

Society for Muscle Biology

Frontiers in Myogenesis Conference

“Skeletal muscle: development, regeneration and disease”

**Sofitel Guarujá Jequitimar, Balneario Praia do Pernambuco,
Sao Paulo, Brazil**

November 6th – 11th 2023

PROGRAM BOOK

Organizers

Michael Kyba

(University of Minnesota, Minneapolis, USA)

Foteini Mourkioti

(University of Pennsylvania, Philadelphia, USA)

Philippos Mourikis

(Mondor Institute / East-Paris University, France)

Executive Officer: Alessandra Sacco (SMB, USA)

Society for Muscle Biology

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“Skeletal muscle: development, regeneration and disease”

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Times are indicated in local Brazil time

Monday, November 6

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

4:00pm Housing Check-in

6:00pm – 6:10pm Welcome Introduction – Conference Organizers
Michael Kyba, Foteini Mourkioti and Philippos Mourikis

6:10pm – 7:10pm **Keynote lecture - Giulio Cossu** – University of Manchester, UK

7:20pm – 8:30pm Dinner
1 *“Myogenic cell heterogeneity during development and disease”*

8:40pm – 10:00pm Opening Reception – Mar Casado Restaurant

Tuesday, November 7

7:00am – 8:00am Breakfast

8:00am – 10:00am **Session 1 – Muscle formation and development**

Chair: Deneen Wellik – University of Wisconsin-Madison

Co-Chair: Matthieu Dos Santos - UT Southwestern

8:00am – 8:30am **Clarissa Henry** – University of Maine, USA

2

“Impact of motor neurons and the extracellular matrix microenvironment on muscle development and homeostasis in congenital disorders of glycosylation”

8:30am – 9:00am **Frank Schnorrer** – IBDM, CNRS, Aix Marseille University, France

3

“A mechanically regulated liquid-liquid phase separation of the transcriptional regulator Tono instructs muscle development”

9:00am – 9:30am **Minchul Kim** – Institute of Genetics and Molecular and Cellular Biology, Strasbourg, France

4

“Novel mechanical factor at the myotendinous junction”

9:30am – 9:45am **Marie Esper** – University of Ottawa, Canada

5

“Lack of Dystrophin disrupts fetal muscle stem cell polarity and commitment during secondary myogenesis”

9:45am – 10:00am **Silvia Di Francescantonio** – IMM, Universidade de Lisboa, Portugal

6

“The Arp2/3 complexes: the hidden role in skeletal muscle postnatal development and homeostasis”

10:00am – 10:30am Coffee Break

10:30am – 12:30pm **Session 2 – Myoblast fusion and muscle growth**

Chair: Elen Miyabara – University of São Paulo, Brazil

Co-Chair: Manuel Gavilán Herrera – Spanish National Center for Cardiovascular Disease, Spain

10:30am – 11:00am **Elizabeth Chen** – UT Southwestern Medical Center, USA

7

“Molecular Regulation of Invasive Protrusion Formation at the Mammalian Fusogenic Synapse”

