



**Raúl Herranz Barranco**

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## Summary of CV

This section describes briefly a summary of your career in science, academic and research; the main scientific and technological achievements and goals in your line of research in the medium -and long- term. It also includes other important aspects or peculiarities.

PhD in Biochemistry by the UAM in 2004, prepared his first experiment for execution in orbit in 2003 (Spanish Cervantes SOYUZ Mission, 3 Experiments: GENE, AGEING, ROOT). Post-doctoral research training in several simulated microgravity facilities in Europe (GBF), particularly at ESTEC (ESA) in the Netherlands, creating a consortium for ESA GBF grants. Returned to Spain in 2008 as Hired Doctor Researcher (JAE-DOC, CIB (CSIC), later modified as INF with "Titulado Superior ATyP (Doctor)" level), acting as PI/coordinator of a National (AYA2009-07792-E) and 2 GBF (ESA) Grants to transfer Space Omics expertise from Insect to Plant models in simulated microgravity (see review, Herranz et al 2013).ESA/NASA Seedling Growth European co-I (2012-18)- The largest plant biology experiment on board ISS (ELGRA Gravity Spotlight Team & NASA Group Achievement Awards).

Teaching habilitations: CAP secondary level (UCM) and PCD/PUP (ANECA) university level. Primary School outreach. Co-supervision of 2 research practicals, 2 TFM and 4 PhD Thesis.

Research evaluations: 13 excellent research track (AEI, 2019). Staff research exams passed 3 times (CT in 2014 y 2015 (INTA) and ID in 2019 (CAB-CSIC)).

Publications: Total 66, Q1 42, First author 15, Corresponding (AC) 26, Book/outreach 8, Reviews: 10. Conferences 107 (6 invited). H index 25, Citations >1900. Grants (PI /co-I /work team): Total 20, Spanish PN (1/4/5), European (4/3/3), ESA/NASA (0/3/6) involving hardware development (technology transfer to Spanish companies, SENER Espacio).

Today, acts as European Coordinator of the GIA2 (3rd GBF project) and the Space Omics Topical Team (ESA) and ISSOP (<http://issop.space>). He is full member of 2 Genelab AWG (Plants and Animal, NASA). The following sections are main achievements from 2010 (2 fatherhood career interruptions).

## General quality indicators of scientific research

This section describes briefly the main quality indicators of scientific production (periods of research activity, experience in supervising doctoral theses, total citations, articles in journals of the first quartile, H index...). It also includes other important aspects or peculiarities.

Como investigador contratado no ha podido solicitar sexenios de investigación aunque su producción en los últimos años (desde la lectura de su tesis en 2004) ha sido muy significativa, continua y al alza en responsabilidad, impacto y citas recibidas. Desde el punto de vista docente, tutela trabajos fin de máster a nivel nacional e internacional y ha codirigido 4 tesis doctorales (todas ellas Sobresaliente cum laude por unanimidad, dos con mención Internacional/Europea).

El número de citas totales supera las 1900 (360 citas en 2021), más de 60 artículos científicos (la mayoría en el primer cuartil Q1 y/o con alto grado de contribución como primer y/o autor de correspondencia) y generando un índice  $h=25$  (<https://scholar.google.es/citations?user=rQhHOuwAAAAJ&hl=en&oi=ao>, en 2021 se registran 13 publicaciones). Se completa su perfil de publicaciones con un centenar de contribuciones a congresos/seminarios, y 10 artículos de divulgación y/o capítulos de libro (con premios internacionales y reediciones). Es revisor habitual en publicaciones internacionales. Ha publicado en bases de datos indexadas 126 secuencias/anotaciones, 6 estudios de expresión por microarrays (279 muestras) y por RNA-seq (38 secuenciaciones publicadas, 44 pendientes de publicación).

Ha participado en 23 proyectos científicos. Actuó como miembro del equipo de trabajo (desde 2000) y como co-investigador (desde 2010) en proyectos del Plan Nacional (uno como IP), en 4 misiones a la Estación Espacial Internacional (Misión Cervantes en 2003 y Misiones SG1, SG2 y SG3 recientemente). Ha sido coordinador de varios proyectos europeos (European Space Agency) e internacionales (Naciones Unidas) para el uso de instrumentación de microgravedad simulada. Como líder nacional en microgravedad simulada, proporciona acceso a estos equipos a científicos y empresas nacionales que desean validar nuevos equipos.

Reconocimientos y premios. Fue acreditado como Profesor de Universidad Privada y como Profesor Contratado Doctor en 2010 e Investigador I3 en 2019. Obtuvo el reconocimiento como Investigador Contratado Indefinido desde 2008 (categoría de Titulado Superior de ATYP Doctor), y actualmente es candidato a Científico Titular de OPIs (ha superado todos los ejercicios del proceso selectivo de CT en especialidad de "Ciencia y Tecnología en Sistemas Espaciales" en las convocatorias de 2014 y 2015 con la mejor puntuación entre los candidatos con perfil de Biología Espacial (superado por ingenieros/astrofísicos) y en el proceso de Investigador Distinguido 2019 en la especialidad "Sistemas evolutivos y complejidad en Astrobiología" (primer suplente tras un matemático)). También en 2019 ha recibido personalmente premios de la NASA y la ELGRA como co-investigador de Seedling Growth, y el reconocimiento de la medalla COSPAR a la cooperación internacional a los IPs de este proyecto.

Actualmente es un miembro relevante en diversos paneles de expertos para la definición de políticas espaciales en ESA (SciSpace Roadmaps) y NASA (Decadal Survey). Colabora en consorcios internacionales de análisis de datos ómicos (Genelab Analysis Working Groups), siendo el coordinador del consorcio europeo ESA funded Space Omics Topical Team y representante europeo del consorcio internacional ISSOP (International Standards for Space Omics Processing).



## Raúl Herranz Barranco

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Personal web page: **<https://issop.space/space-omics-topical-team/>**

### Current professional situation

**Employing entity:** Consejo Superior de Investigaciones Científicas      **Type of entity:** State agency  
**Department:** Biotecnología microbiana y de plantas, Centro de Investigaciones Biológicas Margarita Salas  
**Professional category:** Titulado Superior de Actividades Técnicas y Profesionales (Doctor) / Postdoctoral Research Associate  
**City employing entity:** Spain  
**Phone:** (+34) 918373112 - 4260  
**Start date:** 01/09/2008  
**Type of contract:** Permanent employment contract      **Dedication regime:** Full time  
**Primary (UNESCO code):** 241502 - Molecular biology of plants; 251201 - Exobiology  
**Secondary (UNESCO code):** 240700 - Cell biology; 241700 - Plant Biology (Botany)  
**Tertiary (UNESCO code):** 241302 - Insect development; 241500 - Molecular biology; 251299 - Other  
**Performed tasks:** Suboptimal environments - Environmental Stress Synergies - Evolution of gene redundancy - Adaptation to unusual environments - Space agronomy Altered gravity (including Microgravity) environments, International Space Station (ISS), Space Biology - Altered gravity simulation (including clinostat, RPM, LDC, magnetic levitation) - Model Organisms: Drosophila, Arabidopsis, in vitro cell cultures - Experimental approaches: microarray, qRT-PCR, gene expression, flow cytometry, genomics, proteomics - Experimental questions: plant development, seedling growth, cell cycle, auxins, gravitropism - Application to autonomous Life-support systems for space biology  
**Identify key words:** Space r&d; Exobiology; Evolutionary biology; Molecular biology; Plants and animal biology and ecology; Environmental biology

### Previous positions and activities

	Employing entity	Professional category	Start date
1	Consejo Superior de Investigaciones Científicas	Investigador Contratado Doctor (JAE-Doc) Postdoctoral Research Associate	01/09/2008
2	European Space Agency	Spanish Postdoctoral trainee	01/04/2008
3	Universidad Autónoma de Madrid	Investigador Contratado doctor (Postdoctoral Research Associate)	11/09/2007



	Employing entity	Professional category	Start date
4	Ogilvy Commonhealth Worldwide (Ogilvy Healthworld Spain)	Consultant and Scientific editor	16/05/2005
5	Universidad Autónoma de Madrid	Investigador Contratado doctor (Postdoctoral Research Associate)	01/06/2004
6	Universidad Autónoma de Madrid	NTE-CSIC and FPI fellowships (PhD student)	30/11/1999

- 1** **Employing entity:** Consejo Superior de Investigaciones Científicas **Type of entity:** State agency  
**Department:** Dpto. de Bioquímica (UAM-CSIC) / Dpto. Biología Medioambiental, Instituto de Investigaciones Biomédicas / Centro de Investigaciones Biológicas  
**Professional category:** Investigador Contratado Doctor (JAE-Doc) Postdoctoral Research Associate  
**Start-End date:** 01/09/2008 - 31/08/2011 **Duration:** 3 years  
**Type of contract:** Temporary employment contract  
**Performed tasks:** 3-year postdoctoral contract JAEDoc. Due to the decease of the tutor at University Autonoma de Madrid, I moved to Centro de Investigaciones Biologicas to finish Drosophila associated research and restart a new phase in my research career associated with Dr. Medina (Arabidopsis).  
**Field of management activity:** Public Research Body
- 2** **Employing entity:** European Space Agency **Type of entity:** State agency  
**Department:** Dpto. TEC-MMG (Life and Physical Science Instrumentation Section), European Science & Technology Research Center (ESTEC-ESA)  
**City employing entity:** Noordwijk, Holland  
**Professional category:** Spanish Posdoctoral trainee  
**Start-End date:** 01/04/2008 - 31/08/2008 **Duration:** 5 months  
**Type of contract:** Grant-assisted student (pre or post-doctoral, others)  
**Performed tasks:** 2-years Spanish trainee position at the European Space Agency awarded within the Specialization in Singular Research Facilities and International Organisms” action of the Spanish government that allows both Pre-Doc and Post-Doc candidates to work in European Singular Research Facilities including the European Space Agency, EMBL, CERN, etc... This stay objective was the optimization of new Ground Based Facilities (LDC and HFML levitator magnet) to be widely used by biologist. The stay was suddenly interrupted due to scientific (award of a higher responsibility 3-year research position in Spain that allowed me to lead and intensify the same research line from Spain) and familiar conciliation (birth of my first child and my wife holding a permanent position in a Spanish research center) reasons.  
**Applicability in teaching and/or research:** (Postdoctoral Research Associate)
- 3** **Employing entity:** Universidad Autónoma de Madrid **Type of entity:** University  
**Department:** Dpto. de Bioquímica, Medicina  
**Professional category:** Investigador Contratado doctor (Postdoctoral Research Associate)  
**Start-End date:** 11/09/2007 - 31/03/2008 **Duration:** 6 months - 19 days  
**Type of contract:** Temporary employment contract  
**Performed tasks:** Together with previous Postdoctoral Research Associate periods since my PhD lecture (January 2004) it constitute more than 2 years of postdoctoral stay in UAM working with Drosophila model system.  
**Field of management activity:** University  
**Applicability in teaching and/or research:** Postflight analyses of Cervantes Mission experiments (8th expedition to the International Space Station, 18-28 October 2003). Experiments AGEING & GENE EXPRESSION



- 4** **Employing entity:** Ogilvy Commonhealth Worldwide (Ogilvy Healthworld Spain) **Type of entity:** Healthcare Institutions  
**Department:** Medical/Scientific department  
**City employing entity:** Las Rozas (Madrid), Spain  
**Professional category:** Consultant and Scientific editor  
**Start-End date:** 16/05/2005 - 26/07/2007 **Duration:** 2 years - 2 months - 10 days  
**Type of contract:** Permanent employment contract  
**Dedication regime:** Full time  
**Performed tasks:** Biomedical consultancy, bibliographical research and editorial activities to elaborate scientific materials for pharmaceutical companies, including promotional, technical, legal and medical education documents (slide kits, pharmaceutical bibliographical reviews, etc...) This postdoctoral research activity constitutes more than 2 years of postdoctoral stay in a pharmaceutical company I+D department.
- 5** **Employing entity:** Universidad Autónoma de Madrid **Type of entity:** University  
**Department:** Dpto. de Bioquímica, Medicina  
**Professional category:** Investigador Contratado doctor (Postdoctoral Research Associate)  
**Start-End date:** 01/06/2004 - 15/05/2005 **Duration:** 11 months - 15 days  
**Type of contract:** Temporary employment contract  
**Performed tasks:** Together with other Postdoctoral Research Associate periods since my PhD lecture (January 2004) it constitutes more than 2 years of postdoctoral stay in UAM working with Drosophila model system.  
**Field of management activity:** University  
**Applicability in teaching and/or research:** Postflight preliminar analysis of Cervantes Mission experiments (8th expedition to the International Space Station, 18-28 October 2003). Experiments AGEING & GENE EXPRESSION
- 6** **Employing entity:** Universidad Autónoma de Madrid **Type of entity:** University  
**Department:** Dpto. de Bioquímica, Medicina  
**Professional category:** NTE-CSIC and FPI fellowships (PhD student)  
**Start-End date:** 30/11/1999 - 31/05/2004 **Duration:** 4 years - 7 months  
**Type of contract:** Grant-assisted student (pre or post-doctoral, others)  
**Performed tasks:** My PhD thesis was divided in two main parts funded first by a Predoctoral fellowship CSIC-NTE Optimisation of a Drosophila Cultivation unit of Drosophila for the ISS" and later a single FPI (MEC/MCyT) 4 years grant. The topics were Gene evolution of the Troponin Complex in Insects and Preparation and performance of the Cervantes ISS Mission (8th expedition to the ISS, 18-28 October 2003). Experiments AGEING & GENE EXPRESSION



## Education

### University education

#### 1st and 2nd cycle studies and pre-Bologna degrees

- 1 University degree:** Master (Especialista universitario - 450 horas)  
**Name of qualification:** Periodismo y comunicación científica  
**Degree awarding entity:** Universidad Nacional de Educación a Distancia (UNED-El mundo)  
**Date of qualification:** 07/2007
- 2 University degree:** Master (180 horas, Acreditación Docente ESO)  
**Name of qualification:** Certificado de Aptitud Pedagógica (CAP)  
**Degree awarding entity:** Universidad Complutense Madrid  
**Date of qualification:** 06/2001
- 3 University degree:** Master (Titulo propio Especialista Universitario - 180 horas)  
**Name of qualification:** Metodología de la investigación y técnicas estadísticas en ciencias de la vida  
**Degree awarding entity:** Universidad Autónoma de Madrid  
**Type of entity:** University  
**Date of qualification:** 06/2000
- 4 University degree:** Higher degree  
**Name of qualification:** Licenciado en Bioquímica  
**Degree awarding entity:** Universidad Autónoma de Madrid  
**Type of entity:** University  
**Date of qualification:** 09/1999
- 5 University degree:** Higher degree  
**Name of qualification:** Diplomado en Ciencias Químicas  
**Degree awarding entity:** Universidad Autónoma de Madrid  
**Type of entity:** University  
**Date of qualification:** 06/1997

#### Doctorates

**Doctorate programme:** Doctor en Bioquímica (Biochemistry PhD)  
**Degree awarding entity:** Universidad Autónoma de Madrid  
**Type of entity:** University  
**Date of degree:** 19/01/2004  
**Thesis title:** Evolución génica del complejo Troponina en insectos  
**Thesis director:** Roberto Marco Cuellar  
**Obtained qualification:** Sobresaliente cum laude por unanimidad  
**Recognition of quality:** Yes



## Other postgraduate university studies

- 1** **Type of education:** Postgraduate  
**Postgraduate qualification:** Astrobiología (Astrobiology 30h)  
**Degree awarding entity:** Universidad Complutense de Madrid  
**Faculty, institute or centre:** Cursos de verano El Escorial  
**Date of qualification:** 26/07/2002
- 2** **Type of education:** Postgraduate  
**Postgraduate qualification:** "Biology in Space" Programa Sócrates (80h)  
**Degree awarding entity:** Laboratoire Arago (Banyuls sur mer (Francia))  
**Date of qualification:** 09/2000
- 3** **Type of education:** Postgraduate  
**Postgraduate qualification:** Curso Práctico de Regulación Transcripcional y Terapia Génica (Practical course on gene therapy and transcriptional regulation (80h)  
**Degree awarding entity:** Universidad Autónoma de Madrid **Type of entity:** University  
**Faculty, institute or centre:** Centro de Biología Molecular Severo Ochoa" (UAM-CSIC)  
**Date of qualification:** 09/2000
- 4** **Type of education:** Postgraduate  
**Postgraduate qualification:** Curso Básico de Radiactividad (Basic Radioactivity course for researchers 12h)  
**Degree awarding entity:** Consejo Superior de Investigaciones Científicas **Type of entity:** State agency  
**Faculty, institute or centre:** Instituto de Investigaciones Biomédicas Alberto Sols" (UAM-CSIC)  
**Date of qualification:** 01/1999

## Specialised, lifelong, technical, professional and refresher training (other than formal academic and healthcare studies)

- 1** **Training title:** Iniciación a la programación en Python  
**Awarding entity:** Consejo Superior de Investigaciones Científicas **Type of entity:** State agency  
**End date:** 21/05/2021 **Duration in hours:** 35 hours
- 2** **Training title:** Tecnologías de secuenciación de nueva generación (NGS) y sus aplicaciones  
**Awarding entity:** Consejo Superior de Investigaciones Científicas **Type of entity:** State agency  
**End date:** 21/05/2021 **Duration in hours:** 25 hours
- 3** **Type of training:** Course  
**Training title:** UNITY 3D, Programación de Videojuegos  
**Awarding entity:** Oracle University / Centro de Formación en Tecnologías de la información y las Comunicaciones (CFTIC)  
**End date:** 31/03/2016 **Duration in hours:** 200 hours





- 4** **Type of training:** Course  
**Training title:** Programación SHELL/PERL/AWK en Sistemas IBM AIX (UNIX)  
**Awarding entity:** ARROW IBM partner / Centro de Formación en Tecnologías de la información y las Comunicaciones (CFTIC)  
**End date:** 22/12/2015 **Duration in hours:** 100 hours
- 5** **Type of training:** Course  
**Training title:** Desarrollo de Aplicaciones para Dispositivos Móviles (JavaME y ANDROID)  
**Awarding entity:** Oracle University / Centro de Formación en Tecnologías de la información y las Comunicaciones (CFTIC)  
**End date:** 09/11/2015 **Duration in hours:** 100 hours
- 6** **Type of training:** Course  
**Training title:** Fundamentos de Desarrollo de Aplicaciones JAVA (JavaSE y JavaEE)  
**Awarding entity:** Oracle University / Centro de Formación en Tecnologías de la información y las Comunicaciones (CFTIC)  
**End date:** 15/10/2015 **Duration in hours:** 160 hours
- 7** **Training title:** Iniciación a la estadística aplicada con STATA  
**Awarding entity:** Consejo Superior de Investigaciones Científicas **Type of entity:** State agency  
**End date:** 27/04/2012 **Duration in hours:** 25 hours
- 8** **Training title:** Usuario Web of Knowledge – Nivel Avanzado  
**Awarding entity:** Fundación Española para la Ciencia y la Tecnología **Type of entity:** Fundacion  
**End date:** 18/04/2012 **Duration in hours:** 3 hours
- 9** **Training title:** Inglés específico: Reuniones Internacionales en Inglés  
**Awarding entity:** Consejo Superior de Investigaciones Científicas **Type of entity:** State agency  
**End date:** 15/03/2012 **Duration in hours:** 20 hours
- 10** **Training title:** Inglés Científico (nivel Intermedio)  
**Awarding entity:** Consejo Superior de Investigaciones Científicas **Type of entity:** State agency  
**End date:** 16/03/2010 **Duration in hours:** 20 hours
- 11** **Training title:** Presentaciones en Inglés Científico para Congresos  
**Awarding entity:** Consejo Superior de Investigaciones Científicas **Type of entity:** State agency  
**End date:** 23/11/2009 **Duration in hours:** 15 hours
- 12** **Training title:** Ciclo de Conferencias "ORIGEN Y EVOLUCIÓN DE LA VIDA"  
**Awarding entity:** FUNDACIÓN COSMOCAIXA Museo de las Ciencias Alcobendas (Madrid) **Type of entity:** Divulgacion  
**End date:** 05/2001 **Duration in hours:** 12 hours
- 13** **Training title:** Ciclo de Conferencias "EL ORIGEN DE LAS ESPECIES"  
**Awarding entity:** FUNDACIÓN COSMOCAIXA Museo de las Ciencias Alcobendas (Madrid) **Type of entity:** Divulgacion  
**End date:** 03/2001 **Duration in hours:** 18 hours



- 14 Training title:** Lengua Inglesa (nivel B, A1 y A2)  
**Awarding entity:** Universidad Autónoma de Madrid  
**End date:** 06/1998  
**Type of entity:** University  
**Duration in hours:** 300 hours
- 15 Training title:** Usuario de Internet  
**Awarding entity:** Instituto Madrileño Formación  
**End date:** 10/1997  
**Duration in hours:** 60 hours
- 16 Training title:** Gestión de Hoja de Calculo  
**Awarding entity:** Instituto Madrileño Formación  
**End date:** 10/1996  
**Duration in hours:** 50 hours
- 17 Training title:** Gestión de Base de Datos  
**Awarding entity:** Instituto Madrileño Formación  
**End date:** 07/1996  
**Type of entity:** IMF (CAM)  
**Duration in hours:** 50 hours
- 18 Training title:** Curso preparación First Certificate  
**Awarding entity:** Academia Welcome (Alcorcón, Madrid)  
**End date:** 06/1994  
**Type of entity:** Business  
**Duration in hours:** 134 hours
- 19 Training title:** Programación en Basic  
**Awarding entity:** Academia Delfos (Alcorcón, Madrid)  
**End date:** 06/1990  
**Type of entity:** Business  
**Duration in hours:** 100 hours

### Attended advanced, improvement and innovative teacher training and new technology courses and seminars focused on improving teaching

- 1 Title of course/seminar:** Desarrollo y Programación de Aplicaciones y Videojuegos Multiplataforma  
**Goals of the course/seminar:** Intensive course in JAVA/Android/Shell/UNITY based programming tools I can use to produce Scientific or Educational software  
**Organising entity:** Centro de Formación en Tecnologías de la Información y la Comunicación (CFTIC, CAM)  
**Duration in hours:** 560 hours  
**Start-End date:** 09/2015 - 03/2016
- 2 Title of course/seminar:** Periodismo y comunicación científica  
**Goals of the course/seminar:** Master course to increase teaching, writing and oral communication skills to communicate scientific contents to all kinds of audiences  
**Organising entity:** Universidad Nacional de Educación a Distancia (UNED-El mundo)  
**Duration in hours:** 450 hours  
**Start-End date:** 10/2006 - 07/2007
- 3 Title of course/seminar:** Inteligencia emocional, equilibrio y automotivación  
**Goals of the course/seminar:** Specific course to improve leadership and teaching skills in a social environment  
**Organising entity:** Institut Serveis de Formació Tadel  
**Duration in hours:** 15 hours  
**Start-End date:** 27/09/2006 - 28/09/2006



- 4 Title of course/seminar:** Certificado de Aptitud Pedagógica (CAP)  
**Goals of the course/seminar:** Specific pedagogical master course required to obtain teaching habilitation  
**Organising entity:** Universidad Complutense Madrid (Inst. Ciencias de la Educación)  
**Duration in hours:** 180 hours  
**Start-End date:** 10/2000 - 06/2001

## Language skills

Language	Listening skills	Reading skills	Spoken interaction	Speaking skills	Writing skills
English	C1	C2	C1	C1	C2
Spanish	C2	C2	C2	C2	C2

## Teaching experience

### General teaching experience

- 1 Type of teaching:** International teaching  
**Name of the course:** Space Plant Biology  
**Professional category:** Investigador Contratado Doctor  
**Type of programme:** ERASMUS **Type of teaching:** In person theory  
**University degree:** ESA-ELGRA Gravity-Related Research Summer School (ERASMUS)  
**Start date:** 24/06/2019 **End date:** 28/06/2019  
**Type of hours/ ECTS credits:** Hours  
**Hours/ECTS credits:** 50  
**Entity:** ESA ESEC-Galaxia (Redu, BELGIUM)  
**Subject language:** English
- 2 Type of teaching:** International teaching  
**Name of the course:** The Origins of Life and Life in Space  
**Professional category:** Investigador Contratado Doctor  
**Type of programme:** ERASMUS **Type of teaching:** In person theory  
**University degree:** Exobiology Summer University (ERASMUS)  
**Start date:** 2007 **End date:** 2008  
**Type of hours/ ECTS credits:** Hours  
**Hours/ECTS credits:** 50  
**Entity:** Universidad de Florencia (Firenze, ITALY)  
**Subject language:** English
- 3 Type of teaching:** Official teaching  
**Name of the course:** BIOFÍSICA (BIOLOGÍA COMPUTACIONAL Y DE SISTEMAS)  
**Professional category:** Investigador Contratado Doctor  
**Type of programme:** Diploma **Type of teaching:** In person theory  
**Type of subject:** Obligatory  
**University degree:** Licenciado en Bioquímica  
**Start date:** 2007 **End date:** 2008  
**Type of hours/ ECTS credits:** Hours  
**Hours/ECTS credits:** 20



**Entity:** Universidad Autónoma de Madrid **Type of entity:** University  
**Faculty, institute or centre:** Biochemistry department (Medicine Faculty)

**4** **Type of teaching:** International teaching  
**Name of the course:** Life in Space (ERASMUS)  
**Professional category:** Investigador Contratado Doctor  
**Type of programme:** ERASMUS **Type of teaching:** Virtual  
**University degree:** Space Biology Virtual University (ERASMUS)  
**Start date:** 2005 **End date:** 2005  
**Type of hours/ ECTS credits:** Hours  
**Hours/ECTS credits:** 10  
**Entity:** Curso de intercambio virtual entre cinco universidades europeas (Paris VI, Bonn, Sassari, Nottingham y la Universidad Autónoma de Madrid)  
**Subject language:** English

**5** **Type of teaching:** Official teaching  
**Name of the course:** BIOINFORMÁTICA  
**Type of programme:** Diploma **Type of teaching:** Practical work (classroom-problems)  
**Type of subject:** Optional  
**University degree:** Licenciado en Bioquímica  
**Start date:** 2000 **End date:** 2003  
**Type of hours/ ECTS credits:** Hours  
**Hours/ECTS credits:** 40  
**Entity:** Universidad Autónoma de Madrid **Type of entity:** University  
**Faculty, institute or centre:** Biochemistry department (Medicine Faculty)  
**Department:** Bioquímica

**6** **Type of teaching:** Official teaching  
**Name of the course:** Prácticas BIOQUÍMICA-BIOFÍSICA y BQ EXPERIMENTAL AVANZADA  
**Type of programme:** Diploma **Type of teaching:** Laboratory work  
**Type of subject:** Core  
**University degree:** Licenciado en Medicina y Cirugía y Bioquímica  
**Start date:** 1999 **End date:** 2003  
**Type of hours/ ECTS credits:** Hours  
**Hours/ECTS credits:** 160  
**Entity:** Universidad Autónoma de Madrid **Type of entity:** University  
**Faculty, institute or centre:** Biochemistry department (Medicine Faculty)

## Experience supervising doctoral thesis and/or final year projects

**1** **Project title:** Practicas externas en Biología Espacial de Plantas (4 meses)  
**Type of project:** Practicas Externas TFG  
**Co-director of thesis:** F Javier Medina Diaz  
**Entity:** Universitat Rovira i Virgili **Type of entity:** University  
**City of entity:** Madrid,  
**Student:** Victor Vazquez Vilriales  
**Date of reading:** 27/06/2022



- 2** **Project title:** Efecto de los compuestos volátiles producidos por el hongo *Alternaria alternata* sobre el crecimiento y desarrollo de plántulas de *Arabidopsis thaliana* sometidas a condiciones de microgravedad simulada  
**Type of project:** Trabajo Fin de Máster  
**Co-director of thesis:** F Javier Medina Diaz  
**Entity:** Universidad Complutense de Madrid **Type of entity:** University  
**Student:** Adela Villasante Fernandez  
**Obtained qualification:** 10/10  
**Date of reading:** 10/10/2019
- 3** **Project title:** Practicas externas en Biología Espacial de Plantas (4 meses)  
**Type of project:** Practicas Externas Master  
**Co-director of thesis:** F Javier Medina Diaz  
**Entity:** Universidad Autónoma de Madrid **Type of entity:** University  
**City of entity:** Madrid,  
**Student:** Pablo Pastor Llorca  
**Date of reading:** 30/06/2019
- 4** **Project title:** Efecto sinérgico de la luz y la gravedad sobre el crecimiento y la proliferación celular en *Arabidopsis thaliana*  
**Type of project:** Doctoral thesis  
**Co-director of thesis:** Francisco J. Medina Diaz  
**Entity:** Universidad Complutense de Madrid **Type of entity:** University  
**City of entity:** Madrid, Spain  
**Student:** Aránzazu Manzano Pérez  
**Obtained qualification:** Sobresaliente cum laude  
**Date of reading:** 22/03/2019  
**European doctorate:** Yes **Date of recognition:** 15/03/2019
- 5** **Project title:** Interaccion entre la percepción de la luz y la gravedad sobre el crecimiento y la proliferación celular en *Arabidopsis thaliana*: Simulación en tierra y Definicion del Experimento Espacial Seedling Growth  
**Type of project:** Doctoral thesis  
**Co-director of thesis:** Eugenie Carnero Diaz  
**Entity:** Universidad Complutense de Madrid **Type of entity:** University  
**City of entity:** Madrid, Spain  
**Student:** Miguel A. Valbuena Crespo  
**Obtained qualification:** Sobresaliente Cum Laude por unanimidad  
**Date of reading:** 11/03/2016  
**European doctorate:** Yes
- 6** **Project title:** Alteraciones Inducidas por cambios gravitatorios en Células Proliferantes en Cultivo de *Arabidopsis thaliana*  
**Type of project:** Doctoral thesis  
**Co-director of thesis:** F Javier Medina Diaz  
**Entity:** Universidad Complutense de Madrid **Type of entity:** University  
**Student:** Khaled Yousef Kamal Mostafa  
**Obtained qualification:** Sobresaliente "cum laude" por unanimidad  
**Date of reading:** 17/12/2014  
**European doctorate:** Yes  
**Quality recognition:** No



- 7** **Project title:** Proliferación de células vegetales en condiciones ambientales de gravedad alterada  
**Type of project:** Trabajo Fin de Máster  
**Co-director of thesis:** F Javier Medina Diaz  
**Entity:** Universidad Autónoma de Madrid **Type of entity:** University  
**City of entity:** Madrid,  
**Student:** Aránzazu Manzano Pérez  
**Obtained qualification:** 9,6 / 10 (Sobresaliente)  
**Date of reading:** 10/09/2013
- 8** **Project title:** Cambios funcionales en células proliferantes de Arabidopsis thaliana crecidas en ambientes de gravedad alterada  
**Type of project:** Doctoral thesis  
**Co-director of thesis:** F Javier Medina Diaz  
**Entity:** Universidad Complutense de Madrid **Type of entity:** University  
**Student:** Ana Isabel Manzano Pérez  
**Obtained qualification:** Sobresaliente cum laude por unanimidad  
**Date of reading:** 02/02/2012  
**Quality recognition:** Yes
- 9** **Project title:** Relation between gene expression, motility and accelerated aging in selected Drosophila strains under altered gravity conditions  
**Type of project:** Posgraduate Research trainee  
**Entity:** European Space Agency (ESA-ESTEC) **Type of entity:** R&D Centre  
**City of entity:** Noordwijk, Holland  
**Student:** Paloma Serrano San Román  
**Obtained qualification:** Laboratory work supervised from Madrid of a Spanish trainee (Biology degree) working at ESTEC (ESA) associated to the GBF project Drosophila line which I am the PI. This work has been published in 2 articles (Serrano as first author and Herranz as Senior author)  
**Date of reading:** 30/06/2011

## Educational or pedagogical publications, books, articles, etc.

- 1** Raul Herranz Barranco. De cómo entrar en el siglo XXI de la mano de un gran...Roberto, Encuentros multidisciplinares. 33 - XI, pp. 58 - 67. ISSN 1139-9325  
**Name of the materials:** University discussion and diffusion of space science article  
**Date of drafting:** 2009  
**Format:** Article(s)  
**Justification of material:** Review article connecting Prof. Roberto Marco research and teaching activities during the last decade of his life (until his decease in 2008). The whole issue is dedicated to his memory. This article is a good lecture for students who want to have a better idea of how a university department works and what is the role of a teacher and a researcher in our educational system, always from my personal biographical point of view about Prof. Roberto Marco.
- 2** Roberto Marco; Raul Herranz. Bibliographic debate tools in Biofísica,  
**Name of the materials:** Use of KnowCat online resources  
**Date of drafting:** 2008  
**Format:** Software  
**Justification of material:** During the course of Biofísica (Systems biology) 2007/2008, we used the Knowcat tool to allow the students to share their bibliographic references and promote debate activities in the classroom (Blog based education). This was a pilot study anticipating the present concept of mentorship to promote a horizontal learning more than a vertical, one-direction classical teaching.



