

Society for Muscle Biology

Frontiers in Myogenesis Conference

“Skeletal muscle: development, regeneration and disease”

Los Suenos Marriott Ocean and Golf Resort

Herradura, Costa Rica

November 15th-19th 2021

PROGRAM BOOK

Organizers

Elizabeth Chen

(UT Southwestern, Dallas, USA)

Rita Perlingeiro

(University of Minnesota, Minneapolis, USA)

Francesco Saverio Tedesco

(University College London & The Francis Crick Institute, UK)

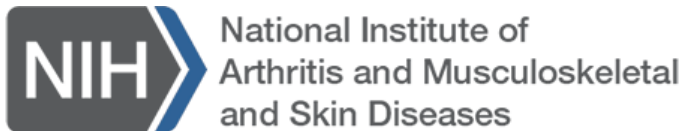
Executive Officer: Alessandra Sacco (SMB, USA)

ACKNOWLEDGEMENTS

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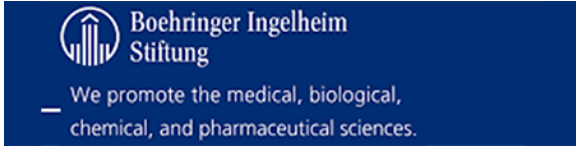
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Society for Muscle Biology

Frontiers in Myogenesis Conference

“Skeletal muscle: development, regeneration and disease”

Organizers: Elizabeth Chen, Rita Perlingeiro, Francesco Saverio Tedesco

Los Suenos Marriott, Herradura, Costa Rica

November 15th-19th 2021

Meeting Registration: Playa Escondida Room Plenary Sessions: Playa Herradura Room

Bold italics: Program Abstract # (please see full abstracts in Abstracts Book)

Poster session assignments are listed at the end of the Program

Times are indicated in local Costa Rica time (Central Time Zone)

Monday, November 15

2:00pm – 6:00pm Meeting Registration – Playa Escondida Room
Poster Session 1 set-up

4:00pm Housing Check-in

6:00pm – 7:30pm Dinner

7:30pm – 7:40pm Welcome Introduction – Conference Organizers
Elizabeth Chen, Rita Perlingeiro and Francesco Saverio Tedesco

7:40pm – 8:40pm **Keynote lecture – Thomas Braun** – Max-Planck-Institute for Heart and Lung Research, Germany
“Stem cell plasticity and organ regeneration”

8:40pm – 10:00pm Opening Reception

Tuesday, November 16

7:00am – 8:30am Breakfast

8:30am – 10:00am **Session 1 – Skeletal muscle development (I)**

Chair: Krzysztof Jagla – INSERM, University of Clermont, Clermont-Ferrande, France

Co-Chair: Joana Esteves de Lima – INSERM, Paris, France

8:30am – 9:00am **Christophe Marcelle** – Institut NeuroMyogène, Claude Bernard University
Lyon, France

1

“Molecular control of myoblast fusion in avian embryos”

9:00am – 9:15am **Elizabeth Sefton** – University of Utah, USA

2

“Development of the mammalian diaphragm and the origin of Congenital Diaphragmatic Hernias (CDH)”

9:15am – 9:45am **Erika Geisbrecht** – Kansas State University, USA

3

“Mechanisms contributing to abnormal protein aggregation in Drosophila muscle”

9:45am – 10:00am **Szu-Chieh Mei** – UT Southwestern, USA

4

“The Molecular and Cellular Regulation of the Zebrafish Fusogenic Synapse”

10:00am – 10:30am Coffee Break

10:30am – 12:00pm **Session 2 – Skeletal muscle development (II)**

Chair: Erika Geisbrecht – Kansas State University, Manhattan, USA

Co-Chair: Sarah Nahle – Institut de Recherches Cliniques de Montréal, Montréal, Canada

10:30am – 11:00am **Douglas Millay** – Cincinnati Children’s Hospital, USA

5

“Insights Into the Activities of Myomaker and Myomerger”