11:00am – 11:30am **Charlotte Peterson** – University of Kentucky, USA

8	<i>“Cellular Mechanisms in Skeletal Muscle Underlying Exercise Response Heterogeneity in Older Individuals”</i>
11:30am – 12:00pm	Douglas Millay – Cincinnati Children's Hospital Medical Center, USA
9	<i>“Myoblast fusogens and myonuclear accretion”</i>
12:00pm – 12:15pm	Jenn Petrosino – University of Pennsylvania, USA
10	<i>“Active transport of tRNAs facilitates distributed protein synthesis in muscle”</i>
12:15pm – 12:30pm	Jimmy Massenet – Sanford Burnham Prebys Medical Discovery Institute, USA
11	<i>“CTCF mediated regulation of skeletal muscle fibers homeostasis”</i>
12:30pm – 2:00pm	Lunch and Meet the Speakers
2:00pm – 3:30pm	Session 3 – Muscle stem cell regulation (I) Chair: Colin Crist – McGill University, Canada Co-Chair: Jin Dylan Chung – University of Melbourne, Australia
2:00pm – 2:30pm	Robert Krauss – Icahn School of Medicine at Mount Sinai, USA
12	<i>“Niche signals and the quiescence-activation transition in muscle stem cells”</i>
2:30pm – 3:00pm	Michael Rudnicki – Ottawa Hospital Research Institute, Canada
13	<i>“Molecular regulation of muscle stem cell function”</i>
3:00pm – 3:15pm	Lale Cecchini – Sanford Burnham Prebys Medical Discovery Institute, USA
14	<i>“Lack of tenascin-C impairs muscle stem cell self-renewal and regeneration potential in aging muscle”</i>
3:15pm – 3:30pm	Anita Kneppers – Institut NeuroMyoGéne, France
15	<i>“AMPKα2 is a skeletal muscle stem cell intrinsic regulator of myonuclear accretion”</i>
3:30pm – 4:00pm	Coffee Break
4:00pm – 4:15pm	Fabrice Chretien – Institut de Myologie, Institut de Myologie Bat Babinsky

“The Myology Foundation: Science, Medicine & Engineering under one roof in the heart of Paris, for the benefits of patients”

4:15pm – 5:15pm **Professional Development Session I - Grant applications** – Led by Elizabeth Chen and Fred Relaix

5:15pm – 5:30pm **Poster Blitz Session 1**

60 – Ana Dias - *The STRIPAK component SLMAP3 is essential for Targeting MTOC Proteins to the Nuclear Envelope for Skeletal Myogenesis*

63 – Collin Kaufman - *Elucidating a role for BMP-6 in muscle stem cell aging*

59 – Manuel Gavilan Herrera - *Role of titin mechanics in skeletal muscle (de)differentiation*

72 – Torie Broer - *Engineering of Highly Functional Vascularized Human Skeletal Muscle Tissues*

64 – Charlotte Senechal - *The adhesion G Protein-Coupled Receptor Gpr116 is essential to maintain the skeletal muscle stem cell pool*

70 – Luca Caputo - *Duchenne Muscular Dystrophy-Related Cardiomyopathy: Beyond Dystrophin Deficiency in Skeletal Muscle*

71 – Laura Virtanen - *Single-cell Spatio-Temporal profiling of striated muscle cell populations in Duchenne Muscular Dystrophy*

6:00pm – 8:00pm **Poster Session 1**

8:00pm –9:30pm Dinner

10:00pm Poster Session 1 tear-down

Wednesday, November 8

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

8:00am – 10:00am **Session 4 – Muscle stem cell regulation (II)**
Chair: Tom Cheung – Hong Kong University of Science and Technology, Hong Kong
Co-Chair: Peggy Chien – UCLA, USA

8:00am – 8:30am **Frederic Relaix** – INSERM, France
16 *“PAX3 drives developmental trajectories during early mouse organogenesis via evolutionary conserved and lineage-specific gene regulatory networks”*

8:30am – 9:00am 17	Brad Olwin – University of Colorado Boulder, USA <i>“Skeletal muscle in aged mice is multifactorial and is not improved by restoring satellite cells to a youthful phenotype”</i>
9:00am – 9:30am 18	Penney Gilbert – University of Toronto, Canada <i>“In silico predictions coupled with the mini-IDLE predictive assay identifies myofiber-derived biomolecules dictating muscle stem cell return to quiescence”</i>
9:30am – 9:45am 19	Ji-Hyung Lee – University of Pennsylvania, USA <i>“How telomeres regulate muscle stem cell identity and contribute to regeneration in injury and muscle disease”</i>
9:45am – 10:00am 20	Margaret Hung – Icahn School of Medicine at Mount Sinai, New York, USA <i>“Regulation of muscle stem cell quiescence by niche adhesion”</i>
10:00am – 10:30am	Coffee Break
10:30am – 12:30pm	Session 5 – Epigenetic regulation of skeletal muscle Chair: Lorenzo Giordani – INSERM, France Co-Chair: Luca Caputo – Sanford Burnham Prebys Medical Discovery Institute, USA
10:30am – 11:00am 21	Vittorio Sartorelli – NIAMS, NIH, Bethesda, USA <i>“Metabolic Promotion of Adult and Ageing Muscle Regeneration by the Serine Biosynthesis Pathway”</i>
11:00am – 11:30am 22	Jeff Dilworth – University of Wisconsin-Madison, USA <i>“Cell fate changes during muscle regeneration are facilitated by the methyltransferase KMT2D”</i>
11:30am – 12:00pm 23	Pier Lorenzo Puri – Sanford Burnham Prebys Medical Discovery Institute, USA <i>“Control of gene expression by 3D chromatin interactions in skeletal muscle during homeostasis and disease”</i>
12:00pm – 12:15pm 24	Lauren Walter – Cornell University, USA

