

# CHRD 2024: Abstract Submission Form

**Presenter Name**  
Hannah Ziegler-Blair

**Presenter Status**  
Masters Student

**Role in the project**  
Perform Experiments  
Analyze Data  
Write Abstract

**Research Category**  
Basic Science

**Title**  
Antibiotic Probing to Investigate Ribosome Structure Changes in Bowen-Conradi Syndrome

**Background**  
Bowen-Conradi Syndrome is a rare genetic disorder in children characterized by severely reduced growth and development, resulting in death during infancy. BCS is a ribosomopathy, a disorder associated with altered ribosome assembly which likely affects the translation of the genetic code into proteins.

**Objective**  
We hypothesized that ribosome-targeting antibiotics could be used to probe changes in ribosome structure in BCS based on growth in our model, yeast.

**Methods**  
BCS is in part due to a failure to chemically modify an important site within the rRNA of the ribosome, which undergoes a three-step modification process that likely affects ribosome structure and/or function. We created yeast strains that express different variations of the modifications of this site. We then grew these strains on plates with media containing various ribosome-targeting antibiotics and compared the growth we observed to see whether certain antibiotics disrupt or improve cell growth at different temperatures. Altered sensitivity to these antibiotics implies changes to the ribosome structure. Plates were imaged to make accurate comparisons of the rates of growth.

**Results**  
The three step modification process of the site within the ribosome involves a snoRNA, a methyltransferase (EMG1), and then an acetyltransferase. At optimal conditions we observed that the snoRNA deletion strain had a small reduction in growth, the strain with the BCS variant of the EMG1 methyltransferase had a severe reduction in growth, and the deletion strain of the acetyltransferase had a minimal reduction in growth. Out of the antibiotics we have tested thus far, we have seen differences in growth between our strains of yeast. These differences have been either exasperated or reduced depending on the temperature and type of antibiotic used.

**Conclusion**  
Our results so far indicate that the differences in growth between wild-type and BCS yeast strains does indicate that a structural change is occurring in BCS ribosomes.

**Do you have a table/figure to upload?**  
No

## Authors

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