11:00am – 11:15am **Pengpeng Bi** – University of Georgia, USA

6

“Evolution of a chordate-specific mechanism for myoblast fusion”

11:15am – 11:30am **Ori Avinoam** – Weizmann Institute, Israel

7

“CaMKII activation in myotubes is essential for myoblast-to-myotube fusion”

11:30am – 12:00pm **Peter Currie** – Australian Regenerative Medicine Institute, Monash University, Australia (Virtual)
8
“Muscle growth mechanisms and growth specific muscle stem cell compartments across the vertebrate phylogeny”

12:00pm – 1:30pm **Lunch and Meet the Speakers**

1:30pm – 3:30pm **Session 3 – Muscle stem cell regulation (I)**
Chair: Philippos Mourikis – IMRB, Paris, France
Co-Chair: Amanda Morales – Tecnológico de Costa Rica, Cartago, Costa Rica

1:30pm – 2:00pm **Alessandra Sacco** – Sanford Burnham Prebys Institute, USA
9
“Muscle stem cell dynamics during tissue growth and repair”

2:00pm – 2:30pm **Robert Krauss** – Icahn School of Medicine at Mount Sinai, USA
10
“Regulation of the satellite cell quiescence by niche cadherins”

2:30pm – 2:45pm **Foteini Mourkioti** – University of Pennsylvania, USA
11
“Mechanistic regulation of novel specialized properties of muscle stem cells”

2:45pm – 3:00pm **Alicia Cutler** – University of Colorado Boulder, USA
12
“FGF signaling in MuSCs attenuates skeletal muscle aging”

3:00pm – 3:30pm **Tom Cheung** – Hong Kong University of Science and Technology, Hong Kong (Virtual)
13
“Deciphering molecular mechanisms that control muscle stem cell quiescence exit”

3:30pm – 3:45pm **Poster Blitz Session 1**
47 Sarah Nahle – *Evidence of fusogene-based myocyte diversity during embryonic myogenesis in the mouse*
45 Alexie Larson – *Estradiol influences cell cycle progression of muscle satellite cells*
46 Margaret Hung – *The Roles of α -, β -, and γ -catenins in Satellite Cell Regulation*
50 Matthew Penna – *The role of Limch1 alternative splicing in skeletal muscle function*
49 Stephanie Oprescu – *Sox11 Function in Muscle Stem Cells*

3:45pm – 4:15pm Coffee Break

4:15pm – 5:15pm **Professional Development Workshop I – Grant Application**

Led by Elizabeth Chen and Francesco Saverio Tedesco

6:00pm – 7:30pm Dinner

7:30pm – 10:00pm **Poster Session 1**

10:00pm Poster Session 1 tear-down

Wednesday, November 17

7:00am – 8:30am Breakfast
Poster Session 2 set-up

8:30am – 10:00am **Session 4 – Muscle stem cell regulation (II)**
Chair: Fabien LeGrand – Institut NeuroMyoGène, Lyon, France
Co-Chair: Matthew Penna – Baylor College of Medicine, Houston, USA

8:30am – 9:00am **Jeff Dilworth** – Ottawa Hospital Research Institute, University of Ottawa, Canada
14
“Epigenetic transduction of injury signals allow satellite cells to communicate with the regenerative muscle environment”

9:00am – 9:30am **Pura Munoz-Canoves** – Pompeu-Fabra University, Spain
15
“Cellular senescence controls skeletal muscle regeneration in young and old mice”

9:30am – 9:45am **Allison Kann** – Icahn School of Medicine at Mount Sinai, USA
16
“Rho/ROCK-mediated mechanotransduction drives activation of muscle stem cells”

9:45am – 10:00am **Dawn Cornelison** – University of Missouri, USA
17
“Wnt5b is a satellite cell motogen and chemoattractant expressed by resident fibro-adipogenic precursor cells”

10:00am – 10:30am Coffee Break

10:30am – 12:15pm **Session 5 – Epigenetic regulation of skeletal muscle**
Chair: Andrea Ulloa Fernandez – Tecnológico de Costa Rica, Cartago, Costa Rica
Co-Chair: Chiara Nicoletti – Sanford Burnham Prebys Medical Discovery Institute, San Diego, USA