“Single-cell analysis of skeletal muscle regeneration across mouse lifespan identifies altered stem cell states”

12:15pm – 12:30pm

25**Romeo Blanc** – University of Rochester Medical Center, USA*“Epigenetic erosion induced by inflammation drives aged stem cell ferroptosis”*

12:30pm – 1:45pm

Lunch and Meet the Speakers

1:45pm – 3:45pm

Session 6 – iPS cells, bioengineering and emerging technologies to study and repair skeletal muscle**Chair: Francesco Saverio Tedesco** – University College London & The Francis Crick Institute, UK**Co-Chair: Farshad Babaeijandaghi** – Altos Labs, USA

1:45pm – 2:15pm

26**Francesco Saverio Tedesco** – University College London & The Francis Crick Institute, UK*“Bioengineering human skeletal muscle for advanced tissue, disease and therapy modelling”*

2:15pm – 2:45pm

27**Deneen Wellik** – University of Wisconsin, Madison, USA*“Hox-expressing interstitial cells are myoprogenitors that contribute to existing muscle fibers - a novel potential for myodystrophy therapy”*

2:45pm – 3:15pm

28**April Pyle** – University of California Los Angeles, USA*“Defining molecular and regulatory landscape of human muscle stem and progenitor cells”*

3:15pm – 3:30pm

29**Sarah Crist** – University of Minnesota, USA*“Human iPSC-derived iPAX7 myogenic progenitors are transcriptionally mature after incorporation into murine myofiber in vivo”*

3:30pm – 3:45pm

30**Ori Bar-Nur** – ETH, Switzerland*“Interspecies generation of iPSC-derived functional muscle stem cells”*

3:45pm – 4:15pm

Coffee Break

4:15pm – 6:15pm

Session 7 – Muscle metabolism and aging**Chair: Robert Grange** – Virginia Tech, USA

Co-Chair: Robson Carvalho – São Paulo State University, UNESP, Brazil

4:15pm – 4:45pm

31

Alessandra Sacco – Sanford Burnham Prebys Medical Discovery Institute, USA

“Muscle stem cell dynamics during tissue growth, aging and repair”

4:45pm – 5:15pm

32

Thomas Braun – Max Planck Institute for Heart and Lung Research, Germany

“Metabolic control of muscle stem cell quiescence and self renewal”

5:15pm – 5:30pm

33

Daniel Moore – University College London / The Francis Crick Institute, UK

“Using Human iPS Cells and CRISPR-Cas Technology to Develop Novel Therapies for Skeletal Muscle Laminopathies”

5:30pm – 5:45pm

34

Maria Eduarda Ramos Cezine – University of Sao Paulo, Brazil

“RANKL signaling drives skeletal muscle into the oxidative profile”

5:45pm – 6:00pm

Poster Blitz Session 2

91 – Gabriel Zanardo - *Telocytes at the Myotendinous Junction in mdx Mice*

95 – Michael Anderson - *Structural and Functional Analysis of Dystroglycan Cell Surface Cleavage Reveals a Novel Regulation Mechanism*

78 – Joyce Esposito - *Modeling Duchenne Muscular Dystrophy in vitro: 2D versus 3D culture for myogenic differentiation of iPSCs*

