Endocrine and Metabolism Section Newsletter
Spring 2015
American Physiological Society

Newsletter at a Glance

Section 1: Experimental Biology 2016 San Diego
Deadlines for Abstracts and Awards

Important Deadlines:
Abstracts due Nov. 5, 2015
APS Endocrinology & Metabolism Awards due Nov. 20, 2015

Section 2: Experimental Biology 2016 San Diego
APS Endocrinology and Metabolism Section Program Details

Section 3: APS Endocrinology and Metabolism Section Steering Committee

Section 4: Experimental Biology 2015 APS Endocrinology and Metabolism Section Award Recipients

EB 2016
EB 2016 will be held in San Diego, CA April 2-6. The section is sponsoring several sessions that promise to be at the forefront of endocrinology and metabolism. We look forward to seeing you there.

Section Programming and Special Events
The E&M Section will sponsor the Solomon Berson Lecture, three symposia, and two featured topics and poster sessions at EB. Also, don’t forget to join us for the Section Business Meeting and Awards Reception.

It's time to begin to prepare for EB2016. The Section has a number of great sessions covering a wide range of topics in Endocrinology and Metabolism and we encourage you and your colleagues to submit to one of our Featured Topics or other Poster Sessions.

In addition, we are sponsoring various young investigator awards, including cash prizes and free meeting registration. These also include the APS Campbell Awards from the Young Investigator Poster Competition to be held at our Section Business meeting and reception.
**Section 2: Experimental Biology 2016 San Diego, APS Endocrinology and Metabolism Section Program Details.**

**Solomon A. Berson Distinguished Lectureship of the APS Endocrinology and Metabolism Section**

Gerald I. Shulman, MD, PHD
Professor of Medicine and Cellular and Molecular Physiology at Yale University and an Investigator in the Howard Hughes Medical Institute.

The Endocrinology and Metabolism Section Steering Committee is pleased to announce that the winner of the 2016 Solomon A. Berson Distinguished Lectureship Award is Gerald I. Shulman, Professor of Medicine and Cellular and Molecular Physiology at Yale University and an Investigator in the Howard Hughes Medical Institute.

Dr. Shulman completed his doctoral work at Wayne State University, graduating with an M.D./Ph.D. in 1979. Dr. Shulman completed research fellowships at Vanderbilt and Harvard and clinical training at Massachusetts General Hospital, prior to his postdoctoral training at Yale, where he later joined the faculty in 1987. Dr. Shulman has pioneered the development of novel MRS methodology to noninvasively assess carbohydrate and fat metabolism in a tissue specific manner in humans for the first time. These studies in turn have led to several paradigm shifts in our understanding of the regulation of liver and muscle carbohydrate and fat metabolism in humans. Furthermore these studies have led to the elucidation of the cellular and molecular mechanism of lipid-induced liver and muscle insulin resistance in humans and in the process has led to the identification of several novel therapeutic targets for the prevention and treatment of non-alcoholic fatty liver disease and type 2 diabetes, which are now in clinical development.

**Symposia 1**

The control of skeletal muscle atrophy in responses to disuse: clinical/ pre-clinical contentions and fallacies of evidence