10:30am – 11:00am **Pier Lorenzo Puri** – Sanford Burnham Prebys Institute, USA

18	<i>"Decrypting 3D chromatin interactions that regulate gene expression in skeletal muscle cells"</i>
11:00am – 11:30am	Fred Relaix – Paris Est-Creteil University, France
19	<i>"Insights into molecular pathways that impair skeletal muscle stem cell function in Duchenne muscular dystrophy"</i>
11:30am – 11:45am	Rae Cho – Salk Institute, USA
20	<i>"Caspase-mediated nuclear pore complex trimming drives myogenesis by changing MBD2 genome-binding landscape"</i>
11:45am – 12:00pm	Michael Phelps – Washington State University, USA
21	<i>"Epigenetic repression of myogenesis by the HDAC3/NCOR repressor complex"</i>
12:00pm – 12:15pm	Alessandro Magli – University of Minnesota, USA
22	<i>"Transcriptional and epigenetic networks underlying specification of diaphragm myogenic progenitors during development"</i>
12:15pm – 1:45pm	Lunch and Meet the Speakers
1:45pm – 3:15pm	Session 6 – Muscle metabolism and cancer Chair: Genevieve Kendall – Nationwide Children's Hospital and The Ohio State University, Columbus, USA Co-Chair: Sarah Danielli – University Children's Hospital of Zürich, Zürich, Switzerland
1:45pm – 2:15pm	Charles Keller – Children's Cancer Therapy Development Institute, USA
23	<i>"SMARCA4 temporal biology in alveolar rhabdomyosarcoma"</i>
2:15pm – 2:45pm	Glenn Rowe – University of Alabama at Birmingham, USA
24	<i>"Transcriptional regulation of skeletal muscle mitochondrial function and exercise performance"</i>
2:45pm – 3:00pm	Genevieve Kendall – Nationwide Children's Hospital, USA
25	<i>"Fusion oncogenes co-opt developmental programs for rhabdomyosarcoma tumorigenesis"</i>
3:00pm – 3:15pm	Posters Blitz Session 2 60 Chiara Nicoletti – <i>Reshaping cell identity: insights into a master Transcription Factor and insulator interplay during myogenic conversion</i> 66 Joana Esteves de Lima – <i>HIRA stabilizes skeletal muscle lineage identity</i>

63 Cedomir Stamenkovic – *Expansion of human iPSCs-derived muscle progenitor cells in vitro by inhibition of the JAK2/STAT3 pathway*

67 SungWoo Choi – *DLL4 and PDGF-BB regulate migration of human iPSC-derived skeletal myogenic progenitors*

71 Bayardo Garay – *Understanding the physiologic adaptations governing the clinical manifestations of Duchenne muscular dystrophy*

3:15pm– 3:45pm Coffee Break

3:45pm – 5:30pm **Session 7 – iPSC cells, bioengineering and emerging technologies to study and repair skeletal muscle**

Chair: Charles Emerson Jr – University of Massachusetts Medical School, Worcester, USA

Co-Chair: Bayardo Garay – University of Minnesota, Minneapolis, USA

3:45pm – 4:15pm **April Pyle** – University of California Los Angeles, USA

26

“In vivo satellite cell niche emergence from human stem and progenitor cells”

4:15pm – 4:45pm **Mary Garry** – University of Minnesota, USA

27

“Humanized skeletal muscle: novel therapies and models”

4:45pm – 5:00pm **Ori Bar-Nur** – Swiss Federal Institute of Technology (ETH) Zurich, Switzerland

28

“Integrative molecular roadmap for reprogramming fibroblasts into induced myogenic progenitor cells”

5:00pm – 5:30pm **Hidetoshi Sakurai** – Kyoto University, Japan (Virtual)

29

“Disease modeling and drug screening for muscular diseases by patient-derived iPSCs”

