

# 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 scientific 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. **The 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.**

#### Getting started with writing an abstract

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 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 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 These are important fields as they signify your eligibility for awards and bursaries  
**Early Stage Investigator:** No

**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°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  $\mu M$  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 TNF $\alpha$  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 simple 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 an interesting story, however, keep in mind that you aim to convey accurate scientific information. We also encourage you to submit negative data from well-designed and well-executed studies.

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](http://weitzlab.seas.harvard.edu/links/tutorials/paper_guide.pdf).

## **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. Classifications and subclassifications have changed dramatically. Remember to choose the right reviewing assembly since this will determine the experts who will evaluate your work. In our case, the relevant Assembly is Respiratory Structure and Function.

[The available Classification-Subclassification combinations for RSF.](#)

**We look forward to seeing your work presented in a RSF session at the ATS in 2021.**

## **Acknowledgements**

Many people assisted in the preparation of this abstract writing guide. We particularly acknowledge the contribution of Dr. Jeffrey J. Fredberg and Dr. Janette K. Burgess.