Assembly on Respiratory Structure and Function

Early Career Professionals Working Group

Abstract Preparation Guide

for submission to the American Thoracic Society International Conference

There is no single correct way to prepare an abstract for the ATS International Conference. It is worth investing the time to produce a clear and concise abstract that successfully tells your story. Your abstract, if submitted to the RSF Assembly, will be graded by the Assembly Program Committee, which consists of people with expertise in all areas within the RSF Assembly. Review by the Program Committee and the International Conference Committee will determine the format of your presentation at the meeting (e.g., oral presentation, poster discussion, etc.). There are also awards for travel, scholarships and scientific excellence for trainees. **These awards are based on the abstract scores. If you would like your abstract to be considered for an award, please select the appropriate box in the affirmation section of the online abstract submission.**

So how to go about it?

This information has been assembled from many sources, including those cited below[1, 2].

• **Start with formulating the conclusion**. While the conclusion appears at the end of your abstract, starting with formulating the conclusion directs your writing to create the tension that will pull the reader deeper into your story. Make the conclusion one sentence or two at most. Make only one single, central point. The rest of the abstract serves to support that single point.

• **Introduction.** Always give a brief rationale for your work (Why is this important? What is the problem being addressed?), and mention the hypothesis or aims up front. You should state the need in the field but do not have to walk the reader through your thought process of how you identified the need. You will be able to elaborate on this during your (poster) presentation, after the abstract is accepted.

• **Describe the methods employed.** Keep the methods as concise but as clear as possible, avoiding jargon. Briefly describe the materials used; one sentence will suffice. You should elaborate on the experimental approach; 2-3 phrases to describe the specific steps in your study design and the techniques and analyses employed. Provide details if the methodology is novel or if you submit a Descriptive/Method abstract. Remember to include specific details – number of cell-lines, drug concentrations, time, inclusion criteria, statistical analysis, etc.

•**Summarize your results.** Present your results in a logical order that parallels the order in the Methods section; in this way you will explain to the reader, in a step-by-step fashion, the thought process that led to “the answer” to your research question. Always mention the effect size with proper error range (i.e. SEM, SD) and the p-values (and if space allows the statistical test used). Do not discuss, speculate, or compare your results with data in the literature ; simply write the most important results that will help you put together “a story” in the conclusion paragraph.

•**State your principal conclusion.**

•**Write your title.** Now that you have developed your message, give it a suitable title. The title should adequately describe the contents using the fewest words and should be catchy. Keep in mind that key words in the title will be

used to assign your abstract to a session. It will also help people interested in your field, find your presentation more easily. Do not use abbreviations in the title.

- **Have someone else read it.** Like with anything in science, two minds are better than one. Find someone from your own field but also someone who is not directly familiar with your topic as not all reviewers will be experts in your particular field.

The ATS abstract below illustrates how to incorporate the points above in the preparation of an abstract.

Title: Inflammation Altered Mitochondrial Dynamics In Human Airway Smooth Muscle
Type: Scientific Abstract
Category: 03.10 - Smooth Muscle: Airway (RSF)
Presentation Preference: Poster only

Funded by: NIH grants Specify grant number here
The Presenting Author is a first or second year fellow: No
Student or in Training: No
Early Stage Investigator: No

These are important fields as they signify your eligibility for awards and bursaries

Abstract Body

Rationale: Excitation-contraction coupling represents a cascade of events that connects an elevation of cytosolic Ca^{2+} concentration ($[Ca^{2+}]_{cyt}$), with the ensuing, ATP-consuming mechanical work. An elevation in $[Ca^{2+}]_{cyt}$ is followed by an increase in mitochondrial Ca^{2+} ($[Ca^{2+}]_{mito}$) that leads to an increase in ATP production. Accordingly, mitochondrial dynamics (fission and fusion events and movement) are essential to couple $[Ca^{2+}]_{cyt}$ and $[Ca^{2+}]_{mito}$ and therefore ATP synthesis to localized energy demand within airway smooth muscle (ASM) cells. However, little is known about mitochondrial dynamics in ASM. In inflamed airways, an enhanced contractility is observed, and both $[Ca^{2+}]_{cyt}$ and $[Ca^{2+}]_{mito}$ responses are altered. We hypothesized that inflammation also changes mitochondria dynamics. Mitochondrial movement and fission/fusion state were characterized in human ASM cells during agonist stimulation before and after exposure to cytokines.