- 3** Raul Herranz. Scientific documents for pharmaceutical companies (KIVEXA® - Abacavir/Lamivudina Company: GSK),  
**Name of the materials:** 200 SLIDES ABOUT LIPOATROPHY, RENAL TOXICITY AND DRUG RESISTANCES IN THE TREATMENT OF HIV  
**Target group profile:** MEDICAL EDUCATION MATERIAL FOR AIDS DOCTORS  
**Date of drafting:** 2006  
**Format:** Slide Kit  
**Justification of material:** Preparation of scientific documents for pharmaceutical companies including training, technical/legal and promotional materials. Some of them very innovative and in the frontier of knowledge, and also some of them have been awarded in public contests (ASPID Awards)
- 4** Raul Herranz. Scientific documents for pharmaceutical companies (GSK (GLAXO SMITH KLINE)),  
**Name of the materials:** BOLETIN VIH  
**Target group profile:** AIDS Patients and relatives  
**Date of drafting:** 2006  
**Format:** Article(s)  
**Justification of material:** Preparation of a 8 pages monthly trade journal for AIDS patients (not advertising but educational contents). I was member of the editorial committee during 6 issues.
- 5** Raul Herranz. Scientific documents for pharmaceutical companies (Bondronat-ácido ibandronico Roche),  
**Name of the materials:** Bibliographical Summaries and Comments (attached to the original articles) in cooperation with specialists  
**Target group profile:** Reumathologist  
**Date of drafting:** 2006  
**Format:** Notes  
**Justification of material:** Preparation of scientific documents for pharmaceutical companies including training, technical/legal and promotional materials. Some of them very innovative and in the frontier of knowledge, and also some of them have been awarded in public contests (ASPID Awards)
- 6** Raul Herranz. Scientific documents for pharmaceutical companies (SPANISH ASOTIATION OF MEDICAL ONCOLOGY (SEOM)),  
**Name of the materials:** COLLECTION ONCOVIDA & AERO  
**Target group profile:** Cancer Patients and relatives  
**Date of drafting:** 2006  
**Format:** Article(s)  
**Justification of material:** Preparation of monographycal cancer related booklet (not advertising but educational contents). I elaborated Oncovida 2 (Cooperative groups), 4 (Cancer awareness), 5 (Renal cancer), 6 (GIST), 7 (Paliative cares) and AERO Boletin ACTUA.
- 7** Raul Herranz. Scientific documents for pharmaceutical companies (CIALIS®-Tadalafil Company: LILLY),  
**Name of the materials:** TABLET-PC CONTENTS PREPARATION AND UPGRADE (USE OF INFORMATICS TOOLS FOR MARKETING DELEGATES).  
**Target group profile:** Marketing delegates/Urologists  
**Date of drafting:** 2006  
**Format:** Tablet PC  
**Justification of material:** Another example of scientific documents for pharmaceutical companies.



- 8** Raul Herranz. Scientific documents for pharmaceutical companies (TEMODAL®-Temozolomida Company: SCHERING-PLOUGH),  
**Name of the materials:** TRANSLATION OF THE PRODUCT MONOGRAPH (LEGAL DOCUMENT) AND WRITING OF A SUPPLEMENTARY BOOK WITH NEW APPLICATIONS (50 PAGES CLINICAL REVIEW WITH 80 REFERENCES FROM THE LAST 3 YEARS) & A TOOL FOR DOSAGE CALCULATION  
**Target group profile:** Oncologists  
**Date of drafting:** 2006  
**Format:** Chapters of books  
**Justification of material:** Preparation of scientific documents for pharmaceutical companies including training, technical/legal and promotional materials. Some of them very innovative and in the frontier of knowledge, and also some of them have been awarded in public contests (ASPID Awards)
- 9** Roberto Marco; Raúl Herranz. Curso virtual Biology in Space” 2006/2008,  
**Name of the materials:** Use of teleconference eLearning system  
**Date of drafting:** 2006  
**Format:** Software  
**Justification of material:** During the courses 2006/2007 & 2007/2008, the "Life in Space" Socrates course was complemented with monthly webinars coordinated from Spain. We used the eLearning system to connect students and teachers from several european universities in order to prepare the students for the intensive 2 weeks summer course after that.

## Participation in conferences with talks focused on teacher training

- 1** **Name of the event:** XXIII Meeting of the Spanish Society of Plant Physiology/XVI Spanish Portuguese Congress of Plant Physiology  
**Type of event:** Conference  
**Presentation language:** Spanish  
**City of event:** Pamplona, Spain  
**Date of presentation:** 26/06/2019  
**Organising entity:** Planeta STEM - iGEM - Biogalaxy      **Type of entity:** Associations and Groups  
Entrevista compartida con el Dr. Gonzalez-Pastor (CAB) con estudiantes que están preparando un proyecto internacional de Biología Espacial de Plantas.
- 2** **Name of the event:** III Congreso del Laboratorio para Experimentación en Espacio y Microgravedad (LEEM)  
**Type of event:** Conference  
**Type of participation:** Participatory - invited/keynote talk  
**Aims of the event:** To promote Microgravity research careers in Spanish young researchers  
**Target group profile:** PhD Students  
**Presentation language:** Spanish  
**City of event:** Zaragoza, Spain  
**Date of presentation:** 27/11/2008  
**Organising entity:** S3 (Spanish Space Students)      **Type of entity:** Associations and Groups  
EXPERIENCIA DE UN SPANISH TRAINEE DEL CDTI EN LAS INSTALACIONES DE MICROGRAVEDAD DE LA ESA (ESTEC).



## Awards received for innovation in the field teaching

- 1 Name of the prize:** COLLECTION "ADVISORYBOARD".A REVIEW OF CONCLUSIONS FROM BREAST CANCER KEY OPINION LEADERS. ASPID DE ORO 2006\* TO THE BEST PRESS FOR SPECIALISTS.  
**Awarding entity:** X edition Iberoamerican ASPID health & pharmaceutical advertising awards  
**Type of entity:** Business  
**City awarding entity:**  
**Proposed by:** AROMASIL® (Exemestano) - Company: PFIZER  
**Conferral date:** 2006
- 2 Name of the prize:** PERSPECTIVES MATERIAL, MEETINGS SUMMARIES AND DELEGATES TRAINING MATERIALS. ASPID DE ORO 2006\* TO THE BEST CAMPAIGN FOR SPECIALISTS  
**Awarding entity:** X edition Iberoamerican ASPID health & pharmaceutical advertising awards  
**Type of entity:** Business  
**City awarding entity:**  
**Proposed by:** VELCADE® (Bortezomib) - Company: JANSSEN-CILAG  
**Conferral date:** 2006
- 3 Name of the prize:** SCIENTIFIC COORDINATOR OF AN INTERNATIONAL CAMPAIGN OF A PRODUCT LAUNCH FROM A SPANISH PHARMACEUTICAL COMPANY. ASPID DE ORO 2006\* TO THE BEST CAMPAIGN FOR GENERAL PRACTITIONERS (ATENCIÓN PRIMARIA)  
**Awarding entity:** X edition Iberoamerican ASPID health & pharmaceutical advertising awards  
**Type of entity:** Business  
**City awarding entity:**  
**Proposed by:** EBASTINE FDT® (Ebastina) - Company: ALLMIRALL  
**Conferral date:** 2006
- 4 Name of the prize:** SCIENTIFIC COORDINATOR OF BUCKLER 0,0 CAMPAIGN. ASPID DE ORO 2006\* TO THE BEST GENERAL CONSUMER CAMPAIGN (PUBLIC)  
**Awarding entity:** X edition Iberoamerican ASPID health & pharmaceutical advertising awards  
**Type of entity:** Business  
**City awarding entity:**  
**Proposed by:** Buckler 0,0: Salud y sabor - Company: HEINEKEN  
**Conferral date:** 2006

## Other activities/achievements not included above

- 1 Description of the activity:** Acreditación como Profesor Universitario Contratado Doctor y de Universidad Privada (Habilitation as Associate University Professor)  
**Organising entity:** Agencia Nacional de Evaluación de la Calidad y Acreditación  
**Type of entity:** ANECA  
**End date:** 07/2010
- 2 Description of the activity:** Acreditación como Profesor de Secundaria y Bachillerato (Habilitation as Secondary/High School Teacher)  
**Organising entity:** Instituto de Ciencias de la Educación  
**Type of entity:** University (UCM)  
**End date:** 2001



- 3 Description of the activity:** Primary School activities around Spaceflight (Seedling Growth project) and Ground microgravity (Clinostat ONU project) - Annual since 2014  
**Organising entity:** CIB (CSIC) and CEIP Victoria Kent **Type of entity:** Public Research Body (Rivas-vaciamadrid)

## Scientific and technological experience

### Research and development groups/teams

- 1 Name of the group:** International Standards for Space Omics Processing (ISSOP)  
**Aims of the group:** Provide consensus guidelines for Space Biology research at the international level  
**Name of principal investigator:** Raul Herranz **Number of members in the group:** 25  
**Type of collaboration:** Co-authorship of international collaboration  
**Affiliation entity:** Space biology researchers from NASA **Type of entity:** Associations and Groups (USA), ESA (Europe) and JAXA (Japan)  
**Relevant results:** I am the European coordinator of the Space Omics Topical Team and ISSOP. Shared publications in CELL press journals. Co-PI are Jonathan M Galazka (USA) and Masafumi Muratani (Japan)  
**Start date:** 2019 **Duration:** 2 years
- 2 Name of the group:** GENELAB Analysis Working Groups (Plants and Animals)  
**Aims of the group:** Connect the Space Biology scientist and co-analyze the new GENELAB space omics database to make spaceflight mission results more accessible to the scientific community and general public  
**Name of principal investigator:** Sylvain V Costes **Number of members in the group:** 150  
**Type of collaboration:** Co-authorship of international collaboration  
**Affiliation entity:** NASA (USA)  
**Relevant results:** I am full member of two NASA GENELAB analysis working groups (as spaceflight experiments co-I in the Plant and PI in the Animals (invertebrate) working group. Shared publications in CELL press journals.  
**Start date:** 2017 **Duration:** 4 years
- 3 Name of the group:** Plant Cell Nucleolus, Proliferation & Microgravity group - Environmental Biology Department  
**Aims of the group:** Study Arabidopsis cell growth & proliferation in Space  
**Name of principal investigator:** F Javier Medina **Number of members in the group:** 5  
**Type of collaboration:** Co-authorship of projects and their development  
**Affiliation entity:** Centro de Investigaciones Biológicas Margarita Salas - CSIC  
**Number of directed thesis:** 4  
**Start date:** 16/05/2009 **Duration:** 12 years
- 4 Name of the group:** Madrid Developmental Biology Microgravity Laboratory (MDBML) - Dept. Biochemistry / Inst. Inv. Biomédicas Alberto Sols  
**Aims of the group:** Study drosophila behavior, aging and development in Space  
**Name of principal investigator:** R. Marco Cuellar **Number of members in the group:** 5  
**Type of collaboration:** Co-authorship of projects and their development  
**Affiliation entity:** Universidad Autónoma de Madrid / CSIC  
**Start date:** 01/11/1999 **Duration:** 8 years

## Scientific or technological activities

### R&D projects funded through competitive calls of public or private entities

- 1 Name of the project:** Priming Radiation-Induced plants' adaptation to Moon: make an enemy your friend (PRIMO)

**Geographical area:** European Union

**Degree of contribution:** Researcher

**Entity where project took place:** International Space Station (ISS)

**Name principal investigator (PI, Co-PI....):** Giovanna Aronne; Veronica De Micco; Paola Adamo; Raimondo Fortezza; Antonio Ceriello; Carmen Arena; Marco Durante; Stefania De Pascale; Walter Tinganelli; Eugénie Carnero Diaz; Dario Castagnolo; Raul Herranz; Veronica Pereda Loth; Isabel Le Disquet

**Nº of researchers:** 14

**Funding entity or bodies:** European Space Agency (ESA)

**Type of participation:** Co-Investigator

**Name of the programme:** ESA Campaign: Reserve Pool of Science Activities for the Moon: A SciSpace Announcement of Opportunity

**Code according to the funding entity:** Idea I-2022-04105

**Start-End date:** 2023 - 2026 **Duration:** 3 years

**Participating entity/entities:** Centro de Investigaciones Biológicas Margarita Salas (CSIC); GSBMS-EVOLSAN, University of Toulouse III (GSBMS); Institut de Systématique, Evolution, Biodiversité-Sorbonne University (ISYEB-SU); Telespazio; The Helmholtz Centre for Heavy Ion Research in Darmstadt (GSI); University of Naples Federico II (UNINA)

**Applicant's contribution:** (SUBMITTED). This Spaceflight project is an ESA mission to get samples for our group in Europe to perform the Space Omics research with partial g samples at the Moon & Moon orbiter. I participate as European Co-I in the experiments due to my expertise particularly in SG3 focused on Space transcriptomics.
- 2 Name of the project:** European leadership in Plant Space Omics: DEEP transcriptional response to microgravity

**Geographical area:** National

**Degree of contribution:** Coordinator of total project, network or consortium

**Entity where project took place:** Centro de Investigaciones Biológicas **Type of entity:** State agency

**Name principal investigator (PI, Co-PI....):** Dr. Raúl Herranz Barranco

**Nº of researchers:** 3

**Funding entity or bodies:** Ministerio de Ciencia e Innovación. PROYECTOS DE GENERACIÓN DE CONOCIMIENTO 2021

**Type of participation:** Principal investigator

**Code according to the funding entity:** PID2021-126507OB-I00

**Start-End date:** 2022 - 2025 **Duration:** 3 years

**Participating entity/entities:** CSIC

**Total amount:** 315.081 €

**Applicant's contribution:** (Pending of AUTONOMIC FUNDING). I act as the sole PI, so the focus of the project is shifted to molecular biology experiments and/or experiments performed in simulated microgravity facilities. Additional plant physiology and microscopical analysis are supported by Dr. Medina and Dr. Carnero-Diaz as research team members. It is also included our participation in the GENELAB/ISSOP/ESA



TT activities in close collaboration with other NASA/JAXA/ESA researchers as well as NASA funded spaceflight opportunities.

**3 Name of the project:** Partial gravity studies on the ISS: An essential reference for growing plants on the Moon

**Geographical area:** Non EU International

**Degree of contribution:** Researcher

**Entity where project took place:** International Space Station (ISS)

**Name principal investigator (PI, Co-PI....):** Dr. Christopher McKay; Dr. John Z. Kiss (NASA PI); Dr. Raul Herranz (ESA Col)

**Nº of researchers:** 3

**Funding entity or bodies:**

National Aeronautics and Space Administration (NASA)

**Type of participation:** European Co-Investigator

**Code according to the funding entity:** NNH21ZDA001N-SBPS

**Start-End date:** 2022 - 2025

**Duration:** 3 years

**Participating entity/entities:** AMES research Center (NASA, California USA); CSIC; UNC Greensboro (North Carolina, USA)

**Applicant's contribution:** (Phase II - Score GOOD - Not funded). This Spaceflight project is a NASA mission to providing samples for our group in Europe to perform the Space Omics research with partial g samples at the ISS, as a first step to a lunar lander mission. I participate as European Co-I in the experiments due to my expertise particularly in SG3 focused on Space transcriptomics with the same American PI (J. Kiss).

**4 Name of the project:** GIA2 Project: From GBF to ISS with *A. thaliana* and Crop species. Utilization of ground based low-gravity and radiation facilities to complement and optimize the scientific knowledge from plant experiments in the ISS

**Geographical area:** European Union

**Degree of contribution:** Coordinator of total project, network or consortium

**Name principal investigator (PI, Co-PI....):** Dr. Raúl Herranz Barranco; F Javier Medina Diaz; Eugenie Carnero-Diaz; Eduardo Gonzalez-Pastor

**Nº of researchers:** 4

**Funding entity or bodies:**

European Space Agency

**Type of participation:** Principal investigator

**Name of the programme:** ESA GBF Access Program

**Start-End date:** 01/01/2020 - 30/06/2023

**Duration:** 3 years - 6 months

**Participating entity/entities:** Amsterdam (ESTEC-DESC); CAB-CSIC (Torrejón); CIB-CSIC (Madrid); Universities of Paris VI & Paul Sabatier (Toulouse) Ground based Facilities in Toulouse (GSBMS)

**Total amount:** 49.000 €

**Applicant's contribution:** This is my third GBF project that it is currently granted (2 years with an extension to be executed after COVID19 situation) to expose plants to Mars Environment (radiation and partial g). I have assumed the scientific coordinator of the project after retirement of my lab head Dr. Medina (assisted by 2 local GBF coordinators, Veronica Pereda and Jack van Loon). I retain the role of principal Investigator of one of the 4 subprojects (Molecular Biology Approach).

**5 Name of the project:** ESA Topical Team: Space Omics: Towards an integrated ESA/NASA –omics database for spaceflight and ground facilities experiments

**Degree of contribution:** Coordinator of total project, network or consortium

**Entity where project took place:** European Space Agency

**Name principal investigator (PI, Co-PI....):** Raul Herranz; Willian da Silveira; Daniela Bezdan; Nathaniel Szewczyk



**Nº of researchers:** 15

**Funding entity or bodies:**

European Space Agency

**Type of participation:** Co-ordinator

**Name of the programme:** ESA Topical Team

**Code according to the funding entity:** Contract # 4000131202/20/NL/PG/pt

**Start-End date:** 01/07/2020 - 31/12/2022

**Duration:** 2 years

**Participating entity/entities:** CIB-CSIC (Madrid)

**Total amount:** 20.000 €

**Applicant's contribution:** Coordinator of the European consortium on Space omisc research. See link <https://issop.space/space-omics-topical-team/> Main goal of this topical team is to coordinate european efforts and advise ESA policies to gain more visibility at the International level (including our ongoing collaborations with Genelab and the participation in ISSOP consortium, in which I am also European Coordinator). I am also one (Plants) of the four POC for Genelab AWG.

**6 Name of the project:** Accion Extraordinaria para la Preparación de Proyectos 2021

**Geographical area:** National

**Degree of contribution:** Researcher

**Entity where project took place:** Centro de Investigaciones Biológicas

**Type of entity:** State agency

**Name principal investigator (PI, Co-PI...):** Dr. F. Javier Medina Diaz; Dr. Raúl Herranz Barranco

**Nº of researchers:** 2

**Funding entity or bodies:**

CSIC

**Type of participation:** Principal investigator

**Code according to the funding entity:** 2021AEP135

**Start-End date:** 01/01/2022 - 31/08/2022

**Duration:** 9 months

**Participating entity/entities:** CSIC

**Total amount:** 520.000 €

**Applicant's contribution:** Complementary grant to be executed in the context of PID2021-126507OB-I00 (PI Dr. Medina) project for the preparation of the activities (mainly ESA simulation facilities experiments) to be developed before the next project PID2021-126507OB-I00 (PI Dr. Herranz) is granted.

**7 Name of the project:** Plantas para la exploración espacial. Resultados de experimentos en la ISS y nuevos experimentos europeos

**Geographical area:** National

**Degree of contribution:** Researcher

**Entity where project took place:** Centro de Investigaciones Biológicas

**Type of entity:** State agency

**Name principal investigator (PI, Co-PI...):** Dr. F. Javier Medina Díaz; Dr. Raúl Herranz Barranco

**Nº of researchers:** 2

**Funding entity or bodies:**

Ministerio de Economía y Competitividad. Programa Nacional de I+d+i

**Type of participation:** Team member

**Code according to the funding entity:** RTI2018-099309-B-I00

**Start-End date:** 01/01/2019 - 29/07/2022

**Duration:** 3 years - 7 months

**Participating entity/entities:** CSIC

**Total amount:** 177.000 €

**Applicant's contribution:** As member of the research team, I am in charge of the molecular biology experiments and/or experiments performed in simulated microgravity facilities (ESA GBF projects).



- 8** **Name of the project:** ROOTROPS - Tackling the roots of bending  
**Geographical area:** European Union  
**Degree of contribution:** Researcher  
**Name principal investigator (PI, Co-PI....):** Giovanna Aronne; Jack W.A. van Loon; F Javier Medina Diaz; John Z. Kiss  
**Nº of researchers:** 4  
**Funding entity or bodies:**  
European Space Agency  
**Type of participation:** Team member  
**Name of the programme:** ESA GBF Access Program  
**Start-End date:** 2019 - 2020 **Duration:** 2 years  
**Participating entity/entities:** CIB-CSIC (Madrid); ESTEC-DESC (Amsterdam); UNINA (Naples)  
**Total amount:** 34.000 €  
**Applicant's contribution:** My expertise on other GBF have been used as a team member and consultant in the preparation of the proposal and execution. Granted in January 2019.
- 9** **Name of the project:** The Plant Adaptation to Space Environment. Lessons learned from a major ESA/NASA joint experiment in Plant Biology on board ISS. Organization of a Workshop to discuss the results and conclusions of the SEEDLING GROWTH experiment  
**Geographical area:** European Union  
**Degree of contribution:** Researcher  
**Entity where project took place:** Centro de Investigaciones Biológicas **Type of entity:** State agency  
**Name principal investigator (PI, Co-PI....):** F Javier Medina Diaz; John Z. Kiss; Eugenie Carnero Diaz; Raúl Herranz Barranco  
**Nº of researchers:** 4  
**Funding entity or bodies:**  
European Low-Gravity Research Association **Type of entity:** Associations and Groups  
**Type of participation:** Team member  
**Name of the programme:** Gravity Spotlight Team  
**Start-End date:** 2019 - 2020 **Duration:** 6 months  
**Participating entity/entities:** CIB-CSIC (Madrid); ESTEC-DESC (Amsterdam); Institut Systématique, Evolution, Biodiversité (ISYEB), Museum National d'Histoire Naturelle, CNRS, Sorbonne Université, EPHE.57 rue Cuvier CP39, 75005 Paris,; University of North Carolina at Greensboro, Greensboro, NC 27402, USA  
**Total amount:** 5.000 €  
**Applicant's contribution:** Grant for the the organization of a dedicated workshop in Granada in 2019 which the results of the space experiment "Seedling Growth" (SG, 2012-2018, recently been completed in both the spaceflights and ground segments. It has been one of the most complex and ambitious projects carried out in the International Space Station (ISS) on Plant Biology until now, as a result of NASA/ESA cooperation) led by the consortium endorsing this proposal will be discussed and summarized and relevant conclusions are reached and shared.
- 10** **Name of the project:** United Nations Human Space Technology Initiative (UN-HSTI) Zero-Gravity Instrument Project (ZGIP)  
**Type of project:** Basic research (including archaeological digs, etc) **Geographical area:** Non EU International  
**Degree of contribution:** Coordinator of total project, network or consortium  
**Entity where project took place:** Centro de Investigaciones Biológicas **Type of entity:** State agency  
**Name principal investigator (PI, Co-PI....):** Raul Herranz; F Javier Medina  
**Nº of researchers:** 2

**Funding entity or bodies:**

United Nations Office for Outer Space Affairs

**Type of entity:** Foundation**City funding entity:** Vienna, Switzerland**Type of participation:** Co-Investigador**Start-End date:** 01/09/2014 - 31/08/2019**Duration:** 5 years

**Applicant's contribution:** My role is the coordination of the use of a microgravity simulation facility (clinostat) to be used in our lab (Research activity) and also for demonstrations in a related Primary School (Educational/outreach activity). in the context of a real Spaceflight mission Ground controls experiments. Due to the success of the first 2 years project, a continuation project (a second clinostat unit) was granted, so the duration of the project was extended up to 5 years. The Facilities will remain in our lab after the duration of the project so the activity will be extended as long as possible.

- 11 Name of the project:** Crecer plantas en el espacio. Experimentos en la Estación Espacial Internacional con liderazgo español

**Geographical area:** National**Degree of contribution:** Researcher**Entity where project took place:** Centro de Investigaciones Biológicas**Type of entity:** State agency**Name principal investigator (PI, Co-PI...):** Dr. F. Javier Medina Díaz; Dr. Eugénie Carnero-Díaz; Dr. Julio Sáez-Vasquez; Dr. Raúl Herranz Barranco**Nº of researchers:** 4**Funding entity or bodies:**

Ministerio de Economía y Competitividad. Programa Nacional de I+d+i

**Type of participation:** Team member**Code according to the funding entity:** ESP2015-64323-R**Start-End date:** 01/01/2016 - 30/06/2019**Duration:** 3 years - 6 months**Participating entity/entities:** CSIC**Total amount:** 150.000 €

**Applicant's contribution:** Starting on october 2017, I requested to be member of the research team, being in charge of the molecular biology experiments and/or experiments performed in simulated microgravity facilities.

- 12 Name of the project:** PLANT DEVELOPMENT project (A SERIES OF ESA SPACEFLIGHTS to ISS)

**Geographical area:** Non EU International**Degree of contribution:** Researcher**Entity where project took place:** International Space Station (ISS)**Name principal investigator (PI, Co-PI...):** Dr. Medina (PI); Dr. Carnero-Díaz (Co-PI); Dr. Kittang (Co-PI); Dr. Raul Herranz; Dr. Elodie Boucheron-Dubuisson; Dr. Veronica Pereda; Dr. Cristian Mazars; Prof. tor-Henning Iversen**Nº of researchers:** 9**Funding entity or bodies:**

European Space Agency (Mission to the International Space Station)

**Type of participation:** Team member**Code according to the funding entity:** ILSRA-2001-001 (Genara-B) / ILSRA-2004-028 (Root Cell Proliferation / ILSRA-2001-051 (Multigen-2)**Start-End date:** 2012 - 2018**Duration:** 15 years**Participating entity/entities:** CSIC (Spain); Paris VI and Toulouse Universities (France); Trondheim (Norway)**Total amount:** 0 €

**Applicant's contribution:** This was a JOINT EUROPEAN Arabidopsis thaliana ISS PROJECT currently removed from the ESA pipeline of projects. It was approved as three individual projects, Plant Proliferation



(PI, Dr. Medina) in Madrid, together with other partners projects, namely, GENARA-B (PI, Dr. Medina / Dr. Carnero) and MULTIGEN-2 (PI, Prof. Iversen) but not performed due to ESA budget constrains. After 15 years of working in different versions (I joint the project by mid 2011) following ESA managers requirements, a combined european project on plant biology was finally deselected when the Plant Biology EMCS facility was unboarded from the ISS.

**13 Name of the project:** SEEDLING GROWTH project (3 ESA/NASA SPACEFLIGHTS to ISS)

**Geographical area:** Non EU International

**Degree of contribution:** Researcher

**Entity where project took place:** International Space Station (ISS)

**Name principal investigator (PI, Co-PI...):** Dr. F. J. Medina (ESA PI); Dr. John Z. Kiss (NASA PI); Dr. Raul Herranz (ESA Col); Dr. Richard E. Edelmann (NASA Col); Dr. Eugénie Carnero-Díaz; Dr. Elodie Boucheron-Dubuisson; Dr. Julio Saez-Vasquez

**Nº of researchers:** 7

**Funding entity or bodies:**

European Space Agency (ESA))

National Aeronautics and Space Administration (NASA)

**Type of participation:** Co-Investigador

**Code according to the funding entity:** ILSRA2009-0932/ILSRA2009-1177

**Start-End date:** 2012 - 2018

**Duration:** 7 years

**Participating entity/entities:** CSIC; Miami University (OH, USA); Paris VI; Toulouse and Perpignan Universities (France)

**Applicant's contribution:** This Spaceflight project entitled "Transduction of the light stimulation signal and its effects on cell growth and proliferation under spaceflight conditions in Arabidopsis thaliana (SEEDLING GROWTH)" is a Joint ESA/NASA mission to maximize the output of the european and northamerican partners. Three spaceflights for 2013, 2014 and 2015 has been granted. Finally the last fight was performed in 2017 and the last Ground Control activity will be completed in summer 2018 completing the project. I acted as European Co-I in the experiments (particularly in SG3 focused on Space transcriptomics).

**14 Name of the project:** Plants in the International Space Station. Space and ground-based research included in ESA and NASA programmes

**Geographical area:** National

**Degree of contribution:** Researcher

**Entity where project took place:** Centro de Investigaciones Biológicas

**Type of entity:** State agency

**Name principal investigator (PI, Co-PI...):** Dr. F. Javier Medina Díaz; Dr. Eugénie Carnero-Díaz; Dr. Julio Sáez-Vasquez; Raul Herranz Barranco

**Nº of researchers:** 4

**Funding entity or bodies:**

Ministerio de Economía y Competitividad. Programa Nacional de I+d+i

**Type of participation:** Team member

**Code according to the funding entity:** AYA2012-33982

**Start-End date:** 01/01/2013 - 31/12/2015

**Duration:** 3 years

**Participating entity/entities:** CSIC

**Total amount:** 84.000 €

**Applicant's contribution:** Posdoctoral Associate researcher

**15 Name of the project:** GIA Project: From GBF to ISS with A. thaliana. Utilization of ground based microgravity simulation to improve the scientific knowledge and expected returns from already approved experiments to be performed with Arabidopsis thaliana in ISS

**Geographical area:** European Union





**Degree of contribution:** Scientific coordinator

**Name principal investigator (PI, Co-PI....):** Dr. Raúl Herranz Barranco; F Javier Medina Diaz; Eugenie Carnero-Diaz; Christian Mazars

**Nº of researchers:** 4

**Funding entity or bodies:**

European Space Agency

**Type of participation:** Co-ordinator

**Name of the programme:** ESA GBF Access Program

**Code according to the funding entity:** ESA Contract 4000105761

**Start-End date:** 01/01/2012 - 31/12/2013

**Duration:** 2 years

**Participating entity/entities:** Amsterdam (DESC) and Cologne (DLR); CIB-CSIC (Madrid); Universities of Paris VI & Paul Sabatier (Toulouse) Ground based Facilities in Toulouse (GSBMS)

**Total amount:** 46.900 €

**Applicant's contribution:** Scientific coordinator of the project (assisted by 3 local GBF coordinators, Veronica Pereda, Jack van Loon and Ruth Hemmersbach) Principal Investigator of one of the 4 subprojects (Molecular Biology Approach)

**16 Name of the project:** ESA Topical Team: Arabidopsis thaliana space experiments utilising existing or planned experiment hardware and facilities on ISS”

**Degree of contribution:** Researcher

**Entity where project took place:** European Space Agency

**Name principal investigator (PI, Co-PI....):** Dr. Ann-Iren Kittang (Chair from NTNU Norway); Abdul Basit Mohammad; F Javier Medina; Elodie Boucheron; Eugenie Carnero-Diaz; Raul Herranz; Tor-Henning Iversen; Christian Mazars; Veronica Pereda

**Nº of researchers:** 9

**Funding entity or bodies:**

European Space Agency

**Type of participation:** Team member

**Name of the programme:** ESA Topical Team

**Code according to the funding entity:** Contract # 4000106052/12/NL/VJ

**Start-End date:** 01/01/2012 - 31/12/2012

**Duration:** 1 year

**Participating entity/entities:** CIB-CSIC (Madrid); Norway; Trondheim; Universities of Paris VI & Paul Sabatier (Toulouse) and Norwegian University of Science and Technology (NTNU)

**Total amount:** 25.000 €

**Applicant's contribution:** As a full member of this ESA Topical Team project, I have the opportunity of discuss the further steps in European research strategy to be applies in Biological microgravity field with the major players of this field in Europe.