Chairs: Philip J Atherton and Charles Lang

Loss of skeletal muscle mass in response to mechanical unloading is associated with prolonged bedrest, casting of lower-limbs due to broken/fractured bones, and spaceflight. Moreover, a number of catabolic conditions including age-related sarcopenia and numerous diseases associated with muscle wasting i.e. respiratory or organ failure; are exacerbated by interactions between disease(s)
pathogenesis (i.e. inflammation) and increasingly sedentary behaviors associated with ill-health. Indeed, the physiological and metabolic consequences of skeletal muscle unloading are profound including: skeletal muscle atrophy, bone loss, whole-body/muscle insulin resistance, fluid shifts and cardio-respiratory de-conditioning. There have been a number of approaches used to experimentally induce skeletal muscle atrophy both in humans and animals. Such models include (but are not limited to) bed rest, limb-casting or unilateral lower limb suspension (ULLS), and for rodents, tail suspension; all of which have been broadly utilized experimental models to increase understanding of the physiological and metabolic responses to inactivity, and drivers of skeletal muscle atrophy. Nonetheless, despite a substantial number of human immobilization studies ranging 3-120 d duration in humans in addition to a substantial number of pre-clinical studies too numerous to detail, there remains both significant gaps in our knowledge and controversies relating to our understanding of disuse atrophy in response to mechanical unloading. These particularly relate to: i) the temporality of muscle atrophy (i.e. as most studies to date have considered mainly singular pre/post-disuse time-points) and, ii) the underlying metabolic mechanism(s). Unfortunately, in the absence of such definitive insights, we remain lacking in efficacious interventions to minimize physiological and metabolic perturbations associated with disuse atrophy. While without any question, a major knowledge gap remains the need to define the mechanistic and temporal basis of disuse atrophy, there remains a more fundamental controversy; that is: whether disuse atrophy is predominantly driven by increases in muscle protein breakdown (MPB) or decreases in muscle protein synthesis (MPS). Indeed there are very much two-camps on this matter. Whilst from an objective point-of-view, the scenario of a combination of a “bit-of-both” may seem likely, there are in fact little or no experimental data quantifying these processes synchronously and dynamically i.e. using tracers. Similarly, whether crucial metabolic disturbances in muscle exposed to mechanical unloading, such as muscle insulin resistance has a causative impact upon disuse atrophy remains contentious. Finally, this arena is dogged by contention over how accurately pre-clinical models of disuse atrophy represent human muscle unloading (e.g. due to differences in metabolic rates and fuel utilization) and also what methodologies are informative enough readouts to confer whether or not MPS and/or MPB are altered i.e. whether it is appropriate MPS/MPB-related genes/protein(s) act as proxies for dynamically quantified tracer readouts of MPS/MPB, in addition to what systems biology and transgenics approaches can tell us of these processes. This timely symposium will focus on the physiological/metabolic disturbances associated with disuse atrophy with contributors conveying knowledge yielded from clinical and pre-clinical studies (and from multi-modal approaches).

Symposia 2

New insights into exercise and insulin sensitivity
Chairs: Erik Richter and Glenn McConell

The number of people with diabetes is increasing at a great rate with type 2 diabetes accounting for over 85% of people with diabetes. Skeletal muscle is the major site of glucose disposal in response to insulin. The skeletal muscle of people with type 2 diabetes does not respond normally to insulin and so glucose uptake in response to insulin is reduced in these individuals and this contributes greatly to glucose intolerance. Most people are aware that “exercise is good for people with diabetes”. Most assume that this is because exercise causes weight loss and since around 80% of people with type 2 diabetes are overweight, this is indeed a great benefit of exercise. However, exercise training increases skeletal muscle insulin sensitivity, independently of weight loss. In addition, each acute bout of exercise also increases insulin sensitivity for 24-48 hours. Therefore, there are both acute and chronic effects of exercise on insulin sensitivity, and, importantly, exercise increases skeletal
muscle insulin sensitivity in both people with and without type 2 diabetes. The mechanism(s) responsible for this increase in skeletal muscle insulin sensitivity with exercise have not been fully delineated and are important for development of therapeutics. This symposium will involve presentations on exciting new insights into how exercise increases insulin sensitivity.

**Symposia 3**

**Role of Oxytocin in the Control of Energy Homeostasis**
Chair: James E. Blevins

The neuropeptide oxytocin has emerged as an important anorexigen in the regulation of energy balance. Its effects on food intake have largely been attributed to limiting meal size through interactions in key regulatory brain regions such as the hypothalamus and hindbrain. Pharmacologic, genetic, and pair-feeding studies indicate that its ability to reduce body mass extends beyond that of food intake, affecting multiple factors that determine energy balance such as energy expenditure, lipolysis, and glucose regulation. Systemic administration of oxytocin recapitulates many of its effects when administered centrally, raising the questions of whether and to what extent circulating oxytocin contributes to energy regulation. This topic is particularly timely in light of recent findings that reveal its promising therapeutic potential to ameliorate obesity in diet-induced rodents, nonhuman primates and obese humans.

**Featured Topics:** These Featured Topics will include keynote seminars followed by 15 minute presentations by the authors of submitted abstracts. This is an especially great opportunity for trainees to present their work.