Hypothesis and Aims clearly stated

Methods: Human ASM cells were isolated from lung specimens obtained incidental to patient surgery. Mitochondria were tagged using either Mitotracker Red or Mitotracker Green. Experiments were performed at 37^{o}C. Two-color real-time fluorescence microscopic imaging was used to visualize labeled cells. The velocity of mitochondrial movement was measured using the time-lapse images and kymographic analysis. The balance between fission and fusion was determined by analysis of mitochondrial form factor and aspect ratio using Image J and Matlab.

Novel methodology briefly described

Results: Mitochondria exhibit two forms of movement: 1) random/wiggling movements that occur throughout the cell but are particularly observed around the nucleus, and 2) directed motion trajectories that are more commonly found in the distal compartment. Addition of 10 µM histamine increased $[Ca^{2+}]_{cyt}$ and after an ~1-s delay and increase in $[Ca^{2+}]_{mito}$. This activation was associated with an increase in random/wiggling movements of mitochondria. There was also a slight increase in the velocity of directed motion trajectories of mitochondria. In particular, mitochondrial movement towards the peri-nuclear Golgi/SR was observed with stimulation. After a delay, exposure to histamine resulted in less complex mitochondrial networking and increased fragmentation (or fission). Exposure of ASM cells to TNFα or IL-13 for 48h was associated with reduced coupling between $[Ca^{2+}]_{cyt}$ and $[Ca^{2+}]_{mito}$ responses to histamine (decreased $[Ca^{2+}]_{mito}$ response). In addition, all forms of mitochondrial movement were reduced, and there was markedly increased mitochondrial fragmentation.

The most important results presented in the order described in the methods

Conclusions: Agonist stimulation of ASM cells increases mitochondrial movement and induces fragmentation. Exposure of ASM cells to pro-inflammatory cytokines results in reduced $[Ca^{2+}]_{mito}$ response, reduced mitochondrial movement, but greater mitochondrial fragmentation. Such changes in mitochondrial dynamics may contribute to alterations in excitation-contraction and excitation-energy coupling in inflamed airways.

One central message in conclusion

Here are a few other elements of a good abstract.

Write in the past tense. You have 400 words for the abstract body text so you will need to be "economical" with words. When using abbreviations; spell the name out fully the first time it is mentioned with the abbreviation in parentheses. Finally, try to develop a story with elements of tension, puzzlement or surprise. Everyone loves a good story.

You must indicate your **Research Funding Source**: All abstracts must specify funding source: i.e., pharmaceutical firm name, grant name and source or other specific funding source. Compliance to this rule is an ATS prerequisite for review.

Have others read your abstract for clarity and conciseness, as well as for possible spelling and grammatical errors.

Table/Figure. You can include up to 1 table OR 1 figure (not included in the 400 word count). A well thought out image with proper resolution (publication quality) can help convey the story of your abstract significantly. If you choose to include a high quality table or figure, make sure it is legible, the axes are easily to read, and the font is at least 9 points. An image cannot have more than one panel.

1. Day, R.L., *How to write and publish a scientific paper*. 5 ed. 1998, Westport, CT: Oryx Press.
2. Weitz, D. *Weitz-lab guide to good paper writing*. 2012; Available from: http://weitzlab.seas.harvard.edu/links/tutorials/paper_guide.pdf.

So now you have written the abstract, what happens next?

You need to submit your abstract using the online system. This does not need to be completed in one session. Try to use the contact information that is already uploaded about your authors when possible to avoid duplication of people in the system.