**17 Name of the project:** Alteraciones Funcionales en Plantas Causadas por la Microgravedad. Investigaciones en el Espacio y en Tierra en el marco de Proyectos Multilaterales Europeos

**Geographical area:** National

**Degree of contribution:** Researcher

**Entity where project took place:** Centro de Investigaciones Biológicas

**Type of entity:** State agency

**Name principal investigator (PI, Co-PI....):** Dr. F. Javier Medina Díaz; Dr. Eugénie Carnero-Diaz; Ana I Manzano Perez; Raul Herranz Barranco

**Nº of researchers:** 3

**Funding entity or bodies:**

Ministerio de Ciencia y Tecnología. Programa Nacional de I+d+i

**Type of participation:** Team member

**Code according to the funding entity:** AYA2009-07952



**Start-End date:** 01/01/2010 - 31/12/2012      **Duration:** 3 years  
**Participating entity/entities:** CSIC  
**Total amount:** 99.000 €  
**Applicant's contribution:** Postdoctoral Associated Researcher

- 18 Name of the project:** Financiación nacional para experimentos cofinanciados por la ESA en GBF europeas de microgravedad simulada: Drosophila  
**Geographical area:** National  
**Degree of contribution:** Researcher  
**Entity where project took place:** Centro de Investigaciones Biológicas      **Type of entity:** State agency  
**Name principal investigator (PI, Co-PI....):** Dr. Raul Herranz Barranco (PI); F Javier Medina Diaz  
**Nº of researchers:** 2  
**Funding entity or bodies:** Ministerio de Ciencia e Innovación      **Type of entity:** Body, others  
**Type of participation:** Co-ordinator  
**Name of the programme:** Acción Especial Plan Nacional de I+D+i  
**Code according to the funding entity:** AYA2009-07792-E  
**Start-End date:** 01/03/2011 - 31/08/2012      **Duration:** 1 year - 6 months  
**Participating entity/entities:** CSIC  
**Total amount:** 23.000 €  
**Applicant's contribution:** This project allowed me, as Principal Investigator, to fund some space omics (microarray-related) remaining experiments with samples obtained during my Research Stay in The Netherlands. The project was successfully finished by the publication of three first quartile articles concerning microarray results and three additional articles already submitted and in different degrees of the editorial process.

- 19 Name of the project:** Magnetic Levitation of plant cell cultures: its effects on cell proliferation and cell growth  
**Geographical area:** European Union  
**Degree of contribution:** Researcher  
**Entity where project took place:** High Field Magnet Laboratory at Nijmegen Radbound University      **Type of entity:** University  
**City of entity:** Nijmegen, Holland  
**Name principal investigator (PI, Co-PI....):** Dr. R. Herranz; Dr. F. J. Medina  
**Nº of researchers:** 2  
**Funding entity or bodies:** European Union  
**Type of participation:** Principal investigator  
**Name of the programme:** European Union EUROMAGNET II  
**Code according to the funding entity:** Project 2010.17 (NSO06-209)  
**Start-End date:** 01/01/2010 - 31/12/2011      **Duration:** 2 years  
**Participating entity/entities:** CIB-CSIC (Madrid)  
**Total amount:** 50 €  
**Applicant's contribution:** As a consequence of the ESA GBF project I coordinated, all GBF partners had the opportunity to apply for magnetic time and travelling costs to the Transnational Access to the HFML. Our group exposed cell cultures and seedlings in 50 hours.

- 20 Name of the project:** Systematic Evaluation of the ground based (micro-) gravity simulation paradigms available in Europe. First Phase: Similarities and Differences between the different approaches. SEGMGSPH1



**Geographical area:** European Union

**Degree of contribution:** Scientific coordinator

**Name principal investigator (PI, Co-PI....):** Dr. Raúl Herranz Barranco; Ralf Anken; Johannes Boonstra; Markus Braun; Reinhard Hilbig; F Javier Medina; Jack van Loon; Ruth Hemmersbach; Ralf Anken

**Nº of researchers:** 9

**Funding entity or bodies:**

European Space Agency

**Type of participation:** Co-ordinator

**Name of the programme:** ESA GBF Access program

**Code according to the funding entity:** ESA contract 4200022650

**Start-End date:** 01/01/2010 - 31/12/2011

**Duration:** 2 years

**Participating entity/entities:** Amsterdam (in The Netherlands) & Zurich (in Switzerland); Bonn & Hohenheim (in Germany); CIB-CSIC (Madrid); Ground based Facilities in Amsterdam (DESC) and Cologne (DLR); Universities of Erlangen; Utrecht

**Total amount:** 48.900 €

**Applicant's contribution:** Scientific coordinator of the project (assisted by 2 local GBF coordinators, Jack van Loon and Ruth Hemmersbach) Principal Investigator of one of the 7 subprojects (Drosophila). See publication #10. Thanks to the expertise obtained in the previous stay, I was awarded this project, headed and coordinated by me, which included the top microgravity biologists in Europe. It was completely successful, allowing individual researchers access to European Community funding to use the HFML facilities and it has been generated (in addition to each group publications) a publication review with important agreements for future use of this facilities in Europe.

**21 Name of the project:** Experimentos Biológicos en Microgravedad Real y Simulada en el Marco del Programa ELIPS-2 de la Agencia Espacial Europea” ESP2006-13600-C02-01.

**Degree of contribution:** Researcher

**Entity where project took place:** Universidad Autónoma de Madrid

**Type of entity:** University

**Name principal investigator (PI, Co-PI....):** Prof. Dr. Roberto Marco Cuellar; F Javier Medina Díaz; Raul Herranz Barranco

**Nº of researchers:** 3

**Funding entity or bodies:**

Ministerio de Ciencia y Tecnología. Programa Nacional del Espacio

**Type of participation:** Others

**Code according to the funding entity:** ESP2006-13600-C02-01

**Start-End date:** 2007 - 2009

**Participating entity/entities:** UAM - CSIC

**Total amount:** 128.000 €

**Applicant's contribution:** Hired Researcher

**22 Name of the project:** Experimentos de Drosophila melanogaster en la Estación Espacial Internacional ligados a la Misión Soyuz Española” Ayuda Especial.

**Degree of contribution:** Researcher

**Entity where project took place:** Universidad Autónoma de Madrid

**Type of entity:** University

**Name principal investigator (PI, Co-PI....):** Prof. Dr. Roberto Marco Cuellar; F Javier Medina Díaz; Raul Herranz Barranco

**Nº of researchers:** 3

**Funding entity or bodies:**

Ministerio de Ciencia y Tecnología. Programa Nacional del Espacio

**Type of participation:** Others



**Start-End date:** 2004 - 2007

**Duration:** 3 years

**Participating entity/entities:** UAM - CSIC

**Total amount:** 200.000 €

**Applicant's contribution:** Hired Researcher

**23 Name of the project:** Experimentos preparatorios para la utilización científica de la Estación Espacial Internacional

**Degree of contribution:** Technician

**Entity where project took place:** Universidad Autónoma de Madrid

**Type of entity:** University

**Name principal investigator (PI, Co-PI....):** Prof. Dr. Roberto Marco Cuellar

**Nº of researchers:** 4

**Funding entity or bodies:**

Ministerio de Ciencia y Tecnología. Programa Nacional del Espacio

**Start-End date:** 2003 - 2005

**Duration:** 3 years

**Participating entity/entities:** UAM - CSIC

**Total amount:** 169.400 €

**Applicant's contribution:** Responsible of the technical handling of samples in the Cervantes mission to the ISS

**24 Name of the project:** Experimentos de Drosophila melanogaster en la Estación Espacial Internacional ligados a la Misión Soyuz Española (Spanish Soyuz Misión). ESP2002-11913.

**Degree of contribution:** Current university student

**Entity where project took place:** Universidad Autónoma de Madrid

**Type of entity:** University

**Name principal investigator (PI, Co-PI....):** Prof. Dr. Roberto Marco Cuellar

**Nº of researchers:** 5

**Funding entity or bodies:**

Ministerio de Ciencia y Tecnología. Programa Nacional del Espacio

**Code according to the funding entity:** ESP2002-11913

**Start-End date:** 2002 - 2004

**Duration:** 3 years

**Participating entity/entities:** UAM - CSIC

**Total amount:** 200.000 €

**Applicant's contribution:** Responsible of the technical handling of samples in the Cervantes mission to the ISS

**25 Name of the project:** SOYUZ SPACEFLIGHT - MISION CERVANTES (GENE, AGEING & ROOT experiments)

**Degree of contribution:** Current university student

**Entity where project took place:** International Space Station (ISS)

**Name principal investigator (PI, Co-PI....):** Prof. Marco (GENE/ AGEING PI); Dr. Medina (ROOT PI) .

**Nº of researchers:** 2

**Funding entity or bodies:**

European Space Agency

**Type of participation:** Investigador Predoctoral

**Start-End date:** 10/2003 - 10/2003

**Duration:** 10 days

**Participating entity/entities:** Centro de Investigaciones Biológicas; Universidad Autónoma de Madrid

**Applicant's contribution:** As the Predoctoral fellow associated to these experiments done in the International Space Station, I performed the preflight tests, flight hardware preparation, recovery of the ISS flight samples and processing of the samples on landing site (Moscow, Starcity).

- 26** **Name of the project:** La Estación Espacial Internacional y la adaptación de los seres vivos a la microgravedad: Diseño y puesta a punto de experimentos durante su fase de ensamblaje 2000-2002.  
**Degree of contribution:** Current university student  
**Entity where project took place:** Universidad Autónoma de Madrid **Type of entity:** University  
**Name principal investigator (PI, Co-PI....):** Prof. Dr. Roberto Marco Cuellar  
**Nº of researchers:** 5  
**Funding entity or bodies:** CICYT - Programa Nacional de Investigación Espacial  
**Start-End date:** 2000 - 2002 **Duration:** 3 years  
**Participating entity/entities:** UAM - CSIC  
**Total amount:** 80.000 €  
**Dedication regime:** Part time  
**Applicant's contribution:** Optimization of protocols and hardware to be done in Space
- 27** **Name of the project:** Aislamiento, caracterización molecular y genética de los componentes Troponina de *Drosophila melanogaster*.  
**Degree of contribution:** Current university student  
**Entity where project took place:** Universidad Autónoma de Madrid **Type of entity:** University  
**Name principal investigator (PI, Co-PI....):** Prof. Dr. Roberto Marco Cuellar  
**Nº of researchers:** 3  
**Funding entity or bodies:** Programa Nacional de Promoción General del Conocimiento **Type of entity:** Public Research Body  
**Start-End date:** 1999 - 2000 **Duration:** 2 years  
**Participating entity/entities:** UAM - CSIC  
**Total amount:** 60.000 €  
**Dedication regime:** Part time  
**Applicant's contribution:** Identification and evolutionary characterization of the insects troponin genes

### R&D non-competitive contracts, agreements or projects with public or private entities

- 1** **Name of the project:** Diseño de una unidad de fijación (FIX-BOX, ESA) para el experimento SEEDLING GROWTH compatible con el hardware TROPI (NASA)  
**Type of project:** Technical viability study **Entity where project took place:** Centro de Investigaciones Biológicas  
**Degree of contribution:** Researcher  
**Entity where project took place:** Centro de Investigaciones Biológicas **Type of entity:** State agency  
**Name principal investigator (PI, Co-PI....):** Dr. F Javier Medina; Dr. Raul Herranz  
**Nº of researchers:** 2  
**Funding entity or bodies:** NTE (Nuevas Tecnologías Espaciales SL) - SENER  
**Start date:** 2013 **Duration:** 3 years  
**Relevant results:** Adaptation of a fixation unit to the existing TROPI hardware to be used in Seedling Growth mission 2 and 3. This activity has supposed an industrial return of more than one million euros as a consequence of our research projects.



- 2** **Name of the project:** Preservación de muestras biológicas (fijadas y no-fijadas) en la investigación espacial  
**Type of project:** Industrial research **Entity where project took place:** Universidad Autónoma de Madrid  
**Degree of contribution:** Current university student  
**Entity where project took place:** Universidad Autónoma de Madrid **Type of entity:** University  
**Name principal investigator (PI, Co-PI....):** Dr. F Javier Medina (Chair); Dr. Roberto Marco  
**Nº of researchers:** 2  
**Funding entity or bodies:**  
European Space Agency **Type of entity:** State agency  
NTE (Nuevas Tecnologías Espaciales SL) **Type of entity:** Business  
**City funding entity:** Barcelona, Spain  
DISTCOM Antenas SL **Type of entity:** Business  
**City funding entity:** Torrelodones, Community of Madrid, Spain  
**Name of the programme:** European Space Agency Life Science Topical Teams  
**Start date:** 2001 **Duration:** 2 years  
**Relevant results:** Design of new fixation protocols to be used in automatic hardware in the International Space Station (Herranz et al. J Gravit Physiol 2005).
- 3** **Name of the project:** Perfeccionamiento de un nuevo tipo de unidad automatizada para el cultivo de Drosophila y de instrumentación complementaria para su uso en la ISS.  
**Type of project:** Industrial research **Entity where project took place:** Consejo Superior de Investigaciones Científicas  
**Degree of contribution:** Current university student  
**Entity where project took place:** Consejo Superior de Investigaciones Científicas **Type of entity:** State agency  
**Name principal investigator (PI, Co-PI....):** Prof. Roberto Marco  
**Nº of researchers:** 1  
**Funding entity or bodies:**  
Consejo Superior de Investigaciones Científicas **Type of entity:** State agency  
**City funding entity:** Madrid, Community of Madrid, Spain  
NTE (Nuevas Tecnologías Espaciales SL) **Type of entity:** Business  
**City funding entity:** Barcelona, Spain  
**Name of the programme:** Formación y Especialización en Líneas de Interés Industrial  
**Start date:** 01/11/1999 **Duration:** 1 year  
**Relevant results:** Knowledge transfer to the spanish productive sector in the emerging field of Aerospace engineering (optimization of a cultivation unit of Drophiila for the ISS, Herranz et al 2002).



## Results

### Industrial and intellectual property

- 1 Title registered industrial property:** DESIGN OF HARDWARE FOR MICROGRAVITY SIMULATION GIA2 PROJECT (D-BOX)  
**Entity holder of rights:** CSIC  
**Country of inscription:** Spain, Catalonia  
**Date of register:** 2020
- 2 Title registered industrial property:** DESIGN OF HARDWARE FOR MICROGRAVITY SIMULATION ROOTROPS PROJECT (D-BOX)  
**Entity holder of rights:** University of Naples  
**Country of inscription:** Italy  
**Date of register:** 2019
- 3 Title registered industrial property:** DESIGN OF A FIX – BOX FOR THE SEEDLING GROWTH EXPERIMENT TO BE PERFORMED INTO THE TROPI HARDWARE (EMCS AT INTERNATIONAL SPACE STATION)  
**Type of industrial property:** Collaboration in the Design and Testing of Spaceflight Experiments Hardware  
**Entity holder of rights:** European Space Agency (Built by Airbus Space (formerly NTE-SENER))  
**Country of inscription:** Spain, Catalonia  
**Date of register:** 2016
- 4 Title registered industrial property:** ESTABLISHMENT OF A PERMANENT COLONY OF Drosophila IN THE ISS: Hardware Test and Adaption of Techniques  
**Type of industrial property:** Collaboration in the Design and Testing of Spaceflight Experiments Hardware  
**Entity holder of rights:** European Space Agency (Built by NTE SL (Nuevas Tecnologías Espaciales))  
**Country of inscription:** Spain, Catalonia  
**Date of register:** 2002



## Scientific and technological activities

### Scientific production

**H index:** 25

**Date of application:** 04/11/2022

**Fuente de Índice H:** GOOGLE SCHOLAR

### Publications, scientific and technical documents

- 1** Colleen S Deane; Joseph Borg; Thomas Cahill; Eugenie Carnero-Diaz; Timothy Etheridge; Gary Hardiman; Natalie Leys; Pedro Madrigal; Aranzazu Manzano; Felice Mastroleo; F Javier Medina; Manuel A Fernandez-Rojo; Keith Siew; Nathaniel Szewczyk; Alicia Villacampa; Stephen b Walsh; Silvio Weging; Daniela Bezdán; Stefania Giacomello; Wilian da Silveira; Raul Herranz. Space omics research in Europe: contributions, geographical distribution and ESA member state funding schemes. *iScience*. 25 - 3, pp. 103920 - 0. Cell Press Journals, 18/03/2022. ISSN 25890042
- Type of production:** Scientific paper  
**Position of signature:** 21
- Total no. authors:** 21  
**Impact source:** ISI
- Impact index in year of publication:** 5,08
- Relevant results:** First review of the Space Omics research in Europe (I hold the role of coordinator of the ESA Space Omics Topical Team). This paper is the flagship of a European Space Omics Collection to publish approx. 20 papers simultaneously in Summer 2022 in Cell Press journals (co-guest edited by me).
- Relevant publication:** Yes
- Format:** Journal  
**Degree of contribution:** Author or co-author of article in journal with external admissions assessment committee  
**Corresponding author:** Yes  
**Category:** Science Edition - MULTIDISCIPLINARY SCIENCES  
**Journal in the top 25%:** Yes
- 2** Tatsiana Shymanovich; Joshua P Vandenbrink; Raul Herranz; F Javier Medina; John Z Kiss. Spaceflight studies identify a gene encoding an intermediate filament involved in tropism pathways. *Plant Physiology and Biochemistry*. 171 - 1, pp. 191 - 200. Elsevier Masson, 15/01/2022. Available on-line at: <<https://doi.org/10.1016/j.plaphy.2021.12.039>>.
- Type of production:** Scientific paper  
**Position of signature:** 5
- Total no. authors:** 6  
**Impact source:** ISI
- Impact index in year of publication:** 4,27  
**Position of publication:** 29
- Relevant results:** Follow up study validating on ground simulation studies the effects on genes previously identified in the Seedling Growth Experiment.
- Relevant publication:** Yes
- Format:** Journal  
**Degree of contribution:** Author or co-author of article in journal with external admissions assessment committee  
**Category:** Science Edition - PLANT SCIENCES  
**Journal in the top 25%:** Yes  
**No. of journals in the cat.:** 445
- 3** Giovanna Aronne; Lucius Wilhelminus Franciscus Muthert; Luigi Gennaro Izzo; Leone Ermes Romano; Maurizio Iovane; Fiore Capozzi; Aranzazu Manzano; Malgorzata Ciska; Raúl Herranz; F Javier Medina; John Z Kiss; Jack JWA van Loon. A novel device to study altered gravity and light interactions in seedling tropisms. *Life Sciences in Space Research*. 32, pp. 8 - 16. Elsevier, 02/01/2022.
- Type of production:** Scientific paper  
**Format:** Journal





**Position of signature:** 9

**Total no. authors:** 12

**Impact source:** ISI

**Impact index in year of publication:** 2.082

**Position of publication:** 50

**Relevant results:** Hardware description previous to the results of the GBF project Rootrop in collaboration with Dr. Aronne group

**Relevant publication:** Yes

**Degree of contribution:** Author or co-author of chapter in book

**Corresponding author:** No

**Category:** Science Edition - BIOLOGY

**Journal in the top 25%:** No

**No. of journals in the cat.:** 93

- 4** Luigi Gennaro Izzo; Leone Ermes Romano; Lucius Wilhelminus Franciscus Muthert; Maurizio Iovane; Fiore Capozzi; Aránzazu Manzano; Malgorzata Ciska; Raúl Herranz; F Javier Medina; John Z Kiss; Jack JWA van Loon; Giovanna Aronne. Interaction of gravitropism and phototropism in roots of Brassica oleracea. Environmental and Experimental Botany. 193, pp. 104700. Elsevier, 01/01/2022. Available on-line at: <<https://doi.org/10.1016/j.envexpbot.2021.104700>>.

**Type of production:** Scientific paper

**Position of signature:** 8

**Total no. authors:** 12

**Impact source:** ISI

**Impact index in year of publication:** 5.54

**Position of publication:** 23

**Relevant results:** First report of the results of the GBF project Rootrops in collaboration with Dr. Aronne group

**Relevant publication:** Yes

**Format:** Journal

**Degree of contribution:** Author or co-author of chapter in book

**Corresponding author:** No

**Category:** Science Edition - PLANT SCIENCES

**Journal in the top 25%:** Yes

**No. of journals in the cat.:** 445

- 5** Thomas Cahill; Henry Cope; Joseph J. Bass; Eliah G. Overbey; Rachel Gilbert; Willian Abraham da Silveira; Amber M. Paul; Tejaswini Mishra; Raúl Herranz; Sigrid S. Reinsch; Sylvain V. Costes; Gary Hardiman; Gary Hardiman; Candice G. T. Tahimic. Mammalian and Invertebrate Models as Complementary Tools for Gaining Mechanistic Insight on Muscle Responses to Spaceflight. Int. J. Mol. Sci. 22 - 17, pp. 9470. MDPI, 31/08/2021. ISSN 1422-0067

**Type of production:** Scientific paper

**Position of signature:** 9

**Total no. authors:** 14

**Impact source:** ISI

**Impact index in year of publication:** 5.923

**Relevant results:** Article revisiting the use of animal models (*Drosophila*/ *C. elegans*) to advance in space biology, in this moment in which rodent missions datasets have been added to GeneLab

**Relevant publication:** Yes

**Format:** Journal

**Degree of contribution:** Author or co-author of article in journal with external admissions assessment committee

**Corresponding author:** No

**Category:** Science Edition - BIOCHEMISTRY & MOLECULAR BIOLOGY

**Journal in the top 25%:** Yes

- 6** Eliah G Overbey Amanda M Saravia-Butler Zhe Zhan. NASA GeneLab RNA-Seq Consensus Pipeline: Standardized Processing of Short-Read RNA-Seq Data. iScience. pp. 102361. Cell Press Journals, 23/04/2021.

**Type of production:** Scientific paper

**Position of signature:** 21

**Total no. authors:** 46

**Impact source:** ISI

**Impact index in year of publication:**

**Format:** Journal

**Degree of contribution:** Author or co-author of article in journal with external admissions assessment committee

**Corresponding author:** No

**Category:** Science Edition - MULTIDISCIPLINARY SCIENCES

**Journal in the top 25%:** Yes

**Relevant results:** Companion paper to the NASA Spaceflight results special issue published in the Cell November 2020 , elaborating on new pipelines for Space Omics Full issue: <https://www.cell.com/c/the-biology-of-spaceflight>

**Relevant publication:** Yes

- 7** Aranzazu Manzano; Veronica Veronica Pereda-Loth; Anne de Bures; Julio Julio Sáez-Vásquez; Raul Herranz; F Javier Medina. Light signals counteract alterations caused by simulated microgravity in proliferating plant cells. American Journal of Botany. 108 - 1, pp. 1775 - 1792. Botanical Society of AMERICA, 20/04/2021.

**Type of production:** Scientific paper

**Position of signature:** 5

**Total no. authors:** 6

**Impact source:** ISI

**Impact index in year of publication:** 2,84

**Position of publication:** 21

**Format:** Journal

**Degree of contribution:** Author or co-author of article in journal with external admissions assessment committee

**Category:** Science Edition - PLANT SCIENCES

**Journal in the top 25%:** Yes

**No. of journals in the cat.:** 190

**Relevant results:** Multidisciplinary approach article summarizing Dr. Manzano's thesis main achievements using the microgravity simulation with seedlings.

**Relevant publication:** Yes

- 8** Alicia Villacampa; Ludovico Sora; R. Herranz; F.J. Medina; Malgorzata Ciska. Analysis of Gravitropism and Biological Effects of Vertical and Horizontal Clinorotation in Arabidopsis thaliana Root Tip. Plants. 10 - 4, pp. 734. MDPI, 09/04/2021. ISSN 1531-1074

**Type of production:** Scientific paper

**Position of signature:** 3

**Total no. authors:** 5

**Impact source:** ISI

**Impact index in year of publication:** 2,369

**Position of publication:** 34

**Format:** Journal

**Degree of contribution:** Author or co-author of article in journal with external admissions assessment committee

**Corresponding author:** No

**Category:** Science Edition - GEOSCIENCES, MULTIDISCIPLINARY

**Journal in the top 25%:** Yes

**No. of journals in the cat.:** 167

**Relevant results:** Nice report on the effects of clinorotation modes in the root development. <https://doi.org/10.3390/plants10040734>

**Relevant publication:** Yes

- 9** A. Villacampa; M. Ciska; A. Manzano; J. Vandenbrink; J. Z Kiss; R. Herranz; F.J. Medina. From spaceflight to Mars g-levels: adaptive response of A. thaliana seedlings in a reduced gravity environment is enhanced by red light photostimulation. Int. J. Mol. Sci. 22 - 899, MDPI, 18/01/2021. ISSN 1422-0067

**Type of production:** Scientific paper

**Position of signature:** 6

**Total no. authors:** 7

**Impact source:** ISI

**Impact index in year of publication:** 5.923

**Format:** Journal

**Degree of contribution:** Author or co-author of article in journal with external admissions assessment committee

**Corresponding author:** Yes

**Category:** Science Edition - BIOCHEMISTRY & MOLECULAR BIOLOGY

**Journal in the top 25%:** Yes

**Citations:** 4

**Relevant results:** Seedling Growth project results on the collection of wild type plants exposed to red light.

**Relevant publication:** Yes

- 10** Aranzazu Manzano; Eva Creus; Albert Tomas; Miguel Angel Valbuena; Alicia Villacampa; Malgorzata Ciska; Richard E. Edelmann; John Kiss; F Javier Medina; Raul Herranz. The FixBox: Hardware to provide on-orbit fixation capabilities to the EMCS on the ISS. *Microgravity Science and Technology*. 32 - 6, pp. 1105 - 1120. Elsevier, 22/12/2020.

**DOI:** 10.1007/s12217-016-9531-8

**Type of production:** Scientific paper

**Position of signature:** 10

**Total no. authors:** 10

**Relevant results:** I am the Corresponding author of this work that introduce a new piece of hardware that have been developed by ESA and built by Airbus Space with our collaboration

**Relevant publication:** Yes

**Format:** Journal

**Degree of contribution:** Author or co-author of article in journal with external admissions assessment committee

**Corresponding author:** Yes

- 11** Pedro Madrigal; Alexander Gabel; Alicia Villacampa; Aranzazu Manzano; Colleen S Deane; Daniela Bezdán; Eugenie Carnero-Díaz; F Javier Medina; Gary Hardiman; Ivo Grosse; Nathaniel Szewczyk; Silvio Weging; Stefania Giacomello; Stephen Harridge; Tessa Morrison-Paterson; Thomas Cahill; Wilian da Silveira; Raul Herranz. Revamping Space-omics in Europe. *Cell Systems*. S2405-4712 - 20, pp. 30413 - 0. Cell Press Journals, 16/12/2020. ISSN 2405-4720

**Type of production:** Scientific paper

**Position of signature:** 18

**Total no. authors:** 18

**Impact source:** ISI

**Impact index in year of publication:** 8,673

**Format:** Journal

**Degree of contribution:** Author or co-author of article in journal with external admissions assessment committee

**Corresponding author:** Yes

**Category:** Biochemistry

**Journal in the top 25%:** Yes

**Citations:** 5

**Relevant results:** Letter introducing a new european group for Space Omics research in europe (I hold the role of coordinator of the ESA Space Omics Topical Team).

**Relevant publication:** Yes

- 12** Lindsay Rutter; Richard Barker; Daniela Bezdán; Henry Cope; Sylvain V. Costes; Lovorka Degoricija; Kathleen M. Fisch; Mariano I. Gabitto; Samrawit Gebre; Stefania Giacomello; Simon Gilroy; Stefan J. Green; Christopher E. Mason; Sigrid S. Reinsch; Nathaniel J. Szewczyk; Deanne M. Taylor; Jonathan M. Galazka; Raul Herranz; Masafumi Muratani. A New Era for Space Life Science: International Standards for Space Omics Processing (ISSOP). *Patterns*. 100148, Cell Press, 25/11/2020. ISSN 2666-3899

**Type of production:** Scientific paper

**Position of signature:** 18

**Total no. authors:** 19

**Relevant results:** State of the art description of the Space Omics research requirements including the introduction of a new international consortium ISSOP. My contribution as co-corresponding author for Europe It derives from the role of coordinator of the ESA Space Omics Topical Team. Journal is new (expect high IF)

**Relevant publication:** Yes

**Format:** Journal

**Degree of contribution:** Author or co-author of article in journal with external admissions assessment committee

**Corresponding author:** Yes

**Citations:** 13

- 13** Aranzazu Manzano; Alicia Villacampa; Julio Julio Sáez-Vásquez; John Kiss; F Javier Medina; Raul Herranz. The importance of Earth reference controls in spaceflight –omics experiments: Dissecting transcriptional responses of nucleolin mutants to red light stimulation. *iScience*. 23, pp. 101686. Cell Press Journals, 20/11/2020. ISSN 2589-0042

**Type of production:** Scientific paper

**Position of signature:** 6

**Total no. authors:** 6

**Format:** Journal

**Degree of contribution:** Author or co-author of article in journal with external admissions assessment committee

**Corresponding author:** Yes

**Impact source:** ISI

**Category:** Science Edition - MULTIDISCIPLINARY SCIENCES

**Impact index in year of publication:**

**Journal in the top 25%:** Yes

**Citations:** 4

**Relevant results:** Companion paper to the NASA Spaceflight results special issue published in the Cell November 2020, elaborating on our spaceflight 1g control transcriptional status. Cover iScience: [https://www.cell.com/iscience/issue?pii=S2589-0042\(20\)X0011-3](https://www.cell.com/iscience/issue?pii=S2589-0042(20)X0011-3) Full issue: <https://www.cell.com/c/the-biology-of-spaceflight>

**Relevant publication:** Yes

- 14** Khaled Y Kamal; Jack JWA van Loon; F Javier Medina; Raul Herranz. Differential transcriptional profile through cell cycle progression in Arabidopsis cultures under simulated microgravity. *Genomics*. 111 - 6, pp. 1956 - 1965. Elsevier, 01/12/2019. Available on-line at: <https://doi.org/10.1016/j.ygeno.2019.01.007>. ISSN 0888-7543

**Type of production:** Scientific paper

**Format:** Journal

**Position of signature:** 4

**Degree of contribution:** Author or co-author of article in journal with external admissions assessment committee

**Total no. authors:** 4

**Corresponding author:** Yes

**Impact source:** ISI

**Category:** Genetics and heredity

**Impact index in year of publication:** 3.16

**Journal in the top 25%:** No

**Position of publication:** 65

**No. of journals in the cat.:** 173

**Citations:** 10

**Relevant results:** Although we choose a journal not indexed in Plant Biology, such an impact factor (3.16) fall into the first quartile in the case of Plant Biology journals. I am corresponding author. Published online on January 2019.

**Relevant publication:** Yes

- 15** R. Herranz; J. P. Vandenbrink; A. Villacampa; A. Manzano; W. L. Poehlman; F. A. Feltus; J. Z. Kiss; F. J. Medina. RNAseq Analysis of the Response of Arabidopsis thaliana to Fractional Gravity Under Blue-Light Stimulation During Spaceflight. *Frontiers in Plant Science*. 10 - 1529, Frontiers, 26/11/2019. ISSN 1664-462X

**Type of production:** Scientific paper

**Format:** Journal

**Position of signature:** 1

**Degree of contribution:** Author or co-author of article in journal with external admissions assessment committee

**Total no. authors:** 8

**Corresponding author:** Yes

**Impact source:** ISI

**Category:** Science Edition - PLANT SCIENCES

**Impact index in year of publication:** 4.495

**Journal in the top 25%:** Yes

**Position of publication:** 15

**No. of journals in the cat.:** 222

**Citations:** 22

**Relevant results:** Submitted by invitation in the Research Topic: Higher Plants, Algae and Cyanobacteria in Space Environments. Second report of our Seedling Growth transcriptomics studies. In this case we report the effects of blue light stimulation on wildtype samples exposed to a gradient of gravity levels from microgravity to 1g on board the ISS.

**Relevant publication:** Yes

- 16** J.P. Vandenbrink; R. Herranz; W. L. Poehlman; F. A. Feltus; A. Villacampa; M. Ciska; F. J. Medina; J. Z. Kiss. RNA-seq analyses of Arabidopsis thaliana seedlings after exposure to blue-light phototropic stimuli in microgravity. *American Journal of Botany*. 106 - 11, pp. 1466 - 1476. Botanical Society of America, 10/11/2019. ISSN 1537-2197

**Type of production:** Scientific paper

**Format:** Journal

**Position of signature:** 2

**Degree of contribution:** Author or co-author of article in journal with external admissions assessment committee

**Total no. authors:** 8

**Corresponding author:** No



**Impact source:** ISI  
**Impact index in year of publication:** 2.788  
**Position of publication:** 49

**Category:** Science Edition - PLANT SCIENCES  
**Journal in the top 25%:** Yes  
**No. of journals in the cat.:** 222  
**Citations:** 24

**Relevant results:** First report of our Seedling Growth transcriptomics studies. In this case we report the effects of blue light stimulation on wildtype samples exposed to microgravity on the ISS.