85 – Masanari Ikeda - *Cell cycle inhibitor p16 expression in post-mitotic myofibers causes muscle weakness*

92 – Lara Caetano Rocha-Braga - *The impact of the acute exercise following muscle atrophy in myotendinous interface*

82 – Eline van de Ven - *Unravelling the metabolism of sialic acid in human iPSC-derived skeletal muscle models*

83 – Kah Yong Goh - *FOXO-regulated Deaf1 controls muscle regeneration through autophagy*

6:00pm – 7:00pm

Professional Development Session II – Diversity and inclusion in science

– Led by Anton Bennett

7:00pm – 8:00pm

Poster Session 2

8:00pm – 9:30pm

Dinner

9:30pm – 10:30pm **Poster Session 2 (cont.)**

11:00pm Poster Session 2 tear-down

Thursday, November 9

7:00am – 8:00am Breakfast
Poster Session 3 set-up

8:00am – 11:45am **Session 8 – Regeneration in neuromuscular disorders**
Chair: Fabrisia Ambrosio – Spaulding Rehabilitation Hospital, MGH Harvard, USA
Co-Chair: Joel Chamberlain – University of Washington, USA

8:00am – 8:30am **Julia von Maltzahn** – Leibniz Institute of Aging, Germany
35 *“Changes in the myofiber secretome after denervation affect muscle stem cell lineage progression and functionality”*

8:30am – 9:00am **Will Wang** – Sanford Burnham Prebys Medical Discovery Institute, USA
36 *“Spatial regulators of skeletal muscle regeneration and neuromuscular disorders”*

9:00am – 9:15am **Meilyn Cruz Soca** – CARE, Pontificia Universidad Católica de Chile, Chile
37 *“Involvement of lipid signaling in skeletal muscle fibrosis: LPA-mediated activation of YAP/TAZ in denervation”*

9:15am – 9:30am **Cristofer Calvo** – Cincinnati Children's Hospital, USA
38 *“Myonuclei exhibit a multimodal transcriptional response to muscle denervation”*

9:30am – 9:45am **Marcus Krüger** – University of Cologne, Germany
39 *“Spatial proteomics of skeletal muscle reveals the complex composition of neuromuscular (NMJ) and myotendinous (MTJ) transition zones”*

9:45am – 10:00am **Poster Blitz Session 3**
97 – Lola Lessard - *Metabolic defects as a potential therapeutic target in Type I Myotonic Dystrophy*

- 96 – Emily Laurilliard - *Dissecting tissue-specific features of endothelial-muscle stem cell crosstalk in engineered co-culture models*
- 101 – Roberto Silva-Rojas - *Titin mechanical failure induces skeletal muscle dystrophy*
- 100 – Gabriele Guarnaccia - *Role of Serum amyloid protein A1 (SAA1) in pancreatic cancer cachexia*
- 102 – Jin Dylan Chung - *Intrinsic muscle stem cell dysfunction in Akita mice, a model of Type 1 diabetes*
- 99 – Marshall Hogarth - *Single Cell RNA Sequencing Reveals Dysregulated Stromal Cells and their Aberrant Molecular Interactions in Dysferlinopathy*
- 98 – Matthieu Dos Santos - *Opposing gene regulatory programs governing myofiber development and maturation revealed at single nucleus resolution*

10:00am – 10:30am Coffee Break

10:30am – 11:00am **Pura Munoz-Canoves – Altos Labs Inc, USA**
40 *“Improving regeneration of aged skeletal muscle”*

11:00am – 12:00pm **Professional Development Session III – Meet the Editors – Led by April Pyle**

12:30pm – 2:00pm **Lunch and Meet the Speakers**

2:00pm – 7:00pm **Free Time**

7:00pm – 8:00pm **Poster Session 3**

8:00pm – 9:30pm Dinner

9:30pm – 10:30pm **Poster Session 3 (cont.)**

10:30pm Poster Session 3 tear down

Friday, November 10

7:00am – 8:00am Breakfast

8:00am – 10:15am **Session 9 – Muscle microenvironment in skeletal muscle repair and disease**