Which abstract category should you choose?

While the list of possible classifications seems huge, and possibly of little interest to you it is actually REALLY IMPORTANT! The classification, discipline and subclassification that you choose will determine which assemblies you can select as your reviewing assembly, and they decide the programming for presentation at the conference. Thus, if you want to present your work in a forum of people with similar interests, pay attention to your selections. The classifications and subclassifications have changed dramatically. Remember to choose the right reviewing assembly since this will determine the experts who will evaluate your work.

Please check classification 26 if your abstract fits better outside the disease categories. The available Classification-Subclassification combinations for RSF are:

Classification	Discipline	SubClassification
01. Acute Lung Injury, ARDS	Adult/Pediatric	Cellular/Molecular Investigation
	Adult/Pediatric	Clinical Studies
	Adult/Pediatric	Genetics, Genomics, Epigenetics, and Systems Biology
	Adult/Pediatric	Physiology/Pathophysiology
	Adult/Pediatric	Translational Science
02. Allergy	Adult/Pediatric	Cellular/Molecular Investigation
	Adult/Pediatric	Clinical Studies
	Adult/Pediatric	Genetics, Genomics, Epigenetics, and Systems Biology
	Adult/Pediatric	Physiology/Pathophysiology
	Adult/Pediatric	Translational Science
03. Asthma	Adult/Pediatric	Cellular/Molecular Investigation

	Adult/Pediatric	Clinical Studies
	Adult/Pediatric	Genetics, Genomics, Epigenetics, and Systems Biology
	Adult/Pediatric	Physiology/Pathophysiology
	Adult/Pediatric	Translational Science
04. Autoimmune Lung Disease	Adult/Pediatric	Cellular/Molecular Investigation
	Adult/Pediatric	Genetics, Genomics, Epigenetics, and Systems Biology
	Adult/Pediatric	Physiology/Pathophysiology
	Adult/Pediatric	Translational Science
06. BPD and Other Congenital Pediatric Lung Diseases	Pediatric	Cellular/Molecular Investigation
	Pediatric	Clinical Studies
	Pediatric	Genetics, Genomics, Epigenetics, and Systems Biology
	Pediatric	Physiology/Pathophysiology
	Pediatric	Translational Science
07. Bronchiectasis, Ciliary Dyskinesia	Adult/Pediatric	Cellular/Molecular Investigation
	Adult/Pediatric	Clinical Studies
	Adult/Pediatric	Genetics, Genomics, Epigenetics, and Systems Biology
	Adult/Pediatric	Physiology/Pathophysiology
	Adult/Pediatric	Translational Science
08. Cardiovascular Disease, Hemodynamics	Adult	Cellular/Molecular Investigation
	Adult/Pediatric	Genetics, Genomics, Epigenetics, and Systems Biology
	Adult/Pediatric	Physiology/Pathophysiology
	Adult/Pediatric	Translational Science
09. COPD, Emphysema, Chronic Bronchitis, Alpha-1 Antitrypsin Deficiency	Adult/Pediatric	Cellular/Molecular Investigation
	Adult	Clinical Studies
	Adult/Pediatric	Genetics, Genomics, Epigenetics, and Systems Biology
	Adult/Pediatric	Physiology/Pathophysiology
	Adult/Pediatric	Translational Science
10. Cough	Adult/Pediatric	Cellular/Molecular Investigation