**Relevant publication:** Yes

- 17** K. Y. Kamal; R. Herranz; J.J.W.A. van Loon; F. J. Medina. Cell cycle acceleration and changes in essential nuclear functions induced by simulated microgravity in a synchronized Arabidopsis cell culture. Plant Cell and Environment. 42 - 2, pp. 480 - 494. John Wiley & Sons Ltd, 01/02/2019. ISSN 1365-3040

**Type of production:** Scientific paper  
**Position of signature:** 2

**Format:** Journal  
**Degree of contribution:** Author or co-author of article in journal with external admissions assessment committee

**Total no. authors:** 4

**Impact source:** ISI  
**Impact index in year of publication:** 5.415  
**Position of publication:** 13

**Corresponding author:** No  
**Category:** Plant Sciences  
**Journal in the top 25%:** Yes  
**No. of journals in the cat.:** 222

**Citations:** 20

**Relevant results:** Main publication from Dr. Kamal PhD thesis, demonstrating that microgravity produces an unequivocal acceleration in cell cycle progression due to a bypass of the G2/M transition checkpoint.

**Relevant publication:** Yes

- 18** Miguel A Valbuena; Aranzazu Manzano; Joshua P Vandenbrink; Veronica Pereda-Loth; Eugenie Carnero-Diaz; Richard E Edelmann; John Z Kiss; Raul Herranz; F Javier Medina. The combined effects of real or simulated microgravity and red-light photoactivation on plant root meristematic cells. Planta. 08/06/2018. ISSN 0032-0935

**Type of production:** Scientific paper  
**Position of signature:** 8

**Format:** Journal  
**Degree of contribution:** Author or co-author of article in journal with external admissions assessment committee

**Total no. authors:** 9

**Impact source:** ISI  
**Impact index in year of publication:** 3.249  
**Position of publication:** 32

**Corresponding author:** Yes  
**Category:** Plant Sciences  
**Journal in the top 25%:** Yes  
**No. of journals in the cat.:** 205

**Citations:** 20

**Relevant publication:** Yes

- 19** K.Y. Kamal; R. Herranz; J.J.W.A. van Loon; F.J. Medina. Simulated microgravity, Mars gravity, and 2g hypergravity affect cell cycle regulation, ribosome biogenesis, and epigenetics in Arabidopsis cell cultures. Scientific Reports. 8 - 6424, NATURE Publishing Group, 23/04/2018.

**Type of production:** Scientific paper  
**Position of signature:** 2

**Format:** Journal  
**Degree of contribution:** Author or co-author of article in journal with external admissions assessment committee

**Total no. authors:** 4

**Impact source:** ISI  
**Impact index in year of publication:** 4,122  
**Position of publication:** 12

**Corresponding author:** No  
**Category:** MULTIDISCIPLINARY SCIENCES  
**Journal in the top 25%:** Yes  
**No. of journals in the cat.:** 64

**Citations:** 27

**Relevant publication:** Yes

- 20** Aranzazu Manzano; Raul Herranz; Leonardus A den Toom; Sjoerd te Slaa; Guus Borst; Martijn Visser; F Javier Medina; Jack JWA van Loon. Novel, Moon and Mars, partial gravity simulation paradigms and their effects on the balance between cell growth and cell proliferation during early plant development. NPJ Microgravity. 4 - 9, pp. 1. NATURE Publishing Group, 04/04/2018. ISSN 2373-8065
- Type of production:** Scientific paper  
**Position of signature:** 2
- Total no. authors:** 8  
**Impact source:** ISI  
**Impact index in year of publication:** 2  
**Position of publication:** 20
- Format:** Journal  
**Degree of contribution:** Author or co-author of article in journal with external admissions assessment committee  
**Corresponding author:** No  
**Category:** MULTIDISCIPLINARY SCIENCES  
**Journal in the top 25%:** No  
**No. of journals in the cat.:** 64  
**Citations:** 33
- Relevant publication:** Yes
- 21** Khaled Y Kamal; Jack JWA van Loon; F Javier Medina; Raul Herranz. Embedding Arabidopsis Plant Cell Suspensions in Low-Melting Agarose Facilitates Altered Gravity Studies. Microgravity Science and Technology. 29, pp. 115 - 119. Elsevier, 31/01/2017.  
**DOI:** 10.1007/s12217-016-9531-8
- Type of production:** Scientific paper  
**Position of signature:** 4
- Format:** Journal  
**Degree of contribution:** Author or co-author of article in journal with external admissions assessment committee
- Corresponding author:** Yes  
**Relevant results:** I am the Corresponding author of this work that complements the article published in LifeScience in Space Biology.  
**Relevant publication:** Yes
- 22** Elodie Boucheron-Dubuisson; Ana Isabel Manzano; Isabel Le Disquet; Isabel Matía; Julio Sáez-Vasquez; Jack JWA van Loon; Raúl Herranz; Eugenie Carnero-Díaz; F Javier Medina. Functional Alterations of Root Meristematic Cells of Arabidopsis thaliana induced by Simulated Microgravity Environment. Journal of Plant Physiology. 207, pp. 30 - 41. WILEY-BLACKWELL, 19/10/2016. ISSN 0176-1617
- Type of production:** Scientific paper  
**Position of signature:** 7
- Format:** Journal  
**Degree of contribution:** Author or co-author of article in journal with external admissions assessment committee
- Total no. authors:** 9  
**Impact source:** ISI  
**Impact index in year of publication:** 2.971  
**Position of publication:** 38
- Category:** Science Edition - PLANT SCIENCES  
**Journal in the top 25%:** Yes  
**No. of journals in the cat.:** 209  
**Citations:** 24
- Relevant publication:** Yes
- 23** J.P. Vandenbrink; R. Herranz; F.J. Medina; R.E. Edelman; J.Z. Kiss. A novel blue-light phototropic response is revealed in roots of Arabidopsis thaliana in microgravity. Planta. 244, pp. 1201 - 1215. SPRINGER, 09/08/2016. Available on-line at: <DOI 10.1007/s00425-016-2581-8>. ISSN 0032-0935
- Type of production:** Scientific paper  
**Position of signature:** 2
- Format:** Journal  
**Degree of contribution:** Author or co-author of article in journal with external admissions assessment committee
- Total no. authors:** 5  
**Impact source:** ISI  
**Impact index in year of publication:** 3.239
- Category:** Science Edition - PLANT SCIENCES  
**Journal in the top 25%:** Yes

**Position of publication:** 32

**No. of journals in the cat.:** 209

**Citations:** 39

**Relevant publication:** Yes

- 24** Khaled Y Kamal; Raul Herranz; Jack JWA van Loon; Peter CM Christianen; F Javier Medina. Evaluation of Simulated Microgravity Environments induced by Diamagnetic Levitation of Plant Cell Suspension Cultures. *Microgravity Science and Technology*. 28 - 3, pp. 309 - 317. Elsevier, 06/2016.

**DOI:** 10.1007/s12217-015-9472-7

**Type of production:** Scientific paper

**Format:** Journal

**Position of signature:** 2

**Degree of contribution:** Author or co-author of article in journal with external admissions assessment committee

**Corresponding author:** Yes

**Relevant results:** . am the Corresponding author of this work that complements the article published in *LifeScience in Space Biology*.

**Relevant publication:** Yes

- 25** Ana Isabel Manzano; Raúl Herranz; Aranzazu Manzano; Jack JWA van Loon; F Javier Medina. Early Effects of Altered Gravity Environments on Plant Cell Growth and Cell Proliferation: Characterization of Morphofunctional Nucleolar Types in an Arabidopsis Cell Culture System. *Frontiers in Astronomy and Space Science*. 3 - 2, Oxford Journals, 02/2016. ISSN 2296-987X

**DOI:** 10.3389/fspas.2016.00002

**Type of production:** Scientific paper

**Format:** Journal

**Position of signature:** 2

**Degree of contribution:** Author or co-author of article in journal with external admissions assessment committee

**Total no. authors:** 5

**Relevant results:** Shared first coauthorship and correspondence author, relevant multidisciplinary approach on cellular levels effect of simulated microgravity.

**Relevant publication:** Yes

- 26** Khaled Y Kamal; Ruth Hemmersbach; F Javier Medina; Raul Herranz. Proper selection of 1 g controls in simulated microgravity research as illustrated with clinorotated plant cell suspension cultures. *Life Sci Space Res (Amst)*. 5, pp. 47 - 52. Elsevier, 04/2015. Available on-line at: <doi: 10.1016/j.lssr.2015.04.004.>. ISSN 2214-5524

**Type of production:** Scientific paper

**Format:** Journal

**Position of signature:** 4

**Degree of contribution:** Author or co-author of article in journal with external admissions assessment committee

**Corresponding author:** Yes

**Relevant results:** New journal inherited the Biological half of the famous "Advances in Space Research". No IF information is available yet (but it is expected be in the first quartile)

**Relevant publication:** Yes

- 27** A.I. Manzano; C.E. Dijkstra; O.J. Larkin; P. Anthony; M.R. Davey; L. Eaves; R.J.A. Hill; R. Herranz; F.J. Medina. Meristematic cell proliferation and ribosome biogenesis are decoupled in diamagnetically levitated Arabidopsis seedlings. *BMC Plant Biology*. 13 - 124, pp. 1 - 15. BioMed Central, 09/2013. Available on-line at: <http://www.biomedcentral.com/1471-2229/13/124>.

**Type of production:** Scientific paper

**Format:** Journal

**Position of signature:** 8

**Degree of contribution:** Author or co-author of article in journal with external admissions assessment committee

**Total no. authors:** 9

**Impact source:** ISI

**Category:** Science Edition - PLANT SCIENCES

**Impact index in year of publication:** 3,44

**Journal in the top 25%:** Yes

**Position of publication:** 21

**No. of journals in the cat.:** 190

**Citations: 42**

**Relevant results:** Multidisciplinary approach article summarizing Dr. Manzano's thesis main achievements using the Magnetic levitation facility with seedlings.

**Relevant publication:** Yes

- 28** R. Herranz; R. Hill; I. Lopez-Vidriero; J.J.W.A. van Loon; F.J. Medina. Suboptimal evolutionary novel environments promote singular altered gravity responses of transcriptome during *Drosophila* metamorphosis. *BMC Evolutionary Biology*. 13 - 133, BioMed Central, 06/2013. Available on-line at: <<http://www.biomedcentral.com/1471-2148/13/133>>. ISSN 1471-2148

**Type of production:** Scientific paper

**Position of signature:** 1

**Total no. authors:** 5

**Impact source:** ISI

**Impact index in year of publication:** 4,294

**Position of publication:** 29

**Format:** Journal

**Degree of contribution:** Author or co-author of article in journal with external admissions assessment committee

**Corresponding author:** Yes

**Category:** Genetics and heredity

**Journal in the top 25%:** Yes

**No. of journals in the cat.:** 146

**Citations:** 13

**Relevant results:** Final publication of the serie of articles expanding on microgravity simulation effects on *Drosophila* overall genome effects. It elaborates on previous *Mol Ecol*, *BMC Genomics* and *J R S Interface* publications to produce a final conclusion about overall genoma sinergic and fine-tuning effects.

**Relevant publication:** Yes

- 29** Raul Herranz; Richard JA Hill; Camelia E Dijkstra; Laurance Eaves; Jack JWA van Loon; F Javier Medina. The behavioural-driven response of the *Drosophila* imago transcriptome to different types of modified gravity. *Genomics Discovery*. 1 - 1, pp. 1 - 7. HOAJ - Herbert Open Access Journals, 05/2013. Available on-line at: <doi:10.7243/2052-7993-1-1>. ISSN 2052-7993

**Type of production:** Scientific paper

**Position of signature:** 1

**Corresponding author:** Yes

**Relevant results:** Article in a new online open access journal (No impact factor available). It expands on previous results published in *BMC genomics* and *Mol Ecology* but with a larger dataset of microarray data (environmentally constrained).

**Relevant publication:** Yes

**Format:** Journal

**Degree of contribution:** Author or co-author of article in journal with external admissions assessment committee

- 30** R. Herranz; A. I. Manzano; P.C.M. Christianen; J. J.W.A. van Loon; F.J. Medina. Proteomic signature of *Arabidopsis* cell cultures exposed to mechanical or magnetical simulators of hyper- and microgravity environments. *Astrobiology*. 13 - 3, pp. 217 - 224. Mary Ann Liebert Publishers, 03/2013. ISSN 1531-1074

**Type of production:** Scientific paper

**Position of signature:** 1

**Total no. authors:** 5

**Impact source:** ISI

**Impact index in year of publication:** 2,369

**Position of publication:** 34

**Format:** Journal

**Degree of contribution:** Author or co-author of article in journal with external admissions assessment committee

**Corresponding author:** Yes

**Category:** Science Edition - GEOSCIENCES, MULTIDISCIPLINARY

**Journal in the top 25%:** Yes

**No. of journals in the cat.:** 167

**Citations:** 34

**Relevant results:** I am co-first and corresponding author of this article, published in a first quartile journal of the generally low impact factor field of Space Research, in which we have applied a brand new proteomic technique to validate our previous genomic approach (Manzano et al. *BMC* 2012).



**Relevant publication:** Yes

- 31** P. Serrano; J.J.W.A. van Loon; F.J. Medina; R. Herranz. Relation between gene expression, motility and accelerated aging in selected *Drosophila* strains under altered gravity conditions. *Microgravity Science and Technology*. 25 - 1, pp. 67 - 72. SPRINGER, 11/2012. Available on-line at: <doi:10.1007/s12217-012-9334-5>. ISSN 0938-0108

**Type of production:** Scientific paper

**Position of signature:** 4

**Format:** Journal

**Degree of contribution:** Author or co-author of article in journal with external admissions assessment committee

**Corresponding author:** Yes

**Impact source:** ISI

**Impact index in year of publication:** 0,713

**Position of publication:** 9

**Category:** engineering aerospace

**Journal in the top 25%:** No

**No. of journals in the cat.:** 27

**Relevant results:** The articles have been published online (press version is pagination pending) in this relevant, First Tercil journal of the microgravity multidisciplinary research field constitute a series of pieces describing my PhD students results using Ground Base Facilities experiment samples and their proper controls. I am proud to be corresponding author in all of them.

**Relevant publication:** Yes

- 32** A. I. Manzano; R. Herranz; J.J.W.A. van Loon; F.J. Medina. A hypergravity environment induced by centrifugation alters plant cell proliferation and Growth in an opposite way to Microgravity. *Microgravity Science and Technology*. 24 - 6, pp. 373 - 381. SPRINGER, 06/2012. Available on-line at: <doi:10.1007/s12217-012-9301-1>. ISSN 0938-0108

**Type of production:** Scientific paper

**Position of signature:** 2

**Format:** Journal

**Degree of contribution:** Author or co-author of article in journal with external admissions assessment committee

**Impact source:** ISI

**Impact index in year of publication:** 0,713

**Position of publication:** 9

**Category:** engineering aerospace

**Journal in the top 25%:** No

**No. of journals in the cat.:** 27

**Relevant results:** The articles published in this relevant, First Tercil journal of the microgravity multidisciplinary research field constitute a series of pieces describing my PhD students results using Ground Base Facilities experiment samples and their proper controls. I am proud to be corresponding author in all of them.

**Relevant publication:** Yes

- 33** A. I. Manzano; J.J.W.A. van Loon; P. Christianen; F.J. Medina; R. Herranz. Gravitational and magnetic field variations synergize to cause subtle variations in the global transcriptional state of *Arabidopsis* in vitro callus cultures. *BMC Genomics*. 13 - 105, BioMed Central, 03/2012. Available on-line at: <doi:10.1186/1471-2164-13-105>. ISSN 1471-2164

**Type of production:** Scientific paper

**Position of signature:** 5

**Format:** Journal

**Degree of contribution:** Author or co-author of article in journal with external admissions assessment committee

**Total no. authors:** 5

**Impact source:** ISI

**Impact index in year of publication:** 4,21

**Position of publication:** 34

**Corresponding author:** Yes

**Category:** Genetics and heredity

**Journal in the top 25%:** Yes

**No. of journals in the cat.:** 156

**Citations:** 46

**Relevant results:** This article is the result of the transference of my expertise in *Drosophila* microgravity research at the molecular level to the *Arabidopsis* system. In addition to the outcome for the PhD student (A. Manzano) training and CV, this work is an additional proof of the added value that I am providing to the host laboratory headed by Dr. Medina at CIB (CSIC) and that will have the maximum reflection in the next 5 years activities. As a consequence of our international leadership in both *Arabidopsis* Space biology (Dr. Medina) and Ground

Based Facilities (Dr. Herranz) we will have the opportunity of use a double cellular biology and a molecular biology approach to the samples from 5 annual flights to the International Space Station under Dr. Medina leadership (2013-2017).

**Relevant publication:** Yes

- 34** R. Herranz; O. Larkin; C. Dijkstra; R. Hill; P. Anthony; M. R. Davey; L. Eaves; J.J.W.A. van Loon; F.J. Medina; R. Marco. Microgravity simulation by diamagnetic levitation: effects of a strong gradient magnetic field on the transcriptional profile of *Drosophila melanogaster*. *BMC Genomics*. 13 - 52, BioMed Central, 02/2012. Available on-line at: <doi:10.1186/1471-2164-13-52>. ISSN 1471-2164

**Type of production:** Scientific paper

**Position of signature:** 1

**Total no. authors:** 10

**Impact source:** ISI

**Impact index in year of publication:** 4,21

**Position of publication:** 34

**Format:** Journal

**Degree of contribution:** Author or co-author of article in journal with external admissions assessment committee

**Corresponding author:** Yes

**Category:** Genetics and heredity

**Journal in the top 25%:** Yes

**No. of journals in the cat.:** 156

**Citations:** 56

**Relevant results:** These two articles (together with Hill et al. *JRS Interface*, 2012) demonstrate my competence to establish fruitful international cooperation agreements and top quality results. Particularly we have obtained free access to the exclusive and expensive technology of magnetic levitation in collaboration with a group from the Physics School at the University of Nottingham and we have shared the authorship of the top quality multidisciplinary scientific articles produced using our expertise with *Drosophila melanogaster* as a microgravity model organism. In the parner publication I played the senior article role in a paper analyzing flies behavior from the physics point of view and in the present article I am first author in an article using a whole genome molecular biology approach. In both cases we validated the use of the magnetic levitator facility as a new microgravity research facility and expended our knowledge about environmental stresses.

**Reviews in journals:** 56

**Relevant publication:** Yes

- 35** R. Hill; O. Larkin; C. Dijkstra; A. I. Manzano; E. de Juan; M. R. Davey; P. Anthony; L. Eaves; F.J. Medina; R. Marco; R. Herranz. Microgravity induced by diamagnetic levitation increases the random walk difusion constant of fruit flies. *Journal of the Royal Society Interface*. 9 - 2, pp. 1438 - 1449. Royal Society Publishing Group, 01/2012. Available on-line at: <doi: 10.1098/rsif.2011.0715>. ISSN 1742-5689

**Type of production:** Scientific paper

**Position of signature:** 11

**Total no. authors:** 11

**Impact source:** ISI

**Impact index in year of publication:** 4,26

**Position of publication:** 4

**Format:** Journal

**Degree of contribution:** Author or co-author of article in journal with external admissions assessment committee

**Corresponding author:** Yes

**Category:** Multidisciplinary

**Journal in the top 25%:** Yes

**No. of journals in the cat.:** 59

**Citations:** 23

**Relevant results:** See previous citation joint comment.

**Relevant publication:** Yes

- 36** I. Matía; F. González-Camacho; R. Herranz; J.Z. Kiss; G. Gasset; J.J.W.A. van Loon; R. Marco; F.J. Medina. Plant cell proliferation and growth are altered by microgravity conditions in spaceflight. *Journal of Plant Physiology*. 167 - 3, pp. 184 - 193. ELSEVIER, 2010. ISSN 0176-1617

**Type of production:** Scientific paper

**Position of signature:** 3

**Total no. authors:** 8

**Format:** Journal

**Degree of contribution:** Author or co-author of article in journal with external admissions assessment committee



**Impact source:** ISI  
**Impact index in year of publication:** 2,677  
**Position of publication:** 33

**Category:** Science Edition - PLANT SCIENCES  
**Journal in the top 25%:** Yes  
**No. of journals in the cat.:** 188  
**Citations:** 140

**Relevant results:** I would like to highlight this article published in a first quartile Plant Sciences journal despite I am not the main author of the manuscript. This paper resembles quite well the kind of research that I have started to perform since I joint CIB-CSIC, and it is consequently very close related with future research lines which I am applying for. This article includes the results from the ROOT experiment, a partner experiment of the GENE one in the Spanish Soyuz Mission cited in the previous reference. Results are partially complementary with the ones in the GENE experiment; the microgravity related environmental factors disrupt the finely regulated balance between meristematic cells proliferation and growth. Further tests using ground based facilities are already ongoing and will be published soon by our group, characterized for an important international and multidisciplinary composition.

**Relevant publication:** Yes

- 37** R. Herranz; A. Benguria; D.A. Lavan; I. Lopez-Vidriero; G. Gasset; F.J. Medina; J. van Loon; R. Marco. Spaceflight-related suboptimal conditions can accentuate the altered gravity response of Drosophila transcriptome. *Molecular Ecology*. 19 - 19, pp. 4255 - 4264. WILEY, 2010. ISSN 0962-1083

**Type of production:** Scientific paper  
**Position of signature:** 1

**Format:** Journal  
**Degree of contribution:** Author or co-author of article in journal with external admissions assessment committee

**Total no. authors:** 8  
**Impact source:** ISI  
**Impact index in year of publication:** 6,46  
**Position of publication:** 38

**Corresponding author:** Yes  
**Category:** Molecular Biology  
**Journal in the top 25%:** Yes  
**No. of journals in the cat.:** 286

**Impact source:** ISI  
**Impact index in year of publication:** 6,46  
**Position of publication:** 5

**Category:** Molecular Ecology  
**Journal in the top 25%:** Yes  
**No. of journals in the cat.:** 130

**Impact source:** ISI  
**Impact index in year of publication:** 6,46  
**Position of publication:** 5

**Category:** Science Edition - EVOLUTIONARY BIOLOGY  
**Journal in the top 25%:** Yes  
**No. of journals in the cat.:** 45

**Citations:** 42

**Relevant results:** This article, as a mature, refined and extended version of preliminary reports published in *Microgravity Science and Technology*, contains the main analysis of the GENE experiment in the Cervantes Mission to the International Space Station. It has been published in the second most relevant journal of the ecology field together with an editorial (pages 4105-7) to highlight the impact of this article to a heterogeneous reader of the environmental biology research area. Main objective was to assay the impact of microgravity in *Drosophila* gene expression through the metamorphosis process. Despite previous references suggest little transcriptional effects of this environmental parameter, and taking into account that some mission constraints included suboptimal conditions of oxygen and temperature, we detected a synergic effect of these ecological parameters over pupation developmental process. The modification in thousands of genes expression levels, statistically relevant although not very important in amount, was confirmed in ground based microgravity simulation experiments, and more than that, the opposite effect was observed when the organism was exposed to hypergravity in a dedicated centrifuge.

**Relevant publication:** Yes

- 38** R. Herranz; J. Mateos; R. Marco. Diversification and independent evolution of TpnC genes in insects. *J Mol Evol*. 60 - 1, pp. 31 - 44. SPRINGER, 2005. ISSN 0022-2844

**Type of production:** Scientific paper  
**Position of signature:** 1

**Format:** Journal  
**Degree of contribution:** Author or co-author of article in journal with external admissions assessment committee

**Impact source:** ISI

**Category:** Biochemistry

**Impact index in year of publication:** 2,703  
**Position of publication:** 108

**Impact source:** ISI  
**Impact index in year of publication:** 2,703  
**Position of publication:** 13

**Relevant results:** This contribution is especially significant for me because it is my first publication in a medium-high impact journal as the first author (J Mol Evol is one of the most read journals in Molecular Evolution area). This article includes the first half of my PhD results. Once we located and described the five genes that encode for Troponin C in Drosophila (see Herranz et al 2004) we described here how and why there are so many and variable TpnC genes in insects, bees and mosquitoes included. We also found that the evolution of these genes was independent in each insect order, although the final gene repertoire was similar among them (due to the indirect flight muscle special needings).

**Relevant publication:** Yes

**Journal in the top 25%:** No  
**No. of journals in the cat.:** 261

**Category:** Science Edition - EVOLUTIONARY BIOLOGY  
**Journal in the top 25%:** No  
**No. of journals in the cat.:** 33

- 39** R. Herranz; J. Mateos; J.A. Mas; E. García-Zaragoza; M. Cervera; R. Marco. The co-evolution of insect muscle TpnT and TpnI genes. Mol Biol Evol. 22 - 11, pp. 2231 - 2242. Oxford Journals, 2005. ISSN 0737-4038

**Type of production:** Scientific paper  
**Position of signature:** 1

**Impact source:** ISI  
**Impact index in year of publication:** 9,872  
**Position of publication:** 17

**Impact source:** ISI  
**Impact index in year of publication:** 9,872  
**Position of publication:** 2

**Format:** Journal

**Degree of contribution:** Author or co-author of article in journal with external admissions assessment committee

**Category:** Biochemistry  
**Journal in the top 25%:** Yes  
**No. of journals in the cat.:** 283

**Category:** Science Edition - EVOLUTIONARY BIOLOGY  
**Journal in the top 25%:** Yes  
**No. of journals in the cat.:** 44

**Relevant results:** Undoubtedly, this is the best article that I have contributed to the scientific community reaching almost 10 points impact factor. It contains the second half of my PhD thesis results, extending the results that we found for TpnC (Herranz et al. JMolEvol 2005) to the other two components of the Troponin complex (TpnT y TpnI). Summarizing, these genes have been coevolving in the different organisms to obtain a collection of complementary isoforms in each species, but curiously, this has happened several times independently during evolution (so the number and properties of each component is different in each species). Together with Herranz et al. JMolEvol 2005, it constitutes a good lesson about how different mechanisms operate on molecular evolution of genes and how they can be linked to the functional properties of a protein complex.

**Relevant publication:** Yes

- 40** Raul Herranz. Biología Espacial: Buscando las claves de la adaptación a ambientes extraterrestres para la exploración y colonización del Sistema Solar. Centro de Investigaciones Biológicas Margarita Salas Newsletter. 3, pp. 8 - 11. CSIC, 01/07/2021.

**Type of production:** Popular science article  
**Corresponding author:** Yes

**Relevant results:** Resumen del estado actual de la línea de nuestro grupo en Space Omics en el contexto Europeo.

**Relevant publication:** Yes

**Format:** Journal

- 41** Raul Herranz; Miguel A. Valbuena; Aranzazu Manzano; Khaled Youssef; Alicia Villacampa; Malgorzata Ciska; Jack van Loon; F Javier Medina. Use of reduced gravity simulators for plant biological studies. Methods Mol Biol.2368, pp. 241 - 265. New York(United States of America): Humana, 01/2022. Available on-line at: <[https://doi.org/10.1007/978-1-0716-1677-2\\_16](https://doi.org/10.1007/978-1-0716-1677-2_16)>. ISBN 978-1-0716-1676-5

**Collection:** Plant Gravitropism: Methods and Protocols

**Type of production:** Book chapter

**Position of signature:** 1

**Format:** Book



**Degree of contribution:** Author or co-author of chapter in book

**Total no. authors:** 8

**Corresponding author:** Yes

**Relevant results:** Publication by invitation of the editor (Elison Blancaflor). Most relevant american researchers in the field have been invited but only a couple of europeans are. More than 10000 views have promote the editors to ask for this revised second edition (published online 14 October 2021).

**Relevant publication:** Yes

- 42** Ruth Benavides-Piccione; F Javier Medina; Eduardo RS Roldán; Cayetano Von Kobbe; Luis M Rodríguez-Lorenzo; Pedro Revilla Temiño; Beatriz Martínez Fernández; Miguel Angel Sentandreu; José Eduardo González-Pastor; Juan Miguel González Grau; Raul Herranz. Volumen 12. Our future? Space colonization & exploration. Challenge 4:Sustaining Human life in Space. CSIC Scientific Challenges: Towards 2030. 12, pp. 8 - 11. CSIC, 01/07/2021. ISBN 978-84-00-10760-4

**Type of production:** Book chapter

**Format:** Book

**Corresponding author:** Yes

**Relevant results:** Contribución de nuestro grupo en Space Omics en el contexto CSIC de desafíos 2030 (Volumen 12: investigación espacial).

**Relevant publication:** Yes

- 43** F Javier Medina; Aranzazu Manzano; Khaled Youssef; Malgorzata Ciska; Raul Herranz. Plants in Space: novel physiological challenges and adaptation mechanisms. Progress in Botany. Springer, 02/05/2021. ISSN 0340-4773

**Type of production:** Book chapter

**Format:** Book

**Position of signature:** 5

**Degree of contribution:** Author or co-author of chapter in book

**Total no. authors:** 5

**Corresponding author:** Yes

**Relevant results:** Review chapter on Plant Space Biology and our group results in the last two decades.

**Relevant publication:** Yes

- 44** R. Herranz; M.A. Valbuena; A. Manzano; K. Youssef; A. Villacampa; M. Ciska; J. van Loon; F.J. Medina. Chapter 16. Use of reduced gravity simulators for plant biological studies. Methods Mol Biol.2368, Springer, 2021. Available on-line at: <doi: 10.1007/978-1-4939-2697-8\_18.>. ISSN 1064-3745

**Collection:** Plant Gravitropism: Methods and Protocols

**Type of production:** Book chapter

**Format:** Book

**Position of signature:** 1

**Degree of contribution:** Author or co-author of chapter in book

**Total no. authors:** 8

**Corresponding author:** Yes

**Relevant results:** Updated chapter provided for the Second Edition by invitation of the editor (Elison Blancaflor). Most relevant american researchers in the field have been invited but only a couple of europeans are. More than 10000 views have promote the editors to ask for this revised second edition in 2021.

**Relevant publication:** Yes

- 45** F Javier Medina; Carmen Arena; Raul Herranz; Giovanna Aronne; Veronica de Micco. Chapter 24: Growing Plants under Generated Extra-Terrestrial Environments: Effects of Altered Gravity and of Radiation. Generate on Earth an Extra-Terrestrial Environment. 6, pp. 239 - 254. Aalborg(Denmark): River Publishers, 06/2015. ISBN 978-87-93237-53-7

**Collection:** River Publishers series in Standardisation

**Type of production:** Book chapter

**Format:** Book

**Position of signature:** 3

**Total no. authors:** 5

**Relevant results:** Editors: Daniel Beysens and Jack van Loon. It was the winner of the 2017 Best Engineering Book Award by the International Academy of Astronautics.

