ALTERNATIVE MUSCLE CLUB 2016

Meeting Program

SANTFORD CONSORTIUM FOR REGENERATIVE MEDICINE

Friday, September 30th, 2016

UC San Diego

Salk Institute for Biological Studies
We gratefully acknowledge the support of the following organizations and people, who helped to make this meeting happen.

**INVOLVED INSTITUTIONS**

UC San Diego  
{iem}
UC San Diego Institute of Engineering in Medicine

Sanford Consortium for Regenerative Medicine

**ORGANIZATIONAL AND CORPORATE SPONSORS**

SDMRC

Parent Project Muscular Dystrophy

Genea Biocells - Heather Main, Debra Bressaw

Stemonix - Fabian Zanella

ACEA Biosciences Inc.

Stemonix

VWR - Jilan Knoblauch

**Eppendorf** - Michael Sutton, Melody Wilkinson

**Aurora Scientific** - Matthew Borkowski
PREFACE

Thank you for attending the Alternative Muscle Club 2016!

Welcome to the 4th American Alternative Muscle Club meeting. This year we are back in San Diego at the Sanford Consortium for Regenerative Medicine.

With close to 90 attendees and over 60 abstracts we are certain that this years AMC meeting will be another great success. Genea Biocells has kindly agreed to sponsor this years Young Investigator Award, and the poster prizes. We would also like to extend our gratitude to the institutional support we receive, and to our corporate sponsors!

The AMC has always been a meeting for young scientists with a strong emphasis on career support and networking. Therefore, we are continuing the translational medicine workshop that is run in collaboration with the Parent Project Muscular Dystrophy. We also added a panel on ‘transitioning to industry’ to this years meeting, which may be of interest to a lot of graduate students and postdoctoral fellows.

Most importantly we hope that you enjoy this years AMC meeting. We are sure that the scientific breadth and quality of the research and its participants will make for an exciting meeting!

With kind regards,
The meeting organizers.

Abby Buchwalter
Stephan Lange
Jordan Blondelle
Julius Bogomolovas
Sabine van Dijk
Stefanie Novak
Matthew Stroud
Optimize your culture processes for clinical translation

Our powerful chemical biology platform can identify small molecules to replace critical biologics in your culture media or adapt your process to biologics reduced formulations for easier and more cost-effective clinical translation.

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We are happy to use your cell lines for any service provided to you – screening, process optimization, cell banking, cell differentiation and supply – applying the same strict quality control as for our own cell lines.

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All our products are highly customizable: for example cells frozen at different developmental stages, adjusted cell number per vial, quality control with markers important to your application or compounds pre-diluted in your culture medium.

Genea Biocells is a neuromuscular disease-focused discovery stage company using proprietary human pluripotent stem cell technologies. Genea Biocells also provides contract research services to pharma and supplies reagents to strategic academic collaborators. Genea Biocells has one of the world’s largest banks of pluripotent human embryonic stem cells and developed the world’s first consistent, scalable and high-yield differentiation process for functional skeletal muscle cells.

For more information email info@geneabiocells.com or visit geneabiocells.com
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<td><strong>Eureka Network-Duchenne (END)</strong></td>
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<td><strong>Translational Medicine Workshop</strong></td>
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<td>11:50am-1:45pm</td>
<td>Lunch break &amp; Poster session</td>
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<td>12:15pm-1:45pm</td>
<td><strong>Poster Session</strong></td>
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<td>2:30pm-3:45pm</td>
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<td>3:45pm-4pm</td>
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<td>4pm-5:30pm</td>
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<td>from 5:45pm</td>
<td><strong>Reception / Networking / Social Mixer</strong></td>
<td>Bella Vista Caffé &amp; Terrace</td>
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The San Diego Muscle Research Center (SDMRC) is one of the IEM centers of excellence. Its mission is to provide investigators with the infrastructure and environment to accelerate their cutting-edge muscle research in an efficient and cost-effective manner.

http://sdmrc.ucsd.edu

The Institute of Engineering in Medicine (IEM) was established in 2008 at UC San Diego to bring together outstanding faculty in its Jacobs School of Engineering, the School of Medicine and other units, for interdisciplinary research and education.

