

**Marie Skłodowska-Curie Actions (MSCA)
Innovative Training Networks (ITN)
H2020-MSCA-ITN-2017**

spinner
next generation spine experts

**SPINe: Numerical and Experimental Repair Strategies
Final Event (NWE6)
Tuesday, 23rd November 2021
Teleconference**



This project has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement No 766012



Agenda

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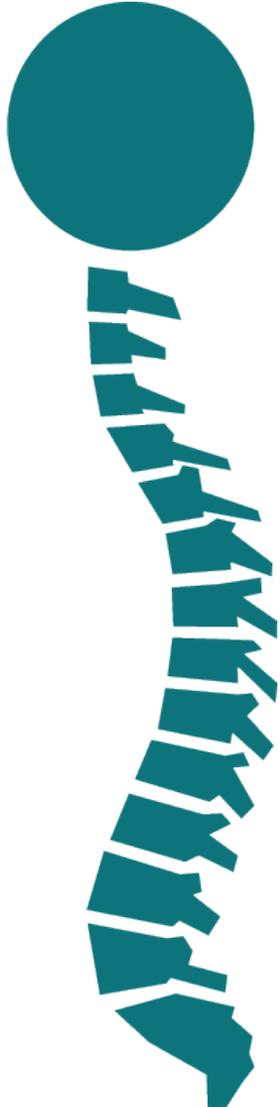


GMT	CET	Ref	Chair	Agenda Item	Responsibility	
09:00	10:00	NWE6-01	Gwen Reilly, USFD	Welcome and Introduction to Spinner	Gwen Reilly, USFD	
09:10	10:10	NWE6-02		Future of Spine Surgery and the Bridge Between Surgeons and Engineers	Áron Lazáry (& Team), NCS	
09:50	10:50	NWE6-03		ESR1: <i>Establishing optimal substitution degrees of hydroxyapatite [HAP] with magnesium and strontium using experimental and statistical tools</i>	Denata Sylva, USFD/Finceramica	
10:20	11:20	Break				
10:25	11:25	NWE6-04	Áron Lazáry, NCS	ESR2: <i>Development of Osteoinductive Coatings for Spinal Implants (Fusion Cages)</i>	Jose Rodrigues USFD/Finceramica	
10:55	11:55	NWE6-05		ESR3: <i>Percutaneous Cement Discoplasty [PCD]: biomechanical and clinical assessment of a minimally invasive treatment of intervertebral disc disease</i>	Chloé Techens, UniBo/NCS	
11:25	12:25	Coffee Break				
11:35	12:35	NWE6-06	Fred Claeysens, USFD	The role of <i>ex vivo</i> testing to investigate spine biomechanics and to improve spine treatments	Luca Cristofolini, UniBo	
11:55	12:55	NWE6-07		Bypassing numerical simulations: deep learning perspectives in vertebrae modeling	Kateryna Bashtova, ADAGOS	
12:15	13:15	Lunch				
13:10	14:10	NWE6-08	Luca Cristofolini, UniBo	Biomaterial Perspective on the Future of Spine Surgery	Finceramica Team	
13:30	14:30	NWE6-09		Advanced mesh morphing for the definition of reduced order models and digital twins	Marco Biancolini, rbf-morph	
13:50	14:50	Coffee Break				
14:00	15:00	NWE6-10	Enrico Dall'Ara, USFD	ESR4: <i>Sagittal stability: movement analysis before and patient motion after spinal treatments</i>	Jennifer Fayad, UniBo/NCS	
14:30	15:30	NWE6-11		ESR5: <i>Modelling for Spinal Surgeries</i>	Marco Sensale, Ansys/USFD	
15:00	16:00	End				



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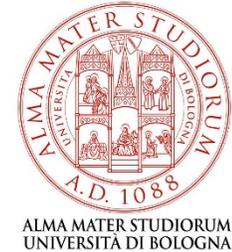
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Spinner Partners



- University of Sheffield – **USFD**
- University of Bologna – **UNIBO**
- **Finceramica** (Faenza, Italy)
- National Centre for Spine Disorders (Budapest, Hungary) - **NCSD**
- **ANSYS** – Lyon, France
- **ADAGOS** – Toulouse, France
- **AESCULAP** – Tuttlingen, Germany
- **rbf-morph** – Rome, Italy (new partner) **(rbf-morph)**TM