**Relevant publication:** Yes

- 46** Raul Herranz; Miguel A. Valbuena; Aranzazu Manzano; Khaled Youssef; F Javier Medina. Use of microgravity simulators for plant biological studies. *Methods Mol Biol.* 1309, pp. 239 - 254. Springer, 2015. Available on-line at: <doi: 10.1007/978-1-4939-2697-8\_18.>. ISSN 1064-3745  
**Collection:** Plant Gravitropism: Methods and Protocols  
**Type of production:** Book chapter  
**Position of signature:** 1  
**Total no. authors:** 5  
**Relevant results:** Publication by invitation of the editor (Elison Blancaflor). Most relevant american researchers in the field have been invited but only a couple of europeans are. More than 10000 views have promote the editors to ask for a revised second edition in 2020.  
**Relevant publication:** Yes  
**Format:** Book  
**Degree of contribution:** Author or co-author of chapter in book  
**Corresponding author:** Yes
- 47** Nicola Marziliano; Raul Herranz. Chapter 12. Genetic Signatures in adaptation to loading/unloading. *Cell Mechanochemistry. Biological Systems and Factors Inducing Mechanical Stress, Such as Light Pressure and Gravity.* 12, pp. 245 - 266. Transworld Research Network, 2010. ISBN 978-81-7895-458-5  
**Type of production:** Book chapter  
**Position of signature:** 2  
**Total no. authors:** 2  
**Relevant results:** Molecular biology chapter of a book, in which I contributed the half of the invertebrate information and the coauthor contributed with the vertebrate/mammalian one.  
**Relevant publication:** Yes  
**Format:** Book  
**Corresponding author:** Yes
- 48** R. Marco; D. Husson; R. Herranz; J. Mateos; F.J. Medina. *Drosophila melanogaster and the future of 'evo-devo' biology in space. Challenges and problems in the path of an eventual colonization project outside the earth.* *Adv Space Biol Med - Developmental Biology Research in Space*, 1st Edition. 9, pp. 41 - 81. ELSEVIER, 2003. Available on-line at: <<http://store.elsevier.com/Developmental-Biology-Research-in-Space/isbn-9780444513533/>>. ISSN 1569-2574, ISBN 978-0-444-51353-3  
**Type of production:** Book chapter  
**Position of signature:** 3  
**Relevant results:** Review article (chapter devoted to *Drosophila*) published in a monographic hand-book concerning the *Developmental Biology Research in Space*, edited by H.-J. Marthy. ISBN 13: 978-0-444-51353-3  
**Relevant publication:** Yes  
**Format:** Book
- 49** F. Javier Medina; Aranzazu Manzano; Raul Herranz; John Z. Kiss. Red Light Enhances Plant Adaptation to Spaceflight and Mars g-Levels. *Life.* 12 - 10, pp. 1484. MDPI journals, 24/09/2022.  
**Type of production:** Review  
**Position of signature:** 3  
**Total no. authors:** 4  
**Relevant results:** This article is a review and update on the results of the Seedling Growth experiments on board the International Space Station.  
**Relevant publication:** Yes  
**Format:** Journal  
**Degree of contribution:** Author or co-author of article in journal with external admissions assessment committee  
**Corresponding author:** No
- 50** Aranzazu Manzano; Eugenie Carnero-Diaz; Raul Herranz; F. Javier Medina. Recent transcriptomic studies to elucidate the plant adaptive response to spaceflight and to simulated space environments. *iScience.* pp. 104687. *Cell Press Journals*, 30/06/2022.  
**Type of production:** Review  
**Position of signature:** 3  
**Total no. authors:** 4  
**Relevant results:** Review of the results obtained from the Space Omics datasets available in GeneLab in the Plants area of knowledge. Special attention is paid to European information (in the context of the Cell Press collection 2022).  
**Format:** Journal  
**Degree of contribution:** Author or co-author of article in journal with external admissions assessment committee  
**Corresponding author:** No



**Relevant publication:** Yes

- 51** F Javier Medina; Aranzazu Manzano; Alicia Villacampa; Malgorzata Ciska; Raul Herranz. Understanding Reduced Gravity Effects on Early Plant Development Before Attempting Life-Support Farming in the Moon and Mars. *Frontiers in Astronomy and Space Science*. 8, pp. 729154. Frontiers, 03/09/2021. ISSN 0340-4773

**Type of production:** Review

**Position of signature:** 5

**Total no. authors:** 5

**Relevant publication:** Yes

**Format:** Journal

**Degree of contribution:** Author or co-author of chapter in book

**Corresponding author:** No

- 52** Joshua P Vandenbrink; John Z Kiss; Raul Herranz; F Javier Medina. Light and gravity signals synergize in modulating plant development. *Frontiers in Plant Science*. Frontiers, 28/10/2014. Available on-line at: <doi: 10.3389/fpls.2014.00563>. ISSN 1664-462X

**Type of production:** Review

**Position of signature:** 3

**Total no. authors:** 4

**Impact source:** ISI

**Impact index in year of publication:** 3,637

**Position of publication:** 23

**Format:** Journal

**Degree of contribution:** Author or co-author of article in journal with external admissions assessment committee

**Category:** Science Edition - PLANT SCIENCES

**Journal in the top 25%:** Yes

**No. of journals in the cat.:** 199

**Citations:** 68

**Relevant results:** Highly relevant review about the cross-link between gravitational and light signalling in plant development, writing in the context of a transcontinental collaboration with our Seedling Growth Spaceflight Experiment in USA.

**Relevant publication:** Yes

- 53** Ann-Iren Kittang; Tor-Henning Iversen; Knut R Fossum; Christian Mazars; Eugenie Carnero-Diaz; Elodie Boucheron-Dubuisson; Isabel Le-Disquet; Valerie Legue; Raul Herranz; Veronica Pereda-Loth; F Javier Medina. Exploration of plant growth and development using the EMCS Facility on the International Space Station. *Plant Biology*. 16 - 3, pp. 528 - 538. Wiley, 17/01/2014. Available on-line at: <DOI: 10.1111/plb.12132>.

**Collection:** "Space Biology Special Issue"

**Type of production:** Review

**Position of signature:** 9

**Total no. authors:** 11

**Impact source:** ISI

**Impact index in year of publication:** 2,409

**Position of publication:** 42

**Format:** Journal

**Degree of contribution:** Author or co-author of review

**Category:** Science Edition - PLANT SCIENCES

**Journal in the top 25%:** Yes

**No. of journals in the cat.:** 188

**Citations:** 47

**Relevant results:** Review article in a special issue concerning Plant Space Biology experiments in the EMCS.

**Relevant publication:** Yes

- 54** Raul Herranz; F Javier Medina. Cell proliferation and plant development under novel altered gravity environments. *Plant Biology*. 16 - s1, pp. 23 - 30. Wiley, 24/09/2013. Available on-line at: <DOI: 10.1111/plb.12103>.

**Collection:** "Space Biology Special Issue"

**Type of production:** Review

**Position of signature:** 1

**Total no. authors:** 2

**Impact source:** ISI

**Impact index in year of publication:** 2,409

**Format:** Journal

**Degree of contribution:** Author or co-author of review

**Corresponding author:** Yes

**Category:** Science Edition - PLANT SCIENCES

**Journal in the top 25%:** Yes



**Position of publication:** 42

**No. of journals in the cat.:** 188

**Citations:** 49

**Relevant results:** Review article in a special issue concerning Plant Space Biology.

**Relevant publication:** Yes

- 55** R. Herranz; R. Anken; J. Boonstra; M. Braun; P.C.M. Christianen; M. de Geest; J. Hauslage; R. Hilbig; R.J.A. Hill; M. Lebert; F.J. Medina; N. Vagt; O. Ullrich; J. J.W.A. van Loon; R. Hemmersbach. Ground-based facilities for simulation of microgravity, including terminology and organism-specific recommendations for their use. *Astrobiology*. 13 - 1, pp. 1 - 17. Mary Ann Liebert Publishers, 01/2013. Available on-line at: <DOI 10.1089/ast.2012.0876>. ISSN 1531-1074

**Type of production:** Review

**Format:** Journal

**Position of signature:** 1

**Degree of contribution:** Author or co-author of article in journal with external admissions assessment committee

**Total no. authors:** 15

**Corresponding author:** Yes

**Impact source:** ISI

**Category:** Science Edition - GEOSCIENCES, MULTIDISCIPLINARY

**Impact index in year of publication:** 2,369

**Journal in the top 25%:** Yes

**Position of publication:** 34

**No. of journals in the cat.:** 167

**Citations:** 309

**Relevant results:** This review article, published in a first quartile journal of the generally low impact factor field of Space Research, is the best proof of my skills to work, to coordinate and to play a leader role in an International context. Now, a number of international key partners has been located and we are ready to apply for European Union funding, what it will be of the utmost importance in the hard years we expect to deal with, particularly in Spain.

**Relevant publication:** Yes

- 56** F.Javier Medina; F. González-Camacho; A. I. Manzano; A. Manrique; Raul Herranz. Nucleolin, a major conserved multifunctional nucleolar phosphoprotein of proliferating cells. *Journal of Applied Biomedicine*. 8 - 3, pp. 141 - 150. Faculty of Health and Social Studies, University of South Bohemia, Czech Republic, 2010. ISSN 1559-2316

**Type of production:** Review

**Format:** Journal

**Position of signature:** 5

**Degree of contribution:** Author or co-author of review

**Impact source:** ISI

**Category:** Science Edition - PHARMACOLOGY & PHARMACY

**Impact index in year of publication:** 1,933

**Position of publication:** 147

**No. of journals in the cat.:** 261

**Relevant results:** Review of the last decade results concerning our main research topics including nucleolin properties as a nucleolar activity marker. This review was written by invitation of the editors: Josef Berger, Jiri Patocka and Karel Smetana.

**Relevant publication:** Yes

- 57** Eliah Overbey; Saswati Das; Henry Cope; Pedro Madrigal; Zaneta Andrusivova; Solène Frapard; Rebecca Klotz; Daniela Bezdán; Ryan Scott; Jiwoon Park; Dawn Chirko; Jonathan M. Galazka; Sylvain V. Costes; Christopher E. Mason; Raul Herranz; Nathaniel J. Szewczyk; Joseph Borg; Stefania Giacomello. Challenges and considerations for single-cell and spatially resolved transcriptomics sample collection during spaceflight. *Cell Reports Methods*. pp. 100325. Cell Press Journals, 31/10/2022.

**Type of production:** Perspective

**Format:** Journal

**Position of signature:** 15

**Degree of contribution:** Author or co-author of article in journal with external admissions assessment committee

**Total no. authors:** 18

**Corresponding author:** No

**Relevant results:** A relevant publication in the European Space Omics 2022 Cell Press Collection (acting as coauthor and guest editor)



**Relevant publication:** Yes

- 58** Raul Herranz; Wilian da Silveira; Daniela Bezdán; Stefania Giacomello; Nathaniel Szewczyk. Building the Space Omics Topical Team to boost European space researchers' role in the international consortia redefining spaceflight-generated datasets. *iScience*. 25 - 9, pp. 104868 - 0. Cell Press Journals, 16/09/2022. ISSN 25890042

**Type of production:** Backstory

**Position of signature:** 1

**Total no. authors:** 5

**Impact source:** ISI

**Impact index in year of publication:** 5,08

**Format:** Journal

**Degree of contribution:** Author or co-author of article in journal with external admissions assessment committee

**Corresponding author:** Yes

**Category:** Science Edition - MULTIDISCIPLINARY SCIENCES

**Journal in the top 25%:** Yes

**Relevant results:** Backstory of the Space Omics research in Europe (I hold the role of coordinator of the ESA Space Omics Topical Team). This paper explains the origins and aims of the European Space Omics Topical Team consortium in the Cell Press journals Space Omics in Europe collection (co-guest edited by me).

**Relevant publication:** Yes

- 59** Henry Cope; Craig RG Willis; Matthew J. MacKay; Lindsay A. Rutter; Li Shean Toh; Philip M. Williams; Raul Herranz; Joseph Borg; Daniela Bezdán; Stefania Giacomello; Masafumi Muratani; Christopher E. Mason; Timothy Etheridge; Nathaniel J. Szewczyk. Routine Omics Collection is a Golden Opportunity for European Human Research in Space and Analogue Environments. *Patterns*. pp. 100550. Cell Press Journals, 30/07/2022.

**Type of production:** Perspective

**Position of signature:** 7

**Total no. authors:** 14

**Relevant results:** A relevant publication in the European Space Omics 2022 Cell Press Collection (acting as coauthor and guest editor)

**Relevant publication:** Yes

**Format:** Journal

**Degree of contribution:** Author or co-author of article in journal with external admissions assessment committee

**Corresponding author:** No

- 60** Raul Herranz; Miguel A. Valbuena; Khaled Youssef; F Javier Medina. Mechanisms of disruption of meristematic competence by microgravity in Arabidopsis seedlings. *Plant Signalling & Behavior*. 9 - 2, pp. 28289. Landes Biosciences Publications, 10/03/2014. Available on-line at: <DOI: 10.4161/psb.28289>.

**Type of production:** Mini-Review

**Position of signature:** 1

**Total no. authors:** 4

**Impact source:** Expected from h-index Google Scholar

**Impact index in year of publication:** 2

**Format:** Journal

**Degree of contribution:** Author or co-author of article in journal without external admissions assessment committee

**Citations:** 19

**Relevant results:** Review about different mechanisms acting on different cellular biological models of plant response to altered gravity.

**Relevant publication:** Yes

- 61** F. Javier Medina; Raul Herranz. Microgravity environment uncouples cell growth and cell proliferation in root meristematic cells. *Plant Signaling & Behavior*. 5 - 2, pp. 176 - 179. Landes Bioscience Journals, 2010. ISSN 1559-2316

**Type of production:** Addendum-Comment

**Position of signature:** 2

**Impact source:** Expected by H-index Google Scholar

**Impact index in year of publication:** 2,0

**Format:** Journal

**Degree of contribution:** Author or co-author of review



**Relevant results:** Review concerning our main research topics including the uncoupling of cell growth and cell proliferation in altered gravity conditions. This review was written by invitation of the editor: Frantisek Baluska.

**Relevant publication:** Yes

- 62** Khaled Y Kamal; Mortaza Khodaeiaminjan; Ahmed Tantawy; Daa Abdel Moneim; Asmaa Abdel Salam; Salwa Ash-shormillesy; Ahmed Attia; Mohamed Ali; Raul Herranz; Mohamed El-Esawi; Amr Nassrallah; Mohamed Fawzy Ramadan. Evaluation of growth and nutritional value of Brassica microgreens grown under red, blue and green LEDs combinations. *Physiologia Plantarum*. 169 - 4, pp. 625 - 638. Wiley, 04/03/2020. ISSN 1399-3054

**DOI:** 10.1111/ppl.13083

**Type of production:** Scientific paper

**Position of signature:** 9

**Total no. authors:** 12

**Impact source:** ISI

**Impact index in year of publication:** 4,148

**Position of publication:** 24

**Format:** Journal

**Degree of contribution:** Author or co-author of article in journal with external admissions assessment committee

**Corresponding author:** No

**Category:** Plant Science

**Journal in the top 25%:** No

**No. of journals in the cat.:** 234

**Relevant results:** Collaboration after Dr. Kamal PhD thesis, preliminary study to prepare a deeper microgravity related project.

**Relevant publication:** No

- 63** R. Herranz; D.A. Lavan; F.J. Medina; J. van Loon; R. Marco. The Gene" Experiment in the Spanish Soyuz Mission to the International Space Station. II. Effects of oxygen concentration constrain. *Microgravity Science and Technology*. 21 - 4, pp. 299 - 304. SPRINGER, 2009. Available on-line at: <DOI 10.1007/s12217-008-9097-1>. ISSN 0938-0108

**Type of production:** Scientific paper

**Position of signature:** 1

**Corresponding author:** Yes

**Impact source:** ISI

**Impact index in year of publication:** 0,713

**Position of publication:** 9

**Format:** Journal

**Degree of contribution:** Author or co-author of article in journal with external admissions assessment committee

**Category:** Engineering/Aerospace

**Journal in the top 25%:** No

**No. of journals in the cat.:** 27

**Relevant results:** The articles published in this relevant, First Tercil journal of the microgravity multidisciplinary research field constitute a series of pieces describing the process of analysis of the valuable International Space Station experiment samples and their proper controls.

- 64** L. J. Leandro; N.J. Szewczyk; A. Benguría; R. Herranz; D. A. Lavan; F.J. Medina; G. Gasset; J. van Loon; A. Conley; R. Marco. Comparative analysis of *Drosophila melanogaster* and *Caenorhabditis elegans* gene expression experiments in the European Soyuz Flights to the International Space Station. *Advances in Space Research*. 40 - 4, pp. 506 - 512. ELSEVIER, 2007. ISSN 0273-1177

**Type of production:** Scientific paper

**Position of signature:** 4

**Impact source:** ISI

**Impact index in year of publication:** 0,774

**Position of publication:** 6

**Format:** Journal

**Degree of contribution:** Author or co-author of article in journal with external admissions assessment committee

**Category:** Engineering/Aerospace

**Journal in the top 25%:** Yes

**No. of journals in the cat.:** 25

**Relevant results:** An example of international collaboration to share International Space Station materials and results published in a First Quartile, although specialized, journal.

- 65** E. de Juan; A. Benguría; A. Villa; L. J. Leandro; R. Herranz; P. Duque; E. Horn; F.J. Medina; J. van Loon; R. Marco. The AGEING" Experiment in the Spanish Soyuz Mission to the International Space Station. *Microgravity Science and Technology*. 19 - 5/6, pp. 170 - 174. SPRINGER, 2007. ISSN 0938-0108

**Type of production:** Scientific paper  
**Position of signature:** 5

**Impact source:** ISI  
**Impact index in year of publication:** 0,713  
**Position of publication:** 9

**Relevant results:** The articles published in this relevant, First Tercil journal of the microgravity multidisciplinary research field constitute a series of pieces describing the process of analysis of the valuable International Space Station experiment samples and their proper controls.

**Format:** Journal  
**Degree of contribution:** Author or co-author of article in journal with external admissions assessment committee  
**Category:** Engineering/Aerospace  
**Journal in the top 25%:** No  
**No. of journals in the cat.:** 27

- 66** R. Herranz; D.A. Lavan; A. Benguría; P. Duque; L.J. Leandro; G. Gasset; A. Zaballos; F.J. Medina; J. van Loon; R. Marco. The Gene” Experiment in the Spanish Soyuz Mission to the International Space Station. Effects of cold transportation. Microgravity Science and Technology. 19 - 5/6, pp. 196 - 200. SPRINGER, 2007. ISSN 0938-0108

**Type of production:** Scientific paper  
**Position of signature:** 1

**Impact source:** ISI  
**Impact index in year of publication:** 0,713  
**Position of publication:** 9

**Relevant results:** The articles published in this relevant, First Tercil journal of the microgravity multidisciplinary research field constitute a series of pieces describing the process of analysis of the valuable International Space Station experiment samples and their proper controls.

**Format:** Journal  
**Degree of contribution:** Author or co-author of article in journal with external admissions assessment committee  
**Category:** Engineering/Aerospace  
**Journal in the top 25%:** No  
**No. of journals in the cat.:** 27

- 67** J. Mateos; R. Herranz; A. Domingo; J.C. Sparrow; R. Marco. The structural role of high molecular weight tropomyosins in dipteran indirect flight muscle and the effect of phosphorylation. J Muscle Res Cell Motil. 27 - 3-4, pp. 189 - 201. SPRINGER, 2006. ISSN 0142-4319

**Type of production:** Scientific paper  
**Position of signature:** 2

**Impact source:** ISI  
**Impact index in year of publication:** 1,731  
**Position of publication:** 122

- 68** R. Herranz; D. Husson; A. Villa; M. Pastor; F.J. Medina; R. Marco. Modifications in basic handling techniques to study the consequences of the Drosophila melanogaster exposure to the space environment. J Gravit Physiol. 12 - 2, pp. 51 - 60. Galileo Fundation, 2005. ISSN 1077-9248

**Type of production:** Scientific paper  
**Position of signature:** 1

**Relevant results:** Together with the space developmental biology book chapter and the short contributions to J Gravit Physiol (meeting contributions), this article summarizes quite comprehensively how we adapted new hardware and fixation techniques to perform common experiments in the International Space Station conditions during my PhD student stay in Prof Marco’s lab. It also reflects our efforts in terms of collaboration with external companies and the multidisciplinary approach that we have been using in our research. The journal does not fit with the usual Quality standards due to extreme specialization in the multidisciplinary Space Biology field but it is Medline indexed and very useful for our small research community.

**Format:** Journal  
**Degree of contribution:** Author or co-author of article in journal with external admissions assessment committee  
**Category:** Cell Biology  
**Journal in the top 25%:** No  
**No. of journals in the cat.:** 154

**Format:** Journal  
**Degree of contribution:** Author or co-author of article in journal with external admissions assessment committee

- 69** R. Herranz; C. Díaz-Castillo; T.G. Nguyen; T.L. Lovato; R.M. Cripps; R. Marco. Expression pattern characterization of the whole Troponin C gene repertoire during Drosophila development. Gene Expression Patterns. 4 - 2, pp. 183 - 190. ELSEVIER, 2004. ISSN 1567-133X

**Type of production:** Scientific paper  
**Position of signature:** 1

**Format:** Journal

**Impact source:** ISI**Impact index in year of publication:** 1,794**Position of publication:** 79**Degree of contribution:** Author or co-author of article in journal with external admissions assessment committee**Category:** Genetics**Journal in the top 25%:** No**No. of journals in the cat.:** 124

- 70** Raul Herranz. De cómo entrar en el siglo XXI de la mano de un gran...Roberto. Encuentros multidisciplinares. 33 - XI, pp. 58 - 67. Universidad Autonoma de Madrid, 2009. Available on-line at: <<http://www.encuentros-multidisciplinares.org/>>. ISSN 1139-9325

**Type of production:** Popular science article**Format:** Journal**Position of signature:** 1**Degree of contribution:** Author or co-author of article in journal with external admissions assessment committee**Corresponding author:** Yes

- 71** Raul Herranz. VOLUME 12 OUR FUTURE? SPACE COLONIZATION & EXPLORATION. Section 4.5 Sustaining Human Life in Space - Space -omics. Use of spaceflight generated biological datasets. LIBRO BLANCO: DESAFIOS CIENTIFICOS EN TEMÁTICAS ESTRATÉGICAS CSIC 2030. Perspectiva de la Ciencia del Siglo XXI en el CSIC. CSIC, 2021.

**Type of production:** Scientific book or monograph**Format:** Book**Relevant results:** Elaboración de la sección de Space Omics en el contexto de los expertos del CSIC en el Area Temática 12: ¿Nuestro Futuro? Exploración y colonización del Espacio.

- 72** D. Husson; R. Herranz; A. Villa; C. Díaz; J. Mateos; J. Leshner; M. Pastor; F.J. Medina; R. Marco. Design and development of hardware for long term cultivation of *Drosophila melanogaster* in the International Space Station. *Drosophila Information Service*. 87, pp. 124 - 130. Dpt. of Genetics Cold Spring Harbor laboratory, NY (since 1934), 2004. Available on-line at: <<http://www.ou.edu/journals/dis/DIS87/>>.

**Type of production:** Scientific-technical report**Format:** Journal**Position of signature:** 2**Degree of contribution:** Author or co-author of article in journal with external admissions assessment committee**Relevant results:** Special Report <http://www.ou.edu/journals/dis/DIS87/> Technical publication for *Drosophila* researchers

- 73** R. Marco; R. Herranz; A. Villa; U. Kirchnick; E. Horn; G. Gasset; H.-J. Agricola; J. van Loon; F.J. Medina. The experiments Gene and Ageing performed in the International Space Station (ISS) during the Spanish Soyuz Mission. *Advances in Space Research*. 33, pp. 2914 - 2914. ELSEVIER, 2004. ISSN 0273-1177

**Type of production:** Brevia**Format:** Journal**Position of signature:** 2**Degree of contribution:** Author or co-author of article in journal with external admissions assessment committee**Impact source:** ISI**Category:** Engineering/Aerospace**Impact index in year of publication:** 0.774**Journal in the top 25%:** Yes**Position of publication:** 6**No. of journals in the cat.:** 25**Relevant results:** First description of the GENE & AGEING experiments performed during the Cervantes Mission to the ISS

## Works submitted to national or international conferences

- 1** **Title of the work:** Analysis of the effects of microgravity in the Arabidopsis phytochrome A mutant  
**Name of the conference:** Annual Meeting of the ASGSR 2022  
**Type of event:** Conference **Geographical area:** Non EU International  
**Type of participation:** Participatory - others **Reasons for participation:** Review before acceptance

**Corresponding author:** No  
**City of event:** Houston, Texas, United States of America  
**Date of event:** 09/11/2022  
**End date:** 12/11/2022  
**Organising entity:** ASGSR  
Joshua Vandenbrink; John Z. Kiss; R. Herranz; F. J. Medina; Claudia Tyler.
- 2** **Title of the work:** Opportunities and recomendations for space omic research in Europe: Towards an integrated interanational effort for spaceflight and ground facilities experiments  
**Name of the conference:** Annual Meeting of the ASGSR 2022  
**Type of event:** Conference **Geographical area:** Non EU International  
**Type of participation:** Participatory - oral communication **Reasons for participation:** Review before acceptance

**Corresponding author:** No  
**City of event:** Houston, Texas, United States of America  
**Date of event:** 09/11/2022  
**End date:** 12/11/2022  
**Organising entity:** ASGSR  
Daniela Bezdán; Stefania Giacomello; R. Herranz; Willian A. da Silveira; on behalf of the ESA Topical Team.
- 3** **Title of the work:** SEEDLING GROWTH: results from the largest ESA/NASA Arabidopsis experiment on the ISS looking into the molecular adaptation of plants to the Moon gravity and other life support system relevant scenarios  
**Name of the conference:** MELISSA conference 2022 - CURRENT AND FUTURE WAYS TO CLOSED LIFE SUPPORT SYSTEMS  
**Type of event:** Conference **Geographical area:** European Union  
**Type of participation:** Participatory - oral communication  
**Corresponding author:** Yes  
**City of event:** Toulouse, France  
**Date of event:** 08/11/2022  
**End date:** 10/11/2022  
**Organising entity:** MELISSA Foundation  
Raul Herranz; Joshua Vandenbrink; John Z. Kiss; F. Javier Medina.
- 4** **Title of the work:** Limits of life at spaceflight conditions: survival of lichens to simulated microgravity  
**Name of the conference:** Europlanet Science Congress 2022  
**Type of event:** Conference **Geographical area:** Non EU International  
**Type of participation:** Participatory - oral communication  
**Corresponding author:** No  
**City of event:** Granada, Spain  
**Date of event:** 18/09/2022  
**End date:** 23/09/2022

**Organising entity:** EANA

**Publication in conference proceedings:** Yes

R. de la Torre Noetzel; M.V. Ortega; O. Bassy; L.G. Sancho; A. Villasante; J. del Olmo; J. P. de Vera; Herranz. EPSC Abstracts Vol. 16, EPSC2022-1055, 2022, Available on-line at: <<https://doi.org/10.5194/epsc2022-1055>>.

**5 Title of the work:** Improved molecular response to spaceflight and Mars gravity by disruption of nuc2 stress-related gen

**Name of the conference:** 27th ELGRA Biennial symposium and General assembly

**Type of event:** Conference

**Geographical area:** Non EU International

**Type of participation:** Participatory - oral communication

**Reasons for participation:** Review before acceptance

**Corresponding author:** Yes

**City of event:** Lisbon, Portugal

**Date of event:** 06/09/2022

**End date:** 09/09/2022

**Organising entity:** ELGRA

Aranzazu Manzano; Alicia Villacampa; John Kiss; Julio Saez-Vasquez; F. Javier Medina; R. Herranz.

**6 Title of the work:** Next steps for Space Omics research development in Europe: recommendations from an ESA Topical Team

**Name of the conference:** 27th ELGRA Biennial symposium and General assembly

**Type of event:** Conference

**Geographical area:** Non EU International

**Type of participation:** Participatory - oral communication

**Reasons for participation:** Review before acceptance

**Corresponding author:** Yes

**City of event:** Lisbon, Portugal

**Date of event:** 06/09/2022

**End date:** 09/09/2022

**Organising entity:** ELGRA

R. Herranz; on behalf of the ESA Topical Team.

**7 Title of the work:** Role of auxin in the early adaptive response of plants under the combined action of red light and different levels of gravity

**Name of the conference:** 44th COSPAR scientific assembly

**Type of event:** Conference

**Geographical area:** Non EU International

**Type of participation:** Participatory - poster

**Reasons for participation:** Review before acceptance

**Corresponding author:** No

**City of event:** Athens, Greece

**Date of event:** 16/07/2022

**End date:** 24/07/2022

**Organising entity:** COSPAR

Eugenie Carnero Diaz; John Z Kiss; R. Herranz; F Javier Medina; Miguel Angel Valbuena; Isabel Le Disquet; Joshua Vandenbrink.

**8 Title of the work:** NUC2, a stress-related mutant, shows an improved molecular response to Spaceflight and Mars gravity level in the Seedling Growth Experiment

**Name of the conference:** 44th COSPAR scientific assembly

**Type of event:** Conference

**Geographical area:** Non EU International

**Type of participation:** Participatory - oral communication

**Reasons for participation:** Review before acceptance



**Corresponding author:** Yes

**City of event:** Athens, Greece

**Date of event:** 16/07/2022

**End date:** 24/07/2022

**Organising entity:** COSPAR

Aranzazu Manzano; R. Herranz; F. Javier Medina; Julio Saez-Vasquez; John Kiss.

**9 Title of the work:** Opportunities and Recommendations for Space Omics Research in Europe: Towards an integrated international effort for spaceflight and ground facilities experiment database

**Name of the conference:** 44th COSPAR scientific assembly

**Type of event:** Conference

**Geographical area:** Non EU International

**Type of participation:** Participatory - oral communication

**Reasons for participation:** Review before acceptance

**Corresponding author:** Yes

**City of event:** Athens, Greece

**Date of event:** 16/07/2022

**End date:** 24/07/2022

**Organising entity:** COSPAR

R. Herranz; on behalf of the ESA Topical Team.

**10 Title of the work:** Red light enhances plant adaptation to spaceflight and Mars g-level, results of the Seedling Growth experiments on the International Space Station

**Name of the conference:** 44th COSPAR scientific assembly

**Type of event:** Conference

**Geographical area:** Non EU International

**Type of participation:** Participatory - oral communication

**Reasons for participation:** Review before acceptance

**Corresponding author:** Yes

**City of event:** Athens, Greece

**Date of event:** 16/07/2022

**End date:** 24/07/2022

**Organising entity:** COSPAR

F. Javier Medina; Aranzazu Manzano; Alicia Villacampa; Miguel A. Valbuena; Joshua Vandenbrink; Eugenie Carnero Diaz; Julio Saez-Vasquez; Malgorzata Ciska; R. Herranz; John Kiss.

**11 Title of the work:** Spaceflight Studies identify a gene encoding in intermediate filament involved in tropism pathways

**Name of the conference:** 44th COSPAR scientific assembly

**Type of event:** Conference

**Geographical area:** Non EU International

**Type of participation:** Participatory - oral communication

**Reasons for participation:** Review before acceptance

**Corresponding author:** Yes

**City of event:** Athens, Greece

**Date of event:** 16/07/2022

**End date:** 24/07/2022

**Organising entity:** COSPAR

John Kiss; Joshua Vandenbrink; R. Herranz; F. Javier Medina.

**12 Title of the work:** Space studies identify several novel genes in tropism pathways

**Name of the conference:** Annual Meeting American Society for Gravitational and Space Research

**Type of event:** Conference

**Geographical area:** Non EU International

**Type of participation:** Participatory - oral communication

**Reasons for participation:** Review before acceptance

**Corresponding author:** No  
**City of event:** Baltimore, United States of America  
**Date of event:** 03/11/2021  
**End date:** 06/11/2021  
**Organising entity:** ASGSR (American Society for Gravitational and Space Research)  
John Z. Kiss; T. Shymanovich; J. P. Vandenbrink; Raul Herranz; F.J. Medina; A.M. Hughes.

**13** **Title of the work:** Auxin involvement on combining effects of red light and microgravity on the growth of Arabidopsis thaliana during the Seedling Growth Experiment  
**Name of the conference:** 43rd COSPAR scientific assembly: Connecting space research for global impact  
**Type of event:** Conference **Geographical area:** Non EU International  
**Type of participation:** Participatory - oral communication **Reasons for participation:** Review before acceptance  
**Corresponding author:** No  
**City of event:** International convention center, Sydney, Australia  
**Date of event:** 28/01/2021  
**End date:** 04/02/2021  
**Organising entity:** COSPAR  
John Kiss; Joshua Vandenbrink; Alicia Villacampa; Malgrozata Ciska; R. Herranz; F.J. Medina.

**14** **Title of the work:** Detailed gene expression profile by RNA-seq of three collections of Arabidopsis mutants exposed to reduced gravity at the ISS Seedling Growth experiment  
**Name of the conference:** 43rd COSPAR scientific assembly: Connecting space research for global impact  
**Type of event:** Conference **Geographical area:** Non EU International  
**Type of participation:** Participatory - oral communication **Reasons for participation:** Review before acceptance  
**Corresponding author:** Yes  
**City of event:** International convention center, Sydney, Australia  
**Date of event:** 28/01/2021  
**End date:** 04/02/2021  
**Organising entity:** COSPAR  
R. Herranz; Alicia Villacampa; Arancha Manzano; Christine Llauro-Berger; Isabel Le Disquet; Joshua Vandenbrink; John Kiss; Eugenie Carnero-Diaz; Julio Saez-Vasquez; F.J. Medina.

**15** **Title of the work:** Loss of meristematic competence caused by simulated microgravity in plant cells is counteracted by growing seedlings under a photoperiod regime  
**Name of the conference:** 43rd COSPAR scientific assembly: Connecting space research for global impact  
**Type of event:** Conference **Geographical area:** Non EU International  
**Type of participation:** Participatory - oral communication **Reasons for participation:** Review before acceptance  
**Corresponding author:** Yes  
**City of event:** International convention center, Sydney, Australia  
**Date of event:** 28/01/2021  
**End date:** 04/02/2021  
**Organising entity:** COSPAR  
F.J. Medina; Arancha Manzano; Veronica Pereda-Loth; Anne de Bures; Julio Saez-Vasquez; R. Herranz.