Our mission is to accelerate discoveries of innovative science and technology through teamwork and facilitate their translation to improve healthcare delivery.

The IEM is composed of seven Centers focusing on diseases and systems and nine Centers for technologies, education and industry collaboration.

http://iem.ucsd.edu
SCIENTIFIC PODIUM SESSIONS

REGISTRATION

BELLA VISTA CAFFÉ & TERRACE

7:45am-8:25am Registration / Coffee / Social
Poster presenters: Please hang up your posters!
Presenters for Session 1, please set up your computers.

PODIUM SESSION 1

Duane J Roth Auditorium

Session Chairs: Jordan Blondelle & Abby Buchwalter

8:25am-8:30am Welcome address

8:30am-8:45am Jason Pellman:
A Novel Role for SNARE Proteins in Cardiac Desmosomal Biology and Disease.

8:45am-9am Miensheng Chu
Fragile-X related protein 1 regulates gap junction remodeling in cardiomyocytes.

9am-9:15am Adrian Arrieta
MANF, a Structurally Unique ER stress-inducible Chaperone, Restores ER-protein Folding in ER Stressed Cardiac Myocytes & in the Ischemic Heart.

9:15am-9:30am Daniel Smith
Identifying Novel Interacting Partners for the UNC-45 Chaperone in Drosophila melanogaster.

9:30am-9:45am Yoshitake Cho
Perm1 (PGC-1 and ERR-induced Regulator, Muscle 1) is required for exercise–induced mitochondrial biogenesis and enhances oxidative capacity in skeletal muscle.

15 minutes break
PODIUM SESSION 2

Session Chairs: Stephan Lange & Julius Bogomolovas

10am-10:15am Francesca Boscolo Sesillo
p53 Balances Self-Renewal and Myogenic Commitment of Muscle Stem Cells Upon Activation.

10:15am-10:30am Michael Yu
Engineering Multipotent Cardiogenic Progenitors and Cardiomyocytes for Regenerative Medicine and Disease Modeling Purposes.

10:30am-10:45am Erik Blackwood
ATF6 Is Required For ANP Secretion From The Heart.

10:45am-11am Sadie Ingle
Generation of a minipig model for genetic hypertrophic cardiomyopathy.

11am-11:15am Anthony Hessel
Optimal muscle length is the same for twitch and tetanic contractions in muscles from mdm mice: a role for titin in isometric force production?

EUREKA NETWORK-DUCHENNE (END) TRANSLATIONAL MEDICINE WORKSHOP

Session Chairs: Brett Colson and Leonela Amoasii

11:15am-11:50am The Eureka Network-Duchenne (END) Translational Medicine Workshop.

LUNCH & SCIENTIFIC POSTER SESSION

Session Chairs: Stephan Lange & Julius Bogomolovas

11:50am-1:45pm Lunch

12:15pm-1:45pm Poster Session
Odd numbered posters: 12:15pm-1pm
Even numbered posters: 1pm-1:45pm
TRANSITION TO INDUSTRY PANEL

1:45pm-2:30pm Transition to Industry Panel.
  Fabian Zanella - Stemonix
  David Gokhin - Carling Communications
  Indroneal Banerjee - Abbvie
  Heather Main - Genea Biocells

PODium SESSION 3

Session Chairs: Sabine van Dijk and Jordan Blondelle

2:30pm-2:45pm Joanna Palade
  Identification of satellite cells from anole lizard muscle and demonstration of increased musculoskeletal potential.

2:45pm-3pm Constanza Cortes
  Skeletal muscle control of systemic metabolism: a role for Transcription Factor E-B (TFEB) signaling.

3pm-3:15pm Valeria Marrocco
  Pharmacological inhibition of PKCθ in vivo improves healing in mdx mice.

3:15pm-3:30pm Juliane Campos
  β2-adrenoreceptor agonist improves autophagy in skeletal muscle weakness/wasting.

3:30pm-3:45pm Patrick Desmond
  Identification of Small Ankyrin 1 as a novel SERCA1 regulatory protein in Skeletal Muscle.