	Adult/Pediatric	Clinical Studies
	Adult/Pediatric	Genetics, Genomics, Epigenetics, and Systems Biology
	Adult/Pediatric	Physiology/Pathophysiology
	Adult	Translational Science
11. Cystic Fibrosis	Adult/Pediatric	Cellular/Molecular Investigation
	Adult/Pediatric	Clinical Studies
	Adult/Pediatric	Genetics, Genomics, Epigenetics, and Systems Biology
	Adult/Pediatric	Physiology/Pathophysiology
	Adult/Pediatric	Translational Science
12. Diffuse Parenchymal Lung Diseases: ILD, Sarcoidosis, IPF, LAM	Adult/Pediatric	Cellular/Molecular Investigation
	Adult/Pediatric	Clinical Studies
	Adult/Pediatric	Genetics, Genomics, Epigenetics, and Systems Biology
	Adult/Pediatric	Physiology/Pathophysiology
	Adult/Pediatric	Translational Science
13. Drug-Induced Lung Disease, Pulmonary Toxicity	Adult	Cellular/Molecular Investigation
	Adult/Pediatric	Clinical Studies
	Adult/Pediatric	Physiology/Pathophysiology
	Adult/Pediatric	Translational Science
14. Dyspnea	Adult/Pediatric	Clinical Studies
	Adult/Pediatric	Genetics, Genomics, Epigenetics, and Systems Biology
	Adult/Pediatric	Physiology/Pathophysiology
	Adult/Pediatric	Rehabilitation; Exercise; Physical Therapy
16. Immunodeficiencies	Adult/Pediatric	Genetics, Genomics, Epigenetics, and Systems Biology
	Adult/Pediatric	Physiology/Pathophysiology
	Adult/Pediatric	Translational Science
17. Interventional Pulmonology	Adult/Pediatric	Genetics, Genomics, Epigenetics, and Systems Biology
	Adult/Pediatric	Physiology/Pathophysiology
	Adult/Pediatric	Translational Science
18. Lung Cancer, Thoracic Oncology	Adult/Pediatric	Genetics, Genomics, Epigenetics, and Systems Biology

	Adult/Pediatric	Physiology/Pathophysiology
19. Lung Infection (Bacterical, Viral, Fungal, HIV, etc.)	Adult/Pediatric	Genetics, Genomics, Epigenetics, and Systems Biology
	Adult/Pediatric	Physiology/Pathophysiology
20. Mechanical Ventilation (Invasive, Non-Invasive)	Adult/Pediatric	Cellular/Molecular Investigation
	Adult/Pediatric	Clinical Studies
	Adult/Pediatric	Physiology/Pathophysiology
	Adult/Pediatric	Translational Science
21. Multiorgan System Failure	Adult/Pediatric	Genetics, Genomics, Epigenetics, and Systems Biology
	Adult/Pediatric	Physiology/Pathophysiology
22. Non Pulmonary Critical Care	Adult/Pediatric	Genetics, Genomics, Epigenetics, and Systems Biology
	Adult/Pediatric	Physiology/Pathophysiology
23. Occupational, Environmental Health	Adult/Pediatric	Cellular/Molecular Investigation
	Adult/Pediatric	Clinical Studies
	Adult/Pediatric	Genetics, Genomics, Epigenetics, and Systems Biology
	Adult/Pediatric	Physiology/Pathophysiology
	Adult/Pediatric	Translational Science
24. Respiratory Health at Altitude and Extreme Environments	Adult/Pediatric	Cellular/Molecular Investigation
	Adult/Pediatric	Clinical Studies
	Adult/Pediatric	Epidemiologic Studies
	Adult	Genetics, Genomics, Epigenetics, and Systems Biology
	Adult/Pediatric	Physiology/Pathophysiology
	Adult/Pediatric	Rehabilitation; Exercise; Physical Therapy
	Adult/Pediatric	Translational Science
25. Chest Wall, Respiratory Muscles: Neural and Ventilatory Control	Adult/Pediatric	Cellular/Molecular Investigation
	Adult/Pediatric	Clinical Studies
	Adult/Pediatric	Epidemiologic Studies