**16** **Title of the work:** Results and opportunities from the ESA Space Omics Topical Team: Towards an integrated ESA/NASA -omics database for spaceflight and ground facilities experiments  
**Name of the conference:** 43rd COSPAR scientific assembly: Connecting space research for global impact  
**Type of event:** Conference **Geographical area:** Non EU International





**Type of participation:** Participatory - oral communication

**Reasons for participation:** Review before acceptance

**Corresponding author:** Yes

**City of event:** International convention center, Sydney, Australia

**Date of event:** 28/01/2021

**End date:** 04/02/2021

**Organising entity:** COSPAR

Willian A. da Silveira; Nathaniel Szewczyk; Daniela Bezdán; R. Herranz; on behalf of the ESA Topical Team.

- 17** **Title of the work:** Effects of red light photostimulation of Arabidopsis seedlings in microgravity and Mars gravity  
**Name of the conference:** Virtual Annual Meeting American Society for Gravitational and Space Research  
**Type of event:** Conference  
**Type of participation:** Participatory - oral communication  
**Geographical area:** Non EU International  
**Reasons for participation:** Review before acceptance  
**Corresponding author:** No  
**City of event:** Virtual meeting (hosted at Houston, Texas), United States of America  
**Date of event:** 05/11/2020  
**End date:** 06/11/2020  
**Organising entity:** ASGSR (American Society for Gravitational and Space Research)  
Alicia Villacampa; Aranzazu Manzano; Raul Herranz; Malgorzata Ciska; John Z. Kiss; F.J. Medina.
- 18** **Title of the work:** Exploring in ground mutant transcriptomes providing better chances of adaptive responses of plants to spaceflight environment  
**Name of the conference:** Virtual Annual Meeting American Society for Gravitational and Space Research  
**Type of event:** Conference  
**Type of participation:** Participatory - oral communication  
**Geographical area:** Non EU International  
**Reasons for participation:** Review before acceptance  
**Corresponding author:** Yes  
**City of event:** Virtual meeting (hosted at Houston, Texas), United States of America  
**Date of event:** 05/11/2020  
**End date:** 06/11/2020  
**Organising entity:** ASGSR (American Society for Gravitational and Space Research)  
Arancha Manzano; Alicia Villacampa; Julio Saez-Vasquez; John Z. Kiss; F.J. Medina; R. Herranz.
- 19** **Title of the work:** Loss of meristematic competence caused by simulated microgravity in plant cells is counteracted by growing seedlings under a photoperiod regime  
**Name of the conference:** Virtual Annual Meeting American Society for Gravitational and Space Research  
**Type of event:** Conference  
**Type of participation:** Participatory - oral communication  
**Geographical area:** Non EU International  
**Reasons for participation:** Review before acceptance  
**Corresponding author:** No  
**City of event:** Virtual meeting (hosted at Houston, Texas), United States of America  
**Date of event:** 05/11/2020  
**End date:** 06/11/2020  
**Organising entity:** ASGSR (American Society for Gravitational and Space Research)  
F.J. Medina; Arancha Manzano; Veronica Pereda-Loth; Anne de Bures; Julio Saez-Vasquez; R. Herranz.
- 20** **Title of the work:** Simulated microgravity and 1g controls in Space omics: Lessons learnt from and for spaceflight experiments interpretation  
**Name of the conference:** Virtual Annual Meeting American Society for Gravitational and Space Research



**Type of event:** Conference

**Type of participation:** Participatory - oral communication

**Corresponding author:** Yes

**City of event:** Virtual meeting (hosted at Houston, Texas), United States of America

**Date of event:** 05/11/2020

**End date:** 06/11/2020

**Organising entity:** ASGSR (American Society for Gravitational and Space Research)

R. Herranz; Arancha Manzano; Alicia Villacampa; Julio Saez-Vasquez; John Z. Kiss; F.J. Medina.

**Geographical area:** Non EU International

**Reasons for participation:** Review before acceptance

**21 Title of the work:** Adaptation of plant transcriptional profile to Moon and Mars g-levels on board SEEDLING GROWTH spaceflight experiment

**Name of the conference:** 35th Annual Meeting American Society for Gravitational and Space Research

**Type of event:** Conference

**Geographical area:** Non EU International

**Type of participation:** Participatory - oral communication

**Reasons for participation:** Review before acceptance

**Corresponding author:** Yes

**City of event:** Sheraton Denver Downtown in Denver, CO, United States of America

**Date of event:** 20/11/2019

**End date:** 23/11/2019

**Organising entity:** ASGSR (American Society for Gravitational and Space Research)

Alicia Villacampa; Arancha Manzano; Joshua P. Vandenbrink; John Z. Kiss; F.J. Medina; R. Herranz.

**22 Title of the work:** Meta-analysis of the Arabidopsis spaceflight transcriptome revealing changes to respiration and photosynthesis apparatus as a core response to microgravity and induction of HSP's as part of a high light ROS signalling pathway as core response to radiation

**Name of the conference:** 35th Annual Meeting American Society for Gravitational and Space Research

**Type of event:** Conference

**Geographical area:** Non EU International

**Type of participation:** Participatory - oral communication

**Reasons for participation:** Review before acceptance

**City of event:** Sheraton Denver Downtown in Denver, CO, United States of America

**Date of event:** 20/11/2019

**End date:** 23/11/2019

**Organising entity:** ASGSR (American Society for Gravitational and Space Research)

Richard Barker; Colin Kruse; R. Herranz; Ivo Grosse; Matthew Geniza; Sigrid Reinsch; Sarah Wyatt; Simon Gilroy.

**23 Title of the work:** RNAseq Pathway Analysis of Arabidopsis thaliana grown in conditions of microgravity onboard the International Space Station

**Name of the conference:** 35th Annual Meeting American Society for Gravitational and Space Research

**Type of event:** Conference

**Geographical area:** Non EU International

**Type of participation:** Participatory - oral communication

**Reasons for participation:** Review before acceptance

**City of event:** Sheraton Denver Downtown in Denver, CO, United States of America

**Date of event:** 20/11/2019

**End date:** 23/11/2019

**Organising entity:** ASGSR (American Society for Gravitational and Space Research)

Joshua P. Vandenbrink; R. Herranz; William Poehlman; F. Alex Feltus; Alicia Villacampa; Malgorzata Ciska; F.J. Medina; John Z. Kiss.



- 24** **Title of the work:** Dissection of the gene expression profile by RNA-seq of the plant response to partial gravity (Moon and Mars levels on board ISS SEEDLING GROWTH experiment)  
**Name of the conference:** 26th ELGRA Symposium and General Assembly  
**Type of event:** Conference **Geographical area:** European Union  
**Type of participation:** Participatory - oral communication **Reasons for participation:** Review before acceptance  
**Corresponding author:** Yes  
**City of event:** Granada, Andalusia, Spain  
**Date of event:** 24/09/2019  
**End date:** 27/09/2019  
**Organising entity:** ELGRA (European Low Gravity Research Association)  
R. Herranz; Julio Saez-Vasquez; Alicia Villacampa; Arancha Manzano; C. Llauro-Berger; Joshua P. Vandenbrink; John Z. Kiss; F.J. Medina.
- 25** **Title of the work:** Effects of red light stimulation on plant growth and on auxin polar transport under microgravity condition in *Arabidopsis thaliana*. A morphometric study  
**Name of the conference:** 26th ELGRA Symposium and General Assembly  
**Type of event:** Conference **Geographical area:** European Union  
**Type of participation:** Participatory - oral communication **Reasons for participation:** Review before acceptance  
**Corresponding author:** No  
**City of event:** Granada, Andalusia, Spain  
**Date of event:** 24/09/2019  
**End date:** 27/09/2019  
**Organising entity:** ELGRA (European Low Gravity Research Association)  
Eugenie Carnero Diaz; Miguel A. Valbuena; Isabel Le Disquet; F.J. Medina; Aranzazu Manzano; Alicia Villacampa; Joshua P. Vandenbrink; Julio Saez-Vasquez; Malgorzata Ciska; R. Herranz; John Z Kiss.
- 26** **Title of the work:** Nuts & Bolts: Bringing Science and Hardware Together for Spaceflight  
**Name of the conference:** 26th ELGRA Symposium and General Assembly  
**Type of event:** Conference **Geographical area:** European Union  
**Type of participation:** Participatory - oral communication **Reasons for participation:** Review before acceptance  
**Corresponding author:** No  
**City of event:** Granada, Andalusia, Spain  
**Date of event:** 24/09/2019  
**End date:** 27/09/2019  
**Organising entity:** ELGRA (European Low Gravity Research Association)  
Richard E Edelman; John Z. Kiss; Joshua P. Vandenbrink; R. Herranz; F.J. Medina.
- 27** **Title of the work:** The Seedling Growth (SG) spaceflight project on the International Space Station (ISS): Red light contributes to a better adaptation of plants to the space environment  
**Name of the conference:** 26th ELGRA Symposium and General Assembly  
**Type of event:** Conference **Geographical area:** European Union  
**Type of participation:** Participatory - oral communication **Reasons for participation:** Review before acceptance  
**Corresponding author:** No  
**City of event:** Granada, Andalusia, Spain  
**Date of event:** 24/09/2019  
**End date:** 27/09/2019  
**Organising entity:** ELGRA (European Low Gravity Research Association)



F.J. Medina; Arancha Manzano; Alicia Villacampa; Miguel A Valbuena; Joshua P. Vandenbrink; Eugenie Carnero-Diaz; Julio Saez-Vasquez; Malgorzata Ciska; R. Herranz; John Z. Kiss.

- 28** **Title of the work:** What is the Perfect Ground-Based Facility for Microgravity Simulations?  
**Name of the conference:** 26th ELGRA Symposium and General Assembly  
**Type of event:** Conference **Geographical area:** European Union  
**Type of participation:** Participatory - oral communication **Reasons for participation:** Review before acceptance  
**Corresponding author:** Yes  
**City of event:** Granada, Andalusia, Spain  
**Date of event:** 24/09/2019  
**End date:** 27/09/2019  
**Organising entity:** ELGRA (European Low Gravity Research Association)  
R Hemmersbach; T Hammond; J van Loon; R. Herranz.
- 29** **Title of the work:** Plant cell growth and cell proliferation balance under novel, Moon and Mars, partial gravity simulation paradigms  
**Name of the conference:** XXIII Meeting of the Spanish Society of Plant Physiology/XVI Spanish Portuguese Congress of Plant Physiology  
**Type of event:** Conference **Geographical area:** National  
**Type of participation:** 'Participatory - poster **Reasons for participation:** Review before acceptance  
**Corresponding author:** Yes  
**City of event:** Pamplona, Foral Community of Navarre, Spain  
**Date of event:** 26/06/2019  
**End date:** 28/06/2019  
**Organising entity:** Sociedad Española de Fisiología Vegetal **Type of entity:** Associations and Groups  
R. Herranz; Aranzazu Manzano; Khaled Y Kamal; Jack van Loon; F.J. Medina.
- 30** **Title of the work:** UNOOSA ZGIP experience in Spain: from the primary school to the research centre level  
**Name of the conference:** United Nations Expert Meeting on Human Space Technology - "Providing Access to Space"  
**Type of event:** Conference **Geographical area:** Non EU International  
**Type of participation:** Participatory - oral communication **Reasons for participation:** Review before acceptance  
**Corresponding author:** Yes  
**City of event:** Vienna, Austria  
**Date of event:** 04/12/2018  
**End date:** 06/12/2018  
**Organising entity:** UNOOSA (United Nations Office for Outer Space Affairs)  
R. Herranz; A. Villacampa; M. Ciska; F.J. Medina.
- 31** **Title of the work:** Analysis of Genes Associated with a Novel Blue-Light Phototropic Response in Plants Utilizing RNA-Seq  
**Name of the conference:** 34th Annual Meeting American Society for Gravitational and Space Research  
**Type of event:** Conference **Geographical area:** Non EU International  
**Type of participation:** Participatory - oral communication **Reasons for participation:** Review before acceptance  
**City of event:** Bethesda North Marriott and Conference Center in Bethesda, MD, United States of America  
**Date of event:** 31/10/2018  
**End date:** 03/11/2018



**Organising entity:** ASGSR (American Society for Gravitational and Space Research)  
Joshua P. Vandenbrink; Richard E. Edelman; R. Herranz; F.J. Medina; John Z. Kiss.

**32 Title of the work:** ALTERED GRAVITY SIMULATION AND RADIATION TO COMPARE PLANT MODEL AND CROP SPECIES ADAPTATION TO SPACEFLIGHT AND MARS-LIKE ENVIRONMENTS

**Name of the conference:** 69th International Astronautical Congress

**Type of event:** Conference

**Geographical area:** Non EU International

**Type of participation:** Participatory - oral communication

**Reasons for participation:** Review before acceptance

**Corresponding author:** Yes

**City of event:** Bremen, Germany

**Date of event:** 01/10/2018

**End date:** 05/10/2018

**Organising entity:** International Aeronautical Federation

R. Herranz; J.J.W.A. van Loon; V. Pereda-Loth; E. Gonzalez-Pastor; E. Carnero-Diaz; F.J. Medina.

**33 Title of the work:** EFFECTS OF SPACE ENVIRONMENT ON PLANT CELL GROWTH AND PROLIFERATION. ROLE OF RED LIGHT IN COUNTERACTING GRAVITATIONAL STRESS AND PROMOTING ADAPTATION

**Name of the conference:** 69th International Astronautical Congress

**Type of event:** Conference

**Geographical area:** Non EU International

**Type of participation:** Participatory - oral communication

**Reasons for participation:** Review before acceptance

**City of event:** Bremen, Germany

**Date of event:** 01/10/2018

**End date:** 05/10/2018

**Organising entity:** International Aeronautical Federation

F.J. Medina; A. Manzano; M.A. Valbuena; A. Villacampa; J.P. Vandenbrink; E. Carnero-Diaz; J. Saez-Vasquez; M. Ciska; R. Herranz; J.Z. Kiss.

**34 Title of the work:** Arabidopsis thaliana root growth under simulated microgravity

**Name of the conference:** 42ND Committee on Space Research Scientific Assembly

**Type of event:** Conference

**Geographical area:** Non EU International

**Type of participation:** Participatory - oral communication

**Reasons for participation:** Review before acceptance

**City of event:** Pasadena (California), United States of America

**Date of event:** 14/07/2018

**End date:** 22/07/2018

**Organising entity:** COSPAR

Miguel A Valbuena; Lisa Tordjman; Isabel Le Disquet; Marco da Costa; R. Herranz; F. J. Medina; Eugenie Carnero-Diaz.

**35 Title of the work:** DIFFERENTIAL GENE EXPRESSION AND PHOTOTROPISM IN SEEDLINGS OF ARABIDOPSIS GROWN IN MICROGRAVITY

**Name of the conference:** 42ND Committee on Space Research Scientific Assembly

**Type of event:** Conference

**Geographical area:** Non EU International

**Type of participation:** Participatory - oral communication

**Reasons for participation:** Review before acceptance

**City of event:** Pasadena (California), United States of America

**Date of event:** 14/07/2018

**End date:** 22/07/2018

**Organising entity:** COSPAR



John Z. Kiss; Joshua P. Vandenbrink; Richard E. Edelman; R. Herranz; F.J. Medina.

- 36** **Title of the work:** Plant seedlings and cell cultures under hypergravity in the Large Diameter Centrifuge (LDC)  
**Name of the conference:** LDC Hypergravity Workshop  
**Type of event:** Conference **Geographical area:** European Union  
**Type of participation:** Participatory - oral communication **Reasons for participation:** Review before acceptance  
**Corresponding author:** Yes  
**City of event:** European Space Technology Center (ESTEC-Noordwijk), Holland  
**Date of event:** 25/01/2018  
**End date:** 26/01/2018  
**Organising entity:** ESA - European Space Agency  
F.J. Medina; K.Y. Kamal; A.I. Manzano; J.J. van Loon; R. Herranz.
- 37** **Title of the work:** The LDC as a tool to expand Drosophila behaviour results from magnetic levitation and RPM simulated microgravity  
**Name of the conference:** LDC Hypergravity Workshop  
**Type of event:** Conference **Geographical area:** European Union  
**Type of participation:** Participatory - oral communication **Reasons for participation:** Review before acceptance  
**Corresponding author:** Yes  
**City of event:** European Space Technology Center (ESTEC-Noordwijk), Holland  
**Date of event:** 25/01/2018  
**End date:** 26/01/2018  
**Organising entity:** ESA - European Space Agency  
R. Herranz; P. Serrano; J.J. van Loon; F.J. Medina.
- 38** **Title of the work:** RNA-SEQ ANALYSIS OF PLANTS EXHIBITING NOVEL PHOTOTROPIC RESPONSES IN CONDITIONS OF MICROGRAVITY  
**Name of the conference:** 33rd Annual Meeting American Society for Gravitational and Space Research  
**Type of event:** Conference **Geographical area:** Non EU International  
**Type of participation:** Participatory - oral communication **Reasons for participation:** Review before acceptance  
**City of event:** Seattle (Washington), United States of America  
**Date of event:** 25/10/2017  
**End date:** 28/10/2017  
**Organising entity:** ASGSR (American Society for Gravitational and Space Research)  
Joshua P. Vandenbrink; R. Herranz; F.J. Medina; Richard E. Edelman; John Z. Kiss.
- 39** **Title of the work:** COMBINED EFFECT OF MICROGRAVITY AND LIGHT ON CELL GROWTH AND PROLIFERATION IN ARABIDOPSIS THALIANA PLANTS  
**Name of the conference:** ISPS-7 & ELGRA-25 Symposium 2017  
**Type of event:** Conference **Geographical area:** European Union  
**Type of participation:** Participatory - oral communication **Reasons for participation:** Review before acceptance  
**City of event:** Conference Centre of Antibes, Juan-les-Pins, France  
**Date of event:** 05/10/2017  
**End date:** 06/10/2017  
**Organising entity:** ELGRA (European Low Gravity Research Association) **Type of entity:** Associations and Groups



Aranzazu Manzano; Veronica Pereda-Loth; Malgorzata Ciska; R. Herranz; Julio Sáez-Vásquez; F.J. Medina.

**40 Title of the work:** ROLE OF LIGHT IN THE ADAPTATION OF PLANTS TO MICROGRAVITY, AS SHOWN BY CHANGES IN GENE EXPRESSION AFTER AN ISS EXPERIMENT

**Name of the conference:** ISPS-7 & ELGRA-25 Symposium 2017

**Type of event:** Conference

**Geographical area:** European Union

**Type of participation:** Participatory - invited/keynote talk

**Reasons for participation:** Review before acceptance

**City of event:** Conference Centre of Antibes, Juan-les-Pins, France

**Date of event:** 05/10/2017

**End date:** 06/10/2017

**Organising entity:** ELGRA (European Low Gravity Research Association)

**Type of entity:** Associations and Groups

F.J. Medina; Aranzazu Manzano; R. Herranz; Joshua Vandenbrink; Julio Sáez-Vásquez; John Kiss.

**41 Title of the work:** NEW MECHANISMS OF PHOTOTROPISM ARE REVEALED FROM EXPERIMENTS USING THE EMCS ON THE ISS

**Name of the conference:** ELGRA Biennial Symposium 2015 "From Pitagoras to Free Fall"

**Type of event:** Conference

**Geographical area:** European Union

**Type of participation:** Participatory - oral communication

**Reasons for participation:** Review before acceptance

**City of event:** Corfu Isl., Greece

**Date of event:** 29/09/2015

**End date:** 01/10/2015

**Organising entity:** ELGRA (European Low Gravity Research Association)

**Type of entity:** Associations and Groups

John Z. Kiss; Josh P. Vandenbrink; Richard E. Edelman; R. Herranz; F.J. Medina.

**42 Title of the work:** PROGRESSIVE EFFECTS FROM SIMULATED MICRO GRAVITY TO HYPER GRAVITY ON CELL GROWTH AND CELL PROLIFERATION IN THE BRASICACEAE FAMILY

**Name of the conference:** ELGRA Biennial Symposium 2015 "From Pitagoras to Free Fall"

**Type of event:** Conference

**Geographical area:** European Union

**Type of participation:** Participatory - poster

**Reasons for participation:** Review before acceptance

**City of event:** Corfu Isl., Greece

**Date of event:** 29/09/2015

**End date:** 01/10/2015

**Organising entity:** ELGRA (European Low Gravity Research Association)

**Type of entity:** Associations and Groups

Leonardus A. den Toom; Aranzazu Manzano; Guus Borst; Martijn Visser; Alan Dowson; Miguel A. Valbuena; F.J. Medina; R. Herranz; Jack van Loon.

**43 Title of the work:** PROGRESSIVE EFFECTS FROM SIMULATED MICRO GRAVITY, PARTIAL GRAVITY AND HYPER GRAVITY ON CELL GROWTH AND CELL PROLIFERATION AND GENE EXPRESSION IN THE BRASICACEAE FAMILY

**Name of the conference:** 36th International Society for Gravitational Physiology Annual Meeting

**Type of event:** Conference

**Geographical area:** European Union

**Type of participation:** Participatory - oral communication

**Reasons for participation:** Review before acceptance

**City of event:** Ljubljana, Slovenia

**Date of event:** 11/06/2015



**End date:** 11/06/2015

**Organising entity:** ISGP

Aranzazu Manzano; Leonardus A. den Toom; Guus Borst; Martijn Visser; Alan Dowson; Miguel A. Valbuena; F.J. Medina; R. Herranz; Jack van Loon.

- 44** **Title of the work:** EXAMINATION OF PLANT TROPISMS AND THE CELL CYCLE IN MICROGRAVITY  
**Name of the conference:** 30th ANNUAL MEETING OF THE ASGSR  
**City of event:** WESTIN - PASADENA, CA, United States of America  
**Date of event:** 22/10/2014  
**End date:** 26/10/2014  
**Organising entity:** ASGSR (American Society for Gravitational and Space Research)  
John Z Kiss; Josh P Vandenbrink; Katherine DL Millar; Richard E Edelmann; F Javier Medina; Raul Herranz.
- 45** **Title of the work:** PROGRESSIVE EFFECTS FROM SIMULATED MICROGRAVITY TO HYPERGRAVITY ON CELL GROWTH AND PROLIFERATION AND ON GENE EXPRESSION IN THE BRASICACEAE FAMILY  
**Name of the conference:** 30th ANNUAL MEETING OF THE ASGSR  
**City of event:** WESTIN - PASADENA, CA, United States of America  
**Date of event:** 22/10/2014  
**End date:** 26/10/2014  
**Organising entity:** ASGSR (American Society for Gravitational and Space Research)  
Arancha Manzano; Arno den Toom; Alan Dowson; Miguel A Valbuena; F Javier Medina; Raul Herranz; Jack van Loon.
- 46** **Title of the work:** MERISTEMATIC COMPETENCE IS DISRUPTED BY MICROGRAVITY, REAL OR SIMULATED, IN SEEDLINGS AND CULTURED CELLS OF ARABIDOPSIS  
**Name of the conference:** The 40th COSPAR Scientific Assembly  
**City of event:** Moscow, Russia  
**Date of event:** 02/08/2014  
**End date:** 10/08/2014  
**Organising entity:** COSPAR **Type of entity:** Associations and Groups  
Francisco Javier Medina; Miguel Angel Valbuena; Khaled Youssef; John Z Kiss; Jack JWA van Loon; Raúl.
- 47** **Title of the work:** PHOTOTROPISM EXPERIMENTS IN MICROGRAVITY–THE SEEDLING GROWTH PROJECT IN THE EMCS ON THE ISS  
**Name of the conference:** The 40th COSPAR Scientific Assembly  
**City of event:** Moscow, Russia  
**Date of event:** 02/08/2014  
**End date:** 10/08/2014  
**Organising entity:** COSPAR  
John Z Kiss; Katherine DL Millar; Richard E Edelmann; Raúl; Francisco Javier.
- 48** **Title of the work:** DISRUPTION OF CELL GROWTH AND PROLIFERATION INDUCED BY SIMULATED MICROGRAVITY ON SYNCHRONIC PLANT CELL CULTURES  
**Name of the conference:** 29th ASGRS and 5th International Symposium for Physical Sciences in Space  
**Type of event:** Conference  
**Type of participation:** 'Participatory - poster  
**City of event:** Orlando (Florida), United States of America  
**Date of event:** 03/11/2013  
**End date:** 08/11/2013  
**Organising entity:** ASGSR (American Society for Gravitational and Space Research)





**With external admission assessment committee:** Yes

Khaled Youssef; Jack JWA Van Loon; Raul Herranz; F. Javier Medina.

**49 Title of the work:** A COMPARATIVE EVOLUTIONARY APPROACH TO UNRAVEL GENE REDUNDANCY CONTRIBUTION TO UNIQUE TRANSCRIPTOMIC STATES UNDER ALTERED GRAVITY AND/OR OTHER SUBOPTIMAL ENVIRONMENTS

**Name of the conference:** ELGRA Biennial Meeting 2013 "In the spirit of Discovery"

**Type of event:** Conference

**Geographical area:** European Union

**Type of participation:** Participatory - oral communication

**Reasons for participation:** Review before acceptance

**City of event:** Vatican, Rome, Italy

**Date of event:** 11/09/2013

**End date:** 14/05/2013

**Organising entity:** ELGRA (European Low Gravity Research Association) **Type of entity:** Associations and Groups

R. Herranz; Arancha Manzano; F.J. Medina. En: Abstract submitted.

**50 Title of the work:** ALTERED GRAVITY INDUCES CHANGES IN THE PLANT CELL CYCLE: GROWTH OF A SYNCHRONIC CELL CULTURE IN A RANDOM POSITIONING MACHINE

**Name of the conference:** ELGRA Biennial Meeting 2013 "In the spirit of Discovery"

**Type of event:** Conference

**Geographical area:** European Union

**Type of participation:** Participatory - poster

**Reasons for participation:** Review before acceptance

**City of event:** Vatican, Rome, Italy

**Date of event:** 11/09/2013

**End date:** 14/05/2013

**Organising entity:** ELGRA (European Low Gravity Research Association) **Type of entity:** Associations and Groups

Khaled Youssef; Jack van Loon; R. Herranz; F.J. Medina. En: Abstract submitted.

**51 Title of the work:** EFFECTS OF LIGHT STIMULATION ON PLANT CELL GROWTH AND PROLIFERATION IN SPACE: PREPARATION OF ANESA/NASA SPACE FLIGHT EXPERIMENT

**Name of the conference:** ELGRA Biennial Meeting 2013 "In the spirit of Discovery"

**Type of event:** Conference

**Geographical area:** European Union

**Type of participation:** Participatory - oral communication

**Reasons for participation:** Review before acceptance

**City of event:** Vatican, Rome, Italy

**Date of event:** 11/09/2013

**End date:** 14/05/2013

**Organising entity:** ELGRA (European Low Gravity Research Association) **Type of entity:** Associations and Groups

Miguel Angel Valbuena; R. Herranz; John Z. Kiss; F.J. Medina. "Awarded with the Best Life Science Student presentation ELGRA 2013". En: Abstract submitted.

**52 Title of the work:** PLANT CELL CYCLE IS ALTERED BY MICROGRAVITY, REAL OR SIMULATED, IN ROOT MERISTEMATIC AND IN CULTURED CELLS

**Name of the conference:** ELGRA Biennial Meeting 2013 "In the spirit of Discovery"

**Type of event:** Conference

**Geographical area:** European Union

**Type of participation:** Participatory - oral communication

**Reasons for participation:** Review before acceptance

**City of event:** Vatican, Rome, Italy

**Date of event:** 11/09/2013



**End date:** 14/05/2013

**Organising entity:** ELGRA (European Low Gravity Research Association) **Type of entity:** Associations and Groups

F.J. Medina; Ana I. Manzano; Khaled Youssef; Miguel A. Valbuena; John Z Kiss; Jack van Loon; R. Herranz. En: Abstract submitted.

**53 Title of the work:** PLANT DEVELOPMENT EXPERIMENT

**Name of the conference:** ELGRA Biennial Meeting 2013 "In the spirit of Discovery"

**Type of event:** Conference

**Geographical area:** European Union

**Type of participation:** Participatory - oral communication

**Reasons for participation:** Review before acceptance

**City of event:** Vatican, Rome, Italy

**Date of event:** 11/09/2013

**End date:** 14/05/2013

**Organising entity:** ELGRA (European Low Gravity Research Association) **Type of entity:** Associations and Groups

Eugenie Carnero-Diaz; Ann-Iren Kittang; Elodie Boucheron-Dubuisson; Isabel Le-Disquet; Raul Herranz; Miguel A Valbuena; Christian Mazars; Sabine Grat; Tor-Hening Iversen; A. B. Mohammad; Knut R Fossum; Veronica Pereda-loft; B. Eche; F.J. Medina. En: Abstract submitted.

**54 Title of the work:** SEEDLING GROWTH—A NEW SERIES OF EXPERIMENTS ON PLANT TROPISMS AND THE CELL CYCLE ON THE ISS

**Name of the conference:** ELGRA Biennial Meeting 2013 "In the spirit of Discovery"

**Type of event:** Conference

**Geographical area:** European Union

**Type of participation:** Participatory - oral communication

**Reasons for participation:** Review before acceptance

**City of event:** Vatican, Rome, Italy

**Date of event:** 11/09/2013

**End date:** 14/05/2013

**Organising entity:** ELGRA (European Low Gravity Research Association) **Type of entity:** Associations and Groups

John Z Kiss; Kathy DL Millar; Richard E Edelman; F.J. Medina; R. Herranz. En: Abstract submitted.

**55 Title of the work:** THE NEW HARDWARE "FIXBOX" FOR MICROSCOPICAL FIXATION OF PLANT SAMPLES IN SPACE REQUIRES THE ADDITION OF FERROFLUID® WITHOUT ALTERING STRUCTURAL OR ANTIGENIC PRESERVATION

**Name of the conference:** ELGRA Biennial Meeting 2013 "In the spirit of Discovery"

**Type of event:** Conference

**Geographical area:** European Union

**Type of participation:** Participatory - poster

**Reasons for participation:** Review before acceptance

**City of event:** Vatican, Rome, Italy

**Date of event:** 11/09/2013

**End date:** 14/05/2013

**Organising entity:** ELGRA (European Low Gravity Research Association) **Type of entity:** Associations and Groups

Miguel A. Valbuena; Eva Craus; Albert Tomas; R. Herranz; F.J. Medina. En: Abstract submitted.

**56 Title of the work:** EFFECTS OF ALTERED GRAVITY ON MERISTEMATIC AND CULTURED PROLIFERATING CELLS OF ARABIDOPSIS THALIANA

**Name of the conference:** Plant Biology Congress Freiburg 2012 - ISLSWG Satellite Symposium Plant Biology in Space"

**Type of event:** Conference

**Geographical area:** European Union



**Type of participation:** Participatory - oral communication

**City of event:** Freiburg, Germany

**Date of event:** 29/07/2012

**End date:** 03/08/2012

**Organising entity:** FESPB (Federation of European Societies of Plant Biologists) - EPSO (European Plant Science Organisation)

F.J. Medina; A.I. Manzano; R. Herranz.

**Reasons for participation:** Upon invitation

**57 Title of the work:** ALTERATION OF MERISTEMATIC COMPETENCE IN PLANT CELL CULTURES IN VITRO REVEALS A SPECIFIC EFFECT OF GRAVITATIONAL STRESS ON PLANT CELL FUNCTIONS

**Name of the conference:** Joint ESA Life Sciences Meeting "Life in Space for Life on Earth"

**Type of event:** Conference

**Geographical area:** Non EU International

**Type of participation:** Participatory - oral communication

**Reasons for participation:** Review before acceptance

**City of event:** Aberdeen, United Kingdom

**Date of event:** 18/06/2012

**End date:** 22/06/2012

**Organising entity:** European Space Agency (ESA) International Society for Gravitational Physiology (ISGP)

F.J. Medina; A.I. Manzano; J. van Loon; R. Herranz.