15 minutes break

Please remember to take down your posters!
PODIUM SESSION 4

Session Chairs: Stefanie Novak & Stephan Lange

4pm-4:15pm  Tzu-Han Lin
Role of Rab35 and Endosomal Trafficking in T-tubule Remodeling.

4:15pm-4:30pm  Michael Hicks
Human developmental myogenesis identifies enrichment and maturation strategies for hPSC-derived skeletal muscle.

4:30pm-4:45pm  Cassandra Happe
Mechanical Patterning Improves Neuromuscular Junction-in-a-dish Modeling.

4:45pm-5pm  Michael Stec
Fbxw7 is a novel regulator of skeletal muscle stem cell expansion.

5pm-5:15pm  Bradley Nelson

Industry special - novel applications
5:15pm-5:30pm  Fabian Zanella
microHeart: A screening-ready, physiologically relevant human iPSC-derived cardiomyocyte platform.

POSTER AND YOUNG INVESTIGATOR AWARD CEREMONY

AMC Genea Biocells Poster Awards
AMC Genea Biocells Young Investigator Awards

RECEPTION / NETWORKING / SOCIAL EVENT

starting at 5:45pm  Reception

Please remember to take down your posters!
SCIENTIFIC POSTER SESSION

Posters should be mounted on the poster boards in the Sanford Consortium Lobby before 10am. There will be a formal poster session after lunch, from 12:15pm-1:45pm, although AMC attendees are welcome to browse and discuss posters whenever they wish. Posters must be taken down before 6pm. Please note that we cannot save any posters that remain hung up after that time.

GENEA BIOCELLS POSTER AWARDS

An independent jury of senior scientists selects the six best poster presentations during our poster session for the “Genea Biocells Poster Award”. The winners will be announced at the end of the Scientific Sessions at 5:30pm. We gratefully acknowledge Genea Biocells for sponsoring the poster and young investigator awards this year.

Presenters of odd numbered posters should be at their poster. . . . . . . . . . 12:15pm-1pm
Presenters of even numbered posters should be at their poster . . . . . . . . . 1pm-1:45pm

SECTION 1 - MUSCLE/CARDIAC VASCULATURE

POSTER NO. NAME / TITLE

1. Chao Chen
   Novel Variants in VINCULIN and TROPOMYOSIN1 Combinatorially Predispose Patients to Dilated Cardiomyopathy

2. Ramon Diaz Trelles
   Hypoxia tolerance and cardioprotection in the adult heart

3. Marcy Martin
   SREBP2-Induced EndoMT Contributes to Pulmonary Fibrosis

4. Mei Methawasin
   Upregulating compliant titin in the heart attenuates left ventricular stiffness in a mouse model with diastolic dysfunction.

5. Gerburg Schwaerzer
   “Role of protein kinase G signaling in aortic wall maintenance and repair”
SECTION 2 - MUSCLE STRUCTURE, FUNCTION & SIGNALING

6. Patrick Magrath
   Development of MRI Methods Towards Evaluating Cardiomyocyte Performance in Duchenne Muscular Dystrophy

7. Matthew Bills
   Development of an in vitro assay for assessing cardiomyocyte function

8. Eric Carruth
   Regional Gradients in Tissue Anisotropy During Pressure Overload Hypertrophy Reflect Endogenous Heterogeneity in the Rat Ventricles

9. Brett Colson
   Cardiac Myosin-Binding Protein C Structural Dynamics - a Time-Resolved FRET Biosensor for Enhanced Contractility in Heart Failure Therapeutic Discovery

10. Argus Sun
    Force Thresholds: Modeling Subcellular Myocyte Mechanotransduction

11. James Caldwell
    X-ray crystallography structures of Drosophila striated muscle myosin II

12. Andrew D'Lugos
    High Intensity Exercise Preserves Myocellular Size and mTOR Signaling During Doxorubicin Treatment

13. Michael Gibbons
    Histological Assessment of Chronically Torn Human Rotator Cuff Muscles: Evidence of Degeneration, Regeneration and Remodeling

14. Charles Gray
    CaMKIIδ subtypes differentially regulate infarct formation following ex vivo myocardial ischemia/reperfusion through NF-κB and TNF-α

