
# CHRD 2022: Abstract & Poster Submission Form

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**Presenter Status**

- ◉ Undergraduate Students
- ○ Masters Student
- ○ PhD Student
- ○ Post-Doctoral Fellows
- ○ Residents
- ○ Non-Trainee

**Research Category**

- ◉ Basic Science
- ○ Clinical
- ○ Community Health / Policy

**Role in the project**

- ☐ Design
- ☑ Perform Experiments
- ☑ Analyze Data
- ☑ Write Abstract
- ☐

**Title**

The effects of Oxidized Phosphatidylcholines on CD38 Abundance in Human Airway Smooth Muscle Cells

**Background**

Asthma is a chronic, respiratory disease that affects 12% of all children in Canada. A defining disease trait is the hypercontractility of the airway smooth muscles (ASM). This is mediated by intracellular Ca2+flux, including the effects of a transmembrane cyclic ADP ribose hydrolase, CD38, which is increased in ASM cells from asthmatics. We showed that allergen challenge in humans and mice generated oxidized phosphatidylcholines (OxPCs) in the airways. Acute exposure to OxPC is sufficient to induce smooth muscle contraction and airway narrowing.

**Objective**

Our objective was to explore the effect of prolonged exposure on CD38 abundance in HASM cells.

**Methods**

We used human telomerase reverse transcriptase (hTERT) HASM cell lines, generated from primary cell culture of bronchial smooth muscle tissue obtained from human participants who exhibited normal airway function (N=5). hTERT-HASM were pretreated with OxPC (40ug/mL or 80ug/mL) for 24 and 48 hours. We used immunoblotting and quantitative densitometry to assess the abundance of CD38 protein in cell culture lysates. Data were analyzed by one-way ANOVA with relevant post-hoc test.

**Results**

After 24 hours OxPC exposure (40ug/mL or 80ug/mL), CD38 abundance increased 27% and 20%, respectively, when compared to time matched control cultures (N=3). In the 48 hour group, we measured an increase of 18% and 23%, respectively, when compared to the time matched control (N=5). Likely due to the limited number of replicates we were able to achieve, statistically significant differences in CD38 abundance were not evident in OxPC treated HASM cells, however, but as noted above, there was a distinct upward trend.

**Conclusion**

Prolonged exposure to OxPCs may increase CD38 abundance in HASM cells, however differences between individual cell lines make it difficult to detect a statistically significant change in CD38 abundance between time points. The biological relevance of OxPC effect on CD38, and its role in asthma pathophysiology needs further elucidation.

**Do you have a table/figure to upload?**

○ Yes ⊙ No

# Authors

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