6:00pm – 7:30pm Dinner

7:30pm –10:00pm **Poster Session 2**

10:00pm Poster Session 2 tear-down

Thursday, November 18

7:00am – 8:30am Breakfast

Poster Session 3 set-up

8:30am – 10:30am	<p>Session 8 – Microenvironment in skeletal muscle repair and disease</p> <p>Chair: Sarah Greising – University of Minnesota, Minneapolis, USA</p> <p>Co-Chair: Barbara Crisol – EPFL, Lausanne, Switzerland</p>
8:30am – 9:00am	<p>Fabio Rossi – University of British Columbia, Canada</p> <p>30</p> <p><i>“Modulating the inflammatory environment through stromal cells: a double edged sword for muscle regeneration”</i></p>
9:00am – 9:30am	<p>Atsushi Asakura – University of Minnesota Medical School, USA</p> <p>31</p> <p><i>“Endothelial cell signature and potential of muscle stem cells”</i></p>
9:30am – 10:00am	<p>Benedicte Chazaud – Institut NeuroMyogène, Claude Bernard University Lyon, France</p> <p>32</p> <p><i>“The resolution of inflammation in muscle regeneration”</i></p>
10:00am – 10:15am	<p>Farshad Babaeijandaghi – University of British Columbia, Canada</p> <p>33</p> <p><i>“Metabolic reprogramming of skeletal muscle by resident macrophages points to CSF1R inhibitors as muscular dystrophy therapeutics”</i></p>
10:15am – 10:30am	<p>Poster Blitz Session 3</p> <p>76 June Baik – <i>Establishment of a non-human primate myogenic model for enabling cell-based therapy of muscle degenerative disorders</i></p> <p>78 Megan Haase – <i>Incorporation of spatial cellular migration and diffusion of cytokines into an agent-based model of muscle regeneration</i></p> <p>80 Shraavan Girada – <i>Role for class II PI3-Kinase in T-tubule remodeling</i></p> <p>81 Alexis Boulinguez – <i>Reducing ER stress to resolve aggregates accumulation in oculopharyngeal muscular dystrophy</i></p> <p>82 Valentina Taglietti – <i>New rat models of Duchenne and Becker muscular dystrophy to decipher human physio-pathogenesis</i></p>
10:30am – 11:00am	Coffee Break
11:00am – 12:00pm	Workshop II – Diversity, Equity, and Inclusion in Science Led by Rita Perlingeiro and Glenn Rowe
12:00pm – 1:30pm	Lunch and Meet the Speakers
1:30pm – 6:00pm	On-site COVID antigen and PCR testing and Free Time

6:00pm – 7:30pm Dinner

7:30pm – 10:00pm **Poster Session 3**

10:00pm Poster Session 3 tear down

Friday, November 19

7:00am – 8:30am Breakfast

8:30am – 10:15am **Session 9 – Muscle disease models and mechanisms (I)**

Chair: Vincent Mouly – INSERM, Paris, France

Co-Chair: Alexis Boulinguez – INSERM, Paris, France

8:30am – 9:00am **Michael Kyba** – University of Minnesota, USA

34

“Echos of a DUX4 burst: latent disequilibrium in muscle of the FSHD mouse model”

9:00am – 9:15am **Ariany Oliveira-Santos** – University of Nevada Reno, USA

35

“Vemurafenib as a potential treatment for laminin-alpha2 related congenital muscular dystrophy”

9:15am – 9:30am **Valentina Lionello** – University College of London, UK

36

“Modelling muscle disorders with myonuclear defects using advanced human skeletal muscle models”

9:30am – 9:45am **Carolina Ortiz Cordero** – University of Minnesota, USA

37

“Defective autophagy and increased apoptosis contribute toward the pathogenesis of FKRP-associated muscular dystrophies”

9:45am – 10:15am **Francesco Muntoni** – University College London, UK (Virtual)

38

“How the deep phenotyping of DMD is needed to assess efficacy of therapeutic interventions”