Chair: Michael Wozzcyna – NYU Grossman School of Medicine, USA

Co-Chair: Marshall Hogarth – Children's National Medical Center, USA

8:00am – 8:30am **Anton Bennett** – Yale University, USA

41

“Targeting MAP kinase phosphatases in dystrophic muscle disease”

8:30am – 9:00am **Atsushi Asakura** – University of Minnesota Medical School, USA

42

“Circadian regulation of muscle stem cell activation and differentiation”

9:00am – 9:15am **Elise Engquist** – King's College London, UK

43

“Satellite cell and FAP activity in muscular dystrophies”

9:15am – 9:30am **Joana Neves** – Universidade de Lisboa, Portugal

44

“Immune modulatory strategies to restore regenerative capacity in the aged muscle”

9:30am – 9:45am **Chiara Nicoletti** – Sanford Burnham Prebys Medical Discovery Institute, USA

45

“A Single Cell Atlas of Dysferlinopathy Pathogenesis: molecular insights and targets for intervention”

9:45am – 10:15am Coffee Break

10:15am – 11:45pm **Session 10 – Muscle disease mechanisms**

Chair: Christopher Ward – University of Maryland, USA

Co-Chair: Pascal Bernatchez – University of British Columbia, Canada

10:15am – 10:45am **Peter Zammit** – King's College London, UK

46

“Mitochondrial function in facioscapulohumeral muscular dystrophy is disproportionately affected by cigarette smoke”

10:45am – 11:15am **Rita Perlingeiro** – University of Minnesota, USA

47

“Development of allogeneic off-the-shelf myogenic progenitors for the treatment of muscular dystrophies”

11:15am – 11:30am 48	Sujatha Jagannathan – University of Colorado Anschutz Medical Campus, USA <i>“Proteasomal regulation in DUX4 biology”</i>
11:30am – 11:45am 49	Darko Bosnakovski – University of Minnesota, USA <i>“Mouse vs. Human DUX: Modeling FSHD in the mouse”</i>
11:45am – 12:00pm 50	Mahasweta Girgenrath – Entrada Therapeutics, USA <i>“Endosomal Escape Vehicle (EEV™) - Oligonucleotide Conjugates Produce Exon Skipping and Dystrophin Production in Preclinical Models of Duchenne Muscular Dystrophy”</i>
12:00pm – 12:30pm	Business Meeting – Nominations and election of the three organizers for the 2025 meeting; complete evaluation forms; discuss future sites and scheduling
12:30pm – 2:00pm	Lunch and Meet the Speakers
2:00pm – 3:15pm	Session 11 – Translating skeletal muscle science into new therapies Chair: Rachele Crosbie – UCLA, USA Co-Chair: Christopher Brennan – Entrada Therapeutics, USA
2:00pm – 2:30pm 51	Fabio Rossi – University of British Columbia, Canada <i>“Modulating inflammatory response to enhance regeneration”</i>
2:30pm – 2:45pm 52	Eileen Shore – University of Pennsylvania, USA <i>“Heterotopic Ossification: muscle-bone interactions – implications for future therapies”</i>
2:45pm – 3:00pm 53	Ekaterina Mokhonova – UCLA, USA <i>“Sarcospan selectively ameliorates gamma-, but not alpha- or beta-sarcoglycanopathy: implications for mechanisms and therapies for the limb-girdle muscular dystrophies”</i>
3:00pm – 3:15pm 54	Jeffrey Chamberlain – University of Washington, USA <i>“Next generation gene therapies for Duchenne muscular dystrophy (DMD)”</i>
3:15pm – 3:45pm	Coffee Break

4:00pm – 5:00pm

55

Keynote Lecture: Mayana Zatz – University of Sao Paulo, Brazil
“Our contributions to neuromuscular disorders: from gene mapping to potential novel therapies”

5:00pm – 5:15pm

Closing Remarks

5:15pm – 5:30pm

Best Posters Awards

6:00pm – 8:00pm

Closing Banquet

Saturday, November 11

7:00am – 8:30am

Breakfast

Departure