoll M, Vanapalli SA.  
**NemaFlex: A microfluidics-based technology for standardized measurement of muscular strength of *C. elegans*.**  
Lab Chip. 2018 Jul 24;18(15):2187-201.  
<https://www.ncbi.nlm.nih.gov/pubmed/29892747>

*Journal Impact Factor:* 6.045

48

Rettig TA, Ward C, Bye BA, Pecaut MJ, Chapes SK.  
**Characterization of the naive murine antibody repertoire using unamplified high-throughput sequencing.**  
PLoS One. 2018 Jan 10;13(1):e0190982.  
<https://www.ncbi.nlm.nih.gov/pubmed/29320559>

*Journal Impact Factor:* 2.806

49

Rosowski EE, Raffa N, Knox BP, Golenberg N, Keller NP, Huttenlocher A.  
**Macrophages inhibit *Aspergillus fumigatus* germination and neutrophil-mediated fungal killing.**  
PLoS Pathog. 2018 Aug 2;14(8):e1007229.  
<https://www.ncbi.nlm.nih.gov/pubmed/30071103>

*Journal Impact Factor:* 6.608

50

Sng NJ, Paul A-L, Ferl RJ.  
**Phenotypic characterization of an Arabidopsis T-DNA insertion line SALK\_063500.**  
Data Brief. 2018 Jun;18:913-9.  
<https://www.ncbi.nlm.nih.gov/pubmed/29900258>

*Journal Impact Factor:* Not available for this journal

51

Tahimic CGT, Globus RK.  
**Redox signaling and its impact on skeletal and vascular responses to spaceflight.**  
Int J Mol Sci. 2017 Oct 16;18(10):E2153. Review.  
<https://www.ncbi.nlm.nih.gov/pubmed/29035346>

*Journal Impact Factor:* 3.226

52

Thornhill SG, McLean RJC.

**Use of whole-cell bioassays for screening quorum signaling, quorum interference, and biofilm dispersion.**

Methods Mol Biol. 2018;1673:3-24.

<https://www.ncbi.nlm.nih.gov/pubmed/29130160>

Journal Impact Factor: 0.79

53

Toyota M, Spencer D, Sawai-Toyota S, Jiaqi W, Zhang T, Koo AJ, Howe GA, Gilroy S.

**Glutamate triggers long-distance, calcium-based plant defense signaling.**

Science. 2018 Sep 14;361(6407):1112-5.

<https://www.ncbi.nlm.nih.gov/pubmed/30213912>

Journal Impact Factor: 41.058

54

Turner RT, Martin SA, Iwaniec UT.

**Metabolic coupling between bone marrow adipose tissue and hematopoiesis.**

Curr Osteoporos Rep. 2018 Apr;16(2):95-104.

<https://www.ncbi.nlm.nih.gov/pubmed/29492879>

Journal Impact Factor: 3.721

55

Urbaniak C, Dadwal S, Bagramyan K, Venkateswaran K.

**Draft genome sequence of a clinical isolate of *Fusarium fujikuroi* isolated from a male patient with acute myeloid leukemia.**

Genome Announc. 2018 Jun 21;6(25):e00476-18.

<https://www.ncbi.nlm.nih.gov/pubmed/29930033>

Journal Impact Factor: 1.18

56

Urbaniak C, Massa G, Hummerick M, Khodadad C, Schuerger A, Venkateswaran K.

**Draft genome sequences of two *Fusarium oxysporum* isolates cultured from infected *Zinnia hybrida* plants grown on the International Space Station.**

Genome Announc. 2018 May 17;6(20):e00326-18.

<https://www.ncbi.nlm.nih.gov/pubmed/29773617>

Journal Impact Factor: 1.18

57

Urbaniak C, Sielaff AC, Frey KG, Allen JE, Singh N, Jaing C, Wheeler K, Venkateswaran K.

**Detection of antimicrobial resistance genes associated with the International Space Station environmental surfaces.**

Sci Rep. 2018 Jan 16;8(1):814.

<https://www.ncbi.nlm.nih.gov/pubmed/29339831>

Journal Impact Factor: 4.259

58

Valbuena MA, Manzano A, Vandenbrink JP, Pereda-Loth V, Carnero-Diaz E, Edelmann RE, Kiss JZ, Herranz R, Medina FJ.

**The combined effects of real or simulated microgravity and red-light photoactivation on plant root meristematic cells.**

Planta. 2018 Sep;248(3):691-704.

<https://www.ncbi.nlm.nih.gov/pubmed/29948124>

*Journal Impact Factor:* 3.361

59

Wang J, Song J, Clark G, Roux SJ.

**ANN1 and ANN2 function in post-phloem sugar transport in root tips to affect primary root growth.**

Plant Physiol. 2018 Sep;178(1):390-401.

<https://www.ncbi.nlm.nih.gov/pubmed/30018170>

*Journal Impact Factor:* 6.456

60

Ward C, Rettig TA, Hlavacek S, Bye BA, Pecaut MJ, Chapes SK.

**Effects of spaceflight on the immunoglobulin repertoire of unimmunized C57BL/6 mice.**

Life Sci Space Res. 2018 Feb;16:63-75.

<https://www.ncbi.nlm.nih.gov/pubmed/29475521>

*Journal Impact Factor:* 1.97

61

Zea L, Nisar Z, Rubin P, Cortesão M, Luo J, McBride SA, Moeller R, Klaus D, Müller D, Varanasi KK, Muecklich F, Stodieck L.

**Design of a spaceflight biofilm experiment.**

Acta Astronaut. 2018 Jul;148:294-300.

<https://www.sciencedirect.com/science/article/pii/S0094576517317083>

*Journal Impact Factor:* 1.536

62

Zupanska AK, Schultz ER, Yao J, Sng NJ, Zhou M, Callaham JB, Ferl RJ, Paul A-L.

**ARG1 functions in the physiological adaptation of undifferentiated plant cells to spaceflight.**

Astrobiology. 2017 Nov;17(11):1077-111.

<https://www.ncbi.nlm.nih.gov/pubmed/29088549>

*Journal Impact Factor:* 2.603

**For additional information, contact:** Space Life and Physical Sciences Research and Applications Division,  
National Aeronautics and Space Administration <https://www.nasa.gov/directorates/heo/slpsra>

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