10:15am – 10:45am Coffee Break

10:45am – 12:00pm **Session 10 – Muscle disease models and mechanisms (II)**

Chair: Robert Grange – Virginia Tech University, Blacksburg, USA

Co-Chair: Andreia Nunes – University of Nevada, Reno, USA

10:45am – 11:15am **Peter Zammit** – King's College London, UK
39 *"Satellite cell dysfunction in neuromuscular disease: DUX4 and PAX7 interactions in FSHD"*

11:15am – 11:30am **Viviane Tran** – Montreal Clinical Research Institute (IRCM), Canada
40 *"Biasing the conformation of Elmo2 reveals that myoblast fusion can be exploited for regenerative therapy in fusiopathies"*

11:30am – 12:00pm **Virtual Blitz**

- Zhenguo Wu** – Hong Kong University of Science & Technology, Hong Kong
V1 *"Impaired muscle satellite cells in diabetic mice by elevated extracellular adenosine"*
- Luca Caputo** – Sanford Burnham Prebys Institute, USA
V2 *"Alterations of regulatory chromatin interactions leading to aberrant patterns of gene expression in Duchenne Muscular Dystrophy"*
- Akansha Shah** – UT Southwestern Medical Center, USA
V3 *"TWIST2 promotes tumor progression and represses myogenic differentiation in Rhabdomyosarcoma"*
- Yu Xin (Will) Wang** – Stanford University School of Medicine, USA
V4 *"Dynamics of cell-cell interactions during skeletal muscle regeneration and aging revealed by deep spatial profiling"*
- Albert Almada** – University of Southern California, USA
V5 *"Prolonged FOS activity disrupts a global myogenic transcriptional program by altering 3D chromatin architecture in primary muscle progenitor cells"*
- Stephanie Windner** – Memorial Sloan Kettering Cancer Center, USA
V6 *"NMJ signaling regulates nuclear size scaling and DNA content in Drosophila muscle fibers"*
- Eugenia Carraro** – University of Padova, Italy
V7 *"Advanced tissue-engineered approach for 3D diaphragmatic construct production and maturation"*
- Toshifumi Yokota** – University of Alberta, Canada
V8 *"DG9 peptide-conjugated single- and multi-exon skipping for the treatment of Duchenne Muscular Dystrophy"*
- Paola Llanos** – Universidad de Chile, Chile
V9 *"Activation of the NLRP3 inflammasome in skeletal muscle during insulin resistance"*

12:00pm – 1:30pm	Lunch and Meet the Speakers
1:30pm – 2:00pm	Business Meeting – Nominations and election of the three organizers for the 2023 meeting; complete evaluation forms; discuss future sites and scheduling
2:00pm – 3:00pm	Session 11 – Translating skeletal muscle science into new therapies Chair: Gillian Butler-Browne – INSERM Institute of Myology, Paris, France Co-Chair: Carolina Ortiz-Cordero – University of Minnesota, Minneapolis, USA
2:00pm – 2:30pm 41	Giulio Cossu – University of Manchester, UK <i>“Cell therapy for muscular dystrophy, beyond personalised medicine”</i>
2:30pm – 2:45pm 42	Jia Qi Cheng-Zhang – University of Pittsburgh, USA <i>“Development of a miniaturized CRISPR activation for a single AAV delivery method for LAMA2-CMD”</i>
2:45pm – 3:00pm 43	Feng Yue – University of Florida, USA <i>“Lipid droplet dynamics regulate adult muscle stem cell fate”</i>
3:00pm – 3:30pm	Coffee Break
3:30pm – 4:30pm	Keynote: Eric Olson – UT Southwestern, Dallas, USA (Virtual) <i>“Genetic control of muscle development and disease: thinking big and thinking small”</i>
4:30pm – 4:45pm	Closing Remarks
4:45pm – 5:15pm	Best Posters Awards
6:00pm – 8:00pm	Closing Banquet
8:00pm – 11:00pm	Music and Entertainment
Saturday, November 20	
7:00am – 8:30am	Breakfast
	Departure