15. Sherin Hashem
    LAMP-2 deficiency impairs mitophagy and promotes mitochondrial damage in models of Danon disease

16. Valeria Marrocco
    CARP1-mediated signaling in dilated cardiomyopathy

17. Stefanie Novak
    Elucidating the role of phosphorylation on thin filament length regulation in cardiomyocytes

18. Kristoffer Svensson
    Markers of mitochondrial biogenesis are not altered by overexpression of SIRT1 in skeletal muscle of adult mice
Section 3 - Muscle Regeneration

22. Alessandra Castaldi
   C-kit+ cells resident in adult heart are susceptible to aging

23. Melissa Hernandez
   Injectable Skeletal Muscle Matrix in Aged Mouse Model of Peripheral Artery Disease

24. Jessica Ungerleider
   Extracellular Matrix Hydrogel Promotes Tissue Remodeling, Arteriogenesis, and Perfusion in a Rat Hindlimb Ischemia Model

25. Barbora Malecova
   Single cell analysis reveals dynamic transitions within distinct subpopulations of Fibro-Adipogenic Progenitors (FAPs) implicated in skeletal muscle regeneration or fibrosis.

26. Christopher Penton
   Maintaining the differentiation potential of muscle stem cells in vitro in order to support therapeutic discovery for muscular dystrophy diseases

27. David Sala Cano
   Identification of STAT3 downstream effectors regulating muscle stem cell function

Section 4 - Muscle Development

28. Cherie Alissa Lynch
   Mohawk Regulation of Macrophage Polarity During Muscle Repair

29. Gaurav Agrawal
   Engineered 3D Skeletal Muscle-on-a-Chip as an In Vitro Tool

30. Amanda Rickard
   A Pluripotent Cell Based DUX4 Reporter for Modeling FSHD in skeletal muscle
31. Tian Wang
   Regulation of T-tubule membrane remodeling in Drosophila muscle

32. Jordan Blondelle
   Role of Cullin-RING ligase activity in skeletal muscle development

33. Anabel de la Garza
   Multinucleated myotube formation from human pluripotent stem cells

34. Sole Gatto
   Epigenomic mechanisms driving hESC conversion into skeletal muscle cells

35. Vic Keschrumrus
   Drug Screening and Therapy Development Using Engineered Heart Tissues

36. Heather Main
   Skeletal Muscle modeling of Myotonic Dystrophy from human pluripotent cells

37. Geo Vogler
   Identification of Disease-relevant Genetic Variants using the Drosophila Heart Model

**SECTION 5 - MUSCLE BIOPHYSICS & BIOMECHANICS**

38. Ivan Tomasic
   2-deoxy-ATP enhances multiple kinetic parameters to improve cardiac function

39. Xiaoyu Zhang
   Assessment of Positive and Negative Inotropic Compounds Using an Impedance-based System with human iPSC-derived Cardiomyocytes under Controlled Pacing Conditions

40. Johan Lindqvist
   Mechanical ventilation reduces the optimal length for force production in the diaphragm

41. Ayla Sessions
   Extracellular Matrix Downregulation in the Drosophila Heart Preserves Contractile Function and Improves Lifespan

**SECTION 6 - LATE BREAKING**

42. Ike Chinyere
   Feasibility and Testing of a Human Induced Pluripotent Stem Cell Derived Cardiac Graft in a Pre-Clinical Swine Model of CHF
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Career Development / Meeting Benefits

One of the goals for this meeting is to give you a head-start into the career as a scientist in academia or industry.

Eureka Network-Duchenne (END)
Translational Medicine Workshop

This workshop is specifically designed to provide a learning environment where early career scientists (graduate students, postdoctoral fellows, assistant professors) working on various aspects of muscular dystrophies (neuromuscular, cardiac or skeletal) can learn concepts on taking their science from 'Bench To Bedside'.

The workshop session before lunch will provide a general overview on translational medicine to all AMC attendees. We will also offer information on how to apply for a follow-up workshop taking place in Italy later this year.
TRANSITION TO INDUSTRY PANEL

This panel session will feature postdoctoral fellows from UC San Diego, The Scripps Research Institute and the University of Sydney that made the successful transition into an industry position. Each panelist will showcase his career path and experiences. The panelists will be available for a Q&A during the career development session, and may also attend the networking event at the end of the day.