NATIONAL CENTER FOR SPINAL DISORDERS





Project Personnel

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Name		Institution	Role
Gwen Reilly	GR	University of Sheffield (USFD)	Coordinator
Fred Claeysens	FC	University of Sheffield (USFD)	ESR2 Supervisor
Enrico Dall'Ara	ED	University of Sheffield (USFD)	ESR5 Supervisor
Lingzhong Guo	LG	University of Sheffield (USFD)	ESR6 Supervisor
Damien Lacroix	DL	University of Sheffield (USFD)	Co-investigator
Claudia Mazzà	CM	University of Sheffield (USFD)	WP6 Leader
Norman Powell	NP	University of Sheffield (USFD)	Project Manager
Luca Cristofolini	LC	University of Bologna (UniBo)	ESR3 Supervisor
Rita Stagni	RS	University of Bologna (UniBo)	ESR4 Supervisor
Claudio De Luca	CD	Finceramica	ESR1/2 Supervisor
Lucia Forte	LF	Finceramica	ESR1/2 Supervisor
Laura Grillini	LGr	Finceramica	ESR1/2 Supervisor
Riccardo Bendoni	RB	Finceramica	ESR1/2 Supervisor
Áron Lazáry	AL	National Center for Spine Disorders	ESR3/4 Supervisor
Peter Eltes	PE	National Center for Spine Disorders	ESR3/4 Supervisor
Michel Rochette	MR	ANSYS	ESR5 Supervisor
Mohamed Masmoudi	MM	ADAGOS	ESR6 Supervisor
Kateryna Bashtova	KB	ADAGOS	ESR6 Supervisor
Christoph Schilling	CS	AESCULAP	AESCULAP Rep.
Thomas Grupp	TG	AESCULAP	AESCULAP Rep.
Marco Biancolini	MB	rbf-morph	ESR5 Supervisor



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Advisory Board

Gábor Szenczi	Sarrawat Rehman	Stephen Ferguson	Maria-Angeles Perez Anson	Cesare Faldini
Sanatmetal Ltd.	Ortheia	ETH Zurich	University of Zaragoza	University of Bologna



Spinner Fellows

Advisory Board 7
Tuesday, 2nd March 2020
Teleconference

ESR1: Denata Sylva



Nationality: Austrian

Recruiting Institution:  The University of Salzburg

Academic Institution:  The University of Salzburg

Industrial Institution:  Fincermica



Osteoinductive injectable/
mouldable bone graft
substitute for spine repair

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ESR3: Chloé Techens



Nationality: French

Recruiting Institution:  University of Burgundy

Academic Institution:  University of Burgundy

Industrial Institution:  University of Burgundy



Integration of clinical
experience and *in vitro*
biomechanical testing to
improve spinal augmentation

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ESR4: Jennifer Fayad



Nationality: Lebanese

Recruiting Institution:  University of Burgundy

Academic Institution:  University of Burgundy

Industrial Institution:  University of Burgundy



Sagittal stability: movement
analysis before and patient
motion after spinal treatments

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ESR2: José Rui Rodrigues



Nationality: Portuguese

Recruiting Institution:  The University of Salzburg

Academic Institution:  The University of Salzburg

Industrial Institution:  Fincermica



Development of
osteoinductive coatings for
spinal implants (fusion cages)

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ESR5: Marco Sensale



Nationality: Italian

Recruiting Institution:  ANSYS

Academic Institution:  The University of Salzburg

Industrial Institution:  ANSYS



Modelling spinal surgical
procedures

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Tuesday, 2nd March 2020
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ESR6: Cameron James



Nationality: British

Recruiting Institution:  ADAGOS

Academic Institution:  The University of Salzburg

Industrial Institution:  ADAGOS



Statistical shape modelling
and reduced order modelling
techniques for patient-
specific models

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Objectives of Spinner

- 1) Training of orthopaedic Bioengineers capable of integrating *in vitro*, *ex vivo* and *in silico* data across scales for a holistic approach to spine reconstruction.
- 2) Development of bioactive, bioresorbable, mechanically competent materials for restoration of the vertebral bone and stable fusion.
- 3) Mechanical characterisation of implant materials and reconstructed spines *in vitro* and *in silico*.
- 4) Integrated, user-friendly, *in silico* models of the mechanics of damaged and reconstructed spinal segments that can be used for predictive design, patient specific analysis and surgical navigation.



Our six spinner subprojects

WP	ESR		Involvement					
			USFD	UNIBO	NCSD	FINCERAMIC	ANSYS	ADAGOS
WP2 Biomaterials	1	Denata Sylva	Doctoral			S		
	2	José Rodrigues	Doctoral			S		
WP3 Clinical Biomechanics	3	Chloé Thechens		Doctoral	S			
	4	Jennifer Fayad		Doctoral	S			
WP4 In silico Biomechanics	5	Marco Sensale	Doctoral				Recruiting	
	6	Cameron James	Doctoral					Recruiting



EU Mobility

Denata (from Austria)
José (from Portugal)



Chloé (from France)
Jennifer (from Lebanon)



Cameron (from UK)
Marco (from Italy)