**58 Title of the work:** AUXIN TRANSPORT AND RIBOSOME BIOGENESIS MUTANTS/REPORTER LINES TO STUDY PLANT CELL GROWTH AND PROLIFERATION UNDER ALTERED GRAVITY

**Name of the conference:** Joint ESA Life Sciences Meeting "Life in Space for Life on Earth"

**Type of event:** Conference

**Geographical area:** European Union

**Type of participation:** Participatory - poster

**City of event:** Aberdeen, United Kingdom

**Date of event:** 18/06/2012

**End date:** 22/06/2012

**Organising entity:** European Space Agency (ESA) International Society for Gravitational Physiology (ISGP)

**With external admission assessment committee:** Yes

**Type of contribution:** Scientific paper

M.A. Valbuena; A.I. Manzano; J. van Loon; J. Sáez-Vásquez; E. Carnero-Díaz; R. Herranz; F.J. Medina. En: Proc. 'Life in Space for Life on Earth' 18-22 June 2012, Aberdeen, UK (ESA SP-706, February 2013). pp. P309.

**59 Title of the work:** ROLE OF GENE AND PATHWAYS REDUNDANCY IN PLANT AND ANIMAL UNIQUE TRANSCRIPTOMIC STATES UNDER ALTERED GRAVITY SUBOPTIMAL ENVIRONMENTS

**Name of the conference:** Joint ESA Life Sciences Meeting "Life in Space for Life on Earth"

**Type of event:** Conference

**Geographical area:** Non EU International

**Type of participation:** Participatory - oral communication

**Reasons for participation:** Review before acceptance

**City of event:** Aberdeen, United Kingdom

**Date of event:** 18/06/2012

**End date:** 22/06/2012

**Organising entity:** European Space Agency (ESA) International Society for Gravitational Physiology (ISGP)

R. Herranz; F.J. Medina.

**60 Title of the work:** GENE EXPRESSION AND CELLULAR FUNCTIONS ARE UNCOUPLED UNDER ALTERED GRAVITY ENVIRONMENTS IN PLANT IN VITRO SOLID CELL CULTURES

**Name of the conference:** XIV Congreso de la Sociedad Española de Biología Celular

**Type of event:** Conference

**Geographical area:** European Union



**Type of participation:** Participatory - oral communication

**City of event:** Torremolinos, Spain

**Date of event:** 12/12/2011

**End date:** 15/12/2011

**Organising entity:** SEBC (Sociedad Española de Biología Celular)  
R. Herranz; A. I. Manzano; J. van Loon; F.J. Medina.

**Reasons for participation:** Review before acceptance

**61 Title of the work:** ALTERED GROWTH AND PROLIFERATION IN IN VITRO CELL CULTURES FROM Arabidopsis thaliana UNDER MAGNETIC LEVITATION CONDITIONS

**Name of the conference:** 21st ELGRA Biennial Symposium "Gravity: from  $\mu$  to x !"

**Type of event:** Conference

**Geographical area:** European Union

**Type of participation:** Participatory - oral communication

**Reasons for participation:** Review before acceptance

**City of event:** Antwerp, Belgium

**Date of event:** 06/09/2011

**End date:** 09/09/2011

**Organising entity:** ELGRA (European Low Gravity Research Association)  
A. I. Manzano; J. van Loon; P. Christianen; R. Herranz.

**62 Title of the work:** DIAMAGNETIC LEVITATION

**Name of the conference:** 21st ELGRA Biennial Symposium "Gravity: from  $\mu$  to x !"

**Type of event:** Conference

**Geographical area:** European Union

**Type of participation:** 'Participatory - poster

**Reasons for participation:** Review before acceptance

**City of event:** Antwerp, Belgium

**Date of event:** 06/09/2011

**End date:** 09/09/2011

**Organising entity:** ELGRA (European Low Gravity Research Association)  
R. Hill; R. Herranz.

**63 Title of the work:** SYSTEMATIC GBF COMPARISONS OF ALTERED GRAVITY: DROSOPHILA MOTILITY AND GENE EXPRESSION

**Name of the conference:** 21st ELGRA Biennial Symposium "Gravity: from  $\mu$  to x !"

**Type of event:** Conference

**Geographical area:** European Union

**Type of participation:** Participatory - oral communication

**Reasons for participation:** Review before acceptance

**City of event:** Antwerp, Belgium

**Date of event:** 06/09/2011

**End date:** 09/09/2011

**Organising entity:** ELGRA (European Low Gravity Research Association)  
R. Herranz; P. Serrano; R. Hill; J. van Loon; F.J. Medina.

**64 Title of the work:** SYSTEMATIC GBF COMPARISONS OF ALTERED GRAVITY: GENE EXPRESSION AND CELLULAR FUNCTIONS IN PLANT CULTURES

**Name of the conference:** 21st ELGRA Biennial Symposium "Gravity: from  $\mu$  to x !"

**Type of event:** Conference

**Geographical area:** European Union

**Type of participation:** Participatory - oral communication

**Reasons for participation:** Review before acceptance

**City of event:** Antwerp, Belgium

**Date of event:** 06/09/2011

**End date:** 09/09/2011



**Organising entity:** ELGRA (European Low Gravity Research Association)

A. I. Manzano; J. van Loon; P. Christianen; R. Herranz; F.J. Medina.

**65 Title of the work:** GENE EXPRESSION & BEHAVIOR (DROSOPHILA)

**Name of the conference:** 2nd Intermediate Meeting Access to ground based facilities project SEGMGSPE\_Ph1",

**Type of event:** Workshop

**Geographical area:** European Union

**Type of participation:** Participatory - oral communication

**City of event:** Madrid, Spain

**Date of event:** 08/05/2011

**End date:** 10/05/2011

**Organising entity:** Centro de Investigaciones Biológicas (CSIC)

Raul Herranz.

**66 Title of the work:** GROUND BASED FACILITIES FOR GRAVITY ALTERATION & PLANT CELL CULTURES: EFFECTS ON CELL PROLIFERATION & GROWTH

**Name of the conference:** American Society for Gravitational and Space Biology 26th Annual Meeting

**Type of event:** Conference

**Geographical area:** Non EU International

**Type of participation:** 'Participatory - poster

**Reasons for participation:** Review before acceptance

**City of event:** Washington DC, United States of America

**Date of event:** 04/11/2010

**End date:** 07/11/2010

**Organising entity:** ASGSB (American Society for Gravitational and Space Biology)

A.I. Manzano; J. van Loon; P. C. M. Christianen; F.J. Medina; R. Herranz.

**67 Title of the work:** EFFECTS OF REAL OR SIMULATED MICROGRAVITY ON PLANT CELL GROWTH AND PROLIFERATION

**Name of the conference:** 38th COSPAR scientific assembly 2010

**Type of event:** Conference

**Geographical area:** Non EU International

**Type of participation:** Participatory - oral communication

**Reasons for participation:** Review before acceptance

**City of event:** Bremen, Germany

**Date of event:** 18/07/2010

**End date:** 25/07/2010

**Organising entity:** COSPAR (COMmittee on SPACe Research)

F.J. Medina; A.I. Manzano; R. Herranz; C. Dijkstra; O. Larkin; R. Hill; E. Carnero-Diaz; J. van Loon; P. Anthony; M.R. Davey; L. Eaves.

**68 Title of the work:** COMPENSATION OF THE GRAVITY VECTOR BY MAGNETIC LEVITATION CAUSES ALTERATIONS IN CELL CYCLE, RIBOSOME BIOGENESIS AND AUXIN DISTRIBUTION IN ARABIDOPSIS ROOT TIPS

**Name of the conference:** Joint ESA Life Sciences Meeting "Life in Space for Life on Earth"

**Type of event:** Conference

**Geographical area:** Non EU International

**Type of participation:** Participatory - oral communication

**Reasons for participation:** Review before acceptance

**City of event:** Trieste, Italy

**Date of event:** 13/06/2010

**End date:** 18/06/2010

**Organising entity:** European Space Agency (ESA) International Society for Gravitational Physiology (ISGP) ISSBB Symposium European Low Gravity Research Association (ELGRA)



F.J. Medina; A.I. Manzano; C. Dijkstra; O. Larkin; R. Hill; R. Herranz; P. Anthony; E. Carnero-Diaz; M.R. Davey; L. Eaves.

- 69** **Title of the work:** SELECTION OF DROSOPHILA ALTERED BEHAVIOUR AND AGING STRAINS FOR MICROGRAVITY RESEARCH  
**Name of the conference:** Joint ESA Life Sciences Meeting "Life in Space for Life on Earth"  
**Type of event:** Conference **Geographical area:** Non EU International  
**Type of participation:** 'Participatory - poster' **Reasons for participation:** Review before acceptance  
**City of event:** Trieste, Italy  
**Date of event:** 13/06/2010  
**End date:** 18/06/2010  
**Organising entity:** European Space Agency (ESA) International Society for Gravitational Physiology (ISGP) ISSBB Symposium European Low Gravity Research Association (ELGRA)  
**Type of contribution:** Scientific paper  
P. Serrano; J.J. van Loon; A.I. Manzano; F.J. Medina; R. Herranz. "Selection of Drosophila Altered Behaviour & Aging strains for microgravity research". En: J Gravit Physiol (in press) & Proceedings of the ESA 'Life in Space for Life on Earth Symposium' Trieste, Italy (ESA SPS-685). 18/06/2010. Available on-line at: <<http://hdl.handle.net/10261/39192>>. ISSN 1077-9248
- 70** **Title of the work:** UTILIZATION OF DROSOPHILA ALTERED BEHAVIOUR AND AGING STRAINS IN ESA ALTERED GRAVITY GROUND BASED FACILITIES  
**Name of the conference:** Joint ESA Life Sciences Meeting "Life in Space for Life on Earth"  
**Type of event:** Conference **Geographical area:** Non EU International  
**Type of participation:** Participatory - oral communication **Reasons for participation:** Review before acceptance  
**City of event:** Trieste, Italy  
**Date of event:** 13/06/2010  
**End date:** 18/06/2010  
**Organising entity:** European Space Agency (ESA) International Society for Gravitational Physiology (ISGP) ISSBB Symposium European Low Gravity Research Association (ELGRA)  
R. Herranz; P. Serrano; A.I. Manzano; J.J. van Loon; F.J. Medina.
- 71** **Title of the work:** EXPOSURE OF DROSOPHILA MELANOGASTER TO MAGNETIC LEVITATION: CHANGES IN THE BEHAVIOUR, DEVELOPMENT AND GENE EXPRESSION PROFILE AND EXPLOITATION AS A LONG-TERM ALTERED GRAVITY SIMULATOR  
**Name of the conference:** International Conference on Magneto-Science 2009  
**Type of event:** Conference **Geographical area:** Non EU International  
**Type of participation:** Participatory - oral communication **Reasons for participation:** Review before acceptance  
**City of event:** Nijmegen, Holland  
**Date of event:** 26/10/2009  
**End date:** 29/10/2009  
**Organising entity:** HFML (High Magnetic Field Laboratory - University Radbound)  
R. Herranz; O. Larkin; C. Dijkstra; E. de Juan; J. van Loon; F.J. Medina; M. Davey; L. Eaves; R. Marco.
- 72** **Title of the work:** DROSOPHILA AS A MODEL SYSTEM IN MICROGRAVITY GROUND SUPPORT FACILITIES. REVIEW OF OUR LAST FIVE YEARS EXPERIMENTS  
**Name of the conference:** 20th ELGRA Biennial Symposium "In the Footsteps of Columbus"  
**Type of event:** Conference **Geographical area:** European Union  
**Type of participation:** Participatory - oral communication **Reasons for participation:** Review before acceptance



**City of event:** Bonn, Germany  
**Date of event:** 01/09/2009  
**End date:** 04/09/2009  
**Organising entity:** ELGRA (European Low-gravity Research Association)  
Raul Herranz.

- 73** **Title of the work:** GENE EXPRESSION & BEHAVIOR (DROSOPHILA)  
**Name of the conference:** Kick-off Meeting Access to ground based facilities project SEGMGSPE\_Ph1",  
**Type of event:** Workshop **Geographical area:** European Union  
**Type of participation:** Participatory - oral communication  
**City of event:** Cologne, Germany  
**Date of event:** 08/06/2009  
**End date:** 10/06/2009  
**Organising entity:** DLR (European Space Agency)  
Raul Herranz.
- 74** **Title of the work:** EXPERIENCIA DE UN SPANISH TRAINEE DEL CDTI EN LAS INSTALACIONES DE MICROGRAVEDAD DE LA ESA (ESTEC)  
**Name of the conference:** III Congreso del Laboratorio para Experimentación en Espacio y Microgravedad (LEEM)  
**Type of event:** Workshop **Geographical area:** National  
**Type of participation:** Participatory - invited/keynote **Reasons for participation:** Upon invitation talk  
**City of event:** Zaragoza, Spain  
**Date of event:** 27/11/2008  
**End date:** 28/11/2008  
**Organising entity:** S3 (Spanish Space Students)  
Raúl Herranz.
- 75** **Title of the work:** OVERALL GENOMIC EFFECTS OF THE EXPOSURE TO REAL AND SIMULATED GRAVITY DURING DROSOPHILA MELANOGASTER METAMORPHOSIS  
**Name of the conference:** 37th COSPAR Scientific Assembly  
**Type of event:** Conference **Geographical area:** Non EU International  
**Type of participation:** 'Participatory - poster **Reasons for participation:** Review before acceptance  
**City of event:** Montreal, Canada  
**Date of event:** 13/07/2008  
**End date:** 20/07/2008  
**Organising entity:** COSPAR (COmmittee on SPAce Research)  
R. Marco; R. Herranz; D. Laván; A. Villa; F.J. Medina; J. van Loon.
- 76** **Title of the work:** DROSOPHILA BEHAVIOUR & GENE EXPRESSION IN ALTERED GRAVITY CONDITIONS: COMPARISON BETWEEN SPACE AND GROUND FACILITIES  
**Name of the conference:** 14th European Symposium on Life Sciences Research in Space: "Life in Space for Life on Earth"  
**Type of event:** Conference **Geographical area:** Non EU International  
**Type of participation:** 'Participatory - poster **Reasons for participation:** Review before acceptance  
**City of event:** Angers, France  
**Date of event:** 22/06/2008  
**End date:** 27/06/2008



**Organising entity:** European Space Agency (ESA) - International Society for Gravitational Physiology (ISGP)

**Type of contribution:** Scientific paper

R. Herranz; D.A. Laván; C. Dijkstra; O. Larkin; M. Davey; F.J. Medina; J.J. van Loon; R. Marco; P. Schiller. "Drosophila Behaviour & Gene expression in altered gravity conditions: Comparison between Space and ground facilities". En: J Gravit Physiol & Proc of the 'Life in Space for Life on Earth Symposium', Angers, France, 22-27 June 2008, (ESA SP-663). 12/2008. Available on-line at: <<http://hdl.handle.net/10261/21988>>. ISSN 1077-9248

**77 Title of the work:** GENE EXPRESSION VARIATIONS DURING DROSOPHILA METAMORPHOSIS IN ISS VS. RPM MICROGRAVITY AND BEYOND

**Name of the conference:** Technology for Artificial Gravity and Microgravity Simulation Meeting

**Type of event:** Conference

**Geographical area:** European Union

**Type of participation:** Participatory - oral communication

**Reasons for participation:** Review before acceptance

**City of event:** European Space Technology Center (ESTEC-Noordwijk), Holland

**Date of event:** 10/12/2007

**End date:** 12/12/2007

**Organising entity:** ESA - European Space Agency

R. Herranz; D.A. Laván; F.J. Medina; J.J. van Loon; R. Marco.

**78 Title of the work:** MODIFICATIONS OF DROSOPHILA BEHAVIOUR IN MICROGRAVITY: COMPARISON BETWEEN SPACE, RANDOM POSITION MACHINE (RPM) AND MAGNETIC LEVITATION

**Name of the conference:** Technology for Artificial Gravity and Microgravity Simulation Meeting

**Type of event:** Conference

**Geographical area:** European Union

**Type of participation:** Participatory - oral communication

**Reasons for participation:** Review before acceptance

**City of event:** European Space Technology Center (ESTEC-Noordwijk), Holland

**Date of event:** 10/12/2007

**End date:** 12/12/2007

**Organising entity:** ESA - European Space Agency

R. Marco; C. Dijkstra; O. Larkin; R. Herranz; D.A. Laván; E. de Juan; P. Anthony; M. Davey; R.J.A. Hill; L. Eaves; F.J. Medina; J.J. van Loon.

**79 Title of the work:** GENE EXPRESSION CHANGES DURING DROSOPHILA METAMORPHOSIS INDUCED BY POTENTIALLY IMPORTANT EVOLUTIONARY PHYSICAL ENVIRONMENTAL PARAMETERS

**Name of the conference:** 1st Functional Genomics and Systems Biology

**Type of event:** Conference

**Geographical area:** Non EU International

**Type of participation:** 'Participatory - poster

**Reasons for participation:** Review before acceptance

**City of event:** Hinxton Genome Campus (Cambridgeshire ), United Kingdom

**Date of event:** 10/10/2007

**End date:** 13/10/2007

**Organising entity:** Joint Cold Spring Harbor Laboratory/ Wellcome Trust Conference

R. Marco; R. Herranz; D. Laván; J.J. van Loon; F.J. Medina.

**80 Title of the work:** THE COEVOLUTION OF MUSCLE THIN FILAMENT PROTEINS IN DIPTERA

**Name of the conference:** 1st Functional Genomics and Systems Biology

**Type of event:** Conference

**Geographical area:** Non EU International

**Type of participation:** 'Participatory - poster

**Reasons for participation:** Review before acceptance





**City of event:** Hinxton Genome Campus (Cambridgeshire ), United Kingdom

**Date of event:** 10/10/2007

**End date:** 13/10/2007

**Organising entity:** Joint Cold Spring Harbor Laboratory/ Wellcome Trust Conference  
R. Herranz; D. Laván; R. Marco.

**81 Title of the work:** GENE EXPRESSION VARIATIONS DURING DROSOPHILA METAMORPHOSIS IN REAL AND SIMULATED GRAVITY

**Name of the conference:** 47th Annual Drosophila Research Conference

**Type of event:** Conference

**Geographical area:** Non EU International

**Type of participation:** 'Participatory - poster

**Reasons for participation:** Review before acceptance

**City of event:** Houston (Texas), United States of America

**Date of event:** 29/03/2006

**End date:** 02/04/2006

**Organising entity:** GSA (Genetics Society of America)

R. Marco; L.J. Leandro-Garcia; A. Benguria; R. Herranz; A. Zaballos; G. Gasset; J.J. van Loon; F.J. Medina.

**82 Title of the work:** THE COEVOLUTION OF MUSCLE TROPONIN GENE ISOFORMS IN DROSOPHILIDS

**Name of the conference:** 47th Annual Drosophila Research Conference

**Type of event:** Conference

**Geographical area:** Non EU International

**Type of participation:** 'Participatory - poster

**Reasons for participation:** Review before acceptance

**City of event:** Houston (Texas), United States of America

**Date of event:** 29/03/2006

**End date:** 02/04/2006

**Organising entity:** GSA (Genetics Society of America)

L.J. Leandro-Garcia; R. Herranz; R. Marco.

**83 Title of the work:** THE COEVOLUTION OF MUSCLE TROPONIN GENE ISOFORMS IN DROSOPHILIDS

**Name of the conference:** Systems Biology: Global regulation of Gene Expression

**Type of event:** Conference

**Geographical area:** Non EU International

**Type of participation:** 'Participatory - poster

**Reasons for participation:** Review before acceptance

**City of event:** Cold Spring Harbor Laboratory (NY), United States of America

**Date of event:** 23/03/2006

**End date:** 26/03/2006

**Organising entity:** Cold Spring Harbor Laboratory

L.J. Leandro-Garcia; R. Herranz; R. Marco.

**84 Title of the work:** GENE EXPRESSION VARIATIONS DURING DROSOPHILA METAMORPHOSIS IN SPACE. THE GENE EXPERIMENT IN THE SPANISH CERVANTES MISSION TO THE ISS

**Name of the conference:** 9th European Symposium on Life Sciences Research in Space: "Life in Space for Life on Earth"

**Type of event:** Conference

**Geographical area:** Non EU International

**Type of participation:** Participatory - oral communication

**Reasons for participation:** Review before acceptance

**City of event:** Cologne, Germany

**Date of event:** 26/06/2005

**End date:** 01/07/2005



**Organising entity:** European Space Agency (ESA) - International Society for Gravitational Physiology (ISGP)

**Type of contribution:** Scientific paper

R. Herranz; A. Benguria; E. Fernández-Pineda; F.J. Medina; G. Gasset; J.J. van Loon; A. Zaballos; R. Marco. "Gene Expression Variations During Drosophila Metamorphosis in Space. The GENE Experiment in the Spanish Cervantes Mission to the ISS". En: J Gravit Physiol. 12 - 1, pp. 253 - 254. 2005. ISSN 1077-9248

**85 Title of the work:** THE DROSOPHILA EXPERIMENTS "AGEING" AND "GENE" PERFORMED IN THE ISS DURING THE SPANISH SOYUZ MISSION IN 2003

**Name of the conference:** 35th COSPAR Scientific Assembly

**Type of event:** Conference

**Geographical area:** Non EU International

**Type of participation:** Participatory - oral communication

**Reasons for participation:** Review before acceptance

**City of event:** Paris, France

**Date of event:** 18/07/2004

**End date:** 25/07/2004

**Organising entity:** COSPAR (COMmittee on SPACE Research)

R. Marco; R. Herranz; A. Villa; U. Kirshnick; E. Horn; G. Gasset; H. Agricola; J. van Loon; F.J. Medina.

**86 Title of the work:** AN EVO-DEVO APPROACH LEADING TO A STRUCTURAL-FUNCTIONAL MODEL OF TROPONIN GENES IN INSECTS

**Name of the conference:** 45th Annual Drosophila Research Conference

**Type of event:** Conference

**Geographical area:** Non EU International

**Type of participation:** Participatory - poster

**Reasons for participation:** Review before acceptance

**City of event:** Washington DC, United States of America

**Date of event:** 24/03/2004

**End date:** 28/03/2004

**Organising entity:** GSA (Genetics Society of America)

R. Herranz; J. Mateos; J.A. Mas; E. García-Zaragoza; M. Cervera; R. Marco.

**87 Title of the work:** DIVERSIFICATION AND INDEPENDENT EVOLUTION OF TROPONIN C GENES IN INSECTS

**Name of the conference:** 45th Annual Drosophila Research Conference

**Type of event:** Conference

**Geographical area:** Non EU International

**Type of participation:** Participatory - poster

**Reasons for participation:** Review before acceptance

**City of event:** Washington DC, United States of America

**Date of event:** 24/03/2004

**End date:** 28/03/2004

**Organising entity:** GSA (Genetics Society of America)

R. Herranz; J. Mateos; C. Diaz; T. P. Nguyen; T. L. Lovato; R. M. Cripps; R. Marco.

**88 Title of the work:** PAST, PRESENT AND FUTURE OF EUROPEAN DROSOPHILA RESEARCH IN MICROGRAVITY

**Name of the conference:** 45th Annual Drosophila Research Conference

**Type of event:** Conference

**Geographical area:** Non EU International

**Type of participation:** Participatory - oral communication

**Reasons for participation:** Review before acceptance

**City of event:** Washington DC, United States of America

**Date of event:** 24/03/2004



**End date:** 28/03/2004

**Organising entity:** GSA (Genetics Society of America)

R. Marco; R. Herranz; E. Martin; E. Horn.

**89 Title of the work:** AN EVO-DEVO APPROACH LEADING TO A STRUCTURAL-FUNCTIONAL MODEL OF TROPONIN GENES IN INSECTS

**Name of the conference:** 18th European Drosophila Research Conference Eurofly 2003"

**Type of event:** Conference

**Geographical area:** European Union

**Type of participation:** 'Participatory - poster

**Reasons for participation:** Review before acceptance

**City of event:** Göttingen, Germany

**Date of event:** 02/10/2003

**End date:** 04/10/2003

**Organising entity:** University of Göttingen

R. Herranz; J. Mateos; J.A. Mas; E. García-Zaragoza; M. Cervera; R. Marco.

**90 Title of the work:** THE LONG TERM ADAPTATION OF MULTICELLULAR MODEL ORGANISM TO NON-TERRESTRIAL AND SPACE ENVIROMENTS

**Name of the conference:** 8th European Symposium on Life Sciences Research in Space: "Life in Space for Life on Earth"

**Type of event:** Conference

**Geographical area:** Non EU International

**Type of participation:** Participatory - oral communication

**Reasons for participation:** Review before acceptance

**City of event:** Stockholm, Sweden

**Date of event:** 02/06/2002

**End date:** 07/06/2002

**Organising entity:** European Space Agency (ESA) - International Society for Gravitational Physiology (ISGP)

**Type of contribution:** Scientific paper

R. Marco; D. Husson; R. Herranz; M. Pastor; J.M. Ruiz; C. Diaz; J. Mateos; A. Villa. "The long term adaptation of multicellular model organism to non-terrestrial and space enviroments". En: J Gravit Physiol. 9 - 1, pp. 201 - 202. 2002. ISSN 1077-9248

**91 Title of the work:** TOWARDS THE ESTABLISHMENT OF A PERMANENT COLONY OF DROSOPHILA IN THE INTERNATIONAL SPACE STATION: HARDWARE AND ADAPTATION OF TECHNIQUES

**Name of the conference:** 8th European Symposium on Life Sciences Research in Space: "Life in Space for Life on Earth"

**Type of event:** Conference

**Geographical area:** Non EU International

**Type of participation:** 'Participatory - poster

**Reasons for participation:** Review before acceptance

**City of event:** Stockholm, Sweden

**Date of event:** 02/06/2002

**End date:** 07/06/2002

**Organising entity:** European Space Agency (ESA) - International Society for Gravitational Physiology (ISGP)

**Type of contribution:** Scientific paper

R. Herranz; D. Husson; M. Pastor; J.M. Ruiz; C. Diaz; J. Mateos; A. Villa; F.J. Medina; R. Marco. "Towards the establishment of a permanent colony of Drosophila in the international space station (ISS): Hardware and adaptation of techniques". En: J Gravit Physiol. 9 - 1, pp. 357 - 358. 2002. ISSN 1077-9248



- 92** **Title of the work:** CHARACTERIZATION OF ISOFORM PATTERNS OF THE COMPONENTS OF DROSOPHILA TROPONIN AT THE PROTEIN LEVEL  
**Name of the conference:** 43rd Annual Drosophila Research Conference  
**Type of event:** Conference **Geographical area:** Non EU International  
**Type of participation:** 'Participatory - poster **Reasons for participation:** Review before acceptance  
**City of event:** San Diego (California), United States of America  
**Date of event:** 04/2002  
**End date:** 04/2002  
**Organising entity:** GSA (Genetics Society of America)  
J.M. Ruiz; R. Herranz; C. Diaz; J. Mateos; M. Cervera; R. Marco.
- 93** **Title of the work:** EMBRYONARY EXPRESSION OF A NON-MUSCLE PROTEIN INCORPORATING ONE OF THE DIFFERENTIAL EXONS FOUND IN TROPONIN H, AN IFM SPECIFIC ISOFORMHE COMPONENTS OF DROSOPHILA TROPONIN AT THE PROTEIN LEVEL  
**Name of the conference:** 43rd Annual Drosophila Research Conference  
**Type of event:** Conference **Geographical area:** Non EU International  
**Type of participation:** 'Participatory - poster **Reasons for participation:** Review before acceptance  
**City of event:** San Diego (California), United States of America  
**Date of event:** 04/2002  
**End date:** 04/2002  
**Organising entity:** GSA (Genetics Society of America)  
J. Mateos; C. Diaz; R. Herranz; J.M. Ruiz; M. Cervera; R. Marco.
- 94** **Title of the work:** TOWARDS THE ESTABLISHMENT OF A PERMANENT COLONY OF DROSOPHILA IN THE INTERNATIONAL SPACE STATION: HARDWARE AND ADAPTATION OF TECHNIQUES  
**Name of the conference:** 43rd Annual Drosophila Research Conference  
**Type of event:** Conference **Geographical area:** Non EU International  
**Type of participation:** 'Participatory - poster **Reasons for participation:** Review before acceptance  
**City of event:** San Diego (California), United States of America  
**Date of event:** 04/2002  
**End date:** 04/2002  
**Organising entity:** GSA (Genetics Society of America)  
D. Husson; M. Pastor; R. Herranz; J.M. Ruiz; C. Diaz; J. Mateos; A. Villa; R. Marco.
- 95** **Title of the work:** SAMPLE PRESERVATION, ONE OF THE BIG CHALLENGES FOR THE NEXT PHASE OF SPACE RESEARCH: PROBLEMS AND POSSIBLE SOLUTIONS  
**Name of the conference:** ELGRA Biennial Meeting and General Assembly  
**Type of event:** Conference **Geographical area:** European Union  
**Type of participation:** Participatory - oral communication **Reasons for participation:** Review before acceptance  
**City of event:** Banyuls sur Mer, France  
**Date of event:** 25/09/2001  
**End date:** 28/09/2001  
**Organising entity:** ELGRA (European Low Gravity Research Association)  
Roberto Marco; F. Leria; David Husson; Raul Herranz; Jose M. Ruiz; Jesus Mateos; Aida Villa; F Javier Medina.



- 96** **Title of the work:** THE LONG-TERM ADAPTATION OF DROSOPHILA MELANOGASTER TO THE SPACE ENVIROMENT: DESIGN; DEVELOPMENT & TEST OF EXPERIMENTS & HARDWARE FOR ISS  
**Name of the conference:** ELGRA Biennial Meeting and General Assembly  
**Type of event:** Conference **Geographical area:** European Union  
**Type of participation:** Participatory - oral communication **Reasons for participation:** Review before acceptance  
**City of event:** Banyuls sur Mer, France  
**Date of event:** 25/09/2001  
**End date:** 28/09/2001  
**Organising entity:** ELGRA (European Low Gravity Research Association)  
David Husson; Raul Herranz; F Javier Medina; Roberto Marco.
- 97** **Title of the work:** MODIFICACIONES POST-TRADUCCIONALES EN LA TROPONINA H DE DROSOPHILA. PAPEL EN LA FUNCIONALIDAD DEL MÚSCULO INDIRECTO DE VUELO  
**Name of the conference:** XXIV Congreso de la Sociedad Española de Bioquímica y Biología Molecular  
**Type of event:** Conference **Geographical area:** National  
**Type of participation:** 'Participatory - poster **Reasons for participation:** Review before acceptance  
**City of event:** Valencia (Facultad de Ciencias), Spain  
**Date of event:** 18/09/2001  
**End date:** 21/09/2001  
**Organising entity:** Sociedad Española de Bioquímica y Biología Molecular (SEBBM)  
Jesús Mateos; Alberto Domingo; A. Marina; R. Rogado; Carlos Díaz; Raúl Herranz; Jose M Ruiz; Jesús Vazquez; Margarita Cervera; Roberto Marco.
- 98** **Title of the work:** SEQUENCE DIVERGENCE AND EXPRESSION PATTERN OF TROPONIN C GENES IN DROSOPHILIDAE  
**Name of the conference:** 42nd Annual Drosophila Research Conference. "2001: A Fly Odyssey"  
**Type of event:** Conference **Geographical area:** Non EU International  
**Type of participation:** 'Participatory - poster **Reasons for participation:** Review before acceptance  
**City of event:** Washington DC, United States of America  
**Date of event:** 21/03/2001  
**End date:** 25/03/2001  
**Organising entity:** Genetics Society of America (GSA)  
Carlos Díaz; Raúl Herranz; Jesús Mateos; Jose M Ruiz; Margarita Cervera; Roberto Marco.
- 99** **Title of the work:** POST-TRANSLATIONAL MODIFICATIONS IN DROSOPHILA TpnH, AN IFM SPECIFIC TROPOMYOSIN ISOFORM  
**Name of the conference:** Molecular Biology Of Muscle Development And Disease Meeting  
**Type of event:** Conference **Geographical area:** Non EU International  
**Type of participation:** 'Participatory - poster **Reasons for participation:** Review before acceptance  
**City of event:** Pacific Grove (California), United States of America  
**Date of event:** 21/05/2000  
**End date:** 26/05/2000  
**Organising entity:** Asilomar Conference Center  
Jesús Mateos; Alberto Domingo; A. Marina; R. Rogado; Carlos Díaz; Raúl Herranz; Jesús Vazquez; Margarita Cervera; Roberto Marco.