Dr. Heather Main

worked in academia for 11 years across 3 continents, including a PhD in Sweden and post doc in Australia. In 2014 she joined Genea Biocells, a neuromuscular disease company, which utilizes pluripotent stem cell technologies towards disease modeling, drug discovery and stem cell therapies.

Dr. Indroneal Banerjee

was a Postdoctoral Fellow at UC San Diego. His current position at the pharmaceutical company Abbvie sits at the interface between research and drug applications for clinical use.

Dr. David Gokhin

was a Postdoctoral Fellow at the Scripps Research Institute. He currently works as a medical writer for Carling Communications, a professional services firm that specializes in full-service marketing, advertising, and physician communications within pharmaceutical, medical device, and specialty biotechnology industries.

Dr. Fabian Zanella

was a Postdoctoral Fellow at UC San Diego. He is now working for the local biotech company Stemonix that sets a new economic paradigm around stem cell technologies to meet the demands of drug discovery and personalized medicine.
AMC POSTER &
YOUNG INVESTIGATOR
AWARDS

In addition to presenting your work in a talk or poster presentation, we aim to add another line to your CV or résumé. Especially if your poster or podium presentation receives one of the Genea Biocells sponsored Young Investigator or Poster Awards.

The first prize in the Young Investigator Award category is a Nespresso coffee machine. We also offer all four young investigator awardees an opportunity to run an experiment on the IN Cell Analyser 6000 at Genea Biocells.

The six Poster Awards receive a goodie bag containing a mug, candy, pen as well as Myotube Mike (a crusader for awareness of neuromuscular diseases), and a lab-coat.

RECEPTION / NETWORKING / SOCIAL HOUR

Connect with other scientists and attendees from local biotech companies or universities. Our networking event is your chance to quiz people on how to transition into industry, network, establish new collaborations, or simply make new friends with similar scientific interests.
VENUE

SANFORD CONSORTIUM FOR REGENERATIVE MEDICINE

The AMC meeting will be held at the Sanford Consortium for Regenerative Medicine, adjacent to the Salk Institute and the University of California San Diego campus in La Jolla, CA.

The Duane J. Roth Auditorium will host the scientific podium sessions. The poster sessions will be held in the lobby of the Sanford Consortium building.

For the location of the Sanford Consortium Building on a map and directions, please see the following: LINK.

BELLA VISTA SOCIAL CLUB AND CAFFÉ

All catering will be provided by the Bella Vista Social Club and Caffé, located on the grounds of the Sanford Consortium Building. The Bella Vista Social Club and Caffé is renowned for its mix of art and culture. The Caffé provides delicious cheese and meat platters, and a good selection of micro-brewed beer and wine.

A networking event concludes this years AMC, and will also be held at the Bella Vista Caffé. Wind down and enjoy a relaxing networking social hour after the meeting with us, while the sun sets in the Pacific Ocean!
There is limited space available for street parking along Torrey Pines Scenic Drive (free) and in the East Parking Lot adjacent to the Sanford Consortium building ($8 for daylong parking, get your ticket at the machine in the beginning of the day). Please arrive early to get your parking spot, breeze through the registration, hang up your poster and grab a bite before the start of the scientific sessions.

Street address for GPS/Google Maps: 2880 Torrey Pines Scenic Dr., La Jolla, CA-92037

Please use Google Maps (LINK) to see the location.
Although a bit more cumbersome, but the Sanford Consortium Building is also reachable through public transport.

You can also use the trip planner offered by the Metropolitan Transit Service (MTS) -
the destination address is: 2880 Torrey Pines Scenic Dr. La Jolla, CA

http://www.sdmts.com/Planning/googleTP.asp
LODGING

For those coming from out of town, please use the following link for a list of local hotels and lodging options: http://amcsd.ucsd.edu/directions.html

CONTACT

If you have questions about the meeting, you may contact us by email. Email address: amclub.us@gmail.com

ORGANIZING COMMITTEE

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### PARTICIPANTS

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