	Adult/Pediatric	Genetics, Genomics, Epigenetics, and Systems Biology
	Adult/Pediatric	Physiology/Pathophysiology
	Adult/Pediatric	Rehabilitation; Exercise; Physical Therapy
	Adult/Pediatric	Translational Science
26. Structure, Function and Basic Cellular Mechanisms	Adult/Pediatric	Aging
	Adult/Pediatric	Airway (Patho)Biology, Hyperresponsiveness and Pharmacology
	Adult/Pediatric	Autophagy/Mitophagy/Proteostasis/ Endoplasmic Reticulum Stress
		Bioengineering
	Adult/Pediatric	Computational Methods
	Adult/Pediatric	Developmental Biology and Physiology
	Adult/Pediatric	Disease Modeling
	Adult/Pediatric	Epithelial Biology, Injury and Repair: Airway and Alveolar
	Adult/Pediatric	Exercise Physiology and Testing
	Adult/Pediatric	Extracellular Matrix
	Adult/Pediatric	Genetics, Genomics, Epigenetics, and Systems Biology
	Adult/Pediatric	Host Pathogen Interaction
	Adult/Pediatric	Imaging
	Adult/Pediatric	Immunological Mechanisms
	Adult/Pediatric	Ion Transport and Channels
	Adult/Pediatric	Novel Methodologies and Technologies
	Adult/Pediatric	Mechanotransduction
	Adult/Pediatric	Mesenchymal Cell Biology/Fibrosis
	Adult/Pediatric	Obesity
	Adult/Pediatric	Oxidant Stress Pathways
	Adult/Pediatric	Pulmonary Function and Testing
	Adult/Pediatric	Receptors and Signaling
	Adult/Pediatric	Respiratory Morphometry and Measurement
	Adult/Pediatric	Muscle Biology: Airway, Vascular and Skeletal Muscle
	Adult/Pediatric	Stem Cell Biology
	Adult/Pediatric	Tissue Engineering, Regenerative Medicine
27. Right Ventricular and Pulmonary Vasculature, Health and Disease	Adult/Pediatric	Cellular/Molecular Investigation
	Adult/Pediatric	Clinical Studies
	Adult/Pediatric	Genetics, Genomics, Epigenetics, and Systems Biology
	Adult/Pediatric	Physiology/Pathophysiology

	Adult	Rehabilitation; Exercise; Physical Therapy
	Adult/Pediatric	Translational Science
28. Pleural Disease	Adult/Pediatric	Cellular/Molecular Investigation
	Adult/Pediatric	Clinical Studies
	Adult/Pediatric	Genetics, Genomics, Epigenetics, and Systems Biology
	Adult/Pediatric	Physiology/Pathophysiology
	Adult	Translational Science
29. Pulmonary Rehabilitation	Adult	Cellular/Molecular Investigation
	Adult	Clinical Studies
	Adult/Pediatric	Physiology/Pathophysiology
	Adult	Translational Science
30. Sepsis	Adult/Pediatric	Cellular/Molecular Investigation
	Adult/Pediatric	Genetics, Genomics, Epigenetics, and Systems Biology
	Adult/Pediatric	Physiology/Pathophysiology
	Adult/Pediatric	Translational Science
31. Sleep Disordered Breathing	Adult/Pediatric	Physiology/Pathophysiology
32. Non Sleep Disordered Breathing	Adult	General
	Adult/Pediatric	Physiology/Pathophysiology
33. Tobacco, Nicotine, Marijuana Abuse and Addiction	Adult	Genetics, Genomics, Epigenetics, and Systems Biology
	Adult/Pediatric	Physiology/Pathophysiology
	Adult	Translational Science
34. Transplantation	Adult/Pediatric	Cellular/Molecular Investigation
	Adult/Pediatric	Clinical Studies
	Adult	Genetics, Genomics, Epigenetics, and Systems Biology
	Adult/Pediatric	Physiology/Pathophysiology
	Adult	Rehabilitation; Exercise; Physical Therapy
	Adult/Pediatric	Translational Science
35. Tuberculosis, NTM	Adult/Pediatric	Genetics, Genomics, Epigenetics, and Systems Biology
	Adult/Pediatric	Physiology/Pathophysiology

We look forward to seeing your work presented in a RSF session at the ATS in 2018.

Acknowledgements

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