**Featured Topic 1:**

**Hormones and Reproduction**
Chair: Willis K. Samson

**Featured Topic 2:**

**Metabolic Consequences of Exercise**
Chair: Jennifer Steiner and Gina Yosten

**Abstract Topic Categories**
The Endocrinology & Metabolism Section also has several other interesting abstract topic categories, in addition to the Featured Topics categories:

- Cardiovascular endocrinology, including renin-angiotensin-aldosterone
- Gestation, fetal, and neonatal biology, including mammary gland and lactation
- Mitochondrial function
- Neuroendocrinology, hypothalamus, and pituitary
- Obesity and satiety
- Adipocyte function and metabolism
- Pancreatic hormones and diabetes
- Reproduction and sex hormones
- Stress and trauma including adrenal gland
- Exercise, muscle protein synthesis, and bone metabolism
- Nutrition and nutrient metabolism, including lipids, amino acids, carbohydrates
- Translational endocrinology and metabolism
Call for Proposals for EB 2017 in San Francisco
Please consider submitting a proposal for a Symposium or Featured Topic for Experimental Biology 2017 in San Francisco, CA. Travel funds are allocated for proposals selected for programming, which can be used by the Chair(s) and speakers to attend the meeting. The call for proposals will be sent out in early 2016. For more information, please contact the E&M JPC Representative, Gina L. C. Yosten (gyosten@slu.edu).

Section 3: APS Endocrinology and Metabolism Section Steering Committee
The following E&M members were elected to serve your interests. If you have any program or other ideas / concerns regarding APS and Endocrinology and Metabolism issues please do not hesitate to contact the following:
Joseph T Brozinick (brozinick_joseph_t@lilly.com)-Section Chair
Josh Anthony(joshua_anthony@campbellsoup.com)-Ex Oficio/Past Chair
Charles Lang (clang@psu.edu)-AJP Representative
Willis Samson (samsonwk@slu.edu)-Committee on Committees Representative
Esther L Sabban (sabban@nymc.edu)-Secretary/Treasurer
Steven Crozier (scrozier@hersheys.com)-Industry Liaison Representative
Damein Romero (dromero@umc.edu)-Councillor
Labros Sidossis (lasidoss@utmb.edu)-Councillor
Jennifer Steiner (jls2tc@virginia.edu)-Trainee Advisory Committee Representative
Annie Whitaker (awhita@lsuhasc.edu)-Advocacy Liaison
Gina L. C. Yosten (gyosten@slu.edu)-Joint Program Committee Rep and Awards Committee Chair

Section 4: Experimental Biology 2014 APS Endocrinology and Metabolism Section Award Recipients
Congratulations to the Experimental Biology 2015 Winners
Awards were presented at the EB 2015 meeting in Boston to faculty, post-doctoral fellows and graduate students. Recipients were chosen by the E&M section steering committee. The post-doctoral and graduate student awards were based on the merit of the research they present at the meeting. Congratulations!

List of Awardees
Berson Award:
  Grahame Hardie
New Investigator Award:
  Patrick Fueger
Mahesh Award:
  Jennifer Steiner
Mead Johnson Award:
  Blair Conner
  Lauren Stein

Dr. Grahame Hardie 2015 Solomon A. Berson
Distinguished Lecturer of the APS Endocrinology and
Metabolism Section
(with Dr. Joseph Brozinick (left) Chair)
Research Recognition Award:
  Megan Quintana
  Manish Saraf
  Kristen Turner
  Maryam Syed

Campbell Poster Competition Participants (Winners Bolded):
  Yu-Jen Chen
  Harshita Chodavarapu
  Zachary Clayton
  Michella Coelho
  **Sooyeon Lee**
  Andrew Lutkewitte
  Kim Pedersen
  **Maria Torres**

---

*EB2015 APS Endocrinology and Metabolism Section Award Winners*

*Front Row* (Seated): Lauren Stein (Mead Johnson Award), Sooyeon Lee (Campbell Poster Competition, First Place), Kristen Turner (Research Recognition Award)

*Middle Row* (Standing): Manish Saraf (Research Recognition Award), Joe Brozinick (E&M Section Chair), Maryam Syed (Research Recognition Award), Jennifer Steiner (Mahesh Award), Megan Quintana (Research Recognition Award), Blair Conner (Mead Johnson Award), Maria Torres (Campbell Poster Competition, Second Place)

*Back Row* (Standing): Grahame Hardie (Berson Award), Patrick Fueger (New Investigator Award)