**100** **Title of the work:** CARACTERIZACIÓN EVOLUTIVA DE LOS GENES DE LA TROPONINA C EN EL GÉNERO DROSOPHILA

**Name of the conference:** VIII Congreso de la Sociedad Española de Biología Celular

**Type of event:** Conference

**Geographical area:** National

**Type of participation:** Participatory - oral communication

**Reasons for participation:** Review before acceptance

**City of event:** Granada (Facultad de Ciencias), Spain

**Date of event:** 17/12/1999

**End date:** 20/12/1999

**Organising entity:** Sociedad Española de Biología Celular (SEBC)

Raúl Herranz; Carlos Díaz; Jesús Mateos; Margarita Cervera; Roberto Marco.

**101** **Title of the work:** MODIFICACIONES POST-TRADUCCIONALES EN LA TROPONINA H DE DROSOPHILA, Y SU PAPEL EN LA FUNCIONALIDAD DEL MÚSCULO INDIRECTO DE VUELO

**Name of the conference:** VIII Congreso de la Sociedad Española de Biología Celular

**Type of event:** Conference

**Geographical area:** National

**Type of participation:** Participatory - oral communication

**Reasons for participation:** Review before acceptance

**City of event:** Granada (Facultad de Ciencias), Spain

**Date of event:** 17/12/1999

**End date:** 20/12/1999

**Organising entity:** Sociedad Española de Biología Celular (SEBC)

Jesús Mateos; Alberto Domingo; A. Marina; R. Rogado; Carlos Díaz; Raúl Herranz; Jesús Vazquez; Margarita Cervera; Roberto Marco. "This presentation received the Hucoa-Erloss-Eppendorf award to the best young researcher communication".

### Works submitted to national or international seminars, workshops and/or courses

**1** **Title of the work:** Stress-related mutants may show an improved molecular response to spaceflight and Mars gravity level: An European contribution to ESA/NASA Seedling Growth Experiment

**Name of the event:** GeneLab Analysis Working Group Workshop 2021

**Type of event:** Workshop

**Corresponding author:** Yes

**Reasons for participation:** Upon invitation

**Geographical area:** Non EU International

**City of event:** Virtual, United States of America

**Date of event:** 10/11/2021

**End date:** 12/11/2021

**Organising entity:** GeneLab (NASA)

**Type of entity:** State agency

**With external admission assessment committee:** Yes

**Type:** Scientific paper

Aranzazu Manzano; F. Javier Medina; Raul Herranz.

**2** **Title of the work:** IMPORTANCE OF PLANT BIOLOGY RESEARCH IN ALTERED GRAVITY SIMULATION AND RADIATION

**Name of the event:** ESA-ELGRA Gravity-Related Research Summer School

**Type of event:** Course

**Reasons for participation:** Upon invitation

**Geographical area:** European Union

**City of event:** Redu, Belgium

**Date of event:** 25/06/2019

**Type of entity:** State agency



**Organising entity:** European Space Agency (ESA)  
ESEC-Galaxia)  
Raul Herranz.

**3 Title of the work:** RESPUESTA TRANSCRIPTOMICA Y PROTEOMICA A LA MICROGRAVEDAD EN CONDICIONES DE ESTRÉS AMBIENTAL EN ANIMALES Y PLANTAS

**Name of the event:** Seminario extraordinario

**Type of event:** Seminar

**Reasons for participation:** Upon invitation

**Geographical area:** National

**City of event:** A Coruña, Spain

**Date of event:** 02/07/2012

**Organising entity:** INIBIC (Instituto de Investigación Biomédica) **Type of entity:** R&D Centre

Raul Herranz.

**4 Title of the work:** LA REDUNDANCIA GÉNICA EN LA RESPUESTA TRANSCRIPTOMICA Y PROTEOMICA A LA GRAVEDAD ALTERADA EN AMBIENTES SUBOPTIMOS

**Name of the event:** Ciclo de seminarios de Proteómica

**Type of event:** Seminar

**Reasons for participation:** Upon invitation

**Geographical area:** National

**City of event:** Santiago de Compostela, Spain

**Date of event:** 29/06/2012

**Organising entity:** Hospital clínico de Santiago de Compostela **Type of entity:** Healthcare Institutions

Raul Herranz.

**5 Title of the work:** LIGHT AND GRAVITY INTERACTIONS ON CELL GROWTH AND PROLIFERATION UNDER SPACEFLIGHT CONDITIONS IN ARABIDOPSIS THALIANA

**Name of the event:** Space Biology Seminars

**Type of event:** Seminar

**Reasons for participation:** Upon invitation

**Geographical area:** European Union

**City of event:** Trondheim, Norway

**Date of event:** 25/05/2012

**Organising entity:** CIRIS (Center for Interdisciplinary Research in Space, NTNU University) **Type of entity:** University

Raul Herranz.

**6 Title of the work:** SINERGIA ENTRE ESTRESSES ABIÓTICOS: EFECTO DE LA MICROGRAVEDAD EN CONDICIONES AMBIENTALES SUBÓPTIMAS SOBRE EL TRANSCRIPTOMA DE INSECTOS Y DE PLANTAS

**Name of the event:** Jornadas de Navidad del Centro de Investigaciones Biológicas

**Type of event:** Seminar

**Reasons for participation:** Upon invitation

**Geographical area:** National

**City of event:** Madrid, Spain

**Date of event:** 15/12/2010

**Organising entity:** Centro de Investigaciones Biológicas **Type of entity:** State agency

Raul Herranz.

## Other dissemination activities

- 1** **Title of the work:** Monographic radio interview - Space Omics Research at Cell Press NASA issue  
**Name of the event:** A hombros de gigantes  
**Type of event:** Media interviews **Geographical area:** National  
**Reasons for participation:** Upon invitation  
**City of event:** Madrid, Spain  
**Date of event:** 25/11/2020  
**Organising entity:** RNE  
Raúl Herranz.
- 2** **Title of the work:** Monographic radio interview performed by phone about Partial gravity simulation on Plants  
**Name of the event:** La cafetera  
**Type of event:** Media interviews **Geographical area:** National  
**Reasons for participation:** Upon invitation  
**City of event:** Madrid, Spain  
**Date of event:** 07/05/2018  
**Organising entity:** Radiocable  
Raúl Herranz.
- 3** **Title of the work:** Monographic radio interview performed by phone about Partial gravity simulation on Plants  
**Name of the event:** 24 horas  
**Type of event:** Media interviews **Geographical area:** National  
**Reasons for participation:** Upon invitation  
**City of event:** Madrid, Spain  
**Date of event:** 02/05/2018  
**Organising entity:** RNE  
Raúl Herranz.
- 4** **Title of the work:** Monographic Radio program about microgravity simulation on Earth using Magnetic levitation with biological samples  
**Name of the event:** Sin límites - Radio 3  
**Type of event:** Media interviews **Geographical area:** National  
**Reasons for participation:** Upon invitation  
**City of event:** Madrid, Spain  
**Date of event:** 21/02/2012  
**Organising entity:** Universidad Nacional de Educación a Distancia (UNED)  
Raúl Herranz.
- 5** **Title of the work:** What Levitating Fruit Flies Say About the Science of Weightlessness  
**Name of the event:** International Press  
**Type of event:** Media interviews **Geographical area:** Non EU International  
**Reasons for participation:** Upon invitation  
**City of event:** New York, United States of America  
**Date of event:** 31/01/2012  
**Organising entity:** Popular Mechanism  
Raúl Herranz.





- 6** **Title of the work:** Monographic radio interview performed by phone about Magnetic levitation use as a microgravity simulator  
**Name of the event:** Adelantos  
**Type of event:** Media interviews **Geographical area:** National  
**Reasons for participation:** Upon invitation  
**City of event:** Madrid, Spain  
**Date of event:** 21/01/2012  
**Organising entity:** Onda Regional Murcia  
Raúl Herranz.
- 7** **Title of the work:** ¿Que le ocurre a un insecto cuando va al Espacio?  
**Name of the event:** Daily Press  
**Type of event:** Media interviews  
**City of event:** Madrid, Spain  
**Date of event:** 16/01/2012  
**Organising entity:** Muy Interesante (Mass-market trade journal)
- 8** **Title of the work:** Monographic radio interview devoted to Magnetic levitation use as a microgravity simulator  
**Name of the event:** Principio de Incertidumbre  
**Type of event:** Media interviews **Geographical area:** National  
**Reasons for participation:** Upon invitation  
**City of event:** Madrid, Spain  
**Date of event:** 11/01/2012  
**Organising entity:** Canal Extremadura Radio  
Raúl Herranz.
- 9** **Title of the work:** On the air radio interview performed in our laboratory about Magnetic levitation use as a microgravity simulator  
**Name of the event:** España Directo  
**Type of event:** Media interviews **Geographical area:** National  
**Reasons for participation:** Upon invitation  
**City of event:** Madrid, Spain  
**Date of event:** 10/01/2012  
**Organising entity:** RTVE (Spanish public radioTV)  
Raúl Herranz.
- 10** **Title of the work:** La microgravedad espacial altera el comportamiento de los insectos  
**Name of the event:** Daily Press  
**Type of event:** Media interviews **Geographical area:** National  
**Reasons for participation:** Upon invitation  
**City of event:** Madrid, Spain  
**Date of event:** 04/01/2012  
**Organising entity:** El Mundo Digital (online national Journal)  
Raúl Herranz.
- 11** **Title of the work:** Recrean en laboratorio las condiciones de ausencia de gravedad del espacio  
**Name of the event:** Daily Press  
**Type of event:** Media interviews **Geographical area:** National  
**Reasons for participation:** Upon invitation



**City of event:** Madrid, Spain  
**Date of event:** 04/01/2012  
**Organising entity:** RTVE online (online national Journal)  
Raúl Herranz.

**12 Title of the work:** Scientists make flies levitate  
**Name of the event:** International Press  
**Type of event:** Media interviews **Geographical area:** Non EU International  
**Reasons for participation:** Upon invitation  
**City of event:** Washington DC, United States of America  
**Date of event:** 04/01/2012  
**Organising entity:** Science Now  
Raúl Herranz.

**13 Title of the work:** Interview for a report in the 9pm News about our Drosophila and Arabidopsis experiments to done by the Spanish astronaut Pedro Duque in the ISS  
**Name of the event:** TV News (Telediario)  
**Type of event:** Media interviews **Geographical area:** National  
**Reasons for participation:** Upon invitation  
**City of event:** Madrid, Spain  
**Date of event:** 18/10/2003  
**Organising entity:** Telecinco  
Raúl Herranz.

## R&D management and participation in scientific committees

### Scientific, technical and/or assessment committees

- 1 Committee title:** LIBRO BLANCO: DESAFIOS CIENTIFICOS EN TEMÁTICAS ESTRATÉGICAS CSIC 2030  
**Affiliation entity:** CSIC  
**Start date:** 2019
- 2 Committee title:** European coordinator for international Space Omics forums (GeneLab/ISSOP)  
**Geographical area:** Non EU International  
**Primary (UNESCO code):** 241500 - Molecular biology  
**Secondary (UNESCO code):** 251201 - Exobiology  
**Affiliation entity:** European Space Agency  
**Start date:** 2017
- 3 Committee title:** Plant Biology as part of ESA Roadmaps for 2019-2024 and 2024-2029  
**Geographical area:** European Union  
**Primary (UNESCO code):** 241700 - Plant Biology (Botany)  
**Secondary (UNESCO code):** 251201 - Exobiology  
**Affiliation entity:** European Space Agency **Type of entity:** State agency  
**City affiliation entity:** Noordwijk, Zuid-Holland, Holland  
**Start date:** 2016



- 4** **Committee title:** Plant Biology in Space Topical Team  
**Geographical area:** European Union  
**Primary (UNESCO code):** 241700 - Plant Biology (Botany)  
**Secondary (UNESCO code):** 251201 - Exobiology  
**Affiliation entity:** European Space Agency **Type of entity:** State agency  
**City affiliation entity:** Noordwijk, Zuid-Holland, Holland  
**Start date:** 2011

## Organization of R&D activities

- 1** **Title of the activity:** First Space Omics Topical Team meeting  
**Type of activity:** Workshop **Geographical area:** European Union  
**City of event:** Lisbon, Portugal  
**Convening entity:** Centro de Investigaciones Biológicas (CSIC) funded by ESA  
**City convening entity:** Madrid, Spain  
**Type of participation:** Organiser  
**N° assistants:** 12  
**Start-End date:** 07/09/2022 - 08/09/2022 **Duration:** 2 days
- 2** **Title of the activity:** Bimonthly Virtual Meetings Space Omics Topical Team  
**Type of activity:** International Scientific Meeting **Geographical area:** European Union  
**City of event:** Virtual,  
**Convening entity:** CIB (CSIC)  
**City convening entity:** Madrid, Spain  
**Type of participation:** Organiser  
**N° assistants:** 20  
**Start-End date:** 2020 - 2022 **Duration:** 3 years
- 3** **Title of the activity:** First Intermediate Meeting Access to ground based facilities project GIA”  
**Type of activity:** International Scientific Meeting **Geographical area:** European Union  
**City of event:** Madrid, Spain  
**Convening entity:** Centro de Investigaciones Biológicas **Type of entity:** State agency  
**City convening entity:** Madrid, Spain  
**Type of participation:** Organiser  
**N° assistants:** 12  
**Start-End date:** 17/10/2012 - 18/10/2012 **Duration:** 2 days
- 4** **Title of the activity:** Second Intermediate Meeting Access to ground based facilities project SEGMSPE\_Ph1”  
**Type of activity:** International Scientific Meeting **Geographical area:** European Union  
**City of event:** Madrid, Spain  
**Convening entity:** Centro de Investigaciones Biológicas **Type of entity:** State agency  
**City convening entity:** Madrid, Spain  
**Type of participation:** Organiser  
**N° assistants:** 12  
**Start-End date:** 08/05/2011 - 10/05/2011 **Duration:** 3 days



- 5 Title of the activity:** Kick Off Meeting Access to ground based facilities project SEGMGSPE\_Ph1”  
**Type of activity:** International Scientific Meeting      **Geographical area:** European Union  
**City of event:** Cologne, Germany  
**Convening entity:** DLR (European Space Agency)      **Type of entity:** State agency  
**City convening entity:** Cologne, Germany  
**Type of participation:** Organiser  
**N° assistants:** 12  
**Start-End date:** 08/06/2009 - 10/06/2009      **Duration:** 3 days

## R&D management

- 1 Name of the activity:** Member of the Research Center Council  
**Type of management:** Management of body  
**Performed tasks:** Delegate of Hired Staff Researchers  
**Entity:** Consejo Superior de Investigaciones Científicas      **Type of entity:** State agency  
**Start date:** 2019      **Duration:** 4 years  
**Access system:** By vote among several candidates  
**Specific tasks:** Report Staff demands to the Center Director
- 2 Name of the activity:** Biochemistry Department Council member  
**Type of management:** Programme management  
**Performed tasks:** Delegate of the PhD students and Research assistants  
**Entity:** Universidad Autónoma de Madrid      **Type of entity:** University  
**Start date:** 2001      **Duration:** 2 years  
**Access system:** By vote among several candidates

## Other achievements

### Stays in public or private R&D centres

- 1 Entity:** Universidad Autónoma de Madrid (UAM)  
**Faculty, institute or centre:** Facultad de Medicina  
**Start-End date:** 20/01/2004 - 15/05/2009      **Duration:** 2 years - 6 months  
**Goals of the stay:** Post-doctoral  
**Provable tasks:** Postflight analyses of the Cervantes Mission experiments (GENE & AGING)  
**Relevant results:** Multiple publications reflects the research activities performed during this stay (the 32 months of this postdoctoral stay at UAM are divided in 3 periods interrupted by other stays at HW and ESTEC)
- 2 Entity:** European Space Research & Technology Centre ESTEC-ESA  
**Faculty, institute or centre:** TEC-MMG Department  
**City of entity:** Noordwijk, Holland  
**Start-End date:** 04/2008 - 08/2008      **Duration:** 5 months  
**Funding entity:** MINISTERIO DE EDUCACION Y CIENCIA  
**Name of programme:** Estancia de Especialización en organismos Internacionales.  
**Goals of the stay:** Post-doctoral  
**Provable tasks:** Optimization of new GBF (LDC and RPM) to be used by the biologist research community.



**Relevant results:** 2-years Spanish trainee position at the European Space Agency awarded within the Specialization in Singular Research Facilities and International Organisms” action of the Spanish government that allows both Pre-Doc and Post-Doc candidates to work in European Singular Research Facilities including the European Space Agency, EMBL, CERN, etc...The stay was suddenly interrupted due to the award of a higher responsibility 3-year research position in Spain to supervise and extend the same research line from Spain).

- 3** **Entity:** Free University of Amsterdam  
**Faculty, institute or centre:** DESC  
**City of entity:** Ámsterdam, Holland  
**Start-End date:** 12/2007 - 12/2007 **Duration:** 14 days  
**Goals of the stay:** Guest  
**Provable tasks:** Additional GBF control experiments for the GENE experiment from the cervantes mission.  
**Relevant results:** This stay was performed previously and independently of the GBF projects indicated elsewhere.
- 4** **Entity:** Nottingham University  
**Faculty, institute or centre:** Biosciences department  
**City of entity:** Nottingham, United Kingdom  
**Start-End date:** 10/2007 - 11/2007 **Duration:** 1 month - 7 days  
**Goals of the stay:** Guest  
**Provable tasks:** GBF experiments using the magnetic levitation facility  
**Relevant results:** This stay was performed previously and independently of the GBF projects indicated elsewhere.
- 5** **Entity:** Healthworld Spain (An ogilvy group international company)  
**Faculty, institute or centre:** Scientific/Medical department  
**City of entity:** Las Rozas, Spain  
**Start-End date:** 16/05/2005 - 26/07/2007 **Duration:** 2 years - 2 months - 11 days  
**Goals of the stay:** Contracted  
**Provable tasks:** Contracted researcher to perform bibliographical research, consultant activity and writing of scientific/educational materials for pharmaceutical companies (targetting doctors, pharmaceuticals, marketing, patients...)  
**Relevant results:** My job in this company included a strong research component finding bibliographical benefits of the products and generating scientific didactical materials of top-quality. It was already considered to fulfill the movility criteria (equivalent to a Stay in a I+D center) to obtain my JAE-Doc contract.
- 6** **Entity:** Free University of Amsterdam  
**Faculty, institute or centre:** DESC  
**City of entity:** Ámsterdam, Holland  
**Start-End date:** 05/2004 - 06/2004 **Duration:** 1 month - 15 days  
**Goals of the stay:** Guest  
**Provable tasks:** GBF control experiments of the GENE experiment  
**Relevant results:** This stay was performed previously and independently of the GBF projects indicated elsewhere. Realización de experimentos control de la misión Cervantes. Utilización de sistemas de simulación de microgravedad e hipergravedad (Random Position Machine y centrifugas de hipergravedad) bajo la supervisión del Ing. Dr. Van Loon, Director del User Support Operation Center (USOC) holandés
- 7** **Entity:** Universidad Autónoma de Madrid **Type of entity:** University  
**Faculty, institute or centre:** Biochemistry Dep. (Medicine Fac.)  
**City of entity:** Madrid, Spain  
**Start-End date:** 01/11/1999 - 19/01/2004 **Duration:** 4 years - 3 months - 19 days



**Goals of the stay:** Doctorate

**Provable tasks:** PhD Thesis research activities

- 8** **Entity:** Centro de Investigaciones Biológicas (CSIC)  
**Start date:** 16/05/2009 **Duration:** 10 years - 2 months  
**Funding entity:** Consejo Superior de Investigaciones Científicas (CSIC)  
**Name of programme:** JAE Posdoctoral contracts  
**Goals of the stay:** Post-doctoral  
**Relevant results:** Publication of Drosophila pending results and transfer of my expertise as Drosophila space biologist to Arabidopsis model organism
- 9** **Entity:** European, Russian and USA space related institutions  
**Funding entity:** ESA GBF & Spanish Plan Nacional Project  
**Goals of the stay:** Short Trips  
**Provable tasks:** Ground Based or Spaceflight experiments meetings  
**Relevant results:** More than 15 short stays (<1 week) starting with my participation in the Cervantes" mission to the International Space Station (October 2003 in Star City (Moscow)), to Ground Based Facilities in UK (Nottingham), Netherlands (ESTEC, Noordwijk), Germany (DLR, Bonn) & France (GSBMS, Toulouse), as well as the ESA facilities in Trondheim (simulation of ISS EMCS N-USOC, Norway) and our collaborator Dr. Kiss lab at Miami University (Oxford, OH y Oxford, MS, USA)

## Obtained grants and scholarships

- 1** **Name of the grant:** Contrato JAE-DOC para la reincorporación de doctores al tejido investigador español / to recover Spanish researchers and integrate them into the Spanish Research Public System.  
**Aims:** Post-doctoral  
**Awarding entity:** Consejo Superior de Investigaciones Científicas (CSIC)  
**Conferral date:** 01/09/2008 **Duration:** 3 years  
**Entity where activity was carried out:** Centro de Investigaciones Biológicas
- 2** **Name of the grant:** Beca de Especialización en Organismos Internacionales / Spanish Trainee positions at ESA  
**Aims:** Post-doctoral  
**Awarding entity:** Ministerio de Ciencia e Innovación. Investigación  
**Conferral date:** 01/04/2008 **Duration:** 2 years  
**Entity where activity was carried out:** European Space Agency  
**Faculty, institute or centre:** Dpto. TEC-MMG (Life and Physical Science Instrumentation Section)
- 3** **Name of the grant:** Beca de Formación de Personal Investigador  
**Aims:** Pre-doctoral  
**Awarding entity:** Ministerio de Ciencia e Innovación. Investigación  
**Conferral date:** 01/06/2000 **Duration:** 4 years  
**Entity where activity was carried out:** Universidad Autónoma de Madrid  
**Faculty, institute or centre:** Departamento de Bioquímica Fac. Medicina
- 4** **Name of the grant:** Beca de especialización de líneas de interés industrial CSIC-NTE Puesta a punto de una Unidad de cultivo de Drosophila para la ISS"  
**Aims:** Pre-doctoral  
**Awarding entity:** Consejo Superior de Investigaciones Científicas - NTE SL  
**Conferral date:** 01/11/1999 **Duration:** 1 year  
**Entity where activity was carried out:** Universidad Autónoma de Madrid



**Faculty, institute or centre:** Instituto de Investigaciones Biomédicas Alberto Sols

## Other types of collaboration with researchers or technologists

### 1 **Type of relationship:** Joint project networks

**Name principal investigator (PI, Co-PI....):** Ann-Iren Kittang; Tor-Henning Iversen; Raul Herranz; Javier Medina; Christian Mazars; Veronica Pereda; Elodie Boucheron; Eugenie Carnero; Knut Fossum

**Description of the collaboration:** European Space Agency Topical Team "Arabidopsis Space Biology"

**Participating entity/entities:**

Universite Pierre et Marie Curie

**Type of entity:** University Department

**City participating entity:** Paris, France

Universite Paul Sabatier

**Type of entity:** University Department

**City participating entity:** Toulouse, France

Centro de Investigaciones Biológicas

**Type of entity:** State agency

**City participating entity:** Madrid, Community of Madrid, Spain

CIRiS, NTNU Samfunnsforskning a.s

**Type of entity:** Technological Centre

**City participating entity:** Trondheim, Norway

**Start date:** 01/01/2012

**Duration:** 2 years

### 2 **Type of relationship:** Participation in long term collaboration agreements between bodies

**Name principal investigator (PI, Co-PI....):** John Z. Kiss (University of Mississippi, MS USA); Richard Edelmann (Miami University, OH USA); Eugenie Carnero-Diaz (University Paris VI, FRANCE); Christian Mazars (University Toulouse, FRANCE); Ann-Iren Kittang (CIRIS-NTNU Trondheim University, NORWAY); Julio Saez-Vasquez (University Perpignan, FRANCE)

**Description of the collaboration:** Share of materials and joint SPACE proposals

**Start date:** 2008

### 3 **Type of relationship:** Confirmed publications

**Name principal investigator (PI, Co-PI....):** Alberto Benguría (CNIC, Spain); Irene Lopez-Vidriero (CNB, Spain); Juana M<sup>a</sup> Gonzalez-Rubio (IQFR-CSIC, Spain); Emilio de Juan (Alicante University, Spain)

**Description of the collaboration:** Collaboration in flight experiment post-analyses

**Start date:** 2003

### 4 **Type of relationship:** Co-ordinated projects

**Name principal investigator (PI, Co-PI....):** Richard Hill (Magnet Nottingham University, UK); Peter Christianen (Magnet HFML, Netherlands); Veronica Pereda (GSBMS GBFs, FRANCE); Ruth Hemmersbach (DLR GBFs, Germany); Jack van Loon (DESC GBFs, Netherland)

**Description of the collaboration:** European Ground Based Facilities management

**Start date:** 2003

## Scientific societies and professional associations

- 1 Name of the society:** Member  
**Affiliation entity:** Sociedad Española de Biología Celular (SEBC)  
**Start-End date:** 2011 - 2013
- 2 Name of the society:** Member  
**Affiliation entity:** Genetic Society of America (GSA)  
**Start-End date:** 2004 - 2005
- 3 Name of the society:** Member  
**Affiliation entity:** Sociedad Española de Fisiología Vegetal (SEFV)  
**Start date:** 2019
- 4 Name of the society:** Member  
**Affiliation entity:** European Low-Gravity Research Association (ELGRA)  
**Start date:** 2009
- 5 Name of the society:** Member  
**Affiliation entity:** International Society of Gravitational Physiology (ISGP)  
**Start date:** 2002

## Editorial councils

- 1 Name of the editorial council:** International Journal reviewer  
**Affiliation entity:** Frontiers in Plant Science  
**Start date:** 2019
- 2 Name of the editorial council:** International Journal reviewer  
**Affiliation entity:** American Journal of Botany  
**Start date:** 2018
- 3 Name of the editorial council:** International Journal reviewer  
**Affiliation entity:** Plant Science  
**Start date:** 2018
- 4 Name of the editorial council:** International Journal reviewer  
**Affiliation entity:** Frontiers in Astronomy and Space Sciences  
**Start date:** 2016
- 5 Name of the editorial council:** International Journal reviewer  
**Affiliation entity:** Biomed Research International (Hindawi Publishing Corporation)  
**Geographical area:** Non EU International  
**Start date:** 2014
- 6 Name of the editorial council:** International Journal reviewer  
**Affiliation entity:** The Plant Genome  
**Geographical area:** Non EU International





**Start date:** 2014

- 7** **Name of the editorial council:** International Journal reviewer  
**Affiliation entity:** Advances in Space Research  
**Start date:** 2013
- 8** **Name of the editorial council:** International Journal reviewer  
**Affiliation entity:** Plant Biology  
**Start date:** 2013
- 9** **Name of the editorial council:** Genomics Editorial Board member  
**Affiliation entity:** The Scientific World Journal (Hindawi Publishing Corporation)  
**Geographical area:** Non EU International  
**Start date:** 2012
- 10** **Name of the editorial council:** International Journal reviewer  
**Affiliation entity:** Molecular Ecology  
**Start date:** 2010
- 11** **Name of the editorial council:** Editorial Board member  
**Affiliation entity:** Boletín VIH (Healthworld Spain)  
**Geographical area:** National  
**Start date:** 2006 **Duration:** 2 years

### Prizes, mentions and distinctions

- 1** **Description:** First ELGRA Gravity Spotlight Team Award: SEEDLING GROWTH  
**Awarding entity:** European Low Gravity Research Association **Type of entity:** Associations and Groups  
**Conferral date:** 2019  
**Recognition linked:** To ELGRA members of SG Research team: Dr. Medina, Dr. Kiss, Dr. Carnero and Dr. Herranz
- 2** **Description:** NASA Honor Awards: Group Achievement Award to SEEDLING GROWTH  
**Awarding entity:** National Aeronautics and Space Administration **Type of entity:** State agency  
**Conferral date:** 2019  
**Recognition linked:** Nominative to each of the SG Research members

### Obtained accreditations/recognitions

- 1** **Description:** Chair for Space Omics Session (27th ELGRA Biennial symposium and General assembly 2022)  
**Accrediting entity:** European Low Gravity Research Association)  
**City accrediting entity:** Lisbon, Portugal  
**Date of recognition:** 09/09/2022



- 2** **Description:** Chair for F4.2: Influence of Spaceflight Environments on Biological Systems Panel (4 sessions at 44th COSPAR Scientific Assembly 2022))  
**Accrediting entity:** COSPAR  
**City accrediting entity:** Athens, Greece  
**Date of recognition:** 20/08/2022
- 3** **Description:** Superación de Ejercicios Investigador Distinguido CSIC 2019 (Sistemas evolutivos y complejidad en Astrobiología)  
**Accrediting entity:** Centro de Astrobiología (CSIC)  
**Date of recognition:** 11/11/2019
- 4** **Description:** Acreditación I3 como Investigador Distinguido / Habilitation I3 as Tenure-track Researcher  
**Accrediting entity:** Ministerio de Innovación y Ciencia. Agencia Estatal de Investigación  
**Date of recognition:** 29/07/2019
- 5** **Description:** Superación de Ejercicios proceso selectivo para Científico Titular OPIs 2014 y 2015 (Ciencia y Tecnología en Sistemas Aeroespaciales)  
**Accrediting entity:** INTA/CSIC  
**Date of recognition:** 30/05/2016
- 6** **Description:** Acreditación como Profesor Univ. Privada y Contratado Doctor / Habilitation as Private University and Associated Doctor Professor  
**Accrediting entity:** Agencia Nacional de Evaluación de la Calidad y Acreditación  
**Date of recognition:** 07/2010

### Summary of other achievements

- 1** **Description of the achievement:** Database Submission. GLDS 313 (18 + 44 pendientes) & GLDS 314 (17 samples). RNAseq analysis of Arabidopsis thaliana root response to red light in microgravity and partial gravity (SEEDLING GROWTH).  
**Accrediting entity:** GENELAB (NASA microarray/RNAseq repository)  
**Conferral date:** 2019
- 2** **Description of the achievement:** Database Submission. GLDS-251 (20 samples) & GLDS 346 (24 samples). RNAseq analysis of Arabidopsis thaliana root response to blue light in microgravity and partial gravity (SEEDLING GROWTH).  
**Accrediting entity:** GENELAB (NASA microarray/RNAseq repository)  
**Conferral date:** 2019
- 3** **Description of the achievement:** Database Submission. GLDS-144 (24 samples). Gravitational signature of synchronized cell cultures in particular cell cycle stages  
**Accrediting entity:** GENELAB (NASA microarray/RNAseq repository)  
**Conferral date:** 23/08/2014
- 4** **Description of the achievement:** Database Submission. GLDS-34 (50 samples). Environmental and simulation facility conditions can modulate a behavioral-driven altered gravity response of Drosophila imagoes transcriptome  
**Accrediting entity:** GENELAB (NASA microarray/RNAseq repository)  
**Conferral date:** 26/06/2013



- 5** **Description of the achievement:** Database Submission. GLDS-70 (90 samples). Environmental and facility conditions promote singular gravity responses of transcriptome during *Drosophila* metamorphosis  
**Accrediting entity:** GENELAB (NASA microarray/RNAseq repository)  
**Conferral date:** 26/01/2013
- 6** **Description of the achievement:** Database Submission. GLDS-8 (40 samples). An environment with strong gravitational and magnetic field alterations synergizes to promote variations in *Arabidopsis thaliana* callus global transcriptional state  
**Accrediting entity:** GENELAB (NASA microarray/RNAseq repository)  
**Conferral date:** 01/01/2012
- 7** **Description of the achievement:** Database Submission. GLDS-27 (54 samples). Transcription profiling of *Drosophila* exposed to a levitation magnet for different lengths of time  
**Accrediting entity:** GENELAB (NASA microarray/RNAseq repository)  
**Conferral date:** 01/07/2010
- 8** **Description of the achievement:** Database Submission. GLDS-36 (21 samples). Transcription profiling of *Drosophila* after exposure to microgravity in the International Space Station and in a microgravity simulator  
**Accrediting entity:** GENELAB (NASA microarray/RNAseq repository)  
**Conferral date:** 01/07/2010
- 9** **Description of the achievement:** Database Submission. 46 new sequences or annotations (Troponin nucleotides)  
**Accrediting entity:** NCBI (National Center for Biotechnology Information)  
**Conferral date:** 2010
- 10** **Description of the achievement:** Database Submission. 80 new sequences or annotations (Troponin proteins)  
**Accrediting entity:** NCBI (National Center for Biotechnology Information)  
**Conferral date:** 2010